

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

APPLICATION OF KENTUCKY UTILITIES)	CASE NO.
COMPANY FOR AN ADJUSTMENT OF)	2014-00371
ITS BASE RATES)	

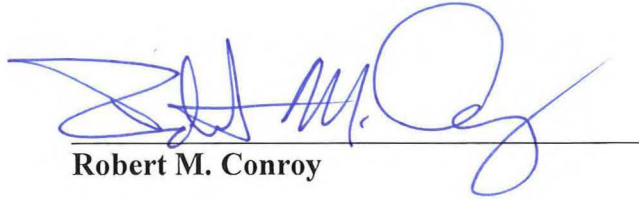
SUPPLEMENTAL RESPONSE OF
KENTUCKY UTILITIES COMPANY
TO
THE FIRST SET OF DATA REQUESTS OF
KENTUCKY INDUSTRIAL UTILITY CUSTOMERS, INC.
DATED JANUARY 8, 2015

FILED: JANUARY 28, 2015

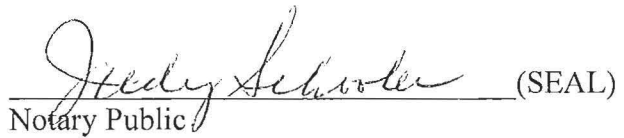
VERIFICATION

COMMONWEALTH OF KENTUCKY)
) SS:
COUNTY OF JEFFERSON)

The undersigned, **Robert M. Conroy**, being duly sworn, deposes and says that he is Director - Rates for Louisville Gas and Electric Company and Kentucky Utilities Company, an employee of LG&E and KU Services Company, and that he has personal knowledge of the matters set forth in the responses for which he is identified as the witness, and the answers contained therein are true and correct to the best of his information, knowledge and belief.


Robert M. Conroy

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 28th day of January 2015.


 (SEAL)
Notary Public

My Commission Expires:
JUDY SCHOOLER
Notary Public, State at Large, KY
My commission expires July 11, 2018
Notary ID # 512743

VERIFICATION

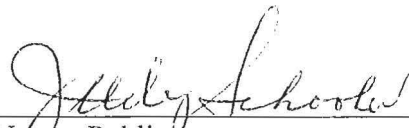
COMMONWEALTH OF KENTUCKY)
) SS:
COUNTY OF JEFFERSON)

The undersigned, **David S. Sinclair**, being duly sworn, deposes and says that he is Vice President, Energy Supply and Analysis for Kentucky Utilities Company and Louisville Gas and Electric Company and an employee of LG&E and KU Services Company, and that he has personal knowledge of the matters set forth in the responses for which he is identified as the witness, and the answers contained therein are true and correct to the best of his information, knowledge and belief.



David S. Sinclair

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 28th day of January 2015.



Notary Public (SEAL)

My Commission Expires:
JUDY SCHOOLER
Notary Public, State at Large, KY
My commission expires July 11, 2018
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VERIFICATION

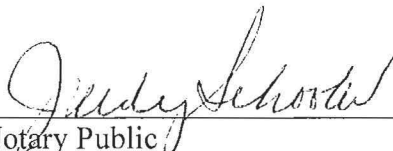
COMMONWEALTH OF KENTUCKY)
) SS:
COUNTY OF JEFFERSON)

The undersigned, **Paul W. Thompson**, being duly sworn, deposes and says that he is Chief Operating Officer for Kentucky Utilities Company and Louisville Gas and Electric Company and an employee of LG&E and KU Services Company, and that he has personal knowledge of the matters set forth in the responses for which he is identified as the witness, and the answers contained therein are true and correct to the best of his information, knowledge and belief.



Paul W. Thompson

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 28th day of January 2015.



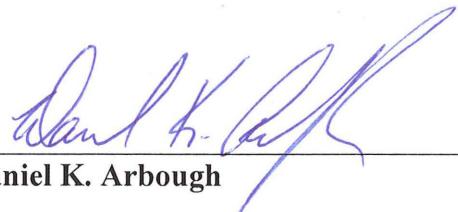
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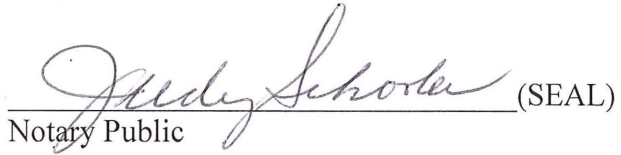
COMMONWEALTH OF KENTUCKY)
) SS:
COUNTY OF JEFFERSON)

The undersigned, **Daniel K. Arbough**, being duly sworn, deposes and says that he is Treasurer for Louisville Gas and Electric Company and Kentucky Utilities Company and an employee of LG&E and KU Services Company, and that he has personal knowledge of the matters set forth in the responses for which he is identified as the witness, and the answers contained therein are true and correct to the best of his information, knowledge and belief.



Daniel K. Arbough

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 20th day of January 2015.



Notary Public (SEAL)

My Commission Expires:
JUDY SCHOOLER
Notary Public, State at Large, KY
My commission expires July 11, 2018
Notary ID # 512743

KENTUCKY UTILITIES COMPANY

CASE NO. 2014-00371

**Supplemental Response to First Set of Data Requests of
Kentucky Industrial Utility Customers, Inc.
Dated January 8, 2015**

Question No. 17

Responding Witness: Daniel K. Arbough / Counsel

Q.1-17. Please provide a copy of all studies, analyses, reports, and correspondence between the Company and its pension actuaries discussing and/or quantifying the change in the 2015, 2016, and/or 2017 pension cost proposed by the Company for the test year in this filing.

A.1-17 **ORIGINAL RESPONSE**

The Company objected to this question on January 19, 2015, because it requires the Company to reveal the contents of communications with counsel and the mental impressions of counsel, which information is protected from disclosure by the attorney-client privilege and the work product doctrine. Without waiver of these objections, see the attached documents that have been identified within the time permitted for this response. Counsel for the Company is continuing to undertake a reasonable and diligent search for other such documents and will reasonably supplement this response through a rolling production of documents.

SUPPLEMENTAL RESPONSE

The Company incorporates by reference the objections stated above. The Company further states that its additional document review has not produced additional documents responsive to this request.

The Company is also filing contemporaneously herewith a privilege log describing the responsive documents the Company is not producing on the ground of attorney-client or work product privilege.

KENTUCKY UTILITIES COMPANY

CASE NO. 2014-00371

**Supplemental Response to First Set of Data Requests of
Kentucky Industrial Utility Customers, Inc.
Dated January 8, 2015**

Question No. 30(f)

Responding Witness: Paul W. Thompson

Q.1-30. Prefer to pages 21-22 of Mr. Thompson's Direct Testimony wherein he addresses the Trimble County 2 design issues that had to be remedied during outages in 2014.

(f) Please provide copies of all reports, studies, memos, or emails describing any of the following: the scope of the problem, increased fuel expense due to the problem, increased purchase power expense due to the problem, reduced off-system sales due to the problem, remediation required due to the problem, costs incurred to correct the problem, or problem resolution.

A.1-30 **ORIGINAL RESPONSE**

(f) The Company objected to this question on January 19, 2015, because it requires the Company to reveal the contents of communications with counsel and the mental impressions of counsel, which information is protected from disclosure by the attorney-client privilege and the work product doctrine. Without waiver of these objections, see the attached documents, subject to the exception noted below, that have been identified within the time permitted for this response. Counsel for the Company is continuing to undertake a reasonable and diligent search for other such documents and will reasonably supplement this response through a rolling production of documents.

Please note that the Companies did not incur any unreasonable fuel expense, purchase power expense, or reduced off-system sales as a result of the TC2 issues Mr. Thompson addressed in the cited portion of his testimony. It is well established within the industry that the reasonable and prudent dispatch of generating units is not made solely on the basis of different units' fuel costs. Running a prudent economic dispatch ensures reliability and thus requires taking a number of reliability and operating factors into account. That notwithstanding, the Company has attempted to produce non-privileged documents responsive to this request. Certain of the documents being produced contain confidential information and are being provided under seal pursuant to a petition for confidential protection.

There was essentially no incremental capital cost associated with the resolution of the combustion system design deficiencies as the resolution was fully covered under the warranty provisions of the EPC agreement with Bechtel. The coal test reports, engineering study reports, field investigation reports, design and construction drawings, laboratory R&D reports, trip reports and all other technical documentation and manuals to resolve the deficiencies in the combustion system designed and supplied by Doosan are voluminous and are not included in the production of documents unless otherwise specifically produced. These documents can be made available for review if requested. These reports include proprietary information on Doosan's design, research and development of the completely new burner design, their fabrication techniques and suppliers (and costs), and their capabilities in their R&D facility in Renfrow, Scotland. To the extent such documents are produced with this response and contain information that the vendor considers to be confidential and proprietary, the documents are provided pursuant a petition for confidential protection.

SUPPLEMENTAL RESPONSE

(f) The Company incorporates by reference the objections stated above. Without waiver of these objections, see the additional attached documents that have been identified.

Please note that certain of the documents being produced contain confidential information and are being provided under seal pursuant to a petition for confidential protection being filed herewith.

The Company is also filing contemporaneously herewith a privilege log describing the responsive documents the Company is not producing on the ground of attorney-client or work product privilege.

Attachment in Excel

The attachment(s)
provided in separate
file(s) in Excel format.

Attachment Confidential

The entire attachment is
Confidential and
provided separately
under seal.

Produced as Native

Original File Name: TCCAPfinal DEC2014 listing(Internal) .xls

Stored File Name: Exchange00000047.xls

From: Cuzick, Fred(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=E009048)
To: Joyce, Jeff; Byrd, Larry; Rabe, Phil; Mohn, Laura; Anderson, Dave (Trimble County)
CC:
BCC:
Subject: TC2 2014 OUTAGE COST
Sent: 01/10/2015 05:25:11 PM -0500 (EST)
Attachments: TC2 2014 OUTAGE \$'S BY OUTAGE ID.xls;

Attached is the 2014 TC2 outage cost run by outage ID. This also includes the WO/Task and description of task. In total \$5.8M O&M has been spent on TC2 based on outage identifiers in 2014.

Fred M. Cuzick, CPA, CGMA
Budget Coordinator
LG&E / Trimble County Station
(502)627-6213 (Office)
(502)627-6226 (Fax)
Fred.Cuzick@lge-ku.com

Produced as Native

Original File Name: TC2 2014 OUTAGE \$'S BY OUTAGE ID.xls

Stored File Name: Exchange00000051.xls

Produced as Native

Original File Name: TC2S14 Spring Outage Plan.xlsm

Stored File Name: Exchange00000052.xlsm

Produced as Native

Original File Name: TC Committed & Other Costs Data 2014-DEC thru 12-29-14 activity .xls

Stored File Name: Exchange00001139.xls

Produced as Native

Original File Name: OSS and Native Load Report December 2014.xlsx

Stored File Name: Exchange00001172.xlsx

Produced as Native

Original File Name: OSS and Native Load Report December 2014.xlsx

Stored File Name: Exchange00001262.xlsx

Produced as Native

Original File Name: OSS and Native Load Report December 2014.xlsx

Stored File Name: Exchange00001352.xlsx

Produced as Native

Original File Name: LSM_TCCAPfinal OCT2014(Internal) REV .xls

Stored File Name: Exchange00004086.xls

Produced as Native

Original File Name: Copy of TCCAPfinal DEC2014 listing(Internal) .xls

Stored File Name: Exchange00006873.xls

The TC2 "A" main steam stop valve (MSV) was closed during a planned valve closure test on Friday, June 27th, 2014, but failed to re-open. On Saturday night, June 28th, 2014, the unit load was reduced in preparation to come offline in order to replace the A MSV fast acting solenoid. An auto shutdown was executed once the unit load reached 80 MW, the turbine tripped on reverse current and the "B" CV and both ICVs closed. The "B" MSV and the "A" CV remained open. The turbine speed increased to a peak speed of 3969 once the Hot Reheat (HRH) Bypass Valves opened following the line breaker being opened, a flow path was established through the turbine without load being generated (line breaker open). This flow path, coupled with the "B" MSV's inability to close, resulted in a turbine over speed condition. Manual intervention was required with a hammer and punch to operate the spool on the fast acting solenoid valve for the "B" MSV to close. The turbine speed decayed after this, and the "A" CV closed, but the reheat valves had to be manually closed as well. The Manual trip handles on the master trip solenoid valves equipped on the hydraulic fluid tank were operated, but nothing happened.

Leading up to this event, there was a known issue with water contamination in the EHC system that had first become apparent to plant personnel on Friday, June 20th. A vacuum dehydrator was brought in on Saturday, June 21st, and removed approximately 2.5 gallons of water over the course of several days. Although the water was removed from the system, the components throughout the system had been contaminated, so the decision was made to conduct a complete flush on the EHC system.

EHC fluid analysis from January 6th, 2014 indicates that the fluid was in good condition with a water content of 0.08% (800 ppm) before coming off-line for the 15+ week burner outage in February, 2014. However, the first sample taken after the outage on June 17th indicated that there was 0.45% (4500 ppm) of water in the fluid.

The potential sources of water were investigated to determine the root cause of the water contamination. A leak in the coolers seemed to be the most likely source of water of this magnitude, so they were pressure tested on-site with nitrogen and water. Both EHC Coolers were pressure tested at 80 psig of air for 1 hour with no noticeable depreciation of pressure observed. Again, these coolers were later pressurized to 120 psig of water. One cooler held pressure for approximately 12 hours and the other for approximately 6 hours. However, to avoid the risk, the decision was made to replace the EHC coolers with temporary coolers until a new heating/cooling system is in place.

After the outage, the coolers were sent out and tested by National Heat Exchange Cleaning Corporation in Youngstown, Ohio. Both coolers passed hydro tests on both the shell and tube side at the OEM's test pressures indicating no leaks in either cooler.

According to MD&A, another source of water into the EHC system could be during start up when the Main Stop and Re-Heat Stop Valve stems are not back seated. These drain lines and pans were inspected and cleaned, and the stem bushings below the valves were verified to be free of obstructions to prevent water from backing up on top of the actuators. During the start-up, the drain lines were blown out and debris was removed from the collection channel at each valve to confirm that all drain lines were clear to prevent standing water from collecting on top of the valve actuators.

During the planned 2014 spring TC2 outage, the EHC tank was drained and that the EHC fluid was stored in plastic totes for several weeks. When the TC2 outage was near completion, the EHC tank was refilled with some of the EHC fluid that had been stored in the totes. While refilling the EHC tank with the used EHC fluid, the mechanics noticed that there was a visible quantity water floating on top of the fluid in the tote. Assuming that the fluid below the visible water would be sufficiently water-free to reuse it, an unknown quantity of the used EHC fluid was pumped from the bottom of the tote back into the EHC tank, and then the mechanics used new fluid to finish topping off the EHC tank. Although the used EHC fluid that was stored in the totes was not sampled and tested before it was put back in the EHC tank, it is assumed now that the fluid was contaminated with water while fluid was stored in the totes, and that this is the most likely source of the EHC fluid water contamination problem that was revealed after the unit was put back online.

Since the TC2 EHC system flush was completed and the unit returned to service in early July, an experiment has been underway to determine how much moisture EHC fluid can absorb from the air. New EHC fluid was put into a small jug, with the cap installed on the jug in a loose, non-air tight manner, similar to a tote. The jug was placed near the location where the totes of fluid were stored during the TC2 outage, and over the past XX weeks, the water content of the fluid increased by ___ ppm. (Tyler to provide input here.)

Follow-up Actions:

- All personnel at the plant have been tailgated about the proper handling and storage of EHC fluid.
 - The mechanics have received training on EHC handling procedures and the proper way to add or remove EHC fluid from the tanks and drums.
 - Used EHC fluid is no longer reused and only clean, new containers are used to hold or transport EHC fluid.
 - Only fluid in unopened EHC drums is used to fill EHC tanks. Once a drum of EHC fluid is opened, any unused fluid remaining in the drum is discarded.
 - The pump used to transfer new EHC fluid into the EHC tanks is clearly labeled to be used for EHC fluid only, and is stored in a secure location that is only accessible by personnel who are trained to handle EHC fluid, the EHC pumps, and associated equipment.
- More training is being planned as well.
- Maintenance PMs have been created to inspect each turbine valve actuator's condensation collection channel, remove any debris from the channel, and blow out the drain lines to ensure that it is clear so that no standing water collects on top of the valve actuators.

Monday, January 6, 2014

- EHC fluid sample taken on this day had 800 ppm (0.08%) water, 5-10 and 10-25 micron particle counts were high.

Saturday, February 8, 2014

- TC2 brought offline for 2014 Spring Outage.

Tuesday, April 15, 2014

- EHC Tank drained during outage.

Tuesday, April 22, 2014

- EHC Tank filled with some of the previously drained fluid (roughly half). Water was visibly present, so new oil was added to fill the tank the rest of the way.

Wednesday, May 28, 2014

- First attempt to bring TC2 back online after outage is not successful.

Thursday, May 29, 2014

- TC2 brought back online to 431 MWs.

Saturday, May 31, 2014

Sunday, June 1, 2014

- According to Daily Shift Log: "Master Trip Solenoid Valves Not Operate During Testing-A1&B1"
 - *When testing the Master trip solenoid vlv A1 and B2 did not operate W/O#6575664*
- WO# 6575664 – "When testing the master trip solenoid vlvs on TC2, A1 and B2 did not operate TS&R"
 - Written 6/1/14 3:42 AM
 - Completed 6/2/2014 3:17:45 PM with remarks, "Adjusted solenoid limit switches. DCS lags the Mark IV and doesn't always show the solenoid operate"
- 1349-Tripped Off-Line, Inst Air Dryer de-pressurized.
- According to Daily Shift Log:

- 2210 placed turbine in auto start up. TCS in alarm preventing turbine to roll. I/E notified.
I/E found servo on B MSCV broke. Replaced same
- 0052 EHC oil pumps O/S carded
- 0237 EHC pump I/S

Monday, June 2, 2014

- Unit Tripped at when 2A ID fan tripped on axial vibration
 - 03:15 AM 2A ID fan OB fan vib high alarm and fan off alarm, 2B FD and 2B PA fan tripped
 - 03:18 AM MFT
- According to Daily Shift Log:
 - 07:23 -Removed EHC Pumps from Service, 2A EHC pump Busted Line, unit 2 turbine EHC pump 2A discharge hose has blown a leak. TS/R. W.O.#6576514
 - 16:03—2A EHC Pump back in service
 - W.O 6576659 Back up filter on EHC transferring filtering pmp hi d/p
- TC2 back online and at 782 MWs.

Monday, June 9, 2014

- According to Daily Shift Log: “Performed MTS Test, B1 not operated”
 - “01:00 Performed the master trip solenoid test, which was supposed to be done last night but could not due to SH steam safety work. The B1 did not indicate operated during test W.O.#6577880 written”
- WO# 6577880 – “During the master trip solenoid test the B1 does not indicate operated, please T/R.”
 - written 6/9/14 2:52 AM
 - completed 6/30/2014 1:44:24 PM with remarks, “Complete. Added a time delay on drop-out relay logic to ensure proper indication to DCS”

Tuesday, June 17, 2014

- EHC fluid sample taken on this day had 4500 ppm (0.45%) water, unable to do particle count due to cloudiness.
- Carded turbine EHC transfer and filtering pump. Mechanics change back-up filter downstream of Selexsorb and Hilsorb filters. Pump was not put back into service after filter change.
- Skid and Nitrogen Gen. first put into service on
 - -DP on particle filter went high after 3-4 hours
 - -taken out of service for filter change
 - -Nitrogen Gen. also taken out

Wednesday, June 18, 2014

- Both filter skid and nitrogen generator put back into service

Thursday, June 19, 2014

- “Unit 2 EHC, B filter DP gauge / solenoid housing is broken & wiring is loose causing a high DP alarm. W/O # 6581222.”

Friday, June 20, 2014

- From Daily Shift Log - *“W.O. 6581329 2A EHC pmp has an in line filter D/P hi alm in., W.O 6581331 2B EHC same for B pmp.”*
- From Patrick Sparks e-mail dated June 21, 2014 – *“...the EHC Line Filter- B D/P alarm came in. We placed the A pump in service and the alarm also came in on that pump. We worked with station maintenance to change these filters. When they opened the canister to change the first filter it was noticed that the EHC fluid has water in it. We worked to change both filters and continued to monitor the system. The Temperature on the system was also rising.”*
- Varnish Removal Skid taken out of service
- EHC Fluid has very milky appearance in site glass

Saturday, June 21, 2014

- From Patrick Sparks e-mail dated June 21, 2014 – *“This morning we had I/E look at EHC Heating/Cooling SOV(2-TCO-CV-120). They were unable to get the valve to change states and believe the valve is in the closed position. This is a Rex Roth 125VDC solenoid valve. We attempted to locate a replacement for this valve and were unsuccessful. Trent Henderson was*

contacted to help with locating a replacement and advised that he was unable to locate one. They have calls in to vendors in an attempt to locate a replacement. Andrew Couch with Fluid Power Products was contacted about cleaning the EHC Fluid that is currently in the system. He has a Vacuum Dehydrator headed to the plant from Indianapolis and it should be here around 1800 today. I have an I/E tech. and a Maint. Tech. staying over to help with setting up the system when it arrives. He is also bringing a particulate filter that goes in the unit and two spares. The de-slag for this evening has been put off until the EHC fluid clean-up is complete. The valve test for this evening has also been suspended due to the EHC fluid issues.”

- EHC transfer and filtering pump put back into service after discussion with Gary Dunlap and Patrick Sparks.
- Hy-pro portable vacuum dehydrator put into service around 19:00 – 20:00.
- No turbine valve testing until further notice due to EHC oil tank issues

Sunday, June 22, 2014

- From Patrick Sparks e-mail dated June 21, 2014 - *“There has been no change since this morning on the temporary filtering unit. The level is about the same place in the condensate tank. There is also a particulate filter on the skid with a 3 micron filter in it and the D/P on it is still at zero. The oil in the EHC reservoir has cleared up and we are not seeing any more water in the sight glass. Andrew Couch with Fluid power products called today to see how the unit was performing and asked if we needed any additional support. He also said that he plans to come by tomorrow to check on the unit. The transfer and filtering system that is built into the EHC unit is also in service. All of the filter D/P on this system are normal at this time also.”*

Monday, June 23, 2014

- EHC Heating/Cooling SOV (2-TCO-CV-120) was freed up.
- Nitrogen Gen. taken out of service

Wednesday, June 25, 2014

From Daily Shift Log:

06/25/2014 01:13	Isolated and carded the TC2 Varnish Removal Skid.
06/25/2014 01:13	Isolated and carded the temporary Vacuum Dehydrator on the TC2 EHC system.
06/25/2014 03:00	Finished cleaning EHC skid. Placed new drip pads on lower level. Wiped down valve tags.
06/25/2014 04:19	TC2 EHC tank has a low level alarm in and is currently at -4.61. Please add fluid. W/O# 6582613
06/25/2014 04:36	Did not test valves due to EHC issues.

- Skid and Nitrogen Gen. put back into service

Thursday, June 26, 2014

- Skid taken out of service
- Dehydrator put into service

From Daily Shift Log:

06/26/2014 02:11	W.O. 6582794 The EHC back up filter has a hi D/P alarm in.
06/26/2014 05:02	The servo filters were replaced on the Main Stop valves and the combined intercept valves. The control valves were not completed due to the D/P indications being broken and possibly having pressure still on the filter not in service.
06/26/2014 14:00	Swapped EHC pumps, 2B pressure running high S/M looking into same.

Friday, June 27, 2014

From Daily Shift Log:

06/27/2014 06:14	Uncarded EHC Transfer/Filtering pump and placed in service.
06/27/2014 10:34	uncarded 2B EHC pump and placed in service. Test ran then removed from service

- Dehydrator taken out of service (Total Water removed from the EHC system was roughly 2.5 gallons)
- Nitrogen Gen. was supposed to be taken out of service, but was still in service on Friday at 3:30 pm

Saturday, June 28, 2014

From Daily Shift Log:

06/28/2014 00:48	testing main steam stop valve A. valve went closed would not re-open. I&E called in. tried to re-start test but would not work..
------------------	--

Sunday, June 29, 2014

- Email from Nick Payne (Sun 6/29/2014 4:40 AM):

"We were waiting for TC2 to come offline to replace the "A" MSV fast acting solenoid. The "A" MSV was closed and the fast acting "EHC dump" solenoid could not be reset. I was on "A" burner deck with I/E investigating the A3 burner scanner failure when Sandra asked me to call the control room. When I called she said the "A" control valve was 100% open and the "B" control valve was about 34% open. Rob Mud and I went to investigate and Casey Ott and Greg Hunt worked on the scanner. We went to the "A" control valve and swapped pencil filters, but the "A" control valve didn't move. We went to the Mark VI and verified there was an alarm on the "A" control valve. It was not responding to a close command. The "B" MSV was at 100% as well. The "A" MSV and "B" CV were closed. Both RH valves were open. We saw on the Mark VI screen that the turbine was tripped and did not see the valves close like we expected due to the fast acting solenoids. I called the production leader and he did not answer. I called the TC2 gauge board and told them "do not open the line breaker". They informed us that that shut down the EHC pumps and we watched the EHC pressure drop. The valves did not close. We then called on the radio and asked permission to manually trip the valves. They gave permission to close the valve any way possible. "We need those valves closed!". Rob Mudd and I went to the EHC Skid and Rob tripped all of the manual EHC trip handles. Nothing happened. We then went back to the Mark VI room and got a hammer and punch. We noticed turbine speed dropping and assume the line breaker opened. We went to the MSV "B" valve and verified it was still open. The operators then called and said leave the area the turbine was overspending. (Speeds reached 3969.7 rpm) Rob took the punch and hammer and punched the spool piece on the fast acting solenoid valve and the MSV closed. When he lifted the punch off of the spool piece the valve went back open. Rob held the spool piece down with the punch and the valve went back closed. Turbine speed dropped. The RH valves were still open Rob then went and punched both of the dump solenoids on the reheat valves. The "A" control valve was reported by operators to be partially open. And soon went to 2% open. We went back to the control room to see what the next step was.

We did not have any reported problems with the intercept valves. We did not get a positive confirmation that any of the fast acting solenoids worked. The only valves that worked were the intercept valves and the "B" CV servo controls.

There was a lockout due to the reverse power level two relay. I believe that function opened the line breaker. My concern is that the line breaker was allowed to open without all steam paths blocked."

- E-mail from Sandra Townsend (Sunday, June 29, 2014 5:32 AM)

“Began lowering load on unit with boiler master in manual due to A MSV closed. As load was dropping the B CV began traveling closed, the A CV remained open. I/E notified. Load dropped quickly from approx.. 230 to 100MW. Operators swapped to reserves and notified I/E of turbine shutdown seq. At this time the A CV was Open, B MSV was open A MSV closed and B CV closed. At 80MW turbine tripped 00:41. A CV and B MSV remained opened Line BKR’s remained closed (3600 RPM) I/E notified ops not to open line BKR. At 00:45 Gen line BKR opened Alarms were:

*Gen prot rly2 alm FNC 32-1
Gen prot rly 2 rly targ present
Gen prot rly 1 alm FNC 32-1
Gen prot rly 1 rly targ present
Gen prot relay (GPR1) trip
Gen prot relay (GPR2) trip
386 G1 gen lockout rly 1
386 G2 gen lockout rly2
Gen prot rly 1 alm FNC 32-2
Gen prot rly 2 alm FNC 32-2
Gen BKR tripped*

Speed decayed on turbine and MS & HRH bypass vlvs opening. A CV, B MSV open

Turbine rolled back to approx. 3150 RPM’s then began to increase. I/E was notified and ops removed Both EHC pumps from service. Speed continued to increase on turbine. I/E went to EHC system and vlvs to manual trip closed.

Ops MFT boiler and opened A PORV. B MSV began closing then reopened (Turbine was approx. 4000 RPMs) vlv went to closed position and stayed closed. I/E made vlv closed. Turbine speed decayed and A CV and RSV traveled closed.

During all of this the turbine HP exhaust temp high alarm and trip alarm came in. The temp reached 868 deg.”

- Hydra-lube contacted for EHC flush.

Comments here and Attach data from System 1, DCS, PI, etc. that was collected for the time of the overspeed and turbine trip.

Monday, June 30, 2014

- Preparation for Hydra-lube (pulled filters, unwired actuators, discharged accumulators, etc.)
- Talked with Rexroth (Nathan Godiska - Sales Manager Energy Technology) about issue with failure to trip, temperature control, etc. Learned of appropriate temperature control philosophy for water control valve (CV-140) to regulate water flow to coolers. Solenoid valve (SV-120) to send fluid through pressure relief valve (PSV-906) for heating is only to be used under start-up at very cold conditions (fluid under ~60 deg F).

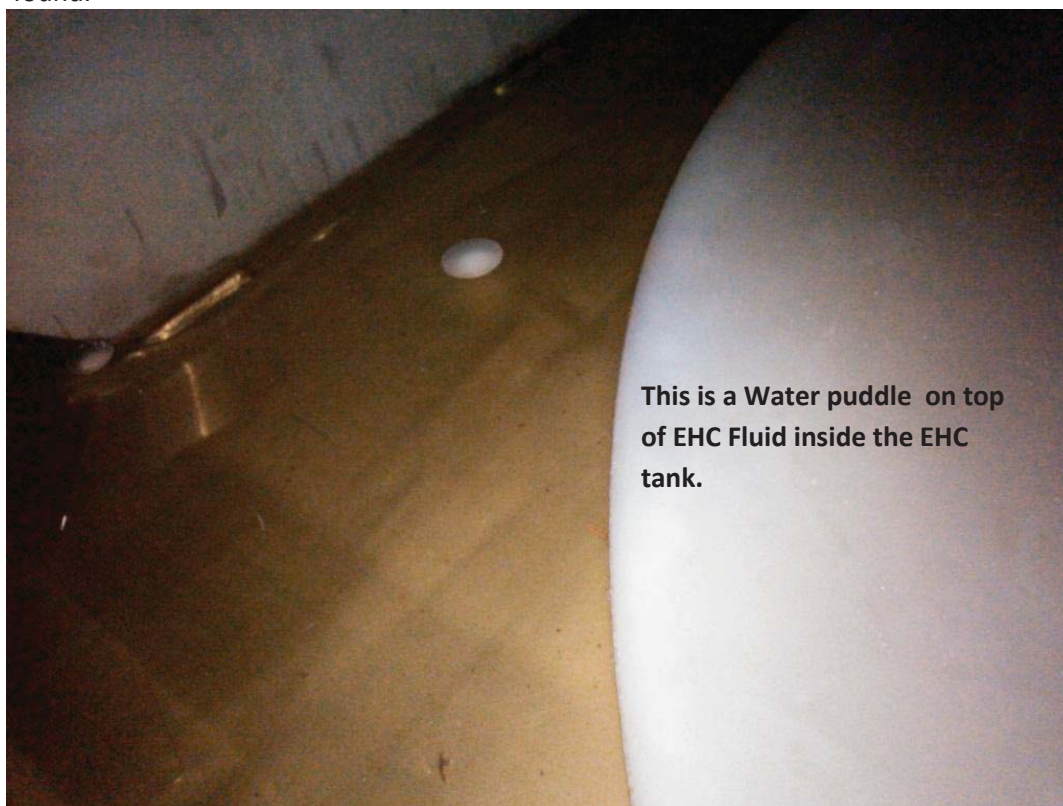
- According to daily shift log: "07:21--EHC CC Water Isolated & carded"

Tuesday, July 1, 2014

- New 1" vent installed on top of reservoir in northwest corner for breather
- Coolers pressure tested with Nitrogen (~80 psi), no leaks identified
- Coolers pressure tested with condensate water (~110 psi). A held pressure for approximately 12 hours and B for approximately 6 hours, no leaks identified
- Trip manifold pulled and send to Rexroth (PA), Replacing "B" EHC pump

Wednesday, July 2, 2014

- Upon opening and draining the EHC tank visual indications of water and contamination were found.





- Call with Rexroth regarding condition of trip manifold and pictures were sent (see attachment). There was water, varnish and oxidation in the ports and on spools. One of the pilot-operated valves did not shift at all and one only shifted partially. Commented that this unit was built in 2006 and didn't think that all the oxidation could have occurred in service. They were very concerned with the condition of the actuators based on what was seen in the trip manifold. According to Rexroth, actuators can only be rebuilt in Pennsylvania and would take weeks. Decision was made to flush through the actuators and trip them in addition to the hourly stroking as part of Hydra-lube's procedure.
- Paul Hartsuch (Regional Manager, ICL-IP) on-site to discuss issues with Fyrquel fluid. He stated that water in the EHC fluid can act as a solvent breaking up and releasing contaminants. Trimble County Unit #2 EHC fluid sample date June 04, 2014 Water Content- WT% 0.43. ~ Water percentages of this magnitude typically are representative of a cooler leak.
- As the EHC fluid tested positive for the closed cooling water corrosion inhibitor (molybdenum) during the previous week's testing, the decision was made to eliminate the EHC coolers as a possible source of water. Temporary coolers were provided by Hydralube until new replacement coolers are in place.
- Hydra-lube charged system with rinse fluid and leak checked @ 14:20
- Stroked valves and started flushing with cleaning agent @ 18:00
- New desiccant breather location made on North West corner of EHC tank

Thursday, July 3, 2014

- Temperature control set points were changed in the Mark VI system by Adam Ball, Nick Payne, and Laura Mohn. See E-mail from Adam Ball below:

Below is a summary of the control constant changes we made today in the Mark VI for the EHC temperature control. As set currently SV120 will direct flow towards the relief valve when the temperature drops below 65 °F and transition flow back to the coolers at 85 °F. I have also attached the original constants for this control and the values that I implemented roughly a week prior to the burner outage this spring. For reference the Mark VI will alarm for Low Temp at 68 °F and High Temp at 149 °F with a hysteresis of 16 °F for both alarms. Once we decide these values are acceptable we need to make them permanent otherwise upon a controller reboot the values will revert back to the previous settings. Any questions let me know."

<u>Name</u>	<u>Description</u>	<u>Value</u>		
		<u>Current</u>	<u>Previous</u>	<u>Original</u>
S1\KTT_HFTA_L	HYDRAULIC FLUID TANK OIL TEMP. (A) LSET	65 °F	105 °F	97 °F
S1\KTT_HFTA_LH	HYDRAULIC FLUID TANK OIL TEMP. (A) LHYS	20 °F	10 °F	23 °F
S1\KTCOTE100HA	HYDRAULIC TANK OIL TEMP. HSET	149 °F		
S1\KTCOTE100LA	HYDRAULIC TANK OIL TEMP. LSET	68 °F		
S1\KHFT_HYS	HYDRAULIC FLUID TANK TEMP. CMP HYS	16 °F		

- Flush with the cleaning agent continued and was planned to continue until at least 20:00 (Thu, July 3). Particle count had dropped some at 10:15, but when MSTSV and Reheat SV's were dumped, particle counts went back up. Dumping ICV, MSCV and Reheat SV's on a 1 hour rotation. After 1 set of rotation (three hours) samples collected. As of 17:00, Particle counts had continued to go up.
- Turbine trip manifold, actuator check valves, and solenoid valves left Bethlehem, PA.
- Rental EHC coolers arrived from Hydra-lube.

Friday, July 4, 2014

- The Rexroth emergency trip manifold, check valves, and solenoid valves have been repaired and arrived on-site.
- Marcus McSpadden (MD&A Hitachi controls expert) on-site.
- Finished cleaning the EHC system with cleaning agent at around 11:00, and started draining the system for cleanup.
- Started Rinse fluid flush at 13:00. Flush was expected to take approximately 8 to 12 hours. Stroking turbine valves 6 times each and opening them up and dumping them 3 times each. At 16:30, the samples were continuing to read high particulate (NAS 6). Requirement is a NAS 3 or below before shutting the system down and adding final fluid.

- Station maintenance finished piping as much as possible on the water side for the temporary oil coolers. Scheduled to return at midnight to install pump, hook up new coolers, install servos and manifold block on top of EHC skid.
- Update from Operations at 23:00, *"The EHC rinse is expected to last at least until 0200 7/5/2014 maybe longer. The last grab sample had no change from (NAS) 5 to (NAS) 5."*

Saturday, July 5, 2014

- Update from Larry Byrd at 2:00 am, *"I just talked with the on duty production leader, Troy Barnes, and was informed that the last two readings on the EH fluid were acceptable (NAS 1 being the last), the EH flush is now shut down, and reassembly work will begin as soon as hold cards are in place. Based on that, the functional testing of the EH system, turbine valves, controls should be complete and the unit ready to release to Operations by 4 to 6 PM this evening."*
- Tyler Buck, Rexroth Service Tech on-site.
- A new valve was installed to replace CV-140. It was pre-set from the factory at 103 deg F, so no adjustments were made. Temporary coolers were installed and piped to the closed cooling water with temporary piping and hoses.
- SV-120 was also replaced, and the oil side of the temporary coolers was hooked up by Hydra-lube. The connection was made upstream of SV-140 in order to continue to utilize PSV-906.
- The EHC fluid accumulators were charged to 1450 PSI, and the trip manifold accumulator was charged to 1150 psi.
- At 17:20, the 2B EHC pump was started. The pressure was reduced by Tyler Buck and system was checked for leaks. Pump pressure was adjusted to 2300 psi.
- Pressures and temperatures were monitored on the system. This included monitoring the pressures on the temporary coolers.
- The Mark VI changes to logic were completed.
- I&E repaired the two of the four master trip solenoid connectors that had been damaged. Needs to be permanently repaired on next outage when we have the correct parts.
- Functional testing continued through the night.

Sunday, July 6, 2014

- E-mail from Nick Payne at 5:37, *"Attached are the completed test plan for TC2 turbine valves. There were issues with low EHC pressure throughout the testing. All trip tests seemed ok. The issue is with the "B" side ETD block. When a Master trip solenoid or the manual trip handle is operated on the "B" side, The EHC pressure does dump, but the pressure does not recover after a reset. The ETD block took 3 to 5 minutes to reset and sometimes much longer. We had more luck resetting the "B" side ETD when we cut off flow to the Intercept valve servos. We performed a lot of the trip tests with those servos isolated. A turbine reset fails if the pressure does not recover in 30 seconds. Without forcing logic in the Mark VI a turbine reset will not likely be possible. I would not trust the operation of the ETD on what I saw during the testing and*

recommend consulting with Tyler Buck from Rex Roth about options. He is in his hotel waiting on instructions.”

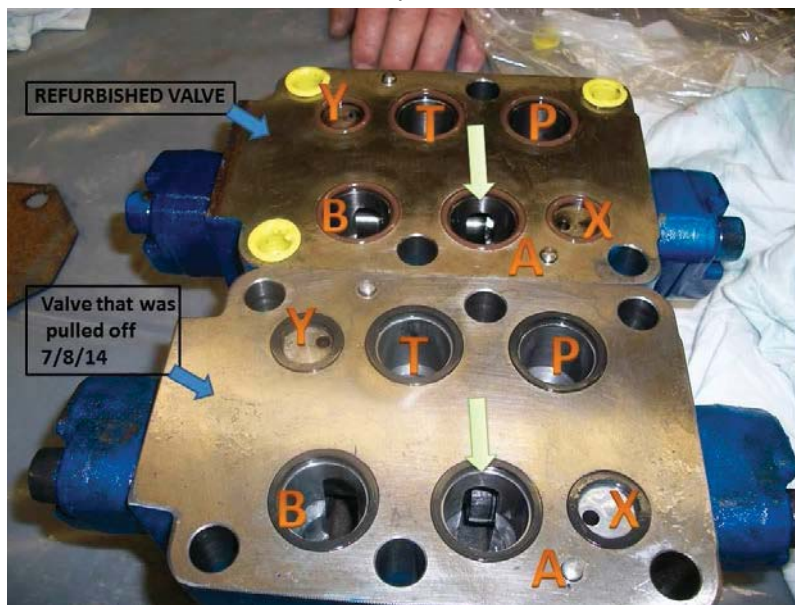
•

Monday, July 7, 2014

- Return of the EHC trip manifold block from service shop, Valves tested same night, but they fail the tests.

Tuesday, July 8, 2014

- Meeting with Gary Williams from Hydra-Lube about EHC events and what actions can be taken to cleanse the system.
- Pilot Valves 305 and 301 pulled for inspection off the EHC trip manifold block around 6p.m. It was noticed that the spool positioning in those valves was different than that of the Refurbished Valves that had returned that day.



- Refurbished Valves placed on the EHC trip manifold that night

Wednesday, July 9, 2014

- TC2 Valves are tested again and pass all tests. Testing ends at roughly 8 p.m. that night.

Sunday, July 13, 2014

- TC2 coming back online, back to 776 MWs at 19:46.

Tuesday, July 29, 2014

- Nitrogen Generator moved to South East side of EHC tank and put back into service at 2:00pm

Produced as Native

Original File Name: TCCAPfinal DEC2014 listing(Internal) .xls

Stored File Name: Exchange00006882.xls

From: Cuzick, Fred(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=E009048)
To: Joyce, Jeff; Byrd, Larry; Rabe, Phil; Mohn, Laura; Anderson, Dave (Trimble County)
CC:
BCC:
Subject: TC2 2014 OUTAGE COST
Sent: 01/10/2015 05:25:11 PM -0500 (EST)
Attachments: TC2 2014 OUTAGE \$'S BY OUTAGE ID.xls;

Attached is the 2014 TC2 outage cost run by outage ID. This also includes the WO/Task and description of task. In total \$5.8M O&M has been spent on TC2 based on outage identifiers in 2014.

Fred M. Cuzick, CPA, CGMA
Budget Coordinator
LG&E / Trimble County Station
(502)627-6213 (Office)
(502)627-6226 (Fax)
Fred.Cuzick@lge-ku.com

Produced as Native

Original File Name: TC2 2014 OUTAGE \$'S BY OUTAGE ID.xls

Stored File Name: Exchange00006886.xls

Produced as Native

Original File Name: TC2S14 Spring Outage Plan.xlsm

Stored File Name: Exchange00006887.xlsm

Produced as Native

Original File Name: TCCAPfinal DEC2014 listing(Internal) .xls

Stored File Name: Exchange00006894.xls

From: Cuzick, Fred(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=E009048)
To: Joyce, Jeff; Byrd, Larry; Rabe, Phil; Mohn, Laura; Anderson, Dave (Trimble County)
CC:
BCC:
Subject: TC2 2014 OUTAGE COST
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Fred.Cuzick@lge-ku.com

Produced as Native

Original File Name: TC2 2014 OUTAGE \$'S BY OUTAGE ID.xls

Stored File Name: Exchange00006898.xls

Produced as Native

Original File Name: TC2S14 Spring Outage Plan.xlsm

Stored File Name: Exchange00006899.xlsm

Type: Calendar
Organizer: Anderson, Dave (Trimble County)
Subject: Discuss Doosan open outage punchlist items
Location: TC 5th Floor Conference room
Start: 06/18/2014 10:00:00 AM -0400 (EDT)
End: 06/18/2014 10:30:00 AM -0400 (EDT)
All Day Event: False
Attendees: Anderson, Dave (Trimble County); Powell, Richard; Payne, Nicholas; Rabe, Phil; Craft, Jim; TC Fifth Floor Conference Room
Sent On: 06/17/2014 12:56:16 PM -0400 (EDT)
Attachments: Copy of Punch List Issue 22-May - Discussion.xlsx;

All,

Wanted to take 30 minutes to discuss 5 outage punch list items that Doosan wants to close out.

David W. Anderson

Trimble County Outage Coordinator

Tel. 502-627-6313

Fax 502-217-2199

email: dave.anderson@lge-ku.com

Produced as Native

Original File Name: Copy of Punch List Issue 22-May - Discussion.xlsx

Stored File Name: Exchange00012393.xlsx

Produced as Native

Original File Name: TC2S14 Spring Outage Plan_201405061362500001E5C_004C825C.xlsm

Stored File Name: Exchange00012715.xlsm

From: Straight, Scott(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=WEB/CN=SCOTTSTRAIGHT)
To: Ruckriegel, Tony
CC: Elmore, Barry
BCC:
Subject: RE: Trimble County Unit 2 Operating Procedure updates
Sent: 01/09/2015 02:11:23 PM -0500 (EST)
Attachments:

Yes, thanks for the reminder also.

From: Ruckriegel, Tony
Sent: Thursday, January 08, 2015 1:28 PM
To: Straight, Scott
Cc: Elmore, Barry
Subject: FW: Trimble County Unit 2 Operating Procedure updates

Scott – I got a follow-up voice message from Joe Coghill (TC), asking if we (PE) had placed in order for this yet (I had overlooked his 12/16/2014 email). Are you OK with PE placing the order and paying the costs to update the TC Operating Procedures for the new buTC2 burners? Per the attached proposal - cost is \$54K.

T. Ruckriegel

From: Coghill, Joe
Sent: Tuesday, December 16, 2014 9:48 AM
To: Straight, Scott
Cc: Ruckriegel, Tony; Joyce, Jeff; Rabe, Phil
Subject: Trimble County Unit 2 Operating Procedure updates

Scott,
Attached is the proposal from Fossil Consulting Services (FCS) to update the training modules for TC 2 which were affected due to the burner change out and other items incorporated on the same outage. The bid proposals are from the company who developed the procedures last year. Let me know if there is anything else you need from me. The price for document updates was more than I originally estimated due to a few system modifications I had overlooked.

Thanks,

Joe Coghill

Sr. Training Coordinator

Louisville Gas & Electric Co.

Trimble County Station

502.627.6207 T

502.627.6226 F

502.336.9966 P

502.216.8864 C

Joe.Coghill@lge-ku.com

From: Craft, Jim
Sent: Wednesday, October 22, 2014 7:52 AM
To: Coghill, Joe
Cc: Rabe, Phil; Joyce, Jeff
Subject: Operating Procedure Modules

Joe,

I talked with Scott Straight this morning about your request for money to update 4 to 5 modules at a cost of 20 to 25K and he told me that he would approve the cost and include it in his project for TC2. He asked me to tell you to send him the proposal

once you have finalized the cost and he would approve it. You might want to copy Tony Ruckriegel on that email since that is who Scott will be asking to provide you with a PO.

Regards,

Jim Craft

TC2 Warranty Period Manager

Trimble County Generating Station

1-502-627-6377 (Office)

1-502-552-5201 (Cell)

1-502-332-5092 (Pager)

jim.craft@lge-ku.com

From: Watkins, Clyde(cwatkins@bechtel.com)
To: Straight, Scott
CC: Brightman, Jeff
BCC:
Subject: FW: Invoice Ltr to LG&E Re 50 Perc Weld Xray 12-12-14
Sent: 12/15/2014 12:31:57 PM -0500 (EST)
Attachments: Invoice Ltr to LG&E Re 50 perc weld xray 12-12-14.pdf;

Scott,

Enclosed is the invoice for the 50% boiler tube x-ray inspections performed during the spring outage. Will be sending you draft invoices for the Performance Bonus and MBE/WBE spend bonus for your review, prior to actually submitting them.

Please let me know if any questions or comments.

Thank You,

Mel Watkins

Project Manager

Trimble County Unit 2 Project

cwatkins@bechtel.com

work: 301-228-8035 (Frederick)

cell : 240-793-4490

From: Gregian, Seda
Sent: Friday, December 12, 2014 5:31 PM
To: Watkins, Clyde
Subject: Invoice Ltr to LG&E Re 50 Perc Weld Xray 12-12-14



December 12, 2014

Mr. Scott Straight
Director, Project Engineering
LG&E KU Services Co.
820 W. Broadway
Louisville, KY 40202

Re: Trimble County Unit 2
Bechtel Job No. 25191
Payment 73, Invoice 25191-14120290
Letter Number: 25191-000-T4C-GAM-00021
File Number: T4C-GAM
Reference: AMENDMENT NO. 6, par. 6.13.3.2 (50% weld x-ray of boiler tube welds)

Dear Scott:

In accordance with Article 8.4 of the Engineering, Procurement and Construction Agreement, we have attached payment Request (Exhibit W) and the original invoice, Invoice #25191-14120290.

Contractor hereby certifies that:

- a) All Subcontractors have been paid amounts properly due under their respective subcontracts.
- b) The applicable Work has been performed in accordance with and complies with the agreement.
- c) Contractor has reviewed all financial information contained in the invoice and it is true, correct and complete.
- d) No Liens or related claims have been filed or commenced and remain unbonded or unreleased, other than Liens that Contractor is entitled to make, file and pursue pursuant to Section 20.5.
- e) Also attached is a duly executed conditional lien waiver (Exhibit HH) from Contractor.

Very truly yours,

Clyde M. Watkins
Project Manager

CMW/sg

cc: J. Joyce
J. Brightman

Attachments: 1. Exhibit W
2. Invoice No. 25191-14120290
3. Exhibit HH
4. Extract from AMENDMENT NO. 6
5. Weld X-Ray Detail

EXHIBIT W

APPLICATION FOR PAYMENT

DATE: December 11, 2014 CONTRACTOR: Bechtel Power CorporationREQUEST FOR PAYMENT #: 73 CONTRACT #: _____FOR THE MONTH ENDING: December 2014

MILESTONES ACHIEVED: _____

ADDITIONAL DESCRIPTION: Weld X-Ray Inspection Change Order**I. GROSS BILLINGS:**

	<u>TOTAL THROUGH LAST PERIOD</u>	<u>TOTAL EARNED THIS PERIOD</u>	<u>TOTAL EARNED TO DATE</u>
A: BASE CONTRACT	\$992,507,000.00		\$992,507,000.00
B: CHANGE ORDERS	\$61,506,118.05	\$50,000.00	\$61,556,118.05
TOTALS:	\$1,054,013,118.05	\$50,000.00	\$1,054,063,118.05

II. THIS PERIOD'S BILLING

A. TOTAL VALUE OF MILESTONES ACHIEVED THIS PERIOD: \$ 50,000

B. AGGREGATE PAYMENT AMOUNT SPECIFIED BY THIS MONTH IN EXHIBIT X:
Not Applicable (See Amendment 6)

C. SUBTOTAL (LESSER OF A OR B): \$ 50,000.00

D. SALES TAX: _____

E. TOTAL DUE THIS MONTH: \$ 50,000.00

RESPECTFULLY SUBMITTED BY: _____



BECHTEL POWER CORPORATION

ENGINEERS - CONSTRUCTORS
 5275 WESTVIEW DRIVE
 FREDERICK, MD 21703

Attachment 2

TO:
 Louisville Gas and Electric Company
 820 West Broadway
 Louisville, KY 40202
 ATTN: Mr. Noel Lively

WIRE TRANSFER:
 The Bank of New York
 New York, NY
 ACCOUNT # 8900512288
 ABA # 021 000 018
 Credit: Bechtel Power Corporation
 Job No. 25191
INVOICE NO: 25191-14120290

For questions, please contact:

Mel Watkins
 Telephone: (301) 228-8035

Invoice Number	Invoice Date	Job Number	Terms	Date Due	Account
25191-14120290	12-Dec-14	25191-ARC	Net 25days	6-Jan-15	111-1000
Cost Description			Cumulative Amount USD	Amount Due USD	
Total through Previous Invoice			\$1,054,013,118.05		
In accordance with Amenment 6 to EPC Agreement, Para 6.13.3.2 (attachment 4 to this letter)					
Weld X-Ray Inspection			\$50,000.00	\$50,000.00	
TOTAL BILLING			\$1,054,063,118.05	\$50,000.00	
				Amount Due This Invoice	

EXHIBIT HH**WAIVER OF LIENS AND GENERAL RELEASE****FORM OF CONDITIONAL PARTIAL LIEN WAIVER TO BE PROVIDED BY CONTRACTOR:****Trimble County Unit 2 Project**

In accord with Section 8.6(iii) of the Engineering, Procurement and Construction Agreement, dated as of [June 9, 2006], by and between Bechtel Power Corporation (“Contractor”) and Louisville Gas and Electric Company, Kentucky Utilities Company, Indiana Municipal Power Agency and Illinois Municipal Electric Agency (the “Owners”) the Contractor, for and in consideration of the payments to be made by the Owners to the Contractor, for Work performed, labor employed and/or for Equipment furnished in connection with the construction of the Facility pursuant to the above-referenced Agreement, hereby certifies as follows. Capitalized terms used and not defined herein shall have the respective meanings set forth in the Agreement:

1. In conjunction with this lien waiver, Contractor is submitting an invoice to Owners in the sum of \$ 50,000.00 with respect to Work performed, labor employed and/or Equipment provided in connection with Paragraph 6.13.3.2 of Amendment 6 to the EPC Agreement (Attachment 4 to this letter).

2. Contingent upon receipt of the sum referenced in paragraph 1 in accordance with the Agreement, the Contractor does hereby waive, release and quit claim in favor of the Owners, the other Trimble County Owners and the Financing Parties and any and all of their successors and assignees (collectively the “Beneficiaries”), all rights that presently exist or hereafter may accrue to the Contractor to assert a lien, whether contractual, statutory or constitutional, upon the Facility and/or all or any portion of the Trimble County Site or any improvements thereon which rights have arisen or arise out of or in connection with the performance of the Work pursuant to the Agreement, but only for Work performed, labor employed and/or Equipment furnished through the _30th _ day of _November_, 2014.

3. The Contractor has not assigned any lien or right to perfect a lien against the Facility and/or all or any portion of the Trimble County Site or any improvements thereon, and the Contractor has the right, power and authority to execute this document.

4. No security interest has been given or executed by the Contractor for or in connection with any materials, equipment, appliances, machinery, fixtures or furnishings placed upon, provided for or installed in the Facility and/or on all or any portion of the Trimble County Site. This Affidavit and Partial Release of Liens is for the benefit of the Beneficiaries.

This Affidavit and Partial Release of Lien is an independent covenant and will operate and be effective with respect to Work performed and labor employed and/or Equipment

furnished under the Agreement and any related supplemental contract or contracts for extra or additional work performed by the Contractor in connection with the Facility for the period the 1st day of March, 2014 to the 30th day of April, 2014.

IN WITNESS WHEREOF, this Affidavit and Partial Release of Lien has been executed on this 12th day of December, 2014.

WITNESS:


(Name)

Susan N. Botts

[Signature]

Subscribed and sworn to me this 12th day of December, 2014.

Susan N. Botts
 Notary Public
 Susan N. Botts
 My Commission Expires 1/3/2017



applicable Test Burn in which such fuel will be used), for the sole purpose of allowing Contractor to perform required commissioning resulting from the Work performed pursuant to any such outage (which commissioning Work is to be performed on a 24/7 basis) (the “Reasonable Commissioning Period”), in each case, taking into account the operational and maintenance requirements of Owners. If requested by Contractor, Owners shall provide 100% Group 1 Fuel for commissioning performed during the Group 1 Fuel Reasonable Commissioning Period. During such outage and the Reasonable Commissioning Period, Contractor and Subcontractors will have reasonable access to the New Unit to perform Work, including Work related to Combustion System Completion, which scheduling must also permit Owners to perform the work that Owners schedule to be performed during such outages. Owners will keep Contractor reasonably apprised of the schedule of such outages and any changes to such schedule. The valves originally installed in the New Unit to enable boiler tube welds to be hydrostatically tested are no longer functional. Contractor is nonetheless required to comply with all applicable Codes in performing the Work and shall not be entitled to additional time, additional compensation, or any other adjustment to this Agreement in connection with the lack of functionality of such valves. In addition, in

connection with all boiler tube welds performed by Contractor or its Subcontractors in connection with the modifications described in Article 1 of Exhibit 3, if the applicable Codes would allow Contractor to perform x-ray inspections on fewer than fifty percent (50%) of such welds, Contractor shall perform x-ray inspections on no fewer than fifty percent (50%) of such welds (these additional inspections shall otherwise comply with the Codes, including procedures for selecting the welds to be inspected). In consideration for the preceding sentence, the Contract Price shall be increased by Fifty Thousand Dollars (\$50,000), which amount may be invoiced to Owner with an Application for Payment submitted after the completion of the modifications.

“6.13.4 INTENTIONALLY OMITTED

“6.13.5 Operations Prior to Combustion System Completion.

“6.13.5.1 Successful Completion of the Combustion System Demonstration Test. Upon the successful completion of the Combustion System Demonstration Test, Owners shall thereafter be entitled to combust in the New Unit any coals within the specifications of Exhibit E.

“6.13.5.2 Trial Period

“6.13.5.2.1 Notwithstanding anything in the Agreement to the contrary, Owners shall, for a period of thirty (30) Days commencing on July 18, 2011 (the “Trial Period”), be entitled to combust in the New Unit any coals within the specifications of Exhibit E. If the number of Days that the New Unit is out of service or otherwise not operating at or near full load during the Trial Period

Trimble County Unit 2

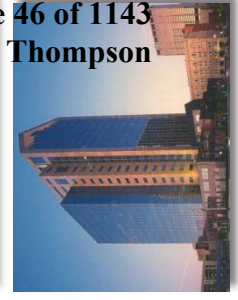
Attachment 5

Non-Destructive Testing Inspection Results

BURNER ID	MATERIAL	CONFIG	BUTTS	NDT RAD	M/T	REPAIR	TUBES	REPAIR COMP	RE-NDT
A1	P11	BUTT	72	39	35	NO			
A2	P11	BUTT	72	44	36	NO			
A3	P11	BUTT	72	42	36	NO			
A4	P11	BUTT	72	44	40	NO			
A5	P11	BUTT	76	36	36	NO			
B1	P11	BUTT	72	36	36	NO			
B2	P11	BUTT	72	36	36	NO			
B3	P11	BUTT	72	45	46	NO			
B4	P11	BUTT	72	36	54	NO			
B5	P11	BUTT	72	37	59	NO			
C1	P11	BUTT	72	71		NO			
C2	P11	BUTT	72	36	37	NO			
C3	P11	BUTT	72	53	36	NO			
C4	P11	BUTT	72	35	37	NO			
C5	P11	BUTT	72	36	41	NO			
D1	P11	BUTT	73	41	48	YES	BTM T2,3	10/03/2014 T 2 BT	3/13/14
D2	P11	BUTT	72	39	36	NO		10/03/2014 T3	3/13/14
D3	P11	BUTT	72	36	42	YES	BTM T18,19	3/12/2014	3/13/14
D4	P11	BUTT	72	36	37	NO			
D5	P11	BUTT	72	46	31	NO			
E1	P11	BUTT	72	20		NO			
E2	P11	BUTT	72	20		NO			
E3	P11	BUTT	72	20		YES	TOP T 17	3/18/2014	3/18/14
E4	P11	BUTT	72	20		NO			
E5	P11	BUTT	72	20		NO			
F1	P11	BUTT	72	36	42	NO			
F2	P11	BUTT	72	44	39	NO			
F3	P11	BUTT	73	43	35	YES	M T29 TOP T	TOP 14 08-03-14	3/9/14
								BTM 29 10-03-14	3/11/14
F4	P11	BUTT	74	56	34	NO	TOP T26,25	TOP T26 08-03-14	3/9/14
	P11							TOP T25 10-03-14	3/11/14
F5	P11	BUTT	73	72		YES	TM T11TOP	BTM T11 10/03/14	3/13/14
								TOP T3 10-03-14	3/11/14

2169 1175 422 9

54.2%

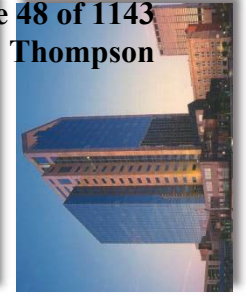


PPL companies

LG&E/IMEA Trimble County Station 2014 Annual Meeting

September 18, 2014

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PPL companies

2014 Trimble County Highlights

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2014 TC2 Spring Outage Summary (15 Weeks Planned)

Bechtel/ Doosan's Major Work Items:

- Installed 30 new burners
- Modified OFA ductwork
- Installed redesigned FD fan intake hoods
- Replaced all water coil air heaters
- Temporarily modified the economizer inlet piping supports
- Install 2 new safety silencers
- Replace seal air non-return dampers



2014 TC2 Spring Outage Summary (15 Weeks Planned)

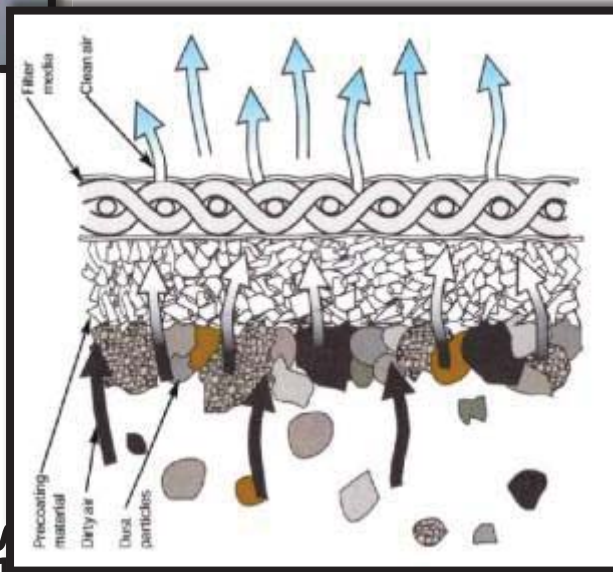
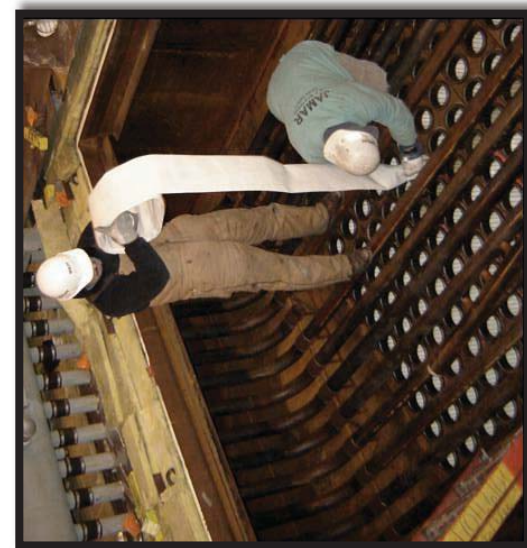
BOILER/ GAS PATH

- Installed 204 tube sections at the TC2 roof tube to cage inlet header transition
- Conducted boiler tube inspection, NDE & tube thickness mapping
- Inspected and repaired Amstar coating and installed additional 20X28 coating on both side walls
- Replaced both chains on submerged scraper conveyor and installed new “dipper” plate
- Replaced top layer of SCR catalyst, sampled, and installed new ash sweeper system
- Changed out the hubs on the 2B FD & ID fans and replaced the fan blades on the 2B FD fan
- Inspected AQ/back end equipment--DESP, WESP, FGD, SCR, PJFF, Duct, stack, duct, etc
- Inspected all coal pulverizers and installed weld overlay to rolls and races as needed
- Inspected high energy piping
- Overhauled SH and RH spray valves and tested and reset all boiler safety



TC2 PJFF Bag Replacement

- Bag Type
- Supplier / Installer
- Leak Test
- Pre-coat
- Start-up Procedures

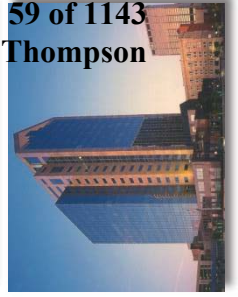


2014 TC2 Spring Outage Summary (15 Weeks Planned)

Turbine & Auxiliaries

- Inspected the last stage turbine buckets (L-0 inspection)
- Removed the 2A lube oil cooler and sent it out for a cleaning and inspection
- Rebuilt 2A & 2B TDBFP recirculation valves
- Repaired the main turbine generator #11 bearing oil leak
- Installed new turbine valve servo manifolds on the 2A & B turbine control valves, intercept valves, and the 2B stop valve
- Completed the main turbine HMI upgrade
- Inspected and cleaned main condensers
- Inspected the hyperbolic cooling tower structure





PPL companies

TC2 Combustion System Update

TC2 Burner Replacement and Combustion Modifications During Spring 2014 Outage

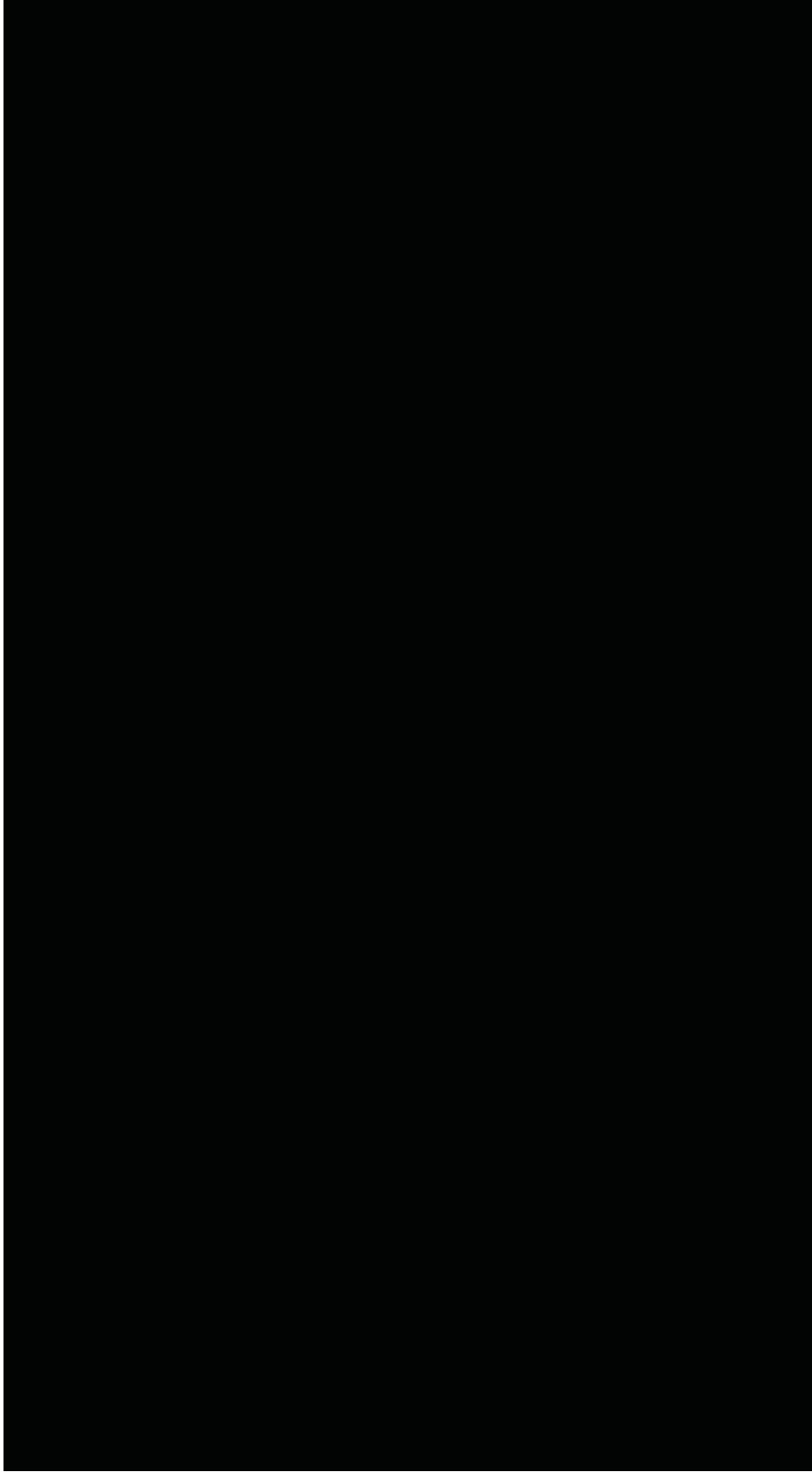
- New Oil Guns/Igniters
- Burner openings modified
- Increased overfire air (OFA) to 30%
 - *Two additional OFA ports on each wall*
 - *Modification of OFA Windbox*



- Other combustion-related activities
 - *Water coil air heater replacement*
 - *FD fan inlet hood re-design*
 - *Air heater sootblower system modifications*



Trimble 2 Burner Replacement



Overall Better Combustion Performance after Burner Replacement Outage

Parameters	Unit	Pre-Burner Outage	Post-Burner Outage
2A Stack CO	ppm	311	64
2B Stack CO	ppm	166	84
2A SCR Inlet NOx	ppm	157	123
2B SCR Inlet Nox	ppm	183	140
2A Econ Outlet Temp	°F	764	744
2B Econ Outlet Temp	°F	776	741

Pre-outage: 8/21/2013, Post Outage: 8/1/2014, Data at full load

- Reduction in CO and more manageable spikes with tuning
- Lower boiler outlet NOx
- Better airflow and modified water coil air heater eliminated issues leading to axial FD fan stall conditions
- Better WESP performance ~ less SO3 formation (lower temperatures and air flows)
- Better Baghouse performance ~ better airflow



TC2 Combustion System – Ongoing and Remaining Activities

- Combustion tuning
- Oil gun testing and tip replacement
- Combustion tests (Group 1, 2 and 3 fuels)
- Performance Guarantee and Functional tests (unburnt carbon, NOx removal, etc.)
- Surrogate Boiler Efficiency and Aux Power usage test



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Slide 26 : 8

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Slide 27 : 9

From: Joyce, Jeff(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=WEB/CN=JEFFJOYCE)
To: Cuzick, Fred
CC:
BCC:
Subject: FW: 2014 Unit unplanned outage costs
Sent: 01/06/2015 07:41:46 AM -0500 (EST)
Attachments: 2014 unplanned outage cost.xls;

Fred

I need to see the list of all expenditures through the year in addition to this summary -----

There were several large expenses that really were not contemplated in the original budget. Or at least I don't recall having to do that.

Anyway I need to review to help set the upcoming processes for 2015

Thanks

Jeff

From: Cuzick, Fred
Sent: Monday, January 05, 2015 11:28 PM
To: Joyce, Jeff; Byrd, Larry
Subject: 2014 Unit unplanned outage costs

Attached is file that contains detail of the 2014 unplanned outage costs that wrecked our budget.

Thought you would want to see how much it added up to in 2014 at (\$1.1M) in total.

Fred M. Cuzick , CPA, CGMA
Budget Coordinator
LG&E / Trimble County Station
(502)627-6213 (Office)
(502)627-6226 (Fax)
Fred.Cuzick@lge-ku.com

Produced as Native

Original File Name: 2014 unplanned outage cost.xls

Stored File Name: Exchange00147810.xls

From: Freibert, Charlie(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=TRADERS/CN=FREIBERT.C)
To: Freibert, Charlie
CC:
BCC:
Subject: TC2 Burner update. Emailing: MM_051514_Mohn.pdf
Sent: 05/19/2014 05:40:21 PM -0400 (EDT)
Attachments: MM_051514_Mohn.pdf;

Produced as Native

Original File Name: MM_051514_Mohn.pdf

Stored File Name: OpenText00018588.pdf

From: Thompson, Paul(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=THOMPSONP)
To: Blake, Kent
CC:
BCC:
Subject: AIP Project Approval - 140919LGE - ORIGINAL
Sent: 12/13/2013 08:00:22 AM -0500 (EST)
Attachments: 140919LGE-22.pdf; TC2 ROOF TUBES Internal Memo - 2014 AIPs.docx; TC2 Roof Transition Tube CEM .xlsm; TC2 Roof Tube Replacement IP.docx; TC2 Transition Roof Tube NSR.doc; TC2 roof tube replacements.txt;

LG&E project number 140919LGE (TC2 TRANSITION TUBE REPL) has been submitted for your approval. Please login to PowerPlant and respond to the items awaiting your approval.

[login to powerplant](#)

Attachment to Response to KIUC-1 Question No. 30(f)
AUTHORIZATION FOR INVESTMENT PROPOSAL

Production 2

Page 92 of 1143

Thompson

LG&E and KU Services Co.

Louisville Gas and Electric Co.

Kentucky Utilities Company

Name of Project: TC2 TRANSITION TUBE REPL		Funding Project Type: LGE Steam NonBlink Excluding Land	
Date Requested: 7/11/2013	Project Number: 140919LGE	Budgeted: no	
Related Project Numbers: 140919KU		If unbudgeted, list alternate budget ref. Number(s): FUNDED FROM GENERATION POOL - THIS IS A 2014 BUDGETED PROJECT THAT NEEDS EARLY ACTIVATION IN ORDER TO ISSUE PO.	
Expected Start Date: 1/1/2009	Expected In Service Date: 12/31/2014	Expected Completion Date: 12/31/2014	
AIP Prepared by: Cuzick, Fred		Phone: 502/627-4122	
Project Manager: Byrd, Larry		Phone: 502/347-4002	
Asset Location: Trimble County - Unit 2		Environmental Code: N/A	
Resp. Center: 002650-GENERAL MANAGER - TC		Product Code: 111 - WHOLESALE GENERATION	

REASONS AND DETAILED DESCRIPTION OF PROJECT

140919LGE-TC2 TRANSITION TUBE REPL

This project is to replace two hundred four transition tubes on the TC2 boiler roof. In 2012 the aforementioned transition tubes were identified, through inspection, to have hardness values above the allowable numbers set forth by ASME codes for this material. The high hardness values make this material very susceptible to cold cracking. Cold cracking is more prevalent and increases in likelihood to happen when the roof tube metal temperatures are at or below 300o F. In the event of a forced outage or planned outage of the unit, tube temperatures will fall below the 300o F and increase the likelihood of creating a crack and subsequent leak in the roof tubes.

The existing transition pieces have been subjected, during manufacturing, to a heating process which tapers (swages) the tube from a certain thickness to a smaller thickness. It has been determined that the high hardness values found, are attributed to this swaging process. The new transition pieces will be fabricated in such a manner that the heated swage process will no longer be required. The tubes will be fabricated to have a thicker wall and machined to match the wall of the existing tubes thus removing the possibility of added heat stress. SEE ATTACHED IP FOR MORE DETAIL.

Costs	Capital Investment	Cost of Removal/Retirement	Capital Cost Subtotal	Initial O&M Cost	Lifetime Maintenance Cost	O&M Subtotal	Production 2 TOTAL INVESTMENT
Contract Labor	\$902,266.00	\$252,427.00	\$1,154,693.00	\$0.00	\$0.00	\$0.00	\$1,154,693.00
Other	\$21,925.00	\$0.00	\$21,925.00	\$0.00	\$0.00	\$0.00	\$21,925.00
Local Engineering	\$5,143.00	\$7,573.00	\$12,716.00	\$0.00	\$0.00	\$0.00	\$12,716.00
Subtotal - GAAP	\$929,334.00	\$260,000.00	\$1,189,334.00	\$0.00	\$0.00	\$0.00	\$1,189,334.00
Contributions	(\$232,335.00)	(\$65,000.00)	(\$297,335.00)	\$0.00	\$0.00	\$0.00	(\$297,335.00)
Net Expenditures - GAAP	\$696,999.00	\$195,000.00	\$891,999.00	\$0.00	\$0.00	\$0.00	\$891,999.00
2009 Total	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
2010 Total	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
2011 Total	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
2012 Total	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
2013 Total	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
2014 Total	\$696,999.00	\$195,000.00	\$891,999.00	\$0.00	\$0.00	\$0.00	\$891,999.00

Approval Type: Non-IT Projects

Authorized by	Amount	Name	Date Approved	Req'd
Supervisor	\$25,000.00			N
Manager	\$100,000.00	Byrd, Larry	12/6/2013	Y
Budget Coordinator	\$0.00	Cuzick, Fred	12/9/2013	Y
Special Approvers	\$0.00	Feider, Ryan	12/9/2013	Y
Director	\$300,000.00	Joyce, Jeffrey	12/10/2013	Y
Vice President	\$750,000.00	Bowling, Donald	12/10/2013	Y
Investment Committee Coordinator	\$0.00	Kuhl, Megan	12/12/2013	Y
Financial Planning Director	\$0.00	Cosby, David	12/12/2013	Y
Senior Officer	\$1,000,000.00	Thompson, Paul	12/13/2013	Y
CFO	\$1,000,001.00	Blake, Kent		Y
CEO	\$1,000,002.00	Staffieri, Victor		Y
Property Accounting	\$0.00	Rose, Bruce		Y

INVESTMENT MATERIALS

UOP #	Utility Account Id		Quantity	Total Cost	
05727	131200	TUBING (ALL) (05727)	204	\$18,678.00	

RETIRED EQUIPEMENT (OR MATERIALS)

UOP #	Utility Account Id		Quantity	Vintage Year	Original Project Number

AIP QUESTIONS**Are there Related Project Numbers?**

Provide related project numbers or indicate 'N/A'.

140919KU**Is this an IT related project?**

IT project is any project that requires IT involvement or the purchase of hardware and software.

no**Purchase/Sale of Real Estate?**

Is this a transaction related to the sale/purchase of land or buildings?

no

AIP QUESTIONS

Budgeted?

Is the project budgeted or unbudgeted?

no

Alternate Budget Numbers?

If the project is unbudgeted, list alternate budget reference numbers. Enter N/A, if none.

FUNDED FROM GENERATION POOL - THIS IS A 2014 BUDGETED PROJECT THAT NEEDS EARLY ACTIVATION IN ORDER TO ISSUE PO.

Legal Asset Retirement Obligation?

Is there a legal or environmental requirement governing disposal of this asset?

no

Leased Asset?

Does this project involve a leased asset?

no

Obsolete Inventory?

Will this project create obsolete inventory?

no

Environmental Project

Is this an Environmental Project?

no

Environmental Cost Recovery

If an environmental project, is this an approved environmental cost recovery (ECR) project?

no

ECR Project Type

If this is an ECR project, indicate the project type.

N/A

ECR Compliance Number

If this is an ECR project, provide the ECR compliance plan number (see the approved project list on the Rates and Regulatory intranet site).

N/A

Environmental Affairs

Does Environmental Affairs need to review this project for environmental permitting issues (based on responses to the six questions in the Investment Proposal)?

no

Research and Experimental Credit

Is this an experimental project with the purpose of improving, enhancing, or adding to a current manufacturing process?

no

Sales Tax-Pollution Control

Is this project done for environmental regulations or statutes? (If yes, may qualify for the Pollution Control Exemption.)

no

Sales Tax-Manufacturing Integration

Is this project integrated in the Manufacturing Process? (Yes to this question and the following two questions may qualify for the New and Expanded Exemption.)

yes

Sales Tax-State Equipment Use

Is this equipment used in the state for the first time?

yes

Sales Tax-Upgrade or Improvement?

Is this project considered an upgrade or improvement? If yes, enter description on next line.

no

Sales Tax-Upgrade Description

Description of upgrade, if applicable (i.e., improved materials, increased capacity, longer life, etc.) from prior question. Enter N/A, if not applicable.

N/A

Produced as Native

Original File Name: TC2 Roof Transition Tube CEM .xlsm

Stored File Name: OpenText00031118.xlsm

Click here to enter text.

Project Name: TC2 Transition Roof Tube Replacement

Total Expenditures: \$ 892k Net IMEA/IMPA Reimbursement

Project Number(s): 140919LGE

Business Unit/Line of Business: Power Generation

Prepared/Presented By: Francisco Maldonado

Executive Summary

This project is to replace two hundred four transition tubes on the TC2 boiler roof (SA213 T23 2.5"x0.28" MWT). In 2012 the aforementioned transition tubes were identified, through inspection, to have hardness values above the allowable numbers set forth by ASME codes for this material. The high hardness values make this material very susceptible to cold cracking. Cold cracking is more prevalent and increases in likeliness to happen when the roof tube metal temperatures are at or below 300° F. In the event of a forced outage or planned outage of the unit, tube temperatures will fall below the 300° F and increase the likelihood of creating a crack and subsequent leak in the roof tubes.

The existing transition pieces have been subjected, during manufacturing, to a heating process which tapers (swages) the tube from a certain thickness to a smaller thickness. It has been determined that the high hardness values found, are attributed to this swaging process. The new transition pieces will be fabricated in such a manner that the heated swage process will no longer be required. The tubes will be fabricated to have a thicker wall and machined to match the wall of the existing tubes thus removing the possibility of added heat stress.

After careful review of the inspection report provided by Structural Integrity, Generation Engineering recommended that the transition tubes be replaced. Other options were explored such as a complete retrofit of the TC2 boiler roof with new material but this option proved to be unnecessary and not economical. The inspection reports show the problem areas are localized in the transition pieces and, as such, should be the areas that are repaired. If the tubes are not replaced, the likelihood of a tube leak increases over time.

This project, if approved, is scheduled to be completed during the TC2 2014 spring outage. Material is estimated to cost approximately \$136k (includes 6% sales tax) and labor is estimated to cost \$975k. The 2014 capital business plan includes \$616k (Net) for this project. The shortfall in the budget will be funded from the anticipated money left over on the TC2 PJFF Replacement Project (137671 LGE) due to favorable pricing received. NOTE: There is a warranty claim against Bechtel for this work.

Background

Trimble County 2 boiler roof is comprised of SA-213 Grade 23 tubes. Grade 23 is a, relatively speaking, new and exotic metal, and as such, there is very little knowledge and history on this material. The ASME code case that governs the manufacturing of Grade 23 is currently in its sixth revision due to the fact that new information has been gathered in the recent years. Unfortunately, some of that information was discovered at Trimble County do to several roof tube leaks and repairs.

The initial interest that led to the metallurgical analyses of the tubes was due to tube failures that occurred at field welds from original fabrication. When the repairs were made to the original tubes, stress concentrations were created. These concentrations created cold cracks in tubes at field weld line "D". It is important to note that poor fabrication was found and repaired at four different field weld lines and only those found and repaired at weld line "D" experienced cold cracking. Subsequent analysis was performed at the different field weld lines throughout the roof. The data shows that high hardness readings were not a global issue but an issue isolated to the "D" weld line.

- **Other Alternatives Considered(1 –Recommendation, 2 –Do nothing, 3 –Next Best Alt)**

1. It is recommended that only the transition pieces be replaced. This recommendation consists of replacing 204 tubes roughly 2 feet long. This is the least invasive and addresses the high hardness issue found during the analytical work performed in 2013.
2. If nothing is done the probability of a tube leak and unit shutdown occurring increases.
3. Next best option is to replace all of the T23 material on the TC2 boiler roof. This option is not very economical because not only will the material need to be replaced but engineering will have to be done to accommodate stresses and supports for the boiler if a new material is used.
4. Another option would be to replace only the tubes that test bad. This would require a complete analysis of each tube. The hardness test is done to a very small portion of the tube (approximately one square inch). To ensure that the structural integrity of each tube has not been compromised every square inch would need to be inspected. This would be a very costly endeavor and there is a high probability that all the tubes will have high hardness values and will need to be replaced.

Project Description

- **Project Scope and Timeline**

This project is scheduled to be completed during the TC2 2014 spring outage beginning in late February. The boiler contractor will remove and replace 204 transition roof tubes. The welds will be x-rayed and acceptance will be in accordance with ASME boiler and state codes. The contractor will also have to cut and re-weld screen tubes that penetrate the roof near the weld line at the cage inlet header. Cutting of the screen tubes is necessary to gain access to the weld line.

Many inspections and tests have been done to determine the best options for repair. Seven roof tubes have been replaced at this weld line and have proven to be the correct fix for the issue. These new tubes have been in service for 6 months and no known issues have been experienced to date.

If approved, the material will be ordered as soon as practical with an expected delivery in late February. The work is expected to take 3 weeks starting in late February. The timeline for the repair will not be an issue due to the fact that the outage is expected to last 10-14 weeks.

- **Project Cost**

The estimated project cost is \$1,190k (gross). This includes \$136k (includes 6% sales tax) for material, \$975k for labor and \$50k for contingency. The labor and material portions will be done on a lump sum basis. Contingency is based on 5% of the project total. Some work has been done in this area and many of the unknowns have been taken into account the 5% will be sufficient in case an unforeseen issue arises.

Economic Analysis and Risks

- **Bid Summary**

Four suppliers were solicited to bid on the T23 roof tube material. Out of the four only two provided a bid. Michigan seamless “no bid” because they did not have the fabrication capabilities to provide the specified tubes and Boiler Tube of America “no bid” for reasons unknown. Refer to table below for an overview of the bidders prices.

Material Bids	Alstom Power	Boiler Tube of America	Minotte	Michigan Seamless Tubing
MBE/WBE				
Total Cost (\$000s)	\$147	No Bid	\$136	No Bid

Labor Bids	A&D	PIC	SE Boiler	TEI	MCS	UGS	Titan
MBE/WBE							
Removal Costs	\$167	\$233	\$195	\$252	\$579	\$1,095	\$936
Installation Costs	\$255	\$544	\$780	\$1,005	\$876	\$1,645	\$2,062
Total Cost (\$000s)	\$422	\$777	\$975	\$1,256	\$1,454	\$2,740	\$2,997

It is likely that we will use Minotte for the material purchase. Minotte is both capable of meeting the required schedule and manufacturing the material to the required specification. It is also likely that Southeast Boiler (SBR) will be used for the labor portion of the project. It was found during bid review that SBR is technically the most competent contractor. Not only do they have experience welding the T23 material but they have experience with welding the T23 material at the TC the roof tube and in particular at weld line "D".

A&D was also considered for the labor portion of this project. Upon review of A&D's bid it was found that their labor hours seemed too low to complete this job and it is very likely that they have underestimated the scope of work associated with this project. Along with low labor hours they lack the technical expertise to work with T23 and would be hard pressed to provide a quality job. PIC was also considered but due to recent history on TC1 boiler projects it has been determined that this project would run the risk of not being completed on time by PIC. PIC is a smaller company that depends heavily on "key" project managers if those project managers are not available for a given job the job seems to suffer. Such was the case on TC1 and the probability of happening again on TC2 is very likely.

- **Budget Comparison and Financial Summary**

Financial Detail by Year (\$000s)	2013	2014	2015	Post 2015	Total
1. Capital Investment Proposed		697			697
2. Cost of Removal Proposed		195			195
3. Total Capital and Removal Proposed (1+2)	-	892	-	-	892
4. Capital Investment 2014 BP		616			616
5. Cost of Removal 2014 BP					-
6. Total Capital and Removal 2014 BP (4+5)	-	616	-	-	616
7. Capital Investment variance to BP (4-1)	-	(81)	-	-	(81)
8. Cost of Removal variance to BP (5-2)	-	(195)	-	-	(195)
9. Total Capital and Removal variance to BP (6-3)	-	(276)	-	-	(276)
10. Project O&M Proposed					-
11. Total Project Proposed (3+10)	-	892	-	-	892
12. Net Income		\$41	\$36	\$916	\$993

Financial Summary (\$000s):

Discount Rate:	6.50%
Capital Breakdown:	
Contract Labor:	\$975
Materials:	\$136
Local Engineering:	\$0
Burdens:	\$24
Contingency:	\$55
Reimbursements:	(\$298)
Net Capital Expenditure:	\$892

Project Presented and alternatives:

Financial Analysis - Project Summary (\$000)	Total Project	Replace 50% (Next Best)	Do Nothing
NPVRR	(\$1,011)	\$138	(\$2,683)
NPV Cash Flows	\$109	\$(5)	\$254
IRR	8.1%	6.4%	-1.4%
ROE	10.0%	5.3%	0.0%

ROE by Year					
	2014	2015	2016	2017	2018
Proposed Project	10.9%	4.9%	7.6%	13.3%	14.3%
Next Best (50% Replacement)	5.3%	-.02%	-1.3%	2.1%	12.7%
Do Nothing	0%	0%	0%	0%	0%

- **Assumptions**

- If this project is not completed, there is a 10% probability that a forced outage will occur of 5 days duration on Trimble County 2 per year.
- The probability of a forced outage due to roof tube leaks increases 1% each year.

- **Environmental**

New Source Review Evaluation, questions 1-6 (as applicable) must be completed on all investment proposals.		
1	Does the project include any new equipment or component with emissions, result in emissions not previously emitted or cause the unit to exceed any emission limit? If yes, Environmental Affairs is required to review this project. If no, go to Question #2.	No
2	Question 2: Is the change a like-kind or functionally equivalent replacement	

	under \$500K? If yes, the project is not subject to NSR and no further evaluation is required. If no, go to Question #3.	No
3	Question 3: Does the equipment change increase the emissions unit's maximum hourly heat input? If yes, Environmental Affairs is required to review this project. If no, go to Question #4.	No
4	Question 4: Does the equipment change increase the emissions unit's electrical output? If yes, Environmental Affairs is required to review this project. If no, go to Question #5.	No
5	Question 5: Has the equipment being repaired/replaced been repaired or replaced in the past at this unit or other units in the fleet? If no, Environmental Affairs is required to review this project. If yes, list any known projects and go to Question #6.	Yes
6	Question 6: Have there been forced outages or unit de-rates in the past 5 years due to this component? If no, the project is not subject to NSR and no further evaluation is required; if the answer is yes, Environmental Affairs needs to review this project.	Yes

Environmental Affairs has reviewed and concluded the project is considered routine maintenance. Please see attached New Source Review document.

- **Risks**

Based on hardness data collected at the roof tubes, it is highly likely that there will be a tube leak forced outages will occur on an increasing basis until transition roof tubes are repaired.

Conclusions and Recommendation

It is recommended that the Investment Committee approve the TC2 Transition Roof Tube Replacement project for \$1,190k gross (\$892k Net) to avoid certain catastrophic tube failure related outages.

Produced as Native

Original File Name: Microsoft_Excel_97-2003_Worksheet1.xls

Stored File Name: OpenText00031120.xls

From: Hudson, Rusty
Sent: Friday, December 06, 2013 9:18 AM
To: Bowling, Ralph; Joyce, Jeff
Cc: Cuzick, Fred
Subject: TC2 roof tube replacements

The TC2 roof tube replacements project is at \$892k net with \$50k of contingency. The IC threshold is on a net basis, not gross. Given that we are still \$100k under the \$1m threshold, I am okay with this just going through the normal PowerPlant approval process and not the IC if that is okay with you guys. When they get over \$950k I prefer to take them, but with this one I think we will be okay. Rusty



MEMO

To: Financial Planning & Controlling
From: Fred Cuzick- Trimble County
Date: 12-6-13
Re: AIP-140919LGE- TC2 Transition Roof Tubes

The attached AIP for \$892k is included in the proposed 2014 BP which is currently in the process of being approved by RAC, Senior Management and/or the PPL Board. Due to the urgency of the project, it is imperative to open the project in 2013 while waiting on final BP approval expected in December. All spending to occur in 2013 has been approved through the internal RAC process. This project is a high priority so in the event of capital reductions during the approval process, this project would still likely be done.

Facility: Trimble County	Unit: TC2
Project Name/Number: 140919LGE TC2 Transition Roof Tube Replacement	Project Date: February 2014, Outage
	Review Date: November 13, 2013
	Performed by: R. Cash, R. Feider
	Document Revision Date:

Part 1: Evaluate Individual Categories

Nature and Extent of Project:	
	Yes/No
1. Does the change require pre-approval of a state commission, in the case of utilities?	No
2. Does the source itself characterize the project as non-routine in any of its own documents?	No
3. For tube bundle replacements, how much of the total boiler tubing will this project replace?	<5%
4. Will the activity fit into a normal outage turnaround?	Yes
5. Does it involve outside engineering help?	Yes
6. Do the replacement parts have the same function and capacity as the original design?	Yes
Explanation/Findings:	
<p>This project is to replace 2ft sections of two hundred four transition tubes on the TC2 boiler roof (SA213 T23 2.5"x0.28" MWT). The tubes are fabricated of SA 213 T23 metal and subjected to a swage process. In 2012 the transition tubes on the TC2 roof were identified, through inspection, to have hardness values above the allowable numbers set forth by ASME codes for this material. The high hardness values make this material very susceptible to cold cracking, particularly when the roof tube metal temperatures are at or below 300° F.</p> <p>The project will consist of a like-in-kind replacement of the tubes with tubes fabricated of SA 213 23 metal not subjected to the swage process. The replacement tubes will also have a thicker wall for heat stress protection.</p>	

Is the nature and extent of the project consistent with RMRR objectives? Yes No

Purpose of Project: (how is funding justified?)	Thompson
	Yes/No
1. Has the unit deteriorated to the point that after the repair or replacement, it will regain achievable capacity it has not seen in the last 60 months?	No
2. Will the changes extend the useful life of the boiler?	No
3. Will the change result in more material throughput (i.e.; fuel, lime, limestone)?	No
4. Will the project alter the boiler's dispatch order?	No
<p>Explanation/Findings:</p> <p>TC2 has had only 1 forced outage/derate attributed with the roof tubes since the construction of TC2. This project will replace the remaining 2ft sections of the 204 SA 213 Grade 23 transition tubes. The Grade 23 material is a relatively new metal with limited operational and test data on this material. The ASME code case that governs the manufacturing of Grade 23 is currently in its sixth revision due to recent data in the last few years.</p> <p>The purpose of this project is preventative due to inspection and testing of the material of construction. The initial interest that led to the metallurgical analyses of the tubes was due to tube failures that occurred at field welds from original fabrication. When the repairs were made to the original tubes, stress concentrations were created. These concentrations created cold cracks in tubes at field weld line "D".</p> <p>Inspections and tests were utilized to determine the best options for repair. Seven roof tubes were replaced at this weld line for testing. The "test" tubes have performed well over the last six months and meet the hardness values set forth by ASME codes for this material.</p>	

Is the purpose of the project consistent with RMRR objectives? Yes No

Frequency of Project:	
	Yes/No
1. Is the project performed infrequently in a typical unit's life?	Yes
2. Is it common industrial practice to undergo this type or repair or replacement for this EGU?	Yes, when product does not meet industry design specifications
3. Even though this type of activity is regularly done in the industry, how frequent has this type of repair or replacement been done at this particular unit (or, is there an established pattern such as every 2 years, every 10 years, etc.)?	As Needed
4. Is there any repair or replacement activity within the entire project that is done rarely if ever?	No

Explanation/Findings:

It is routine to replace sections of boiler roof tubes as needed due to material defects or new data indicating future operational issues. The tubes have not performed to initial specifications and have failed to meet applicable ASME codes for hardness. Parts failing to meet the stress and hardness codes are routinely replaced in the industry to maintain equipment in accordance with good engineering practices.

Is the frequency of the project consistent with RMRR objectives? Yes No

Cost of Project:	
	Yes/No
1. Is this an expected and planned cost for operating the unit?	Yes
2. Will a significant amount of the cost of the project be included in the source's capital expenses?	Yes*
3. Does the cost far exceed the typical expenditures associated with this type of equipment?	No
4. What is the percentage of the project's cost compared to a new comparable source and is it significant (e.g., less than 0.75 percent)?	<0.5%
Explanation/Finding: *LG&E and KU budgets a majority of maintenance expenditures during unit planned outages as capital expenditures.	

Is the cost of the project consistent with RMRR objectives? Yes No

CONCLUSION

Part 2: Routine Maintenance (Yes/No)

Summary/Conclusion:	Routine Maintenance (Yes/No)
<p>The like-in-kind replacement of sections of the boiler roof tubes meets the requirements of RMRR. The replacement sections are composed of the same material of construction, but without being fabricated with a swage process. It is routine in the industry to replace components that fail to meet industry code in accordance with good engineering practices. The change in the material fabrication process does not exclude the project from the definition of RMSS (see Case discussion below.) The project is not due to forced outages or derates and no emissions increase is anticipated as a direct result of this project.</p> <p>In the April 2010 case <i>National Parks Conservation Associations v. Tennessee Valley Authority, No. 3:01-CV-71</i>, the replacement of the superheater at Bull Run was deemed routine with a change in the material of construction. The judge agreed that replacement with a better product with the same function may sometimes be appropriate. In the final ruling, the change of material was reviewed under the purpose of the project. The judge did not find the change of material or the replacement of the superheater were adverse factors in relation to the project.</p>	Yes

If the answer to Part 2 is no, complete Part 3.

Part 3: Emissions Increase (Yes/No)

If the project is <u>not</u> routine, would the project reasonably be expected to result in an emissions increase, in regard to NSR (yes/no).	Emissions Increase (Yes/No)
	No
Justification:	

DOCUMENT REVIEW

<u>Reviewers:</u>			
Environmental Affairs		Trimble County	
Reviewer	Rebecca Cash	Reviewer	Ryan Feider
Date	12/6/2013	Date	11/13/2013

<u>Unit</u>	<u>Event</u>	<u>Start</u>	<u>End</u>	<u>Type</u>	<u>Cause</u>	GAC	NAC	Description
Trimble County, TC2	268	10/16/2012 13:47	10/18/2012 16:29	U1	1090	0	0	F540This ouage was due to a boiler roof tube leak, The unit was removed from service and the leak was pad welded until the fall outage.
Trimble County, TC2	287	12/10/2012 0:00	12/20/2012 10:07	PE	4401	0	0	F530The inspection outage was extended to allow for boiler tube repairs (roof tube iss

Produced as Native

Original File Name: 15-Worksheet.xls

Stored File Name: OpenText00033938.xls

Redacted as Unresponsive

Trimble County Unit 2 burner change-out

Laura Shuffett Mohn, group leader, Engineering, discussed the final phase of a 14-week outage for TC2. The action was necessary to replace 30 original coal burners with those of a more advanced design.

Twenty of the burners sustained damage in June 2010 shortly after TC2's start-up. The damaged stemmed from the type of coal used in the burners. The coal would swell and exhibit elasticity, eventually catching fire inside the burner. This type of coal is used to meet stricter emissions regulations.

Although various modification and correction plans were taken, performance issues persisted, leading to a decision to replace the burners. After reviewing proposals from four vendors, the company selected a supplier offering significant design features, expertise and a replacement warranty.

Thirty new burners were installed and have undergone extensive tests and equipment modifications. The next steps are to fire the unit and begin the combustion tuning process. Various types of coal will be burned and tested. The burners are designed to handle a range of coal types. TC2's efficiency and megawatt capacity will be rechecked.

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Redacted as Unresponsive

Redacted as Unresponsive

Trimble County - Unit 2

- Safety – NTR
- Punchlist/Warranty
 - SESS – Siemens notified us that they sold SESS to Foster Wheeler. Foster Wheeler has been purchased by AMEC. Bechtel and Owner teams continue to investigate root causes of the four major issues (WESP plate coverage and power input, PJFF dP, and PJFF/PAC feed reducing Hg capture) during the early weeks of the burner replacement outage. SESS continues to develop a plan to remediate WESP plate washing coverage issues. PJFF pressure drop issues appear to be linked to oil contamination of the bags (wicking of oil into the bag material). Lab results expected back in a few weeks to confirm.
 - Doosan – Payment received from Bechtel for the Doosan related claims totaling \$644k. PE submitted a draft services agreement to Doosan.
- Combustion System: Work continues to track a couple of weeks ahead of plan with current projection of week of May 8th completion.
- DSI – Meiner's Electric has completed tying the new grounding network into plant grid; Meiner's continues its work in the DESP electrical building. East & Westbrook is set to begin digging the trench for the electrical ductbank on Monday, April 21st. Titan continues to route conveyance piping.

Redacted as Unresponsive

From: Blake, Kent(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=E008318)
To: Staffieri, Vic; Farr, Paul [PPL]
CC: Rives, Brad
BCC:
Subject: Re: Weekly Report on LKE Activities
Sent: 03/08/2014 12:51:09 PM -0500 (EST)
Attachments:

Paul,

Redacted as Unresponsive

OSS was \$1.5 million better. We're a little limited now on excess capacity with TC2 on a 15 week outage to replace the burners, but we had to pull the trigger on that to make sure we had the unit ready for the summer.

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Kent

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Redacted as Unresponsive

Trimble County Unit 2 burner change-out

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Redacted as Unresponsive

From: Blake, Kent(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=E008318)
To: Bowling, Ralph
CC:
BCC:
Subject: RE: EFOR Info
Sent: 12/09/2013 11:26:35 AM -0500 (EST)
Attachments:

Thanks Ralph. This is exactly what I needed. Of course, I'll focus on Commercial Availability – i.e., we kept the units running when it mattered the most.

From: Bowling, Ralph
Sent: Monday, December 09, 2013 10:13 AM
To: Blake, Kent
Cc: Thompson, Paul
Subject: EFOR Info

Kent

As requested a brief summary of EFOR for the coal units, also provided is additional detail below if you need for it context. Let me know if you need additional or different information.

Ralph

Coal Unit Availability - EFOR ytd through October for the Coal Fleet was 7.7% as compared to the target of 5.1%. **Commercial Availability – Actual** ytd through October 91.5% versus targeted 91.3%, which is at target. The top contributor for EFOR continues to be issues related to TC2. An installation issue with the turbine lube oil system has been resolved and the combustion system modification will be made during the outage that starts in February. Two other units, (MC3 & 4) have also experienced elevated EFOR due to combustion related issues coupled with high sulfur fuel causing boiler tube failures. A major outage on MC3, which included burner replacement, was completed this fall and similar outage is scheduled for MC4 in the spring of next year which should have a positive impact on the performance of both units.

More detail:

Ten of 18 units performed better than target (GH1, 2 & 3, MC 1&2, BR1&2, CR5, TC1 and GR3), 2 units slightly above target (GR4 & GH4) and 5 units above target (TC2, BR3, MC3, MC4, and CR4 (in order of EFOR contribution)).

TC2 continued to be burdened by combustion design issues and turbine bearing failure due to oil system contamination during construction. The turbine bearing issue was resolved by performing a 'full flow' oil flush during the last outage and hopefully the combustion issues will be resolved with burner replacement after the 2014 scheduled spring outage.

BR3 experienced several reheater leaks and an issue with a boiler feed pump. This is historically uncharacteristic of this unit as it has normally met EFOR target. The boiler tube leaks are certainly driven by the switch to high sulfur fuel.

MC3's primary driver was a leak in the turbine crossover expansion joint which was slated for replacement during the fall scheduled outage. But since the joint failed days before the scheduled outage, the scheduled outage period was scored as forced outage due to GADS reporting criteria. The unit recently completed a significant outage which included the replacement of burners and reheater that will have a significant positive impact on unit performance.

MC4 Primary drivers were issues with the generator (hydrogen seal failure) and boiler tube leaks. The generator has been resolved and there is a major outage scheduled in the spring of '14 which includes several sections of boiler tube replacement that will improve the unit's reliability.

CR4 – The generator had been operating with an identified shorted turned in the rotor. Operating with one short is feasible, but if a second short occurs, heat created by the ground will cause excessive vibration beyond acceptable levels. The spring 2012 scheduled outage scope included rewinding the rotor to correct grounds. But given the finite life of the unit, we opted to take a calculated risk to operate the unit to retirement and save the capital expenditure for the rewind. Unfortunately a second ground did occur and required the rewind to be performed under a forced outage designation.

From: Byrd, Larry(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=E011284)
To: Buckner, Mike; Crutcher, Tom
CC:
BCC:
Subject: FW: 07292 TC2 - Restart & Optimisation Programme
Sent: 04/24/2014 11:09:48 AM -0400 (EDT)
Attachments: Restart Programme (14-04-23).pdf;

Thought you gents might be interested in some of these TC2 spring 2013 outage key milestone dates:

4/25	Fill boiler
4/26	Drain boiler and nitrogen fill
5/8	Out of gas path, fans in service
5/20	First fire, oil
5/22	First fire, coal
5/23	Synchronize generator
5/20 – 6/3	Combustion Optimization
7/3 – 8/8	Fuel tests (3)
7/3 – 9/5	Performance testing/report

There's much more detail on the attached schedule.

FYI,

Larry

From: Anderson, Dave (Trimble County)
Sent: Wednesday, April 23, 2014 1:13 PM
To: Afiyet, Hamit; Ball, Adam; Bethany, Ron; Boone, James; Bullock, Sam; Byrd, Larry; Cash, Rebecca; Chin, Doug; Craft, Jim; Craven, David; Dorwart, Jordan; Dukes, Christopher; Feider, Ryan; Gilliland, Dave; Gray, Jeffrey; Griffith, Michelle; Hance, Chuck; Hannon, Hannah; Hayes, Christopher; Heinz, John; Henderson, Trent; Hudson, Glen; Jensen, Jack; Jones, Steve; Joyce, Jeff; Joyce, Kenny; Maldonado, Francisco; Melloan, Ricky; Menezes, Tomas; Mills, Ricky; Mohn, Laura; Moore, Emmett; Noonan, Kenny; Park, Marci; Payne, Nicholas; Phelps, Grant; Powell, Richard; Rabe, Phil; Raker, Adam; Ransdell, Charles; Richardson, Stephen; Sanders, Matt; Sedam, Dale; Simpson, Jeff; Slaughter, Mitch; Stewart, Robert E. (Trimble); Thomas, Mark; Thurston, Eric; Turner, Haley; Turner, Tyler; Walcott, Danny; Waller, Logan
Subject: FW: 07292 TC2 - Restart & Optimisation Programme

FYI.....

TC2 restart schedule.

David W. Anderson

Trimble County Outage Coordinator
Tel. 502-627-6313
Fax 502-217-2199
email: dave.anderson@lge-ku.com

From: Fleming, Ian [<mailto:ian.fleming@doosan.com>]
Sent: Wednesday, April 23, 2014 11:48 AM
To: Jones, Gareth; Young, Charles E H; Gratton, Ron
Cc: McCallum, Neil; Lee, John; Kerslake, Ian; Davidson, Gordon; Hammond, Steve; London, Alan; Maunder, Kevin; Clyde Watkins; Slaughter, Mitch; Rabe, Phil; Anderson, Dave (Trimble County); Dearman, James
Subject: 07292 TC2 - Restart & Optimisation Programme

Gents,

Fyi, please find attached latest revision to Restart & Optimisation programme.

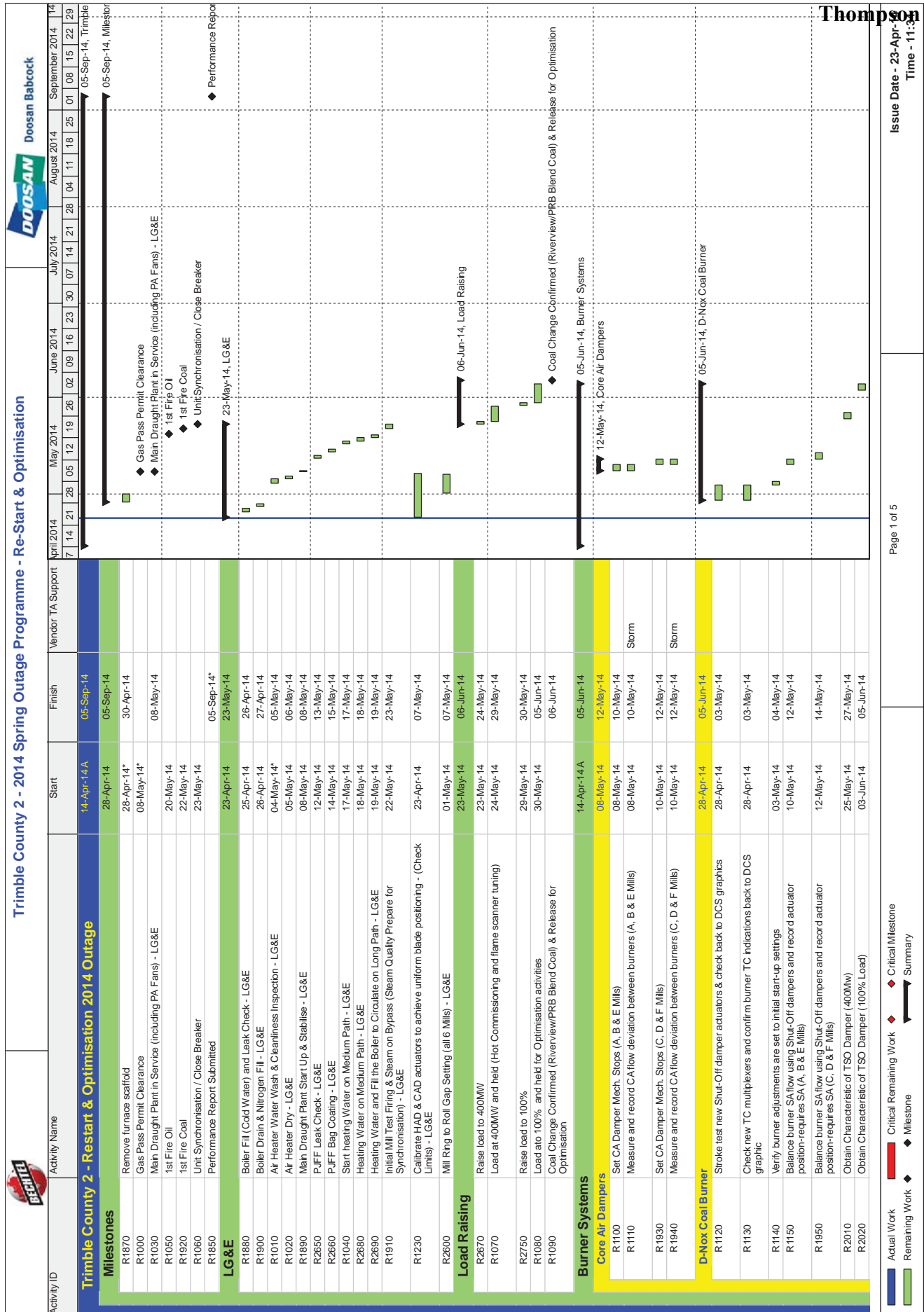
If there are any question or clarification required, please do not hesitate to contact me.

Regards
Ian Fleming

Senior Project Planning Engineer
Doosan Babcock
Trimble County Site

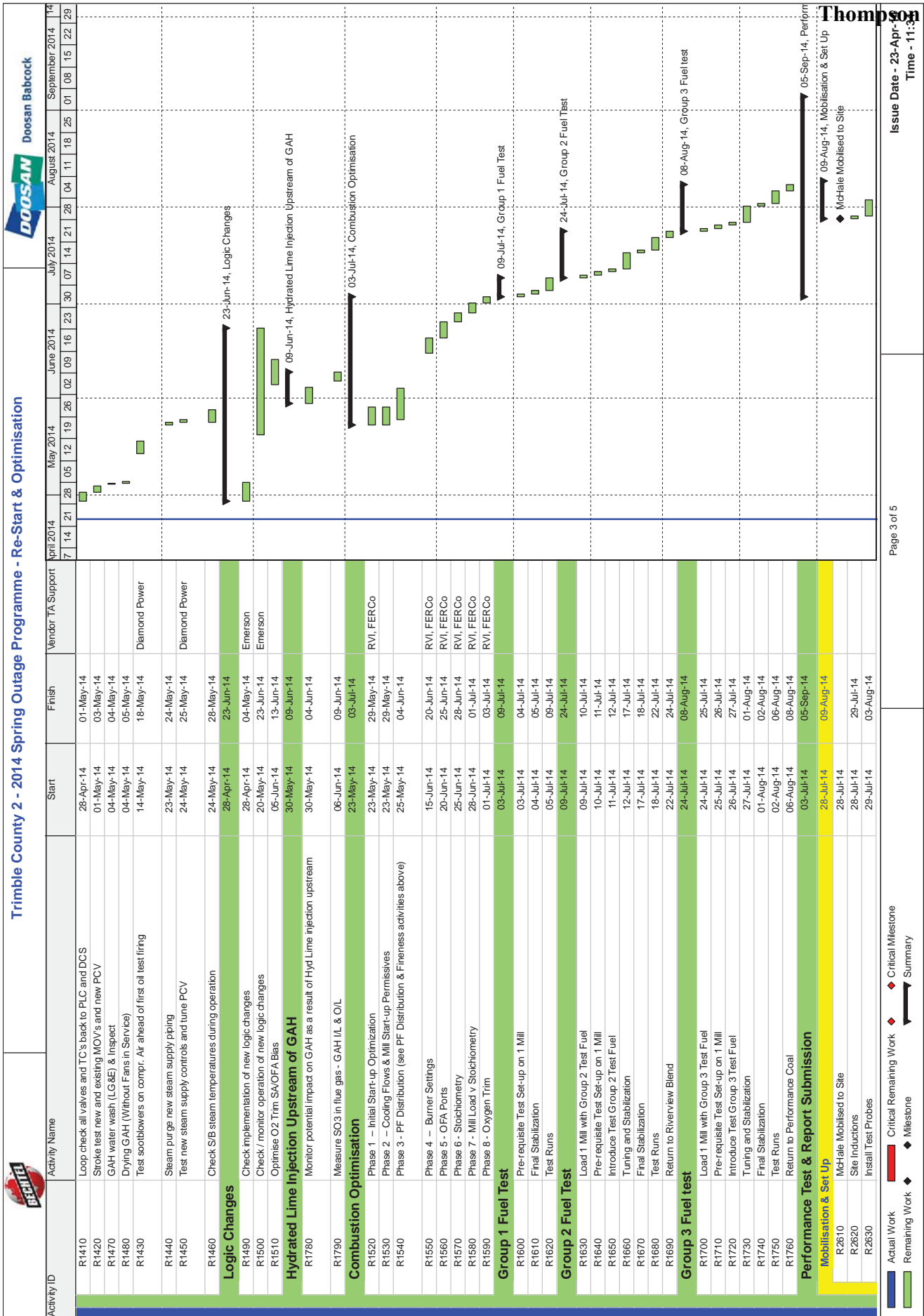
Tel: 502 255 5210
Email: ian.fleming@doosan.com

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Thompson

Trimble County 2 - 2014 Spring Outage Programme - Re-Start & Optimisation		Doosan Babcock													
Activity ID	Activity Name	Start	Finish	Vendor / TA Support	April 2014	May 2014	June 2014	July 2014	August 2014	September 2014	October 2014	November 2014	December 2014	January 2015	February 2015
Oil Burners															
R1160	Terminate Brad Harrison connectors on new COEN oil burners	14-Apr-14	24-May-14												
R1170	Loop check new oil burnerassy. & junction test back to DCS graphics	14-Apr-14	21-Apr-14												
R1180	Stroke test HEAI and main carriage in local and remote	23-Apr-14	06-May-14	Emerson											
R1190	Test fire all 30 new oil burners and optimise oil & atom air press and CA flow (Inadvertently for flame check - 1hr/gun)	01-May-14	15-May-14	COEN											
R1200	Loop check new flame amplifier card back to DCS	20-May-14	24-May-14												
R1210	Loop check new flame amplifier card back to DCS	14-Apr-14	04-Jun-14	Forney											
R1220	Optimise oil flame scanners during test firing and up to 40% load	14-Apr-14	19-Apr-14												
R1230	Optimise coal flame scanners during mill starts and high unit load	20-May-14	04-Jun-14	Forney											
R1240	Optimise oil flame scanners during mill starts and high unit load	22-May-14	01-Jun-14	Forney											
Purges / Cooling Air Fans															
R1980	Run Fans & Record Data	08-May-14	09-May-14												
R1990	Change Orifice Plates (if required)	08-May-14	08-May-14												
R2000	Run Fans & Record Data	08-May-14	09-May-14												
R2010	Run Fans & Record Data	09-May-14	09-May-14												
R2020	Run Fans & Record Data	12-May-14	09-Jun-14												
R2030	Obtain characteristic of PA Hot & Cold Air control dampers (A, B & E Mills)	12-May-14	15-May-14												
R2040	Optimal position for PA Hot Air control dampers	07-Jun-14	09-Jun-14												
R2050	Optimal position for PA Cold Air control dampers	07-Jun-14	09-Jun-14												
Secondary Air / OFA Flow Measurement															
R1280	Stroke check new OFA damper actuators and linkage movement	05-May-14	27-Jun-14												
R1270	Leak test new OFA impulse pipework	05-May-14*	07-May-14												
R1860	SA & OFA Windbox Flow Tests	08-May-14	09-May-14												
R2030	Traverses on new OFA aerotrols (cold air) (Fercos)	16-May-14	19-May-14	FERCO											
R2030	Traverses on new OFA aerotrols (cold air) (Fercos)	16-May-14	20-May-14	FERCO											
R1310	Obtain characteristic of SA/OFA control dampers (to be done part load)	24-May-14	28-May-14	FERCO											
R1290	Traverses on new OFA aerotrols (hot air) (Fercos)	01-Jun-14	05-Jun-14	FERCO											
R1250	6 Mill Test	06-Jun-14	07-Jun-14	FERCO											
R1300	Finalise K factors in the DCS	07-Jun-14	10-Jun-14	FERCO											
R1320	Optimise optimal position for SA/OFA control dampers (X-Over Press. Set Point)	10-Jun-14	12-Jun-14												
R1330	Tuning of SA/OFA control dampers (DPS/Emerson)	12-Jun-14	15-Jun-14	Emerson											
R1340	Monitor operation of SA/OFA control	12-Jun-14	27-Jun-14												
Mill Systems															
PF Pipe Clean Air Distribution (Storm)															
R1350	Perform PF pipe clean air flow distribution - set new orifice plates (A, B & E Mills)	12-May-14	04-Jun-14												
R1830	Perform PF pipe clean air flow distribution - set new orifice plates (C, D & F Mills)	16-May-14	20-May-14	Storm											
PF Distribution (Storm)															
R1360	Check/correct PF distribution on mills (A, B & E) (Storm Sampling/Alstom Off Site Support)	25-May-14	04-Jun-14	Storm + Alstom											
R1840	Check/correct PF distribution on mills (C, D & F) (Storm Sampling/Alstom Off Site Support)	25-May-14	04-Jun-14	Storm + Alstom											
PF Fineness															
R1370	Finalise mill classifier speed range (DPS/LG&E)	24-May-14	03-Jun-14	SGS											
Mill Seal Air Fan Discharge Non-Return Damper															
R1380	Test out of service fan reverse flow leakage and windmilling	12-May-14	13-May-14												
R1390	Test hot change-over of seal air fans	12-May-14	13-May-14												
Gas Airheaters - New Steam Supply															
R1400	Install new control logic in PLC and update data link to DCS	28-Apr-14	28-May-14	Diamond Power											



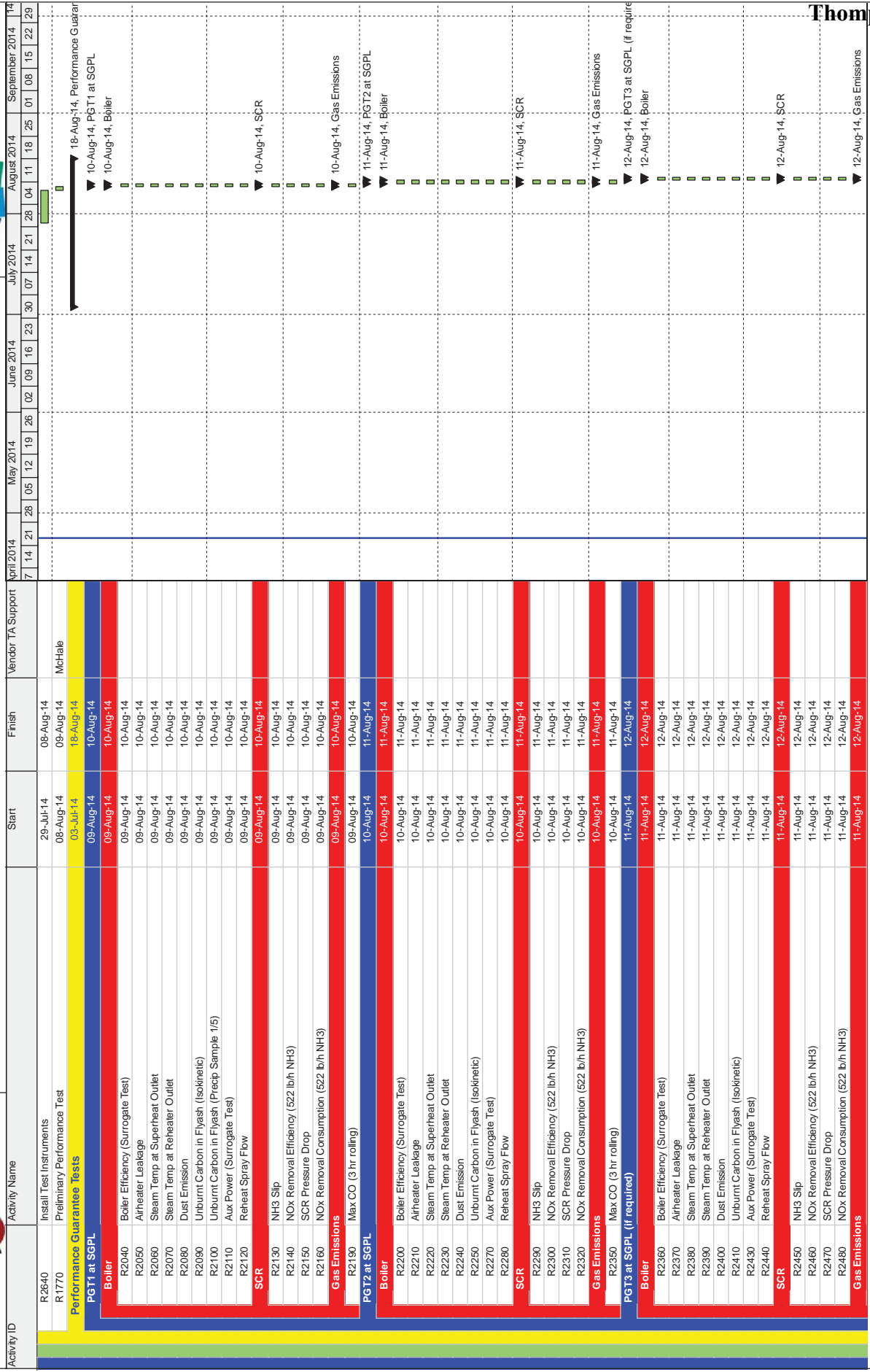
Activity ID		Activity Name	Start	Finish	Vendor / TA Support	April 2014	May 2014	June 2014	July 2014	August 2014	September 2014	October 2014
R2640	R1770	Install Test Instruments Preliminary Performance Test	29-Jul-14 08-Aug-14	08-Aug-14 09-Aug-14								
		Performance Guarantee Tests	09-Jul-14	18-Aug-14	MChale							
		PGT1 at SGPL	09-Aug-14	10-Aug-14								
		Boiler	09-Aug-14	10-Aug-14								
R2040	R2050	Boiler Efficiency (Surrogate Test) Airheater Leakage	09-Aug-14 09-Aug-14	10-Aug-14 10-Aug-14								
R2060	R2070	Steam Temp at Superheat Outlet Steam Temp at Reheater Outlet	09-Aug-14 09-Aug-14	10-Aug-14 10-Aug-14								
R2080	R2090	Dust Emission Unburnt Carbon in Flyash (Isokinetic)	09-Aug-14 09-Aug-14	10-Aug-14 10-Aug-14								
R2100	R2110	Unburnt Carbon in Flyash (Precip Sample 1/5) Aux Power (Surrogate Test)	09-Aug-14 09-Aug-14	10-Aug-14 10-Aug-14								
R2120		Reheat Spray Flow	09-Aug-14	10-Aug-14								
		SCR	09-Aug-14	10-Aug-14								
R2130	R2140	NH3 Slip NOx Removal Efficiency (522 lb/h NH3)	09-Aug-14 09-Aug-14	10-Aug-14 10-Aug-14								
R2150	R2160	SCR Pressure Drop NOx Removal Consumption (522 lb/h NH3)	09-Aug-14 09-Aug-14	10-Aug-14 10-Aug-14								
		Gas Emissions	09-Aug-14	10-Aug-14								
R2190		Max CO (3 hr rolling)	09-Aug-14	10-Aug-14								
		PGT2 at SGPL	10-Aug-14	11-Aug-14								
		Boiler	10-Aug-14	11-Aug-14								
R2200	R2210	Boiler Efficiency (Surrogate Test) Airheater Leakage	10-Aug-14 10-Aug-14	11-Aug-14 11-Aug-14								
R2220	R2230	Steam Temp at Superheat Outlet Steam Temp at Reheater Outlet	10-Aug-14 10-Aug-14	11-Aug-14 11-Aug-14								
R2240	R2250	Dust Emission Unburnt Carbon in Flyash (Isokinetic)	10-Aug-14 10-Aug-14	11-Aug-14 11-Aug-14								
R2270	R2280	Aux Power (Surrogate Test) Reheat Spray Flow	10-Aug-14 10-Aug-14	11-Aug-14 11-Aug-14								
		SCR	10-Aug-14	11-Aug-14								
R2290	R2300	NH3 Slip NOx Removal Efficiency (522 lb/h NH3)	10-Aug-14 10-Aug-14	11-Aug-14 11-Aug-14								
R2310	R2320	SCR Pressure Drop NOx Removal Consumption (522 lb/h NH3)	10-Aug-14 10-Aug-14	11-Aug-14 11-Aug-14								
		Gas Emissions	10-Aug-14	11-Aug-14								
R2350		Max CO (3 hr rolling)	10-Aug-14	11-Aug-14								
		PGT3 at SGPL (if required)	11-Aug-14	12-Aug-14								
		Boiler	11-Aug-14	12-Aug-14								
R2360	R2370	Boiler Efficiency (Surrogate Test) Airheater Leakage	11-Aug-14 11-Aug-14	12-Aug-14 12-Aug-14								
R2380	R2390	Steam Temp at Superheat Outlet Steam Temp at Reheater Outlet	11-Aug-14 11-Aug-14	12-Aug-14 12-Aug-14								
R2400	R2410	Dust Emission Unburnt Carbon in Flyash (Isokinetic)	11-Aug-14 11-Aug-14	12-Aug-14 12-Aug-14								
R2430	R2440	Aux Power (Surrogate Test) Reheat Spray Flow	11-Aug-14 11-Aug-14	12-Aug-14 12-Aug-14								
		SCR	11-Aug-14	12-Aug-14								
R2450	R2460	NH3 Slip NOx Removal Efficiency (522 lb/h NH3)	11-Aug-14 11-Aug-14	12-Aug-14 12-Aug-14								
R2470	R2480	SCR Pressure Drop NOx Removal Consumption (522 lb/h NH3)	11-Aug-14 11-Aug-14	12-Aug-14 12-Aug-14								
		Gas Emissions	11-Aug-14	12-Aug-14								

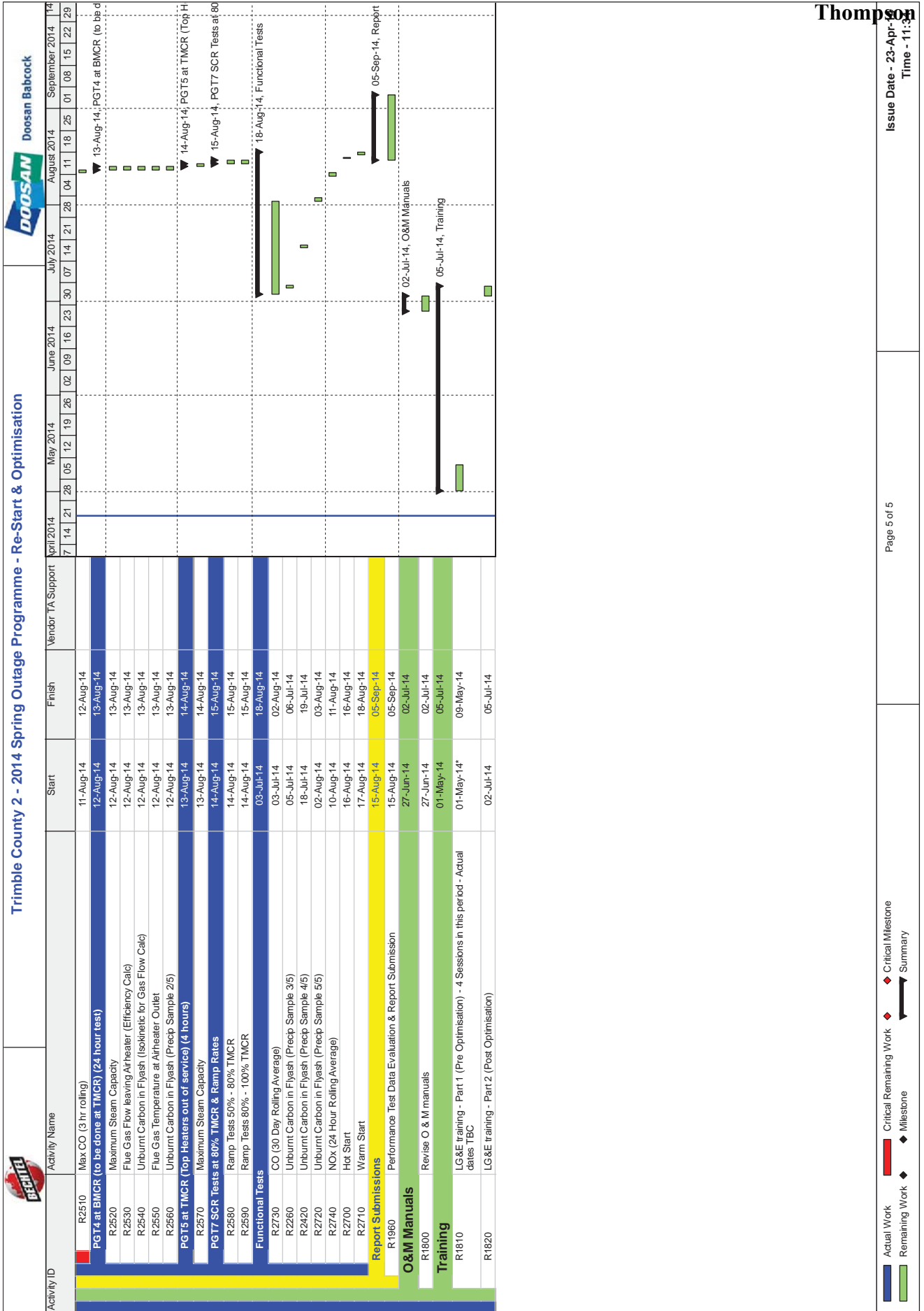


Trimble County 2 - 2014 Spring Outage Programme - Re-Start & Optimisation



Doosan Babcock





From: Whitehead, Karen A.(WhiteheadKA@bv.com)
To: Hussey, Ryan J.; Trimble, James T. (Tom); 'jalvey@impa.com'; 'JohnL@impa.com'; 'Childers@imea.org'; 'Thompson' 'kwagner@imea.org'; 'aschum@imea.org'; Slaughter, Mitch; Crutcher, Tom; Bowling, Ralph; Straight, Scott; Carlisle, Gary; Slack, Eric; Mohn, Laura; Dorwart, Jordan; Coghill, Joe; Thomas, Mark; Maldonado, Francisco; Gray, Jeffrey; Raker, Adam; Buckner, Mike; Byrd, Larry; Braun, Allen; 'MikeM@impa.com'; Joyce, Kenny; Turner, Haley; Craft, Jim; Dukes, Christopher; Rabe, Phil; Boone, James; Lively, Noel; Melloan, Ricky; Clifford, Troy; Fante, Kevin; Ganote, Gary; Hudson, Glen; Murphy, Wayne; Pickhart, Charlie; Shupe, David; Spalding, Jeff; Payne, Nicholas; Joyce, Jeff; Huguenard, Jim; Craven, David; Burkhardt, Terry; Barnes, Troy; Ransdell, Charles; Turner, Tyler; Henderson, Trent; Anderson, Dave (Trimble County); Allen, Ross; Powell, Richard; Richardson, Stephen; Roach, Sandra A; Martin, Charlie; Willbur, Mickey; Sparks, Patrick
CC:
BCC:
Subject: RE: TC2 Start Up and Commissioning Meeting Notes 7/3/2014
Sent: 07/03/2014 08:42:12 AM -0400 (EDT)
Attachments: NOx-NH3 Daily Data.xlsx; Copy of 2nd July '14 Copy of Outage List - 29th June '14 to 4th July '14....xlsx;

All,

TC2 Unit Status as of approximately 8:00 am:

- The Unit is offline – forced outage
- Water has gotten into the EHC system, so a flush of the system needs to be performed before the unit can come back online.
- As of this morning, it is estimated that the unit will be down until at least Saturday (7/5) or Sunday (7/6). The oil guns will be “tested” when the unit comes back online during the cold start. Individual oil gun firing prior to startup is not going to occur.
- Since D mill has been offline for more than a week, LG&E-KU is in process of emptying out the bunker due to fire concerns. At this time the determination has not been made to empty the other bunkers since startup is anticipated soon. During this process the D mill feeder belt has broken and will be repaired.

Activities Planned:

- Online testing unable to continue until the unit is back on.
- There will be a meeting this afternoon to discuss recommended oil gun testing procedure during startup (items 2 and 25). Both Coen and Forney are on-site today.
- Doosan has generated a list of activities to be completed during the outage. Summary notes follow for today’s activities discussed:
 - Item 1 – insulation of burner front area to reduce temperatures will be completed today
 - Item 10 – Doosan to repair and refit Cegrit assemblies to be completed today
 - Item 15 – OFA port rods will be painted today
 - Item 19 – Cold position readings on burner deck access ladders to be finished tonight
 - Item 27 – Review outage impacts to testing program to be completed today
 - Item 34 – Test and check SCR sonic horns to be performed today

Discussion Items:

- Completed outage activities from Doosan’s list are noted with highlights in the attachment.
- Remaining activities should be considered on-going
- Yesterday the reheat boiler dampers were inspected. It was discovered that an inspection plate had dislodged and damaged the damper.
- Coen and Forney are on site today to discuss startup and oil gun testing.

Attached is Doosan’s mini-outage work scope. Also attached is the daily NO_x-NH₃ report from 6/29; there are no updates today since the unit is down.

Please let me know if you have any questions.

Regards,

Karen Whitehead, P.E.* | Mechanical Engineer, Steam Generation Section, Energy Division

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Produced as Native

Original File Name: Copy of 2nd July '14 Copy of Outage List - 29th June '14 to 4th July '14....xlsx

Stored File Name: OpenText00049856.xlsx

From: Whitehead, Karen A.(WhiteheadKA@bv.com)
To: Hussey, Ryan J.; Trimble, James T. (Tom); 'jalvey@impa.com'; 'JohnL@impa.com'; 'Childers@imea.org', 'Thompson', 'kwagner@imea.org'; 'aschum@imea.org'; Slaughter, Mitch; Crutcher, Tom; Bowling, Ralph; Straight, Scott; Carlisle, Gary; Slack, Eric; Mohn, Laura; Dorwart, Jordan; Coghill, Joe; Thomas, Mark; Maldonado, Francisco; Gray, Jeffrey; Raker, Adam; Buckner, Mike; Byrd, Larry; Braun, Allen; 'MikeM@impa.com'; Joyce, Kenny; Turner, Haley; Craft, Jim; Dukes, Christopher; Rabe, Phil; Boone, James; Lively, Noel; Melloan, Ricky; Clifford, Troy; Fante, Kevin; Ganote, Gary; Hudson, Glen; Murphy, Wayne; Pickhart, Charlie; Shupe, David; Spalding, Jeff; Payne, Nicholas; Joyce, Jeff; Huguenard, Jim; Craven, David; Burkhardt, Terry; Barnes, Troy; Ransdell, Charles; Turner, Tyler; Henderson, Trent; Anderson, Dave (Trimble County); Allen, Ross; Powell, Richard; Richardson, Stephen; Roach, Sandra A; Martin, Charlie; Willbur, Mickey; Sparks, Patrick

CC:
BCC:
Subject: TC2 Start Up and Commissioning Meeting Notes 7/1/2014
Sent: 07/01/2014 09:00:53 AM -0400 (EDT)
Attachments: NOx-NH3 Daily Data.xlsx; 07292 TC2 Copy of Outage List - 29th June '14 to 4th July '14.xlsx;

All,

TC2 Unit Status as of approximately 8:00 am:

- The Unit is offline – forced outage
- Water has gotten into the EHC system, so a flush of the system needs to be performed before the unit can come back online.
- As of this morning, it is estimated that the unit will be down until at least Friday (7/4) or Saturday (7/5). There is a possibility that some oil firing could be done on 7/3 to test the oil guns and scanners, to be investigated by LG&E-KU.

Activities Planned:

- Online testing unable to continue until the unit is back on.
- Doosan has generated a list of activities to be completed during the outage. Summary notes follow for today's activities:
 - Item 2 – Doosan is in discussions with Coen and will issue a revised 5 pair oil gun tip testing program targeted today or tomorrow
 - Item 5 -- logic updates list to be provided today.
 - Item 13 – Complete OFA damper bearing and test point insulation, targeted for today
 - Item 15 – OFA port rod adjustments to be finished today
 - Item 16 – complete fitting PA/SA test probes, scaffolding, to be complete today
 - Item 19 – Cold position readings on burner deck access ladders to be reconfirmed today
 - Item 21 – the boiler access doors are open for viewing the burner throats today

Discussion Items:

- Doosan has completed the following activities in the outage list:
 - Item 6 – verification of PF D3 and D4 thermocouple wiring
 - Item 8 - reconcile and test flame scanners to check for faults
 - Item 9 – investigate A3, B4, and C3 oil scanners
 - Item 11 – Set mills A, B, D, and F core air damper min closed stops (although it was noted that A south needs to be repaired. Once the parts have come in, this will be complete)
 - Item 12 – Install permanent mill orifice plates. Doosan to issue a record copy of the orifice details for each pipe in the O&M manual
 - Item 17 - survey of GAH piping and supports
 - Item 18 - Survey of F row PF lines
 - Item 26 – Storm and FERCo are demobilized
- Remaining activities should be considered on-going
- LG&E-KU to look into one of the HP spray thermocouples. It was noted that it is reading about 40F lower than it should.
- It was noted that the stack CO will be used for upcoming combustion verification testing, rather than the SCR inlet CO.
- LG&E-KU is installing a permanent boiler instrument grid, to be commissioned the week of 7/14. This will allow some comparison of the FERCo traverse results.
- Doosan plans to bring Coen and Forney onsite for oil gun and scanner testing, tentatively scheduled for 7/3. The new crossover duct pressures for control of the core air dampers will be determined following testing.
- Opening up the air heater access doors to view the top GAH baskets is also being considered since upstream limestone injection has been occurring for a short time.

Attached is Doosan's mini-outage work scope. Also attached is the daily NO_x-NH₃ report from 6/29; there are no updates today since the unit is down.

Please let me know if you have any questions.

Regards,

Karen Whitehead, P.E.* | Mechanical Engineer, Steam Generation Section, Energy Division

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Produced as Native

Original File Name: 07292 TC2 Copy of Outage List - 29th June '14 to 4th July '14.xlsx

Stored File Name: OpenText00049889.xlsx

From: Whitehead, Karen A.(WhiteheadKA@bv.com)
To: Hussey, Ryan J.; Trimble, James T. (Tom); 'jalvey@impa.com'; 'JohnL@impa.com'; 'Childers@imea.org', 'Thompson', 'kwagner@imea.org'; 'aschum@imea.org'; Slaughter, Mitch; Crutcher, Tom; Bowling, Ralph; Straight, Scott; Carlisle, Gary; Slack, Eric; Mohn, Laura; Dorwart, Jordan; Coghill, Joe; Thomas, Mark; Maldonado, Francisco; Gray, Jeffrey; Raker, Adam; Buckner, Mike; Byrd, Larry; Braun, Allen; 'MikeM@impa.com'; Joyce, Kenny; Turner, Haley; Craft, Jim; Dukes, Christopher; Rabe, Phil; Boone, James; Lively, Noel; Melloan, Ricky; Clifford, Troy; Fante, Kevin; Ganote, Gary; Hudson, Glen; Murphy, Wayne; Pickhart, Charlie; Shupe, David; Spalding, Jeff; Payne, Nicholas; Joyce, Jeff; Huguenard, Jim; Craven, David; Burkhardt, Terry; Barnes, Troy; Ransdell, Charles; Turner, Tyler; Henderson, Trent; Anderson, Dave (Trimble County); Allen, Ross; Powell, Richard; Richardson, Stephen; Roach, Sandra A; Martin, Charlie; Willbur, Mickey; Sparks, Patrick
CC:
BCC:
Subject: TC2 Start Up and Commissioning Meeting Notes 7/2/2014
Sent: 07/02/2014 09:35:18 AM -0400 (EDT)
Attachments: 1st July '14 Copy of Outage List - 29th June '14 to 4th July '14.xlsx; NOx-NH3 Daily Data.xlsx;

All,

TC2 Unit Status as of approximately 8:00 am:

- The Unit is offline – forced outage
- Water has gotten into the EHC system, so a flush of the system needs to be performed before the unit can come back online.
- As of this morning, it is estimated that the unit will be down until at least Sunday (7/6) or Monday (7/7). The oil guns will be “tested” when the unit comes back online during the cold start. Individual oil gun firing prior to startup is not going to occur.

Activities Planned:

- Online testing unable to continue until the unit is back on.
- There will be a meeting this afternoon to discuss recommended logic changes to the optimum damper position and enthalpy f(x) set points (item 5 on Doosan’s activity list)
- Doosan has generated a list of activities to be completed during the outage. Summary notes follow for today’s activities discussed:
 - Item 2 – Doosan is in discussions with Coen and will issue a revised 5 pair oil gun tip testing program targeted today or tomorrow
 - Item 5 -- logic updates list issued and to be reviewed with LG&E-KU later today
 - Item 10 – Repair and refitting Cegrit assemblies to be resolved today
 - Item 14 – new valves on the condensate pots for the GAH sootblower steam supply to be done today
 - Item 19 – Cold position readings on burner deck access ladders to be finished tonight
 - Item 25 – Doosan to issue preliminary copy of the revised burner test program this morning.
 - Item 29 – Cleaning of the burner decks from previous PF leaks to be completed today
 - Item 32 – Modification of purge air pipe on A1 burner due to clash with PF pipe support targeted for completion today
 - Item 36 – LG&E-KU to check an HP spray thermocouple previously reading 40 F low.

Discussion Items:

- Completed outage activities from Doosan’s list are noted with highlights in the attachment.
- Remaining activities should be considered on-going
- Doosan plans to bring Coen and Forney onsite for oil gun and scanner testing, tentatively scheduled for 7/6. The new crossover duct pressures for control of the core air dampers will be determined following testing.
- Doosan to advise on the planned duration for “testing” of the oil guns during the unit startup.
- Yesterday Doosan, Bechtel, and LG&E-KU were able to view the boiler walls and burners through observation ports. Burner throats looked to be clear of slag. The OFA ports showed some slag.
- Air heater baskets looked to be mostly clear with some larger particles caught on the top of the baskets
- There was discussion for a potential inspection of the OFA secondary air duct to determine the source of a hot spot located previously.

Attached is Doosan’s mini-outage work scope. Also attached is the daily NO_x-NH₃ report from 6/29; there are no updates today since the unit is down.

Please let me know if you have any questions.

Regards,

Karen Whitehead, P.E.* | Mechanical Engineer, Steam Generation Section, Energy Division
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Produced as Native

Original File Name: 1st July '14 Copy of Outage List - 29th June '14 to 4th July '14.xlsx

Stored File Name: OpenText00049892.xlsx

From: Whitehead, Karen A.(WhiteheadKA@bv.com)
To: Hussey, Ryan J.; Trimble, James T. (Tom); 'jalvey@impa.com'; 'JohnL@impa.com'; 'Childers@imea.org'; 'Thompson', 'kwagner@imea.org'; 'aschum@imea.org'; Slaughter, Mitch; Crutcher, Tom; Bowling, Ralph; Straight, Scott; Carlisle, Gary; Slack, Eric; Mohn, Laura; Dorwart, Jordan; Coghill, Joe; Thomas, Mark; Maldonado, Francisco; Gray, Jeffrey; Raker, Adam; Buckner, Mike; Byrd, Larry; Braun, Allen; 'MikeM@impa.com'; Joyce, Kenny; Turner, Haley; Craft, Jim; Dukes, Christopher; Rabe, Phil; Boone, James; Lively, Noel; Melloan, Ricky; Clifford, Troy; Fante, Kevin; Ganote, Gary; Hudson, Glen; Murphy, Wayne; Pickhart, Charlie; Shupe, David; Spalding, Jeff; Payne, Nicholas; Joyce, Jeff; Huguenard, Jim; Craven, David; Burkhardt, Terry; Barnes, Troy; Ransdell, Charles; Turner, Tyler; Henderson, Trent; Anderson, Dave (Trimble County); Allen, Ross; Powell, Richard; Richardson, Stephen; Roach, Sandra A; Martin, Charlie; Willbur, Mickey; Sparks, Patrick
CC:
BCC:
Subject: TC2 Start Up and Commissioning Meeting Notes 7/4/2014
Sent: 07/04/2014 08:31:14 AM -0400 (EDT)
Attachments: 3rd July 14 Copy of Outage List - 29th June '14 to 4th July '14.xlsx; NOx-NH3 Daily Data.xlsx;

All,

TC2 Unit Status as of approximately 8:00 am:

- The Unit is offline – forced outage
- Water has gotten into the EHC system, so a flush of the system needs to be performed before the unit can come back online.
- As of this morning, it is estimated that the unit will be down until at least Sunday (7/6) evening. The oil guns will be tested when the unit comes back online during the cold start. Individual oil gun firing prior to startup is not going to occur.

Activities Planned:

- Online testing unable to continue until the unit is back on.
- Revised oil gun test / startup procedure to be issued by Doosan today or tomorrow. Both Coen and Forney will be on site for startup.
- Refer to the attached outage plan for a list of activities to be completed today
- All Doosan carded items will be completed and turned in today

Discussion Items:

- Completed outage activities from Doosan's list are noted with highlights in the attachment.
- Remaining activities should be considered on-going. Note that many of the activities still open can be completed once the unit is back online.

Attached is Doosan's mini-outage work scope. Also attached is the daily NO_x-NH₃ report from 6/29; there are no updates today since the unit is down.

Please let me know if you have any questions.

Regards,

Karen Whitehead, P.E.* | Mechanical Engineer, Steam Generation Section, Energy Division

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Original File Name: 3rd July 14 Copy of Outage List - 29th June '14 to 4th July '14.xlsx

Stored File Name: OpenText00049895.xlsx

From: Whitehead, Karen A.(WhiteheadKA@bv.com)
To: Hussey, Ryan J.; Trimble, James T. (Tom); 'jalvey@impa.com'; 'JohnL@impa.com'; 'Childers@imea.org'; 'Thompson' 'kwagner@imea.org'; 'aschum@imea.org'; Slaughter, Mitch; Crutcher, Tom; Bowling, Ralph; Straight, Scott; Carlisle, Gary; Slack, Eric; Mohn, Laura; Dorwart, Jordan; Coghill, Joe; Thomas, Mark; Maldonado, Francisco; Gray, Jeffrey; Raker, Adam; Buckner, Mike; Byrd, Larry; Braun, Allen; 'MikeM@impa.com'; Joyce, Kenny; Turner, Haley; Craft, Jim; Dukes, Christopher; Rabe, Phil; Boone, James; Lively, Noel; Melloan, Ricky; Clifford, Troy; Fante, Kevin; Ganote, Gary; Hudson, Glen; Murphy, Wayne; Pickhart, Charlie; Shupe, David; Spalding, Jeff; Payne, Nicholas; Joyce, Jeff; Huguenard, Jim; Craven, David; Burkhardt, Terry; Barnes, Troy; Ransdell, Charles; Turner, Tyler; Henderson, Trent; Anderson, Dave (Trimble County); Allen, Ross; Powell, Richard; Richardson, Stephen; Roach, Sandra A; Martin, Charlie; Willbur, Mickey; Sparks, Patrick
CC:
BCC:
Subject: TC2 Start Up and Commissioning Meeting Notes 7/7/2014
Sent: 07/07/2014 08:08:29 AM -0400 (EDT)
Attachments: NOx-NH3 Daily Data.xlsx; 4th July 14 Copy of Outage List - 29th June '14 to 4th July '14 (3).xlsx;

All,

TC2 Unit Status as of approximately 8:00 am:

- The Unit is offline – forced outage
- The EHC system continues to experience problems during pre-startup functional testing. It is expected the system will be reassembled late today.
- As of this morning, it is estimated that the unit will be down until at least Tuesday (7/8).

Activities Planned:

- Online testing unable to continue until the unit is back on.
- Coen, Forney, and Emerson are currently on site and will be present for unit startup.
- Doosan plans to finish up remaining outage punch list items today
- There will be a meeting this afternoon to discuss the combustion optimization procedure.

Discussion Items:

- The oil guns will be tested when the unit comes back online during the cold start. Individual oil gun firing prior to startup is not going to occur. A revised oil gun test procedure has been provided.
- Completed outage activities from Doosan's list are noted with highlights in the attachment.
- The reheat gas biasing damper has been repaired. It was discovered last week that the nearby observation door had interfered with damper movement leading to a side-to-side reheat temperature imbalance. It is expected that the temperature imbalance will improve when the unit is back online.

Attached is the most recent version of Doosan's mini-outage work scope. Also attached is the daily NO_x-NH₃ report from 6/29; there are no updates today since the unit is down.

Please let me know if you have any questions.

Regards,

Karen Whitehead, P.E.* | Mechanical Engineer, Steam Generation Section, Energy Division

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Original File Name: 4th July 14 Copy of Outage List - 29th June '14 to 4th July '14 (3).xlsx

Stored File Name: OpenText00049898.xlsx

From: Whitehead, Karen A.(WhiteheadKA@bv.com)
To: Hussey, Ryan J.; Trimble, James T. (Tom); 'jalvey@impa.com'; 'JohnL@impa.com'; 'Childers@imea.org'; 'Thompson', 'kwagner@imea.org'; 'aschum@imea.org'; Slaughter, Mitch; Crutcher, Tom; Bowling, Ralph; Straight, Scott; Carlisle, Gary; Slack, Eric; Mohn, Laura; Dorwart, Jordan; Coghill, Joe; Thomas, Mark; Maldonado, Francisco; Gray, Jeffrey; Raker, Adam; Buckner, Mike; Byrd, Larry; Braun, Allen; 'MikeM@impa.com'; Joyce, Kenny; Turner, Haley; Craft, Jim; Dukes, Christopher; Rabe, Phil; Boone, James; Lively, Noel; Melloan, Ricky; Clifford, Troy; Fante, Kevin; Ganote, Gary; Hudson, Glen; Murphy, Wayne; Pickhart, Charlie; Shupe, David; Spalding, Jeff; Payne, Nicholas; Joyce, Jeff; Huguenard, Jim; Craven, David; Burkhardt, Terry; Barnes, Troy; Ransdell, Charles; Turner, Tyler; Henderson, Trent; Anderson, Dave (Trimble County); Allen, Ross; Powell, Richard; Richardson, Stephen; Roach, Sandra A; Martin, Charlie; Willbur, Mickey; Sparks, Patrick
CC:
BCC:
Subject: TC2 Start Up and Commissioning Meeting Notes 7/8/2014
Sent: 07/08/2014 08:03:48 AM -0400 (EDT)
Attachments: NOx-NH3 Daily Data.xlsx; 4th July 14 Copy of Outage List - 29th June '14 to 4th July '14 (3).xlsx;

All,

TC2 Unit Status as of approximately 8:00 am:

- The Unit is offline – forced outage
- The EHC system continues to experience problems during pre-startup functional testing. LG&E-KU is investigating the source of the EHC system contamination and debris. There will be an updated forecast later this morning.
- As of this morning, it is estimated that the unit will be down until at least Thursday (7/10).

Activities Planned:

- Online testing unable to continue until the unit is back on.
- Coen, Forney, and Emerson are currently on site and will be present for unit startup.
- Doosan plans to finish up remaining outage punch list items today

Discussion Items:

- The oil guns will be tested when the unit comes back online during the cold start. Individual oil gun firing prior to startup is not going to occur. A revised oil gun test procedure has been provided.
- Completed outage activities from Doosan's list are noted with highlights in the attachment.
- Doosan and LG&E-KU are investigating modifications to the mill seal air fan motors to stop "windmilling" while the mill is offline. Anti-rotation bearings are one potential solution under consideration.
- There was a meeting yesterday to discuss the D-NOx optimization plan. Doosan is implementing revisions based on comments received.

Attached is the most recent version of Doosan's mini-outage work scope. Also attached is the daily NO_x-NH₃ report from 6/29; there are no updates today since the unit is down.

Please let me know if you have any questions.

Regards,

Karen Whitehead, P.E.* | Mechanical Engineer, Steam Generation Section, Energy Division

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Original File Name: 4th July 14 Copy of Outage List - 29th June '14 to 4th July '14 (3).xlsx

Stored File Name: OpenText00049901.xlsx

From: Whitehead, Karen A.(WhiteheadKA@bv.com)
To: Hussey, Ryan J.; Trimble, James T. (Tom); 'jalvey@impa.com'; 'JohnL@impa.com'; 'Childers@imea.org', 'Thompson', 'kwagner@imea.org'; 'aschum@imea.org'; Slaughter, Mitch; Crutcher, Tom; Bowling, Ralph; Straight, Scott; Carlisle, Gary; Slack, Eric; Mohn, Laura; Dorwart, Jordan; Coghill, Joe; Thomas, Mark; Maldonado, Francisco; Gray, Jeffrey; Raker, Adam; Buckner, Mike; Byrd, Larry; Braun, Allen; 'MikeM@impa.com'; Joyce, Kenny; Turner, Haley; Craft, Jim; Dukes, Christopher; Rabe, Phil; Boone, James; Lively, Noel; Melloan, Ricky; Clifford, Troy; Fante, Kevin; Ganote, Gary; Hudson, Glen; Murphy, Wayne; Pickhart, Charlie; Shupe, David; Spalding, Jeff; Payne, Nicholas; Joyce, Jeff; Huguenard, Jim; Craven, David; Burkhardt, Terry; Barnes, Troy; Ransdell, Charles; Turner, Tyler; Henderson, Trent; Anderson, Dave (Trimble County); Allen, Ross; Powell, Richard; Richardson, Stephen; Roach, Sandra A; Martin, Charlie; Willbur, Mickey; Sparks, Patrick
CC:
BCC:
Subject: TC2 Start Up and Commissioning Meeting Notes 7/9/2014
Sent: 07/09/2014 11:34:42 AM -0400 (EDT)
Attachments: NOx-NH3 Daily Data.xlsx; 4th July 14 Copy of Outage List - 29th June '14 to 4th July '14 (3).xlsx;

All,

TC2 Unit Status as of approximately 9:00 am:

- The Unit is offline – forced outage
- The EHC system and valves have been cleaned and are being reassembled. There will be testing later today to determine whether the EHC fluid contamination is low enough to proceed with startup as well as functional testing.
- As of this morning, it is estimated that the unit will be down until at least Friday (7/11).

Activities Planned:

- Online testing unable to continue until the unit is back on.
- Coen, Forney, and Emerson are currently on site and will be present for unit startup.
- Doosan plans to finish up remaining outage punch list items today

Discussion Items:

- The oil guns will be tested when the unit comes back online during the cold start. Individual oil gun firing prior to startup is not going to occur. A revised oil gun test procedure has been provided.
- Completed outage activities from Doosan's list are noted with highlights in the attachment.

Attached is the most recent version of Doosan's mini-outage work scope. Also attached is the daily NO_x-NH₃ report from 6/29; there are no updates today since the unit is down.

Please let me know if you have any questions.

Regards,

Karen Whitehead, P.E.* | Mechanical Engineer, Steam Generation Section, Energy Division

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Original File Name: 4th July 14 Copy of Outage List - 29th June '14 to 4th July '14 (3).xlsx

Stored File Name: OpenText00049904.xlsx

From: Hussey, Ryan J.(HusseyRJ@bv.com)

To: Whitehead, Karen A.; Trimble, James T. (Tom); 'jalvey@impa.com'; 'JohnL@impa.com'; 'Childers@imea.org'; 'kwagner@imea.org'; 'aschum@imea.org'; Slaughter, Mitch; Crutcher, Tom; Bowling, Ralph; Straight, Scott; Carlisle, Gary; Slack, Eric; Mohn, Laura; Dorwart, Jordan; Coghill, Joe; Thomas, Mark; Maldonado, Francisco; Gray, Jeffrey; Raker, Adam; Buckner, Mike; Byrd, Larry; Braun, Allen; 'MikeM@impa.com'; Joyce, Kenny; Turner, Haley; Craft, Jim; Dukes, Christopher; Rabe, Phil; Boone, James; Lively, Noel; Melloan, Ricky; Clifford, Troy; Fante, Kevin; Ganote, Gary; Hudson, Glen; Murphy, Wayne; Pickhart, Charlie; Shupe, David; Spalding, Jeff; Payne, Nicholas; Joyce, Jeff; Huguenard, Jim; Craven, David; Burkhardt, Terry; Barnes, Troy; Ransdell, Charles; Turner, Tyler; Henderson, Trent; Anderson, Dave (Trimble County); Allen, Ross; Powell, Richard; Richardson, Stephen; Roach, Sandra A; Martin, Charlie; Willbur, Mickey; Sparks, Patrick

CC:

BCC:

Subject: TC2 Start Up and Commissioning Meeting Notes 7/18/2014

Sent: 07/18/2014 10:04:57 AM -0400 (EDT)

Attachments: TC2 Restart - 3 Day Programme 17th July 2014.pdf; NOx-NH3 Daily Data.xlsx;

All,

TC2 Unit Status as of 9:30 AM:

- Unit load at 670 MW(gross). Load reduced due to 3- and 4-FWHs out of service.
- Main steam temperature/pressure, 1,073 F/3,214 psig, HRH temperature, 1,065° F.
- Mills A, B, D, E and F are online. Mill changeover from C- to B-Mill early this morning.
- O₂ bias is at 0.75. A and B Side O₂ at 3.8 and 4.0 percent, respectively.
- The crossover duct pressure is at 4.8 inH₂O.

Activities Planned:

- Revise K-factors in DSC.
- Individual TSO damper movements and FERCO grid analysis.
- Fuel oil system recirculation valve operation and header pressure testing.

Discussion Items:

- Fuel oil gun light off testing and troubleshooting continued yesterday with positive results. Adjustments were made and a common HESI set position and fuel oil gun tip alignment has been identified for 29 of the 30 burner. Burner A1 fuel oil gun light off is still intermittent and will be investigated further.
- It was noted by LG&E-KU that excessive fuel oil header pressure drops were experienced Tuesday when brining in B-Mill. According to Doosan, the first and second fuel oil guns were lit off very close to one another (at nearly the same time) without allowing for sufficient time between light offs for the fuel oil head pressure to recover and stabilize.
- Fuel oil head pressure testing was also conducted as part of the fuel oil light of testing and trouble shooting. Doosan lit the fuel oil guns locally, moving from one gun to the next until all five fuel oil guns on a burner level were lit. No significant fuel oil header pressure drops were experienced.
- Fuel oil header pressure fluctuations due to the fuel oil system recirculation valve were discussed. When 5+ to around 8 fuel oil guns are lit, header pressure instability is experienced. When flow gets beyond minimum recirculation with more guns in service, the issue goes away. Doosan is planning to conduct a test with additional fuel oil guns in service and monitor the fuel oil recirculation valve operation and header pressure. Test is planned for the evening shift.
- New fuel oil gun fuel oil and atomizing air gaskets are on-site. Coen will be installing several to test them out. If they check out ok, the gaskets will be installed on all 30 burners.
- Faulty fuel oil gun purge air valves were further discussed. LG&E-KU notes that several of the faulty purge air valves, as identified by Doosan, had rebuild kits installed over the last outage. Fully seating of the purge air valves has been an ongoing issue.
- 6/19/2014 meeting notes listed several discussed solutions to the fuel oil purge air valve problems. Today, it was also noted that purge air piping alignment to the valve may be an issues when in the hot position. It was noted that when some of the valve flanges were unbolted, excessive pipe movement occurred and when re-installing the purge air valve after rebuild, piping had to be pried back into position. This stress that the piping may be inducing on the valve may also be attributing to the issue. LG&E-KU is looking at disconnecting the supports to "free up" the valve and piping to see what affect it may have on the valve. Burner D2 was identified as a possible test which had a new kit installed recently but is still experiencing issues.
- LG&E-KU noted that they do have in stock a new purge air valve assembly with a higher torque actuator. Although, the new assembly does not share the same dimensions and piping modifications will be required to get one installed. No date has been set to install and test one.
- Today Doosan has requested DSC support to make modifications to the current K-factors.
- The six mill test was conducted Tuesday. As part of the test, the original K-factors were updated to balance the RDLs for the burner rows and OFA wind boxes. Based on discussions, Doosan will revise the OFA K-factors to the previous K-factors. All SA K-factors will remain unchanged.
- Preliminary results for the new K-factors have been issued. The results will not be finalized unit analyses for coal and ash samples sent to SGS are received.

Attachment to Response to KIUC-1 Question No. 30(f)

Production 2

Page 156 of 1143

Thompson

- Today Doosan will begin adjusting individual burner TSO dampers and assessing movements with FERC grid sampling. When conducted, individual TSO dampers will be moved out in five percent increments up to 70 percent. Currently, all TSO dampers are set at 50 percent when in the firing position.
- 3- and 4- FWH air testing was conducted yesterday. No leaks were found in 3-FWH. A leak in 4-FWH was identified resulting from loose header bolts. The bolts will be torqued. Both FWHs will be buttoned up and returned to service today. LG&E-KU expects TC2 to return to full load later this afternoon.

Attached is the current revision of the 3 Day Forward Plan. Also attached is the daily NO_x-NH₃ report.

Please let me know if you have any questions or comments.

Thank you,

Ryan Hussey | Power Generation Services

Black & Veatch Corporation | 11401 Lamar Avenue, Overland Park, KS 66211

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CC:
BCC:
Subject: TC2 Start Up and Commissioning Meeting Notes 7/24/2014
Sent: 07/24/2014 09:23:25 AM -0400 (EDT)
Attachments:

All,

TC2 Unit Status:

- TC2 is in a forced outage.

Today's Activities Planned:

- No testing activities planned due to the forced outage.

Discussion Items:

- Yesterday, TC2 tripped at 1:20 PM. LG&E-KU is anticipating to return the unit to service later today though several issues need to be further investigated / corrected.
- Testing activities for yesterday focused on OFA air biasing. A baseline FERCO grid was completed in the morning. A +5 percent bias was implemented for the front wall OFA ports with all other settings remaining the same as those that closed out the day before. Settings in place are as follows:
 - O₂ bias at 0.00.
 - Stoichiometry 0.91.
 - A Side (column 1) TSOs at 100 percent.
 - B Side (column 5) TSOs at 100 percent.
 - Center (column 3) TSOs at 35 percent.
 - Column 2 and 4 TSOs at 40 percent.
 - 5+ percent bias on front wall OFA ports.
- With the forced outage, Doosan will be further reviewing prior days Burner Optimization test results.
- Logic changes to correct the O₂ dip during unit ramp were discussed. Doosan has two proposed logic changes. LG&E-KU needs to further review recommended changes before deciding on the direction taken.
- Additional fuel oil gun test tips are proposed by Coen and may be available in the next couple of days. Depending on how long the force outage continues, cold start-up testing of the tips may be possible.
- A FERCO grid for SCR outlet NO_x was taken several days ago. Doosan has provided results to their engineering office for assessment.
- Doosan has asked LG&E-KU to confirm the GAH steam soot blower supply pressure.

Due to the force outage, there are no updates to the 3 Day Forward Plan or the daily NO_x-NH₃ report.

Please let me know if you have any questions or comments.

Thank you,

Ryan Hussey | Power Generation Services

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To: Owens, David; Whitehead, Karen A.; Trimble, James T. (Tom); 'jalvey@impa.com'; 'JohnL@impa.com'; 'Childers@imea.org'; 'kwagner@imea.org'; 'aschum@imea.org'; Slaughter, Mitch; Crutcher, Tom; Bowling, Ralph; Straight, Scott; Carlisle, Gary; Slack, Eric; Mohn, Laura; Dorwart, Jordan; Coghill, Joe; Thomas, Mark; Maldonado, Francisco; Gray, Jeffrey; Raker, Adam; Buckner, Mike; Byrd, Larry; Braun, Allen; 'MikeM@impa.com'; Joyce, Kenny; Turner, Haley; Craft, Jim; Dukes, Christopher; Rabe, Phil; Boone, James; Lively, Noel; Melloan, Ricky; Clifford, Troy; Fante, Kevin; Ganote, Gary; Hudson, Glen; Murphy, Wayne; Pickhart, Charlie; Shupe, David; Spalding, Jeff; Payne, Nicholas; Joyce, Jeff; Huguenard, Jim; Craven, David; Burkhardt, Terry; Barnes, Troy; Ransdell, Charles; Turner, Tyler; Henderson, Trent; Anderson, Dave (Trimble County); Allen, Ross; Powell, Richard; Richardson, Stephen; Roach, Sandra A; Martin, Charlie; Willbur, Mickey; Sparks, Patrick
CC:
BCC:
Subject: TC2 Start Up and Commissioning Meeting Notes 7/25/2014
Sent: 07/25/2014 09:10:53 AM -0400 (EDT)
Attachments:

All,

TC2 Unit Status:

- TC2 is coming back on-line from the forced outage.

Today's Activities Planned:

- Continue with the Burner Optimization Plan.

Discussion Items:

- Re-start of TC2 from a warm start began this morning. It is expected that the unit will be back on-line at full load later this afternoon.
- Depending on when TC2 returns to full load and LG&E-KU gives the go ahead, Doosan will continue with OFA Port Secondary Air Tuning (Phase 6 Burner Optimization Plan).
- Two new logic schemes have been loaded to resolve the O₂ dip when brining on additional mills to increase unit load (typically 4 to 5 mills). New logic was simulated but has not been live tested. The new logic will be tested as the opportunity to do so present itself. Other potential options are being disused.
- Logic changes to raise the lower end of the cross over duct pressure f(x) curve have been implemented.
- The mill fineness speed curve has been updated by Doosan and has been implemented in the logic. Doosan indicates that the mill speed selection can now be run in auto.
- When the unit tripped Wednesday, the following setting were in place:
 - O₂ bias at 0.00.
 - Stoichiometry 0.91.
 - A Side (column 1) TSOs at 100 percent.
 - B Side (column 5) TSOs at 100 percent.
 - Center (column 3) TSOs at 35 percent.
 - Column 2 and 4 TSOs at 40 percent.
 - 5+ percent bias on front wall OFA ports.
- The front to rear OFA bias has been set back to 0.
- Other outstanding items noted include the GAH steam supply pressure verification and Doosan's assessment of the SCR outlet NO_x FERCO distribution data.

Due to the force outage, there are no updates to the 3 Day Forward Plan or the daily NO_x-NH₃ report.

Please let me know if you have any questions or comments.

Thank you,

Ryan Hussey | Power Generation Services

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To: Arnold, Gerald; Buckner, Mike; Crutcher, Tom; Didelot, Joe; Edelen, Jim; Harper, Travis; Hensley, Mike; Lockett, Dave; Rabe, Phil
CC:
BCC:
Subject: Ops & Maint Mgr Mtg Minutes 7-17-14
Sent: 08/07/2014 10:53:25 AM -0400 (EDT)
Attachments: CR Notes For Ops-Maint July 2014.docx;

<<CR Notes For Ops-Maint July 2014.docx>>

July 17, 2014

Notes for Ops/Maintenance Manager Meeting at Cane Run

Safety

Doug Chin:

- Monthly metric review
- Business Partner Safety Audits are on-going and will continue throughout the year. Ghent is currently in an audit. Mike Drake suggested having safety committee members escort the third party on the audits.
- Audits will include a “top ten” list that will be shared with the plants. PE opted out of the offer.
- Mike B mentioned the KPSC is requiring a standardized tailgate with Operations within first hour of the shift to review and document production and safety issues. More to come on this issue as Doug and Mike gain more insights into the requirement.

TC:

- On 6/5, an employee had his foot go into a hole around the 1B TDBFP RH Spray line where it penetrated the floor. Employee experience a leg scrape with minor swelling.
- On 6/18, a contracted employee was removing hose from back of a truck and felt a sting on his forearm. Suspect an insect bite.
- On 6/21, a contracted warehouse employee moving a large pipe hanger located on a pallet had his fingers when the rod moved.
- On 5/27, a contracted employee twisted his ankle while walking on uneven pavement.

CR:

- **(Contractor Recordable)** - On June 12, 2014, an Evans contractor was attempting to secure a box of sweeping compound on a pallet when the box shifted and caused a contusion of his left thigh and knee. He was taken to the doctor and was given restrictions.
- **(First Report)** - On June 23, 2014, an LG&E Employee was performing a 5C Mill inspection and was in the process of closing it up for production. The employee then placed a fan back in its original location to blow on the exhaust bearing which helps control the bearing temperature and as he turned it on, some dirt / foreign object blew up into his right eye. Employee was wearing his safety glasses. First Aid was performed on the employee by the company's ERT personnel. No further action was needed.
- **(First Report)** - On July 3, 2014, an Operator was working on the Unit 6 coal feeder and a valve wrench slipped off the bunker valve causing a pull in his right shoulder. The employee has recently complained of discomfort and will be sent to the company doctor.
- **(First Report)** - On July 15, 2014, a PE contractor working at the Paddys Run Station suffered a fall resulting in a 1st Aid case. The employee was part of a team conducting an evaluation of the hazardous materials that would need to be removed before the plant could be demolished. The injured employee entered the facility and went immediately to the southeast corner of the building. He travelled down the steps to the mezzanine level of unit 6 fan room area. He stepped off the stairs onto a piece of grating approximately 4 feet wide by 10 feet long. The grating failed causing the employee to fall through the opening. He struck a pipe about 4 feet below the mezzanine level and then landed on the grating over the trench in the basement below. The trench grating also collapsed under him. He suffered some bruises and contusions but was alright other than that. The previous week a structural engineer had surveyed the entire plant and did not mark this grating as deficient. The contractor and Project Engineering are re-evaluating how the environmental survey will be completed.

- 80 days since last OSHA Recordable incident on 4/28/14.
- 1,372 days since last lost time incident on 10/14/10.

Ohio Falls:

- 1,617 days since last OSHA Recordable incident on 2/11/10.
- 9,439 days since last lost time incident on 9/12/88.

GH:

- 6-5-14 Contractor working for C&B Marine cut finger while positioning ladder on side of Barge. Contractor was taken to Hospital for treatment.
- 6-23-14 Contractor twisted knee while pushing barrel on barrel cart up an incline in Turbine Reservoir oil room doorway. Okay at this time. First Report.

185 days since last OSHA recordable injury. (1-13-14)

185 days since last lost time injury. (1-13-14)

87 days since last contractor OSHA recordable injury. (4-3-14)

GR:

- Green River employees completed 3 years with no lost time accidents.

MC:

- Several Zachry employee recordables through the month.

Unit Information

TC1

Unit on-line and currently good for full load. Suspect a small leak in the penthouse area. Monitoring same.

Unit experienced a trip on 6/12 while performing a routine lube oil pump swap on the 1A IDF. The fan tripped due to low oil pressure. Investigation of the control circuit revealed a 5 second time delay was in place instead of a 60 second delay. The outage lasted 49 minutes.

On 6/17 unit was removed from service due to a thermowell weld failure on the main steam line. This was a dissimilar metal weld. Unit returned to service on 6/19.

On 7/8 the unit tripped while attempting to change out a servo valve on the turbine #4 CV. Turbine load was dropped to close the #4 CV and a clamp was placed on the FAS. When the disc dump operated, the turbine tripped. The unit returned to service 4 hours and 4 minutes later.

On 7/8 the unit tripped due to feedwater issues picking up load following the outage earlier in the day. The unit was placed back on line 41 minutes later.

TC2

TC2 is currently on line and good for 675 MW. The derate is due to feedwater heater level issues. The #3 heater appears to have a tube leak. Operators are trying to diagnose issues.

Unit was removed from service on 6/29 due turbine EHC issues. While testing turbine valves early on 6/28, the 2A MSV valve closed but would not open back up. Further diagnoses of the valve revealed a need to change out the FAS on the valve. While removing the unit from service, the 2B MSV and 2A CV would not close. The turbine tripped, but the valves remained open and the turbine began to overspeed. I/E personnel on site troubleshooting were able to close the 2B MSV by manually picking up the FAS. This allowed the turbine to come to gear. Investigation of the system revealed significant amounts of contamination caused by water in the system. A full flush and operational testing of the turbine valves was performed, and a temporary cooler installed on the EHC skid. A full report will be issued in the near future. The unit returned to service on 7/13.

Doosan has resumed boiler tuning, and currently is targeting 8/5 for the first of three fuel box tests.

Combustion Turbines

All CTs are available for full load.

CR:

CR4:

- (Maintenance Outage) Off-line 6/13/14 at 7:32 to 6/13/14 at 22:55 – Turbine right main stop valve linkage and pilot valve linkage maintenance.
- (Reserve Status) Off-line 6/13/14 at 22:55 to 6/15/14 at 22:49.
- (Maintenance Outage) Off-line on 7/3/14 at 21:11 to 7/6/14 at 8:02 – Boiler leak repair – waterwall tube.
- (Forced Outage) Off-line on 7/14/14 at 13:45 to 7/15/14 at 16:26 – High Silica due to 10 condenser leaks.

CR5:

- (Forced Outage) Off-line on 6/5/14 at 6:04 to 6/6/14 at 18:42 – External waterwall leak and a leak in the penthouse off the economizer outlet header.
- (Forced Outage) Off-line on 6/28/14 at 6:43 to 6/30/14 at 6:17. – Waterwall and reheat tube leaks on 4th landing.
- (Forced Outage) Off-line on 7/8/14 at 11:15 to 7/9/14 at 2:23 – Loss of the 5B ID fan due to excessive room temperature (I/O board).
- (Maintenance Outage) Off-line on 7/13/14 at 1:00 to 7/14/14 at 1:30 – 5B CWP vibration issues; replacing broken strut rod on discharge piping on same.
- (Forced Outage) Off-line on 7/14/14 at 1:30 to 7:19 – Start-up failure due to the 3825 line breaker not closing due to an auxiliary contact linkage problem.
- Current Significant Issues: 5A CWP pulled due to broken lower shaft, 5B CWP exhibiting high vibration, and the 52 BFP motor requires replacement due to cracked rotor bars (high temperatures)

CR6:

- (Forced Outage) Off-line from 6/21/14 at 15:31 to 6/22/14 at 10:18 – Condenser leak repair.
- (Forced Outage) Off-line from 6/22/14 at 10:27 to 6/22/14 at 12:23 – Low drum level trip.
- (Forced Outage) Off-line from 6/22/14 at 12:23 to 6/28/14 at 0:26 – #3 and #4 bearings wiped.
- ((Forced Outage) Off-line on 7/13/14 at 23:01 to 7/17/14 at 8:09 external lower waterwall tube leaks.

CR Station:

- On 7/13/14, the SDRS B transformer 14KV feed had a short and took out the main feed to the scrubbers. Currently on backup. The lime slakers lost power and a temporary diesel generator (1MW – temporary air permit) was rented to provide feed until the main feed can be restored (likely Thursday, 7/17/14).

GT11:

- (Maintenance Outage) 6/12/2014 at 8:00 to 12:52 – Station kilowatt meter work

PR11:

- None

PR12:

- None

PR13:

- The 16” gas-line work is complete and all three PR CTs are now available together and PR13 can now run back in AGC.

OF:

- **Unit 2** Electrical work has resumed expediting the overhaul.
- **Unit 5** Re-assembly of the Unit is now in progress. Voith estimates that the restoration of the Unit will be completed by **September 5th**.

GH:

Unit 1

- Unit good for full load (519 mw’s)
- Ran Annual MOD-25 Test on Generator on 6-4-14. No issues.
- PJFF support steal is in place and Hopper are being set this week.

Unit 2

- Unit good for full load (528 mw’s)
- Ran Annual MOD-25 Test on Generator on 6-4-14. No issues.

Unit 3

- Unit good for full load (534 mw’s)
- Ran Annual MOD-25 Test on Generator on 6-5-14. No issues.
- Unit was removed from service on Monday, 6-9-14 to make modification to new economizer to attempt to raise the exit gas temperature to be able to place SCR in service. Unit returned to service on Saturday, 6-14-14. Minimum Operation temperature on the SCR was reached on 6-16-14. Ran SO3 inlet test to SCR and it had been lowered enough that Minimum operating temperature was reduced from 644 to 610 degrees F and the SCR was placed in service on 6-17-14.

Unit 4

- Unit good for full load (512 mw’s)
- Ran Annual MOD-25 Test on Generator on 6-5-14. No issues.

- Site development for the Unit 4 PJFF has begun with PJFF erected. Baghouse compartments are installed and duct/dampers are being assembled.

All Plant:

Personnel N/A

- Performed Zebra Mussel Treatments on all units in the month of June

Other:

- CCR Dewatering area has limitations in every system tested:
- Bottom Ash Submerged Flight Conveyors are limited to take-away conveyors
- Pug-milled Fly Ash is now being ran on system with some improvement. Still having issues with either too much dusting or too wet and sticking in the chutes.
- Gypsum Dewatering is now being ran around the clock.
- New Fly Ash transfer equipment is running on Units 1, 2 and Unit 3 Baghouse.

GR:

- Unit 3 had a maintenance outage on 6-13-14 at 17:27 to repair the chemical feed line to the drum. The unit returned to reserve status on 6-14-14 at 11:40.
- On 6-16-14 the unit returned to service at 03:10.
- Unit 4 a SH tube leak was detected at 17:06 on 6-03-14; the unit was removed from service (U2) at 20:58. The unit returned to service at 6-05-14 at 10:03.
- Unit 4 was removed from service due to a SH tube leak on 6-12-14 at 06:56. The unit returned to service at 12:43 on 6-13-14.
- Unit 4 was removed from service at 00:05 on 6-17-14 due to a SH tube leak. The unit returned to service at 08:34 on 6-19-14.
- Unit 4 was removed from service at 11:43 on 6-19-14 due the Main Steam Safety valve leaking. The unit returned to service at 15:00 on 6-20-14.
- Unit 4 was removed from service on a maintenance outage 6-27-14 at 22:52 to repair a nitrogen leak on 138/161kv No 1-T3 transformer (reserve transformer to GR4). Unit was returned to service at 00:03 on 6-29-14.

MC:

- **MC1**—Currently good for full load. Unit tripped on 6/29 when ID fan runback signal kicked in, but signal to turbine was runback to 0. The signal had never been wired properly when the Mark VI EHC was installed in 2012. Back on later that day.
- **MC2**—Mill and burner tuning continued in June. No outages in June.
- **MC3**—Currently good for full load. Unit came offline on 6/5 due to an economizer leak. Tubes were repaired, air heaters washed, hoppers cleaned out, unit back online 6/9. As the unit came back on line, it tripped after a few seconds. It appears the timing relay that prevents a turbine hard close if load is less than 2% for 10 seconds did not initiate properly and tripped the unit. Unit back online that same day.
- **MC4**—Unit came off line 5/30 to clean the condenser water boxes. While off, a boiler hydro was ran and a leak in the secondary superheater was identified and repaired. Unit back on line 6/2. Unit was forced off line on 6/8 due to a boiler tube leak in the reheater. After repairs, a maintenance outage was granted to make burner inspections/repairs. Unit back on line 6/10.

Generation Engineering

Ben Hill and Jeff Simpson:
EFOR Reduction via GADS Data

- Current Condition: Determine what data is available and what tools and processes are available to analyze it.
- Team is at data gathering and analysis phase of the project.
- Production Cost of 1.5% EFOR increase across the fleet costs company \$5M – fuel, variable O&M expenses. Surplus Cost: reserve margin of 2.5% costs about \$15M/year.
- Focus on optimizing maintenance outage intervals.
- The request was made to Ben to evaluate the impact that new equipment has on EFOR.
- Another request was made to get the maintenance managers more involved to help evaluate the data and flesh out different hypotheses.

Compliance

- Dan Wilson stated there is an increase in industry activity to hack into plant IT systems.
- The responsibility for managing security is Dan's Compliance group and he will collaborate with IT Security to solve the problems.
- Any suspicions into hacking into any plant computer systems should be initially directed to Dan Wilson and not IT. Dan's team uses different systems and websites to monitor hacking activity. It was noted that the plant doesn't have the capability to monitor hacking activity of its systems and by the time it's recognized, it's a problem.
- In version 5, all plants will have CIP compliance. The plan is to ensure the ranking will be accurate but classified as "low". Version will be implemented on April 1, 2016.
- The biggest point of vulnerability for Black Start Unit is not notifying transmission of changes to the standards used, especially for units that aren't utilized as much.

Fleet Operations

- Arc Flash 70E training has occurred at the plants. There are concerns over some of the topics conveyed through Bob R during the training. Mike Buckner noted that the Maintenance & Operations team can present to Doug Chin and the safety committee suggestions to make the process more feasible, without jeopardizing safety. It appears there is confusion over semantics of interpretation that needs to be fleshed out.
- The following are a list of issues identified by the operations managers and Mike Buckner during the meeting:
 1. Arc Rated Gear. For plants that have installed the newer arc rated switchgear, do we have the latitude to identify this gear, label it accordingly and allow our Switchmen to rack these breakers in and out with a lower PPE requirement?
 2. For non-arc rated switchgear, when does the "racking procedure" actually begin? That is, at what part of the switching procedure does the Switchman need to put on the full 40 cal PPE? At the beginning of the switching process for that device or can they wait until right before the actual racking in or out process begins?
 3. There is a discrepancy in how the training is being presented in regards to how Operators should handle a "case of trouble" with the I/E Group. In the training document, bullet point number 4, it states that Maintenance, Engineering and Operations should work

“collectively” to identify the problem....,. In some of the training sessions, Operators are being told that once they run into a “case of trouble” with a breaker, they should take a hands off approach and turn it completely over to the I/E Group until they clear up the issue and release it back to Operations.

4. What level of training do we want our I/E Techs to have to trouble shoot breaker related issues? (most maintenance of switchgear and breakers is currently being done by contractors and in-house talent is limited).
5. For switchgear with the Maintenance Relay Switch installed (fast acting relay), does or can this change the PPE requirements when racking breakers in or out?
6. Shouldn't the Safety Coordinators at each station be in agreement on the types of arc flash safety equipment (PPE) that is being purchased and utilized so that each plant is using the same thing?

From: Sinclair, David(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=TRADERS/CN=SINCLAIR.D)
To: Schram, Chuck; Brunner, Bob; Pfeiffer, Caryl
CC:
BCC:
Subject: FW: Project Engineering's ES Bi-Weekly Report - March 1, 2014
Sent: 03/03/2014 11:37:52 AM -0500 (EST)
Attachments: PE's Bi-Weekly Update on 2014 -03-01.docx;

[Note the discussions on the various landfills and CR7. Thanks](#)

From: Straight, Scott
Sent: Monday, March 03, 2014 10:26 AM
To: Voyles, John; Bowling, Ralph; Sinclair, David; Rives, Brad; Reynolds, Gerald; Blake, Kent; Thompson, Paul
Cc: Waterman, Bob; Saunders, Eileen; Hendricks, Claudia; Whelan, Chris; O'brien, Dorothy (Dot); Bellar, Lonnie; Sturgeon, Allyson; Conroy, Robert; Huguenard, Jim; Winkler, Michael; Revlett, Gary; Noland, Steve; Clements, Joe; Schetzel, Doug; Phillips, Brian; Siemens, George; Dimas, Jim; Williams, Cheryl; Joyce, Jeff; Kirkland, Mike; Turner, Steven; Fraley, Jeffrey; Hudson, Rusty; Hincker, Loren; Tummonds, David; Smith, Richard; Cosby, David; Malloy, John; Thomas, Greg; Energy Services Project Engineering; Sheridan, Kenneth; Andriot, Jim; Charnas, Shannon; Johnson, Sarah
Subject: Project Engineering's ES Bi-Weekly Report - March 1, 2014

Underlines represent changes from the last report.

<<PE's Bi-Weekly Update on 2014 -03-01.docx>>

Scott Straight

Director Project Engineering

LG&E and KU Energy, LLC

502-627-2701

March 1, 2014

Thompson

Brown - CCR Ash Pond & Landfill Project

- Safety – Nothing to Report (NTR)
- Permitting:
 - Landfill KDWM Permit: The permit is now expected to be delayed again until summer of 2014 due to KDWM concerns with public record. EA and Legal continue to work with KDWM to address public comments and minor issues.
 - Title V Air Permit Modification: NTR
- Engineering/Schedule/Execution:
 - Landfill Phase I
 - Mobilization originally scheduled for late February 2014 is now on hold pending clarity on timing of receiving the permit. The change order to Charah to line the west collection pond has been awarded and work will continue as scheduled.
 - Charah has started receiving equipment in preparation to restart construction activities once we have permit approval. Equipment mobilized to the site not needed for the lining of the west collection pond will be de-mobilized.
 - AMEC is designing the settlement and stability monitoring system under the landfill.
 - CCR Transport/Treatment – Skanska
 - Working on GA's and P&ID's.
 - First monthly meeting was held at Skanska's office on February 26th.
 - Existing Gypsum De-watering Facility - Currently reviewing bids for the new west collection pond pumps.
 - Service Water Pump VFD's – Meetings held the week of February 3rd covering preliminary outage scheduling discussions with the plant to coordinate for the April Unit 3 outage.
 - A conference call was held on February 20th with Invensys/Foxboro to verify all DCS projects, which includes the VFD's, are on schedule and coordinated for the April outage. All DCS items are on schedule and ready for the outage.
- Issues/Risks – **Construction float goes to zero beginning August 1, 2014.**

Brown - Unit 3 Air Compliance Project

- Safety – NTR
- Permitting – MATS extension letter sent to KDAQ.
- AMEC Engineering/Execution:
 - Site mobilization scheduled for April, 2014.
 - As a result of KU's initial review of the GA drawings, the decision has been made to relocate the existing hydrated lime silos to improve PJFF maintenance access and clearance from the 138kV lines, as well as improving ductwork layouts.
 - AMEC has begun transmitting drawings.
 - Clyde Bergemann - LG&E/KU will be forming a CB User's Group comprised of PE and the three EPC firms (Zachry – MC, AMEC – Brown 3 & TC1, KBR – Ghent) to meet every two weeks or so to monitor, record, report on and assist CB is meeting their contractual commitments on the PJFF supply. The overall all performance of CB has improved marginally relative to delivery schedules and quality, albeit not where it needs to be. The PE commercial group audit in CB's office on supporting documentation for past milestone achievements used to support invoices to date on TC1 was completed on February 19th; **no contract exceptions were revealed.** Zachry, AMEC and KBR are expected to do the same given the CB PJFF contracts were fully assigned to them for Mill Creek, Brown and Ghent respectively.

Cane Run - Unit 7

- Safety – Minor fire experienced on some form work/plastic weather shielding on a concrete pour.
- Engineering/Execution: The re-baselined schedule was issued week of February 17th and now shows zero float against the early target date of March 1st (Contractual commercial operation date is May 1, 2015).
 - Transformers: STG GSU transformer and spare STG GSU transformer are being dressed out. GE Prolec has begun oil filling activities on CTG-1 GSU and dressing out CTG-2 GSU.
 - CTG's: Piping, electrical, and structural activities continue on both CTG's.
 - HRSG's: Casing welds, piping installation, and stack erection continues for both HRSG's.
 - STG: NTR
 - Main Condenser: NTR
 - Water Treatment Area: NTR
 - Buildings: NTR
 - Substation: NTR
 - Screen House Modifications/Upgrades:
 - ✓ Raw Water Pumps – Sulzer successfully recast the remaining two impeller bowls February 11th, however they informed us late last week that the impellers have been incorrectly manufactured. Impact to the pump delivery date, if any, is not known at this time. Shipments are scheduled for March 4th and March 11th.
 - ✓ Screenhouse Intake Cleaning – NTR
 - ✓ General Construction – Hall continues with electrical building installation, piping, and electrical work and remains on schedule.
 - ✓ Trash Rake Repairs - Addendum to RFQ being drafted - Replacement motors and potentially gears under review.
- Issues/Risks: NTR

Cane Run - CCR Project

- Safety – NTR
- Permitting – A meeting was held February 12th with EA and CR management to develop a strategy for submitting the final closure permit application for the Ash Pond and Landfill. According to Generation Planning's CCR production forecast, CR Units 4, 5 and 6 will only produce enough CCR material to complete the Ash Pond Cap and Closure plan before the units are retired. It is not likely that the south end of the Landfill and the MSE Wall will receive any additional CCR material produced; however, the existing material in the Landfill will be re-graded for stormwater management. PE and Stantec are now developing a final closure plan for the south end of the Landfill and MSE Wall at lower elevations. EA and PE will present this plan to KYDWM by the end of May, 2014.
- Engineering/Execution:
 - Ash Pond Closure & Landfill Cap – Charah: NTR
- Issues/Risks – NTR

Ghent - CCR Project

- Safety – NTR
- Permitting – The Ghent Landfill cannot be placed into service until the KDWM approves the project's Construction Progress Report (CPR). A Notice of Deficiency was received October 28th, 2013; the remaining item to address is the Irrevocable Letter of Credit, used to provide financial assurance for special waste sites. EA and Cash Management continue to work toward a resolution.
- Engineering/Execution:
 - CCR Transport - TIC/Kiewit

- Construction – continues on the gypsum storage building as well as the portal reclaimer and conveyors within the gypsum storage building. Construction continued working punchlist items.
- Commissioning –continued to transfer fly ash from Units 1 & 2, into Silos 2 & 3 as check-out. Pipe and general conveyor run-in continued. Continued operation of the 0-1 remote submerged flight conveyor (SFC) and takeaway conveyor; the commissioning crew is working through ash loading. Continued to commission the 0-2 and 0-3 SFCs and performed pre-commissioning activity of the gypsum processing system.
- Landfill Phase IA - Charah
 - Charah continues to perform maintenance on the landfill cell. This will be required until the landfill's Construction Progress Report is approved by the KYDWM and CCR material is placed into the cell. See issues/risk section below.
- CCR Balance of Plant
 - Landfill South Leachate Pond Pump House Power & Communication - Fishel continued pulling overhead fiber. Bids were received to perform the underground portion of the installation at the dual truck loading facility and south leachate pond pump-house.
 - Service Water Extension – Early Construction continues to perform the detailed engineering of the system. The contractor has completed the potable water tie into the dual truck loading facility.
 - Acid Feed System to Units 1 & 2 Cooling Towers - UGS is working toward completion by finishing the necessary electrical and controls systems. Commissioning efforts began.
 - Gypsum Relocation –The contract was awarded to Charah; contract execution occurred on February 26th.
 - South Leachate Pond 4160v & Fiber Feed – Issued RFQ February 14th to four contractors. All contractors attended pre-bid meeting on February 13th and submitted proposals on February 19th. PE is currently evaluating the bids.
 - Gypsum Sump Discharge Line Extension - Issued RFQ February 11th to three contractors. All contractors attended pre-bid meeting on February 13th and submitted proposals on February 19th. PE is currently evaluating the bids.
- Issues/Risks – The landfill continues to experience severe erosion after rain events and maintenance will be required until the landfill is placed into service.

Ghent - SO3 Mitigation

- Safety – NTR
- Engineering:
 - Exit Gas Temperature Study:
 - Ghent 3 and 4 Economizer Scope –Berkel has submitted a detailed plan that Fluor is reviewing for final concurrence/acceptance. Upon concurrence, Fluor will issue IFC drawings for the foundation reinforcement project. B&W has completed fabrication of economizer modules for GH3 and is planning to ship them to the Mount Vernon, Indiana shop for chemical cleaning, scheduled to begin March 10th. GH3 economizer components are arriving on-site to KBR receiving. PE is evaluating potential change orders to B&W to provide internal cleaning for supplied components and to provide field service during the installation.
 - Ghent Unit 1 Economizer Scope – The Sole Source Contract Proposal has been electronically approved by the IC. An agreement (Purchase Order) to order the assemblies will be issued no later than February 28th. The substantially complete procurement (contract) documents have been approved by the Contract Review Group.
 - Layne Christenson has completed the tie-in to the main well water header for 1-1 well. They are finalizing the electrical and completing the pump house building for 1-1 well. Work

continues on the 2-1 well site development and demolition will begin on the 2-1 well once 1-1 is operational.

- Issues/Risks – NTR

Ghent - Air Compliance Project

- Safety – NTR
- Engineering/Execution:
 - PJFF - Follow up meetings with CB continue.
 - Ghent EPC
 - KBR continues receiving, welding and fabricating baghouse compartments, hoppers, manifolds and duct in east and west lay down yards for GH1 and GH4. Insulation is being installed on ductwork assemblies in the laydown yard. Placement of compartments and hoppers at U4 PJFF is under way, with 6 of 20 set to date.
 - Erection of structural steel at U3 PJFF for duct support is complete except for items required to be left out until the outage. Excavation and forming of pile cap foundations continues at U4 PJFF. Auger cast piles are being installed east of pipe rack at U4 for U4 PJFF duct support.
 - Structural steel and equipment are being installed at U3 ash transfer building.
 - Insulation and siding being installed on GH3 PJFF, including the PJFF penthouse.
 - Electrical construction at U3 PJFF continues to pull wire from U3 VFD's to 138kV feed breakers, and ID fans. Electrical construction is ongoing at U3 PDC.
 - KBR has started installing instrument air piping, seal water.
 - Placement of structural steel and various pieces of equipment at U3 blower building continues.
 - Testing of various circuits, conductors, breakers, relays and other associated electrical equipment at U3 PJFF, PDC, and ID fan VFDs is ongoing.
 - Installing U3 PJFF expansion joints.
 - Fabricating 30" pipe for outage relocation of the service water strainer system on the east side of Unit #1 continues, along with the installation of the new HDPE line for strainer blowdown.
 - Grouting motor, ID fan, drive and the dead pedestals, they will work east through all of the fans at U3 PJFF.
 - KBR continues work to complete the estimates for the alternate locations and arrangements of GH2 PJFF. The GH2 change is likely to require a request for additional outage duration, but the extent is not yet determined.
 - Units 3 & 4 Air Heater and Ductwork Reinforcing – Bids were received on February 3rd and were evaluated. Contract Proposal routed for approval.
 - Administration. Building and Machine Shop – Kelley has begun to pour the building footers for both the Administration and Machine Shop buildings. The potable water line installation has been completed to within 5 feet from the Administration building.
 - Issues/Risks – Extended periods of snow, ice and extreme cold weather, coupled with deliver delays and fabrication quality issues associated with the CB supplied items, have hindered KBR's construction progress. PE's audit of the TC1 PJFF contract has been verbally shared with KBR. KBR is expected to do the same given the CB PJFF contract for Ghent was fully assigned to them.

Mill Creek - Air Compliance Project

- Safety – NTR
 - Permitting: NTR
 - Schedule/Execution:
 - General
 - Fire Water relocation at ash silo area completed February 21st.

- LG&E Substation Contractor (Elliott) performing the 138 kV Bay expansion foundations to be completed the week of February 24th - work continues on schedule.
- Marmon completed filling sleeve under railroad tracks with grout. Backfill/compaction and trenching for 138 kV cables is continuing. Working on transformer pad for cable entry. Marmon still progressing on schedule.
- Marietta Silos is installing rebar for floor in the new ash silos.
- Zachry working on the Reserve Aux transformer pad.
- Plasti-Con building Unit 3 Breach Duct flange and transition piece in the factory. Hand laminating stiffeners on the transition piece.
- Evans erecting station SDRS power distribution building.
- Electricians performing site wide preventative maintenance's as schedule dictates.
- Existing Unit 4 Stack Liner Assessment - RFQ released February 13th; Bids due February 25th following a pre-bid meeting on February 18th.
- Units 1 and 2
 - Stebbins pouring inlet of WFGD – Elevation 58'8".
 - Firewater Tank foundation finished on February 15th.
 - U1/2 chimney at approximately 412.5 ft.
 - PJFF hopper assembly is complete in the field, with the exception of C-276 issues. Twenty-four hoppers are set in the structural steel.
 - Installation of fire water line and storm water system continues.
 - Zachry installing and pouring ash pipe rack south foundation rebar.
 - Electricians are installing embeds for fire water pump house and grounding in WFGD electrical building slab. Also connecting temporary power as needed in the area.
- Unit 3 New WFGD
 - EPC and OEM engineering groups are refining the general arrangements. Maintenance and access review meeting was attended on February 20th in Denver.
- Unit 4
 - East train PJFF compartments and hoppers have been set – weld out continues. Last manifold section is set. Field C-276 installation work is on hold.
 - West train PJFF compartments - setting and weld out continues–fifteen of twenty compartments are set. Field C-276 installation work is on hold.
 - Stebbins is installing block and rebar on U4 WFGD. Setting discharge nozzles and pouring walls – Elevation 101'4".
 - CDI (chimney subcontractor) installing liner cans in chimney. First 8 cans installed.
 - Zachry continuing installation of foundations/piers for WFGD and Fly Ash Pipe Racks.
 - Setting structural steel for pump and electrical building.
 - Performing preventative maintenance on Absorber Recycle pumps, gear boxes, and motors.
 - U4 DCS Software FAT was held in Arizona. UCC related scopes did not get completed – a return trip is attended during the week of February 17th.
 - Tate continues U4 Fabrication of Underflow Tank. The floor and six rings have been set and welded. Both doors welded out. Friday, February 14th at 6:00 P.M. Tate left and sometime over the weekend damage was caused to the underflow tank - possibly due to high winds and lack of internal bracing. Several panels need to be removed and replaced.
 - Pouring fly ash pipe rack supports. Pouring duct support foundations.
 - Evans continues erecting AQCS Electrical Building.
 - Haywood Baker finished initial scope of micropiles. Demobilized until engineering work is ready.

- Electricians continue to install cable tray in WFGD pump house and electrical building. Installing conduit in duct bank for 14 kV to 4 kV transformers. Installing grounding at common and fly ash silo pipe racks. Installing lighting at PJFF structure.
- Unit 4 CEM FAT scheduled the week of February 24th.
- Issues/Risk –
 - PE and Zachry working with CB to audit status of work performed to date. CB deliveries of Unit 1 & 2 manifolds are delayed. Working with CB to ensure PJFF components are fabricated and delivered per the drawings and schedule. The PE commercial group audit of supporting documentation on TC1 has been verbally shared with Zachry. Zachry is expected to do the same given the CB PJFF contract for Mill Creek was fully assigned to them.
 - Unit 1 & 2 Tie-in Outages were swapped in the spring of 2015.
 - Weather continues to impact construction efficiencies.
 - Executive Management Meeting was held February 20th.

Mill Creek - Administration Building

- Safety – NTR
- Execution:
 - Structural steel in fabrication, expected delivery March 31st.
 - Pouring footers and stem walls for CMU walls and slab on south half of building.
 - Excavating, repairing and encasing in concrete 14" roof drain line from existing Boiler building.
 - Installing grounding grid for column foundations on south half of building foundation.
- Issues/Risks –
 - During excavation of footers in South East corner of Administration Building, the roof drains from boiler building were uncovered, and noted that line had separated over time. Kelley Construction will make necessary repairs before the line is encased in concrete.

Ohio Falls (OF) - Rehabilitation

- Safety – Voith will celebrate two years and 85,000 MH without a lost time accident.
- Execution:
 - General – Bids for the river services related to dewatering have been received and analysis is underway. A conference call was held with the transmission services provider to explain the latest of several studies; \$225K has been spent so far, with two more facilities studies needed.
 - PE continues to work with Voith on the purchase of a spare set of lower turbine guide bearing shoes and blocks.
 - Unit 1:
 - The generator rotor will be installed into the drive train later this week; upper generator bridge assembly will begin afterwards.
 - A meeting with both Voith and Kingsbury was held on 2/25 for review of the changes to the new thrustbearing and new procedures. The thrust bearing will be installed after the generator bridge is assembled.
 - Unit 5 Turbine Coupling failure:
 - Voith could not come to terms with a local heavy equipment mover for a proposal to recover the turbine from the floor of the unit; a second local heavy rigging contractor is now being pursued.
 - The replacement turbine, originally intended for Unit 2 but diverted to Unit 5, has been delivered to the Voith shop for final milling and checkout.

- Issues/Risks –
 - River levels have risen again, and could impact final wicket gate measurements.
 - Vertical plumbing of Unit 3 caused a two month delay. Voith submitted a change order for \$820k.
 - Unit 5 Turbine Runner/Shaft Matter: Voith continues their investigation (see above); the unit is still in warranty.
 - If the remaining single dewatering pump fails or cannot keep the water low, the schedule may be jeopardized until a second pump is rebuilt or replaced. Currently the plan is to watch the sole remaining pump, and wait until Unit 1 is rewatered before pump change outs begin.

Paddy's Run (PR) and Canal Long-term Demolition Planning

- Engineering/Execution:
 - RFQ for the consultant that will convert the conceptual plan to a final demolition plan including floodwall redesigns was issued on February 17th with contract award projected in March 2014. A preliminary walk through of the old units was held as part of an assessment of safety for potential bidders prior to a pre-bid meeting tentatively set for March 3rd. The Company received notice from MSD/COE that FEMA has requested immediate filling of some transverse duct lines in the Paddy's Run levee that have been untouched for several decades; MSC reiterated their need to have the work performed immediately. PE met with a potential contractor to work out technical and commercial issues, with a start expected in early March for an April 1st completion.

Trimble County - Unit 2

- Punchlist/Warranty
 - SESS - Bechtel and Owner teams continue to investigate root causes of the four major issues (WESP plate coverage and power input, PJFF dP, and PJFF/PAC feed reducing Hg capture) during the early weeks of the burner replacement outage. A Senior Management call was held on February 28th to discuss findings to date on the outage with regards to the WESP and PJFF. WESP plate coverage review indicates a lack of plate coverage, as we had alerted SESS to. SESS developing a plan to remediate issues. PJFF pressure drop issues appear to be linked to oil contamination of the bags (wicking of oil into the bag material). Lab results expected back in a few weeks to confirm.
 - Doosan – Agreement reached with Bechtel on essentially all filed Doosan related PL/Warranty spreadsheet. Bechtel submitted on March 1 a final draft of the settlement spreadsheet along with a draft settlement letter.
- Combustion System:
 - Amendment 6 – Amendment #6 signed by all five parties (IMPA, IMEA, KU, LG&E and Bechtel) and is now final.
 - DSI – Engineering and procurement activities are ongoing. Riverside was awarded the work for removal of the underground piping interferences; BCSI is preparing the change order; demo work will begin shortly. Titan mobilized on to site Monday, February 24th. The Plant has requested additional test ports; a scope of work has been provided to BCSI to obtain change order pricing. Environmental Affairs is preparing the MATS updated air permit.

Trimble County - CCR Projects

- Fly Ash Barge Loading System
 - Execution:
 - 5000T silo (patch site/weeps) - minor repairs and sealant application will be scheduled for a warmer weather period (Spring 2014).

- The 7kv/480v transformers were received on February 13th; replacement and testing are on hold pending a decision on how to relocate the instrument gauges.
- TC CCR Projects – Landfill, Transportation and Treatment
 - Engineering/Permitting:
 - A Nationwide Permit Application was submitted to the USACE on September 9, 2013, to build roads for new monitoring wells in both Ravines A and B. A Memo of Agreement (MOA) was prepared by the USACE and was reviewed by LG&E.
 - The 401 and 404 Permit documents are now ready for submittal to the DOW and Corps, respectively.
 - The KDWM public meeting was held at 7:00 pm February 20th at the Trimble County High School.
 - The Kentucky Transportation Cabinet Permit application for the new bridge crossing State Road 1838 has been submitted.
 - The draft of the Kentucky Division of Water Dam Safety permit has been completed and is being reviewed by LG&E.
 - A meeting is scheduled for March 3rd to discuss GAI's findings of the re-survey/re-scan of the Ravines A, B, and C.
 - GAI has biologists on site reviewing potential Indiana bat habitat.
 - Alternative Road and Conveyor Routing – NTR
 - CCRT – NTR
 - Helipad – An Award Recommendation has been routed for signatures and approved for East & Westbrook.
 - PE is preparing a report and will schedule a meeting to update the Kentucky Public Service Commission in regards to the CCR Landfill Project ECR new landfill foot print (Plan IIC-4b).
 - Execution/Construction:
 - Land Acquisition – Real Estate continues finalizing appraisals for all potential land to be purchased. Closing has occurred on the Kenneth Bowling farm. Scrap tires on many of the properties are being removed in an effort to clean-up these farms.
 - Fence Project - The severe weather continues to impact all facets of the fencing project. The need to add road guardrail in three areas has been reviewed and accepted by LG&E. The information has been submitted to the Trimble County Fiscal Court for their review and approval. It is anticipated that this work will be completed later this summer.

Trimble County - Unit 1 Air Compliance Project

- Engineering/Execution:
 - PJFF – PE has received final change order pricing from Clyde Bergemann on several smaller change orders; PE has completed its review of fleet wide C-276 wallpaper installation on all parts of the PJFF and provided feedback to CBPG; PE has sent CBPG change order documents for the DOR, Exhibit D (outage change) and Exhibit X (submittals). B&McD continues to review drawing submittals. The PE commercial group audit of supporting documentation for past milestone achievements used to support invoices to date on TC1 at CB's office was completed on February 18th and 19th; no contract exceptions were revealed.
 - ID Fans – TLT/Babcock Inc.: Engineering and procurement activities continue; a change order to update the submittal schedule (dates and descriptions) is under review by both parties.
 - PJFF EPC - The substantially complete contract documents were approved by the Contract Review Group (CRG). The Contract Proposal was approved at the February 25th IC meeting. Meetings with

the preferred bidder were held on February 26th and 27th; the IMEA, IMPA, and LKE Board approvals are being processed; the planned contract signature is early March 2014.

2018 Natural Gas Combined Cycle (NGCC) / Future Capacity Requirements

- Engineering:
 - Solar – Site assessment and environmental impact study in progress. Received Draft copy of the Initial Siting study which is currently under review.
 - NGCC 2018 – work continues with HDR to develop bid specifications and vendor qualification packages for April submittal to market. Pre-qualification packets by EPC firms has been received and are under review.

General

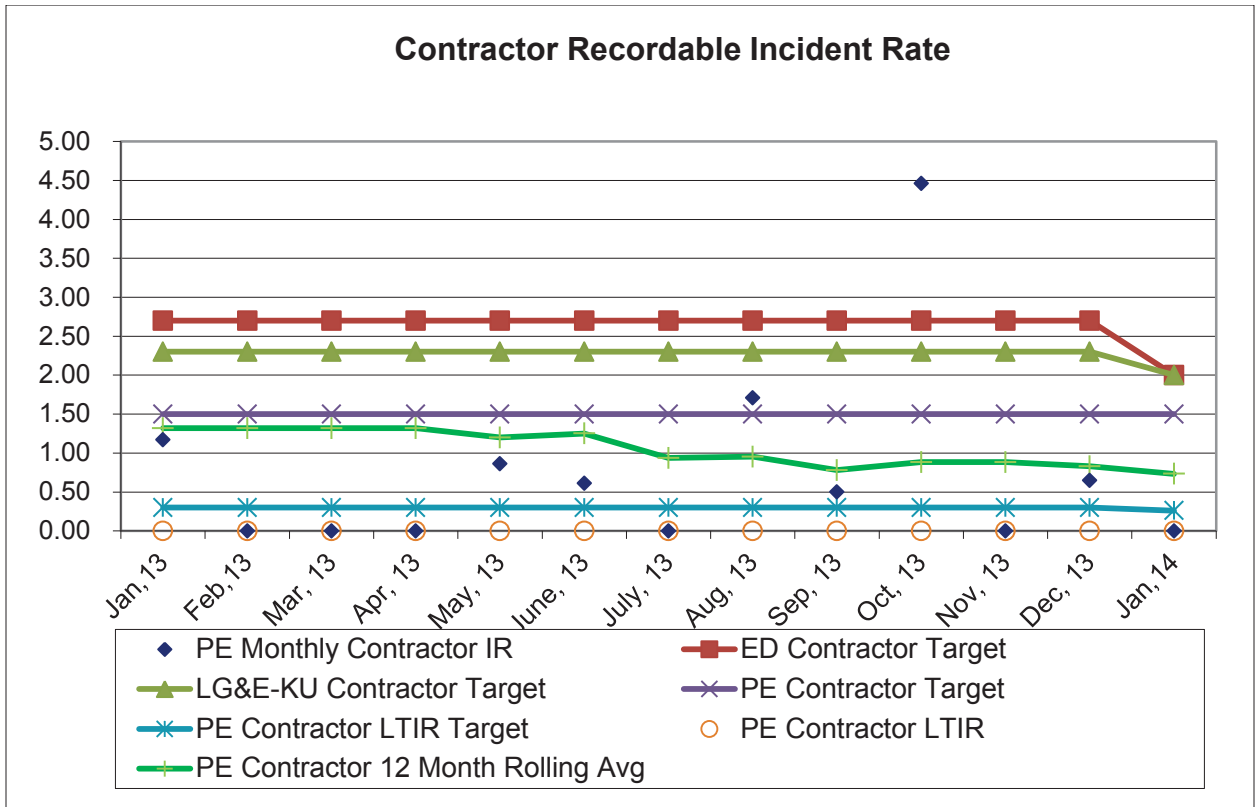
- 316A/316B and Effluent Regulations - Sampling overseen by CH2M Hill for the effluent study continues at TC and Ghent; a kickoff meeting is tentatively scheduled for Brown and Mill Creek for the week of March 17th. PE has added to their scope a study on why TC continues to have toxicity issues with the gypsum pond effluent.
- The PE management strategic contracting strategy meeting postponed to due inclement weather has been rescheduled for March 19th and 20th.

Staffing

- Currently at 89 including contract staff.

Metrics (Safety):

- There were **zero** recordable injuries for the month of February (and January).



Energy Services - Bi-weekly Update
PROJECT ENGINEERING
 March 1, 2014

■ **Investment Committee**

INVESTMENT COMMITTEE SCHEDULE																
Project Manager	Description	Contract, Project, SSA	Amount, \$000s	Month of IC Meeting	Feb14	Mar14	Apr14	May14	Jun14	Jul14	Aug14	Sep14	Oct14	Nov14	Dec14	Jan15
Straight Gregory	CCR Update (Bi-Annual) GH PJFF Revision	P	-	Mar												
Gregory	GHEAC EPC-Revision	C		Mar												
Hudson	Second Combined Cycle AIP	P	2,300	Feb												
Lipp	TC Env Air - PJFF EPC	C		Feb												
Lipp	TC Env Air/CCR - Owner's Engineer Revision	C	5,000	Jul												
Lipp	TC CCR - EPC	C														
Lipp	TC CCR-Additional Sanction	P		Dec												
Lipp	TC CCR - Landfill Phase I - Construction	C	91,600													
Lipp	TC CCR - In Lieu of Fees	P	10,000													

IC Month	Review Mtg. Outline	Review Mtg. Draft Paper	Contract Review Group	IC - Final Paper	RAC
Feb-14	1/10/2014	2/10/2014	2/11/2014	2/25/2014	2/18/2014
Mar-14	2/10/2014	3/10/2014	3/11/2014	3/25/2014	3/18/2014
Apr-14	3/10/2014	4/9/2014	4/11/2014	4/29/2014	4/18/2014
May-14	4/9/2014	5/9/2014	5/11/2014	5/27/2014	5/18/2014
Jun-14	5/9/2014	6/12/2014	6/11/2014	6/24/2014	6/18/2014
Jul-14	6/12/2014	7/10/2014	7/11/2014	7/29/2014	7/18/2014
Aug-14	7/10/2014	8/11/2014	8/11/2014	8/26/2014	8/18/2014
Sep-14	8/11/2014	9/8/2014	9/11/2014	9/30/2014	9/18/2014
Oct-14	9/8/2014	10/10/2014	10/11/2014	10/28/2014	10/18/2014
Nov-14	10/10/2014	11/10/2014	11/11/2014	11/25/2014	11/18/2014
Dec-14	11/10/2014	12/6/2014	12/11/2014	12/18/2014	12/13/2014
Jan-15	12/6/2014	1/10/2015	1/11/2015	1/28/2015	1/18/2015
Feb-15	1/6/2015	2/10/2015	2/11/2015	2/28/2015	2/18/2015
Mar-15	2/6/2015	3/10/2015	3/11/2015	3/28/2015	3/18/2015
Apr-15	3/6/2015	4/10/2015	4/11/2015	4/28/2015	4/18/2015

IC Month	Review Mtg. Outline	Review Mtg. Draft Paper	Contract Review Group	IC - Final Paper	RAC
Feb-14	1/10/2014	2/10/2014	2/11/2014	2/25/2014	2/18/2014
Mar-14	2/10/2014	3/10/2014	3/11/2014	3/25/2014	3/18/2014
Apr-14	3/10/2014	4/9/2014	4/11/2014	4/29/2014	4/18/2014
May-14	4/9/2014	5/9/2014	5/11/2014	5/27/2014	5/18/2014
Jun-14	5/9/2014	6/12/2014	6/11/2014	6/24/2014	6/18/2014
Jul-14	6/12/2014	7/10/2014	7/11/2014	7/29/2014	7/18/2014
Aug-14	7/10/2014	8/11/2014	8/11/2014	8/26/2014	8/18/2014
Sep-14	8/11/2014	9/8/2014	9/11/2014	9/30/2014	9/18/2014
Oct-14	9/8/2014	10/10/2014	10/11/2014	10/28/2014	10/18/2014
Nov-14	10/10/2014	11/10/2014	11/11/2014	11/25/2014	11/18/2014
Dec-14	11/10/2014	12/6/2014	12/11/2014	12/18/2014	12/13/2014
Jan-15	12/6/2014	1/10/2015	1/11/2015	1/28/2015	1/18/2015
Feb-15	1/6/2015	2/10/2015	2/11/2015	2/28/2015	2/18/2015
Mar-15	2/6/2015	3/10/2015	3/11/2015	3/28/2015	3/18/2015
Apr-15	3/6/2015	4/10/2015	4/11/2015	4/28/2015	4/18/2015

Guidelines for document presentations are as follows:

- 1) An outline is the first step in the review process. This review should take place approximately two months prior to the full project/contract presentation at the Investment Committee. This will give Senior Management in Energy Services a first look at upcoming projects and contracts. The outline is due to Scott Straight and Tony Ruckriegel one week prior to the review meeting and Rusty Hudson three days prior to the review meeting.
- 2) The month of the Investment Committee meeting, the project/contract is presented to Energy Services Senior Management for a detailed review as a draft paper in the review meeting. Material at this time should include an Investment Proposal and supporting Capital Evaluation Model (CEM) for project approval papers, both of which should be completed utilizing the current templates located on the Project Engineering Sharepoint site. Final draft papers are due one week prior to the review meeting.
- 3) The final project/contract proposal paper and CEM (for projects) are due to Rusty Hudson and Scott Straight three weeks before the Investment Committee meeting. The long lead time is designed to allow Financial Planning personnel time to review the material prior to the Investment Committee meeting.

IC Month	Review Mtg. Outline	Review Mtg. Draft Paper	Contract Review Group	IC - Final Paper	RAC
Feb-14	1/10/2014	2/10/2014	2/11/2014	2/25/2014	2/18/2014
Mar-14	2/10/2014	3/10/2014	3/11/2014	3/25/2014	3/18/2014
Apr-14	3/10/2014	4/9/2014	4/11/2014	4/29/2014	4/18/2014
May-14	4/9/2014	5/9/2014	5/11/2014	5/27/2014	5/18/2014
Jun-14	5/9/2014	6/12/2014	6/11/2014	6/24/2014	6/18/2014
Jul-14	6/12/2014	7/10/2014	7/11/2014	7/29/2014	7/18/2014
Aug-14	7/10/2014	8/11/2014	8/11/2014	8/26/2014	8/18/2014
Sep-14	8/11/2014	9/8/2014	9/11/2014	9/30/2014	9/18/2014
Oct-14	9/8/2014	10/10/2014	10/11/2014	10/28/2014	10/18/2014
Nov-14	10/10/2014	11/10/2014	11/11/2014	11/25/2014	11/18/2014
Dec-14	11/10/2014	12/6/2014	12/11/2014	12/18/2014	12/13/2014
Jan-15	12/6/2014	1/10/2015	1/11/2015	1/28/2015	1/18/2015
Feb-15	1/6/2015	2/10/2015	2/11/2015	2/28/2015	2/18/2015
Mar-15	2/6/2015	3/10/2015	3/11/2015	3/28/2015	3/18/2015
Apr-15	3/6/2015	4/10/2015	4/11/2015	4/28/2015	4/18/2015

IC Month	Review Mtg. Outline	Review Mtg. Draft Paper	Contract Review Group	IC - Final Paper	RAC
Feb-14	1/10/2014	2/10/2014	2/11/2014	2/25/2014	2/18/2014
Mar-14	2/10/2014	3/10/2014	3/11/2014	3/25/2014	3/18/2014
Apr-14	3/10/2014	4/9/2014	4/11/2014	4/29/2014	4/18/2014
May-14	4/9/2014	5/9/2014	5/11/2014	5/27/2014	5/18/2014
Jun-14	5/9/2014	6/12/2014	6/11/2014	6/24/2014	6/18/2014
Jul-14	6/12/2014	7/10/2014	7/11/2014	7/29/2014	7/18/2014
Aug-14	7/10/2014	8/11/2014	8/11/2014	8/26/2014	8/18/2014
Sep-14	8/11/2014	9/8/2014	9/11/2014	9/30/2014	9/18/2014
Oct-14	9/8/2014	10/10/2014	10/11/2014	10/28/2014	10/18/2014
Nov-14	10/10/2014	11/10/2014	11/11/2014	11/25/2014	11/18/2014
Dec-14	11/10/2014	12/6/2014	12/11/2014	12/18/2014	12/13/2014
Jan-15	12/6/2014	1/10/2015	1/11/2015	1/28/2015	1/18/2015
Feb-15	1/6/2015	2/10/2015	2/11/2015	2/28/2015	2/18/2015
Mar-15	2/6/2015	3/10/2015	3/11/2015	3/28/2015	3/18/2015
Apr-15	3/6/2015	4/10/2015	4/11/2015	4/28/2015	4/18/2015

Final Outline at PWT Briefing Meeting

From: Straight, Scott(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=WEB/CN=SCOTTSTRAIGHT)
To: Bowling, Ralph; Voyles, John
CC:
BCC:
Subject: FW: 07292 TC2 - Site Progress Report W/E 9-May
Sent: 05/12/2014 05:15:31 PM -0400 (EDT)
Attachments: Site Progress Report 9-May.pdf;

A higher level update as an fyi.

From: Watkins, Clyde [mailto:cwatkins@bechtel.com]
Sent: Monday, May 12, 2014 5:06 PM
To: Straight, Scott; Joyce, Jeff
Cc: Brightman, Jeff
Subject: FW: 07292 TC2 - Site Progress Report W/E 9-May

Scott, Jeff,

Attached is the site weekly progress report, issued by Doosan. Key accomplishments:

1. Gas Path Complete: Completed one day ahead of schedule.
2. Cold Commissioning: Well underway, forecasting to complete as of May 23rd (synch date)
3. LGE Operator Training: Completed as of today.

We continue to have daily interface meetings between Bechtel, LGE Plant Staff and Doosan to keep everyone apprised of progress towards unit restart.

Please let me know if you have any questions or comments.

Thank You,

Mel Watkins
Project Manager
Trimble County Unit 2 Project
cwatkins@bechtel.com
work: 301-228-8035 (Frederick)
cell : 240-793-4490



Trimble County Project Site Progress Report

Project : NOx Reduction/Burner Upgrade	Week Ending 9th May 2014
Project Site Manager : J Lee	Contract Number: 07292

KEY AREAS	CURRENT STATUS
<ul style="list-style-type: none"> • Safety 	<ul style="list-style-type: none"> • 1 x Accidents since last report <ul style="list-style-type: none"> ○ 1 x First Aid (6-5-14) – A Petro-Chem insulator was installing insulation on the OFA ducting when an insulation pin went through his glove and punctured his hand (small puncture wound). The wound was clean and dressed at site and he then attended the local hospital for a “precautionary” TB injection. He returned to his normal duties. The incident was reported to Bechtel in a timely manner. • 0 LTRs • 5 Recorded Doosan Safety Inspections completed • 2 Safety Improvement Observations raised – <ul style="list-style-type: none"> ○ Poor housekeeping on OFA level. SBR crew detaled to address. ○ Sparks falling to basement area from hot work activities on rear wall burner decks. Area barricaded and fire watcher detailed. • Daily plant walk down between Doosan, Bechtel, LG&E & SBR continue, no issues raised. • Final weekly SBR safety meeting attended • Positives <ul style="list-style-type: none"> ○ Continued praise from LG&E Plant & Project Engineering Management team for good housekeeping. Bechtel site team very positive with how things are progressing.
<ul style="list-style-type: none"> • Progress Overview 	<ul style="list-style-type: none"> • Gas Path Cancellation achieved one day early – 6th May • Punch List priority 1 items (Gas Path Cancellation) all cleared. Progressively clearing remaining items. • Restart programme commenced – Core Air & Purge Air Testing in progress, currently on schedule.



Trimble County Project Site Progress Report

Project : NOx Reduction/Burner Upgrade

Week Ending 9th May 2014

Project Site Manager : J Lee

Contract Number: 07292

- | | |
|---|---|
| <ul style="list-style-type: none"> • Burner & Throat Replacement <ul style="list-style-type: none"> ○ SMR's 132 & 158
 • OFA Ducting & Ports <ul style="list-style-type: none"> ○ SMR 156
 • PF Pipework Modifications <ul style="list-style-type: none"> ○ SMR 132
 • GAH Sootblower Pipework <ul style="list-style-type: none"> ○ SMR 107 & 159
 • WCAH / FD Inlet Hoods <ul style="list-style-type: none"> ○ SMR 095
 • Remaining Miscellaneous Scope <ul style="list-style-type: none"> ○ PA Flow Impulse Lines – SMR 101 ○ Hydrojet Pipework – SMR 117C ○ ID Fan Stall Sensing Ports–SMR 127 ○ Logic Revisions – SMR 155
 ○ Insulation – SMR 165 ○ WCAH Handling System – SMR 177
 • Material Supply | <ul style="list-style-type: none"> • Commissioning activities in progress • Punch List items in progress, cable management and gallery mods.
 • Insulation proceeding
 • PF Pipes – Verified all gags removed.
 • Diamond Power returning to site on Monday 12 May to complete logic implementation and function testing • Punch List items in progress • Valve platform
 • Insulation on headers to finalise
 • Insulation mods in progress. • Complete, at final inspect • Stall lines to level. • Logics complete with exception of GAH (see above) • Progressive through to end of cold air flow testing • Non outage work
 • WCAH Handling System f/cast end -May |
|---|---|



Trimble County Project Site Progress Report

Project : NOx Reduction/Burner Upgrade

Week Ending 9th May 2014

Project Site Manager : J Lee

Contract Number: 07292

- **SMR's Completed**

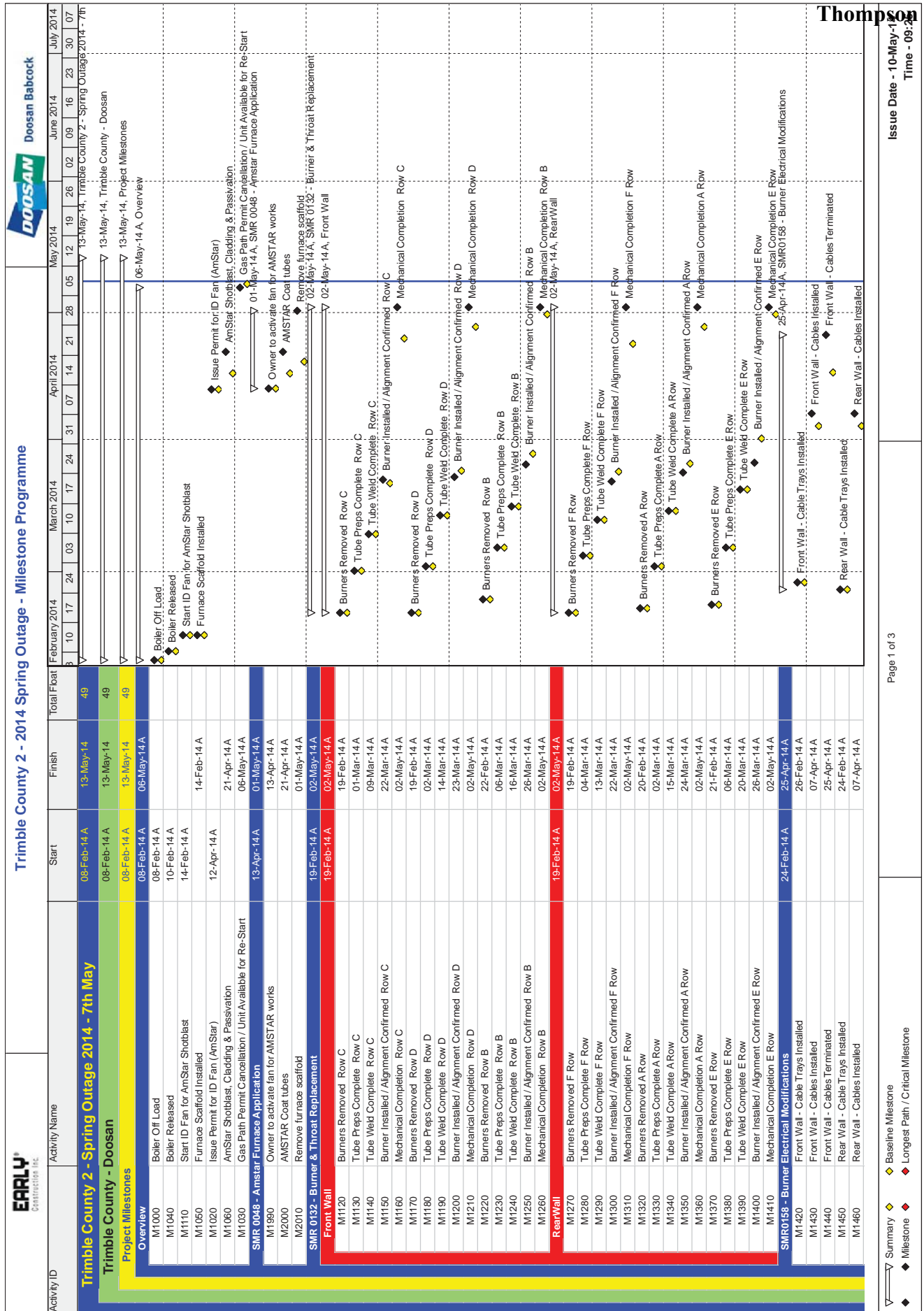
- SMR 176 - ID Fan Test Ports
- SMR 178 - Air Heater Test Points

Previous Week(s)

- SMR 048 – AmStar Application
- SMR 114 – Furnace Dipper Plate Refractory
- SMR 137 – Reposition SA Thermocouples
- SMR 169 – SCR NOx Probe
- SMR 170 – Boiler Building Roof Ventilation Fan
- SMR 171 - PF Pipe Support Structural Steel Modifications
- SMR 172 – Purge Air Pipework
- SMR 173 – Economiser Inlet Flow Element
- SMR 174 – Mill Inerting Lines – Tell Tail Drain
- SMR 175 – Purge Air Fan Pipework Mods
- SMR 132A – Core Air Test Points
- SMR 152 – PF Orifice Carriers – Note PF Orifice Plates will be fitted as required in Re-Start Phase.
- SMR 166 – GAH Sootblower Structural Steel Modifications @ EL702'
- SMR 141 – Inspect selected PF pipes for build up, and clean if required
- SMR 068 – Replace Mill Seal Air Dampers
- SMR 157 – SCR A Side DP Tapping Point
- SMR 167 – OFA Structural Steel Modifications
- SMR 168 – FD Suction Hood Structural Steel Modifications

Attachments to Summary Report

Milestone Schedule, Restart Schedule



Trimble County 2 - 2014 Spring Outage - Milestone Programme



Activity ID Activity Name Start Finish Total Float

Activity ID	Activity Name	Start	Finish	Total Float
Trimble County 2 - Spring Outage 2014 - 7th May				
Trimble County - Doosan				
Project Milestones				
M1000	Boiler Off Load	08-Feb-14 A	13-May-14	49
M1040	Boiler Released	08-Feb-14 A	13-May-14	49
M1110	Start ID Fan for AmStar Shotblast	08-Feb-14 A	13-May-14	49
M1050	Furnace Scaffold Installed	10-Feb-14 A	14-Feb-14 A	
M1020	Issue Permit for ID Fan (AmStar)	12-Apr-14 A	21-Apr-14 A	
M1060	AmStar Shotblast, Cladding & Passivation	06-May-14 A	06-May-14 A	
M1030	Gas Path Permit Cancellation / Unit Available for Re-Start	13-Apr-14 A	01-May-14 A	
SMR 0048 - Amstar Furnace Application				
M1990	Owner to activate fan for AMSTAR works	13-Apr-14 A	13-Apr-14 A	
M2000	AMSTAR Coat tubes	21-Apr-14 A	21-Apr-14 A	
M2010	Remove furnace scaffold	01-May-14 A	01-May-14 A	
SMR 0132 - Burner & Throat Replacement				
Front Wall				
M1120	Burners Removed Row C	19-Feb-14 A	02-May-14 A	
M1130	Tube Preps Complete Row C	19-Feb-14 A	19-Feb-14 A	
M1140	Tube Weld Complete Row C	09-Mar-14 A	09-Mar-14 A	
M1150	Burner Installed / Alignment Confirmed Row C	22-Mar-14 A	22-Mar-14 A	
M1160	Mechanical Completion Row C	02-May-14 A	02-May-14 A	
M1170	Burners Removed Row D	19-Feb-14 A	19-Feb-14 A	
M1180	Tube Preps Complete Row D	02-Mar-14 A	02-Mar-14 A	
M1190	Tube Weld Complete Row D	14-Mar-14 A	14-Mar-14 A	
M1200	Burner Installed / Alignment Confirmed Row D	23-Mar-14 A	23-Mar-14 A	
M1210	Mechanical Completion Row D	02-May-14 A	02-May-14 A	
M1220	Burners Removed Row B	22-Feb-14 A	22-Feb-14 A	
M1230	Tube Preps Complete Row B	06-Mar-14 A	06-Mar-14 A	
M1240	Tube Weld Complete Row B	16-Mar-14 A	16-Mar-14 A	
M1250	Burner Installed / Alignment Confirmed Row B	26-Mar-14 A	26-Mar-14 A	
M1260	Mechanical Completion Row B	02-May-14 A	02-May-14 A	
Rear Wall				
M1270	Burners Removed F Row	19-Feb-14 A	19-Feb-14 A	
M1280	Tube Preps Complete F Row	04-Mar-14 A	04-Mar-14 A	
M1290	Tube Weld Complete F Row	13-Mar-14 A	13-Mar-14 A	
M1300	Burner Installed / Alignment Confirmed F Row	22-Mar-14 A	22-Mar-14 A	
M1310	Mechanical Completion F Row	02-May-14 A	02-May-14 A	
M1320	Burners Removed A Row	20-Feb-14 A	20-Feb-14 A	
M1330	Tube Preps Complete A Row	02-Mar-14 A	02-Mar-14 A	
M1340	Tube Weld Complete A Row	15-Mar-14 A	15-Mar-14 A	
M1350	Burner Installed / Alignment Confirmed A Row	24-Mar-14 A	24-Mar-14 A	
M1360	Mechanical Completion A Row	02-May-14 A	02-May-14 A	
M1370	Burners Removed E Row	21-Feb-14 A	21-Feb-14 A	
M1380	Tube Preps Complete E Row	06-Mar-14 A	06-Mar-14 A	
M1390	Tube Weld Complete E Row	20-Mar-14 A	20-Mar-14 A	
M1400	Burner Installed / Alignment Confirmed E Row	26-Mar-14 A	26-Mar-14 A	
M1410	Mechanical Completion E Row	02-May-14 A	02-May-14 A	
SMR0158 - Burner Electrical Modifications				
M1420	Front Wall - Cable Trays Installed	24-Feb-14 A	25-Apr-14 A	
M1430	Front Wall - Cables Installed	26-Feb-14 A	26-Feb-14 A	
M1440	Front Wall - Cables Terminated	07-Apr-14 A	07-Apr-14 A	
M1450	Rear Wall - Cable Trays Installed	24-Feb-14 A	24-Feb-14 A	
M1460	Rear Wall - Cables Installed	07-Apr-14 A	07-Apr-14 A	

Thompson

Issue Date - 10-May-14
Time - 09:24

Summary
Milestone
Baseline Milestone
Longest Path / Critical Milestone

Activity ID	Activity Name	Start	Finish	Total Float	Trimble County 2 - 2014 Spring Outage - Milestone Programme												Doosan Babcock
					February 2014	March 2014	April 2014	May 2014	June 2014	July 2014							
M1470	Rear Wall - Cables Terminated		25-Apr-14 A														
M1480	Power Cabinets /Ro Marshaling Installed		09-Mar-14 A														
SMR 0132 - PF Pipework Modifications		12-Feb-14 A	05-May-14 A														
M1490	Verify All Gags Fitted		12-Feb-14 A														
M1500	PF Pipes Removed Front Wall		15-Feb-14 A														
M1510	PF Pipes Removed Rear Wall		16-Feb-14 A														
M1530	PF Pipes Off Site Modifications Complete		25-Mar-14 A														
M1560	Modified Pipes Installed Front Wall		29-Mar-14 A														
M1570	Modified Pipes Installed Rear Wall		09-Apr-14 A														
M1540	PF Pipes Support Modifications Complete Front Wall		21-Apr-14 A														
M1550	PF Pipes Support Modifications Complete Rear Wall		21-Apr-14 A														
M1520	Strengthening / Trimmer Steel Installed		25-Apr-14 A														
M1580	Verify All Gags Removed		05-May-14 A														
SMR 0156 - OFA Ports & Throats / Ducts & Windbox		25-Feb-14 A	13-May-14 A	38													
OFA Ports																	
Front Wall (East)																	
M1650	Tube Preps Complete South East Corner		14-Apr-14 A														
M1600	Tube Weld Complete South East Corner		14-Mar-14 A														
M1610	OFA Register Installed (New & Existing) South East Corner		13-Apr-14 A														
M1620	Tube Preps Complete North East Corner		11-Mar-14 A														
M1630	Tube Weld Complete North East Corner		20-Mar-14 A														
M1640	OFA Register Installed (New & Existing) North East Corner		14-Apr-14 A														
M1650	Tube Preps Complete South West Corner		16-Mar-14 A														
M1660	Tube Weld Complete South West Corner		18-Mar-14 A														
M1670	OFA Register Installed (New & Existing) South West Corner		20-Mar-14 A														
M1680	Tube Preps Complete North West Corner		22-Apr-14 A														
M1690	Tube Weld Complete North West Corner		16-Mar-14 A														
M1700	OFA Register Installed (New & Existing) North West Corner		20-Mar-14 A														
Duct / Windbox																	
Front Wall (East)																	
M1710	Ducting / Windbox Destruct complete		13-May-14 A	38													
M1720	Modify Support Straps (SE Corner)		25-Feb-14 A														
M1730	Assemble & Weld Toggle Duct Section (SE Corner)		25-Feb-14 A														
M1750	Assemble Windbox (SE Corner)		06-Mar-14 A														
M1770	Confirm Alignment of Toggle Section (SE Corner)		26-Mar-14 A														
M1780	Re-install Insulation & Lagging (SE Corner)		13-Apr-14 A														
M1790	Modify Support Straps (NE Corner)		22-Apr-14 A														
M1800	Assemble & Weld Toggle Duct Section (NE Corner)		13-May-14 A	38													
M1820	Assemble & Weld Windbox (NE Corner)		30-Mar-14 A														
M1840	Confirm Alignment of Toggle Section (NE Corner)		14-Apr-14 A														
M1850	Re-install Insulation & Lagging (NE Corner)		22-Apr-14 A														
Rear Wall (West)																	
M1860	Ducting / Windbox Destruct complete		10-Mar-14 A	80													
M1870	Modify Support Straps (SW Corner)		12-May-14 A	54													
M1880	Assemble & Weld Elbow Duct / Turning Vanes (SW Corner)		10-Mar-14 A														
M1900	Assemble & Weld Windbox (SW Corner)		17-Mar-14 A														
M2720	Confirm Alignment of Toggle Section (SW Corner)		15-Apr-14 A														
M1890	Assemble & Weld Toggle Duct Section (SW Corner)		28-Apr-14 A														
M1920	Re-install Insulation & Lagging (SW Corner)		29-Apr-14 A														
M1930	Modify Support Straps (NW Corner)		01-May-14 A														
M1950	Assemble & Weld Elbow Duct / Turning Vanes (NW Corner)		12-May-14 A	54													
M2730	Confirm Alignment of Toggle Section (NW Corner)		15-Mar-14 A														
M1960	Assemble & Weld Windbox (NW Corner)		14-Apr-14 A														
M1940	Assemble & Weld Toggle Duct Section (NW Corner)		24-Apr-14 A														
			28-Apr-14 A														
			30-Apr-14 A														

Thompson

Issue Date - 10-May-14
Time - 09:42

Summary
Milestone
Longest Path / Critical Milestone

Baseline Milestone
Milestone

Activity ID	Activity Name	Start	Finish	Total Float	2014											
					Feb	Mar	Apr	May	Jun	Jul						
M1980	Re-install Insulation & Lagging (NW Corner)	01-Apr-14 A	12-May-14	58												
SMR 0166 - GAH Support Steelwork	Inspect Installation & Sign off - Bechtel / DB / EC	01-Apr-14 A	01-Apr-14 A													
SMR 0107 - GAH Sootblower Piping	PCV Warming Line 1" - Installation Complete	01-Apr-14 A	24-Apr-14 A													
M2030	2" & 3" Sootblower Steam @ 530" - Installation Complete	01-Apr-14 A	01-Apr-14 A													
M2050	Sootblower Supply from Platen Sub - Installation Complete	01-Apr-14 A	01-Apr-14 A													
M2060	6" Pipe from 714" down to 530" - Installation Complete	01-Apr-14 A	01-Apr-14 A													
M2070	Warming Drain from 530" to CDV - Installation Complete	01-Apr-14 A	01-Apr-14 A													
M2080	SVE Pipework - Silencers - Installation Complete	01-Apr-14 A	01-Apr-14 A													
M2090	SVE Pipework - Roofing - Re-installation Complete	01-Apr-14 A	01-Apr-14 A													
SMR 0170 - Boiler Building Roof Ventilation Fan	Fan Relocated in new location	04-Apr-14 A	04-Apr-14 A													
M2100	GAH Sootblower - Cables / hardware installed	31-Mar-14 A	13-May-14	39												
SMR 0159 - GAH Sootblower Electrical Modifications	GAH Sootblower - Terminated/Glanded/Loop Check	31-Mar-14 A	13-May-14	39												
SMR 0095 - WCAH Upgrade	WCAH - South Side - Old Coils / Casings Removed	26-Feb-14 A	15-Apr-14 A													
M2140	WCAH - South Side - New Coils / Casings Installed	23-Mar-14 A	23-Mar-14 A													
M2150	WCAH - South Side - New Headers Installed	12-Apr-14 A	12-Apr-14 A													
M2160	WCAH - North Side - Old Coils / Casings Removed	25-Mar-14 A	25-Mar-14 A													
M2170	WCAH - North Side - New Coils / Casings Installed	07-Apr-14 A	07-Apr-14 A													
M2180	WCAH - North Side - New Headers Installed	15-Apr-14 A	15-Apr-14 A													
M2190	FD Hood - South Side - Crane in Position	01-Mar-14 A	01-Mar-14 A													
M2200	FD Hood - South Side - Hood Installed	18-Mar-14 A	18-Mar-14 A													
M2210	FD Hood - North Side - Scaffold Access Erected	05-Mar-14 A	05-Mar-14 A													
M2220	FD Hood - North Side - Crane in Position	15-Mar-14 A	15-Mar-14 A													
M2230	FD Hood - North Side - Hood Installed	27-Mar-14 A	27-Mar-14 A													
SMR 0152 - PF Orifice Plates (#30)	A Mill Complete	20-Feb-14 A	24-Feb-14 A													
M2240	B Mill Complete	20-Feb-14 A	20-Feb-14 A													
M2260	D Mill Complete	24-Feb-14 A	24-Feb-14 A													
M2250	E Mill Complete	24-Feb-14 A	24-Feb-14 A													
M2270	C Mill Complete	24-Feb-14 A	24-Feb-14 A													
M2280	F Mill Complete	24-Feb-14 A	24-Feb-14 A													
M2290	F Mill Complete	24-Feb-14 A	24-Feb-14 A													
SMR 0068 - Mill Seal Air Non Return Dampers	Dampers Installation Complete	02-Mar-14 A	02-Mar-14 A													
M2300	Dampers Installation Complete	02-Mar-14 A	02-Mar-14 A													
SMR 0114 - Furnace Dipper Plate Refractory	Visual Inspection / Determine Extent of Repairs	09-Feb-14 A	09-Feb-14 A													
M2310	Repairs Completed	09-Feb-14 A	09-Feb-14 A													
M2320	Repairs Completed	09-Feb-14 A	09-Feb-14 A													
SMR 0155 - Logic Revisions	Logic Revisions Finalised	09-Apr-14 A	09-Apr-14 A													
M2330	Logic Revisions Finalised	09-Apr-14 A	09-Apr-14 A													
M2340	Logic Changes Implemented	07-May-14 A	07-May-14 A													
SMR 0173 - Flow Element Calibrations	Logic Changes Implemented	27-Feb-14 A	27-Feb-14 A													
M2350	Economiser Inlet - Removed for Calibration	28-Feb-14 A	28-Feb-14 A													
M2360	Economiser Inlet - Re-Fitted	31-Mar-14 A	31-Mar-14 A													
M2370	Economiser Inlet - Weld / NDE Complete	07-Apr-14 A	07-Apr-14 A													
M2380	Economiser Inlet - Insulation Complete / Scaffold Removed	25-Apr-14 A	25-Apr-14 A													
M2390	HP Spray Water - Removed for Calibration	27-Feb-14 A	27-Feb-14 A													
M2400	HP Spray Water - Re-Fitted	04-Apr-14 A	04-Apr-14 A													
M2410	HP Spray Water - Weld / NDE Complete	07-Apr-14 A	07-Apr-14 A													
M2420	HP Spray Water - Insulation Complete / Scaffold Removed	19-Apr-14 A	19-Apr-14 A													

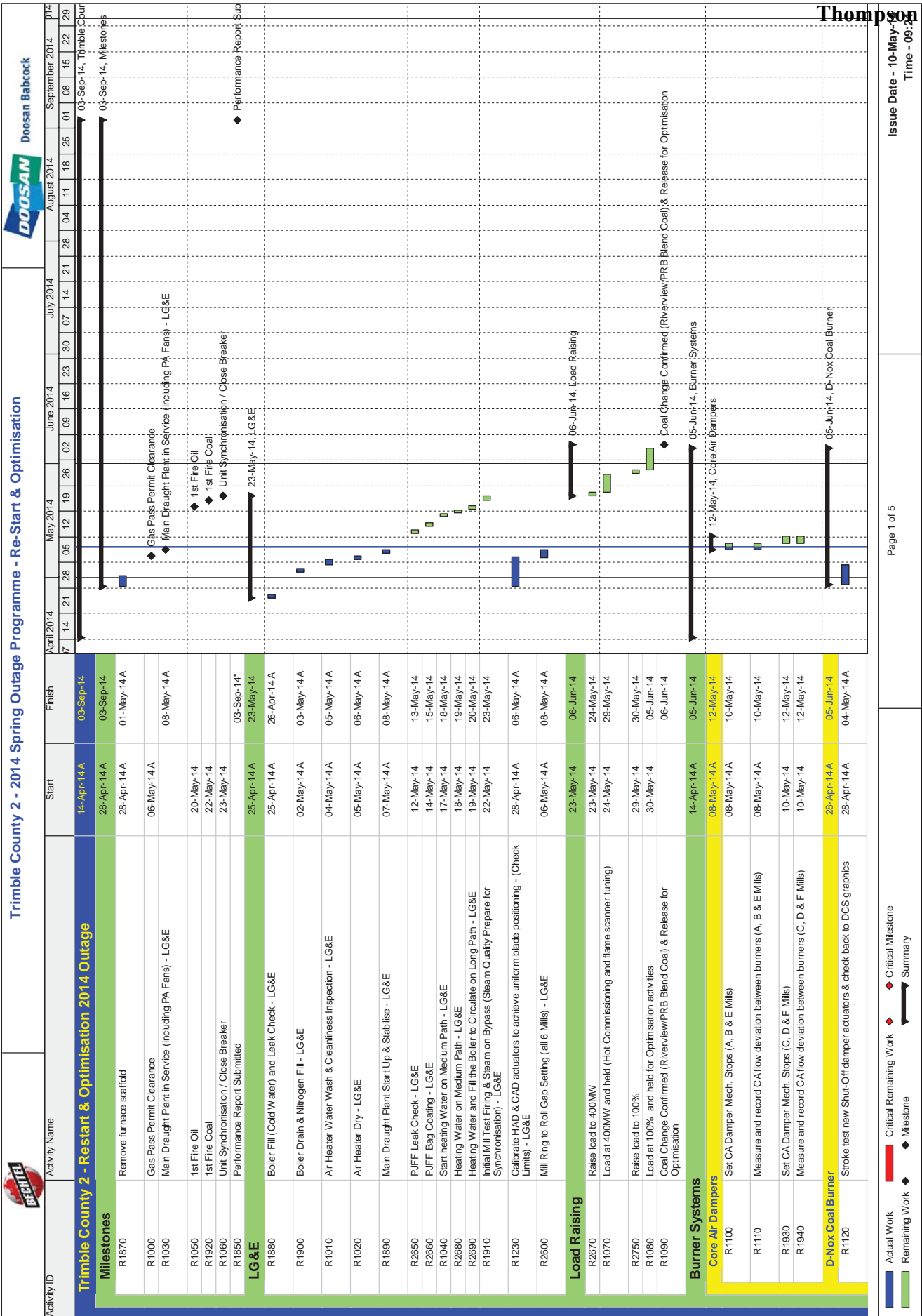


Trimble County 2 - 2014 Spring Outage - Milestone Programme

Doosan Babcock

Issue Date - 10-May-14
 Time - 09:48

Thompson

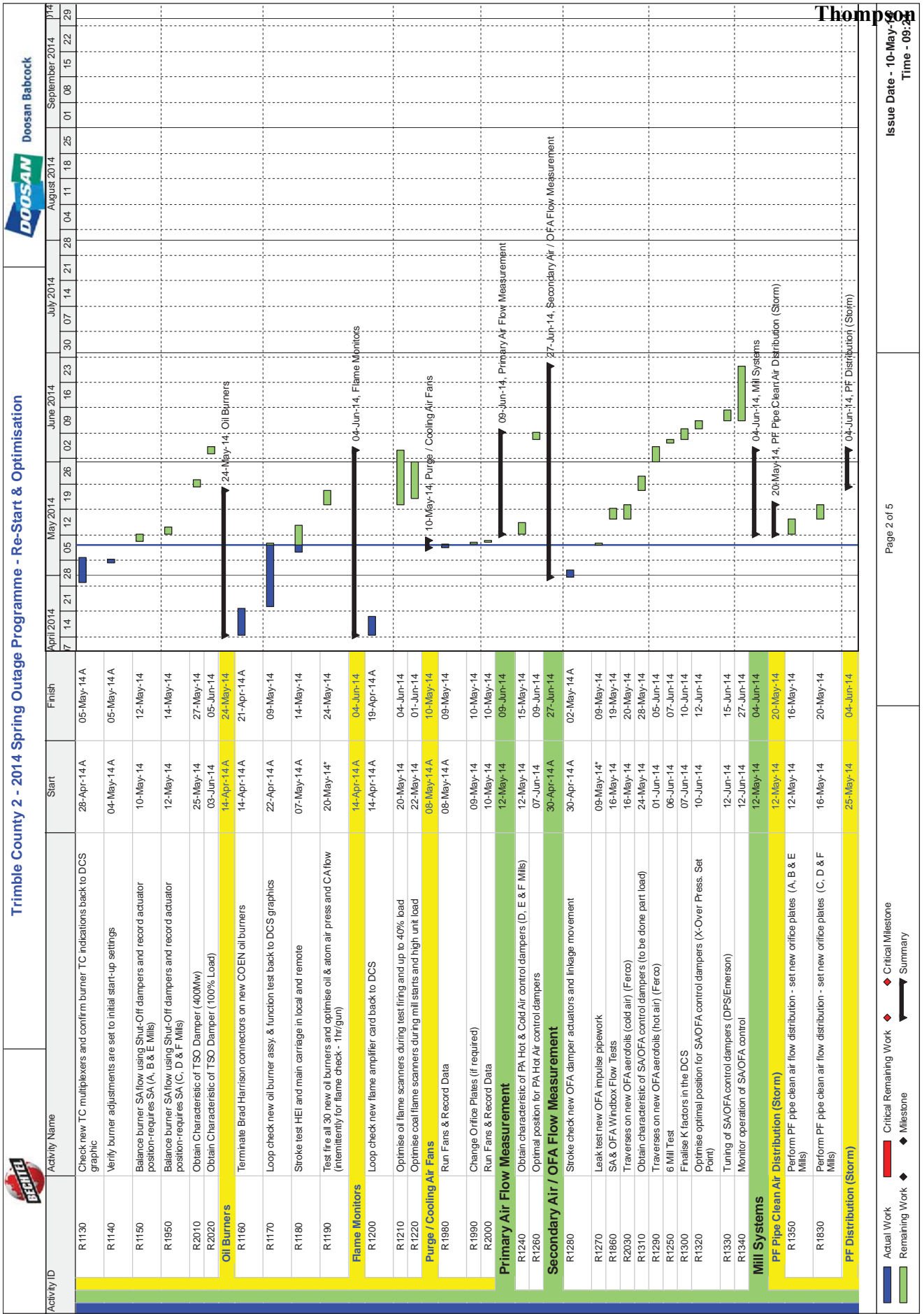


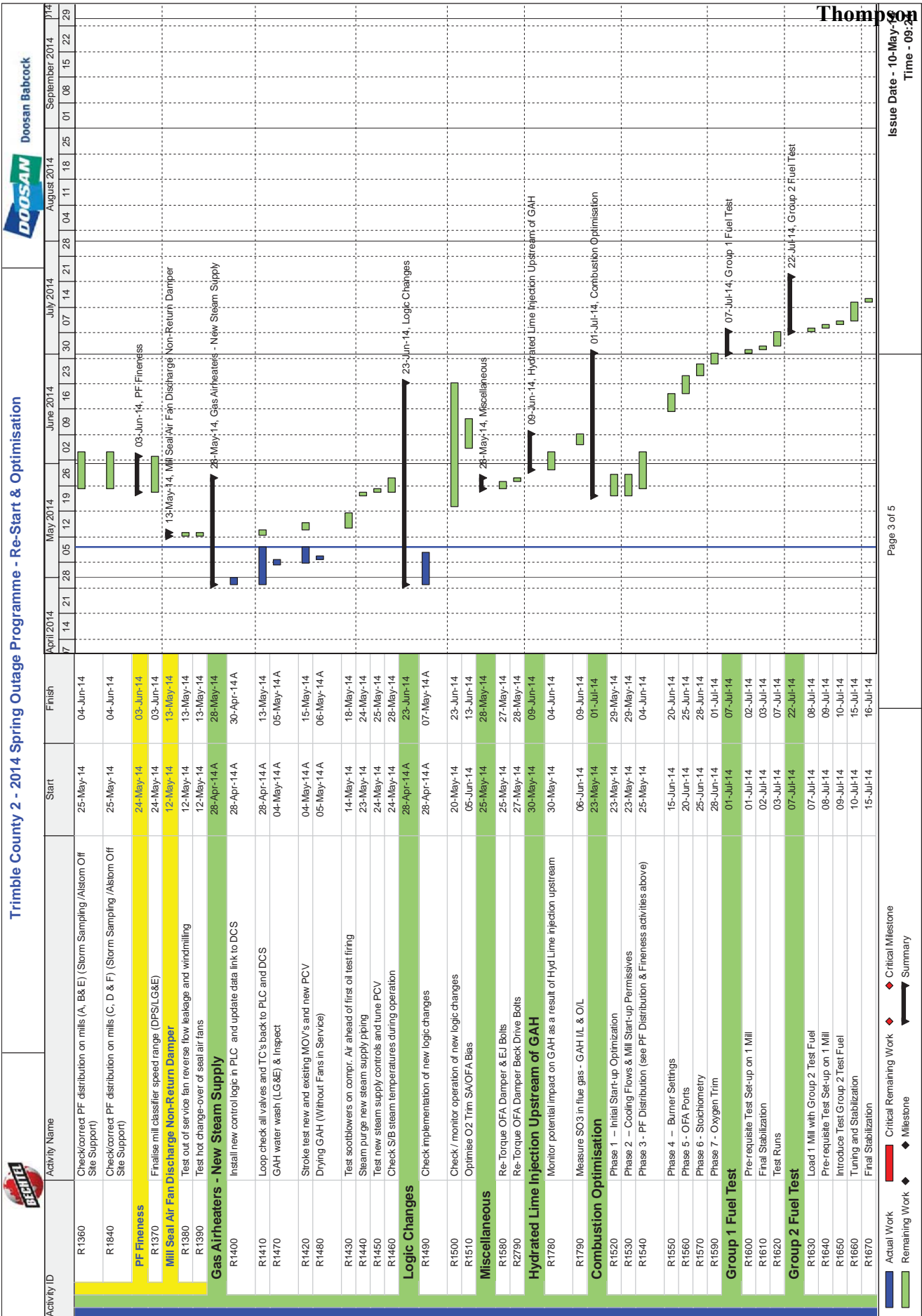
Trimble County 2 - 2014 Spring Outage Programme - Re-Start & Optimisation



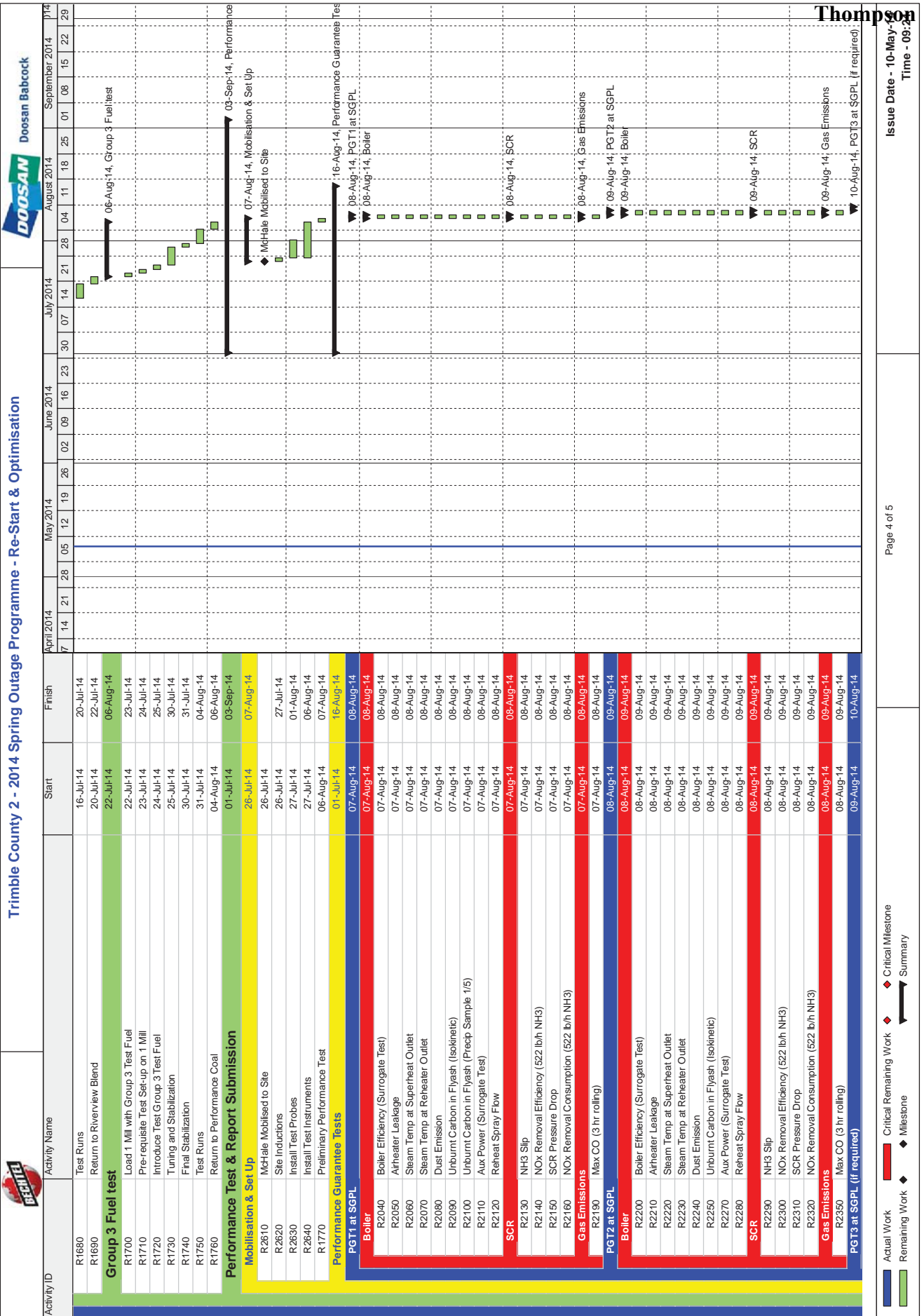
Doosan Babcock

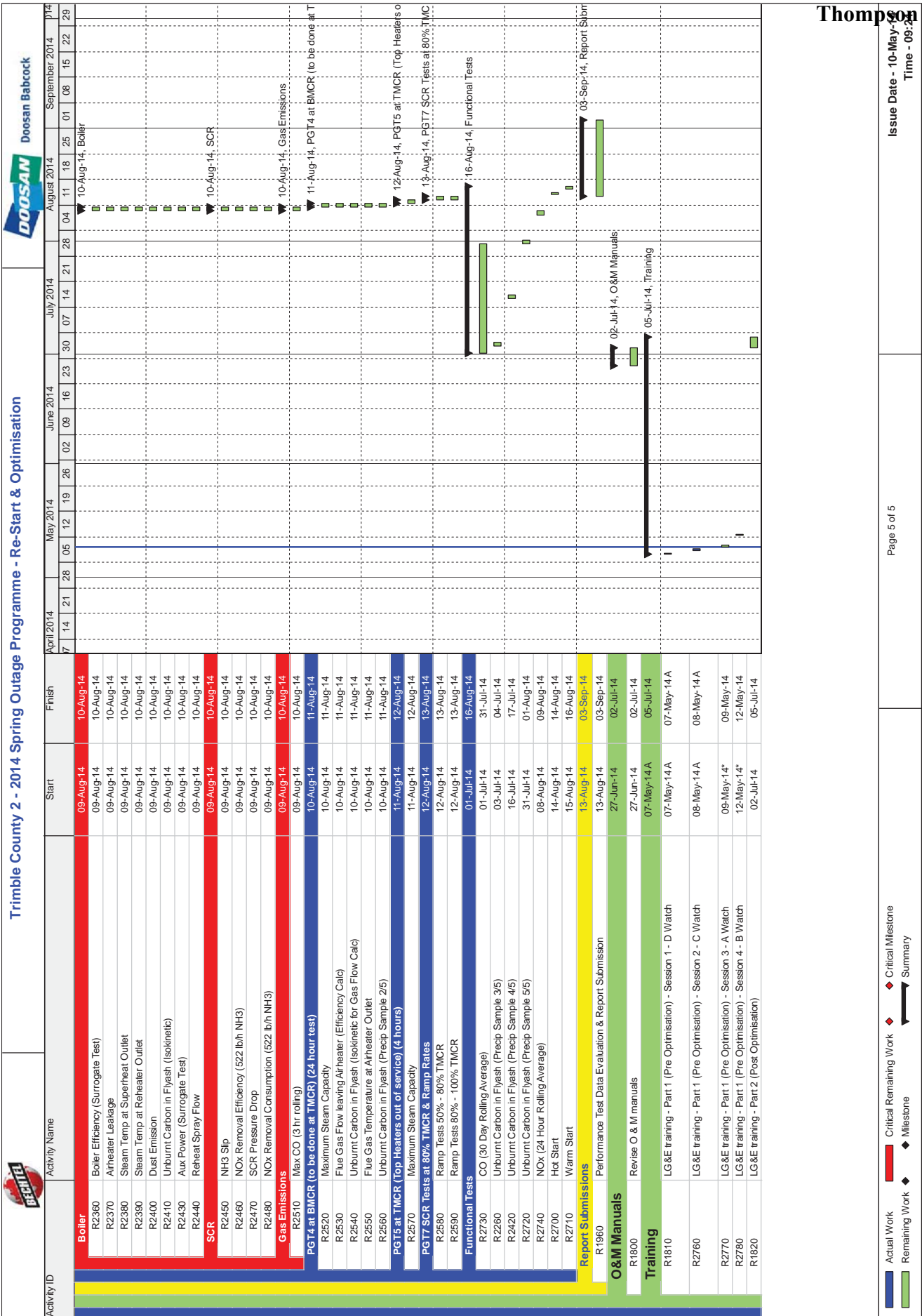
Thompson





Thompson





From: Faith, Bobbie(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=E026371)
To: Lewis, Donna
CC: Bowling, Ralph; Byrd, Larry; Clark, Janice; Cosby, David; Wilson, Dan; Gilliland, Dave; Voyles, John; Joyce, Jeff; Hincker, Loren; Kirkland, Mike; Bryant, Nancy; Rabe, Phil; Ransdell, Charles; Kiesler, Rosie; Turner, Steven
BCC:
Subject: TC Weekly Report -- Week ending 4 7 14
Sent: 04/07/2014 02:30:55 PM -0400 (EDT)
Attachments: Week ending 4 7 14.docx;

Bobbie Faith

Assistant to Jeff Joyce, General Manager
Louisville Gas & Electric
Trimble County Generating Station
487 Corn Creek Road
Bedford, Kentucky 40006
502-627-6283
bobbie.faith@lge-ku.com

Weekly Report
April 7, 2014

Station / Area: Trimble County Station**Safety:**

- 17 days since last OSHA recordable incident (3/20/14).
- 153 days since last lost-time incident (11/4/13).
- 10 days since last contractor OSHA recordable incident (3/27/14)

Environmental:

Week Ending April 6 th 2014	TC1	TC2	CTs
SO2 (Sulfur Dioxide)	0	0	
NOx (Nitrous Oxide)	0	0	
PM (Particulate Matter)	0	0	0
CO (Carbon Monoxide)		0	
CO_CORR (Carbon Monoxide-Corrected)			0
NOX CORR (Nitrous Oxide-Corrected)			1
CH2O (Formaldehyde)			0
Sulfur Content of Natural Gas			0
CO (Carbon Monoxide)		0	
Hg (Mercury)		0	
VOC (Volatile Organic Compounds)		0	
H2SO4 (Sulfuric Acid Mist)		0	
Fluorides		0	
HCl (Hydrochloric Acid)		0	
HAPS (Hazardous Air Pollutants)		0	
Pb (Lead)		0	

Cause/Duration: At 05:00 on 4/1/2014 CT9 experienced a NOx exceedance of 13.3 PPM. CT9 (EU29) was started "Fires in" at 05:29 went online "line breaker closed" at 05:36, went into Mode 6 at 05:42 and started a calibration at 05:48.

Below are the 1-minute averages after Mode 6:

05:42- 39.7 NOx PPM

05:43- 8.5 NOx PPM

05:44- 8.0 NOx PPM

05:45- 7.9 NOx PPM

05:46- 7.8 NOx PPM

05:47- 7.8 NOx PPM

Action Taken: No action was necessary. The unit was in compliance 1-minute after going into mode 6.

- SCR and hydrated lime systems in service.

Unit Status:

- **Unit 1:**
 - TC1 on-line and good for full load.
 - Removed unit from service on 4/5 @ 00:00 hours to repair a boiler leak located in the wall tube adjacent to the wall blower. While the unit was offline, maintenance repairs were also performed on the boiler wet ash pit, burners, voltage balance relay and miscellaneous other outage repair work. Unit back on-line 4/6 @ 5:49 hrs.
 - The turbine/generator T7 bearing vibration is currently running around 3 to 4 mils. Monitoring same.
 - Still troubleshooting mill fire issues. No further issues to report at this time.
 - Monitoring oil leak on turbine generator #10 bearing. Adjusted vapor extractor pressure to minimize leak.
 - Monitoring AH differential pressures.
 - 1A Demister wash pump has been overhauled and is expected to return to service this week.
 - 1B11 recycle pump out of service for repairs.
- **SO₃ Removal System:**
 - TC1 – Hydrated lime injection in service.
- **Unit 2:**
 - TC2 off-line for planned burner outage. Current return to service is 5/26.
 - Outage is currently on schedule.
 - Other TC2 outage work includes:
 - Boiler inspection (Alstom) is ongoing.
 - SCR catalyst change-out is complete.
 - Hydrated lime project in progress.
 - BCP thrust bearing inspection is scheduled to start April 18th.
 - ID and FD fans – replacing fan blade hubs on 2B ID and 2B FD fans.
 - Ash pit dipper plate replacement materials are currently on order and should be on site by this Thursday.
 - All 30 burners are now installed. Continuing to install OFA duct work.
 - Roof tube boiler project is in progress and on schedule to be completed by April 23rd.
 - Plant and Bechtel are still evaluating punch list and warranty work scope that is not disputed and non-outage. Still working off punch

list items. Station developed list of open items and design is for PE.

- **Common:**
 - The B Ash Pond pump has been returned by the Central Service Shop and is expected to be returned to service this week.
 - CFA rotary feeder out-of-service due to feeder pluggage. Repair work planned for middle of April.
- **Combustion Turbines:**
 - All CTs are available.

Fuel/Limestone Inventory:

- TC1 and TC2 High Sulfur
 - 263,161.0 (25 days)
- TC2
 - PRB – 104,047.62 (45 days @ 30%)
- Limestone
 - 61,815 Tons

Material Handling:

- 21 coal barges and 2 limestone barges in the last 7 days.
- Barges in the fleet:
 - 22 Barges TC1 & TC2 High Sulfur Coal (Riverview)
 - 0 Barges TC2 PRB Coal
 - 0 Barges Limestone
- Issues:
 - None

People:

- N/A

Other:

- Synmat trucking gypsum to Certaineed Plant in Carrollton on part-time basis.
- No barges are scheduled this week. 1,200 ton silo is being emptied for maintenance activities.

From: Noonan, Kenny(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=WEB/CN=KENNYNOONAN)
To: Bowling, Ralph; Crutcher, Tom
CC:
BCC:
Subject: FW: TC2 T&G Advisory Bulletins.
Sent: 03/27/2014 08:20:26 AM -0400 (EDT)
Attachments: taa14001.pdf; taa14002.pdf; TAQ14026.pdf;

I meant to Cc you all on this.

KRN

From: Noonan, Kenny
Sent: Thursday, March 27, 2014 8:19 AM
To: Joyce, Jeff; Byrd, Larry; Rabe, Phil
Cc: Jones, Steve; Hoilman, William; Robinson, Richard (Green River)
Subject: TC2 T&G Advisory Bulletins.
Importance: High

Have we received any advisory bulletins or info such as GE's TILs from Hitachi? The attachments are for the Walter Scott U4 as Hitachi's version of GE's TILs or Siemens OMM bulletins.

TC2 steam path is very similar in design and feel some portion of these TAA's will apply to TC2. They don't look too ominous and the areas of concern for inspection mentioned by Hitachi for is already in the LGE-KU major outage processes.

Their values to initiate repairs and method of making these repairs are right in line with what we have seen within our GE steam paths.

I wanted to check to see if TC had seen any of these letters and if not I will contact MD&A to see if any TAAs have been issued for TC2

Thanks
KRN

From: Faith, Bobbie(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=E026371)
To: Lewis, Donna
CC: Bowling, Ralph; Byrd, Larry; Clark, Janice; Cosby, David; Wilson, Dan; Gilliland, Dave; Voyles, John; Joyce, Jeff; Hincker, Loren; Kirkland, Mike; Bryant, Nancy; Rabe, Phil; Ransdell, Charles; Kiesler, Rosie; Turner, Steven
BCC:
Subject: TC Weekly Report -- Week ending 3 31 14
Sent: 03/31/2014 11:45:28 AM -0400 (EDT)
Attachments: Week ending 3 31 14.docx;

Bobbie Faith

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**Weekly Report
March 31, 2014**

Station / Area: Trimble County Station

Safety:

- 10 days since last OSHA recordable incident (3/20/14).
- 146 days since last lost-time incident (11/4/13).
- 3 days since last contractor OSHA recordable incident (3/27/14)

Environmental:

Week Ending March 30 th 2014	TC1	TC2	CTs
SO2 (Sulfur Dioxide)	0	0	
NOx (Nitrous Oxide)	0	0	
PM (Particulate Matter)	0	0	0
CO (Carbon Monoxide)		0	
CO_CORR (Carbon Monoxide-Corrected)			0
NOX CORR (Nitrous Oxide-Corrected)			0
CH2O (Formaldehyde)			0
Sulfur Content of Natural Gas			0
CO (Carbon Monoxide)		0	
Hg (Mercury)		0	
VOC (Volatile Organic Compounds)		0	
H2SO4 (Sulfuric Acid Mist)		0	
Fluorides		0	
HCl (Hydrochloric Acid)		0	
HAPS (Hazardous Air Pollutants)		0	
Pb (Lead)		0	

- SCR and hydrated lime systems in service.

Unit Status:

○ **Unit 1:**

- TC1 on-line and good for full load.
- The turbine/generator T7 bearing vibration is currently running around 3 to 4 mils. Monitoring same.
- Still troubleshooting mill fire issues. No further issues to report at this time.
- Monitoring oil leak on turbine generator #10 bearing. Adjusted vapor extractor pressure to minimize leak.
- Monitoring AH differential pressures.

- 1A Demister wash pump is out of service for overhaul. Expected to return to service this week.
- 1B11 recycle pump out of service for repairs.

- **SO₃ Removal System:**
 - TC1 – Hydrated lime injection in service.

- **Unit 2:**
 - TC2 off-line for planned burner outage. Current return to service is 5/26.
 - Outage is currently on schedule.
 - Other TC2 outage work includes:
 - Boiler inspection (Alstom) is ongoing.
 - SCR catalyst change-out is ongoing and progressing well.
 - Hydrated lime project in progress.
 - BCP thrust bearing inspection is scheduled to start April 18th.
 - Deaerator inspection is complete and identified repairs will be completed this week.
 - ID and FD fans – replacing fan blade hubs on 2B ID and 2B FD fans.
 - Ash pit dipper plate replacement materials should be on site by the end of the week.
 - All 30 burners are now installed. Continuing to install OFA duct work.
 - Turbine inspections (last stage buckets) are complete.
 - Roof tube boiler project is in progress and on schedule to be completed by April 23rd.
 - DESP work is complete.

 - Plant and Bechtel are still evaluating punch list and warranty work scope that is not disputed and non-outage. Still working off punch list items. Station developed list of open items and design issues for PE.

- **Common:**
 - The B Ash Pond pump has been repaired by the Central Service Shop and is planning to be in service next week.
 - A FA rotary feeder out-of-service due to BUS outage for repairs on the A FA motor breaker. Repair work planned to be completed this week.
 - CFA rotary feeder out-of-service due to feeder pluggage. Repair work planned for middle of April.

- **Combustion Turbines:**
 - All CTs are available.

Fuel/Limestone Inventory:

- TC1 and TC2 High Sulfur
 - 260,371.0 (24.7 days)

- TC2
 - PRB – 104,047.62 (45 days @ 30%)

- Limestone
 - 49,325 Tons

Material Handling:

- 28 coal barges and 2 limestone barges in the last 7 days.

- Barges in the fleet:
 - 15 Barges TC1 & TC2 High Sulfur Coal (Riverview)
 - 0 Barges TC2 PRB Coal
 - 0 Barges Limestone

- Issues:
 - None

People:

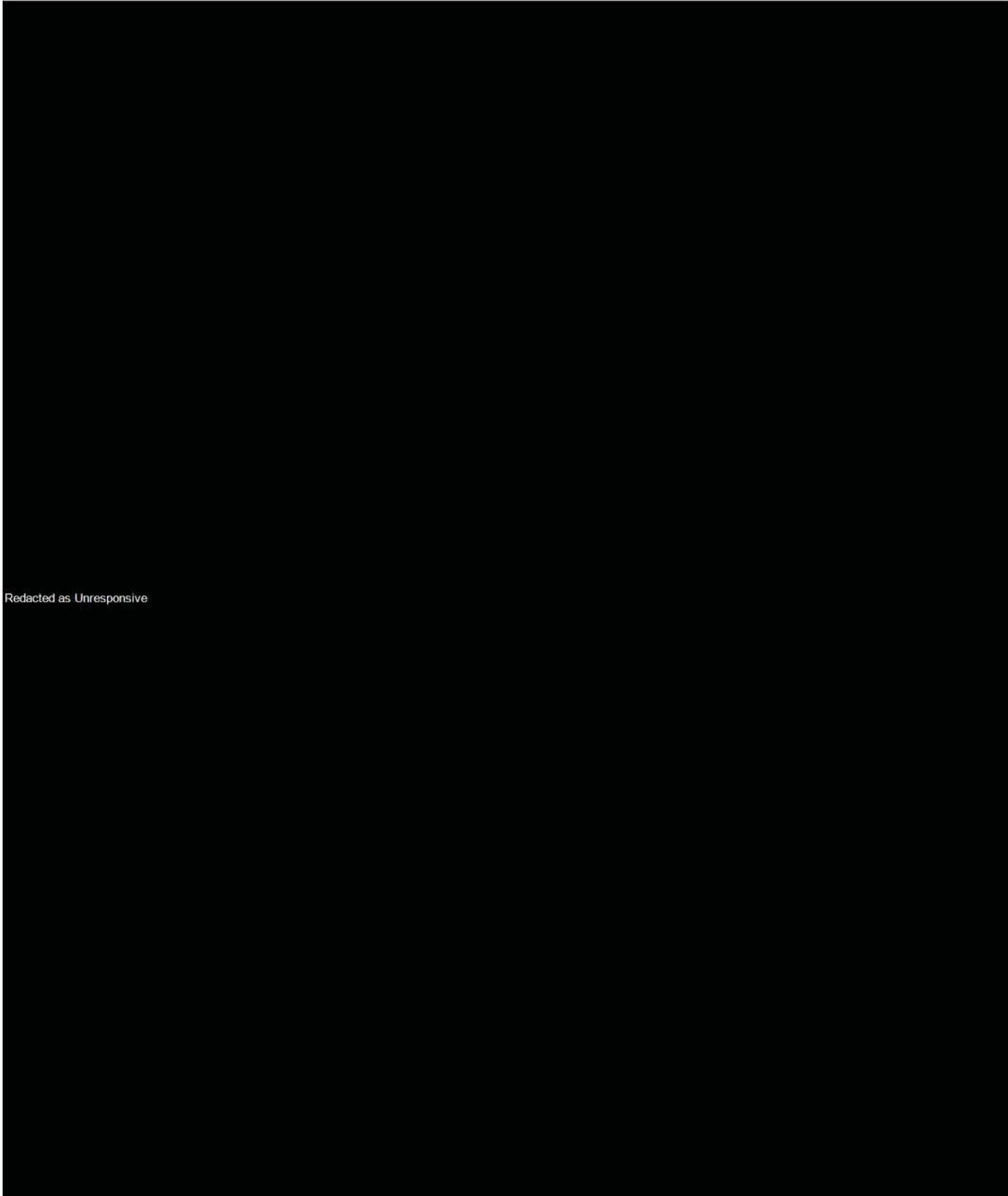
- One new Mechanical Engineer and one new Station Helper have started this week.

Other:

- Synmat trucking gypsum to Certaineed Plant in Carrollton on part-time basis.
- No barges are scheduled this week. 1,200 ton silo is being emptied for maintenance activities.

Power Generation
Week Ending 03/14/14

Redacted as Unresponsive



Redacted as Unresponsive

- **Unit 2:**

- TC2 off-line for planned burner outage. Current return to service is 5/26.
- Outage is currently on schedule.
- Bag house fabric filter replacement is complete.
- Other TC2 outage work includes:
 - Boiler inspection (Alstom) is ongoing.
 - SCR catalyst change-out is ongoing.
 - Ductwork inspection complete.
 - Hydrated lime project in progress.
 - BCP thrust bearing inspection is scheduled to start April 18th.
 - Deaerator inspection is complete.
 - ID and FD fans – replacing fan blade hubs on 2B ID and 2B FD fans.
 - FM Global TC2 boiler and unfired pressure vessel inspections completed.
 - First burner installation beginning today.
- Plant and Bechtel are still evaluating punch list and warranty work scope that is not disputed and non-outage. Still working off punch list items. Station developed list of open items and design issues for PE.

Redacted as Unresponsive

From: Faith, Bobbie(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=E026371)
To: Lewis, Donna
CC: Bowling, Ralph; Byrd, Larry; Clark, Janice; Cosby, David; Wilson, Dan; Gilliland, Dave; Voyles, John; Joyce, Jeff; Hincker, Loren; Kirkland, Mike; Bryant, Nancy; Rabe, Phil; Ransdell, Charles; Kiesler, Rosie; Turner, Steven
BCC:
Subject: TC Weekly Report -- Week ending 3 16 14
Sent: 03/18/2014 04:00:34 PM -0400 (EDT)
Attachments: Week ending 3 16 14.docx;

Bobbie Faith

Assistant to Jeff Joyce, General Manager
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Weekly Report
March 17, 2014

Station / Area: Trimble County Station**Safety:**

- 1 day since last OSHA recordable incident (3/16/13).
- 132 days since last lost-time incident (11/4/13).
- 143 days since last contractor OSHA recordable incident (10/24/13)

Environmental:

Week Ending March 16 th 2014	TC1	TC2	CTs
SO2 (Sulfur Dioxide)	0	0	
NOx (Nitrous Oxide)	0	0	
PM (Particulate Matter)	0	0	0
CO (Carbon Monoxide)		0	
CO_CORR (Carbon Monoxide-Corrected)			0
NOX CORR (Nitrous Oxide-Corrected)			0
CH2O (Formaldehyde)			0
Sulfur Content of Natural Gas			0
CO (Carbon Monoxide)		0	
Hg (Mercury)		0	
VOC (Volatile Organic Compounds)		0	
H2SO4 (Sulfuric Acid Mist)		0	
Fluorides		0	
HCl (Hydrochloric Acid)		0	
HAPS (Hazardous Air Pollutants)		0	
Pb (Lead)		0	

- SCR and hydrated lime systems in service.

Unit Status:○ **Unit 1:**

- TC1 on-line and good for full load.
- The turbine/generator T7 bearing vibration is currently running around 3 to 4 mils. Monitoring same.
- Still troubleshooting mill fire issues. Performing inspection on 1A coal mill.
- Experienced problem with the 1A TDBFP not resetting after routine trip test. I/E replaced solenoid on controls. Pump back in service. Trouble shooting high control oil pressure.

- Monitoring oil leak on turbine generator #10 bearing. Adjusted vapor extractor pressure to minimize leak.
- Monitoring AH differential pressures.
- 1A Demister wash pump is out of service for overhaul.

- **SO₃ Removal System:**
 - TC1 – Hydrated lime injection in service.

- **Unit 2:**
 - TC2 off-line for planned burner outage. Current return to service is 5/26.
 - Outage is currently on schedule.
 - Bag house fabric filter replacement is complete.
 - Other TC2 outage work includes:
 - Boiler inspection (Alstom) is ongoing.
 - SCR catalyst change-out is ongoing.
 - Ductwork inspection complete.
 - Hydrated lime project in progress.
 - BCP thrust bearing inspection is scheduled to start April 18th.
 - Deaerator inspection is complete.
 - ID and FD fans – replacing fan blade hubs on 2B ID and 2B FD fans.
 - FM Global TC2 boiler and unfired pressure vessel inspections completed.
 - First burner installation beginning today.

 - Plant and Bechtel are still evaluating punch list and warranty work scope that is not disputed and non-outage. Still working off punch list items. Station developed list of open items and design issues for PE.

- **Common:**
 - The B Ash Pond pump has been pulled and shipped to the Central Service Shop and repairs are in process.

- **Combustion Turbines:**
 - All CTs are available. TC9 and 10 unavailable for a brief period on Sunday, due to a jammed limit switch on LCI preventing start-up. Reduced speed on VFD to prevent over travel on limits.

Fuel/Limestone Inventory:

- TC1 and TC2 High Sulfur
 - 279,676.13 (26.6 days)

- TC2
 - PRB – 71,672.75 (31 days @ 30%)

- Limestone
 - 54,896 Tons

Material Handling:

- 23 coal barges and 2 limestone barges in the last 7 days.
- Barges in the fleet:
 - 0 Barges TC1 & TC2 High Sulfur Coal (Riverview)
 - 0 Barges TC2 PRB Coal
 - 1 Barges Limestone
- Issues:
 - None

People:

- Eric Oberhausen accepted the Training Coordinator position.

Other:

- Synmat trucking gypsum to Certaineed Plant in Carrollton on part-time basis.
- Shipped one fly ash barge to Holcim. Two barges are scheduled to be loaded this week.

Power Generation
Week Ending 02/28/14

Redacted as Unresponsive



- **Unit 2:**
 - TC2 off-line for planned burner outage. Current return to service is 5/26.
 - Outage is currently on schedule.
 - Bag house fabric filter replacement started last week. One section North/South was completed. (BWF).
 - Other TC2 outage work includes:
 - Boiler inspection (Alstom) is ongoing.
 - SCR catalyst change-out is ongoing.
 - Ductwork inspection completed last week.
 - Hydrated lime project started last week.
 - BFP recirc valve inspections are complete. Repairs are ongoing on the “2B” TDBFP.
 - BCP thrust bearing inspection.
 - Deaerator inspection is complete.
 - ID and FD fans – replacing fan blade hubs on 2B ID and 2B FD fans.
 - FM Global TC2 boiler and unfired pressure vessel inspections completed last week.

 - Plant and Bechtel are still evaluating punch list and warranty work scope that is not disputed and non-outage. Still working off punch list items. Station developed list of open items and design issues for PE.

Redacted as Unresponsive

From: Faith, Bobbie(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=E026371)
To: Lewis, Donna
CC: Bowling, Ralph; Byrd, Larry; Clark, Janice; Cosby, David; Wilson, Dan; Gilliland, Dave; Voyles, John; Joyce, Jeff; Hincker, Loren; Kirkland, Mike; Bryant, Nancy; Rabe, Phil; Ransdell, Charles; Kiesler, Rosie; Turner, Steven
BCC:
Subject: TC Weekly Report -- Week ending 3 3 14
Sent: 03/03/2014 01:55:00 PM -0500 (EST)
Attachments: Week ending 3 3 14.docx;

Bobbie Faith

Assistant to Jeff Joyce, General Manager
Louisville Gas & Electric
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Bedford, Kentucky 40006
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bobbie.faith@lge-ku.com

Weekly Report
March 3, 2014

Station / Area: Trimble County Station**Safety:**

- 140 days since last OSHA recordable incident (10/11/13).
- 118 days since last lost-time incident (11/4/13).
- 129 days since last contractor OSHA recordable incident (10/24/13)

Environmental:

Week Ending March 2 nd 2014	TC1	TC2	CTs
SO2 (Sulfur Dioxide)	0	0	
NOx (Nitrous Oxide)	0	0	
PM (Particulate Matter)	0	0	0
CO (Carbon Monoxide)		0	
CO_CORR (Carbon Monoxide-Corrected)			0
NOX CORR (Nitrous Oxide-Corrected)			0
CH2O (Formaldehyde)			0
Sulfur Content of Natural Gas			0
CO (Carbon Monoxide)		0	
Hg (Mercury)		0	
VOC (Volatile Organic Compounds)		0	
H2SO4 (Sulfuric Acid Mist)		0	
Fluorides		0	
HCl (Hydrochloric Acid)		0	
HAPS (Hazardous Air Pollutants)		0	
Pb (Lead)		0	

- SCR and hydrated lime systems in service.

Unit Status:○ **Unit 1:**

- TC1 on-line and good for full load.
- The turbine/generator T7 bearing vibration is currently running around 3 to 4 mils. Monitoring same.
- Still troubleshooting mill fire issues.
- Blanked off the 1B2 coal burner due to burned out gasket. Will require outage to replace gasket.
- Monitoring oil leak on turbine generator #10 bearing. Adjusted vapor extractor pressure to minimize leak.
- Monitoring AH differential pressures.

- **SO₃ Removal System:**
 - TC1 – Hydrated lime injection in service.

- **Unit 2:**
 - TC2 off-line for planned burner outage. Current return to service is 5/26.
 - Outage is currently on schedule.
 - Bag house fabric filter replacement started last week. One section North/South was completed. (BWF).
 - Other TC2 outage work includes:
 - Boiler inspection (Alstom) is ongoing.
 - SCR catalyst change-out is ongoing.
 - Ductwork inspection completed last week.
 - Hydrated lime project started last week.
 - BFP recirc valve inspections are complete. Repairs are ongoing on the “2B” TDBFP.
 - BCP thrust bearing inspection.
 - Deaerator inspection is complete.
 - ID and FD fans – replacing fan blade hubs on 2B ID and 2B FD fans.
 - FM Global TC2 boiler and unfired pressure vessel inspections completed last week.

 - Plant and Bechtel are still evaluating punch list and warranty work scope that is not disputed and non-outage. Still working off punch list items. Station developed list of open items and design issues for PE.

- **Common:**
 - The B Ash Pond pump has been pulled and shipped to the Central Service Shop and repairs are in process.

- **Combustion Turbines:**
 - All CTs are available.

Fuel/Limestone Inventory:

- TC1 and TC2 High Sulfur
 - 292,263.0 (27.8 days @ 70%)

- TC2
 - PRB – 59,704.0 (26 days @ 30%)

- Limestone
 - 31,431 Tons

Material Handling:

- 19 coal barges and 2 limestone barges in the last 7 days.

- Barges in the fleet:
 - 0 Barges TC1 & TC2 High Sulfur Coal (Riverview)
 - 7 Barges TC2 PRB Coal
 - 4 Barges Limestone

- Issues:
 - None

People:

Other:

- Synmat trucking gypsum to Certaineed Plant in Carrollton on part-time basis.
- Shipped one fly ash barge to Holcim. One is scheduled to be loaded this week as weather allows.

• **Unit 2:**

- TC2 off-line for planned burner outage. Current return to service is 5/26.
- Outage is currently on schedule.
- Ran various irrigation water tests on the WESP, and performed inspections.
- Reaction tank is drained and inspection to start this week.
- SCR mechanical cleaning is complete.
- Bag house fabric filter replacement to start this week (BWF).
- Other TC2 outage work to start this week (Week #3) includes:
 - Boiler inspection (Alstom)
 - SCR catalyst change-out
 - Ductwork inspection
 - Hydrated lime project
 - BFP recirc valve inspections and repairs
 - BCP thrust bearing inspection
 - Deaerator inspection
 - ID and FD fans
 - FM Global TC2 boiler and unfired pressure vessel inspections
- Plant and Bechtel are still evaluating punch list and warranty work scope that is not disputed and non-outage. Still working off punch list items. Station developed list of open items and design issues for PE.

Redacted as Unresponsive

From: Straight, Scott(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=WEB/CN=SCOTTSTRAIGHT)
To: Voyles, John; Bowling, Ralph; Thompson, Paul
CC:
BCC:
Subject: FW: TC #2 2014 Spring outage daily report 03.02.2014.docx
Sent: 03/03/2014 08:04:29 AM -0500 (EST)
Attachments: TC #2 2014 Spring outage daily report 03.02.2014.docx;

Gents, sending this PE shift report as a fyi status summary update of the combustion system work.

Scott

From: Wilson, Gregory
Sent: Monday, March 03, 2014 3:44 AM
To: Straight, Scott
Cc: Joyce, Jeff; Anderson, Dave (Trimble County); Gilliland, Dave; Rabe, Phil; Hance, Chuck; Lipp, Joan; Withrow, Jimmy; Slaughter, Mitch; Turner, Haley; Cooley, Ray; Osborne, John
Subject: TC #2 2014 Spring outage daily report 03.02.2014.docx



**PROJECT ENGINEERING DEPARTMENT
“DAILY CONSTRUCTION REPORT”
Dayshift/Nightshift**

LG&E KU PROJECT COORDINATORS: Gregory Wilson	DATE: 03.02.2014 and 03.03.2014 02/01-05/18/2014 vs. 02/18-05/25/2014
CONTRACTOR ON SITE: Southeast Boiler	SUPERVISORS NAME: T.Fallon/Doug. A
PROJECT NAME: TC Unit 2 Outage	DAY/ NIGHT SHIFT HOURS 7:00 to 04:00 hours
WEATHER	
<u>Temperature</u>	<u>Precipitation</u>
<i>High:</i> 29	<i>Amount:</i> NTR
<i>Low:</i> 22	<i>Time Beginning:</i> 05:30 am
<i>Wind:</i> N @ 9 mph	<i>Time Ending:</i> 06:00 am
<i>Other:</i> Cold	<i>Type (Rain, Snow, Sleet):</i> Sleet and Snow

MAJOR CONSTRUCTION ACTIVITIES OF THE DAY

TC Unit 2 Burners

- **Southeast boiler: Doing prep work on the cut out sections of the old quarls, fit up work continues with the installation of quarl C1, D4, D5, F3 and A1-A5.**
- **B & E decks are still being worked for installation.**
- **Night Shift: they are prepping the F-5 quarl for installation. Air clean test T.B.A.**
- **Southeast boiler: Doing demo work to the OFA ductwork and starting to install new wall and floor panels to the modified duct sections.**
- **Petrochem: are still building and modifying scaffolding to accommodate welder’s safety.**

BURNER	Old Burner Removed	Secondary Air barrel removed	Air Register removed	Old Quarl Removed	New Quarl Positioned	New Quarl Welded	New Burner Installed	New Burner Wired (Complete)
C1	2/15	2/17	2/16	2/20	3/1			
C2	2/15	2/17	2/16	2/20	2/27			
C3	2/15	2/16	2/16	2/20	2/27			
C4	2/15	2/16	2/16	2/20	2/27			
C5	2/15	2/16	2/16	2/20	2/27			
D1	2/15	2/17	2/17	2/21	2/26			
D2	2/15	2/17	2/17	2/21	2/28			
D3	2/15	2/15	2/17	2/21	2/28			
D4	2/15	2/17	2/17	2/21	3/1			
D5	2/15	2/17	2/17	2/21	3/2			
B1	2/16	2/18	2/19	2/22				
B2	2/16	2/18	2/19	2/22				
B3	2/10	2/19	2/19	2/22				

B4	2/16	2/19	2/19	2/22				
B5	2/16	2/19	2/19	2/22				
BURNER	Removed	Secondary Air barrel removed	Air Register removed	Old Quarl Removed	New Quarl Positioned	New Quarl Welded	New Burner Installed	New Burner Wired (Complete)
F1	2/15	2/16	2/17	2/21	2/27			
F2	2/15	2/16	2/17	2/21	2/26			
F3	2/15	2/16	2/17	2/21	3/1			
F4	2/15	2/16	2/17	2/20	2/26			
F5	2/16	2/16	2/17	2/20	N/A			
A1	2/16	2/18	2/18	2/23	3/2			
A2	2/16	2/18	2/18	2/22	3/2			
A3	2/10	2/18	2/18	2/22	3/2			
A4	2/16	2/18	2/18	2/22	3/2			
A5	2/16	2/18	2/18	2/22	3/1			
E1	2/17	2/19	2/19	2/23				
E2	2/17	2/19	2/19	2/23				
E3	2/17	2/19	2/19	2/23				
E4	2/17	2/19	2/20	2/23				
E5	2/17	2/20	2/20	2/23				

Production 2

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Thompson

Inspections:

Verified and signed that quarl D5, is clean and free of debris and ready to install for fit up.
Also verified and signed A2-A4, is clean and free of debris and ready to install for fit up.

Work Quality/Observations/Concerns:

- Housekeeping continues to look good.
- Burner decks are in good shape.
- Check on the progress of the throat prep, swapped out radios. The other one the battery was dead. The charger is no good.

Safety /Environmental Issue:

- Spoke to welder on B deck to put up arc protection screen.
- Spoke to Doosan engineer about climbing between the scaffolding rail and the cut section to look into the upper pipe cut outs of the panel wall.
- Spoke to SBR QC about using an A frame ladder as a lean too ladder to see into the cut section of the upper pipe of the panel wall.
- Due to the weather nightshift is not coming in tonight.

Contractors on Site

Bechtel- 2
 SBR/Early Construction- 51
 Doosan- 5
 Petrochem- 14
 Meiners- 0

Night Shift
 Doosan-3
 SBR/Early Construction-31

From: Wyne, Lindsey(/O=LGE/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=WYNE, LINDSEYFC1)
To: Lewis, Donna
CC: Faith, Bobbie; Bowling, Ralph; Byrd, Larry; Clark, Janice; Cosby, David; Wilson, Dan; Gilliland, Dave; Voyles, John; Joyce, Jeff; Hincker, Loren; Kirkland, Mike; Bryant, Nancy; Rabe, Phil; Ransdell, Charles; Kiesler, Rosie; Turner, Steven
BCC:
Subject: TC Weekly Report - Week Ending 3 10 14
Sent: 03/10/2014 12:44:11 PM -0400 (EDT)
Attachments: Week ending 3 10 14.docx;

Thank you,

Lindsey Wyne

Administrative Assistant

Louisville Gas & Electric

Trimble County Generating Station

487 Corn Creek Road

Bedford, Kentucky 40006

Phone: 502.627.6220

Fax: 502.627.6226

Lindsey.Wyne@lge-ku.com

-

Weekly Report
March 10, 2014

Station / Area: Trimble County Station**Safety:**

- 147 days since last OSHA recordable incident (10/11/13).
- 125 days since last lost-time incident (11/4/13).
- 136 days since last contractor OSHA recordable incident (10/24/13)

Environmental:

Week Ending March 2 nd 2014	TC1	TC2	CTs
SO2 (Sulfur Dioxide)	0	0	
NOx (Nitrous Oxide)	0	0	
PM (Particulate Matter)	0	0	0
CO (Carbon Monoxide)		0	
CO_CORR (Carbon Monoxide-Corrected)			0
NOX CORR (Nitrous Oxide-Corrected)			0
CH2O (Formaldehyde)			0
Sulfur Content of Natural Gas			0
CO (Carbon Monoxide)		0	
Hg (Mercury)		0	
VOC (Volatile Organic Compounds)		0	
H2SO4 (Sulfuric Acid Mist)		0	
Fluorides		0	
HCl (Hydrochloric Acid)		0	
HAPS (Hazardous Air Pollutants)		0	
Pb (Lead)		0	

- SCR and hydrated lime systems in service.

Unit Status:○ **Unit 1:**

- TC1 on-line and good for full load.
 - TC1 tripped from service on 3/6 @ 01:06 hrs due to level switch issues on the 1B IDF VFD cooling system. Back on line @ 12:48 hrs.
- The turbine/generator T7 bearing vibration is currently running around 3 to 4 mils. Monitoring same.
- Still troubleshooting mill fire issues.
- Replaced the PA Flow element on the 1B coal mill.

- Monitoring oil leak on turbine generator #10 bearing. Adjusted vapor extractor pressure to minimize leak.
- Monitoring AH differential pressures.
- 1A Demister wash pump is out of service for overhaul.

- **SO₃ Removal System:**
 - TC1 – Hydrated lime injection in service.

- **Unit 2:**
 - TC2 off-line for planned burner outage. Current return to service is 5/26.
 - Outage is currently on schedule.
 - Bag house fabric filter replacement started last week. One section North/South was completed. (BWF).
 - Other TC2 outage work includes:
 - Boiler inspection (Alstom) is ongoing.
 - SCR catalyst change-out is ongoing.
 - Ductwork inspection completed last week.
 - Hydrated lime project started last week.
 - BFP recirc valve inspections are complete. Repairs are ongoing on the “2B” TDBFP.
 - BCP thrust bearing inspection.
 - Deaerator inspection is complete.
 - ID and FD fans – replacing fan blade hubs on 2B ID and 2B FD fans.
 - FM Global TC2 boiler and unfired pressure vessel inspections completed last week.

 - Plant and Bechtel are still evaluating punch list and warranty work scope that is not disputed and non-outage. Still working off punch list items. Station developed list of open items and design issues for PE.

- **Common:**
 - The B Ash Pond pump has been pulled and shipped to the Central Service Shop and repairs are in process.

- **Combustion Turbines:**
 - All CTs are available.

Fuel/Limestone Inventory:

- TC1 and TC2 High Sulfur
 - 281,020.75 (26.7 days)

- TC2
 - PRB – 71,106.70 (31 days @ 30%)

- Limestone
 - 58,969 Tons

Material Handling:

- 22 coal barges and 3 limestone barges in the last 7 days.

- Barges in the fleet:
 - 3 Barges TC1 & TC2 High Sulfur Coal (Riverview)
 - 0 Barges TC2 PRB Coal
 - 2 Barges Limestone

- Issues:
 - None

People:

Other:

- Synmat trucking gypsum to Certaineed Plant in Carrollton on part-time basis.
- Shipped one fly ash barge to Holcim. Two barges are scheduled to be loaded this week.

From: Faith, Bobbie(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=E026371)
To: Lewis, Donna
CC: Bowling, Ralph; Byrd, Larry; Cosby, David; Wilson, Dan; Gilliland, Dave; Voyles, John; Joyce, Jeff; Hincker, Loren; Mattingly, Jennifer; Kirkland, Mike; Bryant, Nancy; Rabe, Phil; Ransdell, Charles; Kiesler, Rosie; Turner, Steven
BCC:
Subject: TC Weekly Report -- Week ending 4 13 14.docx
Sent: 04/14/2014 03:52:44 PM -0400 (EDT)
Attachments: Week ending 4 13 14.docx;

Bobbie Faith

Assistant to Jeff Joyce, General Manager
Louisville Gas & Electric
Trimble County Generating Station
487 Corn Creek Road
Bedford, Kentucky 40006
502-627-6283
bobbie.faith@lge-ku.com

Weekly Report
April 14, 2014

Station / Area: Trimble County Station**Safety:**

- 24 days since last OSHA recordable incident (3/20/14).
- 160 days since last lost-time incident (11/4/13).
- 17 days since last contractor OSHA recordable incident (3/27/14)

Environmental:

Week Ending April 13 th 2014	TC1	TC2	CTs
SO2 (Sulfur Dioxide)	0	0	
NOx (Nitrous Oxide)	0	0	
PM (Particulate Matter)	0	0	0
CO (Carbon Monoxide)		0	
CO_CORR (Carbon Monoxide-Corrected)			0
NOX CORR (Nitrous Oxide-Corrected)			0
CH2O (Formaldehyde)			0
Sulfur Content of Natural Gas			0
CO (Carbon Monoxide)		0	
Hg (Mercury)		0	
VOC (Volatile Organic Compounds)		0	
H2SO4 (Sulfuric Acid Mist)		0	
Fluorides		0	
HCl (Hydrochloric Acid)		0	
HAPS (Hazardous Air Pollutants)		0	
Pb (Lead)		0	

- SCR and hydrated lime systems in service.

Unit Status:○ **Unit 1:**

- TC1 on-line and derated to 525MW due to ID fan vibration.
- The turbine/generator T7 bearing vibration is currently running around 3 to 4 mils. Monitoring same.
- Still troubleshooting mill fire issues. Experienced fires in the 1B and ID coal mills on Saturday.
- Monitoring oil leak on turbine generator #10 bearing. Adjusted vapor extractor pressure to minimize leak.
- Monitoring AH differential pressures.

- 1A Demister wash pump has been overhauled and is expected to return to service tomorrow.
- 1B11 recycle pump out of service for repairs.
- Experiencing issues with hydroveyor pluggage.

- **SO₃ Removal System:**
 - TC1 – Hydrated lime injection in service.

- **Unit 2:**
 - TC2 off-line for planned burner outage. Current return to service is 5/26.
 - Outage is currently on schedule.
 - Currently running the 2A ID fan at minimum for Amstar work taking place in the boiler.
 - Other TC2 outage work includes:
 - Boiler inspection (Alstom) is complete. Punch-list is 98% complete.
 - SCR catalyst change-out is ongoing. All catalysts have been installed. Seal work is ongoing.
 - Hydrated lime project in progress.
 - BCP thrust bearing inspection is complete.
 - ID and FD fans – replacing fan blade hubs on 2B ID and 2B FD fans.
 - Ash pit dipper plate replacement materials are currently being installed (~50% complete).
 - All 30 burners are now installed. Continuing to install OFA duct work.
 - Roof tube boiler project is in progress and on schedule to be completed by April 23rd.

 - Plant and Bechtel are still evaluating punch list and warranty work scope that is not disputed and non-outage. Still working off punch list items. Station developed list of open items and design issues for PE.

- **Common:**
 - The B Ash Pond pump is being coupled and is expected to be released for service later today.
 - CFA rotary feeder out-of-service due to feeder pluggage. Repair work is in progress.

- **Combustion Turbines:**
 - All CTs are available.

Fuel/Limestone Inventory:

- TC1 and TC2 High Sulfur
 - 243,303.01 (23.1 days)

- TC2
 - PRB – 104,047.62 (45 days @ 30%)

- Limestone
 - 59,500 Tons

Material Handling:

- 21 coal barges and 2 limestone barges in the last 7 days.

- Barges in the fleet:
 - 29 Barges TC1 & TC2 High Sulfur Coal (Riverview)
 - 0 Barges TC2 PRB Coal
 - 4 Barges Limestone

- Issues:
 - None

People:

- N/A

Other:

- Synmat trucking gypsum to Certaineed Plant in Carrollton on part-time basis.
- No barges are scheduled this week. 1,200 ton silo is being emptied for maintenance activities.

From: Melloan, Ricky(/O=LGE/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=MELLOAN, RICKYCF4)
To: Bowling, Ralph; Joyce, Jeff
CC:
BCC:
Subject: FW: TC2 Burner Replacement
Sent: 04/14/2014 11:33:24 AM -0400 (EDT)
Attachments:

Ralph and Jeff – All burners and oil guns in. Work remaining on burner fronts includes Beck drives, purge air connections and I&E. OFA ports, new added port and one old port that was removed for duct expansion, are installed on front wall. Insulation and lagging well along on front wall. On the rear wall, the airfoils, dampers, and toggle section of duct are in progress. This is critical path work but is reported to be on schedule. Amstar work started this weekend on schedule and should be complete this week. This includes both Doosan recoating around top elevation of burners and OFA ports and TC repairs and around new inspection doors. Flow nozzles are welded and being insulated. WCAH headers are welded but not fully connected with flex connections. Materials are in for WCAH trolley system but this work may continue after the outage. Work continues on the dipper plate.

From: Melloan, Ricky
Sent: Thursday, April 03, 2014 1:01 PM
To: Bowling, Ralph; Joyce, Jeff
Subject: FW: TC2 Burner Replacement

Ralph and Jeff - All burner work inside the furnace is complete and all burners are fully welded. The roof tube project remains in progress. All core air supplies and coal conduit connections are made up on the front wall but not fully bolted. Modifications to some platforms and handrail are required for access to the burner fronts. A new section of conduit on the rear wall was taken down when it was discovered that the end connection had been welded on backwards. CL Smith is in today to correct this fabrication error. The front corners of the new OFA ducts are well ahead of the back corners. Manpower is being moved from the burner work to the OFA work. The feedwater flow nozzle which was removed and sent out for recalibration is being welded back in. Amstar still scheduled for the 13th through the 17th after which the boiler scaffolding will be removed. Revised schedule re-commissioning meeting set for next Wednesday.

Rick

From: Melloan, Ricky
Sent: Thursday, March 27, 2014 1:49 PM
To: Bowling, Ralph; Joyce, Jeff
Subject: FW: TC2 Burner Replacement

Jeff and Ralph – The modification to the F1 burner was done today (not next Thurs as previously reported). Actually, the orientation of the coal inlet nozzle was off by 30 degrees. When this was rotated to the correct position, the internal support feet on the core air tube were not at the correct location. The inlet nozzle flange was unbolted at the face and the elbow and core air tube pulled. The feet were cut off and re-welded by RVI and the burner has been reinstalled. This turned out not to be a major issue. All burners are installed with all welding complete, both pressure parts and connections on ten burners. Core air supply connections have been fitted on several burners and new coal conduit sections are starting to be placed. The last two OFA support frames arrived and are being installed. OFA work will continue after the revised schedule for Amstar.

Rick

From: Melloan, Ricky
Sent: Tuesday, March 25, 2014 1:42 PM
To: Bowling, Ralph; Joyce, Jeff
Subject: FW: TC2 Burner Replacement

Ralph and Jeff – Update - Yesterday Doosan reported that they had discovered a problem with the F1 core air tube orientation that will require rework. Today they reported that Early will rig and remove the core air tube and RV Industries will send

people in for the rework. The orientation is off by 30 degrees. Correction will at a minimum mean cutting and re-welding some centering pins on the tube and may mean cutting and re-welding the attachment flange. Work including removal is expected to take 1 to 2 shifts and is now scheduled for next week. According to Doosan, the drawings were correct and this was a RVI fabrication error which is being investigated.

Rick

From: Melloan, Ricky
Sent: Monday, March 24, 2014 2:31 PM
To: Bowling, Ralph; Joyce, Jeff
Subject: RE: TC2 Burner Replacement

Ralph and Jeff – Twenty nine burners are now in the hole. Twenty are set and aligned with various degrees of welding remaining. The F1 core air tube has to be removed because the orientation was found to be incorrect. After removal, some cutting and welding is required to remedy. Doosan’s preference is to send this component back to RV Ind. to correct. All NDE on the burner and OFA pressure parts is complete with welding and NDE ongoing on the roof tube project. The NE and SE OFA ducts are nearest complete with re-insulation work started on these two new duct sections.. Early is still awaiting delivery of the structural reinforcing frames for the other two OFA corners. No new OFA ports have been installed. Otherwise the new WCAH coils are installed on the B side and both new intake hoods are in place.

Rick

From: Melloan, Ricky
Sent: Thursday, March 06, 2014 10:51 AM
To: Bowling, Ralph; Joyce, Jeff
Subject: FW: TC2 Burner Replacement

Ralph and Jeff- Nine panels are now 100% welded. Nine others are in various stages of root welding. All panels are in the hole. 157 welds have been examined with no rejects. Today there was discussion of when the first burner would go in. This is now scheduled for March 17 on F row.. The original scheduled called the first burner install on March 24. It is desirable to get the first burner in ASAP in order to identify any possible issues ASAP.

Rick

From: Melloan, Ricky
Sent: Tuesday, March 04, 2014 10:31 AM
To: Bowling, Ralph; Joyce, Jeff
Subject: RE: TC2 Burner Replacement

Ralph and Jeff - As of this morning, six panels are 100% welded (tubes only) with four other panels between 70% and 90% welded. Twenty panels are “in the hole”. F4 has been NDT examined with no findings. Additional NDE (50%) is scheduled for tonight possible getting the other five panels that are welded. The plan calls for starting to install burners after a row of throats is complete. F row will be first. There is considerable work to be done before this can start including membrane welding and windbox modifications. It is estimated that the first burners will start to be installed in 1 ½ to 2 weeks. In all, good progress with no major surprises. Doosan reports to be “ on schedule”.

Rick

From: Melloan, Ricky
Sent: Thursday, February 27, 2014 12:59 PM
To: Bowling, Ralph
Cc: Joyce, Jeff
Subject: FW: TC2 Burner Replacement

Ralph – A brief progress report on the burner replacement. You are likely getting this info from Jeff as well.

Nine of 30 throats are “ in the hole”. Weld in is near complete on F3 and D1 (tubes only, not membrane). Radiography on these two panels is scheduled for tonight. The other seven are in various stages of fitting and welding. Fit up is taking a lot of time as expected. For those tubes that do not align, the membrane is split to various degrees and wedges are used to move the tubes. Final welds look very good but it will be interesting to see first radiography results. By contract, we are testing 50% of the welds and taking steps to assure all welders receive near equal testing.

Rick

From: Melloan, Ricky
Sent: Tuesday, February 25, 2014 1:55 PM
To: Bowling, Ralph
Cc: Joyce, Jeff
Subject: RE: TC2 Burner Replacement

Ralph – The first throat panel, F3, is set and tack welded in. Fine tuning of tube to tube alignment is taking place. Both Doosan and Southeast claim to be satisfied with overall fit, especially for the first panel. Membranes are split 4-5 inches and in some cases this is being lengthened to allow more tube to tube movement. As expected, much was learned from placing the first panel, both from a rigging and fit standpoint. While Doosan required the first opening to be cut large, Southeast is confident they can get an accurate fit and eliminate excessive trimming on remaining panels. Some degree of work is going on in almost all burner openings simultaneously. The B1 panel is next and will be placed later this afternoon. In all, no surprises and very good progress.

Rick

From: Bowling, Ralph
Sent: Tuesday, February 18, 2014 10:10 PM
To: Melloan, Ricky
Cc: Joyce, Jeff
Subject: Re: TC2 Burner Replacement

Good deal thanks for the update

R

Sent from my iPad

On Feb 18, 2014, at 10:53 AM, "Melloan, Ricky" <Ricky.Melloan@lge-ku.com> wrote:

Ralph – Already a change in plans for placing the new throats in the furnace. Doosan advised this morning, that instead of lifting the panels up through the furnace, the throats would be placed in through the windbox at each individual burner. This change was due to Southeast’s lack of confidence in the beams supplied by PetroChem and with the burners out it could be determined that there was sufficient clearance to bring the throats through the windbox. This allows the use of existing permanent beams at each burner used for burner R&R. At this time the estimated impact to the schedule is at worst neutral and likely positive. It is definitely a much safer plan. The first cuts are now scheduled for mid week. Will keep you advised and things progress.

Rick

From: Bowling, Ralph
Sent: Tuesday, February 11, 2014 2:12 PM
To: Melloan, Ricky
Cc: Joyce, Jeff
Subject: RE: TC2 Burner Replacement

Rick

Thanks for the update, as I said I am sure the structural integrity is a part of the plan, but it makes me feel better to know it is a specific consideration.

Thanks and good luck in helping to manage the challenge.

R

From: Melloan, Ricky
Sent: Tuesday, February 11, 2014 1:04 PM
To: Bowling, Ralph
Cc: Joyce, Jeff
Subject: TC2 Burner Replacement

Ralph – Attached is the Doosan SMR (Site Modification Request) for the burner and throat replacements. This is a very high level overview of the scope and plan. We met with John Lee yesterday and went over the plan in more detail. As you may already know, after all scaffolding is erected and Amstar has completed coating removal, a jig will be attached to the wall for cut lines and the old throats will be removed in two halves. According to Doosan, all 30 throats could be removed with no structural impact on the furnace. The plan calls for no more than 10 to be out at any given time. The new panels will be lifted up the center and transferred to beams above each burner. These beams are supported from the scaffolding. There are 74 tube to tube fits per panel. The first panel is scheduled to be lifted in about two weeks. It was agreed that much would be learned at that time and the process would be adjusted with experience. A challenge for sure.

Rick Melloan
Trimble Co. Station
502-627-6259

Redacted as Unresponsive

- **Unit 2:**

- TC2 off-line for planned burner outage. Current return to service is 5/26.
- Outage is currently on schedule.
- Currently running the 2A ID fan at minimum for Amstar work taking place in the boiler.
- Other TC2 outage work includes:
 - Boiler inspection (Alstom) is complete. Punch-list is 98% complete.
 - SCR catalyst change-out is ongoing. All catalysts have been installed. Seal work is ongoing.
 - Hydrated lime project in progress.
 - BCP thrust bearing inspection is complete.
 - ID and FD fans – replacing fan blade hubs on 2B ID and 2B FD fans.
 - Ash pit dipper plate replacement materials are currently being installed (~50% complete).
 - All 30 burners are now installed. Continuing to install OFA duct work.
 - Roof tube boiler project is in progress and on schedule to be completed by April 23rd.
- Plant and Bechtel are still evaluating punch list and warranty work scope that is not disputed and non-outage. Still working off punch list items. Station developed list of open items and design issues for PE.

Redacted as Unresponsive

From: Lively, Noel(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=E012084)
To: Straight, Scott
CC:
BCC:
Subject: FW: Functional Testing Status 09_04_rev.xlsx
Sent: 01/14/2014 07:32:45 AM -0500 (EST)
Attachments: Functional Testing Status 09_04_rev.xlsx;

Scott,

Here is the functional testing status.

BTW-Phil didn't respond to me, so I don't know the station's opinion.

Noel

From: Lively, Noel
Sent: Wednesday, October 16, 2013 2:34 PM
To: Rabe, Phil
Subject: Functional Testing Status 09_04_rev.xlsx

Phil,

I think and Scott and Donna will soon be engaging in some settlement discussions, part of which will include the remaining functional tests that have not yet been completed and/or have a disputed status regarding the need to re-perform after the upcoming burner mods. The status of all the functional tests are included in the attached spread sheet; the far right column contains the latest response from Bechtel. Scott has asked me to check with the station to determine if any of them can be waived? In particular:

- 2.3.4 Heat rate at 50% and 80%. At one time the station was willing to waive these.
- 2.3.7 SCR pressure drop. We don't really have a valid design number anymore because of the catalyst revisions.
- 2.3.8 Essential electrical supplies. If I'm not mistaken, the issue here was with the emergency diesel? And I believe that it takes a significant effort to place all of the forces in the DCS since it must be simulated with the unit off-line? There is reference of an email to you and me on Apr 5, 2012, but I can't put my hands on it.
- 2.3.10 Particulate removal across the individual DESP/PJFF/WESP components.
- 2.3.11.1 WFGD reaction tank bleed off quality.

Noel W. Lively
BOC office: (502) 627-4577
Cane Run office: (502) 449-8013
Cell: (502) 552-2944
Fax: (502) 217-2035

Produced as Native

Original File Name: Functional Testing Status 09_04_rev.xlsx

Stored File Name: OpenText00237184.xlsx

From: Kerslake, Ian(ian.kerslake@doosan.com)
To: 'Dearman, James'; 'Devin Brann'; 'Clyde Watkins'; Anderson, Dave (Trimble County); Withrow, Jimmy; Roach, Sandra A'; Mohn, Laura; Slaughter, Mitch; Rabe, Phil; 'Trimble, James T. (Tom)'; 'Daniel Menniti'; 'Robert L Branning'; 'Andy Bergman'; 'Ryan Hussey'; 'Whitehead, Karen A.'; Melloan, Ricky; Powell, Richard; Dukes, Christopher; Boone, James; Joyce, Jeff; Carlisle, Gary; Craft, Jim; Payne, Nicholas; Henderson, Trent; Allen, Ross; 'Babcock, James'; Owens, David; 'Scott Viestra' (savierstra@savyeng.com); 'savierstra@earthlink.net'; 06350 TRIMBLE COUNTY MAILBOX; Maunder, Kevin; Smith, Mike; Jones, Gareth; Gratton, Ron; Mackintosh, Alister; Gonese, Jean; Hammond, Steve; Torkington, Ian R; Young, Charles E H; Hough, David C; Heath, Justin; McCallum, Neil; Davidson, Gordon; Cahill, Michael; Elliott, Robert; Fleming, Ian; Lee, John; London, Alan; Whitehouse, Matthew; Cameron, Euan; Groom, David; Wright, Paul; Reynolds, Paul (Crawley); Grist, John; Fogarty, John P; Bartlett, Derek; Smith, John (Crawley); Cartwright, Robert; Mantle, Barry D G; Farrow, David; Scott, Crispin W; Falkner, Robert
CC:
BCC:
Subject: RE: 07292 TC2 - 1st July Update re Outage Action Plan 29th June '14 to 4th July '14
Sent: 07/01/2014 07:24:31 PM -0400 (EDT)
Attachments: 1st July '14 Copy of Outage List - 29th June '14 to 4th July '14.xlsx;

Good Evening Phil, Mel, Devin and Dave,

Please find attached an updated copy of our Outage Action Plan for review during tomorrow's daily meeting.

We have included the Logic updates as issued today, current status of previously advised items and included for both the Doosan and LG&E new scopes as discussed at this mornings meeting.

Lines highlighted in grey are complete

Thanks and Best regards

Ian Kerslake
Project Procurement Manager
Doosan Babcock Limited
Doosan House
Crawley Business Quarter
Manor Royal, Crawley
West Sussex, RH10 9AD
Tel: +44 (0)1293 584855
Mobile +44 (0) 7774 965780
Email: ian.kerslake@doosan.com

Produced as Native

Original File Name: 1st July '14 Copy of Outage List - 29th June '14 to 4th July '14.xlsx

Stored File Name: OpenText00252016.xlsx

From: Kerslake, Ian(ian.kerslake@doosan.com)
To: 'Dearman, James'; 'Devin Brann'; 'Clyde Watkins'; Anderson, Dave (Trimble County); Withrow, Jimmy; Roach, Sandra A'; Mohn, Laura; Slaughter, Mitch; Rabe, Phil; 'Trimble, James T. (Tom)'; 'Daniel Menniti'; 'Robert L Branning'; 'Andy Bergman'; 'Ryan Hussey'; 'Whitehead, Karen A.'; Melloan, Ricky; Powell, Richard; Dukes, Christopher; Boone, James; Joyce, Jeff; Carlisle, Gary; Craft, Jim; Payne, Nicholas; Henderson, Trent; Allen, Ross; 'Babcock, James'; Owens, David; 'Scott Viestra' (savierstra@savyeng.com); 'savierstra@earthlink.net'; 06350 TRIMBLE COUNTY MAILBOX; Maunder, Kevin; Smith, Mike; Jones, Gareth; Gratton, Ron; Mackintosh, Alister; Gonese, Jean; Hammond, Steve; Torkington, Ian R; Young, Charles E H; Hough, David C; Heath, Justin; McCallum, Neil; Davidson, Gordon; Cahill, Michael; Elliott, Robert; Fleming, Ian; Lee, John; London, Alan; Whitehouse, Matthew; Cameron, Euan; Groom, David; Wright, Paul; Reynolds, Paul (Crawley); Grist, John; Fogarty, John P; Bartlett, Derek; Smith, John (Crawley); Cartwright, Robert; Mantle, Barry D G; Farrow, David; Scott, Crispin W; Falkner, Robert; Ostendorf, Bryan; 'Shultz, George'
CC:
BCC:
Subject: RE: 07292 TC2 - 2nd July Update re Outage Action Plan 29th June '14 to 4th July '14
Sent: 07/02/2014 05:38:19 PM -0400 (EDT)
Attachments: Copy of 2nd July '14 Copy of Outage List - 29th June '14 to 4th July '14.xlsx; 07292 TC2 - Plan for Economiser inlet FW pipe supports.msg; Burner Photos 1-7-14.zip;

Good Evening Phil, Mel, Devin and Dave,

Please find attached an updated copy of our Outage Action Plan for review during tomorrow's daily meeting.

We have included the Logic updates as discussed today, current status of previously advised items and included for both the Doosan new scopes as discussed at this mornings meeting.

For item # 3 please see attached email issued this afternoon containing the procedure for re-setting the economiser feed piping support and as agreed by separate correspondence with Laura & Jordan we will ensure we liaise with Hamit re our planned work scope

For item # 21 please see attached file containing the burner photo's taken by Doosan

Lines highlighted in grey are complete

Thanks and Best regards

Ian Kerslake
Project Procurement Manager
Doosan Babcock Limited
Doosan House
Crawley Business Quarter
Manor Royal, Crawley
West Sussex, RH10 9AD
Tel: +44 (0)1293 584855
Mobile +44 (0) 7774 965780
Email: ian.kerslake@doosan.com

Produced as Native

Original File Name: Copy of 2nd July '14 Copy of Outage List - 29th June '14 to 4th July '14.xlsx

Stored File Name: OpenText00252020.xlsx

From: Kerslake, Ian(ian.kerslake@doosan.com)
To: 'Dearman, James'; 'Devin Brann'; 'Clyde Watkins'; Anderson, Dave (Trimble County); Withrow, Jimmy; Roach, Sandra A'; Mohn, Laura; Slaughter, Mitch; Rabe, Phil; 'Trimble, James T. (Tom)'; 'Daniel Menniti'; 'Robert L Branning'; 'Andy Bergman'; 'Ryan Hussey'; 'Whitehead, Karen A.'; Melloan, Ricky; Powell, Richard; Dukes, Christopher; Boone, James; Joyce, Jeff; Carlisle, Gary; Craft, Jim; Payne, Nicholas; Henderson, Trent; Allen, Ross; 'Babcock, James'; Owens, David; 'Scott Viestra' (savierstra@savvyeng.com); 'savierstra@earthlink.net'; 06350 TRIMBLE COUNTY MAILBOX; Maunder, Kevin; Smith, Mike; Jones, Gareth; Gratton, Ron; Mackintosh, Alister; Gonese, Jean; Hammond, Steve; Torkington, Ian R; Young, Charles E H; Hough, David C; Heath, Justin; McCallum, Neil; Davidson, Gordon; Cahill, Michael; Elliott, Robert; Fleming, Ian; Lee, John; London, Alan; Whitehouse, Matthew; Cameron, Euan; Groom, David; Wright, Paul; Reynolds, Paul (Crawley); Grist, John; Fogarty, John P; Bartlett, Derek; Smith, John (Crawley); Cartwright, Robert; Mantle, Barry D G; Farrow, David; Scott, Crispin W; Falkner, Robert; 'Ostendorf, Bryan'; 'Shultz, George'
CC:
BCC:
Subject: RE: 07292 TC2 - 3rd July Update re Outage Action Plan 29th June '14 to 4th July '14
Sent: 07/03/2014 05:50:26 PM -0400 (EDT)
Attachments: 3rd July 14 Copy of Outage List - 29th June '14 to 4th July '14.xlsx;

Good Evening Phil, Mel, Devin and Dave,

Please find attached an updated copy of our Outage Action Plan for review during tomorrow's tailgate meeting in the control room @ 08.00

We have included the Logic updates as discussed today, current status of previously advised items and included for both the Doosan new scopes as discussed at this mornings meeting, including tonight's planned burner inspections with the bore scope – thank you again for the loan of your equipment.

Lines highlighted in grey are complete

Friday 4th July Agreed Meeting schedule:

07.15 am Daily Outage Meeting - Cancelled
08.00 am Doosan / Bechtel Combustion Meeting - Cancelled

08.00 am Tailgate Meeting to be held in the control room to review key outage actions ie Economiser feed water piping support rework & readiness for weekend unit start up

We will issue tomorrow lunchtime our normal Re-Start 3 Day Look Ahead sheet to detail our key start up & testing activities planned for Saturday, Sunday and Monday

The last outage status action sheet will be issued tomorrow evening and any outstanding items will then be moved to either our Outage Construction Punch list or Eng. Action Item List as appropriate, in order that we track through to close out

KEY NOTE / ACTION – ALL SBR / PETROCHEM / DOOSAN PERSONNEL TO BE SIGNED OFF ALL SUB-SHEETS & HOLD CARDS BY CLOSE OF DAY SHIFT TOMORROW FRIDAY 4TH JULY '14 AND ENSURE ALL DOORS CLOSED ETC.

Bechtel will then complete full walk down of all job scopes worked in this outage, sign off and turn over back to LG&E Operations

Thanks and Best regards

Ian Kerslake
Project Procurement Manager
Doosan Babcock Limited
Doosan House
Crawley Business Quarter
Manor Royal, Crawley
West Sussex, RH10 9AD
Tel: +44 (0)1293 584855
Mobile +44 (0) 7774 965780
Email: ian.kerslake@doosan.com

Produced as Native

Original File Name: 3rd July 14 Copy of Outage List - 29th June '14 to 4th July '14.xlsx

Stored File Name: OpenText00252053.xlsx

From: Kerslake, Ian(ian.kerslake@doosan.com)
To: 'Dearman, James'; 'Devin Brann'; 'Clyde Watkins'; Anderson, Dave (Trimble County); Withrow, Jimmy; Roach, Sandra A'; Mohn, Laura; Slaughter, Mitch; Rabe, Phil; 'Trimble, James T. (Tom)'; 'Daniel Menniti'; 'Robert L Branning'; 'Andy Bergman'; 'Ryan Hussey'; 'Whitehead, Karen A.'; Melloan, Ricky; Powell, Richard; Dukes, Christopher; Boone, James; Joyce, Jeff; Carlisle, Gary; Craft, Jim; Payne, Nicholas; Henderson, Trent; Allen, Ross; 'Babcock, James'; Owens, David; 'Scott Viestra' (savierstra@savvyeng.com); 'savierstra@earthlink.net'; 06350 TRIMBLE COUNTY MAILBOX; Maunder, Kevin; Smith, Mike; Jones, Gareth; Gratton, Ron; Mackintosh, Alister; Gonese, Jean; Hammond, Steve; Torkington, Ian R; Young, Charles E H; Hough, David C; Heath, Justin; McCallum, Neil; Davidson, Gordon; Cahill, Michael; Elliott, Robert; Fleming, Ian; Lee, John; London, Alan; Whitehouse, Matthew; Cameron, Euan; Groom, David; Wright, Paul; Reynolds, Paul (Crawley); Grist, John; Fogarty, John P; Bartlett, Derek; Smith, John (Crawley); Cartwright, Robert; Mantle, Barry D G; Farrow, David; Scott, Crispin W; Falkner, Robert; 'Ostendorf, Bryan'; 'Shultz, George'
CC:
BCC:
Subject: RE: 07292 TC2 - 4th July Update re Outage Action Plan 29th June '14 to 4th July '14
Sent: 07/04/2014 06:24:33 PM -0400 (EDT)
Attachments: 4th July 14 Copy of Outage List - 29th June '14 to 4th July '14 (3).xlsx; FLAME SCANNERS ROOM FLOOR 4.docx; SOOT BLOWER ROOM FLOOR 1.docx; C3 Oil burner tip.docx;

Good Evening Phil, Mel, Devin and Dave,

Please find attached the final copy of our Outage Action Plan detailing current status, as previously mentioned all outstanding items will be moved to either our Outage Construction Punch list or Eng. Action Item List as appropriate, in order that we track through to close out.

Item # 3 Economiser feed pipe supports

The agreed recommended actions have been completed with the boiler full of water, set-out below are the positions of the 12 off supports.

- 31311/SSC/001 – Set in cold position, no adjustment made.
- 31311/SSC/002 – Set in cold position, no adjustment made.
- 31311/SSC/003 – Set in cold position, no adjustment made.
- 31311/SSC/004 – Set in cold position, no adjustment made.
- 31311/SSC/005 – Set in cold position, no adjustment made.
- 31311/SSC/006 – Adjusted to cold position.
- 31311/SSV/007 – Adjusted to cold position.
- 31311/SSV/008 – Fully loaded.
- 31311/SSV/009 – No load.
- 31311/SSC/010 – Set in cold position, no adjustment made.
- 31311/SSV/011 – Fully adjusted, still taking a small amount of load.
- 31311/SSC/012 – Set in cold position, no adjustment made.

Item # 39 Cleanliness of Level 4 Flame scanner room and Level 1 Sootblower room

Survey completed and attached are copies of the survey reports showing the housekeeping issues that we have identified – Doosan to remove the 3 boxes of rubbish in the flame scanner room as detailed within these reports and please can we ask for LG&E to review the storage of the materials found in these rooms and advise

Item # 48 Burner Inspections

During Thursday nightshift we removed all C row & all F row burners with the exception of F3 burner, PF elbow inspection plugs to view PF internal side of burner for any instances of PF layout etc – no layout found

All C row & and all F row burners with the exception of F3 were then also inspected with bore scope, down the inner zone sighting / rod out tube, and found to be clear of layout or any build up towards the tip end of the burner

Also removed C3 and F3 complete oil gun assemblies, the mounting tube was also inspected by use of a bore scope and no evidence of any heat related damaged or distortion was evident during the full bore inspection. Attached is a photograph of C3 burner tip and one from bore scope showing partial view of end of core tube.

All lines highlighted in grey are complete

My thanks to everyone for all their hard work, efforts and support during the last week and for making this a safe and successful mini outage, it is much appreciated

Thanks and Best regards

Ian Kerslake
Project Procurement Manager
Doosan Babcock Limited
Doosan House
Crawley Business Quarter
Manor Royal, Crawley
West Sussex, RH10 9AD
Tel: +44 (0)1293 584855
Mobile +44 (0) 7774 965780
Email: ian.kerslake@doosan.com

Produced as Native

Original File Name: 4th July 14 Copy of Outage List - 29th June '14 to 4th July '14 (3).xlsx

Stored File Name: OpenText00252055.xlsx

From: Kerslake, Ian(ian.kerslake@doosan.com)
To: 'Dearman, James'; 'Devin Brann'; 'Clyde Watkins'; Anderson, Dave (Trimble County); Withrow, Jimmy; Roach, Sandra A'; Mohn, Laura; Slaughter, Mitch; Rabe, Phil; 'Trimble, James T. (Tom)'; 'Daniel Menniti'; 'Robert L Branning'; 'Andy Bergman'; 'Ryan Hussey'; 'Whitehead, Karen A.'; Melloan, Ricky; Powell, Richard; Dukes, Christopher; Boone, James; Joyce, Jeff; Carlisle, Gary; Craft, Jim; Payne, Nicholas; Henderson, Trent; Allen, Ross; 'Babcock, James'; Owens, David; 'Scott Viestra' (savierstra@savvyeng.com); savierstra@earthlink.net; 06350 TRIMBLE COUNTY MAILBOX; Maunder, Kevin; Smith, Mike; Jones, Gareth; Gratton, Ron; Mackintosh, Alister; Gonese, Jean; Hammond, Steve; Torkington, Ian R; Young, Charles E H; Hough, David C; Heath, Justin; McCallum, Neil; Davidson, Gordon; Cahill, Michael; Elliott, Robert; Fleming, Ian; Lee, John; London, Alan; Whitehouse, Matthew; Cameron, Euan; Groom, David; Wright, Paul; Reynolds, Paul (Crawley); Grist, John; Fogarty, John P; Bartlett, Derek; Smith, John (Crawley); Cartwright, Robert; Mantle, Barry D G; Farrow, David; Scott, Crispin W; Falkner, Robert

CC:
BCC:
Subject: RE: 07292 TC2 - Outage Action Plan 29th June '14 to 4th July '14
Sent: 06/30/2014 01:24:15 PM -0400 (EDT)
Attachments: 07292 TC2 Copy of Outage List - 29th June '14 to 4th July '14.xlsx;

Good Afternoon Phil, Mel, Devin and Dave,

Further to our earlier conversation during the daily start up meeting, please find attached a copy of our 'Outage Action Plan' detailing the activities / work-scopes, that we either already have underway or plan to complete in the coming days during this short unit outage.

Please note that we have included some additional items that we would appreciate both Bechtel's and LG&E's support to complete.

Thanking you in advance for your help and we can look to review this list on a daily basis this week, to track progress to completion

Best regards

Ian Kerslake
Project Procurement Manager
Doosan Babcock Limited
Doosan House
Crawley Business Quarter
Manor Royal, Crawley
West Sussex, RH10 9AD
Tel: +44 (0)1293 584855
Mobile +44 (0) 7774 965780
Email: ian.kerslake@doosan.com

Produced as Native

Original File Name: 07292 TC2 Copy of Outage List - 29th June '14 to 4th July '14.xlsx

Stored File Name: OpenText00252079.xlsx

From: Hammond, Steve(steve.hammond@doosan.com)
To: Watkins, Clyde; Babcock, James; Brann, Devin; Dearman, James; Scott Vierstra; Melloan, Ricky; Mohn, Laura; Rabe, Phil; Craft, Jim; O'Reilly, Daniel; Allen, George K. (Chip); Carlisle, Gary; Kerslake, Ian
CC:
BCC:
Subject: RE: Doosan Related Action Items Review Meeting - 23-Jul-14
Sent: 07/23/2014 07:04:20 AM -0400 (EDT)
Attachments: AIL Update_23_Jul_14.xlsx;

Please find attached the AIL that will be discussed at this morning's meets, hard copies will be available if required.

Regards

Steve

 Steve Hammond
 Doosan Babcock
 Email: steve.hammond@doosan.com
 Tel: +1 502 255 5290

-----Original Appointment-----

From: Watkins, Clyde [<mailto:cwatkins@bechtel.com>]
Sent: 24 June 2014 16:28
To: Watkins, Clyde; Babcock, James; Brann, Devin; Dearman, James; Scott Vierstra; 'Ricky Melloan'; 'Laura Mohn'; Rabe, Phil; Jim.Craft@lge-ku.com; O'Reilly, Daniel; Allen, George K. (Chip); 'Gary Carlisle'; Hammond, Steve; Kerslake, Ian
Subject: Doosan Related Action Items Review Meeting
When: 23 July 2014 10:00-11:00 (UTC-05:00) Eastern Time (US & Canada).
Where: Bechtel Conference Room

When: Occurs every Wednesday effective 6/25/2014 from 10:00 AM to 11:00 AM (UTC-05:00) Eastern Time (US & Canada).
 Where: Bechtel Conference Room

Note: The GMT offset above does not reflect daylight saving time adjustments.

~~*~*~*~*~*~*~*~*

Proposed Dated and Time: If this doesn't work, please suggest an alternate time.

Please dial into following conference number:

866-232-8005

Conf code: 301-228-8035

Produced as Native

Original File Name: AIL Update_23_Jul_14.xlsx

Stored File Name: OpenText00252103.xlsx

From: Hammond, Steve(steve.hammond@doosan.com)
To: Watkins, Clyde; Babcock, James; Brann, Devin; Dearman, James; 'Scott Vierstra'; Melloan, Ricky; Mohn, Laura; Rabe, Phil; Craft, Jim; O'Reilly, Daniel; Allen, George K. (Chip); Carlisle, Gary; Kerlake, Ian
CC:
BCC:
Subject: RE: Doosan Related Action Items Review Meeting
Sent: 07/09/2014 06:05:17 AM -0400 (EDT)
Attachments: AIL Update_09_Jul_14.xlsx;

All,

Please find attached the current AIL which will be reviewed at today's meeting.

Regards

Steve

 Steve Hammond
 Doosan Babcock
 Email: steve.hammond@doosan.com
 Tel: +44 1293 584634

-----Original Appointment-----

From: Watkins, Clyde [<mailto:cwatkins@bechtel.com>]
Sent: 08 July 2014 15:23
To: Watkins, Clyde; Babcock, James; Brann, Devin; Dearman, James; 'Scott Vierstra'; 'Ricky Melloan'; 'Laura Mohn'; 'Rabe, Phil'; Jim.Craft@lge-ku.com; O'Reilly, Daniel; Allen, George K. (Chip); 'Gary Carlisle'; Hammond, Steve; Kerlake, Ian
Subject: Doosan Related Action Items Review Meeting
When: 09 July 2014 09:30-10:30 (UTC-05:00) Eastern Time (US & Canada).
Where: Bechtel Conference Room

When: Wednesday, July 09, 2014 9:30 AM-10:30 AM (UTC-05:00) Eastern Time (US & Canada).

Where: Bechtel Conference Room

Note: The GMT offset above does not reflect daylight saving time adjustments.

~~*~*~*~*~*~*~*~*

Proposed Dated and Time: If this doesn't work, please suggest an alternate time.

Please dial into following conference number:

866-232-8005

Conf code: 301-228-8035

Produced as Native

Original File Name: AIL Update_09_Jul_14.xlsx

Stored File Name: OpenText00252107.xlsx

From: Hammond, Steve(steve.hammond@doosan.com)
To: Watkins, Clyde; Rabe, Phil
CC: Hobbs, Donna; Babcock, James; Brann, Devin; Dearman, James; O'Reilly, Daniel; Joyce, Jeff; Slaughter, Mitch; Melloan, Ricky; Dukes, Christopher; Carlisle, Gary; Mohn, Laura; Roach, Sandra A; McCallum, Neil; Kerlake, Ian; Gratton, Ron; Maunder, Kevin; Gonese, Jean; Torkington, Ian R
BCC:
Subject: RE: Doosan/Bechtel/LGE - Action Items Meeting
Sent: 11/11/2013 10:31:01 AM -0500 (EST)
Attachments: AIL Update_06_Nov_13.xlsx;

Mel / Phil

I am due in meetings with our Spring 2014 outage sub-contractor on Wednesday and Thursday of this week so can I ask for the AIL call on Wednesday 13th November to be cancelled. If you have any questions regarding the AIL please let me know and I will respond.

The attached AIL is the one used for the meeting on the 6th and below are the actions I noted from that meeting;

- # 59.1.6.1 – DPS confirmed verbally that the 24MWe ramp could be carried out between 80% and 100% load, to be confirmed by e-mail.
- # 79 – Advise forecast date.
- # 62.8 – Advise forecast date.
- # 84.2 – Check latest WCAH data sheet has been issued.
- # 84.2.1.1 – Comment from Phil re WCAH, isolating valves and positioning of thermocouples – DPS to review.
- # 92 – Chris Dukes to review, this has been completed and is with Phil for approval to implement.
- # 96.2 – Close
- # 96.3 – DPS to expedite HPSA response.
- # 97 – Move to watch item.
- # 99 – DPS to expedite.
- # 109 – Mitch issued a copy of list of attendees for the “4th Annual Dry Hydrate Users Group Meeting” held in March 2012 in today’s Plan of the Week meeting and is looking to set up a meeting this week with Mark Thomas this week.
- # 110 – E-mail issued 09-Nov-13.

Thanks in advance.

Steve

Steve Hammond
Doosan Babcock Limited
Email: steve.hammond@doosan.com
Tel: +1 502 255 5290

From: Watkins, Clyde [mailto:cwatkins@bechtel.com]
Sent: 06 November 2013 13:45
To: Watkins, Clyde; Hobbs, Donna; Babcock, James; Brann, Devin; Dearman, James; McCallum, Neil; Hammond, Steve; Kerlake, Ian; Melloan, Ricky; Dukes, Christopher; Rabe, Phil; Slaughter, Mitch; Carlisle, Gary; O'Reilly, Daniel; Roach, Sandra A; Gratton, Ron; Maunder, Kevin; Jeff Joyce; Gonese, Jean; Martin, Brenda; McCallum, Neil; Hammond, Steve; Kerlake, Ian; Melloan, Ricky; Dukes, Christopher; Rabe, Phil; Slaughter, Mitch; Carlisle, Gary; Roach, Sandra A; Gratton, Ron; Maunder, Kevin; Jeff Joyce; Gonese, Jean
Cc: 'Mohn, Laura'; 'Mohn, Laura'
Subject: RE: Doosan/Bechtel/LGE - Action Items Meeting

Updated AI list for today’s call.

Mel

Mel Watkins

Project Engineering Manager

Trimble County Unit 2 Project

cwatkins@Bechtel.com

work: 301-228-8035 (Frederick)

work: 502-255-5277 (Trimble Site)

cell : 240-793-4490

-----Original Appointment-----

From: Watkins, Clyde

Sent: Friday, June 28, 2013 8:27 AM

To: Watkins, Clyde; Hobbs, Donna; Babcock, James; Brann, Devin; Dearman, James; McCallum, Neil; Hammond, Steve; Kerslake, Ian; Melloan, Ricky; Dukes, Christopher; Rabe, Phil; Slaughter, Mitch; Carlisle, Gary; O'Reilly, Daniel; Roach, Sandra A; 'Gratton, Ron'; Maunder, Kevin; Jeff Joyce; 'Gonese, Jean'; Martin, Brenda; McCallum, Neil; Hammond, Steve; Kerslake, Ian; Melloan, Ricky; Dukes, Christopher; Rabe, Phil; Slaughter, Mitch; Carlisle, Gary; Roach, Sandra A; 'Gratton, Ron'; Maunder, Kevin; Jeff Joyce; 'Gonese, Jean'

Cc: 'Mohn, Laura'; Mohn, Laura

Subject: Doosan/Bechtel/LGE - Action Items Meeting

When: Wednesday, November 06, 2013 9:00 AM-10:00 AM (UTC-05:00) Eastern Time (US & Canada).

Where: Bechtel Startup Conference Room

Please use the following dial in number:

866-232-8005

Conf code: 301-228-8035

Produced as Native

Original File Name: AIL Update_06_Nov_13.xlsx

Stored File Name: OpenText00252737.xlsx

ATTACHMENT A TO EXHIBIT 3

COMBUSTION SYSTEM COMPLETION SCHEDULE

The following Combustion System completion schedule is the initial schedule to be used for coordination and planning purposes, recognizing that achieving the outage completion dates relies upon Owners completing the activities within the durations as set forth in Note 4 on the schedule, and returning facility systems to service to support contractor commissioning activities. The Parties intend to update it from time to time to reflect actual and projected progress in achieving Combustion System Completion, and may modify it by mutual agreement. The contractually required dates and other contractual terms are as set forth in (or determined pursuant to) the Agreement (as amended).

From: Mohn, Laura(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=E008837)
To: Carlisle, Gary; Melloan, Ricky
CC: Rabe, Phil; Slaughter, Mitch
BCC:
Subject: FW: 07292 - TC2 - Spring 2014 Outage SMR's
Sent: 02/10/2014 02:28:43 PM -0500 (EST)

Attachments: Spring 2014 Outage Work Scope - SMR~WP Register (03Dec13).pdf; SMR 0048 Rev F 03Dec13.pdf; SMR 0068 Rev E 03Dec13.pdf; SMR 0095 Rev B 03Dec13.pdf; SMR 0101 Rev C 05Nov13.pdf; SMR 0107 Rev C 03Dec13.pdf; SMR 0114 Rev C 03Dec13.pdf; SMR 0127 Rev C 03Dec13.pdf; SMR 0132 Rev B 03Dec13.pdf; SMR 0141 Rev C 05Nov13.pdf; SMR 0152 Rev B 03Dec13.pdf; SMR 0155 Rev A 05Nov13.pdf; SMR 0156 Rev D 03Dec13.pdf; SMR 0157 Rev A 05Nov13.pdf; SMR 0159 Rev C 03 Dec13.pdf; SMR 0165 Rev C 03Dec13.pdf; SMR 0166 Rev A 25Nov13.pdf; FW_ Combustion & REI Action Item List - Item B57 & B87.msg;

Rick and Gary,

Here are the SMRs. I forwarded them in December, but did not include you...sorry.

Also attached is another e-mail with another SMR related to the OFA ports.

Finally, Matt Churchman is downloading the files on the Bechtel e-room and placing them on the I drive under the following location:

I:\Matt Churchman TC Drafting\eRoom Bechtel Drawings

Let me know if you need anything else.

Regards,

Laura

From: Mohn, Laura
Sent: Friday, December 20, 2013 7:34 AM
To: Anderson, Dave (Trimble County); Payne, Nicholas; Powell, Richard; Henderson, Trent; Turner, Tyler; Mills, Ricky; Jensen, Jack; Maldonado, Francisco; Dorwart, Jordan; Moore, Emmett; Slaughter, Mitch; Sedam, Dale
Cc: Joyce, Jeff; Byrd, Larry; Rabe, Phil
Subject: FW: 07292 - TC2 - Spring 2014 Outage SMR's

From: Watkins, Clyde [<mailto:cwatkins@bechtel.com>]
Sent: Thursday, December 12, 2013 6:06 PM
To: Mohn, Laura
Cc: Craft, Jim; Dearman, James
Subject: FW: 07292 - TC2 - Spring 2014 Outage SMR's

Laura,

Here is the other package of SMR's received today from Doosan. Please forward to others that may wish to review them.

Thank You,

Mel Watkins

Project Engineering Manager

Trimble County Unit 2 Project

cwatkins@Bechtel.com

work: 301-228-8035 (Frederick)

work: 502-255-5277 (Trimble Site)

cell : 240-793-4490

From: Hammond, Steve [<mailto:steve.hammond@doosan.com>]

Sent: Thursday, December 12, 2013 7:13 AM

To: Watkins, Clyde

Cc: McCallum, Neil; Davidson, Gordon; Torkington, Ian R; Kerslake, Ian; Gratton, Ron; 06350 TRIMBLE COUNTY MAILBOX; Cameron, Euan; Lee, John; Cahill, Michael; Payne, Trevor; Hobbs, Donna; Brann, Devin; Dearman, James

Subject: 07292 - TC2 - Spring 2014 Outage SMR's

Mel,

Please find attached a copy of the current SMR register and the SMR's themselves less their attachments. This provides a description of the work being carried out against each SMR. Doosan will issue the SMR's complete with attachments through the e-room during week commencing 16th December 2013.

Let me know if you have any questions.

Thanks and regards

Steve

Steve Hammond
Doosan Babcock Limited
Email: steve.hammond@doosan.com
Tel: +44 1293 584634

From: Mohn, Laura(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=E008837)
To: Anderson, Dave (Trimble County); Payne, Nicholas; Powell, Richard; Henderson, Trent; Turner, Tyler; Mills, Ricky; Thompson; Jensen, Jack; Maldonado, Francisco; Dorwart, Jordan; Moore, Emmett; Slaughter, Mitch; Sedam, Dale
CC: Joyce, Jeff; Byrd, Larry; Rabe, Phil
BCC:
Subject: FW: Combustion & REI Action Item List - Item B57 & B87
Sent: 12/20/2013 07:35:26 AM -0500 (EST)
Attachments: TC2_OFA ports Dec 12th 2013.pdf;

From: Watkins, Clyde [mailto:cwatkins@bechtel.com]
Sent: Thursday, December 12, 2013 6:05 PM
To: Mohn, Laura
Cc: Dearman, James; Craft, Jim
Subject: FW: Combustion & REI Action Item List - Item B57 & B87

Laura,

Forwarding the SMR packages received from Doosan that we discussed on the phone this morning.

Please forward to others that may want them.

Thank You,

Mel Watkins

Project Engineering Manager

Trimble County Unit 2 Project

cwatkins@Bechtel.com

work: 301-228-8035 (Frederick)

work: 502-255-5277 (Trimble Site)

cell : 240-793-4490

From: Cameron, Euan [mailto:Euan.Cameron@doosan.com]

Sent: Thursday, December 12, 2013 9:19 AM

To: Watkins, Clyde

Cc: Hobbs, Donna; McCallum, Neil; Kerslake, Ian; Hammond, Steve; Torkington, Ian R; Groom, David; Reynolds, Paul (Crawley); Hough, David C; Gratton, Ron; Lee, John; Davidson, Gordon; 06350 TRIMBLE COUNTY MAILBOX; Brann, Devin

Subject: RE: Combustion & REI Action Item List - Item B57 & B87

Mel,

In addition to Steve's earlier email, please find attached the second of the more detailed Construction scope write-ups – this one is for the OFA work package.

Please note that this should be read in conjunction with SMR 0156.

Best Regards,

Euan

Title:

SITE WORK PACKAGE

Document Designation:

Document Reference:WP02

Project Name	Project Code	Group Code	Folder Group	Sub Folder Group
TRIMBLE 2	07292A	00	00	00

Status: Issue Date 2013.12.04 Revision Date 2013.12.12 Revision 04

Distribution: No. Pages 8 Appendices 0

Subject:

Additional OFA ports and associated works

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- 1. Brief Description of Work Package.....**
- 2. General Information for Construction.....**
 - 2.1 General.....
 - 2.2 Pre Check for Erection.....
 - 2.3 Enabling Works.....
 - 2.4 Erection.....
 - 2.5 Work Access Systems.....
 - 2.6 Tools & Equipment.....
- 3. Quality Management, Acceptance Test and Inspection.....**
 - 3.1 Quality Assurance.....
 - 3.2 Quality Control.....
- 4. Bill of Quantities.....**

Introduction

The intent of this document is to give an outline view of the work content including the proposed sequence and must be read in conjunction with the SMR which is the controlling document regarding technical requirements.

It is important to note that the work is to be executed using method statements, technical procedures, safety documents and controls which form part of the subcontractor’s instructions and documentation produced for this work package.

1. Brief Description of Work Package

There are currently 10 OFA (Over Fired Air) ports, (5 in the front wall and 5 in the rear wall, each one is fitted directly above each column of burners). This work pack covers fitting 4 additional OFA ports into the furnace and increasing the ducting size local to the 4 OFA ports. The new ports are fitted at a different elevation as the existing ones due to the new ports being of a slightly larger diameter, they are fitted on the outboard furnace corners.

2. General Information for Construction

2.1 General

Duct Insulation
Duct Support frame
OFA Ducts
OFA windbox
Damper
Damper actuator
Expansion Joint
Replacement Boiler straps
Flow straighteners
Aerofoils
OFA Galleries
OFA Ports
OFA Quarl
OFA Pressure Part attachments
OFA duct doors
Painting
AmStar coating

It is the CONTRACTOR’s responsibility to familiarise themselves with the site environment to ensure that the assembly concept, methods to be employed including dimensional checks are undertaken prior to execution of the work package are satisfactory

2.2 Pre Check for Erection

- Establish suitable laydown areas for the new quarl panels and old quarls.
- Establish the route for transporting the equipment around site up to and down from the work area.
- Carry out any required survey and identify testing of intended lifting points / existing beams.
- Identify welders who are qualified to carry out this task.
- Ensure all personnel have undergone the required rig training for this task.
- Compile the safety and quality documentation packs
- Ensure that all replacement items are available and on site for the work to commence
- Ensure that all special tooling, jigs, jacking systems and equipment are available and in good working order.

2.3 Enabling Works

- Set up all the required temporary services.
- Load test any lifting points as required.
- Engage with the AI inspection authority for pressure part welding.

2.4 Erection

Section 2.4.1 REMOVAL OF EXISTING EQUIPMENT

- 1 Erect scaffolds including safety scaffolds under the ducts and inside the vertical duct sections. There will be a scaffold internal to the furnace which is being dealt with under the burner work pack
- 2 Identify, mark and remove surrounding electrics and any similar item which could be damaged during execution of the work
- 3 Disconnect the damper actuator and store for fitting during re-assembly
- 4 Remove impulse pipework from aerofoils and store for refitting
- 5 Remove insulation as required for access to ducting sections
- 6 Mark termination point on windbox V – type expansion fold
- 7 Support the toggle duct section. It is imperative that only the identified existing steelwork is utilised to support and to rig the existing and new ducting during removal and fitting of the equipment
- 8 Remove the damper and local expansion joint
- 9 Remove the redundant section of windbox ducting to allow introduction of the new OFA penetration to commence
- 10 Remove the toggle duct section and expansion joint
- 11 Remove the 90 degree section of ducting down to the termination point
- 12 Remove the existing (end) OFA port and store to allow it to be refitted later
- 13 Remove the redundant section of the existing windbox support, this is fitted to the furnace corner and a drawing will be available to determine the cut position of the section which would foul the new ducting if it were to remain in position.

Section 2.4.2 MARKING THE NEW OFA PORT CENTRE LINE

- 1 Mark the furnace to determine the centre of the new OFA position and drill a 1/4" hole through the membrane to transfer the datum to the inside of the furnace. The required dimensions and angles required to carry out this activity are identified on the drawing

Section 2.4.3 TEMPORARY SUPPORT ARRANGEMENT TO THE BOILER SUPPORT STRAPS

- 1 The existing boiler straps foul the new OFA port and are to be modified, due to the weight distribution across all the boiler straps it is thought prudent to ensure they remain under load throughout the work. Therefore a temporary load transfer plates require welding to the side of the straps (see drawing).
- 2 Once the plates are welded and any required NDE complete, assemble the threaded rod system and ensure it is correctly tensioned using the hydraulic jacking system. It may be necessary to remove sections of existing finger plates to allow the temporary system to be fitted, new finger plate sections have been supplied in case they are required, and finger plates must be re fitted upon completion of the work
- 3 It is imperative that the boiler straps remain in tension throughout completion of the work and must not be cut until the temporary system is correctly fitted, also the temporary rods must not be de-tensioned until the new straps are fitted and complete
- 4 Mark the cut lines and back marks on the 2 boiler straps and cut both straps ensuring the boiler tubes are not damaged during this process
- 5 Support the boiler straps, then grind away the weld between the seal blocks and boiler straps and remove the redundant boiler strap sections
- 6 With the sections of boiler strap removed the existing cast support strap filler blocks (which will interfere with the new butt welds) must also be removed and any rags removed from the remaining redundant blocks dressed to ensure they do not interfere with the new straps. This operation must be undertaken with extreme care to ensure the tubes are not damaged.
- 7 Additional cast support strap filler blocks are required for the new sections of boiler strap and these must now be welded into position.
- 8 The new sections of boiler strap can now be fitted into position ensuring that the straps are fitted in the correct orientation and that the drilled datum hole in the membrane is central to the boiler straps. The final inspection is to ensure that the support brackets are correctly distanced to allow them to accept the ducting frame (which attaches to the lugs on the new straps plus existing lugs). The straps can be butt welded together once confirmed that they are positioned and orientated correctly, and then the straps welded to the new cast blocks.
- 9 Once the modification work to the straps is confirmed as complete, including any required NDE, the temporary loading system can be de-tensioned and removed. Ensure that any previously removed finger plates are fitted/replaced, new finger plate sections have been supplied for this activity

Section 2.4.4 FITTING OF THE NEW OFA PANEL

- 1 The existing panel area will be marked for removal from the furnace side using a jig frame. This frame will be accurately positioned (firstly on the new panel), then onto the inside furnace wall to ensure the cut / butt weld positions are correct and that the new quarl opening is located in its correct position.
- 2 Fit the marking out frame to the new panel to determine correct fit. Mark the frame to determine which way round it fits and which is top, also to the furnace corner it relates to.
- 3 Fit the marking out frame to the furnace and mark the cut lines and back-marks onto the inside of the furnace tubes. The back-mark will be 1 inch inboard of the final finish dimension and will be marked by fitting a 1 inch spacer inside the frame. The final cut line is marked directly from the frame inner edge. As all these marks will have gone when the final prep is complete a datum mark will also be scribed onto the tube using the jig frames outer edge.
- 4 With the tubes marked out as described, it is imperative to ensure each tube is cut inside of the mark to allow sufficient material for the weld prep to be machined and that each tube is cut in relation to the individual tubes axis
Cutting, prepping and welding of the furnace tubes will only be carried out by personnel who have undergone the correct training and familiarisation in the test rig, as well as having the correct qualifications.
Once the panel has been removed it is imperative that the tube ends are capped at all times they not being worked upon. During machining activities a retrievable core plug must be fitted inside the tube bore and the remaining tubes capped. All core plugs must be uniquely identified and used with a logging system, they must also have a tail so it is easy to visualise that a core plug is in place.
Prior to fitting the new panel, all tube bores are to be inspected internally.
- 5 The existing furnace panel will be rigged prior to cutting; the tubes will be cut using cold cutting and thermal methods, and removed from the furnace via the bottom hopper. The work required to replace the OFA quarl is similar to that required on the burners with the additional complication of the cut line on a number of OFA tubes being underneath the existing boiler support straps. Due to this the support straps require modification prior to the quarl panel being removed along with removal of the attachment welds between the furnace tubes and support straps/blocks as described in section 3
- 6 The existing ends of the furnace tubes are then cleaned and weld prepped back to pre-set back marks and dimensional checks carried out prior to offering the new quarl into position. It is essential that tube ends (existing and new, are capped whenever they are not being worked upon and that cleanliness within the tube bores is kept to a high level (ingress of foreign materials is not acceptable). With the existing tube ends prepped to length, any deposits removed from the tube bore and O/D back to a clean metal surface and visually inspected, the new quarl panel is to be offered up into position. Any minor adjustment should then take place to allow the quarl to be fitted into position and the 40 tube butt welds set for welding. Weld of the 40 butt welds can only commence after all 40 welds are deemed to be achievable. Upon completion of welding the required NDE can be carried out.

SECTION 2.4.5 FITTING THE SEAL RING AND SEAL BOX

- 1 The seal box mounting ring fillet blocks are supplied loose as they would be in the way of the panel butt welds if fitted. These blocks therefore need to be fitted and welded into position once the panel work is complete.
- 2 With the blocks welded the seal ring is to be fitted, the ring fits onto the blocks and is seal welded to the blocks all the way around the outer circumference. The new seal box fits onto the seal ring and is seal welded to the ring. Positioning of the seal box into its correct location is important as it forms part of the datum for the new OFA port position.
- 3 Once the OFA port is fitted and welded into position the letterbox opening in the seal box is used to deposit the pourable refractory. Once the refractory is fitted the letterbox cover plate is seal welded into position

Section 2.4.6 ERECTION OF DUCTING SECTIONS

- 1 Fit temporary packing to allow the toggle duct floor sections to be fitted into position, complete fitting of this section. Ensure that the packing can be removed upon completion of the work by using wedge sections or jacks. It is imperative that only the identified existing/temporary steelwork is utilised to support and to rig the existing and new ducting during removal and fitting of the equipment
- Note: - The new ducting sections have been trial assembled during manufacture and will be uniquely marked to aid assembly.
- 2 Fit the furnace side toggle ducting wall
 - 3 Fit the new aerofoils and weld them into position ensuring they are correctly orientated, they are delivered as complete assemblies already pressure tested.
 - 4 Fit the flow straightening devices ensuring the flow straightener fitted with the access door is in the correct location and the correct way around
 - 5 Fit the remaining toggle duct wall
 - 6 Fit the toggle duct roof sections
 - 7 Ensure all welding to the flow straighteners and aerofoils is complete and that all internal seal welded is complete
 - 8 Fit the 90 degree elbow section of ducting into position and fully seal weld internally
 - 9 Fit the short make up section which fits upstream of the toggle duct complete with its expansion joint, ensuring both ends of the toggle duct remain at the correct respective elevations along with the expansion joint length
 - 10 Once sufficient work on the new OFA penetration is completed the new section of windbox can be fitted by firstly fitting the support frame which attaches to the furnace wall ensuring all pins are correctly fitted and secured. When fitting the pins, alignment of the frame is critical. It is imperative that all the pins are confirmed to be correctly fitted prior to fitting the ducting as access is restricted
 - 11 To allow the new frame to be fitted into position it is probable that 2 or possibly 3 sections of overturning post may need to be removed, an alternative to this would be to cut the new frame into sections of a size which will fit behind the overturning posts (therefore not cutting the overturning posts). If this needs to be done, ensure that the sections (overturning post, or new frame) are match marked upon removal and butt welded back into position in conjunction with fitting the windbox support frame.

- 12 Prior to fitting the new windbox ensure that all work relating to the OFA panel is complete, that the permanent new boiler straps are fitted and complete, the temporary threaded rods are removed and that any support finger plates which were removed have been re-fitted.
- 13 The new windbox duct will be fitted in sections, firstly fitting the furnace side wall of the duct to the support frame, then the windbox floor. The windbox front wall is then fitted ensuring that the opening for the new OFA port is in the correct position to allow alignment of the OFA port to the furnace side penetration. Then fit the 3 internal bracings.
- 14 Finally the windbox roof section will be fitted and then the whole section seal welded internally and the OFA port support steelwork fitted and welded into position, the termination point of the windbox new end will finish with a new V – type expansion fold which will need to be fitted onto the new windbox end.
- 15 Once the windbox section is fitted and complete the new damper is to be fitted into position, the damper is supported on sections and once fitted the joints are to be seal welded.
- 16 The final 2 sections to be fitted are the downstream expansion joint and short make up section, it is imperative that the correct datum and offset to the toggle duct section is maintained during this section of the work.
- 17 At this stage the expansion sliding pin joints are to be fitted at either end of the toggle duct section, the hinges are to be fitted to the exact dimension required and this is to be verified by the manufacturer prior to removing the packing fitted under the toggle duct section and then again after it is removed.
- 18 Refit the damper actuator and electrics ensuring that the damper blades are in the correct position then run the damper through its travel using the actuated motor. This activity is to be verified by the manufacturer.
- 19 Refit any additional electrics which were removed for protection
- 20 Fit the aerofoil impulse pipework, this will require shortening as the new ducting is at a higher elevation to the old.
- 21 Ensure the inside of the ducting access doors are fitted with insulation and that the inner cover is welded into position
- 22 Ensure the traverse points have the end caps fitted and that they are able to be removed during re-commissioning
- 23 Inspect the ducting to ensure all hot cold clearances are achieved
- 24 Fit the ducting insulation including any required modification to the insulation of identified adjacent equipment
- 25 Remove all scaffolding
- 26 Inspect the completed work and sign the completion certificate with the identified responsible signatories.
- 27 Once the ducting is complete the new OFA port plus the original OFA port which was previously removed can both be fitted into position ensuring the fasteners are correctly tightened
- 28 Coating of the OFA panel internally to the furnace will be carried out as a separate activity upon completion of the burner work

Section 2.4.7 POST OUTAGE WORK

- 1 Carry out a leak check on the aerofoil impulse pipework joints once the system is under pressure.
- 2 Complete any work required to any minor modifications of walkways ensuring that safety barriers are fitted until completion

2.5 Work Access Systems

Conventional scaffolds will be fitted to the windbox side and internal to the windbox where required, a design access system is to be fitted within the furnace which will have integral lifting points. Additional scaffold will be required external to the windbox to allow its removal and replacement and for seal welding the ducting internally after erection.

2.6 Tools & Equipment

All construction equipment, assembly tools and lifting systems are provided by the CONTRACTOR to execute the work package

3. Quality Management, Acceptance Test and Inspection

3.1 Quality Assurance

The contractor shall operate a quality management system that meets US and Kentucky State accreditation including any subcontractors they employ.

3.2 Quality Control

The contractor shall determine the scope of inspection and testing requirements according to the US and Kentucky State applicable codes, unless otherwise advised by the ORDERER.

4. Bill of Quantities

All materials associated with this section of the work will be free issue; this includes fasteners and gaskets unless otherwise instructed

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Brief Description of SMR

The interior faces of the furnace panels in the area depicted on drawing number are clad with an erosion resistant material.

Item:

Furnace Cladding

Drawings:

- 06350/B250/31100/0007 - Location of AmStar Cladding

Action Required (Use Continuation Sheet as required)

- **Revision F – Drawing revisions removed and transferred to SMR drawing register.**

1. DB / SEB are providing access to all furnace walls to facilitate the application of the coating as required.
2. Access will be required after the furnace scaffold is erected to grit blast the existing coating from the areas to be cut / welded and at the end of the outage to apply the cladding to the OFA panels and the top half of the top row of burner panels.
3. The schedule advised by AmStar is;
 - Alstom plans to arrive at the work site at least 24 hours prior to start of work proper in Unit 2. The pre-blast is estimated to take 24 hours and the cladding schedule calls for a critical path time line of 96 hours (8 shifts). It is assumed that Alstom may setup and breakdown equipment in the boiler off of critical path, before and after the start and end of Alstom's critical path time line and in conjunction with other work activities in the unit.
 - Note! The gas path must be clear and hold cards signed off prior to the application of the AmStar cladding.
 - The date for this work is to be finalised.
4. The following notes have been taken from the AmStar proposal document;
 - **LIST OF CLIENT SUPPLIED SUPPORT ITEMS**
 - **Work area:** A work area of the specified size is required to position equipment and materials. An area adjacent to the subject equipment access point is required to position spray equipment. An area, accessible by trolley jack or forklift is required to position blast equipment. Areas are to be approximately 200 sq. ft. (20 m²) in size. Areas for equipment and material staging are to be weather protected.
 - **Material Storage:** Cladding material as well as abrasive blast material may be delivered to the site prior to the arrival of the Alstom crew. It is expected that the client will assist the material supplier with off-loading of such material. It is further expected that the client will supply safe and weatherproof storage of this material.
 - **Site Office:** The client is asked to provide a mutually agreed location for the Alstom project manager to use that is equipped with 110V electrical connections for and an area that will have limited use by the Alstom crew during lunch breaks.
 - **Work Platforms:** Scaffold is to be installed by an approved scaffolding company in accordance with OSHA requirements. The scaffold is to be erected no closer than 6" (150 mm) and no further than 14" (350 mm) away from the surface to be coated as Alstom's process requires a direct line of site to the surface to be clad. It is preferred that scaffold is to have toe boards

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fitted and double handrails fitted on all sides, except those adjacent to surfaces to be cladded. All scaffold boards are to be secured. Scaffold levels are to be connected by means of stairways. If stairs cannot be erected due to the geometry of the unit, ladders may be used, but must be staggered every alternate scaffold level. If the scaffold structure is to be supported against the coating surface in the area to be coated, this should be done with outriggers that can be easily removed and re-installed by the scaffold company to facilitate surface preparation and coating of these areas. Scaffold drops should be 6½' to 7' in height and within arm's reach while standing off the scaffolding. Scaffold walkways should be 42" wide at a minimum. Support structures should be placed on the inside of the structure to leave unimpeded access to the surface to be cladded. Down time to make scaffold modifications to meet this specification will be charged as standby time. All decking must be perforated metal as wood decking is unacceptable except in restricted and limited areas only.

- **Electrical supply and connections:** It is expected that the client will allow for the electrical connections described in Section 5 to be available for Alstom's exclusive use during the described work. It is expected that all connections will be within 30 ft (10 m) of the equipment access point. Power requirement is 440 volt, 45 amps per spray unit at 50/60 Hz. It is expected that the client will "hard wire" Alstom's equipment into the plant power supply or provide plug ends to connect to the power cable. Alstom power packs are fitted with approximately 10' (3 m) of power cable per unit. **ALSTOM EQUIPMENT DOES REQUIRE PROPER GROUNDING.**
- **Lifting equipment:** It is expected that the client will provide a crane, lifting bay, or freight elevator for the purposes of lifting and locating Alstom's equipment, consumables, and materials to the necessary staging position outside of the subject equipment.
- **Forklift service:** It is expected that the client will provide Alstom a forklift for setup and material handling purposes throughout the project. This is usually 3-4 hours during setup and breakdown shifts. Alstom technicians are certified to operate a standard type forklift, but should site or union requirements dictate operation by a specialist operator, it is assumed that the client will provide such an operator.
- **Compressed air:** It is expected that the client will provide clean and dry compressed air for the purpose of breathing air supply, abrasive blasting, and spray cladding. Air supply is to be rated at an operating pressure of 8.5 bar (100 psi) minimum, and an operating flow rate as described in Section 5. The air supply should be fitted with a 3" NPT pipefitting. In the case of a portable compressor being supplied by the customer, the customer will supply a minimum of 1 length of 3" boss hose with each compressor.
- **Diesel fuel:** It is expected that the client will provide diesel refueling of Alstom's ancillary equipment such as forklift trucks, compressors, and / or generators. If a diesel tank is required, it is assumed
- **Sand removal:** It is expected that the client will plan for removal and safe disposal of spent abrasives during and / or upon completion of Alstom's work.
- **Ventilation:** It is expected that the client will ventilate the work area to remove fume / dust. It is the clients responsibility to ensure location specific regulations are not violated (plant and/or state). Alstom will provide MSDS & IH data for clients use as requested. For confined vessels, an air changeover of once per minute is expected. For boilers, it is expected that the induced draft fan will be operable, the speed of which can be adjusted to suit the needs of the Alstom project personnel.
- **Plant communication:** Alstom requests the client provide the Alstom Team Leader on each shift a procedure for communicating with plant operations personnel. A plant radio is preferable.
- **Confined space gas testing:** It is expected that plant personnel will test the confined space atmosphere prior to Alstom personnel entering the space. Once Alstom operations have started, it expected that the confined space will be tested at the beginning of each shift, and

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before entry of the space is vacated by all personnel for a period in excess of 15 minutes. Acceptable test levels are; oxygen between 19.5% and 22.5%, toxic vapor levels below permissible exposure limits, explosive gas, and / or particle levels below 10% ignition threshold.

- Standby / hole / fire watches: It is the nature of Alstom's work that all confined spaces be deemed permit required confined spaces. It is expected that the client will supply qualified standby / hole / fire watches as is required for all permit required confined space.
- Confined space permits system: Alstom will follow the clients confined space entry system.
- Lockout / tag out: The client is responsible for locking out and tag out of all valves, and for blanking off all piping into the confined space in which Alstom personnel will operate such as to create a safe working environment in the confined space.
- **OPERATIONAL CONSIDERATIONS**
 - Alstom will "blow off" scaffold decks in the vicinity of Alstom's work area at the end of the project. It is expected that this technique will leave residual dust on the boards due to air recirculation during the "blow down" activity. Furthermore, it is expected that the client will not "wash down" said scaffold boards with water as this process will damage Alstom's passivator, if this project has been specified to have a passivation layer.
 - It is expected that the area to be clad will be dry and free of any scale, and / or product residue prior to execution of the described work. Alstom can remove surface contaminants at an additional cost to the client (of \$1 per additional pound of abrasive used for cleaning scale or product residue). Such activities are not reflected in the project schedule and may result in extension of Alstom's work schedule.
 - Alstom requests that only water based UT couplants be used for ultrasonic testing prior to Alstom activities in the subject unit. The use of any petroleum based UT couplants will require residual couplant removal by means of degreasing and sand blasting, at additional cost to the client.
 - Alstom will provide a company Health and Safety manual to the client for review by plant safety personnel upon request, and receipt of the purchase order authority. It is expected that a client safety representative will confer with Alstom project personnel prior to commencement of any work on site.
 - Alstom will enter the subject equipment under the client's confined space entry system. Alstom will also manage the space in accordance with Alstom confined space safety procedures as detailed in the referred Alstom health and safety manual. The client plant personnel are responsible for providing Alstom operations personnel with full information of hazards and hazard abatement prior to commencement of work on the client's site.
 - It is expected that Alstom operations personnel will not be required to wear safety harnesses in the subject unit while working off safe scaffold platforms. Successful and safe thermal spray coating application requires a high degree of mobility, which is hindered by the wearing of a safety harness. Safe scaffold platforms are platforms that are constructed with the necessary handrails, toe boards and to the specifications that meet regional and national standards for the client's facility.
 - Operations personnel that have been trained and certified by Alstom in the safe use of Alstom equipment and operating procedures will setup and exclusively operate said equipment.
 - It is accepted that Alstom - Houston is non-union and that the client will be responsible to facilitate any agreements necessary to allow execution of the described work should the client's plant site be under union influence. Furthermore, the client shall be responsible for any

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financial obligation to such union influence to facilitate execution of the described work.

- Alstom is the sole applicator of JetStar™ proprietary equipment. In the course of the execution of the described work, certain proprietary information developed by Alstom will be revealed to the client. Alstom's proprietary information may be obtained by the client through other sources due to their communications with Alstom. Written proprietary information or material of Alstom will be clearly marked in a conspicuous place as "Confidential" and/or "Proprietary" (or words of similar import), and oral or visual proprietary information or material is within thirty (30) calendar days of such oral or visual disclosure confirmed in writing as confidential and/or proprietary. Furthermore, any information pertaining to Alstom's equipment, specified material, application procedures or equipment specifications, whether marked or identified as proprietary information or not, is considered Alstom's proprietary information. By accepting the receipt of this proposal, the client and the client representatives agree to maintain such Alstom proprietary information as confidential, and not release any proprietary information to any third party without prior written permission of an officer of Alstom. This provision shall survive the termination of this Agreement.
- Alstom requires that any physical samples of its products that are removed from service be made available to Alstom for metallurgical evaluation.
- Alstom prohibits publication or distribution of pictures of its application processes or products without the expressed written consent of an officer of Alstom.
- Alstom applies cladding alloys that contain significant quantities of Nickel and Chrome, these alloys being primary actors in the corrosion resistance of these cladding materials. These elements, Chrome and Nickel, are fully alloyed into the cladding material, and do not exist in elemental form. They are non-soluble, and as such are considered non-hazardous by Alstom. It is however the responsibility of the buyer / client to perform any due diligence deemed necessary to ensure that the use of Alstom's technology does not violate any local, state or other statutory regulations, or any site specific environmental or safety procedures adopted by the client and / or owner. Any environmental or safety precautions required over and above the standard operating procedures adopted by Alstom are the sole responsibility of the client / owner.
- The Customer recognizes that Alstom considers its equipment, procedures, and processes to be valuable, confidential, and proprietary Trade Secrets. Customer therefore agrees to restrict access of subcontractors or other third parties who may be competitors of Alstom from areas in which Alstom is working or has its equipment, and nearby areas ("Restricted Areas"), in which they may be able to acquire any of Alstom's Trade Secrets, whether or not Alstom personnel are present.

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Brief Description of SMR

Warranty notice TC2-WN-0466E requires the replacement the outlet non return dampers associated with the mill seal air fans tagged # 2-CB-MF-003B.

Item:

Outlet non return damper associated with the mill seal air fan tagged # 2-CB-MF-003B.

Drawings:

- Mill Seal Air Fan GA Drawing – 06350/CALG/32520/0014 C
- Extract from Data Sheet for Flue and Duct Insulation - 06350/B230/39800/1004 Rev G

Action Required (Use Continuation Sheet as required)

- **Revision E – Drawing revisions removed and transferred to SMR drawing register.**

1. The insulation surrounding the non return dampers should be carefully removed and stored for later use (if not damaged).
2. The new non return dampers are to be installed as per the listed drawing.
3. The non return dampers are to be insulated using the removed insulation if not damaged or new materials in accordance with “06350/B230/39800/1004 Rev G – Extract from Data Sheet for Flue and Duct Insulation”.

Materials listed below are to be free issued

- 2 off non return dampers
- 4 off gaskets to suit non return dampers

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Brief Description of SMR

The two water coil air heaters (WCAH) are to be replaced along with the two external FD intake hoods as described in this SMR.

Item:

Water Coil Air Heaters and FD Outdoor Intake Hoods

Drawings:

1. General

- 06350/CIDA/32100/0001 - GA of FD Fan Inlet Duct
- 06350/CIDA/32100/0002 - GA of FD Fan Inlet Duct
- 06350/CIDA/32100/0003 - GA of FD Fan Inlet Duct
- 06350/CIDA/32000/0001 - Standard Detail of Duct Connections and Welding
- 06350/CIDA/32000/0002 - Standard Detail of Duct Connections and Welding
- Photos – general

2. Replacement of existing Water Coil Air Heater banks and outer casing

- 06350/CAHI/32100/0033 - WCAH General Arrangement Drawing
- 06350/CAHI/32100/0034 – WCAH Coil Detail Drawing
- 06350/CAHI/32100/0035 – WCAH Coil Detail Drawing
- 06350/CAHI/32100/0036 – WCAH Coil Detail Drawing
- 06350/CAHI/32100/0038 – WCAH Coil Detail Drawing

3. Site Fabrication Work & Lifting/Hoisting Requirements

- 06350/CAHI/32160/0006 - Site Fabrication Work Prior to Erection
- 06350/CAHI/32160/0011 - Erection, Lifting and Hoisting Requirements
- 06350/CAHI/32160/2008 - TC2 WCAH IOM
- 06350/CAHI/32160/0015 – **Welding Procedure**
- 06350/B240/32000/3001 – Flues and Ducts Loads for Steel Structures (existing loads) – FD Suction extract
- 06350/B250/32100/1002 – FD Fan Inlet Suction Duct Support Philosophy. (original documentation)

4. Replacement of existing interconnecting pipework system and headers

- 06350/B250/32160/1001 - WCAH Terminal Point (Existing Design)
- 06350/B250/32160/1002 – WCAH Headers and Interconnecting Pipes (Existing Design)
- 06350/B250/32160/1006 – **WCAH – 2A Inlet and Outlet Interconnecting Pipework and Headers (New)**
- 6350/B250/32160/1007 – **WCAH – 2B Inlet and Outlet Interconnecting Pipework and Headers (New)**
- 06350/B250/32160/1008 – **2 Flexible Hose Details for Interconnecting Pipework (New)**

5. Installation of new deflector plates upstream of the WCAH

- 06350/B250/32XXX/XXXX – Mods to FD Inlet Duct (new deflector plates, drawing to be finalised)

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	6. Installation of new inlet hood on the FD suction duct (outdoor intake) <ul style="list-style-type: none"> 06350/B250/32100/3001 – Modifications to FD Intake Duct Option 3 (outdoor intake hood)
Action Required (Use Continuation Sheet as required)	
<ul style="list-style-type: none"> Revision B – Drawings issued as highlighted in red on drawing list, revisions removed and transferred to SMR drawing register. 	
1. WCAH Supply BC1090 - Work Plan <ul style="list-style-type: none"> The following identifies the limits of the work package and where information can be found. Whilst it appears to sequentially address the outage works required this is indicative only and the Construction Schedule and Construction Package are the ruling documents for the outage. 	
2. Summary <ul style="list-style-type: none"> This package includes for the following: <ol style="list-style-type: none"> Replacement of existing Water Coil Air Heater banks and outer casing Replacement of existing interconnecting pipework system and headers Installation of new deflector plates upstream of the WCAH Installation of new inlet hood on the FD suction duct (outdoor intake) One critical item to be finalised is the FD suction duct supporting strategy. To deconstruct the existing coils and replace with new, the FD suction duct will require supporting. 	
3. WCAH Replacement <ul style="list-style-type: none"> The replacement coils are manufactured by the same supplier as the existing equipment. Terminal points at the inlet and outlet duct flanges are identical; however the pipework systems require some modification to suit new design. Another key difference is the new WCAH will be larger on all four sides within their terminal points. This may impact galleries/handrails; modifications may therefore be required on site to suit. See supplier drawings for full details. 3D scan is still to be issued and examined. The Coils are shipped within their outer casing three coils high; there are three banks that make up the entire Water Coil. 	
4. Supplier Notes <ul style="list-style-type: none"> The site fabrication work requires that the equipment first be lifted and positioned in place on mating support ductwork prior to field welding Therefore, please refer to the document titled "Erection, lifting and hoisting requirements" for field assembly / erection details". <u>OUTER CASING</u> I understand Bechtel installed the original units the wrong way which make the original installation more difficult. In the drawing for approval you'll received very soon, there will be (4) removable lugs per outer casing. The recommendation is to use these (4) lugs to manipulate the unit in order to put the outer casing in place. 	

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- **COILS**

- Each coil will have (4) removable eye bolt on their top casing portion for the manipulation (removal and insertion).

5. Headers and Pipework

- All interconnecting pipework from headers to coils can be disconnected and removed; this is shown on drawings 06350/B250/32160/1001 rev C & 1002 rev D.
- Both inlet and outlet headers (4 off total) and connections from headers to the inlet flange on the coils will be provided new. This will include additions to the pipework systems, isolation valves on both inlet and outlet headers and thermowells on the outlet pipework from the top coil bank. The header supports should not be altered on the inlet side (east side), the steelwork for the supports on the outlet side will be altered, see drawing 06350/B250/32160/1004. The outlet header will require relocating approx. 2 foot lower. Final details to follow.
- The disconnection of the strap on thermocouples on the outlet pipework of the WCAH required. The wiring will be reused, but new thermowell/thermocouple will be provided on the outlet pipework.

6. Turning Vanes/Deflector Plates

- Two deflector plates to be installed per duct, these are shown on drawing 06350/B250/XXXXX/XXXX. Access to these suggested once existing coils have been removed. This drawing does require an update and details to be finalised. But the location and orientation of plates are fixed. The two plates will be of similar height. These will be standard A36 1/4" thick plate with supports and stiffeners to suit.

7. FD Inlet Hood

- New hoods will be provided for the two outdoor intakes. These will be dissimilar, with the North side hood design taking account of the proximity of the ESP ductwork. The final details of the hoods, bird screen, turning vanes and supporting structure are still to be finalised, concept drawing attached.
- The existing ducts will be cut and prepped in accordance with the detailed drawings. The new duct will then be attached and supported how and where identified.
- The duct will be supplied finish painted, but touch up painting will be required at the joint area.

8. Insulation and Refractory

- Removal of existing insulation and cladding where applicable. Reinsulate WCAH outer casing, headers and pipework.

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Brief Description of SMR

During the Spring 2013 outage the primary air flow elements were changed out for a venturi style measurement device. The impulse lines have been constructed using compression fitting and LGE-KU require access to each of the fittings for maintenance and surety of leak tightness.

Item:

PA Flow Elements compression fittings

Drawings:

- **N/A**

Action Required (Use Continuation Sheet as required)

- 1. The installed PA flow elements (Venturi's) impulse lines are to be surveyed and where a compression fitting is covered by insulation the insulation is to be reworked to provide ready access for LGE-KU maintenance of fittings.**

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Brief Description of SMR

The steam supply to the GAH soot blowers is to be enhanced and this SMR describes the mechanical construction plan.

Note! There is an electrical content to this work package and details for this section of work will be found in SMR0159.

Note! There is a steel work content to this work package and details for this section of work will be found in SMR0166.

Item: GAH Soot Blower Steam Supply	Drawings: <ol style="list-style-type: none"> 1. Piping Isometrics <ul style="list-style-type: none"> • 06350/B250/35710/0001: Upgraded Gas Airheaters Sootblower Steam • 06350/B250/35710/0002: Sootblower Steam to Airheaters Part 1 – Platen Drain to PCV • 06350/B250/35710/0003: Sootblower Steam to Airheaters Part 2 – PCV to Airheater Valve Station • 06350/B250/35710/0004: Sootblower Steam to Airheaters Part 3 – Airheater Valve Station • 06350/B250/35710/0010: Material Take-Off for Sootblower Steam to Airheaters Part 3 – Airheater Valve Station • 06350/B250/35710/0005: Sootblower Steam to Airheaters – PCV Warming Line • 06350/B250/35710/0006: Upgraded Sootblower Steam to Airheaters – Safety Valve Escape Pipework. • 06350/B250/35710/0007: Upgraded Sootblower Steam to Airheaters – Warming Line Sheet 1 • 06350/B250/35710/0008: Upgraded Sootblower Steam to Airheaters – Warming Line Sheet 2 • 06350/B250/35710/0009: Upgraded Sootblower Steam to Airheaters – Plan View • 06350/B250/35710/0011: Upgraded Sootblower Steam to Airheaters Safety Valve Escape Pipe – Roof Penetration Details 2. Pipe Support Detail Drawings <ul style="list-style-type: none"> • Reference Document: Trimble County 07292 – B6 GAH Sootblower Pipe Support Scope • 06350/B270/35711/1001: Rigid Hanger Support No: 35711/SSS/1001 • 06350/B270/35711/1002: Rigid Hanger Support No: 35711/SSS/1002 • 06350/B270/35711/1003: Rigid Hanger Support No: 35711/SSS/1003 • 06350/B270/35711/1004: Rigid Hanger Support No: 35711/SSS/1004 • 06350/B270/35711/1005: Rigid Hanger Support No: 35711/SSS/1005 • 06350/B270/35711/1006: Rigid Hanger Support No: 35711/SSS/1006 • 06350/B270/35711/1007: Guide Support No: 35711/SGD/1007 • 06350/B270/35711/1008: Rigid Strut Support No: 35711/SGD/1008 • 06350/B270/35711/1010: Anchor Support No: 35711/SAN/1010 • 06350/B270/35711/1037: Guide Support No: 35711/SGD/1037 • 06350/B270/35711/1038: Guide Support No: 35711/SGD/1038 • 06350/B270/35711/1039: Guide Support No: 35711/SGD/1039 • 06350/B270/35711/1011: Guide Support No: 35711/SGD/1011 • 06350/B270/35711/1012: Guide Support No: 35711/SGD/1012 • 06350/B270/35711/1013: Prop Support No: 35711/SPS/1013 • 06350/B270/35711/1014: Prop Support No: 35711/SPS/1014 • 06350/B270/35711/1016: Rigid Hanger Support No: 35711/SSS/1016 • 06350/B270/35711/1017: Variable Spring Support No: 35711/SSV/1017 • 06350/B270/35711/1018: Constant Spring Support No: 35711/SSV/1018
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- 06350/B270/35711/1019: Vertical Guide Support No: 35711/SGD/1019
- 06350/B270/35711/1020: Vertical Guide Support No: 35711/SGD/1020
- 06350/B270/35711/1021: Variable Spring Hanger Support No: 35711/SSV/1021
- 06350/B270/35711/1022: Variable Spring Hanger Support No: 35711/SSV/1022
- 06350/B270/35711/1023: Vertical Guide Support No: 35711/SGD/1023
- 06350/B270/35711/1024: Vertical Guide Support No: 35711/SGD/1024
- 06350/B270/35711/1025: Vertical Guide Support No: 35711/SGD/1025
- 06350/B270/35711/1026: Variable Spring Hanger Support No: 35711/SSV/1026
- 06350/B270/35711/1027: Vertical Guide Support No: 35711/SGD/1027
- 06350/B270/35711/1028: Vertical Guide Support No: 35711/SGD/1028
- 06350/B270/35711/1029: Constant Spring Support No: 35711/SSV/1029
- 06350/B270/35711/1030: Variable Spring Hanger Support No: 35711/SSV/1030
- 06350/B270/35711/1031: Sling Solid Support No: 35711/SSS/1031
- 06350/B270/35711/1032: Sling Solid Support No: 35711/SSS/1032
- 06350/B270/35711/1033: Rigid hanger Support No: 35711/SSS/1033
- 06350/B270/35711/1034: Variable Spring Hanger Support No: 35711/SSV/1034
- 06350/B270/35711/1035: Variable Spring Hanger Support No: 35711/SSV/1035
- 06350/B270/35711/1613: Rest Support No: 35711/SPS/1613
- 06350/B270/35711/1614: Rest Support No: 35711/SPS/1614
- 06350/B270/35711/1628: Rest Support No: 35711/SPS/1628
- 06350/B270/35711/1538: Rest Support No: 35711/SPS/1538
- 06350/B270/35711/1539: Rest Support No: 35711/SPS/1539
- 06350/B270/35711/1631: Rest Support No: 35711/SPS/1631
- 06350/B270/35711/1138: Prop Support No: 35711/SPS/1138
- 06350/B270/35711/1139: Rest with Variable Spring Support No: 35711/SPV/1139
- 06350/B270/35711/1616: Variable Spring Support No: 35711/SSV/1616
- 06350/B270/35711/1618: Rest with Variable Spring Support No: 35711/SPV/1618
- 06350/B270/35711/1036: Guide Support No: 35711/SGD/1036
- 06350/B270/35711/1065: Vertical Guide Support No: 35711/SGD/1065
- 06350/B270/35711/1617: Prop Support No: 35711/SPS/1617
- 06350/B270/35711/1632: Prop Support No: 35711/SPS/1632
- 06350/B270/35711/1137: Variable Spring Support No: 35711/SSV/1137
- 06350/B270/35711/1633: Prop Support No: 35711/SPS/1633
- 06350/B270/35711/1629: Rest Support No: 35711/SPS/1629
- 06350/B270/35711/1540: Rest Support No: 35711/SPS/1540
- 06350/B270/35711/1541: Guide Support No: 35711/SGD/1541
- 06350/B270/35711/1543: Guide with Limit Stop Support No: 35711/SLS/1543
- 06350/B270/35711/1630: Rest Support No: 35711/SPS/1630
- 06350/B270/35711/1615: Guide Support No: 35711/SGD/1615
- 06350/B270/35711/1634: Rest Support No: 35711/SPS/1634
- 06350/B270/35711/1066: Rest Support No: 35711/SPS/1066
- 06350/B270/35711/1067: Rest Support No: 35711/SPS/1067
- 06350/B270/35711/1050: Variable Spring Support No: 35711/SSV/1050
- 06350/B270/35711/1069: Guide Support No: 35711/SGD/1069
- 06350/B270/35711/1051: Guide Support No: 35711/SGD/1051
- 06350/B270/35711/1052: Guide Support No: 35711/SGD/1052
- 06350/B270/35711/1053: Guide Support No: 35711/SGD/1053
- 06350/B270/35711/1054: Guide Support No: 35711/SGD/1054
- 06350/B270/35711/1055: Guide Support No: 35711/SGD/1055
- 06350/B270/35711/1056: Guide Support No: 35711/SGD/1056
- 06350/B270/35711/1057: Guide Support No: 35711/SGD/1057
- 06350/B270/35711/1058: Guide Support No: 35711/SGD/1058
- 06350/B270/35711/1059: Guide Support No: 35711/SGD/1059
- 06350/B270/35711/1060: Guide Support No: 35711/SGD/1060
- 06350/B270/35711/1061: Guide Support No: 35711/SGD/1061

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- 06350/B270/35711/1062: Solid Sling Support No: 35711/SSS/1062
 - 06350/B270/35711/1063: Guide Support No: 35711/SGD/1063
 - 06350/B270/35711/1064: Variable Spring Support No: 35711/SSV/1064
 - 06350/B270/35711/1070: Rest + Guide Support No: 35711/SGD/1070
 - 06350/B270/35711/1071: Guide Support No: 35711/SGD/1071
 - 06350/B270/35711/1555: Guide Support No: 35711/SGD/1555
 - 06350/B270/35711/1556: Rigid Hanger Support No: 35711/SSS/1556
 - 06350/B270/35711/1557: Rigid Hanger Support No: 35711/SSS/1557
 - 06350/B270/35711/1558: Rigid Hanger Support No: 35711/SSS/1558
 - 06350/B270/35711/1559: Guide with Limit Stop Support No: 35711/SLS/1559
 - 06350/B270/35711/1560: Rigid Hanger Support No: 35711/SSS/1560
 - 06350/B270/35711/1561: Rigid Strut Support No: 35711/SGD/1561
 - 06350/B270/35711/1562: Rigid Hanger Support No: 35711/SSS/1562
 - 06350/B270/35711/1563: Rigid Hanger Support No: 35711/SSS/1563
 - 06350/B270/35711/1564: Guide with Limit Stop Support No: 35711/SLS/1564
 - 06350/B270/35711/1565: Rigid Hanger Support No: 35711/SSS/1565
 - 06350/B270/35711/1566: Rigid Hanger Strut No: 35711/SGD/1566
 - 06350/B270/35711/1567: Rigid Hanger Support No: 35711/SSS/1567
 - 06350/B270/35711/1568: Rigid Hanger Support No: 35711/SSS/1568
 - 06350/B270/35711/1569: Rigid Hanger Support No: 35711/SSS/1569
 - 06350/B270/35711/1608: Guide with Limit Stop Support No: 35711/SLS/1608
 - 06350/B270/35711/1609: Rest Support No: 35711/SPS/1609
 - 06350/B270/35711/1610: Rest Support No: 35711/SPS/1610
 - 06350/B270/35711/1611: Guide Support No: 35711/SGD/1611
 - 06350/B270/35711/1612: Rigid Hanger Support No: 35711/SSS/1612
 - 06350/B270/35711/1068: Rigid Hanger Support No: 35711/SSS/1068
 - 06350/B270/35711/1570: Rigid Hanger Support No: 35711/SSS/1570
 - 06350/B270/35711/1571: Rigid Hanger Support No: 35711/SSS/1571
 - 06350/B270/35711/1572: Rigid Hanger Support No: 35711/SSS/1572
 - 06350/B270/35711/1573: Rigid Hanger Support No: 35711/SSS/1573
- **Pipe Support Steelwork Connection Details**
 - 06350/B240/23300/0112: Connection Design
 - 06350/B240/23300/0113: Connection Design
 - 06350/B240/23300/0114: Connection Design
 - 06350/B240/23300/0115: Connection Design
 - 06350/B240/23300/0116: Connection Design
 - 06350/B240/23300/0117: Connection Design
 - 06350/B240/23300/0118: Connection Design
- 3. Safety Relief Valve Silencer Support Structure**
- 06350/B240/23300/1001: Sootblower Steam Silencers' Support Frame Location Details
 - 06350/B240/23300/1002: Sootblower Steam Silencers' Support Frame Details
 - 06350/B240/23300/1003: Sootblower Steam Silencers' Support Frame Fabrication Details - Sheet 1
 - 06350/B240/23300/1004: Sootblower Steam Silencers' Support Frame Fabrication Details - Sheet 2
 - 06350/B240/23300/1005: Sootblower Steam Silencers' Support Frame Fabrication Details - Sheet 3
 - 06350/B240/23300/1006: Sootblower Steam Silencers' Support Frame Details
- 4. Safety Relief Valve Silencers**
- **KXA-347/4.1-97AIV: Existing Safety Relief Valve 2-SB-PSV901 Silencer General**

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	<p>Arrangement.</p> <ul style="list-style-type: none"> • KXA-517/4.1-44AIV: New Safety Relief Valve 2-SB-PSV903 Silencer General Arrangement. <p>5. Structural Steel Pipe Support Frame Drawings (Nova Design)</p> <ul style="list-style-type: none"> • "TBC": To Follow • "TBC": To Follow • "TBC": To Follow <p>6. Pressure Transmitter Impulse Piping / Instrument Location Arrangements</p> <ul style="list-style-type: none"> • "TBC": E, C & I Equipment Locations <p>7. Piping Disinvestment Drawings</p> <ul style="list-style-type: none"> • "TBC": To Follow • "TBC": To Follow <p>8. GAH Sootblower Steam Upgrade P&ID</p> <ul style="list-style-type: none"> • 06350/B223/35000/7301: P&ID for Sootblower Sheet 1 • 06350/B223/35000/7302: P&ID for Sootblower Drains • 06350/B223/35000/7303: P&ID for Sootblower Sheet 2 • 06350/B223/31000/1403: P&ID for Platen and Final Superheater <p>9. Bechtel Roof Penetration Detail</p> <ul style="list-style-type: none"> • A3-0000-00003: Roof Details (TC2-A-00003-000008) • 25191-002-3PS-ATRS-G0001: Technical Specification for Delivery and Installation of Modified Bituminous Roof System for Trimble County 2 Project, Bedford, Kentucky <p>10. Bechtel Roof Exhaust Fan Detail</p> <ul style="list-style-type: none"> • AC380873-C: 66D3-VJ Class I Direct Drive Vane Axial Fan Assembly with Exhaust Hood, Plenum Curb Base & Roof Curb <p>11. Other Information</p> <ul style="list-style-type: none"> • 0713-15-RW-1: Flow Element FE113 General Arrangement • 06350-CCCI-AD-32290-0003: Pressure Control Valve 2-SB-CV051 GA Drawing • 453258: Safety Relief Valve 2-SB-PSV903 General Arrangement Drawing • Reference Document: Equipment Tag Number List.
	Action Required (Use Continuation Sheet as required)
	<ul style="list-style-type: none"> • Revision C – Drawings issued as highlighted in red on drawing list, revisions removed and transferred to SMR drawing register. Note re SMR 0166 added to highlight steel work requirement.
	<ul style="list-style-type: none"> • Revision B – Addition of pipe support steelwork connection details and updated “Reference Document: Un-controlled - Trimble County 07292 – B6 GAH Sootblower Pipe Support Scope”
	<p>1. Erect pipework and valves as per route prescribed in isometric number 06350/B250/35710/0002.</p> <ul style="list-style-type: none"> • Connection to Platen Superheater outlet drain manifold stub (previously installed) to be left until hydro test of system is complete.

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- Supports 06350/B270/35711/1001 through to 06350/B270/35711/0006 are slung from new & existing trimmer steel; refer to relevant pipe support detail drawing for detail.
 - Support numbers 06350/B270/35711/1007, 06350/B270/35711/1008 and 06350/B270/35711/1010 (06350/B270/35711/1009 does not exist) rest upon a new steel frame as defined by drawings "TBC" (Nova Design). The frame members will be constructed at site according to the general arrangement and individual member drawings "TBC". Pipe support materials to connect the pipe to the new frame will be supplied to site packaged per support tag reference.
 - Vent piping (line 2-SB-L703-M9NH-1") will be extended from the outlet of valve V713 to a local tundish (TBD). Pipework will be site run.
 - Safety Relief Valve 2-SB-PSV903 is to be installed after completion of the hydro test. A blanking flange, gasket and bolts are provided to isolate the open branch of 8"x4"x8" XXS reducing tee.
 - Safety Relief Valve 2-SB-PSV903 outlet pipe, outlet elbow, elbow drain lines, vent stack drip tray are to be assembled after completion of the hydro test (refer to arrangement drawing 06350/B250/35710/0006 for detail).
 - *NOTE: Additional main steel is to be installed as per Bechtel ECN "TBC" before the construction of the new steel frame for supports 06350/B270/35711/1007, 06350/B270/35711/1008 and 06350/B270/35711/1010.*
2. Remove existing GAH Sootblower pipe work as per disinvestment drawings "TBC"/"TBC"/"TBC" and cap remaining stub as per detail isometric 06350/B250/35710/0003.
3. Erect piping, pipe supports and trimmer steel as prescribed in isometric number 06350/B250/35710/0003 and associated support detail drawings.
- Supports 06350/B270/35711/1011 and 06350/B270/35711/1012 rest upon a new steel frame as defined by drawings "TBC" (Nova Design). The frame members will be constructed at site according to the general arrangement and individual member drawings "TBC". Pipe support materials to connect the pipe to the new frame will be supplied to site packaged per support tag reference.
 - *NOTE: Additional main steel is to be installed as per Bechtel ECN "TBC" before the construction of the new steel frame for supports 06350/B270/35711/1011 and, 06350/B270/35711/1012.*
 - Install Flow element FE113 with flow direction arrow as per the orientation detailed in isometric 06350/B250/35710/0003.
 - Run impulse pipework for Pressure transmitters PT111 to location specified by drawing "TBC" (Refer to descriptive document "EC&I Equipment location.doc" whilst drawings are being prepared).
 - Run impulse pipework for Flow transmitter FT113 from stubs of flow element FE113. FT113 is location indicated on drawing "TBC" (Refer to descriptive document "EC&I Equipment location.doc" whilst drawings are being prepared).
 - Supports 06350/B270/35711/1013 and 06350/B270/35711/1014 (06350/B270/35711/1015 does not exist) rest upon a new steel frame as defined by drawings "TBC" (Nova Design). The frame members will be constructed at site according to the general arrangement and individual member drawings "TBC". Pipe support materials to connect the pipe to the new frame will be supplied to site packaged per support tag reference.
 - *NOTE: Additional main steel is to be installed as per Bechtel ECN "TBC" before the construction of the new steel frame for supports, 06350/B270/35711/1013 and 06350/B270/35711/1014.*
 - Run impulse pipework for pressure transmitter PT114 & PT115 from tappings. PT114 & PT115

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location is indicated on drawing "TBC" (Refer to descriptive document "EC&I Equipment location.doc" whilst drawings are being prepared).

4. Remove existing GAH Sootblower Valve Station pipe work as per disinvestment drawings "TBC"/"TBC"/"TBC".
 - Identify pipe supports to be re-used or modified by review of pipe support detail drawings 06350/B270/35711/1613 to 06350/B270/35711/1067. Remove all others.
5. Erect pipe work, supports, valves, orifices, strainers as per routing and arrangement as prescribed in isometric 06350/B250/35710/0004 and 06350/B250/35710/0010.
 - *NOTE: No piping load is to be applied to the hot and cold end Sootblower Poppet Valves.*
6. Erect pressure control valve (2-SB-CV051) warming/drain line pipework, valves, ferrule (PY091) and trimmer steel as prescribed in isometric 06350/B250/35710/0005.
 - Refer to pipe support detail drawings 06350/B270/35711/1050 through to 06350/B270/35711/1064.
7. Remove existing GAH Sootblower Valve Station Warming/Drain Line pipe work as per disinvestment drawings "TBC"/"TBC"/"TBC".
 - Identify pipe supports to be re-used or modified by review of pipe support detail drawings 06350/B270/35711/1555 to 06350/B270/35711/1573. Remove all others and replace with new.
8. Erect piping GAH Sootblower Valve Station Warming/Drain Line pipework, valves, steam trap as prescribed in isometrics 06350/B250/35710/0007 and 06350/B250/35710/1008.
 - *NOTE: Termination of valve station warming/drain line is still to be determined. An update to isometric 06350/B250/35710/1008 will be provided once a site review has been conducted.*
9. Existing Roof Exhaust Fan 2-BLV-MF-027 APP0 (refer Bechtel; drawing AC380873-C) is to be relocate as prescribed by arrangement drawings 06350/B240/23300/1001 and 06350/B240/23300/1002. New structural support steel is required to support the relocated fan is detailed within these drawings.
10. Safety Relief Valve 2-SB-PSV903 vent stack pipework and pipe supports are to be installed as prescribed in arrangement drawing 06350/B250/35710/0006.
 - The safety relief valve roof penetration required will be undertaken as per Bechtel drawing TC2-A-00003-000008.
 - Roof surface re-work is to be contracted to American Roofing and Metal Company (Rick Steinrock, 502-966-2900, 4610 Roofing Road, Louisville, KY 40218) as per the original TC2 contract with Bechtel.
11. Erect GAH Sootblower Silencer support frames as per general arrangement drawings 06350/B240/23300/1001 and /1002. New structural support steel is required to support the silencer frame is detailed within these drawings.
 - Structural steel roof penetration required will be undertaken as per Bechtel drawing TC2-A-00003-000008 (item 11).
 - Roof surface re-work is to be contracted to American Roofing and Metal Company (Rick Steinrock, 502-966-2900, 4610 Roofing Road, Louisville, KY 40218) as per the original TC2 contract with Bechtel.
 - Install silencers detailed in arrangement drawings KXA-347/4.1-97AIV for existing safety relief valve

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2-SB-PSV901 and KXA-517/4.1-44AIV for the new safety relief valve 2-SB-PSV903.

- **NOTE: It may transpire that the silencers are not delivered to site at an acceptable time before the end of the unit outage. In this case the new safety relief vent stack is to be finished as per general arrangement drawing 06350/B250/35710/0011.**
- **NOTE: The existing safety relief valve vent stack is to be left as is until confirmation of silencer supply is given. The silencer support structure is to be erected around the existing stack unless confirmation of silence supply is given.**
- **NOTE: Requirements for lightening protection to be defined.**

 SITE MODIFICATION REQUEST	Contract No: 07292	Contract Name: Trimble County 2	Serial No. SMR 0114	Rev 1143
	Date: 03 December 2013	Raised By: Steve Hammond		

Brief Description of SMR

WN-0209 Ashpit Refractory - additional remedial repairs following September 2012 inspections

Item:

Furnace Hopper Dipper Plates and Seals

Drawings:

- **06350/X216/31920/0001 - General Arrangement of Furnace Hopper Dipper Plates and Seals**

Action Required (Use Continuation Sheet as required)

- **Revision C – Drawing revisions removed and transferred to SMR drawing register.**

1. The refractory surrounding the Furnace Hopper Dipper Plates is to be inspected and a report issued.
2. Access to the dipper plates will be achieved by one of two methods; # 1) Scaffolding erected in / on the Submerged Scraper Conveyor, or # 2) Scaffolding / Moveable platform mounted from floor level, either will be as directed by Ron Gratton of DB who will be carrying out the inspection.
3. The inspection and issue of report is to be carried out by DB.

Note!

Once the inspection is completed there will be a need to carry out additional work, the scope of which cannot be fully defined until the inspection is completed but as a minimum will require the replacement of two refractory retaining plates which are in DB's possession.

 SITE MODIFICATION REQUEST	Contract No: 07292	Contract Name: Trimble County 2	Serial No. SMR 0127	Rev 1143
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Brief Description of SMR

To provide a precise and reliable system of stall warning for both Trimble County Unit 2 A and B side ID Fans.

Item:

TC2 ID Fan A & B Replacement Stall Warning System.

Drawings:

- Howden Piping Sketch - 1223109-0
- Trimble County 07292 - ID Fan Test Port Sketch
- Delta Pipe Insulation Spec Sheet

Action Required (Use Continuation Sheet as required)

- **Revision C – Drawing revisions removed and transferred to SMR drawing register.**

- The removable insulation blocks are to be removed to provide access to each of the pressure sensing ports.
- The pressure sensing ports will be inspected both internally and externally by Ron Gratton of DB.
- Upon completion of the inspection new thermal insulation is to be applied to the test ports, the insulation is to be a minimum of 2" thick and cover the full length of the probe to promote the heating of the purge air prior to entry into the flue gas stream.
- Typical insulation material to be 'Delta' (refer to attached document Delta Pipe Insulation Spec Sheet) pipe section or blanket retained to the probe with S.S tie wires.

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Brief Description of SMR

The thirty burners and throats are to be removed and replaced with thirty new DNOx burners and throats along with changes to ancillary equipment as described.

Item:

Burner body
Burner throat
Oil igniter
Flame scanner
PF Pipe

Drawings:

1. PF Pipe Drawings

- 06350/B250/34300/9005 - Modifications to Pipe 2-FC-L210E
- 06350/B250/34300/9006 - Modifications to Pipe 2-FC-L220E
- 06350/B250/34300/9007 - Modifications to Pipe 2-FC-L230E
- 06350/B250/34300/9008 - Modifications to Pipe 2-FC-L240E
- 06350/B250/34300/9009 - Modifications to Pipe 2-FC-L250E
- 06350/B250/34300/9010 - Modifications to Pipe 2-FC-L210D
- 06350/B250/34300/9011 - Modifications to Pipe 2-FC-L220D
- 06350/B250/34300/9012 - Modifications to Pipe 2-FC-L230D
- 06350/B250/34300/9013 - Modifications to Pipe 2-FC-L240D
- 06350/B250/34300/9014 - Modifications to Pipe 2-FC-L250D
- 06350/B250/34300/9015 - Modifications to Pipe 2-FC-L210A
- 06350/B250/34300/9016 - Modifications to Pipe 2-FC-L220A
- 06350/B250/34300/9017 - Modifications to Pipe 2-FC-L230A
- 06350/B250/34300/9018 - Modifications to Pipe 2-FC-L250A
- 06350/B250/34300/9019 - Modifications to Pipe 2-FC-L210A
- 06350/B250/34300/9020 - Modifications to Pipe 2-FC-L210F
- 06350/B250/34300/9021 - Modifications to Pipe 2-FC-L220F
- 06350/B250/34300/9022 - Modifications to Pipe 2-FC-L230F
- 06350/B250/34300/9023 - Modifications to Pipe 2-FC-L240F
- 06350/B250/34300/9024 - Modifications to Pipe 2-FC-L250F
- 06350/B250/34300/9025 - Modifications to Pipe 2-FC-L210C
- 06350/B250/34300/9026 - Modifications to Pipe 2-FC-L220C
- 06350/B250/34300/9027 - Modifications to Pipe 2-FC-L230C
- 06350/B250/34300/9028 - Modifications to Pipe 2-FC-L240C
- 06350/B250/34300/9029 - Modifications to Pipe 2-FC-L250C
- 06350/B250/34300/9030 - Modifications to Pipe 2-FC-L210B
- 06350/B250/34300/9031 - Modifications to Pipe 2-FC-L220B
- 06350/B250/34300/9032 - Modifications to Pipe 2-FC-L230B
- 06350/B250/34300/9033 - Modifications to Pipe 2-FC-L240B
- 06350/B250/34300/9034 - Modifications to Pipe 2-FC-L250B

2. Burner Drawings

- 06350/CRVI/34570/0002 Sht 1 - Furnace General Assembly – Front Wall (68-31940-1)
- 06350/CRVI/34570/0002 Sht 2 - Furnace General Assembly – Rear Wall (68-31940-2)
- 06350/CRVI/34570/0002 Sht 3 - Distribution Orifice Orientation – Front Wall (68-31940-3)
- 06350/CRVI/34570/0002 Sht 4 - Distribution Orifice Orientation – Rear Wall (68-31940-4)
- **06350/CRVI/34570/0001 - D68-31941 - D-NOx™ Burner - 81 MWt**
- 06350/B838/34570/0001 - Existing Mk V Burner Arrangement
- 06350/CSEQ/30000/1008 - Burner PF Isolation Valve

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	<p>3. Pressure Part Drawings</p> <ul style="list-style-type: none"> 06350/B250/31100/0012 – Arrangement of Replacement Burner Throat <p>4. Windbox Drawings</p> <ul style="list-style-type: none"> 06350/B250/34715/0010 – Arrangement of Burner Windbox Type 1 06350/B250/34715/0011 – Arrangement of Burner Windbox Type 2 06350/B250/34715/0012 – Arrangement of Burner Windbox Type 3 06350/B250/34715/0122 – Burner Seal Box for 81MWt DB DNOx Burner 06350/B250/34715/0151 – Detail of Windbox Seal Plate
Action Required (Use Continuation Sheet as required)	
<ul style="list-style-type: none"> Revision B – Drawings issued as highlighted in red on drawing list, revisions removed and transferred to SMR drawing register. 	
<p>1 Brief Description of Work Package</p> <p>1.1 General Scope of Work</p> <p>There are 30 burners in the boiler of Trimble County Unit 2, 15 in the front wall and 15 in the rear.</p> <p>This work pack covers the replacement of the burners and associated work which includes replacement on average of 2 PF pipe spools per burner (this is due to a change in PF entry position into the new burner), renewal of the quarl openings, renewal of the associated seal box, the burner support and cutting away sections of the windbox and furnace external casing to gain access to the 30 repair areas and replacement of the windbox casing and seal box upon completion. The new burners are smaller in diameter than those currently fitted, therefore the furnace quarl opening panels need to be replaced and reduced in size to suit these new burners.</p> <p>To change each of the furnace quarls there are 72 butt welds associated with each quarl panel in the furnace wall. The burners will be circumferentially welded to the front of the new seal box and also to the outside of the windbox, see drawings for details. The work scope includes, but is not limited to:</p> <ol style="list-style-type: none"> 1. Removal and disposal of existing 30 burners 2. Removal and disposal of existing 30 burner openings, associated refractory and seal boxes 3. Lifting of 30 new burners 4. Lifting of 30 new seal boxes 5. Lifting and installation of 30 new burner openings 6. Welding of 30 new seal boxes to new burner openings 7. Insulation of burner assemblies through application of refractory in to burner opening seal boxes 8. Erection and alignment of new burners into new openings 9. Replacement of cut away windbox casing 10. Erection of modified PF pipe spools and erection of associated support trimmer steel work <p>There is an electrical content to this work package and details for this section of work will be found in SMR0158.</p> <p>1.2 Erection</p> <p>After establishing safe access to the inside of the windbox and any interaction with workers who may be within the furnace, work can commence with burner removal. The PF pipework will need to be disconnected prior to removal of the burners. There are a number of modifications required to the PF pipework including changes to supports, sling rods and trimmer steelwork in a limited number of instances. It would therefore be prudent to carry out this work while the furnace scaffold is being erected (especially if there are concerns regarding slag removal or dislodging and the interaction</p>	

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this would cause during burner removal and furnace scaffold erection). There are a number of other disconnections to be dealt with prior to removing the burners which will include the core air pipe and bellows unit, PF knife gate isolation valve, oil feed to the burner lance gas feed, compressed air and C&I connections, disconnection of all thermocouple C&I and flame scanner C&I plus compressed air connections. The observation ports front threaded connection and flame monitor mounts are to be removed from the redundant burners and fitted to the new ones. The compressed air connections to the observation ports will also need to be disconnected. The PF pipework will need to be locked into position (including the first 2 spring supports and any additional spring support which requires modification) prior to disconnection from the burner as the system is supported on constant load springs. This is especially important as each PF pipe run will also be disconnected local to the mills to allow a replacement control orifice to be installed.

Several PF pipe spools are to be modified or replaced during the outage to change their entry into the burners from radial to tangential. These spools will need to be removed and lifted down from the boiler building where they will be collected by others and transported to an off-site fabricator's works where the modifications will be carried out.

The scope of this work package encompasses transportation of PF pipework around site but does not include transportation off-site and modification of the pipe spools. All pipe spools requiring modification will be free issued to the chosen fabricator (CL Smith). Details of the modified pipes are shown in arrangement drawings 06350/B250/34300/9005 to 06350/B250/34300/9034.

As this section of the work progresses, the furnace internal scaffold will be erected. The possibility of internal slagging of the burners should be taken into account and adequate measures taken in order to the safety of personnel building the scaffold.

To allow access into the furnace wall from the windbox side, removal of the existing seal box is required along with the adjacent section of the windbox casing. A new section of windbox casing plus a new seal box will be supplied therefore the old material is to be scrapped. Details of the new seal box are shown in drawing 06350/B250/34715/0151. It is however imperative that the section being removed is to the correct dimensions to accept the new casing section. There is a small amount of insulation between the windbox and the furnace wall which will require removal and replacement during the rebuild.

With the burner, tertiary liner, casing sections and seal box removed, the furnace quarl area will be accessible to allow the furnace tubes to be marked up in readiness for removal of the quarl. Cutting, prepping and welding of the furnace tubes will only be carried out by personnel who have undergone the correct training and familiarisation in the test rig, as well as having the correct qualifications. The existing quarl area will be marked for removal from the furnace side using a jig frame that will be supplied by Doosan Babcock. This frame will be accurately positioned firstly on the new panel, then onto the inside furnace wall to ensure the cut / butt weld positions are correct and that the new quarl opening is located in its correct position. It is imperative that the quarl is removed in a manner which will allow the existing tube ends to be weld prep' d to the exact dimensional requirements thereby allowing the new quarl to fit exactly. The new quarls are being supplied already prepared and to the exact dimensional requirements. It will be necessary to remove all end caps and VCI's (Volatile Corrosion Inhibitors) from within the tubes prior to welding. Once removed the existing quarl panel will be rigged and removed from inside the furnace, then out through the ash hopper.

The membrane attached to the existing furnace tubes is to be cut back a distance of approximately 60 mm (2 3/8") from the tube ends. The existing tubes are to be weld prep' d back to pre-set back marks and dimensional checks carried out prior to offering the new quarl into position. It is essential that tube ends (existing and new), are capped whenever they are not being worked upon and that cleanliness within the tube bores is kept to a high level. Ingress of foreign materials is not acceptable.

With the existing tube ends prepared to length, deposits removed from the tube bores and tube O/D's cleaned back to a bare, bright metal surface and visually inspected, the new quarl panel is to be offered up into position. Any minor adjustment should then take place to allow the quarl to be fitted into position and the 72 tube butt welds set for welding. Welding of these tubes can only commence

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after it is deemed that butt welding of all 72 tubes is achievable. Upon completion of welding, the required NDE is to be carried out. Radiographic inspection is the preferred NDE process.

When each panel has been welded and associated NDE work has been completed, new membrane pieces will need to be welded into position in the butt weld areas. The gap in the membrane as a result of the work will be approximately 120 mm in length. Membrane pieces will be supplied pre-cut by Doosan Babcock to lengths of approximately 250 mm (10"). This is effectively twice the length required and it will be necessary to cut these membrane pieces to the right length prior to fitment. It should be noted that each membrane piece supplied is to be used for completing 2 gaps i.e. the 120mm off cut membrane piece should not be discarded. The membrane gap detail is shown in drawing 06350/B250/31100/0012; see 'Tube Welding Detail'. The membrane pieces are item 11 on this drawing.

The new burner quarls will be supplied with the seal box mounting ring already fitted and welded into position (see drawing 06350/B250/31100/0012 – Arrangement of Replacement Burner Throat, item 3). The seal box is to be welded to this ring but not until the burner is fitted into its final position to ensure that the burner is mounted centrally to the quarl opening.

With all pressure part welding completed (including attachments), the burner can be fitted into position. Burner orientation with respect to the PF pipe entry angle is detailed in drawings 68-31940-1 to 68-31940-4.

The burner seal box is to be rigged into position prior to fitting the burner. The burner is to be supported at the front and the rear and drawn into the opening utilising the existing overhead beam. As the front of the burner enters the windbox, the rigging equipment and load is to be transferred to the beam within the windbox which is directly above the burner's final position. Local strengthening may need to be carried out on this beam to allow it to take the weight during fitting. If strengthening is required, it will be necessary to ensure that this has been carried out prior to fitting the burners.

When each burner has been inserted into the wind-box opening, it is ready to be adjusted into its final location. This adjustment is carried out in both the vertical and horizontal planes. Horizontal adjustment (the insertion depth of the burner) is carried out utilising the sleeve length of the welded joint (the sleeve joint will be left un-welded for erection purposes) between the burner and the windbox outer sleeve. The interface between the burner and the burner quarl is shown in drawing D68-31941. The distance from the tip of the burner to the centre line of the furnace side wall tubes is the controlling dimension for the burner insertion length. Vertical adjustment of the burner is carried out utilising the inboard hanger rod which is located within the windbox which fits between the overhead channel (this is also used to support the burner during erection) and the attachment lug on the burner. Drawing D68-31941 shows the attachment lug, drawings 06350/B250/34715/0010 to 06350/B250/34715/0012 show the windbox arrangement including details of the overhead channel. The adjustment in the vertical plane is therefore by virtue of adjustment to the rod length of the internal support to ensure the burner tip is fitted centrally to the quarl opening. Once the burner is in its final position the seal box can be welded into position onto the location ring. Details of the seal box are shown in drawing 06350/B250/34715/0122. The external weld between the windbox outer casing penetration sleeve and the burner front ring can also be made. Once the burner is set to its final position, the welding is to be completed and all bolted joints correctly tightened, followed by removal of the rigging equipment.

With the seal box fitted the refractory can commence. On the burners refractory is not fitted from the furnace side, it is fitted through the 2 openings in the seal box only – see drawing 06350/B250/34715/0122. With the refractory fitted, the final section of work within the windbox is to refit the insulation between the furnace tubes and windbox inner casing and then the section of inner windbox casing. This casing is supplied in 2 halves and must be fully seal welded into position. See drawing 06350/B250/34715/0151.

The modified PF pipework will have been returned to site and is to be fitted and bolted back into position, the constant load supports de-gagged and set to the cold position - Note, there are a number of adjustments from the original settings, ensure that each spring is fitted and set in accordance to the new instruction

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Due to the different configuration of the PF inlet on the new burner, the PF gate valves will need to be orientated to ensure they are not fouling either in the cold or hot position and that they are operable. To achieve this, it may be necessary to modify the existing burner gallery floor and handrails. Details of the knife gate valve are shown in drawing 06350/CSEQ/30000/1008. The new burners are also shorter and smaller in diameter, therefore a safety survey will need to take place to ensure all floor openings and handrails meet the safety requirements and also allow hot to cold movement of the plant.

At this stage the remaining ancillary equipment can be fitted to the burners.

1.3 Post Outage / Non Critical Work

Modifications to floor gratings and safety handrails, ensuring temporary safety barriers remain in place until this work is complete.

The existing burners are to be dismantled to allow removal to segregated scrap upon completion of the work.

1.4 Work Access Systems

If required, conventional scaffold will be fitted to the windbox side. A design access system is to be fitted within the furnace which will have integral lifting points.

There are lifting beams fitted directly above each burner, these beams allow the burners to be withdrawn from the windbox. Additional temporary lifting and transportation trollies will be needed to transport the equipment out of and into the building.

1.5 Tools & Equipment

All construction equipment, assembly tools and lifting systems required to execute the work package are to be provided by the CONTRACTOR.

1.6 Quality Management, Acceptance Test and Inspection

1.6.1 Quality Assurance

The contractor shall operate a quality management system that meets US and Kentucky State accreditation including any subcontractors they employ.

1.6.2 Quality Control

The contractor shall determine the scope of inspection and testing requirements according to the US and Kentucky State applicable codes, unless otherwise advised by the ORDERER.

1.7 Bill of Quantities

All materials associated with this section of the work will be free issue, this includes fasteners and gaskets.

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	Date: 05 November 2013	Raised By: Steve Hammond	

Brief Description of SMR

This is a follow up to SMR 0125 completed during the Fall 2012 and Spring 2013 outages. A number of PF pipes were opened and inspected for PF build up, those that were found to have PF built up were cleaned.

The recommendation of the root cause analysis was "Due to a number of factors working concurrently it would be prudent to undertake periodic checks to ensure the lines are free from deposits and this can be achieved by removal of the PF sampling tapping and insertion of a borescope. It is recommended that this is undertaken at regular outages or can be done on an out of service mill if necessary and will determine the frequency of single pipe purges." The inspection during the Spring 2013 outage did not indicate the presence of any build up and this inspection is to be repeated during the Spring 2014 outage to close out warranty notice TC2-WN-0448.

Item:

PF Pipe Inspections

Drawings:

- N/A

Action Required (Use Continuation Sheet as required)

- This inspection shall be accomplished by using a borescope inserted down the open PF pipe end.
- The PF pipes to be inspected are C2, C4, D1, D2, D3, D4, E1, E2, E4, F2, F3 and F4.
- Further inspections may be necessary dependent upon the results of these inspections.

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Brief Description of SMR

The unit was constructed using 30 variable orifices in the PF pipes above the 6 coal mills. The variable orifices have bound up over time and are to be replaced with fixed orifices which will be sized during the commissioning and optimisation phase following the outage.

Item:

PF Orifice Plates

Drawings:

- 06350/CCLT/34000/0088 – Variable Orifice Plate Drawing
- 06350/CCLT/34000/0085 - Pipeline Components Manual - Operation & Maintenance containing Rigid Coupling Details
- 06350/B250/34399/1015 - PF line A5
- 06350/CCLT/34000/0046 - LG+E Trimble County Fuel Piping - Lined Spools
- 06350/CCLT/34000/0003 - LG+E Trimble County Fuel Piping - 90 Deg Elbows
- 4900-04-0112-00 26in Orifice Housing Drawing

Action Required (Use Continuation Sheet as required)

- **Revision B – Drawing revisions removed and transferred to SMR drawing register.**

1. Before commencing work SEB should satisfy themselves that the PF pipe will not move when the variable orifice plate is unbolted and removed, in the event of any doubt you should raise this with DB.
2. The existing Variable Orifice plates (06350/CCLT/34000/0088 rev B) should be removed from the PF pipes by carefully unbolting the rigid couplings either side. Care should be taken when unbolting the flexible couplings as the seals are to be re-used.
3. Typical drawings of the PF pipes have been attached for information, they are;
 - 06350/B250/34399/1015 rev C - PF line A5
 - 06350/CCLT/34000/0046 rev D - LG+E Trimble County Fuel Piping - Lined Spools
 - 06350/CCLT/34000/0003 rev F - LG+E Trimble County Fuel Piping - 90 Deg Elbows
4. The new fixed orifice plates (4900-04-0112-00) should be installed using the existing rigid couplings and seals – the seals should be inspected before re-use and if any doubt exists regarding their condition this should be raised with DB.

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	Date: 05 November 2012	Raised By: Steve Hammond	

Brief Description of SMR

To capture the logic revisions required to the DCS or BMS to support the mechanical and electrical work carried out in the Spring 2014 outage.

Item:

Logic Revisions

Drawings:

- N/A

Action Required (Use Continuation Sheet as required)

1. The list of potential logic changes is;

#	Description
1	Emerson logic 27-3-061 and 0062 Oxygen Trim control
2	OFA Control Emerson logic 27-3-027 for Front OFA, repeat for Rear
3	SA Cooling flow burner logic Emerson logic 27-3-027 for Mill A, repeat for Mills B – F. And confirmation of SA limit
4	New logic for the Individual shut off damper – New Emerson Sheet (1 off – Emerson/LG&E to repeat the other 29 actuators). This will be linked to SA existing damper logic
5	Addition of burner air control dampers will affect oil burners and PF(mill) permits to start, oil burner permit to purge, on line monitoring and oil/PF burner tripping.
6	Also BMS Common - Furnace Purge Permit start and purge in progress monitoring of burner damper positions.
7	Oil burner igniter Chentronics interface will only affect one logic per oil burner
7A	Oil Burner A1 Logics (similar requirements for all 30 oil burners) - 28/5 ---logics 010,011,012,018,019,020
7B	Mill A Logics (similar requirements for all 6 mills) - 28/3---logics 343,344,356,357 - 28/5---logics 002, 114,117
7C	Common/Group Logics (once only) - 44/3---logics 093,094,096

The revisions could include one or more of the following;

- Revised F(x) Blocks
- Revised Set points
- Revised Logic
- New Logic
- Revised Graphics

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Brief Description of SMR

To support the boiler combustion process it is necessary to enhance the OFA system such that it can support an increased flow of 50%. To achieve this it is necessary to add 4 new larger OFA ports and modify the duct the feeds these ports.

Item:

OFA Port
OFA throat
OFA Air Supply Ducts
Dampers Expansion Joints

Drawings:

General

- 25191-212-SS-0000-E2009: BOILER TIER 2
- 25191-232-SS-0000-E2018: BOILER TIER 2
- 06350/B250/34715/0161: OFA WINDBOX - SUPPORT STRAP TENSIONING SLINGS
- 06350/B250/34730/1002: SHIPPING FRAME FOR WING OVER FIRE AIR PORT

Throats

- 06350/B250/31100/0011: ARRANGEMENT OF ADDITIONAL OFA THROAT
- 06350/B250/34715/0124: SEAL BOX FOR ADDITIONAL OFA
- 06350/B250/34715/0162: OFA WINDBOX - SUPPORT LUGS FOR SUPPORT STRAPS
- 06350/B250/34715/0163: OFA WINDBOX - BUCKSTAY FINGER PLATE MODS
- 06350/B250/31119/1016: DETAILS OF BLOCKS TYPE A & B FOR SPIRAL TUBE PANELS

OFA Ports

- 06350/B270/34730/1001: ARRANGEMENT OF WING OVER FIRE AIR PORT
- 06350/B270/34733/1003: GASKET - AIR INLET CONE TO MOUNTING FLANGE FOR WING OVER FIRE AIR PORT
- 06350/B270/34731/1021: PITOT TUBE ASSEMBLY FOR WING OFA PORT
- 06350/B270/34731/1021: PITOT TUBE ASSEMBLY FOR WING OFA PORT
- 06350/B270/34733/1001: AIR INLET CONE FABRICATION FOR WING OFAP
- 06350/B270/34733/1002: INLET CONE MOUNTING FLANGE FOR WING OVER FIRE AIR PORT

Ductwork

- 0630/B250/32190/1022: GENERAL ARRANGEMENT OF MODIFICATIONS TO OVER FIRE AIR DUCTING AND WINDBOX
- 06350/B250/32199/0012: MODIFICATION TO OVER FIRE AIR DUCTING KEY PLAN

A1: OFA DUCT TRANSITION

- 06350/B250/32199/0008: DETAIL OF OVER FIRE AIR DUCT OFA 01 SHEET 1
- 06350/B250/32199/0013: DETAIL OF OVER FIRE AIR DUCT OFA 01 SHEET 2
- 06350/B250/32199/0015: DETAILS OF STRENGTHENING TO EXISTING DUCT SECTION SA-04 + SA-05
- 06350/B250/32199/0017: DETAILS OF STRENGTHENING TO EXISTING DUCT SECTION SA-17 + SA-18

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A2: ELBOW

- 06350/B250/32199/0009: DETAIL OF OVER FIRE AIR DUCT ELBOW SA08 & SA21 SHEET 1
- 06350/B250/32199/0010: DETAIL OF OVER FIRE AIR DUCT ELBOW SA08 SHEET 2
- 06350/B250/32199/0011: DETAIL OF OVER FIRE AIR DUCT ELBOW SA08 SHEET 3

A3: TOGGLE

- 06350/B250/32199/0001: DETAILS OF SECONDARY AIR TOGGLE SECTIONS FOR OFA WINDBOX DUCTS SA-09, SA-12, SA-22 & SA-25 – SHEET 1
- 06350/B250/32199/0002: DETAILS OF SECONDARY AIR TOGGLE SECTIONS FOR OFA WINDBOX DUCTS SA-09, SA12, SA22 & SA-25 – SHEET 2
- 06350/B250/32199/0003: DETAILS OF SECONDARY AIR TOGGLE SECTIONS FOR OFA WINDBOX DUCTS SA-09, SA12, SA22 & SA-25 - SHEET 3
- 06350/B250/32199/0004: DETAILS OF SECONDARY AIR TOGGLE SECTIONS FOR OFA WINDBOX DUCTS SA-09, SA12, SA22 & SA-25 - SHEET 4
- 06350/B250/32199/0006: DETAILS OF SECONDARY AIR TOGGLE SECTIONS FOR OFA WINDBOX DUCTS SA-09, SA12, SA22 & SA-25 - SHEET 5

A4: SPACER

- 06350/B250/32199/0016: DETAILS OF TAPERED TRANSITION PIECE FOR OFA WINDBOX DUCTS SA-09, SA-12, SA-22 & SA25

A5: WINDBOX

- 06350/B250/34715/0130: ARRANGEMENT OF OFA WINDBOX (RHS)
- 06350/B250/34715/0155: ARRANGEMENT OF OFA WINDBOX (LHS)
- 06350/B250/34715/0131: OFA WINDBOX INTERNAL BRACE 'A'
- 06350/B250/34715/0132: OFA WINDBOX INTERNAL BRACE 'B'
- 06350/B250/34715/0152: OFA WINDBOX INTERNAL BRACE 'C'
- 06350/B250/34715/0134: OFA WINDBOX SUPPORT FRAME (RH END)
- 06350/B250/34715/0153: OFA WINDBOX SUPPORT FRAME (LH END)
- 06350/B250/34715/0135: OFA WINDBOX SUPPORT FRAME - DETAILS
- 06350/B250/34715/0133: OFA WINDBOXES - FRAMEWORK POINT DETAILS (Sheet 1)
- 06350/B250/34715/0137: OFA WINDBOXES - FRAMEWORK POINT DETAILS (Sheet 2)
- 06350/B250/34715/0138: OFA WINDBOXES - FRAMEWORK POINT DETAILS (Sheet 3)
- 06350/B250/34715/0145: OFA WINDBOXES - FRAMEWORK POINT DETAILS (Sheet 4)
- 06350/B250/34715/0146: OFA WINDBOXES - FRAMEWORK POINT DETAILS (Sheet 5)
- 06350/B250/34715/0139: OFA WINDBOX - TERMINAL FLANGE TO DAMPER
- 06350/B250/34715/0140: OFA WINDBOX - 200X200X16X8 FABRICATED BEAM
- 06350/B250/34715/0141: OFA WINDBOX – ARRGT OF INNER FACE (RHS)
- 06350/B250/34715/0157: OFA WINDBOX – ARRGT OF INNER FACE (LHS)

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- 06350/B250/34715/0142: OFA WINDBOX – ARRGT OF OUTER FACE (RHS)
- 06350/B250/34715/0158: OFA WINDBOX – ARRGT OF OUTER FACE (LHS)
- 06350/B250/34715/0143: OFA WINDBOX – ARRGT OF TOP FACE (RHS)
- 06350/B250/34715/0159: OFA WINDBOX – ARRGT OF TOP FACE (LHS)
- 06350/B250/34715/0144: OFA WINDBOX – ARRGT OF LOWER FACE (RHS)
- 06350/B250/34715/0160: OFA WINDBOX – ARRGT OF LOWER FACE (LHS)
- 06350/B250/34715/0147: OFA WINDBOX SUPPORT FRAME (RH END) - LOOSE ITEMS
- 06350/B250/34715/0154: OFA WINDBOX SUPPORT FRAME (LH END) - LOOSE ITEMS
- 06350/B250/34715/0149: OFA WINDBOX [EXISTING] REAR SEAL PLATE
- 06350/B250/34715/0150: OFA WINDBOX - REAR COVER PLATE
- 06350/B250/34715/0127: OFA WINDBOX EXPANSION JOINT
- 06350/B250/34715/0136: OFA WINDBOX - INSULATION PINS (TYPICAL)

A6: DOORS

- 06350/B250/34715/0129: DETAILS OF ACCESS DOOR AD2 FOR OFA WINDBOX SIZE - 2'-0" x 3'-0" & (610x915)
- 06350/B250/34715/0128: DETAILS OF ACCESS DOOR AD1 FOR OFA WINDBOX SIZE - 2'-0" x 3'-0" & (610x915)

A7: AEROFOILS

- 06350/B250/32199/0005: DETAILS OF AEROFOILS FOR OFA WINDBOX DUCTS SA-09, SA-12, SA-22 & SA-25

A8: PERFORATED PLATE

- 06350/B250/32199/0014: DETAILS OF PERFORATED PLATE IN TOGGLE SECTIONS FOR OFA WINDBOX DUCTS SA-09, SA-12, SA-22 & SA-25
- n/a: MS1
- n/a: MS2

Dampers

- 06350/CFOX/32000/1302: OVERFIRE AIR TO WINDBOX FRONT & REAR WALL

Expansion Joints

- 06350/CFOX/32000/0113: OFA WINDBOX TOGGLE JOINT

Insulation

- 06350/B250/39800/1011: OVER FIRE AIR DUCTING AND WINDBOX INSULATION DETAILS - SPECIAL REQUIREMENTS

Action Required (Use Continuation Sheet as required)

Revision D – Drawings issued as highlighted in red on drawing list, revisions removed and transferred to SMR drawing register.

Rev C - Issue of updated drawings as listed on 'OFA System Drawing Index – 18-Nov-13'. Drawings .../0134 rev E and .../0153 rev C issued, other items in red are editorial updates correcting revisions of drawings issued at SMR 0156 revision B.

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Rev B – Issue of updated drawings as listed on 'OFA System Drawing Index – 16-Nov-13'

1. OFA Supply BC1060 - Work Plan

- The following identifies the limits of the work package and where information can be found. Whilst it appears to sequentially address the outage works required this is indicative only and the Construction Schedule and Construction Package are the ruling documents for the outage.

2. General

- Bechtel have advised that the maximum loading on the grating is 150 PSF. Doosan to clarify steel work loading with Bechtel so that spreader sheet flooring can be used.
- Construction will erect scaffolding within the SA duct early to give access and make safer the working area for the removal of the duct intersection. Loading confirmed with mechanical to be within design allowance.
- Construction plan to progress 1 corner ahead (1 week) of the other 3 which will run in parallel with each other to resolve issues once and pass learning on to the other teams.
- Need to identify, possibly by weld map, where 1% Cr welds are located. This will be with Construction drawings

3. De-construction

- Items to be reused and therefore requiring disconnection and safe storage;
 - Transmitters for the 8 off flow elements, see drawing TBC, these may not need to be disconnected from their electrical supply. Note; impulse pipework to be retained for re-use where possible.
 - Actuators for the 4 off dampers, see drawing 06350/CFOX/32000/1301 and 06350/CFOX/32000/1302. Disconnect electrical supply, which Efox TA should do and they should advise any refurbishment or maintenance required on the actuators before reinstallation.
- Move air lines from underneath NW toggle duct. 2" instrument air line with Victaulic press fit couplings. These are specialist fit couplings and a local company used previously on the ID Fan system can assist. Simple re-route with 2 x 90 degree bends, drawing required.
- Hydrojet pipe runs underneath the NW toggle section and requires relocation. Fittings and straight pipe only which can be site procured.
- Cable trays and conduit underneath the NE duct - look to protect with light gauge sheet that can be folded in situ with fire blanket laid over.
- Cables from transmitters and actuators to be shortened / extended into new location as required. Pre outage review to establish required actions.
- Scaffold in-board of handrails. Remove handrails and galleries as required. Handrail modifications required to suit new access door locations, also for burner mods so add spare lengths of handrail. Kick plate may need modification local to new test ports.
- Materials for site 'fixing' of problems, only grating identified currently, 4 sections to be ordered. Other material via on site procurement team and vendors supply chain.
- Remove existing wing OFA ports and safely store for later refitting. 2 lifting lugs are provided on the front plate and a centre point used for internal load transfer but easier to strop under port once pulled. 1210 kg.
- Remove entire ductwork from the SA duct; see drawing 06350/B250/32199/0015 to the expansion 'V' between the outer most two OFA ports on each end of front and rear walls. Note new expansion 'V's, 4 off, to be provided, see drawing 06350/B250/34715/0127. Review current erection (weld location and type)

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before cutting.

Note; seal box insulation has potential to be carcinogenic although application close to tubes so never above 800 degrees means should be OK. Triple MF insulation needs controlled disposal and effective PPE.

- Seal box behind existing wing ports to be re-used. Windbox back plate to be cut away from the seal box itself leaving a 'flange' of plate attached to the seal box. The new back plate to be supplied over size of the seal box such that it can be welded to the created 'flange' rather than the seal box itself.
- Some 'B' blocks to be re-used and need to be dressed flat. To be defined on construction drawings.
- Remove existing corner support brackets; see drawing 06350/B250/34715/0090. Simplest execution is to burn close to wall but leaving a stub (up to 6"). This is acceptable but Bechtel/LGE may insist on complete removal although the stub will be within the insulation/cladding.
- Apply temporary load transfer plates, see sketch 06350/B250/DD/34715/2/0162. Made and heat treated before reaching site although welded at site. Tension threaded bolts needs procedure, are strain gauges (load cells) required, mechanical to advise the load to be carried. Some of the corner finger plates may need to be partially removed to allow the locating of the plates.
- Remove straps local to the position of the new ports, detail to be provided on construction drawing. Dress blocks that are to be re-used. Add new blocks noting strap is to be welded both sides not just one.
- Apply new filler blocks (approx 30 per strap = 60 per opening = 240 total).
- Cut opening for the new pressure part throat taking care to ensure the membrane is not slit too far away from butt ends. Cutting drawing and template required. Lifting frame for new panel required, may use this to mark the wall where it touches provided centre point can be established.
- Install new strap assemblies and weld outboard edge to new filler blocks, ensure the tube butts and membrane can be welded with the strap in place; see drawing 06350/B250/34715/0125. Straps will have lugs shop fitted. (note, lugs ordered as part of OFA duct package are still being delivered but will be obsolete)
- Remove temporary support slings.
- Scrap; all removed ductwork, 8 x expansion joints, 4 x dampers, 4 x flow elements, removed windbox, removed straps and removed mechanical supports. Placed in laydown area and procurement organise local company for removal from site.

4. Throats

- Install new pressure part throats from furnace side, see drawing 06350/B250/31100/0011, note casing flats required to be site fitted as identified on drawing 06350/B250/34715/0126. Complete tube butt welds and membrane repair and infills. 'H' lifting frame may be required. Test piece is at Tipton for trial weld. Cleaning of the tube prior to welding is essential as chemical impregnation during service may release gases when welding.
- NDT, percentage as required to avoid need to hydro-test.
- Re-use some existing blocks and fit other detailed on drawing 06350/B250/34715/0126
- Fit sealing box mount plate (supplied loose) see drawing 06350/B250/31100/0011, note proximity to tube butts and strap blocks which may need to be single sided. Fit seal box as detailed on 06350/B250/34715/0124.

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- Apply Silicon Carbide mouldable refractory to the furnace opening side of the throats up to tube centre line. Fill seal box with refractory, details and quantity on appropriate drawing, applied by pouring into the seal box from the top. Ensure this is complete before fitting the windbox back plate.
- Fit back frame (supplied in one piece), see drawing 06350/B250/34715/0134 and 0153 and detail drawings 06350/B250/34715/0135 and 06350/B250/34715/0133.
- Pitot tube to be run through the windbox with compression fittings. Construction drawing to detail.
- Amstar will shot blast the areas before commencement of works around the OFA cut lines to ensure carcinogenic coating is completely removed. Port to have factory applied coating prior to shipping to site with the tube tails free from coating. On completion Amstar will again shot blast locally to the site welds and apply coating.

5. Windbox/ OFA Port

- Windbox back plate between frame and tubes. Around existing port: Seal weld to frame in shop. Enlarge square opening to allow tolerance to fit, 1.5" extra to allow seal weld to material left attached to seal box. Around new port: Sealed through port conical section. Gasket to windbox back plate.
- Construct Windbox and support system, see drawing 06350/B250/34715/0130 and 0155 and 06350/B250/34715/0132 Whole duct sides (4 off) being supplied in single piece. This is an issue due to the size for physical handling. Lifting lugs may be required, Doosan to advise – site additions. Construction bolts to be tack welded by the fabricator.
- Square seal box opening for the existing port to be over sized for ease of fitting.
- Fit OFA port, arrangement drawing 06350/B270/34730/1001 with name plate to 3890.2002E. Including gaskets as detailed on 06350/B270/34733/1003 and 06350/B270/34731/0010.
- Including access door, 2 left hand, 2 right hand in total see drawings 06350/B250/34715/0128 and 06350/B250/34715/0129. (Facing the wall all hinges to the outside). Note; doors supplied loose without insulation, liner tacked in place. Cut open liner for insulation stuffing as per schedule. Hand holds required inside and outside the door. Box insulation over the door.
- Add damper assembly to Windbox terminal point see drawing 06350/CFOX/AD/32000/2/1301 and 1302. Note actuator location must be on the boiler side of the damper. Note; each damper supplied in 2 pieces but fully assembled. Needs to be construction welded at site.

6. OFA Duct transition & Elbow

- See drawing 06350/B250/32199/015. Top frame, strengthen members separately and supplied in 4 sides due to access restrictions.
- Enlarge take-off opening of the SA duct and install transition piece with radius edges detailed on drawing 06350/B250/32199/0008
- The elbow is a complex shape with turning vanes (separate) and is detailed on drawings 06350/B250/32199/0009, 06350/B250/32199/0010 and 06350/B250/32199/0011. Split sections supplied but could seal in shop if lifting location OK.

7. Toggle Sections

- Each toggle section comprises 2 new EJs see vendors drawing 06350/CFOX/32000/0113. Construction bolts and sealing are an open question, weld needs fillet cut back. EJ breach opening is 20" at duct centre line. Supplied gagged to 19.5" so need to remove transportation bars and close-up. Require Effox to back mark the frame with position and angle for the pin & slot mechanism. OFA toggle duct EJ pin and slot

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mechanisms will be supplied loose by Effox for site welding in position. The EJ frames, and pin and slot plates, will be match marked so that the pin and slot plates can be welded in the correct position inside the ducts. The correct positioning of these plates is essential for the operation of the EJ's.

- Consider the access for lowering / lifting / manoeuvring these EJ frames into position, noting position of galleries and handrails. Temporary duct slings must be maintained until the EJ pin and slot mechanisms are weld in place on the duct local to both EJ's.
- Note that the clamp bar bolts holding the fabric in place must be retightened after a few days service, so some access all around the EJ must be maintained.
- One flow element constructed of sections, duct plate work with external stiffening, see drawing 06350/B250/32199/0001 and 06350/B250/32199/0002. Complete with access doors, tapping points (close proximity of lower test port to gallery is a concern) and load carrying 'pin and slot' mechanism through to the ductwork at each end.
- Including access doors, 4 left hand, 4 right hand in total see drawings 06350/B250/34715/0128 and 06350/B250/34715/0129. (Facing the wall all hinges to the outside). Note; doors supplied loose without insulation.
- Perforated plates required 2 per toggle section as detailed on drawing 06350/B250/DD/32199/0014. Slot in from top of duct with one quarter panel moveable to provide access through the plate. Opens to allow access through.
- Spacer section detailed on 06350/B250/32199/0007. Bolted and gasket to both the damper and the EJ. Compounding tolerance errors should be taken out in this section ie site modify for adjustment. This was an issue with original contract and 3D laser scan should be reviewed to confirm available length.
- Handrail required upstream of the first EJ for personnel protection from the drop through the elbow.

8. Actuators

- Dampers to retain existing actuators and these to be refitted and reconnected. One additional new actuator being supplied as a spare.

9. Flow Element

- Flow element aerofoils to be shop seal welded and tested so fitting is about correct location and ensuring the impulse pipework is correct, see drawing 06350/B250/32199/0005. Note half elements have angles left off. Ensure pressure tapping ports are ground flush.

10. Insulation and Refractory – Also see SMR 0165

- The burner windbox rear seal plate is welded to the burner tube set seal box. Fit refractory infill to burner seal boxes (through slots provided in the seal box top) before the windbox seal plate is welded to the tube set seal box.
- OFA tube sets. Fit SiC mouldable refractory to tube gaps from furnace side. Refractory must extend out beyond tube centrelines.
- The OFA windbox rear seal plate is welded to the OFA tube set seal box. Fit refractory infill to OFA seal boxes (through slots provided in the seal box top) before the windbox seal plate is welded to the tube set seal box.
- New insulation will be required for the additional OFA windbox area, and the new OFA toggle ducts. Thermal Insulation Schedule to identify this item is required.
- A pipe near the top of one of the OFA toggle duct inlet flanges is the Hot Start-Up drain. This pipe (2-BLS-L871-010) at 716°F is 10" diameter and has 7.5 inches of calcium silicate insulation with aluminium cladding. Currently this pipe restricts the lowering of the EJ into position from above, and also the insulation on this pipe will be very close to the fabric of the EJ. Improved thermal conductivity insulation material is to be used to reduce the insulation thickness.
- OFA duct insulation. There are certain pinch points where steelwork is close to the new duct insulation system and again thinner insulation will be applied locally.

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- Existing OFA ports have jackets to the front plate. The two ports being removed and reinstalled are to re-use the existing jackets (check integrity) and the new ports require new jackets.

11. Setting to work

- Re fit transmitters following calibration confirmation by LG&E. Fit impulse pipework to existing transmitters (straight couplings and ferrules required) re-use pipework where possible. Note; transmitters location unchanged.
- Couple and set damper actuators. Need Effox TA present, Wiring may need to be extended.

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Brief Description of SMR

During the mini outage in September 2013 LGE-KU attempted to reposition the A side SCR differential pressure sensing point without success. During the Spring 2014 outage DB will assist LGE-KU with this repositioning.

Item:


SCR Differential Pressure test point – A side.

Drawings:

- N/A

Action Required (Use Continuation Sheet as required)

1. **SEB to provide support to DB if required to identify a position for the A-side SCR differential pressure sensing point. It is likely this will have to be positioned from the inside and a hole drill outwards to enable a suitable position to be identified.**

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Brief Description of SMR

The steam supply to the GAH soot blowers is to be enhanced and this SMR describes the electrical construction plan.

Note! There is a mechanical content to this work package and details for this section of work will be found in SMR0107.

Note! There is a steel work content to this work package and details for this section of work will be found in SMR0166.

Item:	Drawings:
GAH Soot Blower Steam Supply	<ol style="list-style-type: none"> Bechtel ECN 25191-002-V1E-MBPX-01201 (GAH Package) and attachments <ul style="list-style-type: none"> Reference drawings as noted below Technical Specification for B6 – GAH Sootblower Steam Upgrade Supply and Installation of Electrical Equipment and Cables - 06350/B270/TS/35710/2./0001 and attachments <ul style="list-style-type: none"> Attachments as noted below

Action Required (Use Continuation Sheet as required)

- Revision C – Drawings issued as highlighted in red on drawing list, revisions removed and transferred to SMR drawing register. Note re SMR 0166 added to highlight steel work requirement.

- Revision B – Technical Specification for B6 – GAH Sootblower Steam Upgrade Supply and Installation of Electrical Equipment and Cables and supporting documents as listed.

The electrical modifications described in the Bechtel ECN should be carried out and tested as required by the specifications. Upon completion the ECN should be signed off as complete by Bechtel, Doosan, South East Boiler and Rigging and Meiners authorized representatives.

- Bechtel ECN 25191-002-V1E-MBPX-01201 (GAH Package) - Reference Drawings

1. Diamond Power Drawing List.

	Tag #	DPS Ref	DPII Drawing #	Sheet	Title
1	2-SB-CAB-006	06350/CDIH/AL/35700/2./0440	701255-805C	1 of 1	Interconnecting Wiring, Sootblower Control, Sentry 1000
2	2-SB-CAB-006	06350/CDIH/AL/35700/2./0441	701255-806C	1 of 1	Outline and Clearance, Sootblower Control, Sentry 1000
3	2-SB-CAB-006	06350/CDIH/AL/35700/2./0442	701255-803C	1 of 5	Schematic, Sootblower Control, Sentry 1000

Attachment to Response to KIUC-1 Question No. 30(f)

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4	2-SB-CAB-006	06350/CDIH/AL/35700/2./0443	701255-803C	2 of 5	Schematic, Sootblower Control, Sentry 1000
5	2-SB-CAB-006	06350/CDIH/AL/35700/2./0444	701255-803C	3 of 5	Schematic, Sootblower Control, Sentry 1000
6	2-SB-CAB-006	06350/CDIH/AL/35700/2./0445	701255-803C	4 of 5	Schematic, Sootblower Control, Sentry 1000
7	2-SB-CAB-006	06350/CDIH/AL/35700/2./0446	701255-803C	5 of 5	Schematic, Sootblower Control, Sentry 1000
8	2-SB-CAB-001	06350/CDIH/AD/35700/X/8030	530085-803C	1 of 3	Schematic, Sootblower Control, Sentry 1000
9	-	06350/CDIH/AD/35700/X/8050	530085-805C	1 of 8	Interconnecting Wiring, Sootblower Control, Sentry 1000
10	2-SB-CAB-003	06350/CDIH/AD/35700/X/8054	530085-805C	5 of	Interconnecting Wiring, Sootblower Control, Sentry 1000
11	2-SB-CAB-002/3	06350/CDIH/AD/35700/X/8060	530085-806C	1 of 2	Outline and Clearance, Sootblower Control, Sentry 1000
12	2-SB-CAB-002	06350/CDIH/AD/35700/X/0408	530085-813C	1 of 9	Schematic, Sootblower Control, Sentry 1000
13	2-SB-CAB-003	06350/CDIH/AD/35700/X/0424	530085-823C	1 of 9	Schematic, Sootblower Control, Sentry 1000
14	2-SB-CAB-003	06350/CDIH/AD/35700/X/0426	530085-823C	3 of	Schematic, Sootblower Control, Sentry 1000
15	2-SB-CAB-003	06350/CDIH/AD/35700/X/0431	530085-823C	8 of	Schematic, Sootblower Control, Sentry 1000

2. CCI Pressure Control Valve Wiring Diagram.

	Tag #	DPS Ref	STI Drawing #	Sheet	Title
1	2-SB-CV051	06350/CCCI/WD/32390/2/0005	131836WD01_1	1 of 1	GAH Sootblower Steam PCV – Wiring Diagram

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3. Briggs Valcon HP Valve Limitorque Actuator Wiring Diagram.

	Tag #	DPS Ref	Briggs Drawing #	Sheet	Title
1	2-SB-MOV517, 2-SB-MOV521 and 2-SB-MOV522	06350/CBGG/AI/31000/2/0015	17-499-0500-3	1 of 1	Basic Integral Control Diagram Potentiometer (optional) and C&S

4. WM Powell LP Valve Limitorque Actuator Wiring Diagram.

	Tag #	DPS Ref	WM Powell Drawing #	Sheet	Title
1	2-SB-MOV515B, 2-SB-MOV515A, 2-SB-MOV514A, 2-SB-MOV514B and 2-SB-MOV520	06350/CWPO/31000/0006	17-499-0500-3	1 of 1	Basic Integral Control Diagram Hardwired, Aux Contacts.....

5. WIKA Strap On Thermocouple Wiring Diagram

	Tag #	DPS Ref	WIK A Drawing #	Sheet	Title
1	2-SB-TE810, 2-SB-TE809, 2-SB-TE809A and 2-SB-TE809B	06350/CWIK/31000/2/1002	SO00016427-GA-0001	3 total	General Arrangement Drawing – Thermocouple Duplex

6. Emerson/Rosemount Pressure Transmitter Wiring Diagrams.

	Tag #	DPS Ref	Emerson / Rosemount #	Sheet	Title
1	2-SB-PT111, 2-SB-PT112, 2-SB-PT114 and 2-SB-PT115	06350/CEML/AD/63000/2/0013	4 / R3	-	3051T Pressure Transmitter-with 0306AT Integral Manifold
2	2-SB-FT113	06350/CEML/AD/63000/2/0057	7 /R2	-	3051C Pressure Transmitter (TR Option)-with AGCO Manifold M4TPVIS-4-AM.

7. Power and Control Cable Specification Sheets

	Tag #	DPS Ref	#	Sheet	Title
1	n/a	n/a	Cable Code 837G - Attachment 2B & 7B	1 of 1	Cable Code 837G
2	n/a	n/a	Cable Code A79 - Attachment 3B	1 of 1	Cable Code A79

Attachment to Response to KIUC-1 Question No. 30(f)

 <p align="center">SITE MODIFICATION REQUEST</p>	Contract No: 07292	Contract Name: Trimble County 2	Production 2 Serial No. 1143 Page 369 of 1143 SMR 0159 Rev C Thompson
	Date: 03 December 2013	Raised By: Steve Hammond	

3	n/a	n/a	Cable Code DJB - Attachment 4B	1 of 1	Cable Code DJB
4	n/a	n/a	Cable Code DKB - Attachment 5B	1 of 1	Cable Code DKB
5	n/a	n/a	Cable Code GJB - Attachment 6B	1 of 1	Cable Code GJB
7	n/a	n/a	Cable Code N1B - Attachment 8B	1 of 1	Cable Code N1B

- **Technical Specification for B6 – GAH Sootblower Steam Upgrade Supply and Installation of Electrical Equipment and Cables - 06350/B270/TS/35710/2./0001– Attachments**

Document Number	Document Title
25191-000-3PS-JQ07-G0001	Attachment Specification for Instrumentation, Controls and Electrical Requirements for Trimble County Generating Station Units 1 and 2.
-	E.ON-US Electrical Installation Requirements
25191-000-3PS-G000-G0001	General Project Requirements
25191-000-3PS-MBPX-G0001	General Technical Requirements Appendix L
06350/B222/63000/SC/5001	B6 – GAH Sootblower Steam Upgrade Electrical Cable Schedule
06350/B222/CB/63000/1002	B6 – GAH Sootblower Steam Upgrade Electrical Cable Block Diagram
06350/B250/AD/35710/2/0002	Isometric – Sootblower Steam to Airheaters Part 1 – Platen Drain to PDRS
06350/B250/AD/35710/2/0003	Isometric – Sootblower Steam to Airheaters Part 2 – PDRS to Airheater Valve Station
06350/B250/AD/35710/2/0004	Isometric – Sootblower Steam to Airheaters Part 3 – Airheater Valve Station
06350/B250/AD/35710/2/0005	Isometric – Upgraded Sootblower Steam to Airheaters - Warming Line Sheet 1
06350/B250/AD/35710/2/0007	Isometric – Sootblower Steam to Airheaters PDRS Warming Line
<p>Note! All other documents listed within document # 06350/B270/TS/35710/2./0001, Technical Specification for B6 – GAH Sootblower Steam Upgrade Supply and Installation of Electrical Equipment and Cables are included within the Bechtel ECN attachment listing and not repeated here.</p>	

 SITE MODIFICATION REQUEST	Contract No: 07292	Contract Name: Trimble County 2	Production 2 Serial No. 1143 Page 370 of 1143 SMR 0165 Rev C Thompson
	Date: 03 December 2013	Raised By: Steve Hammond	

Brief Description of SMR

This SMR brings together the insulation requirements for the outage as a whole.

Item:	Drawings:
Insulation	<ul style="list-style-type: none"> • 06350/B270/39800/1009 – Data Sheet for Insulation to Modified OFA Windbox and Inlet Duct <ul style="list-style-type: none"> ○ 06350/B270/34730/1001 - Arrangement Of Wing Over Fire Air Port ○ 06350/CFOX/32000/0113 - OFA Windbox Toggle Joint ○ 06350/CFOX/32000/1301 – Over fire Air To Windbox Front & Rear Wall ○ 06350/CFOX/32000/1302 – over fire air to windbox front & rear wall ○ 06350/B250/32190/1022 - General Arrangement Of Modifications To Over Fire Air Ducting And Windbox ○ 06350/B250/32199/0001 - Details Of Secondary Air Toggle Sections For OFA Windbox Ducts SA-09, SA-12, SA-22 & SA-25 – Sheet 1 ○ 06350/B250/32199/0002 - Details Of Secondary Air Toggle Sections For OFA Windbox Ducts SA-09, SA12, SA22 & SA-25 – Sheet 2 ○ 06350/B250/32199/0003 - Details Of Secondary Air Toggle Sections For OFA Windbox Ducts SA-09, SA12, SA22 & SA-25 - Sheet 3 ○ 06350/B250/32199/0004 - Details Of Secondary Air Toggle Sections For OFA Windbox Ducts SA-09, SA12, SA22 & SA-25 - Sheet 4 ○ 06350/B250/32199/0005 - Details Of Aerofoils For OFA Windbox ducts SA-09, SA-12, SA-22 & SA-25 ○ 06350/B250/32199/0006 - Details Of Secondary Air Toggle Sections For OFA Windbox Ducts SA-09, SA12, SA22 & SA-25 - Sheet 5 ○ 06350/B250/32199/0007 - Details Of Spacer Piece For OFA Windbox Ducts SA-09, SA-12, SA-22 & SA-25 ○ 06350/B250/32199/0008 - Detail Of Over Fire Air Duct OFA 01 Sheet 1 ○ 06350/B250/32199/0009 - Detail Of Over Fire Air Duct Elbow SA08 & SA21 Sheet 1 ○ 06350/B250/32199/0010 - Detail Of Over Fire Air Duct Elbow SA08 Sheet 2 ○ 06350/B250/32199/0011 - Detail Of Over Fire Air Duct Elbow SA08 Sheet 3 ○ 06350/B250/32199/0012 - Modification To Over Fire Air Ducting Key Plan ○ 06350/B250/32199/0013 - Detail Of Over Fire Air Duct OFA 01 Sheet 2 ○ 06350/B250/32199/0015 - Details Of Strengthening To Existing Duct Section SA-04 + SA-05 ○ 06350/B250/32199/0016 - Details Of Tapered Transition Piece For OFA Windbox ducts SA-09, SA-12, SA-22 & SA25 ○ 06350/B250/34715/0128 - Details Of Access Door AD1 For OFA Windbox Size - 2'-0" x 3'-0" (610x915) ○ 06350/B250/34715/0129 - Details Of Access Door AD2 For OFA Windbox Size - 2'-0" x 3'-0" (610x915) ○ 06350/B250/34715/0130 - Arrangement Of OFA Windbox (RHS) ○ 06350/B250/34715/0136 - OFA Windbox - Insulation Pins (typical) ○ 06350/B250/34715/0141 - OFA Windbox – Arrangement Of Inner Face (RHS) ○ 06350/B250/34715/0142 - OFA Windbox – Arrangement Of Outer Face (RHS) ○ 06350/B250/34715/0143 - OFA Windbox – Arrangement Of Top Face (RHS) ○ 06350/B250/34715/0144 - OFA Windbox – Arrangement Of Lower Face (RHS) ○ 06350/B250/39800/1011 - Over Fire Air Ducting And Windbox Insulation Details - Special Requirements ○ 06350/CRVI/34570/0001 - D-NOX Burner – 82MWt

 SITE MODIFICATION REQUEST	Contract No: 07292	Contract Name: Trimble County 2	Production 2 Serial No. Rev Page 371 of 1143 SMR 0165 C Thompson
	Date: 03 December 2013	Raised By: Steve Hammond	

	<ul style="list-style-type: none"> ○ 68-32836 - Elbow Cover Plate (Burner) ○ 68-32869 - Air Inlet Tee (Burner) ○ 06350/B250/32160/1006 - WCAH 'A' Side - Inlet and Outlet Interconnecting Pipework & Headers ○ 06350/B250/32160/1007 - WCAH 'B' Side - Inlet and Outlet Interconnecting Pipework & Headers ○ 06350/CAHI/32160/0033 - WCAH Airheater Arrangement Details ● 06350/B270/39800/1010 – Data sheet for Pipework Insulation – Sootblower Steam to Airheaters <ul style="list-style-type: none"> ○ 06350/B250/31000/5005 – Technical Schedule of Pipe Materials for Revised Gas Airheater Sootblower Steam Supply Arrangement ○ 06350/B250/35710/0002 - Sootblower Steam to Airheaters Part 1 – Platen Drain to PCV. ○ 06350/B250/35710/0003 - Sootblower Steam to Airheaters Part 2 – PCV to Airheater Valve Station. ○ 06350/B250/35710/0004 - Sootblower Steam to Airheaters Part 3 – Airheater Valve Station. ○ 06350/B250/35710/0005 – Sootblower Steam to Airheaters – PCV Warming Line. ○ 06350/B250/35710/0006 - Upgraded Sootblower Steam to Airheaters – Safety Valve Escape Pipework. ○ 06350/B250/35710/0007 - Upgraded Sootblower Steam to Airheaters – Warming Line Sheet 1. ○ 06350/B250/35710/0008 - Upgraded Sootblower Steam to Airheaters – Warming Line Sheet 2. ○ 06350/B250/35710/0009 rev A - Upgraded Sootblower Steam to Airheaters – Plan View ○ 06350/B223/35000/7301 - P&ID For Sootblower Sheet 1 ○ 06350/B223/35000/7302 - P&ID For Sootblower Drains ○ 06350/B223/35000/7303 - P&ID For Sootblower Sheet 2 ○ 06350/B223/31000/1403 - P&ID For Platen and Final Superheater
Action Required (Use Continuation Sheet as required)	
<ul style="list-style-type: none"> ● Revision C – Drawing revisions removed and transferred to SMR drawing register. 	
<ul style="list-style-type: none"> ● Rev B – Issue of drawings as listed 	
<ul style="list-style-type: none"> ● Insulation is to be applied as per the two data sheets listed. ● Note that # 10 and note # 17 on “06350/B270/39800/1009 – Data Sheet for Insulation to Modified OFA Windbox and Inlet Duct” are on hold. 	

 <p>SITE MODIFICATION REQUEST</p>	Contract No: 07292	Contract Name: Trimble County 2	Serial No. SMR 0166	Rev 1143
	Date: 25 November 2013		Raised By: Steve Hammond	

Production 2
Page 372 of 1143
SMR 0166
Thompson

Brief Description of SMR

The steam supply to the GAH soot blowers is to be enhanced and this SMR describes the structural steel strengthening required at EL 702' 2-1/2".

Note! There is a mechanical content to this work package and details for this section of work will be found in SMR0107.

Note! There is an electrical content to this work package and details for this section of work will be found in SMR0159.

Item:

GAH Soot Blower Steam Supply

Drawings:

- **Bechtel ECN 25191-422-SSE-0000-E1002 (GAH Package)**

Action Required (Use Continuation Sheet as required)

The structural steel modifications described in the Bechtel ECN should be carried out and tested as required by the specifications. Upon completion the ECN should be signed off as complete by Bechtel, Doosan and South East Boiler and Rigging authorised representatives.

SPRING 2014 OUTAGE - SMR NUMBERS

#	Description	SMR #	WP #	Current Rev	Date of Issue
	Main Scope				
1a	Upgrade steam supply to GAH soot blowers - Mechanical works	SMR 0107	WP 03	C	03-Dec-13
1b	Electrical design on-going, Bechtel ECN 25191-002-V1E-MBPX-01201	SMR 0159	WP 05	C	03-Dec-13
1c	Structural steel modification at EL 702' 2-1/2", Bechtel ECN 25191-422-SSE-0000-F1002	SMR 0166	WP 15	A	25-Nov-13
2	Upgrade WCAH and FD outdoor suction duct hood	SMR 0095	WP 04	B	03-Dec-13
3a	Replace burners and throats	SMR 0132	WP 01	B	03-Dec-13
3b	Electrical design on-going, Bechtel ECN forecast for issue by 31-Dec-13	SMR 0158	WP06		
4a	Install # 4 new OFA ports and throats, and upgrade ductwork and wind box	SMR 0156	WP 02	D	03-Dec-13
4b	Structural steel modification at EL ???' ??' ??", Bechtel ECN 25191-???	SMR 0167		PLACEHOLDER	
	Additional Scope				
5	Inspect furnace dipper plate refractory, and repair if required	SMR 0114	WP 07	C	03-Dec-13
6	Replace # 2 mill seal air non return dampers	SMR 0068	WP 08	E	03-Dec-13
7	Inspect selected PF pipes for build-up, and clean if required	SMR 0141	WP 09	C	05-Nov-13
8	Inspect ID fan stall sensing ports, clean if required, and add insulation	SMR 0127	WP 10	C	03-Dec-13
9	Install # 48 sonic horn insulation jackets	SMR 0153	WP 13		
10	Support LGE-KU to relocate SCR A side DP tapping point	SMR 0157	N/A	A	05-Nov-13
11	PA damper checks, and adjust if required	TBC	N/A		
12	Inspect PA flow element impulse line fittings and ensure they are not covered by insulation	SMR 0101	WP 11	C	05-Nov-13
13	Fit # 30 PF orifice plates	SMR 0152	WP 12	B	03-Dec-13
14	AmStar application	SMR 0048	WP 14	F	03-Dec-13
15	Logic revisions	SMR 0155	N/A	A	05-Nov-13
16	Insulation	SMR 0165	N/A	C	03-Dec-13

From: Anderson, Dave (Trimble County)(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=ANDERSOND)
To: Afiyet, Hamit; Ball, Adam; Bethany, Ron; Boone, James; Bullock, Sam; Byrd, Larry; Cash, Rebecca; Chin, Doug; Craft, Jim; Dorwart, Jordan; Dukes, Christopher; Feider, Ryan; Gilliland, Dave; Gray, Jeffrey; Griffith, Michelle; Hance, Chuck; Hannon, Hannah; Hayes, Christopher; Heinz, John; Henderson, Trent; Hudson, Glen; Jensen, Jack; Jones, Steve; Joyce, Jeff; Joyce, Kenny; Maldonado, Francisco; Melloan, Ricky; Menezes, Tomas; Mills, Ricky; Mohn, Laura; Moore, Emmett; Noonan, Kenny; Park, Marci; Payne, Nicholas; Phelps, Grant; Powell, Richard; Rabe, Phil; Raker, Adam; Ransdell, Charles; Sanders, Matt; Sedam, Dale; Simpson, Jeff; Slaughter, Mitch; Stewart, Robert E. (Trimble); Thomas, Mark; Thurston, Eric; Turner, Haley; Turner, Tyler; Walcott, Danny
CC:
BCC:
Subject: FW: 07292 TC2 - Outage Programme - 3 Day Forward Plan
Sent: 02/11/2014 03:19:33 PM -0500 (EST)
Attachments: Trimble County 2 - 2014 Outage - 3 day Programme (11-Feb).pdf;

All,

FYI.....

Attached is the progress updates from Doosan.

David W. Anderson

Trimble County Outage Coordinator
Tel. 502-627-6313
Fax 502-217-2199
email: dave.anderson@lge-ku.com

From: Fleming, Ian [mailto:ian.fleming@doosan.com]
Sent: Tuesday, February 11, 2014 12:23 PM
To: Dearman, James; Devin Brann; Moore, Eric; Lee, John; Huntington, John; Hammond, Steve; Gray, John; Fallon, Tim; Clyde Watkins; Kerslake, Ian; Anderson, Dave (Trimble County)
Cc: Payne, Trevor; Shrapnell, Vincent; Elliott, Robert; Whitehouse, Matthew; Cahill, Michael; Farrow, David; Bower, Keith; Matthews, David; Gratton, Ron; Lee, John; Hammond, Steve; Stocker, Mark; Collins, Robert; McCallum, Neil; Martin, Brenda; 06350 TRIMBLE COUNTY MAILBOX
Subject: 07292 TC2 - Outage Programme - 3 Day Forward Plan

Gents,
Please find attached copy of 3-day programme updated as of 07:00 today.

As per discussion in the morning meeting I have amended the presentation to include an activity % complete column and also indicated the "Longest Path" activities highlighted in **RED**.

Regards

Ian Fleming

Senior Project Planning Engineer
Doosan Babcock
Trimble County Site

Tel: 502 255 5210
Email: ian.fleming@doosan.com

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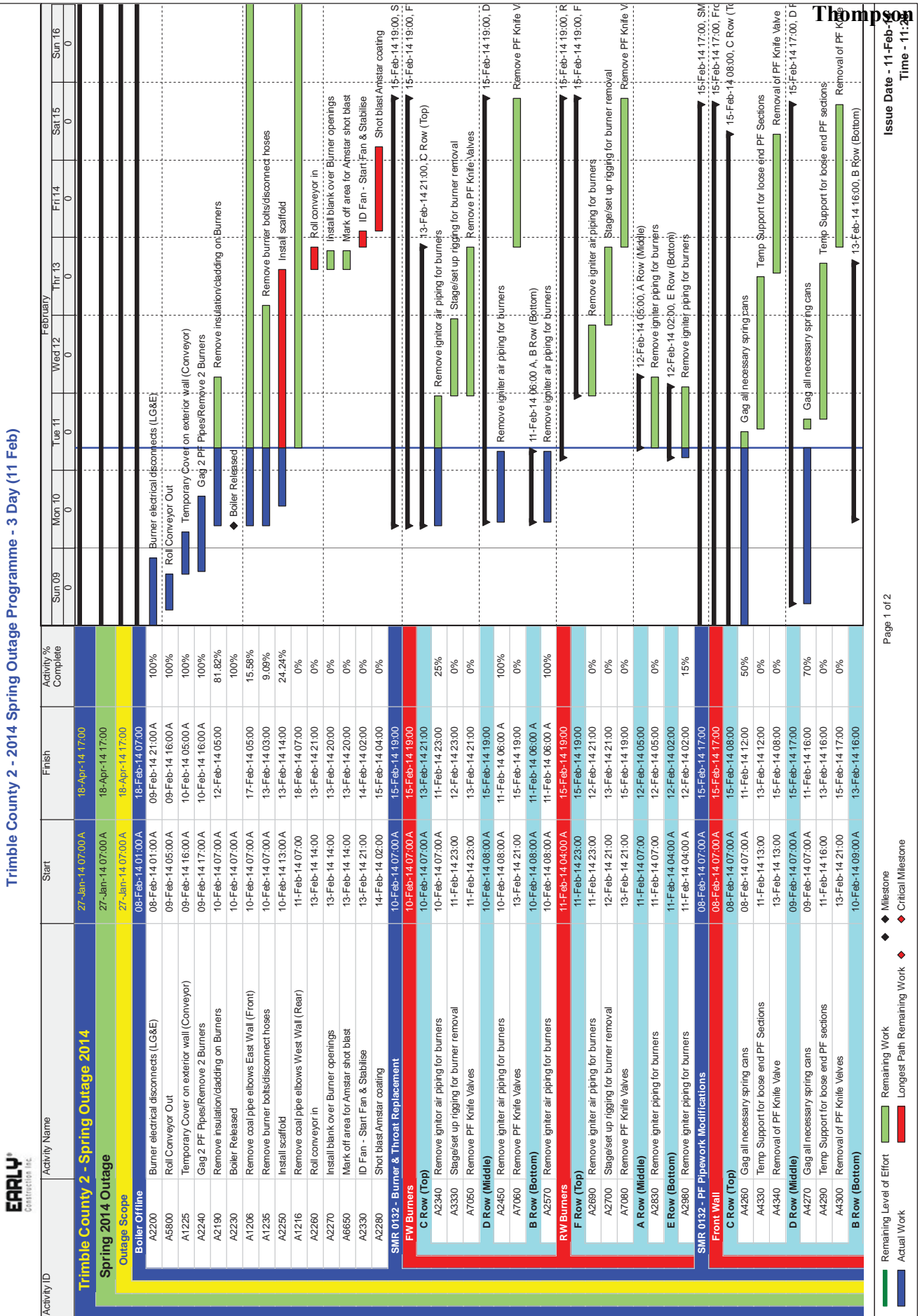
Attachment to Response to KIUC-1 Question No. 30(f)

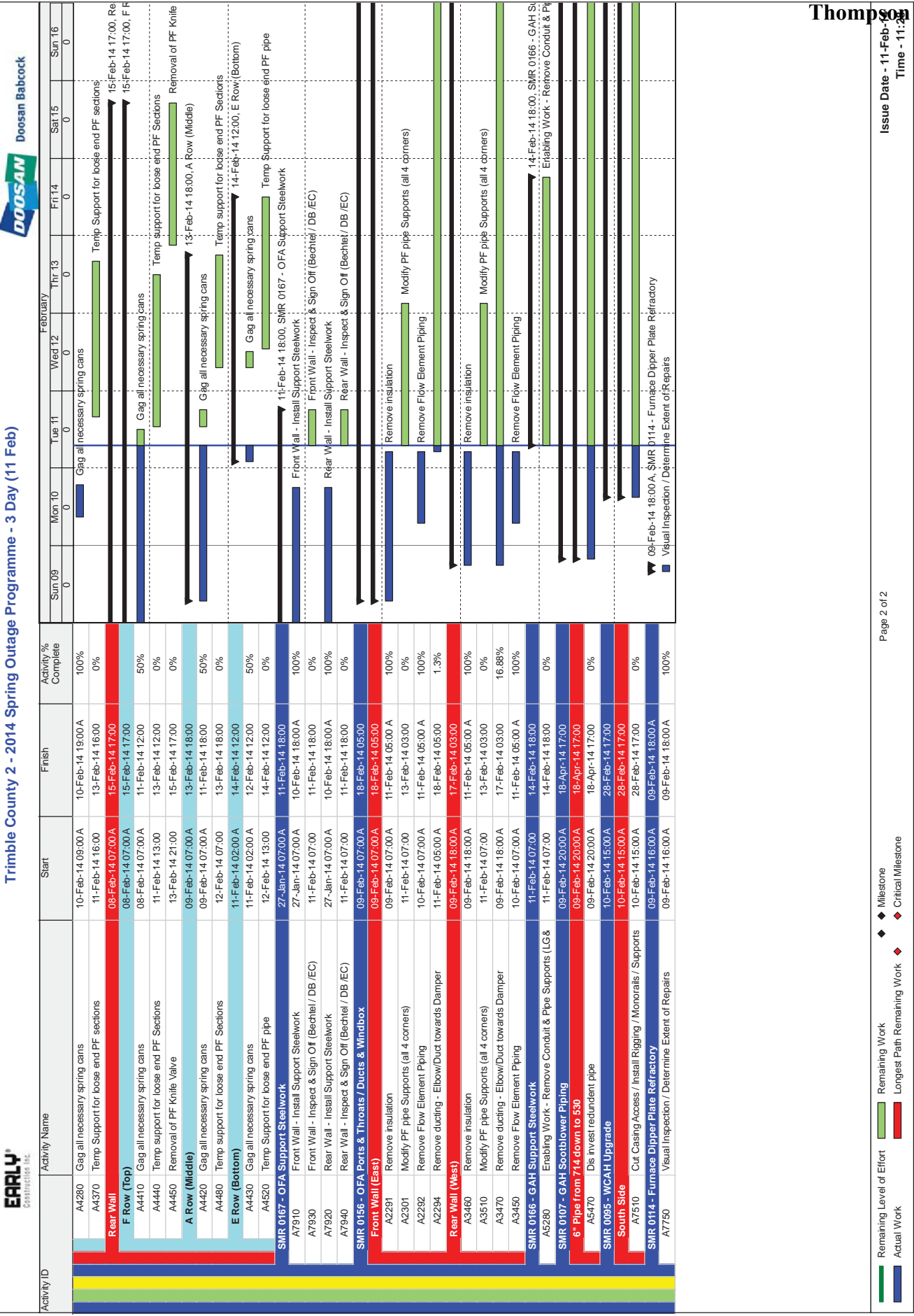
Production 2

you would also copy the communication to postmaster@doosanpowersystems.com then delete the E-Mail and destroy any copies of it. It is your responsibility to scan any attachments for viruses. For further information, visit us at **Thompson**
WWW.DOOSANPOWERSYSTEMS.COM -----

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Trimble County 2 - 2014 Spring Outage Programme - 3 Day (11 Feb)





Doosan Babcock

Trimble County 2 - 2014 Spring Outage Programme - 3 Day (11 Feb)

EARLY
CONSTRUCTION INC.

Activity ID	Activity Name	Start	Finish	Activity % Complete
A4280	Gag all necessary spring cans	10-Feb-14 09:00 A	10-Feb-14 19:00 A	100%
A4370	Temp Support for loose end PF sections	11-Feb-14 16:00	13-Feb-14 16:00	0%
Rear Wall				
F Row (Top)				
A4410	Gag all necessary spring cans	08-Feb-14 07:00 A	15-Feb-14 17:00	50%
A4440	Temp support for loose end PF Sections	08-Feb-14 07:00 A	11-Feb-14 12:00	0%
A4450	Removal of PF Knife Valve	11-Feb-14 13:00	13-Feb-14 17:00	0%
A Row (Middle)				
A4420	Gag all necessary spring cans	09-Feb-14 07:00 A	13-Feb-14 18:00	50%
A4480	Temp support for loose end PF Sections	09-Feb-14 07:00 A	11-Feb-14 18:00	0%
E Row (Bottom)				
A4430	Gag all necessary spring cans	11-Feb-14 02:00 A	14-Feb-14 12:00	50%
A4520	Temp Support for loose end PF pipe	12-Feb-14 13:00	14-Feb-14 12:00	0%
SMR 0167 - OFA Support Steelwork				
A7910	Front Wall - Install Support Steelwork	27-Jan-14 07:00 A	11-Feb-14 18:00	100%
A7930	Front Wall - Inspect & Sign Off (Bechtel / DB / EC)	11-Feb-14 07:00	11-Feb-14 18:00	0%
A7920	Rear Wall - Install Support Steelwork	27-Jan-14 07:00 A	10-Feb-14 18:00 A	100%
A7940	Rear Wall - Inspect & Sign Off (Bechtel / DB / EC)	11-Feb-14 07:00	11-Feb-14 18:00	0%
SMR 0156 - OFA Ports & Throats / Ducts & Windbox				
Front Wall (East)				
A2291	Remove insulation	09-Feb-14 07:00 A	18-Feb-14 05:00	100%
A2301	Modify PF pipe Supports (all 4 corners)	09-Feb-14 07:00 A	11-Feb-14 05:00 A	0%
A2292	Remove Flow Element Piping	11-Feb-14 07:00	13-Feb-14 03:00	0%
A2294	Remove ducting - Elbow/Duct towards Damper	10-Feb-14 07:00 A	11-Feb-14 05:00 A	100%
Rear Wall (West)				
A3460	Remove insulation	09-Feb-14 16:00 A	17-Feb-14 03:00	1.3%
A3510	Modify PF pipe Supports (all 4 corners)	09-Feb-14 18:00 A	11-Feb-14 05:00 A	100%
A3470	Remove ducting - Elbow/Duct towards Damper	11-Feb-14 07:00	13-Feb-14 03:00	0%
A3450	Remove Flow Element Piping	09-Feb-14 18:00 A	17-Feb-14 03:00	16.88%
SMR 0166 - GAH Support Steelwork				
A5280	Enabling Work - Remove Conduit & Pipe Supports (LG &	10-Feb-14 07:00 A	11-Feb-14 05:00 A	100%
SMR 0167 - GAH Scootblower Piping				
A5470	Dis invest redundant pipe	11-Feb-14 07:00	14-Feb-14 18:00	0%
6" Pipe from 714 down to 530				
SMR 0095 - WCAH Upgrade				
South Side				
A7510	Cut Casing Access / Install Rigging / Monorails / Supports	09-Feb-14 15:00 A	28-Feb-14 17:00	0%
SMR 0114 - Furnace Dipper Plate Refractory				
A7750	Visual Inspection / Determine Extent of Repairs	09-Feb-14 18:00 A	09-Feb-14 18:00 A	100%

■ 09-Feb-14 18:00 A, SMR 0114 - Furnace Dipper Plate Refractory
■ Visual Inspection / Determine Extent of Repairs

From: Joyce, Jeff(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=WEB/CN=JEFFJOYCE)
To: Anderson, Dave (Trimble County); Byrd, Larry; Rabe, Phil; Slaughter, Mitch
CC: Melloan, Ricky
BCC:
Subject: FW: Amendment 6 Schedule - For LGE
Sent: 02/06/2014 03:41:55 PM -0500 (EST)
Attachments: Trimble Combustion System Milestone Schedule Rev N (1-31-14).xlsx;

Guys –

Let's try to get in shape to comment on this tomorrow

Thanks

Jeff J

From: Straight, Scott
Sent: Thursday, February 06, 2014 6:50 AM
To: Joyce, Jeff
Subject: FW: Amendment 6 Schedule - For LGE

Jeff,

I have not looked at this, so in parallel with me and Jim looking at this, I would appreciate you and your team review this and provide me any comments by COB tomorrow. If we need to have a brief call to discuss, just have Bobbie set one up or she can call Lana to do so.

Scott

From: Watkins, Clyde [<mailto:cwatkins@bechtel.com>]
Sent: Sunday, February 02, 2014 3:22 PM
To: Straight, Scott
Cc: Huguenard, Jim; Brightman, Jeff; Hobbs, Donna; Wodka, Nancy (PLG); Snyder, John
Subject: FW: Amendment 6 Schedule - For LGE

Scott,

Attached please find the updated Milestone schedule. I believe this accurately reflects agreements reached last week on the outage duration, sequence of testing, start of reliability test, and key completion dates.

If you can please review and provide any comments at your earliest.

Thank You,

Mel

Produced as Native

Original File Name: Trimble Combustion System Milestone Schedule Rev N (1-31-14).xlsx

Stored File Name: OpenText00253197.xlsx

From: Melloan, Ricky(/O=LGE/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=MELLOAN, RICKYCF4)
To: Mohn, Laura
CC:
BCC:
Subject: FW: Amendment 6 Schedule - For LGE
Sent: 02/07/2014 10:12:27 AM -0500 (EST)
Attachments: Trimble Combustion System Milestone Schedule Rev N (1-31-14).xlsx;

From: Joyce, Jeff
Sent: Thursday, February 06, 2014 3:42 PM
To: Anderson, Dave (Trimble County); Byrd, Larry; Rabe, Phil; Slaughter, Mitch
Cc: Melloan, Ricky
Subject: FW: Amendment 6 Schedule - For LGE

Guys –

Let's try to get in shape to comment on this tomorrow

Thanks

Jeff J

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Sent: Thursday, February 06, 2014 6:50 AM
To: Joyce, Jeff
Subject: FW: Amendment 6 Schedule - For LGE

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Scott

From: Watkins, Clyde [<mailto:cwatkins@bechtel.com>]
Sent: Sunday, February 02, 2014 3:22 PM
To: Straight, Scott
Cc: Huguenard, Jim; Brightman, Jeff; Hobbs, Donna; Wodka, Nancy (PLG); Snyder, John
Subject: FW: Amendment 6 Schedule - For LGE

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Thank You,

Mel

Produced as Native

Original File Name: Trimble Combustion System Milestone Schedule Rev N (1-31-14).xlsx

Stored File Name: OpenText00253199.xlsx

From: Melloan, Ricky(/O=LGE/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=MELLOAN, RICKYCF4)
To: Carlisle, Gary
CC:
BCC:
Subject: FW: Here is LGE version, found an err in Doosan will fix and resend
Sent: 02/12/2014 10:55:20 AM -0500 (EST)
Attachments: Trimble Combustion System Milestone Schedule Rev P (2-10-14).pdf; Trimble TC2 Re-Start (14-02-06 IF).pdf;

From: Watkins, Clyde [mailto:cwatkins@bechtel.com]
Sent: Tuesday, February 11, 2014 6:07 PM
To: Straight, Scott; Joyce, Jeff
Cc: Melloan, Ricky; Brightman, Jeff; Wodka, Nancy (PLG); Snyder, John
Subject: FW: Here is LGE version, found an err in Doosan will fix and resend

Scott, Jeff,

Enclosed are two schedules:

1. Amendment 6 schedule, updated to show the outage duration of 105 days (15 weeks), Added key milestone dates for first oil fire, first coal fire, unit at 400 MW's, unit at full load, and other minor changes.
2. Doosan Detailed commissioning schedule. Note the Doosan outage duration will differ due to the float in the Amendment 6 schedule as well as other minor variances. The purpose of providing the Doosan detailed commissioning schedule is so that LGE can see the activities that are driving the restart durations.

Mel

Mel Watkins

Project Engineering Manager

Trimble County Unit 2 Project

cwatkins@Bchtel.com

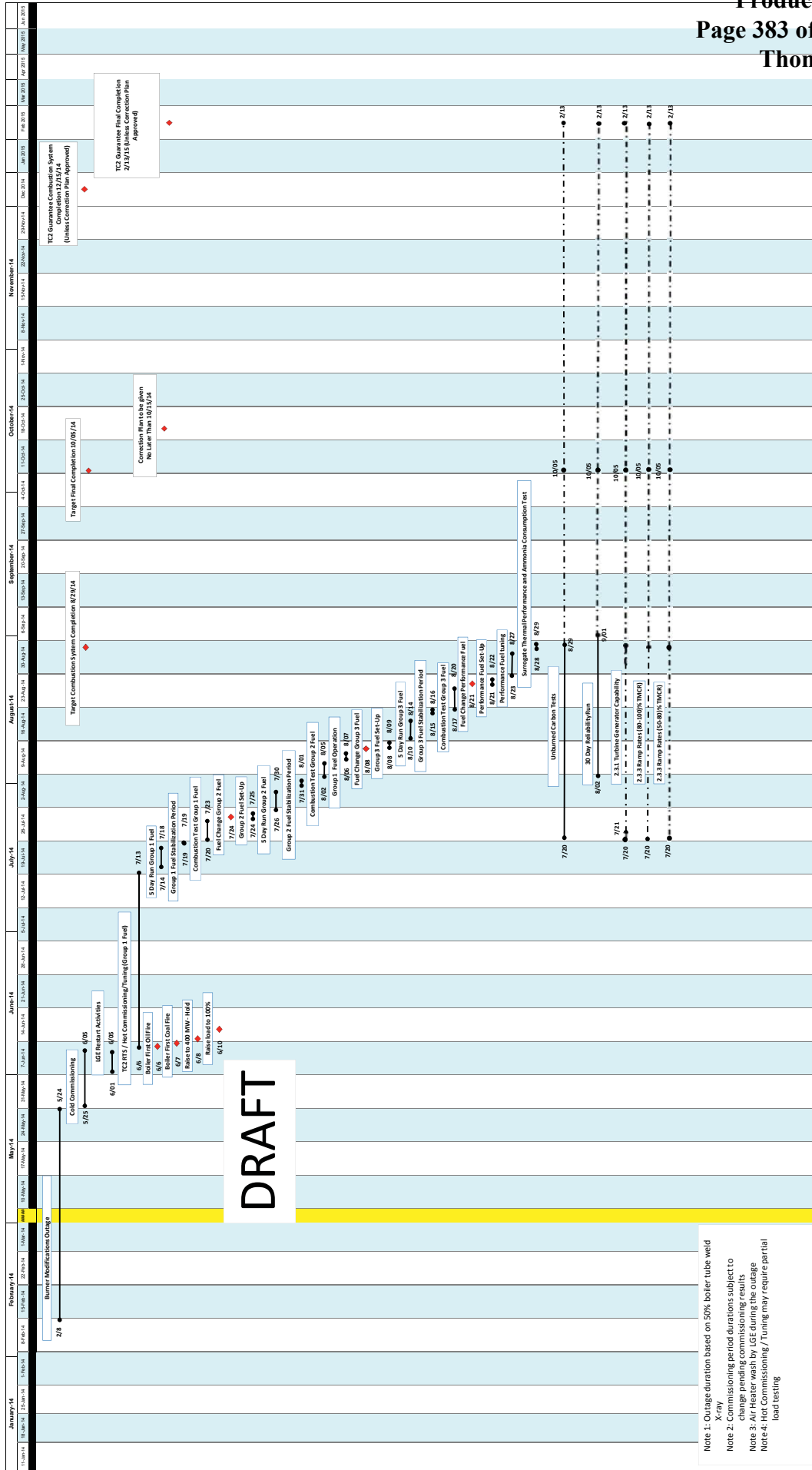
work: 301-228-8035 (Frederick)

work: 502-255-5277 (Trimble Site)

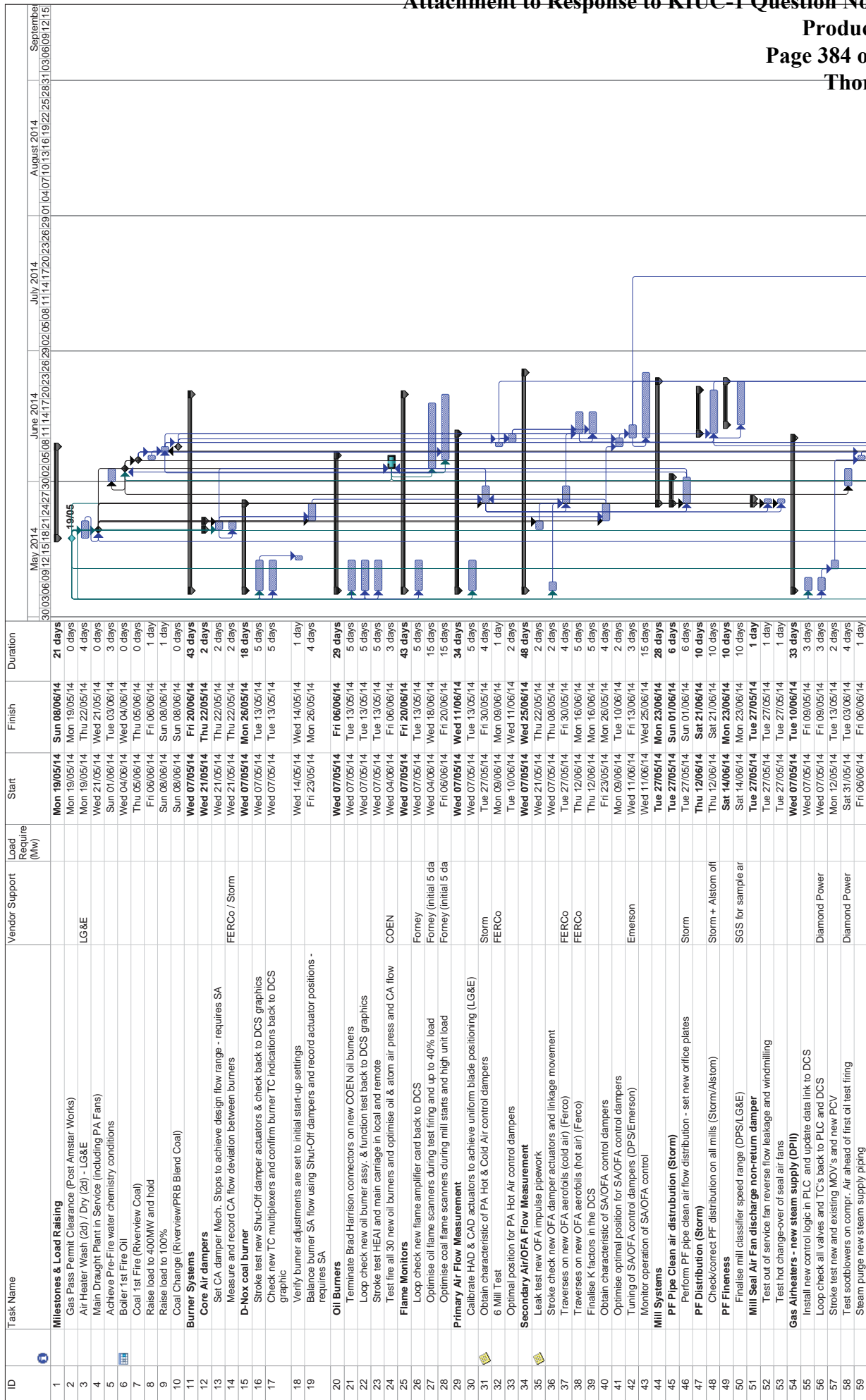
cell : 240-793-4490

Rev. P - Draft issued for Review 10 Feb 2014

Trimble County Unit 2
AMENDMENT 6: EXHIBIT 3: ATTACHMENT A
SUBJECT SCHEDULE: COMPLETION SCHEDULE



- Note 1: Outage duration based on 50% boiler tube weld X-ray
- Note 2: Commissioning period durations subject to change pending commissioning results
- Note 3: Air Heater wash by LGE during the outage
- Note 4: Hot Commissioning / Tuning may require partial load testing



Trimble TC2 Re-Start (14-02-06 IF)

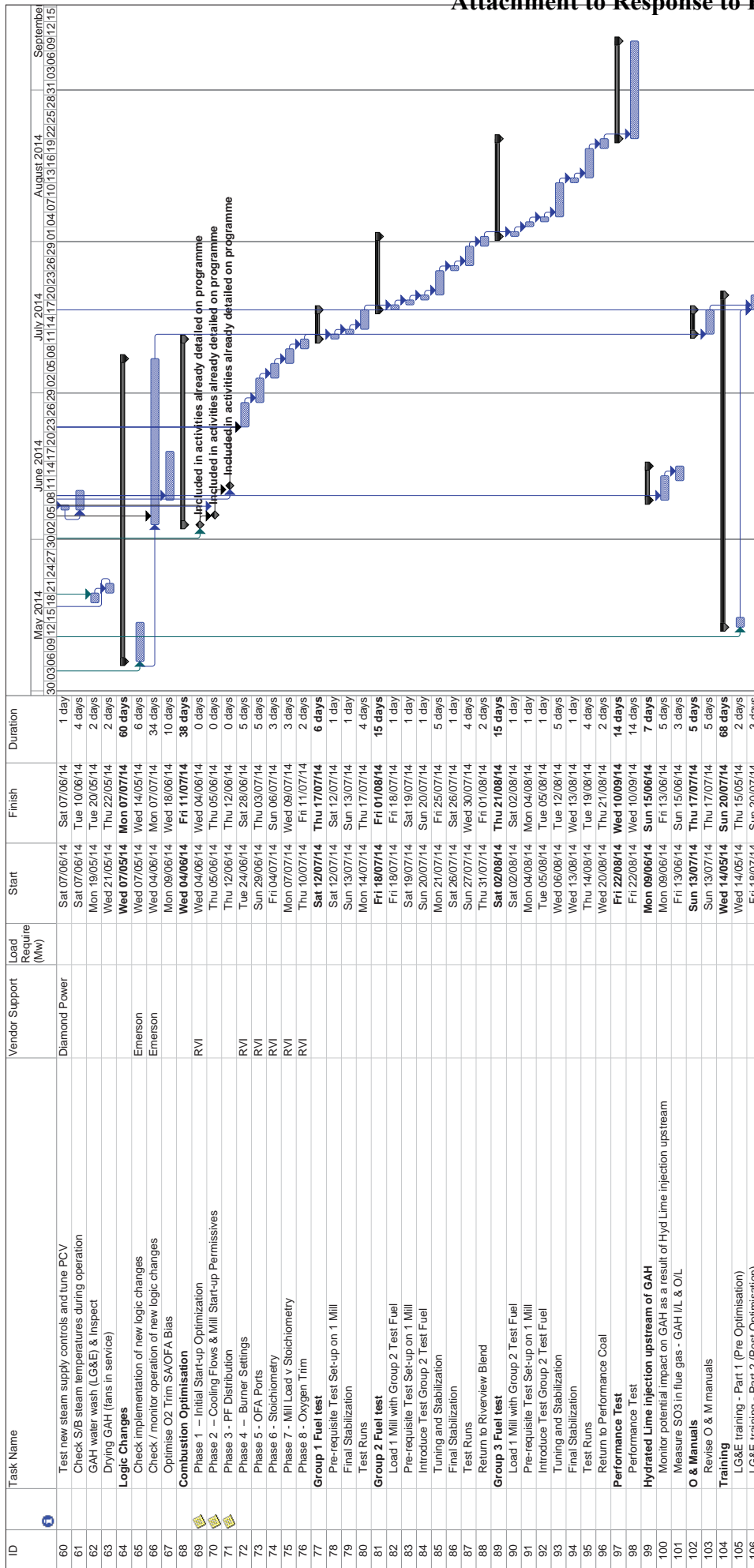
Task Split Milestone Summary

Project Summary External Milestone Inactive Task

Duration-only Manual Summary Rollup Manual Summary Start-only

Finish-only Progress Deadline

Page 1



Trimble TC2 Re-Start (14-02-06 IF)

- Task
- Split
- Milestone
- Summary
- Project Summary
- External Tasks
- External Milestone
- Inactive Task
- Inactive Milestone
- Manual Task
- Manual Milestone
- Manual Summary
- Start-only
- Manual Summary Rollup
- Manual Summary
- Finish-only
- Progress
- Deadline

From: Melloan, Ricky(/O=LGE/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=MELLOAN, RICKYCF4)
To: Rabe, Phil; Slaughter, Mitch; Anderson, Dave (Trimble County); Mohn, Laura
CC:
BCC:
Subject: FW: Here is LGE version, found an err in Doosan will fix and resend
Sent: 02/12/2014 10:42:31 AM -0500 (EST)
Attachments: Trimble Combustion System Milestone Schedule Rev P (2-10-14).pdf; Trimble TC2 Re-Start (14-02-06 IF).pdf;

FYI

From: Watkins, Clyde [mailto:cwatkins@bechtel.com]
Sent: Tuesday, February 11, 2014 6:07 PM
To: Straight, Scott; Joyce, Jeff
Cc: Melloan, Ricky; Brightman, Jeff; Wodka, Nancy (PLG); Snyder, John
Subject: FW: Here is LGE version, found an err in Doosan will fix and resend

Scott, Jeff,

Enclosed are two schedules:

1. Amendment 6 schedule, updated to show the outage duration of 105 days (15 weeks), Added key milestone dates for first oil fire, first coal fire, unit at 400 MW's, unit at full load, and other minor changes.
2. Doosan Detailed commissioning schedule. Note the Doosan outage duration will differ due to the float in the Amendment 6 schedule as well as other minor variances. The purpose of providing the Doosan detailed commissioning schedule is so that LGE can see the activities that are driving the restart durations.

Mel

Mel Watkins

Project Engineering Manager

Trimble County Unit 2 Project

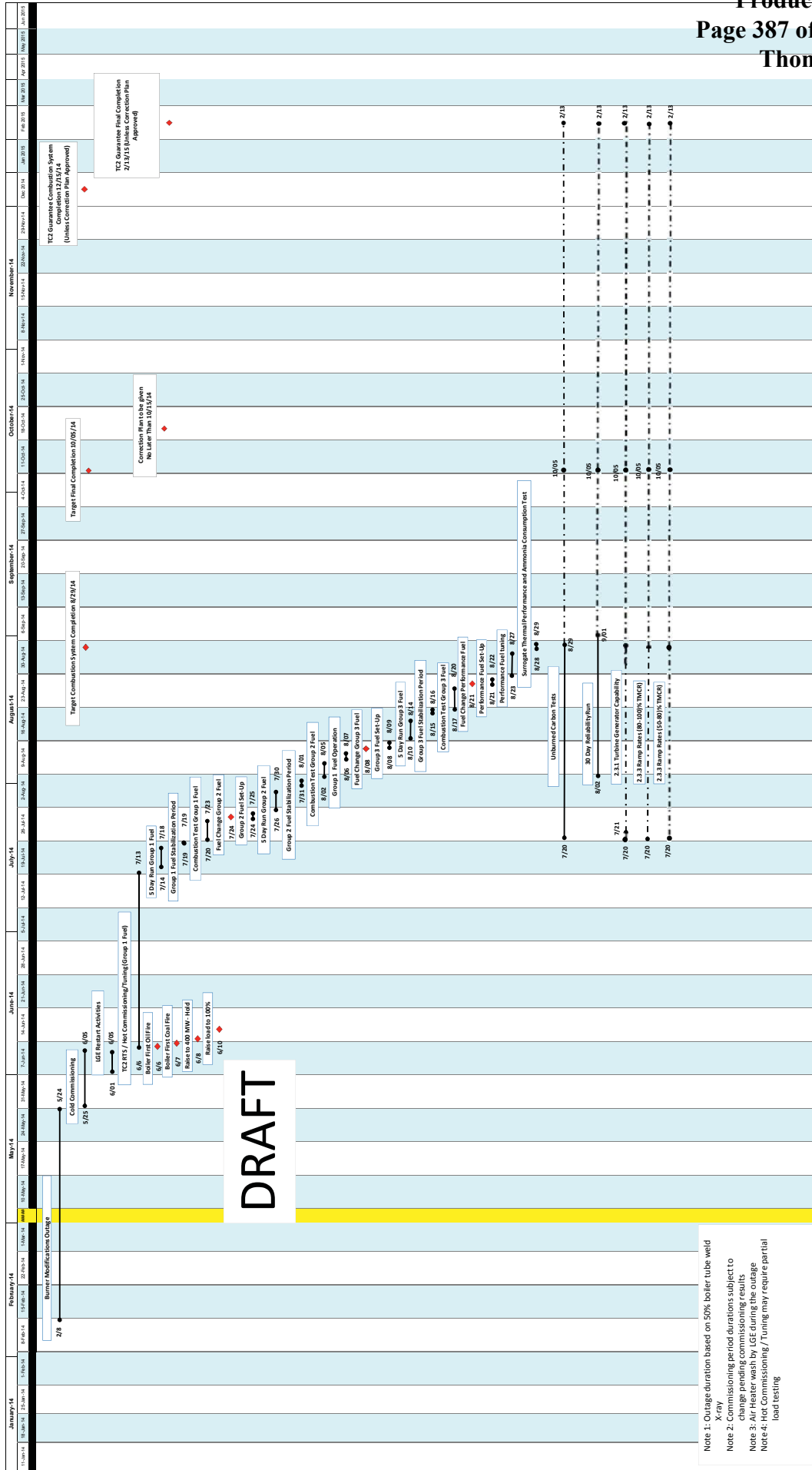
cwatkins@Bechtel.com

work: 301-228-8035 (Frederick)

work: 502-255-5277 (Trimble Site)

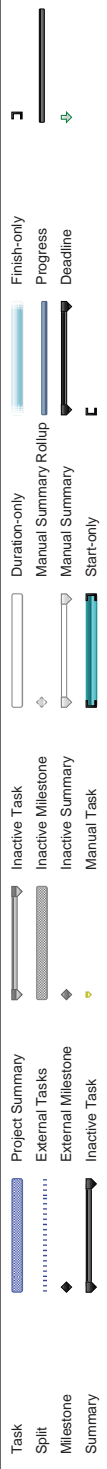
cell : 240-793-4490

Trimble County Unit 2
AMENDMENT 6: EXHIBIT 3: ATTACHMENT A
SUBJECT SCHEDULE: COMPLETION SCHEDULE



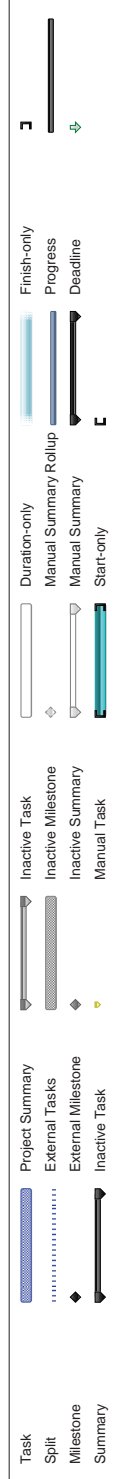
Note 1: Outage duration based on 50% boiler tube weld X-ray
 Note 2: Commissioning period durations subject to change pending commissioning results
 Note 3: Air Heater wash by LGE during the outage
 Note 4: Hot Commissioning / Tuning may require partial load testing

ID	Task Name	Vendor Support	Load Require (Mw)	Start	Finish	Duration
1	Milestones & Load Raising			Mon 19/05/14	Sun 08/06/14	21 days
2	Gas Pass Permit Clearance (Post Amstar Works)			Mon 19/05/14	Mon 19/05/14	0 days
3	Air Heater Wash (2d) / Dry (2d) - LG&E	LG&E		Mon 19/05/14	Thu 22/05/14	4 days
4	Main Draught Plant in Service (Including PA Fans)			Wed 21/05/14	Wed 21/05/14	0 days
5	Achieve Pre-Fire water chemistry conditions			Sun 01/06/14	Tue 03/06/14	3 days
6	Boiler 1st Fire Oil			Wed 04/06/14	Wed 04/06/14	0 days
7	Coal 1st Fire (Riverview Coal)			Thu 05/06/14	Thu 05/06/14	0 days
8	Raise load to 400MW and hold			Fri 06/06/14	Fri 06/06/14	1 day
9	Raise load to 100%			Sun 08/06/14	Sun 08/06/14	1 day
10	Coal Change (Riverview/PRB Blend Coal)			Sun 08/06/14	Sun 08/06/14	0 days
11	Burner Systems			Wed 07/05/14	Fri 20/06/14	43 days
12	Core Air dampers			Wed 21/05/14	Thu 22/05/14	2 days
13	Set CA damper Mech. Stops to achieve design flow range - requires SA			Wed 21/05/14	Thu 22/05/14	2 days
14	Measure and record CA flow deviation between burners			Wed 21/05/14	Thu 22/05/14	2 days
15	D-Nox coal burner	FERCo / Storm		Wed 07/05/14	Mon 26/05/14	18 days
16	Stroke test new Shut-Off damper actuators & check back to DCS graphics			Wed 07/05/14	Tue 13/05/14	5 days
17	Check new TC multiplexers and confirm burner TC indications back to DCS graphic			Wed 07/05/14	Tue 13/05/14	5 days
18	Verify burner adjustments are set to initial start-up settings			Wed 14/05/14	Wed 14/05/14	1 day
19	Balance burner SA flow using Shut-Off dampers and record actuator positions - requires SA			Fri 23/05/14	Mon 26/05/14	4 days
20	Oil Burners			Wed 07/05/14	Fri 06/06/14	29 days
21	Terminate Brad Harrison connectors on new COEN oil burners			Wed 07/05/14	Tue 13/05/14	5 days
22	Loop check new oil burner assy. & junction test back to DCS graphics			Wed 07/05/14	Tue 13/05/14	5 days
23	Stroke test HEA and main carriage in local and remote			Wed 07/05/14	Tue 13/05/14	5 days
24	Test fire all 30 new oil burners and optimise oil & atom air press and CA flow	COEN		Wed 04/06/14	Fri 06/06/14	3 days
25	Flame Monitors			Wed 07/05/14	Fri 20/06/14	43 days
26	Loop check new flame amplifier card back to DCS	Forney		Wed 07/05/14	Tue 13/05/14	5 days
27	Optimise oil flame scanners during test firing and up to 40% load	Forney (initial 5 da		Wed 04/06/14	Wed 18/06/14	15 days
28	Optimise coal flame scanners during test firing and high unit load	Forney (initial 5 da		Fri 06/06/14	Fri 20/06/14	15 days
29	Primary Air Flow Measurement			Wed 07/05/14	Wed 11/06/14	34 days
30	Calibrate HAD & CAD actuators to achieve uniform blade positioning (LG&E)			Wed 07/05/14	Tue 13/05/14	5 days
31	Obtain characteristic of PA Hot & Cold Air control dampers	Storm		Tue 27/05/14	Fri 30/05/14	4 days
32	6 Mill Test	FERCo		Mon 09/06/14	Mon 09/06/14	1 day
33	Optimal position for PA Hot Air control dampers			Tue 10/06/14	Wed 11/06/14	2 days
34	Secondary Air/OFA Flow Measurement			Wed 07/05/14	Wed 25/06/14	48 days
35	Leak test new OFA impulse pipework			Wed 27/05/14	Thu 22/05/14	2 days
36	Stroke check new OFA damper actuators and linkage movement	FERCo		Wed 07/05/14	Thu 08/05/14	2 days
37	Traverses on new OFA aeroballs (cold air) (FercO)	FERCo		Tue 27/05/14	Fri 30/05/14	4 days
38	Traverses on new OFA aeroballs (hot air) (FercO)	FERCo		Thu 12/06/14	Mon 16/06/14	5 days
39	Finalise K factors in the DCS			Thu 12/06/14	Mon 16/06/14	5 days
40	Obtain characteristic of SA/OFA control dampers			Fri 23/05/14	Mon 26/05/14	4 days
41	Optimise optimal position for SA/OFA control dampers	Emerson		Mon 09/06/14	Tue 10/06/14	2 days
42	Tuning of SA/OFA control dampers (DPS/Emerson)			Wed 11/06/14	Fri 13/06/14	3 days
43	Monitor operation of SA/OFA control			Wed 11/06/14	Wed 25/06/14	15 days
44	Mill Systems			Tue 27/05/14	Mon 23/06/14	28 days
45	PF Pipe Clean air distribution (Storm)			Tue 27/05/14	Sun 01/06/14	6 days
46	Perform PF pipe clean air flow distribution - set new orifice plates	Storm		Tue 27/05/14	Sun 01/06/14	6 days
47	PF Distribution (Storm)			Thu 12/06/14	Sat 21/06/14	10 days
48	Check/connect PF distribution on all mills (Storm/Alstom)	Storm + Alstom off		Thu 12/06/14	Sat 21/06/14	10 days
49	PF Fineness			Sat 14/06/14	Mon 23/06/14	10 days
50	Finalise mill classifier speed range (DPS/LG&E)	SGS for sample ar		Sat 14/06/14	Mon 23/06/14	10 days
51	Mill Seal Air Fan discharge non-return damper			Tue 27/05/14	Tue 27/05/14	1 day
52	Test out of service fan reverse flow leakage and windmilling			Tue 27/05/14	Tue 27/05/14	1 day
53	Test hot change-over of seal air fans			Tue 27/05/14	Tue 27/05/14	1 day
54	Gas Airheaters - new steam supply (DPFI)			Wed 07/05/14	Tue 10/06/14	33 days
55	Install new control logic in PLC and update data link to DCS			Wed 07/05/14	Fri 09/05/14	3 days
56	Loop check all valves and TC's back to PLC and DCS	Diamond Power		Wed 07/05/14	Fri 09/05/14	3 days
57	Stroke test new and existing MOV's and new PCV			Mon 12/05/14	Tue 13/05/14	2 days
58	Stroke test new and existing MOV's and new PCV			Sat 31/05/14	Tue 03/06/14	4 days
59	Test scooblowers on compr. Air ahead of first oil test firing	Diamond Power		Fri 06/06/14	Fri 06/06/14	1 day
	Steam purge new steam supply piping					



Trimble TC2 Re-Start (14-02-06 IF)

ID	Task Name	Vendor Support	Load Require (Mw)	Start	Finish	Duration
60	Test new steam supply controls and tune PCV	Diamond Power		Sat 07/06/14	Sat 07/06/14	1 day
61	Check S/B steam temperatures during operation			Sat 07/06/14	Tue 10/06/14	4 days
62	GAH water wash (LG&E) & inspect			Mon 19/05/14	Tue 20/05/14	2 days
63	Drying GAH (fans in service)			Wed 21/05/14	Thu 22/05/14	2 days
64	Logic Changes			Wed 07/05/14	Mon 07/07/14	60 days
65	Check implementation of new logic changes	Emerson		Wed 07/05/14	Wed 14/05/14	6 days
66	Check / monitor operation of new logic changes	Emerson		Wed 07/05/14	Mon 07/07/14	34 days
67	Optimise O2 Trim SA/OFA Bias			Mon 09/06/14	Wed 18/06/14	10 days
68	Combustion Optimisation			Wed 04/06/14	Fri 11/07/14	38 days
69	Phase 1 - Initial Start-up Optimisation	RVI		Wed 04/06/14	Wed 04/06/14	0 days
70	Phase 2 - Cooling Flows & Mill Start-up Permissives			Thu 05/06/14	Thu 05/06/14	0 days
71	Phase 3 - PF Distribution			Thu 12/06/14	Thu 12/06/14	0 days
72	Phase 4 - Burner Settings	RVI		Tue 24/06/14	Sat 28/06/14	5 days
73	Phase 5 - OFA Ports	RVI		Sun 29/06/14	Thu 03/07/14	5 days
74	Phase 6 - Stoichiometry	RVI		Fri 04/07/14	Sun 06/07/14	3 days
75	Phase 7 - Mill Load v Stoichiometry	RVI		Mon 07/07/14	Wed 09/07/14	3 days
76	Phase 8 - Oxygen Trim	RVI		Thu 10/07/14	Fri 11/07/14	2 days
77	Group 1 Fuel test			Sat 12/07/14	Thu 17/07/14	6 days
78	Pre-requisite Test Set-up on 1 Mill			Sat 12/07/14	Sat 12/07/14	1 day
79	Final Stabilization			Sun 13/07/14	Sun 13/07/14	1 day
80	Test Runs			Mon 14/07/14	Thu 17/07/14	4 days
81	Group 2 Fuel test			Fri 18/07/14	Fri 01/08/14	15 days
82	Load 1 Mill with Group 2 Test Fuel			Fri 18/07/14	Fri 18/07/14	1 day
83	Pre-requisite Test Set-up on 1 Mill			Sat 19/07/14	Sat 19/07/14	1 day
84	Introduce Test Group 2 Test Fuel			Sun 20/07/14	Sun 20/07/14	1 day
85	Tuning and Stabilization			Mon 21/07/14	Fri 25/07/14	5 days
86	Final Stabilization			Sat 26/07/14	Sat 26/07/14	1 day
87	Test Runs			Sun 27/07/14	Wed 30/07/14	4 days
88	Return to Riverview Blend			Thu 31/07/14	Fri 01/08/14	2 days
89	Group 3 Fuel test			Sat 02/08/14	Thu 21/08/14	15 days
90	Load 1 Mill with Group 2 Test Fuel			Sat 02/08/14	Sat 02/08/14	1 day
91	Pre-requisite Test Set-up on 1 Mill			Mon 04/08/14	Mon 04/08/14	1 day
92	Introduce Test Group 2 Test Fuel			Tue 05/08/14	Tue 05/08/14	1 day
93	Tuning and Stabilization			Wed 06/08/14	Tue 12/08/14	5 days
94	Final Stabilization			Wed 13/08/14	Wed 13/08/14	1 day
95	Test Runs			Thu 14/08/14	Tue 19/08/14	4 days
96	Return to Performance Coal			Wed 20/08/14	Thu 21/08/14	2 days
97	Performance Test			Fri 22/08/14	Wed 10/09/14	14 days
98	Performance Test			Mon 09/06/14	Sun 15/06/14	7 days
99	Hydrated Lime injection upstream of GAH			Mon 09/06/14	Fri 13/06/14	5 days
100	Monitor potential impact on GAH as a result of Hyd Lime injection upstream			Fri 13/06/14	Sun 15/06/14	3 days
101	Measure SO3 in flue gas - GAH I/L & O/L			Sun 13/07/14	Thu 17/07/14	5 days
102	O & Manuals			Sun 13/07/14	Thu 17/07/14	5 days
103	Revise O & M manuals			Wed 14/05/14	Sun 20/07/14	68 days
104	Training			Wed 14/05/14	Thu 15/05/14	2 days
105	LG&E training - Part 1 (Pre Optimisation)			Fri 18/07/14	Sun 20/07/14	3 days
106	LG&E training - Part 2 (Post Optimisation)			Fri 18/07/14	Sun 20/07/14	3 days



Trimble TC2 Re-Start (14-02-06 IF)

From: Dukes, Christopher(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=E026727)
To: 'Hammond, Steve'; Mel Watkins; Rabe, Phil
CC: Carlisle, Gary; Boone, James; 'James T. (Tom) Trimble'; Joyce, Jeff; Craft, Jim; Mohn, Laura; Slaughter, Mitch; Payne, Nicholas; Powell, Richard; Melloan, Ricky; 'Sandra Roach'; Smith, Timothy (Fuels); Henderson, Trent; Donna Hobbs; 'Brann, Devin' (dmbrann@bechtel.com); 'Dearman, James' (jdearman@bechtel.com); McCallum, Neil; Davidson, Gordon; Torkington, Ian R; Kerlake, Ian; Gratton, Ron; 06350 TRIMBLE COUNTY MAILBOX; Grist, John; Gonese, Jean; Maunder, Kevin; Cameron, Euan
BCC:
Subject: RE: 07292 - TC2 - Spring 2014 Outage Logic Revisions (SMR 0155)
Sent: 01/02/2014 03:25:48 PM -0500 (EST)
Attachments:

Steve,

I can offer the following comments from our DCS perspective at this time:

Document “TRIMBLE COUNTY 2 BURNER MODIFICATIONS – 23 Dec 2013”

Page 3 Section 4.1.2 – The logic drawings for Oxygen Trim Control are sheets **27-3-062** and **27-3-063**. We would like to see these sheets marked up as to which f(x) curves will be modified. The descriptions for each curve in the document (i.e. partial load O2, stoichiometry line, part load O2, and SA limit curve) do not match what we see labeled on the control sheet either, so some clarification will be necessary.

Page 3 Section 4.1.3 – We would like to see these sheets marked up as to what will need to be modified.

Page 3 Section 4.1.4 – The 2A Mill Secondary Control 3/3 sheet is **27-3-032**.

Page 3 Section 4.1.6 – “reaped” should read “repeated”

Pages 3 and 4 Section 4.4 – We understand that there will be additional thermocouple multiplexers added to the existing system. Is Doosan aware that each of these new units will require an IP address and MODBUS mapping configuration? These units will connect via Ethernet to the Emerson routers C and/or D located in the Boiler DCS building. The routers will also need to be configured to accept and route the new information from the multiplexers to the DCS. The router configuration will need to be done by Emerson. A new router configuration can sometimes take up to 6 weeks for Emerson to get back to us. Emerson should have someone take a look at the current running router configurations to see if they will need to be modified and so appropriate actions can be taken sooner rather than later.

We will continue reviewing and offer further comments soon.

Regards,

Chris

From: Hammond, Steve [mailto:steve.hammond@doosan.com]
Sent: Monday, December 30, 2013 4:16 AM
To: Mel Watkins; Rabe, Phil
Cc: Dukes, Christopher; Carlisle, Gary; Boone, James; 'James T. (Tom) Trimble'; Joyce, Jeff; Craft, Jim; Mohn, Laura; Slaughter, Mitch; Payne, Nicholas; Powell, Richard; Melloan, Ricky; 'Sandra Roach'; Smith, Timothy (Fuels); Henderson, Trent; Donna Hobbs; 'Brann, Devin' (dmbrann@bechtel.com); 'Dearman, James' (jdearman@bechtel.com); McCallum, Neil; Davidson, Gordon; Torkington, Ian R; Kerlake, Ian; Gratton, Ron; 06350 TRIMBLE COUNTY MAILBOX; Grist, John; Gonese, Jean; Maunder, Kevin; Cameron, Euan
Subject: RE: 07292 - TC2 - Spring 2014 Outage Logic Revisions (SMR 0155)

Mel / Phil,

In the absence of any comments since the issue of draft logic's on 12Dec13 please find attached a copy of SMR 0155 – Outage Logic Revisions.

The differences are;

- 600001145B Combustion system Operating Philosophy – Philosophy updated to comments received before 24Dec13.
- Trimble County 2 Burner Modifications - 23Dec13 – Updated to reflect comments/discussions.

As before and to assist with the understanding of these logic revisions I have attached a copy of the issued operating philosophy which is now at revision B as per the comments above.

Can I ask you to review the SMR and logics as issued and let us have any comments or questions – as a part of this review can I ask you to also consider whether additional support (Emerson via Doosan) will be needed to implement and test the logics.

Thanks and regards

Steve

Steve Hammond
Doosan Babcock Limited
Email: steve.hammond@doosan.com
Tel: +44 1293 584634

From: Hammond, Steve
Sent: 12 December 2013 11:26
To: Mel Watkins; 'Rabe, Phil' (Phil.Rabe@lge-ku.com)
Cc: Christopher Dukes; Gary Carlisle; James Boone; James T. (Tom) Trimble; Jeff Joyce; Jim Craft; Laura Mohn; Mitch Slaughter; Nicholas Payne; Richard Powell; Ricky Melloan; Sandra Roach; Timothy Smith (Trimble); Trent Henderson; Donna Hobbs; 'Brann, Devin' (dbrann@bechtel.com); 'Dearman, James' (jdearman@bechtel.com); McCartney, Darren P; Davidson, Gordon; Torkington, Ian R; Kerslake, Ian; Gratton, Ron; 06350 TRIMBLE COUNTY MAILBOX; Grist, John; Gonese, Jean; Maunder, Kevin; Cameron, Euan
Subject: 07292 - TC2 - Spring 2014 Outage Logic Revisions (SMR 0155)

Mel / Phil

You will be aware that there are a number of logic changes that need to be implemented to support the changes being made to the unit during the Spring 2014 outage.

Attached to this e-mail are advance copies of the logic to enable a preliminary review to take place ahead of issuing the final logic revisions which are forecast to be issued at the end of the year.

It should be noted that where f(x) are provided, the data will be provided on the final issue of the logic revisions and will be optimised at site where indicated.

The WCAH logic attached has the 4th drain water thermocouple being deleted as only 3 T/C s are provided with the new WCAH. The existing tag numbers on the WCAH have been maintained so that there no DCS database re-work

To assist with the understanding of these logic revisions I have also attached a copy of the issued operating philosophy, this copy is at revision A and the document itself is currently being updated to reflect comments made – we expect to have this available for issue late this week or early next week.

So, can I ask you to review the logics as issued and let us have any comments or questions.

Thanks and regards

Steve

Steve Hammond
Doosan Babcock Limited

Email: steve.hammond@doosan.com

Tel: +44 1293 584634

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From: Dukes, Christopher(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=E026727)
To: Hammond, Steve; Mel Watkins; Rabe, Phil
CC: Carlisle, Gary; Boone, James; 'James T. (Tom) Trimble'; Joyce, Jeff; Craft, Jim; Mohn, Laura; Slaughter, Mitch; Payne, Nicholas; Powell, Richard; Melloan, Ricky; 'Sandra Roach'; Smith, Timothy (Fuels); Henderson, Trent; Donna Hobbs; 'Brann, Devin' (dmbrann@bechtel.com); 'Dearman, James' (jdearman@bechtel.com); McCallum, Neil; Davidson, Gordon; Torkington, Ian R; Kerslake, Ian; Gratton, Ron; 06350 TRIMBLE COUNTY MAILBOX; Grist, John; Gonese, Jean; Maunder, Kevin; Cameron, Euan
BCC:
Subject: RE: 07292 - TC2 - Spring 2014 Outage Logic Revisions (SMR 0155)
Sent: 01/02/2014 08:46:40 AM -0500 (EST)
Attachments:

Steve,

I can now suggest Doosan should supply an Emerson person for logic implementation and testing based on the total amount of logic that will need to be modified.

We have just begun reviewing the logic and operating philosophy from a DCS standpoint and will provide comments as we come upon them.

Thanks and Regards,

Chris

From: Hammond, Steve [mailto:steve.hammond@doosan.com]
Sent: Monday, December 30, 2013 4:16 AM
To: Mel Watkins; Rabe, Phil
Cc: Dukes, Christopher; Carlisle, Gary; Boone, James; 'James T. (Tom) Trimble'; Joyce, Jeff; Craft, Jim; Mohn, Laura; Slaughter, Mitch; Payne, Nicholas; Powell, Richard; Melloan, Ricky; 'Sandra Roach'; Smith, Timothy (Fuels); Henderson, Trent; Donna Hobbs; 'Brann, Devin' (dmbrann@bechtel.com); 'Dearman, James' (jdearman@bechtel.com); McCallum, Neil; Davidson, Gordon; Torkington, Ian R; Kerslake, Ian; Gratton, Ron; 06350 TRIMBLE COUNTY MAILBOX; Grist, John; Gonese, Jean; Maunder, Kevin; Cameron, Euan
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Email: steve.hammond@doosan.com
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From: Hammond, Steve

Sent: 12 December 2013 11:26

To: Mel Watkins; 'Rabe, Phil' (Phil.Rabe@lge-ku.com)

Cc: Christopher Dukes; Gary Carlisle; James Boone; James T. (Tom) Trimble; Jeff Joyce; Jim Craft; Laura Mohn; Mitch Slaughter; Nicholas Payne; Richard Powell; Ricky Melloan; Sandra Roach; Timothy Smith (Trimble); Trent Henderson; Donna Hobbs; 'Brann, Devin' (dbrann@bechtel.com); 'Dearman, James' (jdearman@bechtel.com); McCartney, Darren P; Davidson, Gordon; Torkington, Ian R; Kerslake, Ian; Gratton, Ron; 06350 TRIMBLE COUNTY MAILBOX; Grist, John; Gonese, Jean; Maunder, Kevin; Cameron, Euan

Subject: 07292 - TC2 - Spring 2014 Outage Logic Revisions (SMR 0155)

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Thanks and regards

Steve

Steve Hammond

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Email: steve.hammond@doosan.com

Tel: +44 1293 584634

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From: Dukes, Christopher(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=E026727)
To: 'Hammond, Steve'; 'Mel Watkins'; Rabe, Phil
CC: Carlisle, Gary; Boone, James; 'James T. (Tom) Trimble'; Joyce, Jeff; Craft, Jim; Mohn, Laura; Slaughter, Mitch; Payne, Nicholas; Powell, Richard; Melloan, Ricky; 'Sandra Roach'; Smith, Timothy (Fuels); Henderson, Trent; 'Donna Hobbs'; 'Brann, Devin' (dmbrann@bechtel.com); 'Dearman, James' (jdearman@bechtel.com); 'McCallum, Neil'; 'Davidson, Gordon'; 'Torkington, Ian R'; 'Kerslake, Ian'; 'Gratton, Ron'; '06350 TRIMBLE COUNTY MAILBOX'; 'Grist, John'; 'Gonese, Jean'; 'Maunder, Kevin'; 'Cameron, Euan'; Owens, David
BCC:
Subject: RE: 07292 - TC2 - Spring 2014 Outage Logic Revisions (SMR 0155)
Sent: 01/03/2014 08:45:34 AM -0500 (EST)
Attachments:

Steve,

In regards to document **“Site Modification Request – SMR 0155”** I have some questions and comments.

1. It would appear that the list on Page 1 contains the logic drawings attached to the email. Page 2 is another list of “potential logic changes”. Some of the items on Page 1 are also on Page 2, but the numbering convention on Page 2 does not link the logic items with the drawings very well from Page 1. Can this be organized so it can be easier to follow?
2. On Page 2, I have comments for the following numbered items:
 - a. Item 1 – The Oxygen Trim Control logic sheets are **27-3-062 and 27-3-063**. These sheets are not marked up as to what revisions will be necessary and this item is NOT listed on Page 1 of the SMR.
 - b. Item 2 – OFA logic control sheets are **27-3-065, 27-3-069, 27-3-070, 27-3-071, and 27-3-072**. Again, these sheets are not marked up and this item is NOT listed on Page 1 of the SMR.
 - c. Item 3 – 2A Mill Secondary Air Control Sheet 3/3 is **27-3-032**.
 - d. Item 5 – Is this statement actually reflected as logic changes for items 7, 7A, 7B, and 7C or is this something totally different?
 - e. Items 7-7C – Are these the same as Item 5?
3. Somewhere within the documentation for the logic changes, we would like a brief description of the purpose of the change made to each individual control sheet. You have provided this in the past and would make our review a little easier if we could understand the intent to each change. This, of course, wouldn't need to be in detail of every marked line and algorithm, but a brief overview would help. This also wouldn't need to be done for like changes on repeated control sheets for, say, Mill A, B, C, D, E, and F. One would suffice.
4. Page 1 includes WCAH logic changes that aren't described anywhere in the documentation already provided (that I could find anyway). I understand the purpose and intent, but a brief description of the change being made would be helpful to others, I'm sure.

Some of the detail I'm requesting may not be necessary in the formal SMR documentation, but would certainly be helpful if it could be provided elsewhere. Please let me know if you have any questions or concerns.

Regards,

Chris

From: Dukes, Christopher
Sent: Thursday, January 02, 2014 3:26 PM
To: 'Hammond, Steve'; 'Mel Watkins'; Rabe, Phil
Cc: Carlisle, Gary; Boone, James; 'James T. (Tom) Trimble'; Joyce, Jeff; Craft, Jim; Mohn, Laura; Slaughter, Mitch; Payne, Nicholas; Powell, Richard; Melloan, Ricky; 'Sandra Roach'; Smith, Timothy (Fuels); Henderson, Trent; Donna Hobbs; 'Brann, Devin' (dmbrann@bechtel.com); 'Dearman, James' (jdearman@bechtel.com); McCallum, Neil; Davidson, Gordon; Torkington, Ian R; Kerslake, Ian; Gratton, Ron; 06350 TRIMBLE COUNTY MAILBOX; Grist, John; Gonese, Jean; Maunder, Kevin; Cameron, Euan
Subject: RE: 07292 - TC2 - Spring 2014 Outage Logic Revisions (SMR 0155)

Steve,

I can offer the following comments from our DCS perspective at this time:

Document "TRIMBLE COUNTY 2 BURNER MODIFICATIONS – 23 Dec 2013"

Page 3 Section 4.1.2 – The logic drawings for Oxygen Trim Control are sheets **27-3-062** and **27-3-063**. We would like to see these sheets marked up as to which f(x) curves will be modified. The descriptions for each curve in the document (i.e. partial load O2, stoichiometry line, part load O2, and SA limit curve) do not match what we see labeled on the control sheet either, so some clarification will be necessary.

Page 3 Section 4.1.3 – We would like to see these sheets marked up as to what will need to be modified.

Page 3 Section 4.1.4 – The 2A Mill Secondary Control 3/3 sheet is **27-3-032**.

Page 3 Section 4.1.6 – “reaped” should read “repeated”

Pages 3 and 4 Section 4.4 – We understand that there will be additional thermocouple multiplexers added to the existing system. Is Doosan aware that each of these new units will require an IP address and MODBUS mapping configuration? These units will connect via Ethernet to the Emerson routers C and/or D located in the Boiler DCS building. The routers will also need to be configured to accept and route the new information from the multiplexers to the DCS. The router configuration will need to be done by Emerson. A new router configuration can sometimes take up to 6 weeks for Emerson to get back to us. Emerson should have someone take a look at the current running router configurations to see if they will need to be modified and so appropriate actions can be taken sooner rather than later.

We will continue reviewing and offer further comments soon.

Regards,
Chris

From: Hammond, Steve [<mailto:steve.hammond@doosan.com>]

Sent: Monday, December 30, 2013 4:16 AM

To: Mel Watkins; Rabe, Phil

Cc: Dukes, Christopher; Carlisle, Gary; Boone, James; 'James T. (Tom) Trimble'; Joyce, Jeff; Craft, Jim; Mohn, Laura; Slaughter, Mitch; Payne, Nicholas; Powell, Richard; Melloan, Ricky; 'Sandra Roach'; Smith, Timothy (Fuels); Henderson, Trent; Donna Hobbs; 'Brann, Devin' (dnbrann@bechtel.com); 'Dearman, James' (jdearman@bechtel.com); McCallum, Neil; Davidson, Gordon; Torkington, Ian R; Kerslake, Ian; Gratton, Ron; 06350 TRIMBLE COUNTY MAILBOX; Grist, John; Gonese, Jean; Maunder, Kevin; Cameron, Euan

Subject: RE: 07292 - TC2 - Spring 2014 Outage Logic Revisions (SMR 0155)

Mel / Phil,

In the absence of any comments since the issue of draft logic's on 12Dec13 please find attached a copy of SMR 0155 – Outage Logic Revisions.

The differences are;

- 600001145B Combustion system Operating Philosophy – Philosophy updated to comments received before 24Dec13.
- Trimble County 2 Burner Modifications - 23Dec13 – Updated to reflect comments/discussions.

As before and to assist with the understanding of these logic revisions I have attached a copy of the issued operating philosophy which is now at revision B as per the comments above.

Can I ask you to review the SMR and logics as issued and let us have any comments or questions – as a part of this review can I ask you to also consider whether additional support (Emerson via Doosan) will be needed to implement and test the logics.

Thanks and regards

Steve

Steve Hammond
Doosan Babcock Limited
Email: steve.hammond@doosan.com
Tel: +44 1293 584634

From: Hammond, Steve
Sent: 12 December 2013 11:26
To: Mel Watkins; 'Rabe, Phil' (Phil.Rabe@lge-ku.com)
Cc: Christopher Dukes; Gary Carlisle; James Boone; James T. (Tom) Trimble; Jeff Joyce; Jim Craft; Laura Mohn; Mitch Slaughter; Nicholas Payne; Richard Powell; Ricky Melloan; Sandra Roach; Timothy Smith (Trimble); Trent Henderson; Donna Hobbs; 'Brann, Devin' (dnbrann@bechtel.com); 'Dearman, James' (jdearman@bechtel.com); McCartney, Darren P; Davidson, Gordon; Torkington, Ian R; Kerlake, Ian; Gratton, Ron; 06350 TRIMBLE COUNTY MAILBOX; Grist, John; Gonese, Jean; Maunder, Kevin; Cameron, Euan
Subject: 07292 - TC2 - Spring 2014 Outage Logic Revisions (SMR 0155)

Mel / Phil

You will be aware that there are a number of logic changes that need to be implemented to support the changes being made to the unit during the Spring 2014 outage.

Attached to this e-mail are advance copies of the logic to enable a preliminary review to take place ahead of issuing the final logic revisions which are forecast to be issued at the end of the year.

It should be noted that where f(x) are provided, the data will be provided on the final issue of the logic revisions and will be optimised at site where indicated.

The WCAH logic attached has the 4th drain water thermocouple being deleted as only 3 T/C s are provided with the new WCAH. The existing tag numbers on the WCAH have been maintained so that there no DCS database re-work

To assist with the understanding of these logic revisions I have also attached a copy of the issued operating philosophy, this copy is at revision A and the document itself is currently being updated to reflect comments made – we expect to have this available for issue late this week or early next week.

So, can I ask you to review the logics as issued and let us have any comments or questions.

Thanks and regards

Steve

Steve Hammond
Doosan Babcock Limited
Email: steve.hammond@doosan.com
Tel: +44 1293 584634

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From: Hammond, Steve(steve.hammond@doosan.com)
To: Rabe, Phil; 'Watkins, Clyde'; 'Hobbs, Donna'; 'Babcock, James'; 'Brann, Devin'; 'Dearman, James'; 'McCallum, Neil'; 'Thompson, Neil'; 'Kerslake, Ian'; 'Melloan, Ricky'; 'Dukes, Christopher'; 'Slaughter, Mitch'; 'Carlisle, Gary'; 'O'Reilly, Daniel'; 'Gratton, Ron'; 06350 TRIMBLE COUNTY MAILBOX
CC: Mohn, Laura
BCC:
Subject: RE: Doosan/Bechtel/LGE - Action Items Meeting
Sent: 01/08/2014 05:52:37 AM -0500 (EST)
Attachments: AIL Update_08_Jan_14.xlsx;

Mel / Phil

Please find attached current AIL for today's meeting.

Regards

Steve

Steve Hammond
Doosan Babcock Limited
Email: steve.hammond@doosan.com
Tel: +44 1293 584634

From: Rabe, Phil [<mailto:Phil.Rabe@lge-ku.com>]
Sent: 07 January 2014 21:36
To: 'Watkins, Clyde'; Hammond, Steve; 'Hobbs, Donna'; 'Babcock, James'; 'Brann, Devin'; 'Dearman, James'; 'McCallum, Neil'; 'Kerslake, Ian'; 'Melloan, Ricky'; 'Dukes, Christopher'; 'Slaughter, Mitch'; 'Carlisle, Gary'; 'O'Reilly, Daniel'; 'Gratton, Ron'
Cc: Mohn, Laura
Subject: RE: Doosan/Bechtel/LGE - Action Items Meeting

Mel,

We'll talk to you then.

Phil

From: Watkins, Clyde [<mailto:cwatkins@bechtel.com>]
Sent: Tuesday, January 07, 2014 4:28 PM
To: Rabe, Phil; 'Hammond, Steve'; 'Hobbs, Donna'; 'Babcock, James'; 'Brann, Devin'; 'Dearman, James'; 'McCallum, Neil'; 'Kerslake, Ian'; 'Melloan, Ricky'; 'Dukes, Christopher'; 'Slaughter, Mitch'; 'Carlisle, Gary'; 'O'Reilly, Daniel'; 'Gratton, Ron'
Cc: Mohn, Laura
Subject: RE: Doosan/Bechtel/LGE - Action Items Meeting

Phil,

There was a follow up to the earlier e-mail where my flight tomorrow was cancelled, and so, I can make the originally scheduled time for Wednesday (tomorrow).

Mel

Mel Watkins

Project Engineering Manager

Trimble County Unit 2 Project

cwatkins@Bchtel.com

work: 301-228-8035 (Frederick)

work: 502-255-5277 (Trimble Site)

cell : 240-793-4490

From: Rabe, Phil [<mailto:Phil.Rabe@lge-ku.com>]

Sent: Tuesday, January 07, 2014 4:26 PM

To: 'Hammond, Steve'; Watkins, Clyde; Hobbs, Donna; Babcock, James; Brann, Devin; Dearman, James; McCallum, Neil; Kerslake, Ian; Melloan, Ricky; Dukes, Christopher; Slaughter, Mitch; Carlisle, Gary; O'Reilly, Daniel; 'Gratton, Ron'

Cc: Mohn, Laura

Subject: RE: Doosan/Bechtel/LGE - Action Items Meeting

Mel,

Sorry for the delay in responding. Friday would work better for Mitch and myself.

Thanks,

Phil

From: Hammond, Steve [<mailto:steve.hammond@doosan.com>]

Sent: Tuesday, January 07, 2014 9:22 AM

To: Watkins, Clyde; Hobbs, Donna; Babcock, James; Brann, Devin; Dearman, James; McCallum, Neil; Kerslake, Ian; Melloan, Ricky; Dukes, Christopher; Rabe, Phil; Slaughter, Mitch; Carlisle, Gary; O'Reilly, Daniel; Gratton, Ron

Cc: Mohn, Laura

Subject: RE: Doosan/Bechtel/LGE - Action Items Meeting

Mel

Thursday is ok for me and I will issue an update either later today or I the morning (UK) time.

Regards

Steve

Steve Hammond

Doosan Babcock Limited

Email: steve.hammond@doosan.com

Tel: +44 1293 584634

From: Watkins, Clyde [<mailto:cwatkins@bechtel.com>]

Sent: 07 January 2014 13:42

To: Watkins, Clyde; Hobbs, Donna; Babcock, James; Brann, Devin; Dearman, James; McCallum, Neil; Hammond, Steve; Kerslake, Ian; Melloan, Ricky; Dukes, Christopher; Rabe, Phil; Slaughter, Mitch; Carlisle, Gary; O'Reilly, Daniel; Gratton, Ron

Cc: 'Mohn, Laura'

Subject: RE: Doosan/Bechtel/LGE - Action Items Meeting

Phil, Mitch, Steve,

I'll be travelling tomorrow morning and not available for this meeting. Does Thursday morning, same time work for you?

Steve – Can you please send out an update later today.

Thank You,

Mel Watkins

Project Engineering Manager

Trimble County Unit 2 Project

cwatkins@Bechtel.com

work: 301-228-8035 (Frederick)

work: 502-255-5277 (Trimble Site)

cell : 240-793-4490

-----Original Appointment-----

From: Watkins, Clyde

Sent: Friday, June 28, 2013 8:27 AM

To: Watkins, Clyde; Hobbs, Donna; Babcock, James; Brann, Devin; Dearman, James; McCallum, Neil; Hammond, Steve; Kerlake, Ian; Melloan, Ricky; Dukes, Christopher; Rabe, Phil; Slaughter, Mitch; Carlisle, Gary; O'Reilly, Daniel; Roach, Sandra A; 'Gratton, Ron'; Maunder, Kevin; Jeff Joyce; 'Gonese, Jean'; Martin, Brenda

Cc: 'Mohn, Laura'; Craft, Jim (EON); Byrd, Larry; Sheikh, Salman

Subject: Doosan/Bechtel/LGE - Action Items Meeting

When: Wednesday, January 15, 2014 9:00 AM-10:00 AM (UTC-05:00) Eastern Time (US & Canada).

Where: Bechtel Startup Conference Room

Please use the following dial in number:

866-232-8005

Conf code: 301-228-8035

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Original File Name: AIL Update_08_Jan_14.xlsx

Stored File Name: OpenText00253317.xlsx

Produced as Native

Original File Name: AIL Update_15_Jan_14.xlsx

Stored File Name: OpenText00253319.xlsx

From: Anderson, Dave (Trimble County)(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=ANDERSON)
To: Afiyet, Hamit; Ball, Adam; Bethany, Ron; Boone, James; Bullock, Sam; Byrd, Larry; Cash, Rebecca; Chin, Doug; Craft, Jim; Dorwart, Jordan; Dukes, Christopher; Feider, Ryan; Gilliland, Dave; Gray, Jeffrey; Griffith, Michelle; Hance, Chuck; Hannon, Hannah; Hayes, Christopher; Heinz, John; Henderson, Trent; Hudson, Glen; Jensen, Jack; Jones, Steve; Joyce, Jeff; Joyce, Kenny; Maldonado, Francisco; Melloan, Ricky; Menezes, Tomas; Mills, Ricky; Mohn, Laura; Moore, Emmett; Noonan, Kenny; Park, Marci; Payne, Nicholas; Phelps, Grant; Powell, Richard; Rabe, Phil; Raker, Adam; Ransdell, Charles; Sanders, Matt; Sedam, Dale; Simpson, Jeff; Slaughter, Mitch; Stewart, Robert E. (Trimble); Thomas, Mark; Thurston, Eric; Turner, Haley; Turner, Tyler; Walcott, Danny
CC:
BCC:
Subject: TC2 2014 Weekend and First week Coordination
Sent: 02/09/2014 01:55:15 PM -0500 (EST)
Attachments: TC2 2014 Weekend and First week Coordination.docx;

All,

Great start this weekend and all items are completed as planned for the weekend. Operators are continuing the LOTO and the SSC is out of the way and ready for boiler scaffolding.

Great work by all and remember to stay safe!

David Anderson

TC2 2014 Spring Outage
Weekend and First Week Coordination

- **Friday, February 07, 2014 Offline after peak**
 - At 300 pounds of boiler pressure, inspect leak- **Maldonado**
- **Saturday, February, 8th, 2014**
 - Deslag Boiler & Burners- On site at 10:00 AM.- **Maldonado/ Expro**
 - **Started at 12:15 pm. Estimated 10-12 hrs. worst case.**
 - Disconnect Wiring on Burners- **I/E Maintenance**
 - WESP Irrigation out of service after deslag.- **Operations**
- **Sunday, February, 9th, 2014**
 - Drain Ash Hopper- **Operations**
 - Disconnect Ash Hopper Piping- **Mechanics**
 - Roll Out Ash Hopper- **Doosan/ Mechanics**
 - Ground WESP/ DESP- **I/E Maintenance**
- **Monday, February, 10th, 2014**
 - Boiler Scaffold Build- **SE Boiler (6 shifts)**
 - PJFF Filter Bag Sample Removal- **Mechanics**
 - Pulse Air Out of Service (LOTO)- **Operations**
 - WESP Inspections
 - “Dirty” Inspection- Irrigation out of service and not carded.- **Waller/ Anderson**
 - Place irrigation in service and perform casing washes after “Dirty” Inspection.
 - SCR Doors open for “dirty” Inspection- **Mechanics/ Dorwart**

- **Tuesday, February, 11th, 2014**
 - Boiler Scaffold Build- **SE Boiler (4 shifts)**
 - PJFF Filter Bag Sample Removal
 - Pulse Air Out of Service (LOTO)- **Operations**
 - WESP Inspections
 - “WET” Inspection- Irrigation in service.- **Siemens, LG&E, PCT, TES**
- **Wednesday, February, 12th, 2014**
 - Boiler Scaffold Build- **SE Boiler (2 shifts)**
 - Open Deaerator- **Mechanics**
 - Ground WESP/ DESP- **I/E Maintenance**
 - **CLEAR GAS PATH & SIGN OFF BOTH FANS**
- **Thursday, February, 13th, 2014**
 - Check for any open doors prior to starting fan- **Operations**
 - Put 2A ID Fan in service after scaffold completion.-
Operations/ Bechtel/ Doosan
 - Place 1 Recycle Pump in service to alleviate carry over into the WESP.- **Operations**
 - Sandblasting Burner Fronts/ Amstar (2- 24hr shifts) -
Doosan/
 - Pull 2A Turbine Oil Cooler- **Duncan/ Mechanics**
- **Friday, February 14th, 2014**
 - **SIGN ON GAS PATH- BOTH FANS**
 - Drain Reaction Tank- **Operations**
 - Remove 2A ID Fan and open gas path
 - Reaction Tank Clean-out/Inspection – **Heinz/Phelps**

From: Anderson, Dave (Trimble County)(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=ANDERSOND)
To: Afiyet, Hamit; Ball, Adam; Bethany, Ron; Boone, James; Bullock, Sam; Byrd, Larry; Cash, Rebecca; Chin, Doug; Craft, Jim; Dorwart, Jordan; Dukes, Christopher; Feider, Ryan; Gilliland, Dave; Gray, Jeffrey; Griffith, Michelle; Hance, Chuck; Hannon, Hannah; Hayes, Christopher; Heinz, John; Henderson, Trent; Hudson, Glen; Jensen, Jack; Jones, Steve; Joyce, Jeff; Joyce, Kenny; Maldonado, Francisco; Melloan, Ricky; Menezes, Tomas; Mills, Ricky; Mohn, Laura; Moore, Emmett; Noonan, Kenny; Park, Marci; Payne, Nicholas; Phelps, Grant; Powell, Richard; Rabe, Phil; Raker, Adam; Ransdell, Charles; Sanders, Matt; Sedam, Dale; Simpson, Jeff; Slaughter, Mitch; Stewart, Robert E. (Trimble); Thomas, Mark; Thurston, Eric; Turner, Haley; Turner, Tyler; Walcott, Danny
CC: Dearman, James (jdearman@bechtel.com)
BCC:
Subject: TC2 2014 Weekend and First week Coordination.docx
Sent: 02/06/2014 07:15:18 AM -0500 (EST)
Attachments: TC2 2014 Weekend and First week Coordination.docx;

All,

Revised 7 day plan after yesterday's outage meeting.

Please advise of any corrections or additions.

Thanks,

David W. Anderson

Trimble County Outage Coordinator
Tel. 502-627-6313
Fax 502-217-2199
email: dave.anderson@lge-ku.com

TC2 2014 Spring Outage
Weekend and First Week Coordination

- **Offline after peak**
 - At 300 pounds of boiler pressure, inspect leak- **Maldonado**
- **Day 1**
 - Deslag Boiler & Burners- On site for standby at 4:00 AM.-
Maldonado/ Expro
 - Disconnect Wiring on Burners- **I/E Maintenance**
 - WESP Irrigation out of service after deslag.- **Operations**
- **Day 2**
 - Drain Ash Hopper- **Operations**
 - Disconnect Ash Hopper Piping- **Mechanics**
 - Roll Out Ash Hopper- **Doosan/ Mechanics**
 - Ground WESP/ DESP- **I/E Maintenance**
- **Day 3**
 - Boiler Scaffold Build- **SE Boiler (6 shifts)**
 - PJFF Filter Bag Sample Removal- **Mechanics**
 - Pulse Air Out of Service (LOTO)- **Operations**
 - WESP Inspections
 - “Dirty” Inspection- Irrigation out of service and not carded.- **Waller/ Anderson**
 - Place irrigation in service and perform casing washes after “Dirty” Inspection.
 - Pull 2A Turbine Oil Cooler- **Duncan/ Mechanics**

- **Day 4**
 - Boiler Scaffold Build- **SE Boiler (4 shifts)**
 - PJFF Filter Bag Sample Removal
 - Pulse Air Out of Service (LOTO)- **Operations**
 - WESP Inspections
 - “WET” Inspection- Irrigation in service.- **Siemens, LG&E, PCT, TES**
- **Day 5**
 - Boiler Scaffold Build- **SE Boiler (2 shifts)**
 - Open Deaerator- **Mechanics**
 - Ground WESP/ DESP- **I/E Maintenance**
- **Day 6**
 - Check for any open doors prior to starting fan- **Operations**
 - Put 2A ID Fan in service after scaffold completion.- **Operations/ Bechtel/ Doosan**
 - Place 1 Recycle Pump in service to alleviate carry over into the WESP.- **Operations**
 - Sandblasting Burner Fronts/ Amstar (2- 24hr shifts) - **Doosan/**
- **Day 7**
 - Drain Reaction Tank- **Operations**
 - Remove 2A ID Fan and open gas path
 - Reaction Tank Clean-out/Inspection – **Heinz/Phelps**
 - SCR Doors open for “dirty” Inspection- **Mechanics/ Dorwart**

From: Anderson, Dave (Trimble County)/(O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=ANDERSOND)
To: Afiyet, Hamit; Ball, Adam; Bethany, Ron; Boone, James; Bullock, Sam; Byrd, Larry; Cash, Rebecca; Chin, Doug; Craft, Jim; Dorwart, Jordan; Dukes, Christopher; Feider, Ryan; Gilliland, Dave; Gray, Jeffrey; Griffith, Michelle; Hance, Chuck; Hannon, Hannah; Hayes, Christopher; Heinz, John; Henderson, Trent; Hudson, Glen; Jensen, Jack; Jones, Steve; Joyce, Jeff; Joyce, Kenny; Maldonado, Francisco; Melloan, Ricky; Menezes, Tomas; Mills, Ricky; Mohn, Laura; Moore, Emmett; Noonan, Kenny; Park, Marci; Payne, Nicholas; Phelps, Grant; Powell, Richard; Rabe, Phil; Raker, Adam; Ransdell, Charles; Sanders, Matt; Sedam, Dale; Simpson, Jeff; Slaughter, Mitch; Stewart, Robert E. (Trimble); Thomas, Mark; Thurston, Eric; Turner, Haley; Turner, Tyler; Walcott, Danny
CC: Dearman, James (jdearman@bechtel.com)
BCC:
Subject: TC2 2014 Weekend and First week Coordination.docx
Sent: 02/11/2014 11:45:48 AM -0500 (EST)
Attachments: TC2 2014 Weekend and First week Coordination.docx;

First seven day updates.

Items in yellow are either completed or in progress.

David W. Anderson

Trimble County Outage Coordinator
Tel. 502-627-6313
Fax 502-217-2199
email: dave.anderson@lge-ku.com

TC2 2014 Spring Outage
Weekend and First Week Coordination

- **Friday, February 07, 2014 Offline after peak**
 - At 300 pounds of boiler pressure, inspect leak- **Maldonado**
- **Saturday, February, 8th, 2014**
 - Deslag Boiler & Burners- On site at 10:00 AM.- **Maldonado/ Expro**
 - **Started at 12:15 pm. Estimated 10-12 hrs. worst case.**
 - Disconnect Wiring on Burners- **I/E Maintenance**
 - WESP Irrigation out of service after deslag.- **Operations**
- **Sunday, February, 9th, 2014**
 - Drain Ash Hopper- **Operations**
 - Disconnect Ash Hopper Piping- **Mechanics**
 - Roll Out Ash Hopper- **Doosan/ Mechanics**
 - Ground WESP/ DESP- **I/E Maintenance**
- **Monday, February, 10th, 2014**
 - Boiler Scaffold Build- **SE Boiler (6 shifts)**
 - PJFF Filter Bag Sample Removal- **Mechanics**
 - Pulse Air Out of Service (LOTO)- **Operations**
 - WESP Inspections
 - “Dirty” Inspection- Irrigation out of service and not carded.- **Waller/ Anderson**
 - SCR Doors open for “dirty” Inspection- **Mechanics/ Dorwart**
- **Tuesday, February, 11th, 2014**
 - Boiler Scaffold Build- **SE Boiler (4 shifts)**
 - PJFF Filter Bag Sample Removal

- **Wednesday, February, 12th, 2014**
 - Boiler Scaffold Build- **SE Boiler (2 shifts)**
 - Open Deaerator- **Mechanics**
 - Place irrigation in service and perform casing washes after “Dirty” Inspection. **(Moved to Monday, 2/17/14)**
 - WESP Inspections- **(Moved to Monday, 2/17/14)**
 - “WET” Inspection- Irrigation in service.- **Siemens, LG&E, PCT, TES**
 - Ground WESP/ DESP- **I/E Maintenance**
 - **CLEAR GAS PATH & SIGN OFF BOTH FANS (Midnight)**
- **Thursday, February, 13th, 2014**
 - Check for any open doors prior to starting fan- **Operations**
 - Put 2A ID Fan in service after scaffold completion.- **Operations/ Bechtel/ Doosan**
 - Place 1 Recycle Pump in service to alleviate carry over into the WESP.- **Operations**
 - Sandblasting Burner Fronts/ Amstar (2- 24hr shifts) - **Doosan/**
 - Pull 2A Turbine Oil Cooler- **Duncan/ Mechanics**
- **Friday, February 14th, 2014**
 - **SIGN ON GAS PATH- BOTH FANS**
 - Drain Reaction Tank- **Operations**
 - Remove 2A ID Fan and open gas path
 - Reaction Tank Clean-out/Inspection – **Heinz/Phelps**

From: Anderson, Dave (Trimble County)(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=ANDERSOND)
To: Afiyet, Hamit; Ball, Adam; Bethany, Ron; Boone, James; Bullock, Sam; Byrd, Larry; Chin, Doug; Craft, Jim; Dorwart, Jordan; Dukes, Christopher; Feider, Ryan; Gilliland, Dave; Gray, Jeffrey; Griffith, Michelle; Hance, Chuck; Hannon, Hannah; Hayes, Christopher; Heinz, John; Henderson, Trent; Hudson, Glen; Jensen, Jack; Jones, Steve; Joyce, Jeff; Joyce, Kenny; Maldonado, Francisco; Melloan, Ricky; Menezes, Tomas; Mills, Ricky; Mohn, Laura; Moore, Emmett; Noonan, Kenny; Payne, Nicholas; Phelps, Grant; Powell, Richard; Rabe, Phil; Raker, Adam; Ransdell, Charles; Sanders, Matt; Sedam, Dale; Simpson, Jeff; Slaughter, Mitch; Stewart, Robert E. (Trimble); Thomas, Mark; Thurston, Eric; Turner, Haley; Turner, Tyler; Walcott, Danny
CC:
BCC:
Subject: TC2 outage dates and outage plan
Sent: 01/24/2014 03:22:15 PM -0500 (EST)
Attachments: TC2S14 Spring Outage Plan.xlsm;

All,

For those of you not on site, the TC2 Spring Outage has been pushed out a week and now scheduled to come offline Feb. 7th, 2014. Any changes will be evaluated day by day.

Please notify your contractors and reschedule with the understanding things are always subject to change.

Our apologies for any inconvenience.

Also attached is the Outage Plan that we will present to Ralph in the upcoming weeks. Please review and provide me with updates such as schedule start and finish dates, budget cost estimates, detailed inspection scopes, etc...

I will need this information by noon Wednesday, Jan. 29th, 2014 in order to compile into outage plan document. We will meet on Thursday for review of shutdown process and the first week of work for the outage.

Thanks,

David W. Anderson

Trimble County Outage Coordinator
Tel. 502-627-6313
Fax 502-217-2199
email: dave.anderson@lge-ku.com

Produced as Native

Original File Name: TC2S14 Spring Outage Plan.xlsm

Stored File Name: OpenText00253371.xlsm

Attachment to Response to KIUC-1 Question No. 30(f)

Production 2

Page 414 of 1143

Thompson

From: Anderson, Dave (Trimble County)(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=ANDERSOND)
To: Afiyet, Hamit; Ball, Adam; Bethany, Ron; Boone, James; Bullock, Sam; Byrd, Larry; Cash, Rebecca; Chin, Doug; Craft, Jim; Dorwart, Jordan; Dukes, Christopher; Feider, Ryan; Gilliland, Dave; Gray, Jeffrey; Griffith, Michelle; Hance, Chuck; Hannon, Hannah; Hayes, Christopher; Heinz, John; Henderson, Trent; Hudson, Glen; Jensen, Jack; Jones, Steve; Joyce, Jeff; Joyce, Kenny; Maldonado, Francisco; Melloan, Ricky; Menezes, Tomas; Mills, Ricky; Mohn, Laura; Moore, Emmett; Noonan, Kenny; Payne, Nicholas; Phelps, Grant; Powell, Richard; Rabe, Phil; Raker, Adam; Ransdell, Charles; Sanders, Matt; Sedam, Dale; Simpson, Jeff; Slaughter, Mitch; Stewart, Robert E. (Trimble); Thomas, Mark; Thurston, Eric; Turner, Haley; Turner, Tyler; Walcott, Danny; Park, Marci
CC:
BCC:
Subject: TC2 Outage Plan Document
Sent: 01/30/2014 08:35:00 AM -0500 (EST)
Attachments: TC2S14 Spring Outage Plan.xlsm;

David W. Anderson

Trimble County Outage Coordinator
Tel. 502-627-6313
Fax 502-217-2199
email: dave.anderson@lge-ku.com

Produced as Native

Original File Name: TC2S14 Spring Outage Plan.xlsm

Stored File Name: OpenText00253373.xlsm

From: Anderson, Dave (Trimble County)(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=ANDERSON)
To: Afiyet, Hamit; Ball, Adam; Bethany, Ron; Boone, James; Bullock, Sam; Byrd, Larry; Cash, Rebecca; Chin, Doug; Craft, Jim; Dorwart, Jordan; Dukes, Christopher; Feider, Ryan; Gilliland, Dave; Gray, Jeffrey; Griffith, Michelle; Hance, Chuck; Hannon, Hannah; Hayes, Christopher; Heinz, John; Henderson, Trent; Hudson, Glen; Jensen, Jack; Jones, Steve; Joyce, Jeff; Joyce, Kenny; Maldonado, Francisco; Melloan, Ricky; Menezes, Tomas; Mills, Ricky; Mohn, Laura; Moore, Emmett; Noonan, Kenny; Payne, Nicholas; Phelps, Grant; Powell, Richard; Rabe, Phil; Raker, Adam; Ransdell, Charles; Sanders, Matt; Sedam, Dale; Simpson, Jeff; Slaughter, Mitch; Stewart, Robert E. (Trimble); Thomas, Mark; Thurston, Eric; Turner, Haley; Turner, Tyler; Walcott, Danny
CC:
BCC:
Subject: TC2 Updated Spring Outage Plan
Sent: 01/29/2014 10:56:30 AM -0500 (EST)
Attachments: TC2S14 Spring Outage Plan.xlsm;

All,

Attached is the latest updated TC2 Spring outage plan.

I am constantly updating this document daily.

I added a tab at the very end after the "Post Outage" tab. This tab is scope of coal stacker reclaimers cable replacement. I will add a tab for each scope I receive that was requested in an earlier email once received.

Thanks for everyone's input and hard work. Keep it coming!

Thanks,

David W. Anderson

Trimble County Outage Coordinator
Tel. 502-627-6313
Fax 502-217-2199
email: dave.anderson@lge-ku.com

Produced as Native

Original File Name: TC2S14 Spring Outage Plan.xlsm

Stored File Name: OpenText00253378.xlsm

From: Anderson, Dave (Trimble County)(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=ANDERSOND)
To: Afiyet, Hamit; Ball, Adam; Bethany, Ron; Boone, James; Bullock, Sam; Byrd, Larry; Chin, Doug; Cratt, Jim; Dorwart, Jordan; Dukes, Christopher; Feider, Ryan; Gilliland, Dave; Gray, Jeffrey; Griffith, Michelle; Hance, Chuck; Hannon, Hannah; Hayes, Christopher; Heinz, John; Henderson, Trent; Hudson, Glen; Jensen, Jack; Jones, Steve; Joyce, Jeff; Joyce, Kenny; Maldonado, Francisco; Melloan, Ricky; Menezes, Tomas; Mills, Ricky; Mohn, Laura; Moore, Emmett; Noonan, Kenny; Payne, Nicholas; Phelps, Grant; Powell, Richard; Rabe, Phil; Raker, Adam; Ransdell, Charles; Sanders, Matt; Sedam, Dale; Simpson, Jeff; Slaughter, Mitch; Stewart, Robert E. (Trimble); Thomas, Mark; Thurston, Eric; Turner, Haley; Turner, Tyler; Walcott, Danny
CC:
BCC:
Subject: TC2S14 Outage Planning
Sent: 01/06/2014 01:51:39 PM -0500 (EST)
Attachments: Doosan TC U2 12 09 13 Rev B.PDF; TC2S14 Spring Outage Gantt Chart.xlsx;

All,

Attached is the latest and only Doosan schedule I have received to date for the upcoming Spring outage at the end of this month. Also attached is the latest list of LG&E scheduled work. I reviewed all the work orders today and this list should be current. Please review and make sure all planned tasks are in this list and work orders have been generated.

Laura, Nick and Tyler- If you could please meet with your planners and make sure cost estimates have been entered on the work orders so we can provide Fred with a good outage cost estimate.

Also for all that have contractors- check out map on my desk and make sure space is reserved for any trailers or equipment. Matt Churchman is going to be updating this tomorrow so get with him if the map is not on my desk.

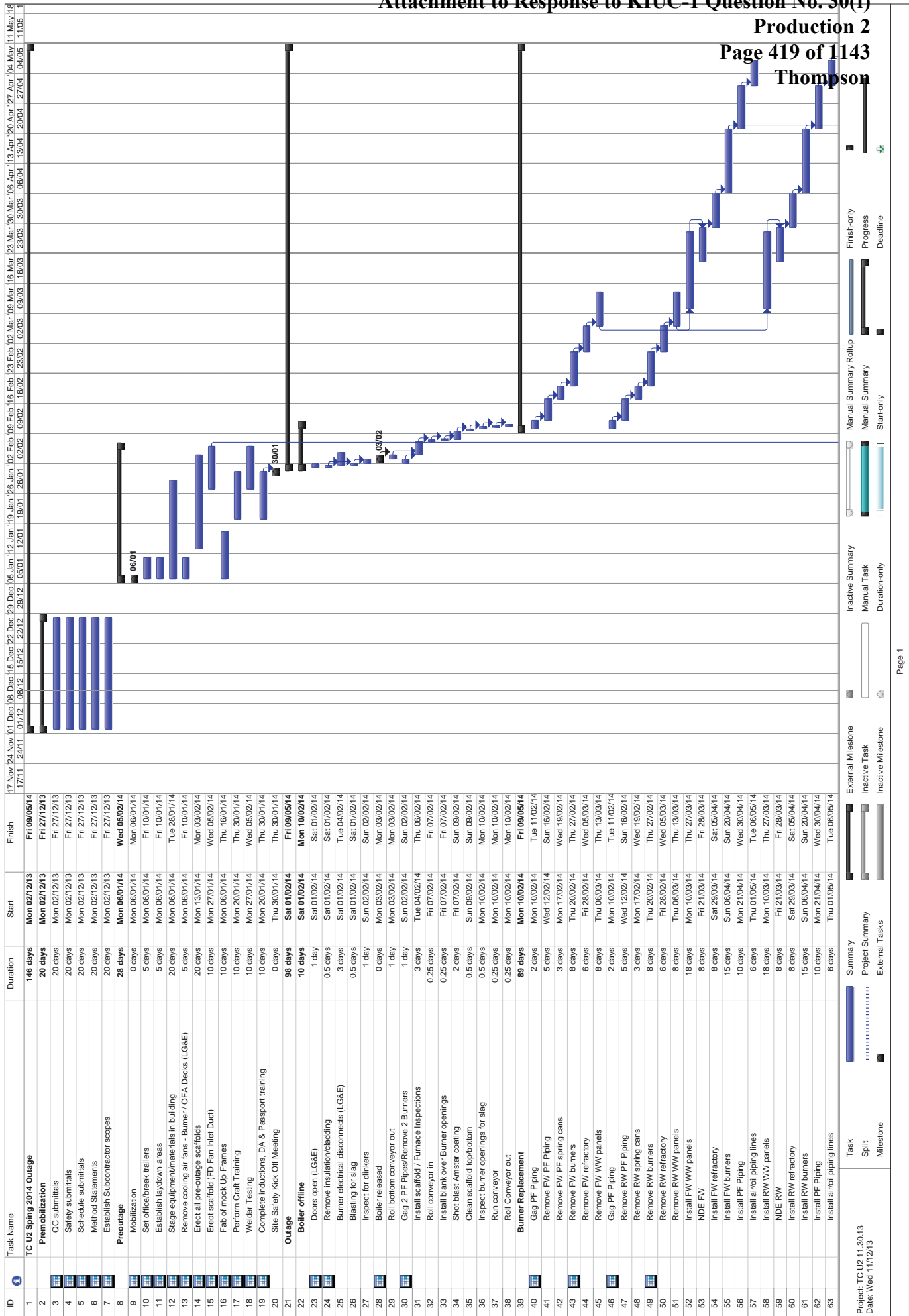
Hopefully, I will return next week and I will schedule a meeting for later in the week.

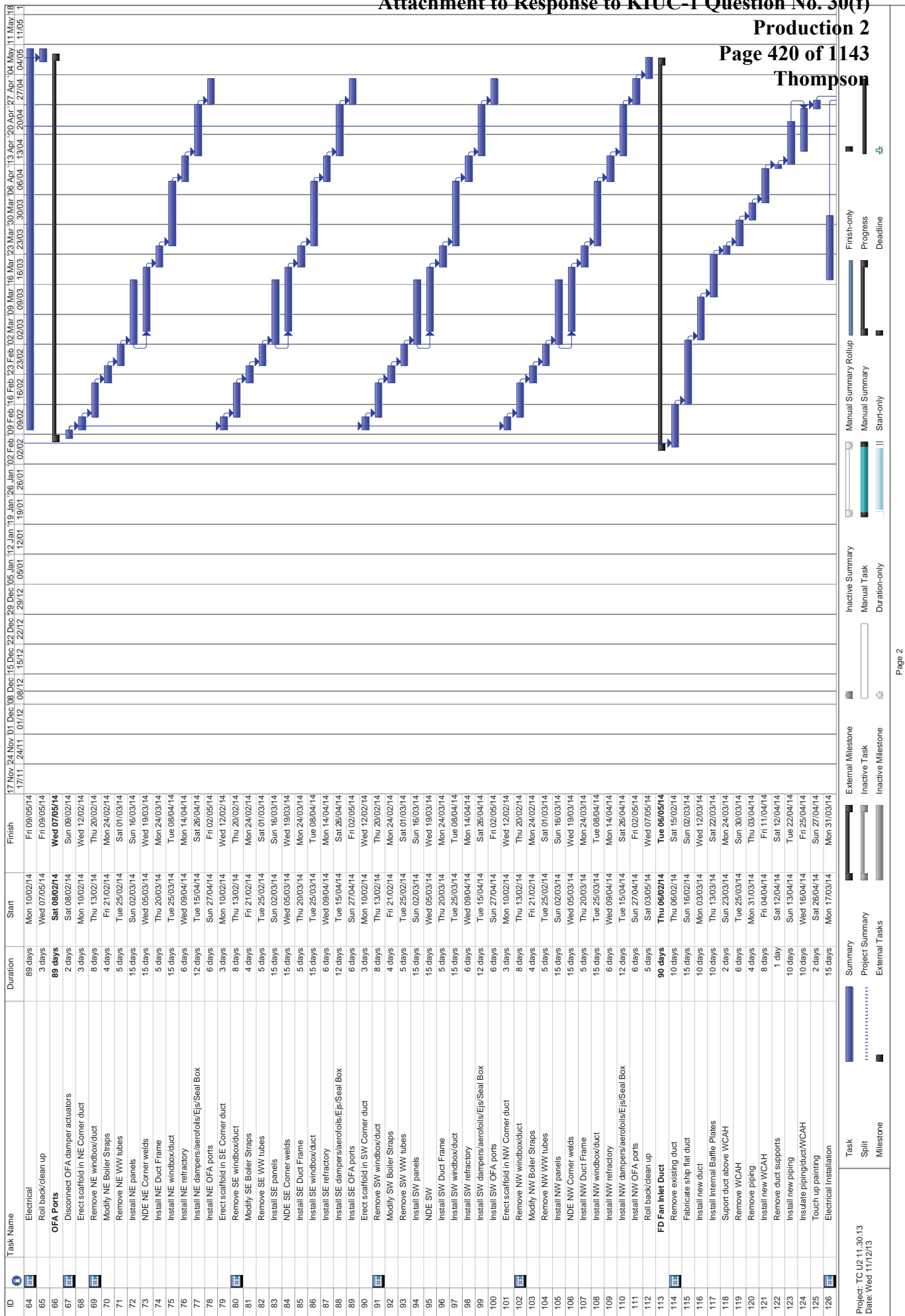
Please do not forward the attachments to Bechtel unless approved by Jeff and Larry. It contains financial information.

Thanks,

David W. Anderson

Trimble County Outage Coordinator
Tel. 502-627-6313
Fax 502-217-2199
email: dave.anderson@lge-ku.com





■ External Milestone
■ Inactive Task
■ Inactive Milestone
■ Summary
■ Project Summary
■ External Tasks
■ Task
■ Split
■ Milestone
■ Manual Summary Rollup
■ Manual Summary
■ Start-only
■ Inactive Summary
■ Manual Task
■ Duration-only
■ Finish-only
■ Progress
■ Deadline

ID	Task Name	Duration	Start	Finish
127	Modify access platforms	20 days	Mon 07/04/14	Sat 26/04/14
128	Scaffold removed	4 days	Mon 28/04/14	Thu 01/05/14
129	Roll back/clean up	5 days	Fri 02/05/14	Tue 06/05/14
130	Scotblower Piping	94 days	Mon 03/02/14	Wed 07/05/14
131	Install weather protection	1 wk	Mon 03/02/14	Fri 07/02/14
132	Relocate roof vent fan/electrical	5 days	Mon 10/02/14	Fri 14/02/14
133	Install 2 new silencers	8 days	Sat 15/02/14	Sat 22/02/14
134	Restare roof	3 days	Sun 23/02/14	Tue 25/02/14
135	Remove tie-in points	10 days	Mon 03/02/14	Wed 12/02/14
136	Install supports/steel/bachtel steel upgrades	20 days	Thu 13/02/14	Tue 04/03/14
137	Fab/install piping	30 days	Sun 23/02/14	Mon 24/03/14
138	Install tie-ins	5 days	Tue 25/03/14	Sat 29/03/14
139	Bulk of system insulation	15 days	Sun 30/03/14	Sun 13/04/14
140	Electrical	30 days	Fri 28/02/14	Sat 29/03/14
141	Pressure Test/System Flush	3 days	Mon 14/04/14	Wed 16/04/14
142	Complete painting/insulation	10 days	Thu 17/04/14	Sat 26/04/14
143	Remove gags/ser spring cans	3 days	Sun 27/04/14	Tue 29/04/14
144	Scaffold removed	5 days	Wed 30/04/14	Sun 04/05/14
145	Roll back/clean up	3 days	Mon 05/05/14	Wed 07/05/14
146	Misc Scope	92 days	Fri 07/02/14	Fri 09/05/14
147	Inspect Furnace Dipper Plate	2 days	Fri 07/02/14	Sat 08/02/14
148	Replace Seal Air non-return dampers	3 days	Sun 09/02/14	Tue 11/02/14
149	Inspect PF Piping	3 days	Wed 12/02/14	Fri 14/02/14
150	Inspect ID Fan sensing lines	5 days	Sat 15/02/14	Wed 19/02/14
151	Inspect PA flow elements	5 days	Thu 20/02/14	Mon 24/02/14
152	Insulate sonic horns	15 days	Mon 17/03/14	Mon 31/03/14
153	Instal 30 PF office plates	45 days	Tue 25/02/14	Thu 10/04/14
154	Anstart installation support	5 days	Mon 21/04/14	Fri 25/04/14
155	Fan In Service (LG&E)	1 day	Sat 26/04/14	Sat 26/04/14
156	Roll conveyor out	1 day	Sun 27/04/14	Sun 27/04/14
157	Remove furnace scaffold	3 days	Mon 28/04/14	Wed 30/04/14
158	Install conveyor	1 day	Thu 01/05/14	Thu 01/05/14
159	Shut Boiler Doors (LG&E)	2 days	Fri 02/05/14	Sat 03/05/14
160	Roll back/clean up	6 days	Sun 04/05/14	Fri 09/05/14



Project: TC Up 11_30-13
Date: Wed 11/12/13

Task Split Milestone

Summary Project Summary External Tasks

External Milestone Inactive Task Inactive Milestone

Inactive Summary Manual Task Duration-only

Manual Summary Rollup Manual Summary Start-only

Finish-only Progress Deadline

Produced as Native

Original File Name: TC2S14 Spring Outage Gantt Chart.xlsx

Stored File Name: OpenText00253383.xlsx

From: Anderson, Dave (Trimble County)(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=ANDERSOND)
To: Afiyet, Hamit; Ball, Adam; Bethany, Ron; Boone, James; Bullock, Sam; Byrd, Larry; Cash, Rebecca; Chin, Doug; Craft, Jim; Dorwart, Jordan; Dukes, Christopher; Feider, Ryan; Gilliland, Dave; Gray, Jeffrey; Griffith, Michelle; Hance, Chuck; Hannon, Hannah; Hayes, Christopher; Heinz, John; Henderson, Trent; Hudson, Glen; Jensen, Jack; Jones, Steve; Joyce, Jeff; Joyce, Kenny; Maldonado, Francisco; Melloan, Ricky; Menezes, Tomas; Mills, Ricky; Mohn, Laura; Moore, Emmett; Noonan, Kenny; Park, Marci; Payne, Nicholas; Phelps, Grant; Powell, Richard; Rabe, Phil; Raker, Adam; Ransdell, Charles; Sanders, Matt; Sedam, Dale; Simpson, Jeff; Slaughter, Mitch; Stewart, Robert E. (Trimble); Thomas, Mark; Thurston, Eric; Turner, Haley; Turner, Tyler; Walcott, Danny
CC:
BCC:
Subject: TC2S14 Spring Outage Plan.xlsm
Sent: 01/30/2014 01:19:17 PM -0500 (EST)
Attachments: TC2S14 Spring Outage Plan.xlsm;

Sorry,

More scopes added to attached document.

David W. Anderson

Trimble County Outage Coordinator
Tel. 502-627-6313
Fax 502-217-2199
email: dave.anderson@lge-ku.com

Produced as Native

Original File Name: TC2S14 Spring Outage Plan.xlsm

Stored File Name: OpenText00253385.xlsm

From: Anderson, Dave (Trimble County)(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=ANDERSOND)
To: Afiyet, Hamit; Ball, Adam; Bethany, Ron; Boone, James; Bullock, Sam; Byrd, Larry; Cash, Rebecca; Chin, Doug; Craft, Jim; Dorwart, Jordan; Dukes, Christopher; Feider, Ryan; Gilliland, Dave; Gray, Jeffrey; Griffith, Michelle; Hance, Chuck; Hannon, Hannah; Hayes, Christopher; Heinz, John; Henderson, Trent; Hudson, Glen; Jensen, Jack; Jones, Steve; Joyce, Jeff; Joyce, Kenny; Maldonado, Francisco; Melloan, Ricky; Menezes, Tomas; Mills, Ricky; Mohn, Laura; Moore, Emmett; Noonan, Kenny; Park, Marci; Payne, Nicholas; Phelps, Grant; Powell, Richard; Rabe, Phil; Raker, Adam; Ransdell, Charles; Sanders, Matt; Sedam, Dale; Simpson, Jeff; Slaughter, Mitch; Stewart, Robert E. (Trimble); Thomas, Mark; Thurston, Eric; Turner, Haley; Turner, Tyler; Walcott, Danny
CC:
BCC:
Subject: TC2S14 Spring Outage Plan.xlsm
Sent: 02/05/2014 12:49:56 PM -0500 (EST)
Attachments: TC2S14 Spring Outage Plan_201405063952900004644_403022A3.zip; Outage Programme - Preliminary Issue (13-01-31)_201405064785400004644_69D351....zip; TC2 2014 Weekend and First week Coordination_201405065125400004644_4C315130.zip;

All,

For today's meeting we will discuss the first 7 days of outage. I have provided documents consisting of: Outage Plan, The first weekend and week of outage planning and Doosan's latest schedule.

Thanks,

David W. Anderson

Trimble County Outage Coordinator
Tel. 502-627-6313
Fax 502-217-2199
email: dave.anderson@lge-ku.com

TC U2 Spring 2014 Outage		Trimble County - Outage Programme - Preliminary												31-Jan-14 16:02												
Activity ID	Activity Name	Start	Finish	February 2014			March 2014			April 2014			May 2014			June 2014										
				03	10	17	24	03	10	17	24	31	07	14	21	28	05	12	19	26	02	09	16	23		
TC U2 Spring 2014 Outage																										
Key Milestones																										
M1000	Boiler Off Load	08-Feb-14*	18-May-14																							
M1010	Gas Path Permit Cancellation	08-Feb-14*	04-May-14																							
M1020	Issue Permit FD Fan	05-May-14	04-May-14																							
M1030	Unit Outage Completion	18-May-14*	18-May-14																							
Premobilization																										
Preoutage																										
Outage																										
Boiler Offline																										
A1150	Boiler Offline/Doors Open (LG&E)	08-Feb-14	18-May-14																							
A1160	Remove insulation/cladding on Burners	08-Feb-14	13-Feb-14																							
A1170	Burner electrical disconnects (LG&E)	08-Feb-14	10-Feb-14																							
A1180	Blasting for Slag	08-Feb-14	08-Feb-14																							
A1190	Inspect for clinkers	08-Feb-14	08-Feb-14																							
A1340	Boiler Water Wash (LG&E)	08-Feb-14	09-Feb-14																							
A1310	Roll Conveyor Out	09-Feb-14	09-Feb-14																							
A1200	Boiler Released	10-Feb-14	09-Feb-14																							
A1220	Gag 2 PF Pipes/Remove 2 Burners	10-Feb-14	10-Feb-14																							
A1230	Install scaffold	10-Feb-14	13-Feb-14																							
A1235	Remove burner bolts/disconnect hoses	10-Feb-14	12-Feb-14																							
A1206	Remove coal pipe elbows East Wall	10-Feb-14	17-Feb-14																							
A1225	Temporary Cover on exterior wall	10-Feb-14	12-Feb-14																							
A1216	Remove coal pipe elbows West Wall	10-Feb-14	17-Feb-14																							
A1240	Roll conveyor in	13-Feb-14	13-Feb-14																							
A1250	Install blank over Burner openings	13-Feb-14	13-Feb-14																							
A1330	Mark off area for Anstar shot blast	13-Feb-14	13-Feb-14																							
A1260	Shot blast/Anstar coating	13-Feb-14	14-Feb-14																							
A1270	Clean Scaffold top/bottom	14-Feb-14	15-Feb-14																							
A1280	Inspect burner openings for slag	15-Feb-14	15-Feb-14																							
A1285	Remove Slag debris from Burner Throats	15-Feb-14	17-Feb-14																							
A1290	Run Conveyor (LG&E)	17-Feb-14	18-Feb-14																							
A1300	Roll Conveyor out	18-Feb-14	18-Feb-14																							
Burner Replacement																										
FW Burners																										
A1320	Remove ignitor air piping for burners 1-5	10-Feb-14	18-Apr-14																							
A2580	Stage/set up rigging for burner removal	11-Feb-14	12-Feb-14																							
A2640	Remove PF Knife Valves 1 - 5	14-Feb-14	16-Feb-14																							
A1350	Remove burners 1 - 5	17-Feb-14	22-Feb-14																							
A1370	Establish cut lines for panels 1-5	22-Feb-14	23-Feb-14																							
A1355	Remove Quarries	22-Feb-14	23-Feb-14																							
A1380	Saw cut panels 1 - 5	23-Feb-14	24-Feb-14																							
A1360	Stage/set up rigging for panel removal	23-Feb-14	24-Feb-14																							
A1390	Remove panels & seal box 1 - 5	24-Feb-14	26-Feb-14																							
A1400	Machine/prep panels 1-5	26-Feb-14	01-Mar-14																							
A1410	Fit and tack panels 1-5	01-Mar-14	04-Mar-14																							

Thompson

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TASK filter: All Activities

Page 1 of 12

31-Jan-14 16:02

Trimble County - Outage Programme - Preliminary

Thompson

Activity ID	Activity Name	Start	Finish	February 2014				March 2014				April 2014				May 2014				June 2014			
				03	10	17	24	03	10	17	24	07	14	21	28	05	12	19	26	02	09	16	23
A1710	Fit and tack panels 11 - 15	15-Mar-14	18-Mar-14																				
A1720	Weld out panels 11 - 15	18-Mar-14	22-Mar-14																				
A1730	NDE panels 11 - 15	22-Mar-14	24-Mar-14																				
A1733	Install peanuts/membrane	24-Mar-14	27-Mar-14																				
A1738	Install burners/confirm burner alignment 11	27-Mar-14	02-Apr-14																				
A1739	Fit & Weld Seal Box/Window seal plate	02-Apr-14	04-Apr-14																				
A2600	Field weld Burner front plate to mounting rin	02-Apr-14	04-Apr-14																				
A1745	Reinstall refractory	04-Apr-14	06-Apr-14																				
A1750	Reinstall Knife gate	06-Apr-14	08-Apr-14																				
A1755	Reinstall cooling air	08-Apr-14	10-Apr-14																				
A1760	Install Beck Drives	10-Apr-14	12-Apr-14																				
A4080	Install ignitors/oil gun/flame monitor burners	12-Apr-14	13-Apr-14																				
A1765	Reinstall igniter air piping for burners 11 - 1	13-Apr-14	15-Apr-14																				
A4090	Cold Commissioning burners 11 - 15	15-Apr-14	18-Apr-14																				
Cooling fans																							
A5650	Disconnect Electrical by LG&E	03-Feb-14*	04-Feb-14																				
A5660	Disconnect from ductwork	04-Feb-14	05-Feb-14																				
A5670	Unbolt from floor & store	05-Feb-14	06-Feb-14																				
A5650	Re-instate Cooling fans / electrical connecto	25-Apr-14	29-Apr-14																				
RW Burners																							
A1770	Remove cooling air fans (LG&E)	01-Feb-14	04-Feb-14																				
A1780	Remove igniter air piping for burners 16 - 20	10-Feb-14*	11-Feb-14																				
A1790	Stage/set up rigging for burner removal	11-Feb-14	12-Feb-14																				
A7030	Remove PF Knife Valves 16 - 20	16-Feb-14	18-Feb-14																				
A1800	Remove burners 16 - 20	19-Feb-14	24-Feb-14																				
A1810	Remove Quart tiles	24-Feb-14	26-Feb-14																				
A1820	Stage/set up rigging for panel removal	26-Feb-14	27-Feb-14																				
A1830	Establish cut lines for panels 16 - 20	27-Feb-14	28-Feb-14																				
A1840	Saw cut panels 16 - 20	28-Feb-14	02-Mar-14																				
A1850	Remove panels & seal box 16 - 20	02-Mar-14	04-Mar-14																				
A1860	Machine/prep panels 16 - 20	04-Mar-14	07-Mar-14																				
A1870	Fit and tack panels 16 - 20	07-Mar-14	10-Mar-14																				
A1880	Weld out panels 16 - 20	10-Mar-14	15-Mar-14																				
A1890	NDE Panels 16 - 20	15-Mar-14	17-Mar-14																				
A1895	Install peanuts/membrane	17-Mar-14	20-Mar-14																				
A1910	Install burners/confirm burner alignment 16	20-Mar-14	27-Mar-14																				
A1912	Fit & Weld Seal Box/Window Seal Plate	27-Mar-14	28-Mar-14																				
A2610	Field weld Burner front plate to mounting rin	27-Mar-14	28-Mar-14																				
A1915	Reinstall refractory	28-Mar-14	30-Mar-14																				
A1920	Reinstall Knife gate	30-Mar-14	01-Apr-14																				
A1925	Reinstall cooling air	01-Apr-14	03-Apr-14																				
A1935	Install Beck Drive	03-Apr-14	05-Apr-14																				
A4100	Install ignitors/oil gun/flame monitor burners	05-Apr-14	07-Apr-14																				
A1930	Reinstall igniter piping for burners 16 - 20	07-Apr-14	09-Apr-14																				
A4110	Cold Commissioning burners 16 - 20	09-Apr-14	12-Apr-14																				
A7040	Remove PF Knife Valves 21 - 25	18-Feb-14	20-Feb-14																				
A1940	Remove igniter piping for burners 21 - 25	24-Feb-14	25-Feb-14																				

Remaining Level of Effort Remaining Work Critical Remaining Work Milestone Critical Mil...

Actual Work

Page 3 of 12

TASK filter: All Activities

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31-Jan-14 16:02

Trimble County - Outage Programme - Preliminary

Activity ID	Activity Name	Start	Finish	February 2014				March 2014				April 2014				May 2014				June 2014						
				03	10	17	24	03	10	17	24	31	07	14	21	28	05	12	19	26	02	09	16	23		
A1960	Stage/set up rigging for burner removal	25-Feb-14	25-Feb-14																							
A1970	Remove burners 21 - 25	25-Feb-14	01-Mar-14																							
A1980	Remove Quartz tiles	01-Mar-14	03-Mar-14																							
A1990	Stage/set up rigging for panel removal	03-Mar-14	04-Mar-14																							
A2000	Establish cut lines for panels 21 - 25	04-Mar-14	05-Mar-14																							
A2010	Saw cut panels 21 - 25	05-Mar-14	07-Mar-14																							
A2020	Remove panels & Seal box 21 - 25	07-Mar-14	09-Mar-14																							
A2030	Machine/prep panels 21 - 25	09-Mar-14	12-Mar-14																							
A2040	Fit and tack panels 21 - 25	12-Mar-14	15-Mar-14																							
A2050	Weld out panels 21 - 25	15-Mar-14	19-Mar-14																							
A2060	NDE panels 21 - 25	19-Mar-14	20-Mar-14																							
A2065	Install peanuts/membrane	20-Mar-14	23-Mar-14																							
A2070	Install burners/confirm burner alignment 21	27-Mar-14	02-Apr-14																							
A2075	Fit & Weld Seal Box/Windbox Seal Plate	02-Apr-14	04-Apr-14																							
A2820	Field weld Burner front plate to mounting rin	02-Apr-14	04-Apr-14																							
A2080	Reinstall refractory	04-Apr-14	06-Apr-14																							
A2085	Reinstall Knife gate	06-Apr-14	08-Apr-14																							
A2090	Reinstall cooling air	08-Apr-14	10-Apr-14																							
A2105	Install Beck Drive	10-Apr-14	12-Apr-14																							
A4120	Install ignitors/oil gun/flame monitor burners	12-Apr-14	13-Apr-14																							
A4130	Reinstall igniler piping for burners 21 - 25	13-Apr-14	15-Apr-14																							
A4130	Cold Commissioning burners 21 - 25	15-Apr-14	18-Apr-14																							
A7050	Remove PF Knife Valves 26 - 30	20-Feb-14	22-Feb-14																							
A2110	Remove igniter piping for burners 26 - 30	01-Mar-14	02-Mar-14																							
A2130	Stage/set up rigging for burner removal	02-Mar-14	03-Mar-14																							
A2140	Remove burners 26 - 30	03-Mar-14	07-Mar-14																							
A2150	Remove Quartz tiles	07-Mar-14	09-Mar-14																							
A2160	Stage/set up rigging for panel removal	09-Mar-14	10-Mar-14																							
A2170	Establish cut lines for panels 26 - 30	10-Mar-14	11-Mar-14																							
A2180	Saw cut panels 26 - 30	11-Mar-14	13-Mar-14																							
A2190	Remove panels/Seal Box 26 - 30	13-Mar-14	15-Mar-14																							
A2200	Machine/prep panels 26 - 30	15-Mar-14	17-Mar-14																							
A2210	Fit and tack panels 26 - 30	17-Mar-14	20-Mar-14																							
A2220	Weld out panels 26 - 20	20-Mar-14	24-Mar-14																							
A2230	NDE panels 26 - 30	24-Mar-14	26-Mar-14																							
A2235	Install peanuts/membrane	26-Mar-14	29-Mar-14																							
A2250	Install burners/confirm burner alignment 26	02-Apr-14	09-Apr-14																							
A2252	Fit & Weld Seal Box/Windbox Seal Plate	09-Apr-14	11-Apr-14																							
A2830	Field weld Burner front plate to mounting rin	09-Apr-14	11-Apr-14																							
A2255	Reinstall refractory	11-Apr-14	13-Apr-14																							
A2265	Reinstall knife gate	13-Apr-14	15-Apr-14																							
A2267	Reinstall cooling air	15-Apr-14	17-Apr-14																							
A2275	Install Beck drive	17-Apr-14	19-Apr-14																							
A4140	Install ignitors/oil gun/flame monitor burners	19-Apr-14	21-Apr-14																							
A2270	Reinstall igniter piping for burners 26 - 30	21-Apr-14	23-Apr-14																							
A4150	Cold Commissioning burners 26 - 30	23-Apr-14	26-Apr-14																							
Electrical																										

█ Remaining Level of Effort █ Remaining Work █ Critical Remaining Work
█ Actual Work █ Critical Milestone █ Milestone

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Activity ID	Activity Name	Start	Finish	February 2014	March 2014	April 2014	May 2014	June 2014
A2280	16th Floor Elevation GAH Sootblower SMR 0159	12-Feb-14	28-Feb-14	Remove/Protect any cables hardware, etc for and/or during installation				
A2400	Cable trays/conduit cables 16th floor elev	12-Feb-14	15-Feb-14					
A2430	Hardware 16th floor elevation	16-Feb-14	20-Feb-14					
A2440	Hardware 16th floor elevation	21-Feb-14	28-Feb-14					
A6370	Section Valve Station GAH Sootblower	28-Feb-14	01-Apr-14					
A6380	Cable trays/Conduit	28-Feb-14	10-Mar-14					
A6390	Cables	10-Mar-14	16-Mar-14					
A6390	Hardware	16-Mar-14	22-Mar-14					
A6400	Terminate and gland cables loop checks	22-Mar-14	01-Apr-14					
A6410	OFA	15-Feb-14	11-Apr-14					
A6420	Remove/protect any cables hardware etc for	15-Feb-14	16-Feb-14					
A6420	Disconnect supply at damper	16-Feb-14	18-Feb-14					
A6430	Reconnect supply and loop checks	10-Apr-14	11-Apr-14					
A6440	Burners	10-Feb-14	02-May-14					
A6490	Remove/protect any cables hardware for an	15-Feb-14	25-Feb-14					
A6500	Front Wall Middle Row Cable Trays Conduit	10-Feb-14	01-Mar-14					
A6510	Front Wall Middle Row Cables	22-Feb-14	19-Mar-14					
A6520	Front Wall Middle Row Terminate & Gland c	04-Apr-14	09-Apr-14					
A6530	Front Wall bottom row cable trays conduit	16-Feb-14	07-Mar-14					
A6540	Front Wall bottom row cables	03-Mar-14	22-Mar-14					
A6540	Front Wall Bottom Row terminate & gland c	10-Apr-14	25-Apr-14					
A6460	Front Wall Top Row Cable Trays Conduit	21-Feb-14	12-Mar-14					
A6470	Front Wall Top Row Cables	07-Mar-14	26-Mar-14					
A6480	Front Wall Top Row Terminate & Gland Ca	29-Mar-14	13-Apr-14					
A6610	Rear Wall bottom row cable trays conduit	15-Feb-14	06-Mar-14					
A6620	Rear Wall bottom row cables	02-Mar-14	21-Mar-14					
A6630	Rear Wall Bottom Row terminate & gland c	17-Apr-14	02-May-14					
A6590	Rear Wall Middle Row Cable Trays Conduit	20-Feb-14	11-Mar-14					
A6590	Rear Wall Middle Row Cables	08-Mar-14	02-Apr-14					
A6600	Rear Wall Middle Row Terminate & Gland c	10-Apr-14	25-Apr-14					
A6550	Rear Wall Top Row Cable Trays Conduit	26-Feb-14	17-Mar-14					
A6560	Rear Wall Top Row Cables	13-Mar-14	01-Apr-14					
A6570	Rear Wall Top Row Terminate & Gland Cab	03-Apr-14	18-Apr-14					
A6450	Hardware Cabinets power Rto/Marshaling	17-Mar-14*	25-Mar-14					
A2290	Roll back/clean up	03-May-14	04-May-14					
A4160	PF Pipes	10-Feb-14	18-Apr-14					
A4240	Front Wall	10-Feb-14	10-Feb-14					
A4250	Gag all necessary spring cans Upper Level	10-Feb-14	10-Feb-14					
A4260	Temp Support for loose end PF Sections U	11-Feb-14	12-Feb-14					
A4270	Removal of PF Knife Valve Upper Level	14-Feb-14	16-Feb-14					
A4180	Remove PF Pipe Upper Level	17-Feb-14	20-Feb-14					
A4200	Clean up and remove debris and loose mat	21-Feb-14	21-Feb-14					
A4210	Gag all necessary spring cans Middle Level	11-Feb-14	11-Feb-14					
A4220	Temp Support for loose end PF sections Ml	12-Feb-14	13-Feb-14					
A4230	Removal of PF Knife Valves Middle Level	16-Feb-14	18-Feb-14					
A4230	Rig & Remove PF Pipe Middle Level	18-Feb-14	22-Feb-14					
A4230	Clean up and remove debris and lose mate	22-Feb-14	23-Feb-14					

Remaining Level of Effort Remaining Work Milestone Critical Remaining Work Critical Mill...

Actual Work

Legend:

- ▼ 04-May-14, Roll back/Clean up
- Roll back/Clean up
- 18-Apr-14, PF Pipe
- 10-Apr-14, Front Wall

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Activity ID	Activity Name	Start	Finish	February 2014				March 2014				April 2014				May 2014				June 2014				
				03	10	17	24	03	10	17	24	07	14	21	28	05	12	19	26	02	09	16	23	
A4190	Gag all necessary spring cans Lower Level	12-Feb-14	12-Feb-14																					
A4280	Temp Support for loose end PF sections Mezz/Lower Level	13-Feb-14	14-Feb-14																					
A4290	Removal of PF Knife valve Mezz/Lower Level	18-Feb-14	20-Feb-14																					
A4300	Remove PF Pipe Mezz/Lower Level	20-Feb-14	26-Feb-14																					
A4310	Clean up and remove debris and loose mat	26-Feb-14	27-Feb-14																					
A4470	PF Pipe Off Site for Modification By others	26-Feb-14	26-Mar-14																					
A4660	Strengthen steel/trimmer steel	27-Feb-14	13-Mar-14																					
A4510	PF Pipe Support Modifications Upper Level	27-Feb-14	23-Mar-14																					
A4690	Remove Temporary Supports Upper Level	19-Mar-14	20-Mar-14																					
A4550	Stage Modified PF Piping	26-Mar-14	28-Mar-14																					
A4570	Install Modified PF Piping Upper Level	28-Mar-14	01-Apr-14																					
A4750	Remove Spring Can Gags Upper Level	06-Apr-14	07-Apr-14																					
A4500	PF Pipe Support Modifications Middle Level	09-Mar-14	02-Apr-14																					
A4580	Install Modified PF Piping Middle Level	01-Apr-14	05-Apr-14																					
A4700	Remove Temporary Supports Middle Level	02-Apr-14	04-Apr-14																					
A4780	Remove Spring Can Gags Middle Level	07-Apr-14	08-Apr-14																					
A4490	PF Pipe Support Modifications Lower Level	05-Mar-14	29-Mar-14																					
A4710	Remove Temporary Supports Lower Level	04-Apr-14	06-Apr-14																					
A4590	Install Modified PF Piping Mezz/Lower Level	05-Apr-14	09-Apr-14																					
A4770	Remove Spring Can Gags Lower Level	08-Apr-14	09-Apr-14																					
A4810	Supervisor Verify all gags removed	09-Apr-14	10-Apr-14																					
Rear Wall																								
A4320	Gag all necessary spring cans Upper Level	10-Feb-14	18-Apr-14																					
A4330	Gag all necessary spring cans Middle Level	10-Feb-14	10-Feb-14																					
A4350	Temp support for loose end PF Sections Up	11-Feb-14	11-Feb-14																					
A4360	Gag all necessary spring cans Lower Level	12-Feb-14	12-Feb-14																					
A4390	Temp support for loose end PF Sections Mi	12-Feb-14	13-Feb-14																					
A4430	Temp Support for loose end PF pipe Mezz/	13-Feb-14	14-Feb-14																					
A4360	Removal of PF Knife Valve Upper Level	16-Feb-14	18-Feb-14																					
A4370	Remove PF Pipe Upper Level	18-Feb-14	22-Feb-14																					
A4400	Removal of PF Knife Valve Middle Level	18-Feb-14	20-Feb-14																					
A4410	Remove PF Pipe Middle Level	20-Feb-14	22-Feb-14																					
A4440	Removal of PF Knife Valve Mezz/Lower Level	20-Feb-14	24-Feb-14																					
A4450	Remove PF Pipe Mezz/Lower Level	22-Feb-14	26-Feb-14																					
A4380	Clean up and remove debris and loose mat	22-Feb-14	23-Feb-14																					
A4420	Clean up and remove debris and loose mat	24-Feb-14	25-Feb-14																					
A4460	Clean up and remove debris and loose mat	27-Feb-14	27-Feb-14																					
A4480	PF Pipe off site for modifications by others	27-Feb-14	26-Mar-14																					
A4520	PF Pipe Support Modifications Upper Level	28-Feb-14	23-Mar-14																					
A4530	PF Pipe Support Modifications Middle Level	04-Mar-14	23-Mar-14																					
A4540	PF Pipe Support Modifications Lower Level	08-Mar-14	31-Mar-14																					
A4560	Stage Modified PF Piping	27-Mar-14	28-Mar-14																					
A4600	Install Modified PF Piping Upper Level	01-Apr-14	04-Apr-14																					
A4610	Install Modified PF Piping Middle Level	05-Apr-14	08-Apr-14																					
A4720	Remove Temporary Supports Upper Level	05-Apr-14	06-Apr-14																					
A4620	Install Modified PF Piping Mezz/Lower Level	09-Apr-14	12-Apr-14																					
A4730	Remove Temporary Supports Middle Level	09-Apr-14	10-Apr-14																					

Remaining Level of Effort █ Actual Work █ Remaining Work █ Critical Remaining Work ◆ Milestone ◆ Critical Mil... ◆

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Trimble County - Outage Programme - Preliminary

TC Uz Spring 2014 Outage

Activity ID	Activity Name	Start	Finish	February 2014				March 2014				April 2014				May 2014				June 2014			
				03	10	17	24	03	10	17	24	07	14	21	28	05	12	19	26	02	09	16	23
A4740	Remove Temporary Supports Lower Level	13-Apr-14	14-Apr-14																				
A4780	Remove Spring Can Gags Upper Level	15-Apr-14	15-Apr-14																				
A4790	Remove Spring Can Gags Middle Level	16-Apr-14	16-Apr-14																				
A4800	Remove Spring Can Gags Lower Level	17-Apr-14	17-Apr-14																				
A4820	Supervisor Verify all gags removed	18-Apr-14	18-Apr-14																				
OFA Ports																							
A2291	Remove insulation	10-Feb-14	25-Apr-14																				
A2301	Modify PF pipe Supports (all 4 corners)	10-Feb-14	15-Apr-14																				
A2295	Demo Dampers	10-Feb-14	12-Feb-14																				
A2292	Remove DP piping	12-Feb-14	19-Feb-14																				
A2294	Remove redundant ducting	12-Feb-14	14-Feb-14																				
A2298	Remove OFA register (1 per corner) & store	12-Feb-14	19-Feb-14																				
A2300	Remove south windbox/duct	12-Feb-14	12-Feb-14																				
A2304	Doors - Save for reinstallation	12-Feb-14	15-Feb-14																				
A2296	Modify scaffold for boiler straps	19-Feb-14	20-Feb-14																				
South East Corner																							
A2305	Install jacks	20-Feb-14	10-Apr-14																				
A2310	Modify support straps	20-Feb-14	20-Feb-14																				
A2315	Install OFA support frame	20-Feb-14	22-Feb-14																				
A2325	Assemble 90 duct & windbox	22-Feb-14	23-Feb-14																				
A2335	Fit & Weld Turning Vanes	23-Feb-14	05-Mar-14																				
A2790	Seal Weld 90 Duct	05-Mar-14	07-Mar-14																				
A2320	Establish cut lines	07-Mar-14	15-Mar-14																				
A2330	Stage/install rigging	22-Feb-14	23-Feb-14																				
A2340	Remove panel	23-Feb-14	24-Feb-14																				
A2350	Machine/prep panel	24-Feb-14	26-Feb-14																				
A2360	Fit/tack panel	26-Feb-14	01-Mar-14																				
A2370	Weld out/complete panel	01-Mar-14	03-Mar-14																				
A2380	NDE panel	03-Mar-14	05-Mar-14																				
A2390	Assemble Toggle	05-Mar-14	06-Mar-14																				
A2820	Reinstate Doors (3 locations)	06-Mar-14	16-Mar-14																				
A2328	Seal Weld Toggle OFA duct	12-Mar-14	23-Mar-14																				
A2410	Reinstall DP	15-Mar-14	23-Mar-14																				
A2415	Remove temp steel supports	16-Mar-14	17-Mar-14																				
A2830	Fit New OFA Register	23-Mar-14	25-Mar-14																				
A2840	Re-fit existing OFA Register	23-Mar-14	26-Mar-14																				
A2420	Reinstall insulation/lagging	26-Mar-14	27-Mar-14																				
North East Corner																							
A3400	Install jacks	24-Feb-14	15-Apr-14																				
A3410	Modify support straps	24-Feb-14	25-Feb-14																				
A3420	Install OFA support frame	25-Feb-14	27-Feb-14																				
A3430	Assemble 90 duct & windbox	27-Feb-14	28-Feb-14																				
A3440	Fit & Weld Turning Vanes	28-Feb-14	10-Mar-14																				
A3450	Seal Weld 90 Duct	10-Mar-14	12-Mar-14																				
A3460	Establish cut lines	12-Mar-14	20-Mar-14																				
A3470	Stage/install rigging	27-Feb-14	28-Feb-14																				

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■ Remaining Level of Effort
■ Actual Work
■ Remaining Work
◆ Critical Remaining Work
◆ Milestone
◆ Critical Milestone

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Trimble County - Outage Programme - Preliminary

TC Uz Spring 2014 Outage

Activity ID	Activity Name	Start	Finish	February 2014	March 2014	April 2014	May 2014	June 2014
				03 10 17 24 03 10 17 24 03 10 17 24 03 10 17 24 03 10 17 24 03 10 17 24				01 08 15 22 29 05 12 19 26 02 09 16 23
A3480	Remove panel	01-Mar-14	03-Mar-14					
A3490	Machine/prep panel	03-Mar-14	06-Mar-14	█				
A3500	Fit/track panel	06-Mar-14	08-Mar-14	█	█			
A3510	Weld out/complete panel	08-Mar-14	10-Mar-14	█	█			
A3520	NDE panel	10-Mar-14	10-Mar-14	█				
A3530	Assemble Toggle	10-Mar-14	20-Mar-14	█	█			
A3540	Reinstate Doors (3 locations)	16-Mar-14	17-Mar-14		█			
A3550	Seal/Weld Toggle OFA duct	20-Mar-14	28-Mar-14		█			
A3560	Reinstall DP	21-Mar-14	30-Mar-14		█			
A3570	Remove temp steel supports	28-Mar-14	30-Mar-14		█			
A3580	Fit New OFA Register	28-Mar-14	31-Mar-14		█			
A3590	Re-fit existing OFA Register	31-Mar-14	01-Apr-14		█			
A3600	Reinstall insulation/lagging	01-Apr-14	15-Apr-14		█			
Disconnect OFA Damper Actuators		10-Feb-14	11-Feb-14	▼				
A5680	Disconnect Electrical by LG&E	10-Feb-14	10-Feb-14	█				
A5690	Disconnect mechanically NE & SE	10-Feb-14	11-Feb-14	█				
A5700	Disconnect mechanically NW & SW	10-Feb-14	11-Feb-14	█				
West (Rear)		19-Feb-14	25-Apr-14	█				
A2990	Remove Insulation	19-Feb-14	20-Feb-14	█				
A3380	Modify PF pipe Supports (all 4 corners)	19-Feb-14	20-Feb-14	█				
A2970	Demo Dampers	20-Feb-14	27-Feb-14	█				
A2980	Remove DP piping	20-Feb-14	22-Feb-14	█				
A3000	Remove redundant ducting	20-Feb-14	27-Feb-14	█				
A3030	Remove OFA register (1 per corner) & store	20-Feb-14	21-Feb-14	█				
A2870	Remove west winbox/duct	21-Feb-14	24-Feb-14	█				
A3320	Doors - Save for reinstallation	21-Feb-14	23-Feb-14	◆				
A3010	Modify scaffold for boiler straps	27-Feb-14	28-Feb-14	█				
South West Corner		28-Feb-14	20-Apr-14	█				
A3620	Install jacks	28-Feb-14	01-Mar-14	█				
A3630	Modify support straps	01-Mar-14	03-Mar-14	█				
A3640	Install OFA support frame	03-Mar-14	04-Mar-14	█				
A3650	Assemble 90 duct & winbox	05-Mar-14	15-Mar-14	█				
A3660	Fit & Weld Turning Vanes	15-Mar-14	17-Mar-14	█				
A3670	Seal Weld 90 Duct	17-Mar-14	25-Mar-14	█				
A3680	Establish cut lines	03-Mar-14	04-Mar-14	█				
A3690	Stage/install rigging	04-Mar-14	05-Mar-14	█				
A3700	Remove panel	05-Mar-14	07-Mar-14	█				
A3710	Machine/prep panel	07-Mar-14	10-Mar-14	█				
A3720	Fit/track panel	10-Mar-14	12-Mar-14	█				
A3730	Weld out/complete panel	12-Mar-14	14-Mar-14	█				
A3740	NDE panel	14-Mar-14	15-Mar-14	█				
A3750	Assemble Toggle	16-Mar-14	26-Mar-14	█				
A3760	Reinstate Doors (3 locations)	22-Mar-14	20-Apr-14	█				
A3770	Seal Weld Toggle OFA duct	25-Mar-14	02-Apr-14	█				
A3780	Reinstall DP	26-Mar-14	27-Mar-14	█				
A3790	Remove temp steel supports	02-Apr-14	04-Apr-14	█				
A3800	Fit New OFA Register	02-Apr-14	05-Apr-14	█				

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Trimble County - Outage Programme - Preliminary

TC Uz Spring 2014 Outage

Activity ID	Activity Name	Start	Finish	February 2014				March 2014				April 2014				May 2014				June 2014							
				03	10	17	24	03	10	17	24	31	07	14	21	28	05	12	19	26	02	09	16	23			
A3810	Re-fit existing OFA Register	05-Apr-14	06-Apr-14																								
A3820	Reinstall insulation/lagging	06-Apr-14	20-Apr-14																								
North West Corner																											
A3840	Install jacks	05-Mar-14	25-Apr-14																								
A3850	Modify support straps	06-Mar-14	08-Mar-14																								
A3860	Install OFA support frame	08-Mar-14	09-Mar-14																								
A3870	Assemble 90 duct & windbox	10-Mar-14	20-Mar-14																								
A3880	Fit & Weld Turning Vanes	20-Mar-14	22-Mar-14																								
A3890	Seal Weld 90 Duct	22-Mar-14	30-Mar-14																								
A3900	Establish out lines	08-Mar-14	09-Mar-14																								
A3910	Stage/install rigging	10-Mar-14	12-Mar-14																								
A3920	Remove panel	10-Mar-14	14-Mar-14																								
A3930	Machine/prep panel	12-Mar-14	14-Mar-14																								
A3940	Fit/lack panel	14-Mar-14	16-Mar-14																								
A3950	Weld out/complete panel	16-Mar-14	18-Mar-14																								
A3960	NDE panel	18-Mar-14	19-Mar-14																								
A3970	Assemble Toggle	20-Mar-14	30-Mar-14																								
A3980	Reinstate Doors (3 locations)	26-Mar-14	27-Mar-14																								
A3990	Seal Weld Toggle OFA duct	30-Mar-14	07-Apr-14																								
A4000	Reinstall DIP	30-Mar-14	31-Mar-14																								
A4010	Remove temp steel supports	07-Apr-14	09-Apr-14																								
A4020	Fit New OFA Register	07-Apr-14	10-Apr-14																								
A4030	Re-fit existing OFA Register	10-Apr-14	11-Apr-14																								
A4040	Reinstall insulation/lagging	11-Apr-14	25-Apr-14																								
Amstar Furnace Application (SMR0048)																											
C1068	Clear scaffold for AMSTAR / Partial Strip	14-Apr-14	18-May-14																								
C1069	AMSTAR Prep wall tubes	17-Apr-14	18-Apr-14																								
A6100	Roll Conveyor in	19-Apr-14	19-Apr-14																								
C1241	Owner to activate fan for AMSTAR works	05-May-14																									
C1070	AMSTAR Coat tubes	08-May-14	12-May-14																								
A1226	Roll Conveyor out	12-May-14	13-May-14																								
C1071	Remove furnace scaffold	13-May-14	16-May-14																								
A6110	Roll Back & Clean Up	13-May-14	18-May-14																								
C1251	Replace Ash Hopper/ancillary works	16-May-14	18-May-14																								
C1261	Close All Doors & Verify (LG&E)	18-May-14	18-May-14																								
WCAH Upgrade SMR095																											
A6680	Pull Old Coils North End	13-Feb-14	06-Mar-14																								
A6690	Deflector plates North End	13-Feb-14	16-Feb-14																								
A6700	New Coils in North End	18-Feb-14	28-Feb-14																								
A6710	Move Header North End	28-Feb-14	06-Mar-14																								
A6720	Pull Old Coils South End	13-Feb-14	18-Feb-14																								
A6730	Deflector plates South End	13-Feb-14	16-Feb-14																								
A6740	New Coils in South End	18-Feb-14	28-Feb-14																								
A6750	Move Header South End	28-Feb-14	06-Mar-14																								
FD Outdoor Suction Duct Hood																											
A6890	Build Scaffold FD Hoods North End	11-Mar-14	13-Mar-14																								
A6900	Pull Screen FD Hoods North End	13-Mar-14	16-Mar-14																								

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 Actual Work █ Critical Remaining Work ◆ Critical Mil... ◆

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Activity ID	Activity Name/Start	Finish	2014																				
			February			March			April			May			June								
			03	10	17	24	03	10	17	24	31	07	14	21	28	05	12	19	26	02	09	16	23
A6910	Inspect Welds FD Hoods North End	16-Mar-14																					
A6920	Repair/Add Weld/FD Hoods North End	18-Mar-14																					
A6930	Fly Hoods up FD Hoods North End	21-Mar-14																					
A6940	Weld Out FD Hoods North End	23-Mar-14																					
A6840	Pull Screen FD Hoods South End	11-Mar-14																					
A6850	Inspect Welds FD Hoods South End	14-Mar-14																					
A6860	Repair/Add Weld/FD Hoods South End	16-Mar-14																					
A6870	Fly Hoods up FD Hoods South End	19-Mar-14																					
A6880	Weld Out FD Hoods South End	21-Mar-14																					
A6800	FD Suction Hood Structural Steel ModificationsSMR	06-Mar-14																					
A6810	Locate & Stage Material North Side	06-Mar-14																					
A6820	Remove Handrail & Grating North Side	06-Mar-14																					
A6830	Install Plates North Side	07-Mar-14																					
A6830	Weld Out North Side	09-Mar-14																					
A6760	Locate & Stage Material South Side	06-Mar-14																					
A6770	Remove Handrail & Grating South Side	07-Mar-14																					
A6780	Install Plates South Side	07-Mar-14																					
A6790	Weld Out South Side	09-Mar-14																					
A6640	SMR0127 ID Fan Stall Sensing Ports	17-Feb-14																					
A6650	Build Scaffolding	17-Feb-14																					
A6650	Inspect and add insulation as needed	19-Feb-14																					
A6660	Completion inspection	21-Feb-14																					
A6670	Remove Scaffold	22-Feb-14																					
A6670	Remove Scaffold	24-Feb-14																					
A5230	Sootblower Piping	24-Jan-14																					
A5230	Install support steel work	24-Jan-14																					
A5240	Install supports	05-Feb-14																					
A5250	Install prefabricated spool pieces	05-Feb-14																					
A5260	fit, set & weld closure	05-Feb-14																					
A5270	Local heat treatment and radiography	12-Feb-14																					
A5190	Soot Blower Supply from Platen Stub	15-Feb-14																					
A5200	Install support steel work	15-Feb-14																					
A5200	Install supports	02-Mar-14																					
A5210	Install pre fabricated spool pieces	02-Mar-14																					
A5220	Fit set and weld closure	02-Mar-14																					
A5340	Heat treatment and radiography	14-Mar-14																					
A5060	6" Pipe from 714 down to 530	14-Mar-14																					
A5060	Install Support Steel work	14-Mar-14																					
A5070	Install supports	22-Mar-14																					
A5460	Install pre fabricated spool pieces	22-Mar-14																					
A5470	Dis invest redundant pipe	29-Mar-14																					
A5480	Install pre fabricated spool pieces	29-Mar-14																					
A5490	Fit set and weld closure	05-Apr-14																					
A5560	Local heat and radiography	10-Apr-14																					
A5350	Warning Drain from 530 to CDV	17-Feb-14																					
A5350	Install support steel work	17-Feb-14																					
A5360	Install supports	26-Feb-14																					

█ Remaining Level of Effort
█ Actual Work
◆ Remaining Work
◆ Critical Remaining Work
◆ Milestone
◆ Critical Mil...

Thompson

TC U2 Spring 2014 Outage

Trimble County - Outage Programme - Preliminary

31-Jan-14 16:02

Activity ID	Activity Name	Start	Finish	February 2014	March 2014	April 2014	May 2014	June 2014
A5370	Install pre fabricated spool pieces	08-Mar-14	13-Mar-14					
A5380	Fit set and weld closure	14-Mar-14	19-Mar-14					
A5390	Local heat and radiography	20-Mar-14	21-Mar-14					
Install SVE Pipework		22-Mar-14	09-May-14					
A5500	Install Support Steel work	22-Mar-14	28-Mar-14	Install pre fabricated spool pieces	Fit set and weld closure	Local heat and radiography	09-May-14, Install SVE Pipework	
A5570	Build weather proof enclosure	22-Mar-14	23-Mar-14	Install Support Steel work	Build weather proof enclosure	Remove Roofing Materials		
A5580	Remove Roofing Materials	24-Mar-14	25-Mar-14	Install supports	Reposition roof air fan	Install pre fabricated spool pieces		
A5510	Install supports	29-Mar-14	01-Apr-14					
A5520	Reposition roof air fan	02-Apr-14	11-Apr-14					
A5530	Install pre fabricated spool pieces	12-Apr-14	14-Apr-14					
A5540	Fit set and weld closure	15-Apr-14	17-Apr-14					
A5590	Install insulation	18-Apr-14	03-May-14					
A5550	Install Silencers 2 off	18-Apr-14	03-May-14					
A5600	Reinstate Roofing	04-May-14	07-May-14					
A5610	Remove weather proof enclosure	08-May-14	09-May-14					
PCV Warming Line 1"		10-Feb-14	20-Feb-14					
A4900	Install support steel work	10-Feb-14*	12-Feb-14	Install support steel work	20-Feb-14, PCV Warming Line 1"			
A4910	Install Supports	13-Feb-14	18-Feb-14	Install Supports				
A4920	Install pre fabricated spool pieces	13-Feb-14	16-Feb-14	Install pre fabricated spool pieces				
A4930	New lapping into existing line	13-Feb-14	14-Feb-14	New lapping into existing line				
A4940	Fit Set & weld closure	13-Feb-14	18-Feb-14	Fit Set & weld closure				
A4960	Valve Strip & Rebuild CV051	17-Feb-14	18-Feb-14	Valve Strip & Rebuild CV051				
A4950	Heat Treat & radiography	19-Feb-14	20-Feb-14	Heat Treat & radiography				
Boiler Roof Fan SMR 170		25-Mar-14	12-Apr-14					
A6950	Build Scaffold	25-Mar-14	30-Mar-14					
A6960	Roof Material Removed	30-Mar-14	01-Apr-14					
A6970	Scaffold Build up underneath from 17th Flo	01-Apr-14	03-Apr-14					
A6980	Install support steel under roof	03-Apr-14	07-Apr-14					
A6990	Build Tracking System to move fan	07-Apr-14	10-Apr-14					
A7000	Move Fan and Install in new location	10-Apr-14	12-Apr-14					
Miscellaneous Scope		27-Feb-14	22-Apr-14					
Replace Seal air non return dampers		03-Mar-14	08-Mar-14					
A5740	Build Scaffold	03-Mar-14*	03-Mar-14	Build Scaffold				
A5750	Remove Insulation	04-Mar-14	04-Mar-14	Remove Insulation				
A5760	Remove Damper (2 Off)	05-Mar-14	05-Mar-14	Remove Damper (2 Off)				
A5770	Install New Damper (2 off)	06-Mar-14	06-Mar-14	Install New Damper (2 off)				
A5780	Reinstate Insulation	07-Mar-14	07-Mar-14	Reinstate insulation				
A5790	Remove Scaffold	08-Mar-14	08-Mar-14	Remove Scaffold				
Install 30 PF office plates		27-Feb-14	22-Apr-14					
A5800	Build Scaffold A	27-Feb-14	27-Feb-14	Build Scaffold A				
A5810	Install Restraints between PF Pipes A	28-Feb-14	28-Feb-14	Install Restraints between PF Pipes A				
A5820	Remove existing offices (5) A	01-Mar-14	03-Mar-14	Remove existing offices (5) A				
A5830	Clean Faces & Install new offices A	04-Mar-14	06-Mar-14	Clean Faces & Install new offices A				
A5840	Remove Restraints A	07-Mar-14	07-Mar-14	Remove Restraints A				
A6120	Build Scaffold B	08-Mar-14	08-Mar-14	Build Scaffold B				
A6130	Install Restraints between PF Pipes A	09-Mar-14	09-Mar-14	Install Restraints between PF Pipes A				
A6140	Remove existing offices (5) B	10-Mar-14	12-Mar-14	Remove existing offices (5) B				

Remaining Level of Effort ■ Actual Work ■

Remaining Work ■ Critical Remaining Work ■

◆ Milestone ◆ Critical Mil...

Page 11 of 12

TASK filter: All Activities

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		Trimble County - Outage Programme - Preliminary														31-Jan-14 16:02										
Activity ID	Activity Name	Start	Finish	February 2014				March 2014				April 2014				May 2014				June 2014						
				03	10	17	24	03	10	17	24	03	10	17	24	03	10	17	24	03	10	16	23			
A6150	Install new orifices B	13-Mar-14	15-Mar-14																							
A6160	Remove Restraints B	16-Mar-14	16-Mar-14																							
A6170	Build Scaffold C	17-Mar-14	17-Mar-14																							
A6180	Install Restraints between PF Pipes A	18-Mar-14	18-Mar-14																							
A6190	Remove existing orifices (5) C	19-Mar-14	21-Mar-14																							
A6200	Install new orifices C	22-Mar-14	24-Mar-14																							
A6210	Remove Restraints C	25-Mar-14	25-Mar-14																							
A6220	Build Scaffold D	26-Mar-14	26-Mar-14																							
A6230	Install Restraints between PF Pipes A	27-Mar-14	27-Mar-14																							
A6240	Remove existing orifices (5) D	28-Mar-14	30-Mar-14																							
A6250	Install new orifices D	31-Mar-14	02-Apr-14																							
A6260	Remove Restraints D	03-Apr-14	03-Apr-14																							
A6270	Build Scaffold E	04-Apr-14	04-Apr-14																							
A6280	Install Restraints between PF Pipes A	05-Apr-14	05-Apr-14																							
A6290	Remove existing orifices (5) E	06-Apr-14	08-Apr-14																							
A6300	Install new orifices E	09-Apr-14	11-Apr-14																							
A6310	Remove Restraints E	12-Apr-14	12-Apr-14																							
A6320	Build Scaffold F	13-Apr-14	13-Apr-14																							
A6330	Install Restraints between PF Pipes A	14-Apr-14	14-Apr-14																							
A6340	Remove existing orifices (5) F	15-Apr-14	17-Apr-14																							
A6350	Install new orifices F	18-Apr-14	21-Apr-14																							
A6360	Remove Restraints F	22-Apr-14	22-Apr-14																							

TASK filter: All Activities

Remaining Level of Effort ■

Actual Work ■

Remaining Work ■

Critical Remaining Work ■

◆ Milestone

◆ Critical Milestone

Page 12 of 12

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TC2 2014 Spring Outage
Weekend and First Week Coordination

- **Friday, Feb. 7th / Tuesday, Feb. 11th**
 - At 300 pounds of boiler pressure, inspect leak- **Maldonado**
- **Saturday, Feb. 8th / Wednesday, Feb. 12th**
 - Deslag Boiler & Burners- On site for standby at 4:00 AM.-
Maldonado/ TBD
 - Internal Boiler Wash after deslag- **TBD**
 - Disconnect Wiring on Burners- **I/E Maintenance**
 - WESP Irrigation out of service after deslag.- **Operations**
- **Sunday, Feb. 9th / Thursday, Feb. 13th**
 - Drain Ash Hopper- **Operations**
 - Disconnect Ash Hopper Piping- **Mechanics**
 - Roll Out Ash Hopper- **Doosan**
- **Monday, Feb. 10th / Friday, Feb. 14th**
 - Boiler Scaffold Build- **SE Boiler (6 shifts)**
 - PJFF Filter Bag Sample Removal- **Mechanics**
 - Pulse Air Out of Service (LOTO)- **Operations**
 - SCR Doors open for “dirty” Inspection- **Mechanics/ Dorwart**
 - WESP Inspections
 - “Dirty” Inspection- Irrigation out of service and not carded.- **Waller/ Anderson**
 - Place irrigation in service and perform casing washes after “Dirty” Inspection.
 - Pull 2A Turbine Oil Cooler- **Duncan/ Mechanics**

- **Tuesday, Feb. 11th / Saturday, Feb. 15th**
 - Boiler Scaffold Build- **SE Boiler (4 shifts)**
 - PJFF Filter Bag Sample Removal
 - Pulse Air Out of Service (LOTO)- **Operations**
 - **WESP Inspections**
 - “WET” Inspection- Irrigation in service.- **Siemens, LG&E, PCT, TES**
- **Wednesday, Feb. 12th / Sunday, Feb. 16th**
 - Boiler Scaffold Build- **SE Boiler (2 shifts)**
 - Open Deaerator- **Mechanics**
- **Thursday, Feb. 13th / Monday, Feb. 17th**
 - Check for any open doors prior to starting fan- **Operations**
 - Put 2A ID Fan in service after scaffold completion.- **Operations/ Bechtel/ Doosan**
 - Place 1 Recycle Pump in service to alleviate carry over into the WESP.- **Operations**
 - Sandblasting Burner Fronts/ Amstar- **Doosan/**
- **Friday, Feb. 14th / Tuesday, Feb. 18th**
 - Drain Reaction Tank- **Operations**
 - Reaction Tank Clean-out/Inspection – **Heinz/Phelps**

Produced as Native

Original File Name: TC2S14 Spring Outage Plan_201405063952900004644_403022A3.xlsm

Stored File Name: OpenText00253389.xlsm

From: Anderson, Dave (Trimble County)(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=ANDERSOND)
To: Afiyet, Hamit; Ball, Adam; Bethany, Ron; Boone, James; Bullock, Sam; Byrd, Larry; Cash, Rebecca; Chin, Doug; Craft, Jim; Dorwart, Jordan; Dukes, Christopher; Feider, Ryan; Gilliland, Dave; Gray, Jeffrey; Griffith, Michelle; Hance, Chuck; Hannon, Hannah; Hayes, Christopher; Heinz, John; Henderson, Trent; Hudson, Glen; Jensen, Jack; Jones, Steve; Joyce, Jeff; Joyce, Kenny; Maldonado, Francisco; Melloan, Ricky; Menezes, Tomas; Mills, Ricky; Moore, Emmett; Noonan, Kenny; Park, Marci; Payne, Nicholas; Phelps, Grant; Powell, Richard; Rabe, Phil; Raker, Adam; Ransdell, Charles; Sanders, Matt; Sedam, Dale; Mohn, Laura; Simpson, Jeff; Slaughter, Mitch; Stewart, Robert E. (Trimble); Thomas, Mark; Thurston, Eric; Turner, Haley; Turner, Tyler; Walcott, Danny
CC:
BCC:
Subject: TC2S14 Spring Outage Plan.xlsm
Sent: 02/07/2014 10:43:05 AM -0500 (EST)
Attachments: TC2S14 Spring Outage Plan.xlsm; TC-2 Maintenance Outage Spring 2014.docx; TC2 2014 Weekend and First week Coordination.docx; Outage Programme - Preliminary Issue (13-01-31).docx;

All,

TC2 updated documents.

David W. Anderson

Trimble County Outage Coordinator
Tel. 502-627-6313
Fax 502-217-2199
email: dave.anderson@lge-ku.com

TC2 2014 Spring Outage
Weekend and First Week Coordination

- **Friday, February 07, 2014 Offline after peak**
 - At 300 pounds of boiler pressure, inspect leak- **Maldonado**
- **Saturday, February, 8th, 2014**
 - Deslag Boiler & Burners- On site at 10:00 AM.- **Maldonado/ Expro**
 - Disconnect Wiring on Burners- **I/E Maintenance**
 - WESP Irrigation out of service after deslag.- **Operations**
- **Sunday, February, 9th, 2014**
 - Drain Ash Hopper- **Operations**
 - Disconnect Ash Hopper Piping- **Mechanics**
 - Roll Out Ash Hopper- **Doosan/ Mechanics**
 - Ground WESP/ DESP- **I/E Maintenance**
- **Monday, February, 10th, 2014**
 - Boiler Scaffold Build- **SE Boiler (6 shifts)**
 - PJFF Filter Bag Sample Removal- **Mechanics**
 - Pulse Air Out of Service (LOTO)- **Operations**
 - WESP Inspections
 - “Dirty” Inspection- Irrigation out of service and not carded.- **Waller/ Anderson**
 - Place irrigation in service and perform casing washes after “Dirty” Inspection.
 - Pull 2A Turbine Oil Cooler- **Duncan/ Mechanics**
 - SCR Doors open for “dirty” Inspection- **Mechanics/ Dorwart**

- **Tuesday, February, 11th, 2014**
 - Boiler Scaffold Build- **SE Boiler (4 shifts)**
 - PJFF Filter Bag Sample Removal
 - Pulse Air Out of Service (LOTO)- **Operations**
 - WESP Inspections
 - “WET” Inspection- Irrigation in service.- **Siemens, LG&E, PCT, TES**
- **Wednesday, February, 12th, 2014**
 - Boiler Scaffold Build- **SE Boiler (2 shifts)**
 - Open Deaerator- **Mechanics**
 - Ground WESP/ DESP- **I/E Maintenance**
 - **CLEAR GAS PATH & SIGN OFF BOTH FANS**
- **Thursday, February, 13th, 2014**
 - Check for any open doors prior to starting fan- **Operations**
 - Put 2A ID Fan in service after scaffold completion.-
Operations/ Bechtel/ Doosan
 - Place 1 Recycle Pump in service to alleviate carry over into the WESP.- **Operations**
 - Sandblasting Burner Fronts/ Amstar (2- 24hr shifts) -
Doosan/
- **Friday, February 14th, 2014**
 - **SIGN ON GAS PATH- BOTH FANS**
 - Drain Reaction Tank- **Operations**
 - Remove 2A ID Fan and open gas path
 - Reaction Tank Clean-out/Inspection – **Heinz/Phelps**

TC-2 Maintenance Outage Spring 2014

Thursday (February 6th 2014)

- Change coal on the mills in service from 70/30 Riverview / PRB to 100% Riverview.
- Change the Hydro-jets to aggressive mode starting the am shift and remain on aggressive until the outage.
- Empty the normal H/L silo if possible.

Friday (February 7th 2014)

- Run Hydro-jets in aggressive mode until the unit is off.
- Check set point on all safeties, scheduled @ 12:00 hrs.
- Start reducing solids in the reaction tank in prep for draining.
- Remove the condenser ball cleaning system from service and card.
- Test run the Trip Manifold Test circuit. (see attached)
- Do not run a casing wash on the WESP before we come off line due to inspection request.
- Start the ramp down to come off line @ 24:00 hrs.
- Unit is scheduled off line @ 03:00 hrs.
- Remove fires from the boiler and start cool down. (increase air flow ~ 4200 KPPH and continue to circulate water). Note: Do not exceed > 100 degs per hour on cool down.
- Isolate and drain the water coils, just after fires are out!
- Isolate and card the ammonia system, open the injection valves and purge the lines on boiler cool down.
- Open available boiler doors for cool down.
- Card equipment as it's available, as per carding request.

Saturday (February 8th 2014)

- Continue boiler cool down until we have about 170 to 180 on spiral and vertical tube temperatures. (~15 hrs.).
- Set up for boiler de-slag.
- Flash drain boiler.
- Card the DESP before fans are out of service to allow for purge.
- Complete boiler cool down, remove the fans from service and card.
- Card burners for change out.
- Remove A/H's from service after fans are out of service.
- Check all hoppers empty.
- Have S/M pin the feedwater line before draining the feedwater system.
- Isolate and drain the condensate and feedwater line.
- Isolate and drain the Deaerator Storage Tank.

Sunday (February 9th 2014)

- Work with SESS on WESP inspection and running casing wash.
- Check the SSC empty and card, drain and card to move.
- Isolate and drain the Hotwell.
- Card equipment as requested.
- Isolate and drain the Stator Cooling System.
- Pull cooling tower screens and clean.
- Isolate and drain the Hydrojet System.

Week of 2/10/14

- Drain the reaction tank down and refill with water until the density is 1.06.
- Remove the Turbine from turning gear.
- Card and isolate the Condenser water box and clean.
- Remove the Circulation Water System from service.
- Refill the SSC after its back in place and return to service for Amstar Coating removal.
- Thursday – We will need to run one I/D fan at min. for Doosan to remove the Amstar Coating (24hrs). Please run the “2A” Recycle Pump and WESP plate irrigation wash when the I/D Fan is in service.
- Friday after we finish running the I/D fan for Doosan to remove the Amstar Coating, Isolate and drain the Reaction Tank.
- Check the SSC empty and card, drain and card to move.
- Isolate and drain the “A” turbine Oil Cooler for removal.

Week of 2/17/14

- Remove the trays in the deaerator heater for inspection.
- Purge the Generator.
- Drain Turbine Oil back for inspection.
- Isolate and drain the Seal Oil System. (Shut down the Seal Oil Vacuum Pump as per the shutdown procedure for extended lay-up).
- Open the doors on the SCR and clean as needed.

Week of 2/24/14

- Set-up and shoot the A1 & A2 condenser.
- Open the lower doors on the PJFF for inspection.

Week of 3/3/14

- Set-up and shoot the B1 & B2 condenser.
Card; Drain and inspect the hotwell.
- Clean the hotwell pump suction strainers.
- Remove the heads from the “2A” Closed Cooling heat exchanger and clean.

Week of 3/10/14

- Remove the heads from the "2B" Closed Cooling heat exchanger and clean.

Week of 3/17/14

- Pull and inspect the hydrated lime and PAC injection lances.

Week of 3/24/14

- Empty and clean the Cooling Tower basin.

Week of 3/31/14

- Change out Stator Resin.

Week of 4/7/14

- Empty and clean the oil / water separator, repair or replace the screen as needed.
- Inspect the Hotwell flash box.

Week of 4/14/14

- Inspect the boiler drains vessel.
- Work on valve tags and housekeeping.

Week of 4/21/14

- Work on valve tags and housekeeping.

Week of 4/28/14

- Work on valve tags and housekeeping.
- Refill the Cooling Tower.
- Refill the Reaction Tank.

Week of 5/5/14

- Purge the Generator.
- Refill the Turbine Oil System.

Week of 5/12/14

- Refill the Turbine Oil System.
- Complete dye test on the condenser.
- Drain and refill the hotwell.

Week of 5/19/14

- Refill the condensate system.
- Start water clean-up.
- Fans in service on 5/23/14.
- Boiler Hydro?

- Fires in the boiler 5/24/14.

TC-2 on Line May 25th

Produced as Native

Original File Name: TC2S14 Spring Outage Plan.xlsm

Stored File Name: OpenText00253394.xlsm

From: Anderson, Dave (Trimble County)(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=ANDERSON)
To: Afiyet, Hamit; Ball, Adam; Bethany, Ron; Boone, James; Bullock, Sam; Byrd, Larry; Cash, Rebecca; Chin, Doug; Craft, Jim; Dorwart, Jordan; Dukes, Christopher; Feider, Ryan; Gilliland, Dave; Gray, Jeffrey; Griffith, Michelle; Hance, Chuck; Hannon, Hannah; Hayes, Christopher; Heinz, John; Henderson, Trent; Hudson, Glen; Jensen, Jack; Jones, Steve; Joyce, Jeff; Joyce, Kenny; Maldonado, Francisco; Melloan, Ricky; Menezes, Tomas; Mills, Ricky; Mohn, Laura; Moore, Emmett; Noonan, Kenny; Park, Marci; Payne, Nicholas; Phelps, Grant; Powell, Richard; Rabe, Phil; Raker, Adam; Ransdell, Charles; Sanders, Matt; Sedam, Dale; Simpson, Jeff; Slaughter, Mitch; Stewart, Robert E. (Trimble); Thomas, Mark; Thurston, Eric; Turner, Haley; Turner, Tyler; Walcott, Danny
CC:
BCC:
Subject: Work Scopes
Sent: 01/30/2014 01:08:32 PM -0500 (EST)
Attachments: TC2S14 Spring Outage Plan.xlsm;

All,

The tabs at the end of this attached document included work scopes I have received up to this point.

Thanks,

David W. Anderson

Trimble County Outage Coordinator
Tel. 502-627-6313
Fax 502-217-2199
email: dave.anderson@lge-ku.com

Produced as Native

Original File Name: TC2S14 Spring Outage Plan.xlsx

Stored File Name: OpenText00253406.xlsx

From: Anderson, Dave (Trimble County)(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=ANDERSOND)
To: Afiyet, Hamit; Ball, Adam; Bethany, Ron; Boone, James; Bullock, Sam; Byrd, Larry; Cash, Rebecca; Chin, Doug; Craft, Jim; Dorwart, Jordan; Dukes, Christopher; Feider, Ryan; Gilliland, Dave; Gray, Jeffrey; Griffith, Michelle; Hance, Chuck; Hannon, Hannah; Hayes, Christopher; Heinz, John; Henderson, Trent; Hudson, Glen; Jensen, Jack; Jones, Steve; Joyce, Jeff; Joyce, Kenny; Maldonado, Francisco; Melloan, Ricky; Menezes, Tomas; Mills, Ricky; Mohn, Laura; Moore, Emmett; Noonan, Kenny; Park, Marci; Payne, Nicholas; Phelps, Grant; Powell, Richard; Rabe, Phil; Raker, Adam; Ransdell, Charles; Sanders, Matt; Sedam, Dale; Simpson, Jeff; Slaughter, Mitch; Stewart, Robert E. (Trimble); Thomas, Mark; Thurston, Eric; Turner, Haley; Turner, Tyler; Walcott, Danny
CC:
BCC:
Subject: 2-12-14 TC #2 2014 Spring outage daily report.docx
Sent: 02/12/2014 06:40:50 AM -0500 (EST)
Attachments: 2-12-14 TC #2 2014 Spring outage daily report.docx;

FYI..... Project Engineering 3rd shift report.

David W. Anderson

Trimble County Outage Coordinator
Tel. 502-627-6313
Fax 502-217-2199
email: dave.anderson@lge-ku.com



PROJECT ENGINEERING DEPARTMENT
“DAILY CONSTRUCTION REPORT”
NIGHT SHIFT

LG&E KU PROJECT COORDINATORS: Gary Harris, Chuck Wescoat	DATE: Wednesday 2-12-2014
CONTRACTOR ON SITE: Bechtel /Southeast	SUPERVISORS NAME; Eric Moore
PROJECT NAME: TC Unit 2 Outage	NIGHT SHIFT HOURS 1900 to 0700
WEATHER	
<u>Temperature</u>	<u>Precipitation</u>
<i>High:</i> 25	<i>Amount:</i> NTR
<i>Low:</i> 12	<i>Time Beginning:</i>
<i>Wind:</i> calm	<i>Time Ending:</i>
<i>Other:</i> Clear	<i>Type (Rain, Snow, Sleet):</i>

MAJOR CONSTRUCTION ACTIVITIES OF THE DAY

TC Unit 2 Burners

~ Southeast boiler- Doing outage work on various burner decks hanging rigging, taking out bolts on burners. Started removing coal conduit from front burners wall and moving it to ground floor. All fuel oil lines removed both sides. 2A3 burner has been removed from plant. All igniters removed from burners and removed from plant.

~ Southeast boiler – Doing demo work to the OFA ductwork, cutting it out in small sections for removal. Crews making good progress on NE, SE and SW corners.

~ Petrochem- Installing scaffold inside the boiler. Scaffold problem inside boiler has been corrected and building more in progress.

FRONT WALL

BURNER	Removed						Re-Installed
C1							
C2							
C3							
C4							
C5							
D1							
D2							
D3							
D4							
D5							
B1							
B2							
B3	X						
B4							
B5							

REAR WALL

BURNER	Removed						Re-Installed
F1							
F2							
F3							
F4							
F5							
A1							
A2							
A3	X						
A4							
A5							
E1							
E2							
E3							
E4							
E5							

Work Quality/Observations/Concerns:

-

Safety /Environmental Issue:

- General housekeeping on site is being well maintained and on going.

Other:

Contractors on Site

Bechtel- 1
Southeast Boiler- 50
Doosan- 1
Petrochem- 5

From: Hammond, Steve(steve.hammond@doosan.com)
To: 'Mel Watkins'; Rabe, Phil
CC: Dukes, Christopher; Carlisle, Gary; Boone, James; 'James T. (Tom) Trimble'; Joyce, Jeff; Craft, Jim; Mohn, Laura; Slaughter, Mitch; Payne, Nicholas; Powell, Richard; Melloan, Ricky; Smith, Timothy (Fuels); Henderson, Trent; 'Brann, Devin' (dmbrann@bechtel.com); 'Dearman, James' (jdearman@bechtel.com); McCallum, Neil; Davidson, Gordon; Torkington, Ian R; Kerslake, Ian; Gratton, Ron; 06350 TRIMBLE COUNTY MAILBOX; Lee, John; Huntington, John; Whitehouse, Matthew; Groom, David
BCC:
Subject: 07292 - TC2 - Action Item Meeting # 2014-3, Doosan to Review Tubing to Purge Meters on ID Fan - No Expansion Facility Causing Damage to Meters
Sent: 03/01/2014 01:39:22 PM -0500 (EST)
Attachments: RE_ Trimble County 07292 - ID Fan Stall Warning Probe Analysis (AIL #62.4).msg; ID Fan Purge Units to be Reworked (28Feb14).pdf; Impulse Pipe to be Reworked (28Feb14).pdf;

Mel / Phil

In response to Action Item Meeting # 2014-3, Doosan to review tubing to purge meters on ID fan - No expansion facility causing damage to meters.

- 1) As you are aware Doosan has an outage activity to add additional insulation around the stab ins that were fitted as part of the stall warning system during the Spring 2013 outage, the reason for this is to ensure the purge air that continually bleeds into the fan is sufficiently heated that acid corrosion does not occur – see AIL # 62.4. I have attached our evaluation of the purge air temperatures seen in August 2013 which led to this scope of work.
- 2) Subsequently Doosan was made aware that one of the purge air units had failed and that the cause of failure was thermal expansion. We have surveyed the installation and agree that the pipe exiting the plastic flow meter could be improved by the addition of a short hose to negate the effect of thermal expansion however we do not believe that the inlet to the purge air unit requires the addition of a hose.

Attached to this e-mail is a sheet titled "ID Fan Purge Units to be Reworked (28Feb14)" which shows both the inlet to and outlet from the purge air unit and the position a hose will be added, can I ask you to review and agree this action. Once agreed we will advise the specification of the hose to be used which we expect to be 5" long with compression fittings to suit the tube used at each end and a material of construction to suit the environmental conditions around the ID fan.

- 3) And finally, Doosan will rework the impulse pipe that runs along the upper quadrant of the ID fan casing to ensure that sufficient slope exists to drain any condensation back into the fan.

Attached to this e-mail is a sheet titled "Impulse Pipe to be Reworked (28Feb14)" which shows the impulse pipe on both fans and the action to be taken, can I ask you to review and agree this action.

If you have any questions let me know, otherwise I look forward to your confirmation that this course of action is agreed.

Regards

Steve

 Steve Hammond
 Doosan Babcock
 Email: steve.hammond@doosan.com
 Tel: +1 502 255 5262

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ID Fan Purge Units – Thermal Expansion – 28Feb14



The purge air inlet pipe to the flow control unit runs between a lower header and the metal body of the flow control unit and by inspection is sufficiently flexible



Replace a 5" section of the flow control unit outlet pipe with flexible hose to remove thermal expansion

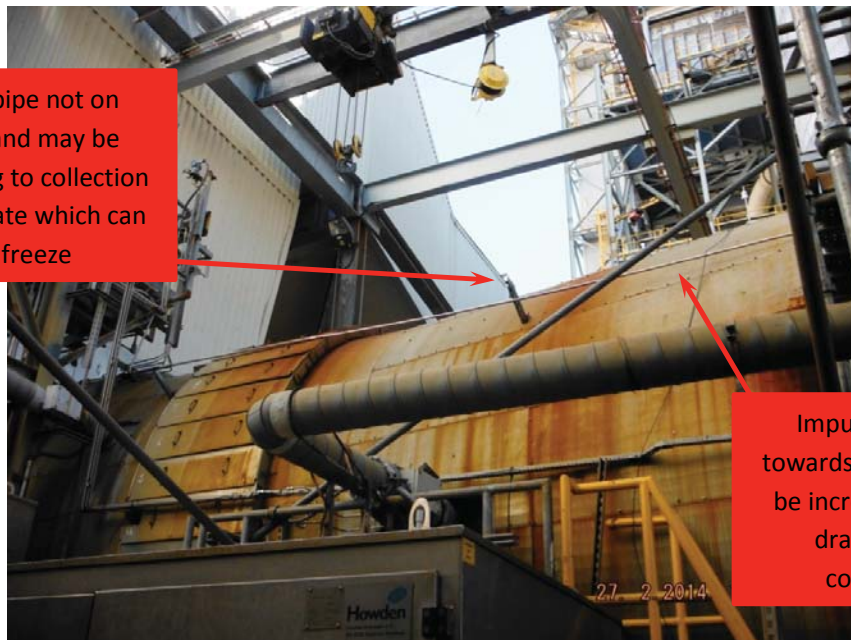
ID Fan Purge Units – Impulse Pipe Slope – 28Feb14

ID Fan A



Impulse pipe sloping towards tapping point and is acceptable

ID Fan B



Impulse pipe not on support and may be contributing to collection of condensate which can then freeze

Impulse pipe slope towards tapping point to be increased to ensure drainage of any condensation

SMR 0127 – Spring 2014 Outage

From: Anderson, Dave (Trimble County)(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=ANDERSOND)
To: Cuzick, Fred
CC: Ball, Adam; Bethany, Ron; Boone, James; Bullock, Sam; Byrd, Larry; Cash, Rebecca; Craft, Jim; Craven, David; Dorwart, Jordan; Dukes, Christopher; Feider, Ryan; Gilliland, Dave; Gray, Jeffrey; Hannon, Hannah; Hayes, Christopher; Heinz, John; Henderson, Trent; Hudson, Glen; Jensen, Jack; Jones, Steve; Joyce, Jeff; Joyce, Kenny; Maldonado, Francisco; Melloan, Ricky; Menezes, Tomas; Mills, Ricky; Mohn, Laura; Moore, Emmett; Noonan, Kenny; Park, Marci; Payne, Nicholas; Phelps, Grant; Powell, Richard; Rabe, Phil; Raker, Adam; Ransdell, Charles; Sedam, Dale; Slaughter, Mitch; Stewart, Robert E. (Trimble); Thomas, Mark; Turner, Haley; Turner, Tyler; Walcott, Danny; Waller, Logan
BCC:
Subject: Budget vs Estimates vs Actual.xlsx
Sent: 03/05/2014 11:11:16 AM -0500 (EST)
Attachments: Budget vs Estimates vs Actual.xlsx;

All,

Attached is the TC2 2014 Spring Outage Budget document.

Thanks for all the input and we need to make any corrections or additions as soon as we become aware.

Thanks,

David W. Anderson

Trimble County Outage Coordinator
Tel. 502-627-6313
Fax 502-217-2199
email: dave.anderson@lge-ku.com

Produced as Native

Original File Name: Budget vs Estimates vs Actual.xlsx

Stored File Name: OpenText00253493.xlsx

Attachment to Response to KIUC-1 Question No. 30(f)

Production 2

Page 460 of 1143

Thompson

From: Anderson, Dave (Trimble County)(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=ANDERSOND)
To: Afiyet, Hamit; Ball, Adam; Bethany, Ron; Boone, James; Bullock, Sam; Byrd, Larry; Cash, Rebecca; Chin, Doug; Craft, Jim; Craven, David; Dorwart, Jordan; Dukes, Christopher; Feider, Ryan; Gilliland, Dave; Gray, Jeffrey; Griffith, Michelle; Hance, Chuck; Hannon, Hannah; Hayes, Christopher; Heinz, John; Henderson, Trent; Hudson, Glen; Jensen, Jack; Jones, Steve; Joyce, Jeff; Joyce, Kenny; Maldonado, Francisco; Melloan, Ricky; Menezes, Tomas; Mills, Ricky; Mohn, Laura; Moore, Emmett; Noonan, Kenny; Park, Marci; Payne, Nicholas; Phelps, Grant; Powell, Richard; Rabe, Phil; Raker, Adam; Ransdell, Charles; Sanders, Matt; Sedam, Dale; Slaughter, Mitch; Stewart, Robert E. (Trimble); Thomas, Mark; Turner, Haley; Turner, Tyler; Walcott, Danny; Waller, Logan
CC:
BCC:
Subject: Budget vs Estimates vs Actual.xlsx
Sent: 03/13/2014 10:35:46 AM -0400 (EDT)
Attachments: Budget vs Estimates vs Actual.xlsx;

Please come to 5th floor for TC2 outage meeting if available.

Produced as Native

Original File Name: Budget vs Estimates vs Actual.xlsx

Stored File Name: OpenText00253495.xlsx

Attachment to Response to KIUC-1 Question No. 30(f)

Production 2

Page 462 of 1143

Thompson

From: Anderson, Dave (Trimble County)(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=ANDERSOND)
To: Afiyet, Hamit; Ball, Adam; Bethany, Ron; Boone, James; Bullock, Sam; Byrd, Larry; Cash, Rebecca; Chin, Doug; Craft, Jim; Craven, David; Dorwart, Jordan; Dukes, Christopher; Feider, Ryan; Gilliland, Dave; Gray, Jeffrey; Griffith, Michelle; Hance, Chuck; Hannon, Hannah; Hayes, Christopher; Heinz, John; Henderson, Trent; Hudson, Glen; Jensen, Jack; Jones, Steve; Joyce, Jeff; Joyce, Kenny; Maldonado, Francisco; Melloan, Ricky; Menezes, Tomas; Mills, Ricky; Mohn, Laura; Moore, Emmett; Noonan, Kenny; Park, Marci; Payne, Nicholas; Phelps, Grant; Powell, Richard; Rabe, Phil; Raker, Adam; Ransdell, Charles; Richardson, Stephen; Sanders, Matt; Sedam, Dale; Simpson, Jeff; Slaughter, Mitch; Stewart, Robert E. (Trimble); Thomas, Mark; Thurston, Eric; Turner, Haley; Turner, Tyler; Walcott, Danny; Waller, Logan
CC: Cuzick, Fred
BCC:
Subject: Budget vs Estimates vs Actual.xlsx
Sent: 04/08/2014 08:54:30 AM -0400 (EDT)
Attachments: Budget vs Estimates vs Actual.xlsx;

TC2 Outage Budget information to date.

David W. Anderson

Trimble County Outage Coordinator
Tel. 502-627-6313
Fax 502-217-2199
email: dave.anderson@lge-ku.com

From: Watkins, Clyde(cwatkins@bechtel.com)
To: Maldonado, Francisco
CC: Dearman, James; Anderson, David I; Melloan, Ricky
BCC:
Subject: Coordination with Doosan
Sent: 03/06/2014 10:31:31 AM -0500 (EST)
Attachments:

Cisco,

We have a daily coordination meeting with Doosan/LGE/Ourselves on the outage work. A number of items that you are spearheading for LGE frequently come up. If you could join us, a couple of times per week, would help with the communication/coordination. Issues discussed today are:

1. Dipper Plate Repairs Planned by LGE – sketch or Map to coordinate with Doosan’s work, timing of when the work will be performed.
2. Air Heater Work Scope – What work is planned? When?
3. Pulverizer Work – We have an inspection team planned to be onsite next Wednesday/Thursday to inspect E mill and two others. We want to make sure the mills are left, unmodified such that the inspection reflects the condition the mills were in when last operated. Trying to get to the bottom of why the E-mill PA flow had to be increased 15%

Thank You

Mel Watkins

Project Engineering Manager

Trimble County Unit 2 Project

cwatkins@Bechtel.com

work: 301-228-8035 (Frederick)

work: 502-255-5277 (Trimble Site)

cell : 240-793-4490

From: Anderson, Dave (Trimble County)(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=ANDERSOND)
To: Afiyet, Hamit; Ball, Adam; Bethany, Ron; Boone, James; Bullock, Sam; Byrd, Larry; Cash, Rebecca; Chin, Doug; Craft, Jim; Craven, David; Dorwart, Jordan; Dukes, Christopher; Feider, Ryan; Gilliland, Dave; Gray, Jeffrey; Griffith, Michelle; Hance, Chuck; Hannon, Hannah; Hayes, Christopher; Heinz, John; Henderson, Trent; Hudson, Glen; Jensen, Jack; Jones, Steve; Joyce, Jeff; Joyce, Kenny; Maldonado, Francisco; Melloan, Ricky; Menezes, Tomas; Mills, Ricky; Moore, Emmett; Noonan, Kenny; Park, Marci; Payne, Nicholas; Phelps, Grant; Powell, Richard; Rabe, Phil; Raker, Adam; Ransdell, Charles; Sanders, Matt; Sedam, Dale; Mohn, Laura; Simpson, Jeff; Slaughter, Mitch; Stewart, Robert E. (Trimble); Thomas, Mark; Thurston, Eric; Turner, Haley; Turner, Tyler; Walcott, Danny
CC:
BCC:
Subject: FW: 07292 TC2 - Key Activities
Sent: 02/14/2014 01:54:14 PM -0500 (EST)
Attachments: Trimble County 2 - 2014 Outage - Key Activity Programme (14-Feb).pdf;

FYI.....This weekend's activities.

David W. Anderson

Trimble County Outage Coordinator
 Tel. 502-627-6313
 Fax 502-217-2199
 email: dave.anderson@lge-ku.com

From: Fleming, Ian [mailto:ian.fleming@doosan.com]
Sent: Friday, February 14, 2014 1:38 PM
To: Anderson, Dave (Trimble County); Dearman, James; Gray, John; Lee, John; Kerslake, Ian
Cc: GRIFFITH Ed (ed.griffith@power.alstom.com)
Subject: 07292 TC2 - Key Activities

Dave / James,

Key activity programme for next few days with current information from AmStar.

Please circulate to others within your organisation as required.

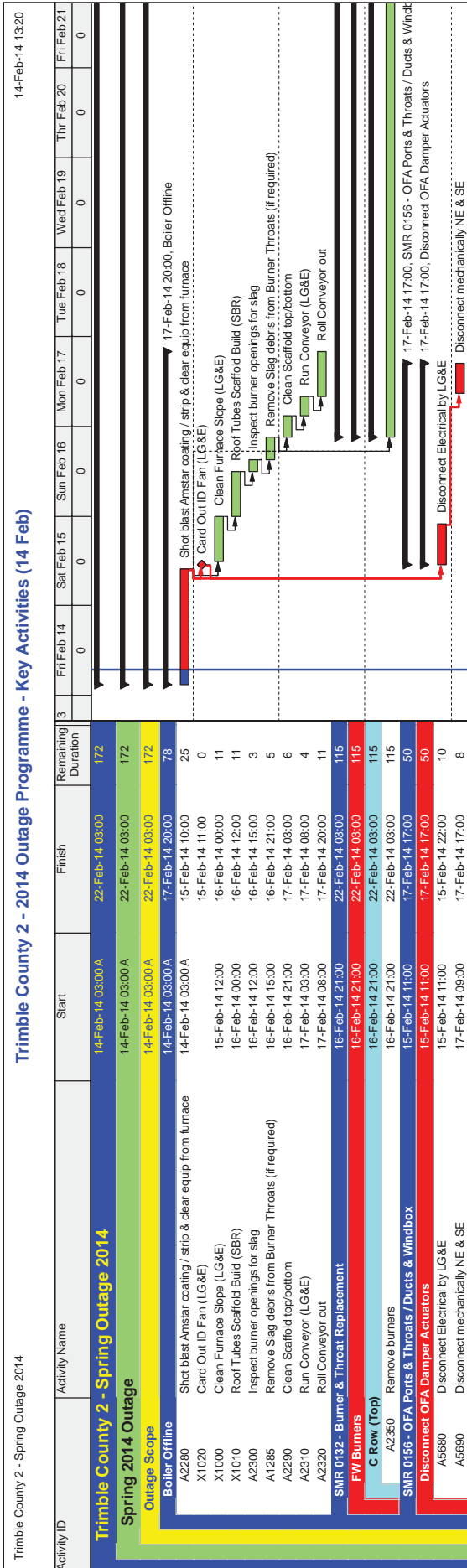
Regards

Ian Fleming

Senior Project Planning Engineer
 Doosan Babcock
 Trimble County Site

Tel: 502 255 5210
 Email: ian.fleming@doosan.com

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From: Anderson, Dave (Trimble County)(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=ANDERSOND)
To: Afiyet, Hamit; Ball, Adam; Bethany, Ron; Boone, James; Bullock, Sam; Byrd, Larry; Cash, Rebecca; Chin, Doug; Craft, Jim; Craven, David; Dorwart, Jordan; Dukes, Christopher; Feider, Ryan; Gilliland, Dave; Gray, Jeffrey; Griffith, Michelle; Hance, Chuck; Hannon, Hannah; Hayes, Christopher; Heinz, John; Henderson, Trent; Hudson, Glen; Jensen, Jack; Jones, Steve; Joyce, Jeff; Joyce, Kenny; Maldonado, Francisco; Melloan, Ricky; Menezes, Tomas; Mills, Ricky; Mohn, Laura; Moore, Emmett; Noonan, Kenny; Park, Marci; Payne, Nicholas; Phelps, Grant; Powell, Richard; Rabe, Phil; Raker, Adam; Ransdell, Charles; Sanders, Matt; Sedam, Dale; Simpson, Jeff; Slaughter, Mitch; Stewart, Robert E. (Trimble); Thomas, Mark; Thurston, Eric; Turner, Haley; Turner, Tyler; Walcott, Danny; Waller, Logan
CC:
BCC:
Subject: FW: 07292 TC2 - Outage Programme - 3 Day Forward Plan
Sent: 03/03/2014 02:39:52 PM -0500 (EST)
Attachments: Burner progress (3-Mar).xlsx; Trimble County 2 - 2014 Outage - 3 day Programme (3-Mar).pdf;

All,

This is the latest update from Doosan. There is an additional document for the burner progress for reference.

Thanks,

David W. Anderson

Trimble County Outage Coordinator
Tel. 502-627-6313
Fax 502-217-2199
email: dave.anderson@lge-ku.com

From: Fleming, Ian [mailto:ian.fleming@doosan.com]
Sent: Monday, March 03, 2014 2:18 PM
To: Dearman, James; Devin Brann; Moore, Eric; Lee, John; Huntington, John; Hammond, Steve; Gray, John; Fallon, Tim; Clyde Watkins; Kerslake, Ian; Anderson, Dave (Trimble County)
Cc: Payne, Trevor; Shrapnell, Vincent; Elliott, Robert; Whitehouse, Matthew; Cahill, Michael; Farrow, David; Bower, Keith; Matthews, David; Gratton, Ron; Lee, John; Hammond, Steve; Stocker, Mark; Collins, Robert; McCallum, Neil; Martin, Brenda; 06350 TRIMBLE COUNTY MAILBOX; Groom, David; Crain, Carolyn
Subject: 07292 TC2 - Outage Programme - 3 Day Forward Plan

Please find attached copy of 3-day programme as presented today in morning meeting inclusive of post meeting amendments and progress monitor for burner/throat installation.

Regards

Ian Fleming

Senior Project Planning Engineer
Doosan Babcock
Trimble County Site

Tel: 502 255 5210
Email: ian.fleming@doosan.com

Produced as Native

Original File Name: Burner progress (3-Mar).xlsx

Stored File Name: OpenText00253602.xlsx

Activity ID	Activity Name	Start	Finish	Activity % Complete	SMR	Notes	Sun 02	Mon 03	Tue 04	Wed 05	Thur 06	Fri 07	Sat 08	Sun 09
Trimble County 2 - 2014 Spring Outage Programme - 3 Mar - Day 24														
Trimble County 2 - Spring Outage 2014 - (96 Days)														
Spring 2014 Outage														
Outage Scope														
SMR 0132 - Burner & Throat Replacement														
FW Burners														
C Row (Top)														
A2410	Fit and tack panels	09-Feb-14 16:00A	21-Mar-14 21:00	70%										
A2420	Weld out panels	26-Feb-14 16:00A	07-Mar-14 16:00	40%										
A2430	NDE panels	27-Feb-14 03:00A	15-Mar-14 07:00	6.25%										
D Row (Middle)														
A7550	Rig & Lift Panels into position	23-Feb-14 18:00A	23-Mar-14 10:00	55%										
A2530	Fit and tack panels	25-Feb-14 18:00A	07-Mar-14 10:30	40%										
A2540	Weld out panels	26-Feb-14 07:00A	19-Mar-14 07:00	20%										
A2550	NDE panels	03-Mar-14 10:00	23-Mar-14 10:00	0%										
B Row (Bottom)														
A2640	Machine / prep panel wall openings	01-Mar-14 07:00A	20-Mar-14 11:00	5%										
A7560	Rig & Lift Panels into position	01-Mar-14 07:00A	13-Mar-14 08:30	0%										
A2650	Fit and tack panels	04-Mar-14 07:00*	13-Mar-14 11:00	0%										
RW Burners														
F Row (Top)														
A2770	Machine / prep panel wall openings	23-Feb-14 14:00A	23-Mar-14 18:00	90%										
A2750	Rig & Lift Panels into position	23-Feb-14 14:00A	04-Mar-14 08:00	75%										
A2780	Fit and tack panels	24-Feb-14 18:00A	05-Mar-14 13:30	70%										
A2790	Weld out panels	25-Feb-14 04:00A	07-Mar-14 16:00	60%										
A2800	NDE Panels	26-Feb-14 02:00A	11-Mar-14 07:00	28.75%										
A1885	Install peanuts/membrane	28-Feb-14 04:00A	17-Mar-14 11:00	0%										
A Row (Middle)														
A7580	Rig & Lift Panels into position	05-Mar-14 05:00	23-Mar-14 18:00	20%										
A2920	Fit and tack panels	01-Mar-14 07:00A	23-Mar-14 16:00	5%										
A2930	Weld out panels	01-Mar-14 07:00A	10-Mar-14 16:00	0%										
E Row (Bottom)														
A3060	Machine / prep panel wall openings	03-Mar-14 16:00	23-Mar-14 16:00	15%										
A7590	Rig & Lift Panels into position	01-Mar-14 23:00A	10-Mar-14 20:15	0%										
A3070	Fit and tack panels	04-Mar-14 07:00*	12-Mar-14 21:00	0%										
A3080	Weld out panels	04-Mar-14 17:00	18-Mar-14 12:00	0%										
SMR0158 - Burner Electrical Modifications														
A6480	Front Wall C Row (Top) - Cables	04-Mar-14 19:00	24-Mar-14 18:00	0%										
A6510	Front Wall D Row (Middle) - Cables	03-Mar-14 07:00	22-Mar-14 07:00	15.79%										
A6540	Front Wall B Row (Bottom) - cables	26-Feb-14 07:00A	19-Mar-14 07:00	0%										
A6570	Rear Wall F Row (Top) - Cables	03-Mar-14 07:00	22-Mar-14 07:00	0%										
A6600	Rear Wall A Row (Middle) - Cables	03-Mar-14 07:00	22-Mar-14 07:00	0%										
A6630	Rear Wall E Row (Bottom) - cables	03-Mar-14 07:00	22-Mar-14 07:00	0%										
SMR 0132 - PF Pipework Modifications														
Common														
A6700	Strengthen steel/trimmer steel (SMR 0171 & 0132)	24-Feb-14 08:00A	11-Mar-14 18:00	35.71%										
SMR 0156 - OFA Ports & Throats / Ducts & Windbox														
Front Wall (East)														
South East Corner														
A3150	Modify support straps	18-Feb-14 07:00A	15-Mar-14 05:00	4.76%										
A2325	Assemble 90 Duct & Toggle	02-Mar-14 06:00A	05-Mar-14 16:00	59.09%										
A3390	Seal Weld 90 Duct / Toggle	18-Feb-14 07:00A	08-Mar-14 18:00	37.91%										
A2335	Fit & Weld Turning Vanes	22-Feb-14 09:00A	15-Mar-14 05:00	50%										
A3160	Establish cut lines	24-Feb-14 06:00A	06-Mar-14 10:00	0%										
North East Corner														
A3160	Establish cut lines	05-Mar-14 16:00	06-Mar-14 21:00	0%										
A3160	Establish cut lines	18-Feb-14 07:00A	16-Mar-14 21:00	0%										



Doosan Babcock

Issue Date - 03-Mar-2014
Time - 14:00

■ Actual Work
■ Remaining Work
■ Longest Path Remaining Work
◆ Milestone
◆ Critical Milestone
◆ Summary

Activity ID	Activity Name	Start	Finish	Activity % Complete	March	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
A3610	Install Jacks / Tensioning Bars	26-Feb-14 07:00 A	04-Mar-14 06:00	25%	0	0	0	0	0	0	0	0	0	0
A3520	Modify support straps	04-Mar-14 06:00	06-Mar-14 17:00	0%	0	0	0	0	0	0	0	0	0	0
A3620	Assemble 90 Duct & Toggle	10-Mar-14 07:00 A	10-Mar-14 16:00	45.45%	0	0	0	0	0	0	0	0	0	0
A3690	Seal Weld 90 Duct / Toggle	23-Feb-14 12:00 A	16-Mar-14 21:00	29.03%	0	0	0	0	0	0	0	0	0	0
A3680	Fit & Weld Turning Vanes	26-Feb-14 07:00 A	05-Mar-14 17:00	37.5%	0	0	0	0	0	0	0	0	0	0
A3440	Demo Dampers	17-Feb-14 15:00 A	06-Mar-14 17:00	89.59%	0	0	0	0	0	0	0	0	0	0
A3430	Remove Rear Wall Window/duct	17-Feb-14 15:00 A	03-Mar-14 15:00	54.17%	0	0	0	0	0	0	0	0	0	0
A3480	Modify scaffold for boiler straps	18-Feb-14 18:00 A	05-Mar-14 19:00	0%	0	0	0	0	0	0	0	0	0	0
A3480	Modify scaffold for boiler straps	05-Mar-14 19:00	07-Mar-14 18:00	0%	0	0	0	0	0	0	0	0	0	0
SMR 0166 - GAH Support Steelwork	Inspect & Sign off - Bechtel / DB / EC	03-Mar-14 07:00	07-Mar-14 18:00	0%	0	0	0	0	0	0	0	0	0	0
A5290	Inspect & Sign off - Bechtel / DB / EC	03-Mar-14 07:00	03-Mar-14 18:00	0%	0	0	0	0	0	0	0	0	0	0
A7980	Replace Conduit & Pipe Supports	04-Mar-14 07:00	07-Mar-14 18:00	0%	0	0	0	0	0	0	0	0	0	0
SMR 0107 - GAH Scootblower Piping	PCV Warming Line 1" (Drg 06350/B250/AD/3571/02/0005)	09-Feb-14 20:00 A	07-Apr-14 18:00	61.04%	0	0	0	0	0	0	0	0	0	0
A4910	Install Supports	10-Feb-14 10:00 A	07-Mar-14 18:00	66.67%	0	0	0	0	0	0	0	0	0	0
A4920	Install & weld pre fabricated spool pieces	11-Feb-14 07:00 A	06-Mar-14 18:00	80%	0	0	0	0	0	0	0	0	0	0
A4950	Heat Treat & radiography	12-Feb-14 07:00 A	07-Mar-14 18:00	0%	0	0	0	0	0	0	0	0	0	0
A5240	Install supports	06-Mar-14 07:00	19-Mar-14 18:00	0%	0	0	0	0	0	0	0	0	0	0
A5190	Install support steel work	12-Feb-14 07:00 A	02-Apr-14 18:00	86.67%	0	0	0	0	0	0	0	0	0	0
A5200	Install supports	12-Feb-14 07:00 A	04-Mar-14 18:00	86.67%	0	0	0	0	0	0	0	0	0	0
A5210	Install & weld pre fabricated spool pieces	13-Feb-14 07:00 A	01-Apr-14 18:00	21.05%	0	0	0	0	0	0	0	0	0	0
A5340	Heat treatment and radiography	14-Feb-14 07:00 A	02-Apr-14 18:00	18.92%	0	0	0	0	0	0	0	0	0	0
A5470	Dis invest redundant pipe	09-Feb-14 20:00 A	07-Mar-14 18:00	89.36%	0	0	0	0	0	0	0	0	0	0
A5060	Install Support Steel work	10-Feb-14 07:00 A	14-Mar-14 17:00	76.2%	0	0	0	0	0	0	0	0	0	0
A5070	Install supports	10-Feb-14 18:00 A	13-Mar-14 18:00	77.55%	0	0	0	0	0	0	0	0	0	0
A5460	Install & weld pre fabricated spool pieces	11-Feb-14 07:00 A	07-Apr-14 17:00	35.89%	0	0	0	0	0	0	0	0	0	0
A5560	Local heat treatment and radiography	12-Feb-14 07:00 A	07-Apr-14 18:00	0%	0	0	0	0	0	0	0	0	0	0
A5350	Install support steel work	05-Mar-14 07:00	13-Mar-14 18:00	0%	0	0	0	0	0	0	0	0	0	0
SMR0159 - GAH Scootblower Electrical Modifications	16th Floor Elevation GAH Scootblower SMR 0159	06-Mar-14 07:00	10-Mar-14 18:00	0%	0	0	0	0	0	0	0	0	0	0
A4250	Cable trays/conduit cables 16th floor elev	06-Mar-14 07:00	10-Mar-14 18:00	0%	0	0	0	0	0	0	0	0	0	0
SMR 0095 - FD Outdoor Suction Duct Hood	South Side	03-Mar-14 07:00	07-Mar-14 17:00	0%	0	0	0	0	0	0	0	0	0	0
A7620	Locate / Set Crane in position	03-Mar-14 07:00	03-Mar-14 17:00	0%	0	0	0	0	0	0	0	0	0	0
A6870	Remove Bird Screen	03-Mar-14 17:00	04-Mar-14 17:00	0%	0	0	0	0	0	0	0	0	0	0
A6890	Inspect Flange Welds	04-Mar-14 17:00	05-Mar-14 17:00	0%	0	0	0	0	0	0	0	0	0	0
A6890	Make good Flange Welds & MPI	05-Mar-14 17:00	07-Mar-14 17:00	0%	0	0	0	0	0	0	0	0	0	0
A6920	Build Scaffold	24-Feb-14 07:00 A	04-Mar-14 18:00	71.43%	0	0	0	0	0	0	0	0	0	0
A7770	Place PO for Materials	03-Mar-14 18:00	03-Mar-14 18:00	0%	0	0	0	0	0	0	0	0	0	0
A6660	Build Scaffold	03-Mar-14 07:00	07-Mar-14 18:00	0%	0	0	0	0	0	0	0	0	0	0
A6670	Inspect and add insulation as needed	03-Mar-14 07:00	07-Mar-14 18:00	0%	0	0	0	0	0	0	0	0	0	0



Trimble County 2 - 2014 Spring Outage Programme - 3 Mar - Day 24



Doosan Babcock

Thompson

From: Melloan, Ricky(/O=LGE/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=MELLOAN, RICKYCF4)
To: Feider, Ryan
CC:
BCC:
Subject: FW: Amendment 6 Completion Schedule
Sent: 03/04/2014 03:51:48 PM -0500 (EST)
Attachments: Trimble Combustion System Milestone Schedule Rev S1 (2-25-14).pdf;

Ryan – Startup schedule. FYI

Rick

From: Slaughter, Mitch
Sent: Wednesday, February 26, 2014 2:26 PM
To: Joyce, Jeff
Cc: Melloan, Ricky; Anderson, Dave (Trimble County); Rabe, Phil
Subject: FW: Amendment 6 Completion Schedule

Jeff,
The feedback I would have on the attached amendment is listed below. If you have any questions, please let me know. Thanks Mitch.

- Oil gun testing – I would list it as “oil guns available for testing (one hour per gun)”. It’s listed as three days when if we hold them to about one hour per gun it would be just over 30 hours. This would also change the information on note #4 section “d”.
- Oil gun testing – this is based on getting a variance to the normal air permit from the state for commissioning, start-up and testing of the new oil guns. (R. Feider)
- The boiler de-slag will impact the Reliability run and the ramp testing at the end of the schedule.
- SCR Tuning is not on the schedule?
- The target for Combustion System Completion of 8/18/14, does not allow for any system or unit problems that could push any of the fuel test a week or two and still make that date?

From: Joyce, Jeff
Sent: Wednesday, February 26, 2014 10:07 AM
To: Melloan, Ricky; Slaughter, Mitch
Cc: Anderson, Dave (Trimble County)
Subject: FW: Amendment 6 Completion Schedule

From: Straight, Scott
Sent: Tuesday, February 25, 2014 9:09 AM
To: Joyce, Jeff
Subject: FW: Amendment 6 Completion Schedule

Jeff, call me after you have reviewed this. If I don’t hear from you by early afternoon, I will call you.

Scott

From: Watkins, Clyde [<mailto:cwatkins@bechtel.com>]
Sent: Tuesday, February 25, 2014 8:27 AM
To: Straight, Scott
Cc: Brightman, Jeff
Subject: Amendment 6 Completion Schedule

Scott,

Attached is the updated Amendment 6 Completion schedule for your review.

Mel

Mel Watkins

Project Engineering Manager

Trimble County Unit 2 Project

cwatkins@Bechtel.com

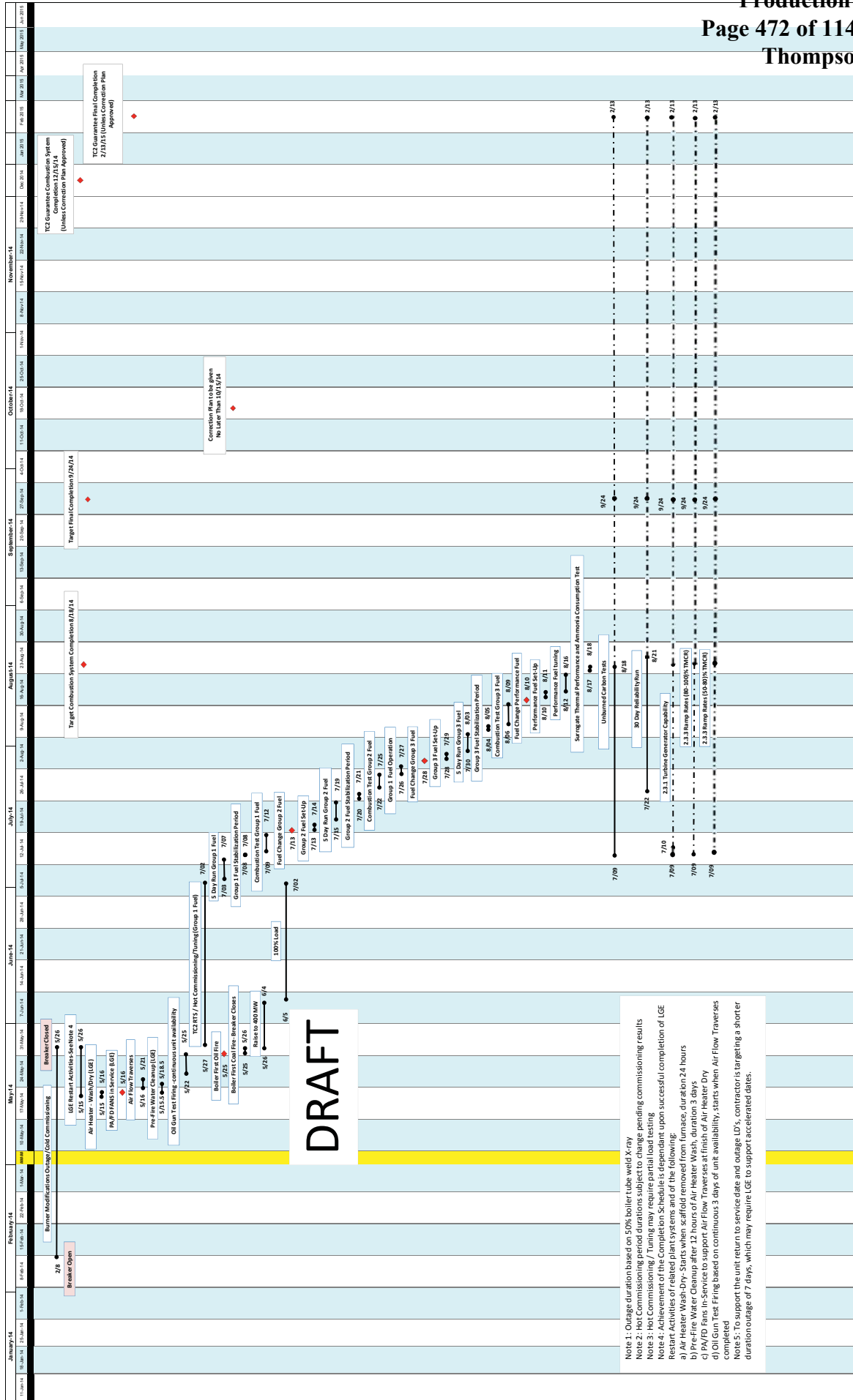
work: 301-228-8035 (Frederick)

work: 502-255-5277 (Trimble Site)

cell : 240-793-4490

Rev. 5 - Draft issued for Review 24 Feb 2014

Trimble County Unit 2
AMENDMENT 6: EXHIBIT 3: ATTACHMENT A
SUBJECT SCHEDULE: COMPLETION SCHEDULE



Note 1: Outage duration based on 50% boiler tube weld X-ray
 Note 2: Hot Commissioning period durations subject to change pending commissioning results
 Note 3: Hot Commissioning / Tuning may require partial load testing
 Note 4: Achievement of the Completion Schedule is dependent upon successful completion of LGE Restart Activities of related plant systems and of the following:
 a) Air Heater Wash-Dry - Starts when scaffold removed from furnace, duration 24 hours
 b) Pre-Start Water Cleanup after 12 hours of Air Heater Wash, duration 3 days
 c) Service to support Air Flow Transverses at the Air Heater Dry
 d) Oil Gun Test Firing based on continuous 3 days of unit availability, starts when Air Flow Transverses completed
 Note 5: To support the unit return to service date and outage LD's, contractor is targeting a shorter duration outage of 7 days, which may require LGE to support accelerated dates.

From: Melloan, Ricky(/O=LGE/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=MELLOAN, RICKYCF4)
To: Mohn, Laura
CC:
BCC:
Subject: FW: Amendment 6 Completion Schedule
Sent: 03/19/2014 10:50:06 AM -0400 (EDT)
Attachments: Trimble Combustion System Milestone Schedule Rev S1 (2-25-14).pdf;

Laura – This is latest commissioning schedule I have. This is the same one that is attached to Amendment 6 but it is still marked DRAFT. Of course all this will change if we adopt the accelerated schedule.

Rick

From: Slaughter, Mitch
Sent: Wednesday, February 26, 2014 2:26 PM
To: Joyce, Jeff
Cc: Melloan, Ricky; Anderson, Dave (Trimble County); Rabe, Phil
Subject: FW: Amendment 6 Completion Schedule

Jeff,
The feedback I would have on the attached amendment is listed below. If you have any questions, please let me know. Thanks Mitch.

- Oil gun testing – I would list it as “oil guns available for testing (one hour per gun)”. It’s listed as three days when if we hold them to about one hour per gun it would be just over 30 hours. This would also change the information on note #4 section “d”.
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- SCR Tuning is not on the schedule?
- The target for Combustion System Completion of 8/18/14, does not allow for any system or unit problems that could push any of the fuel test a week or two and still make that date?

From: Joyce, Jeff
Sent: Wednesday, February 26, 2014 10:07 AM
To: Melloan, Ricky; Slaughter, Mitch
Cc: Anderson, Dave (Trimble County)
Subject: FW: Amendment 6 Completion Schedule

From: Straight, Scott
Sent: Tuesday, February 25, 2014 9:09 AM
To: Joyce, Jeff
Subject: FW: Amendment 6 Completion Schedule

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Scott

From: Watkins, Clyde [<mailto:cwatkins@bechtel.com>]
Sent: Tuesday, February 25, 2014 8:27 AM
To: Straight, Scott
Cc: Brightman, Jeff
Subject: Amendment 6 Completion Schedule

Scott,

Attached is the updated Amendment 6 Completion schedule for your review.

Mel

Mel Watkins

Project Engineering Manager

Trimble County Unit 2 Project

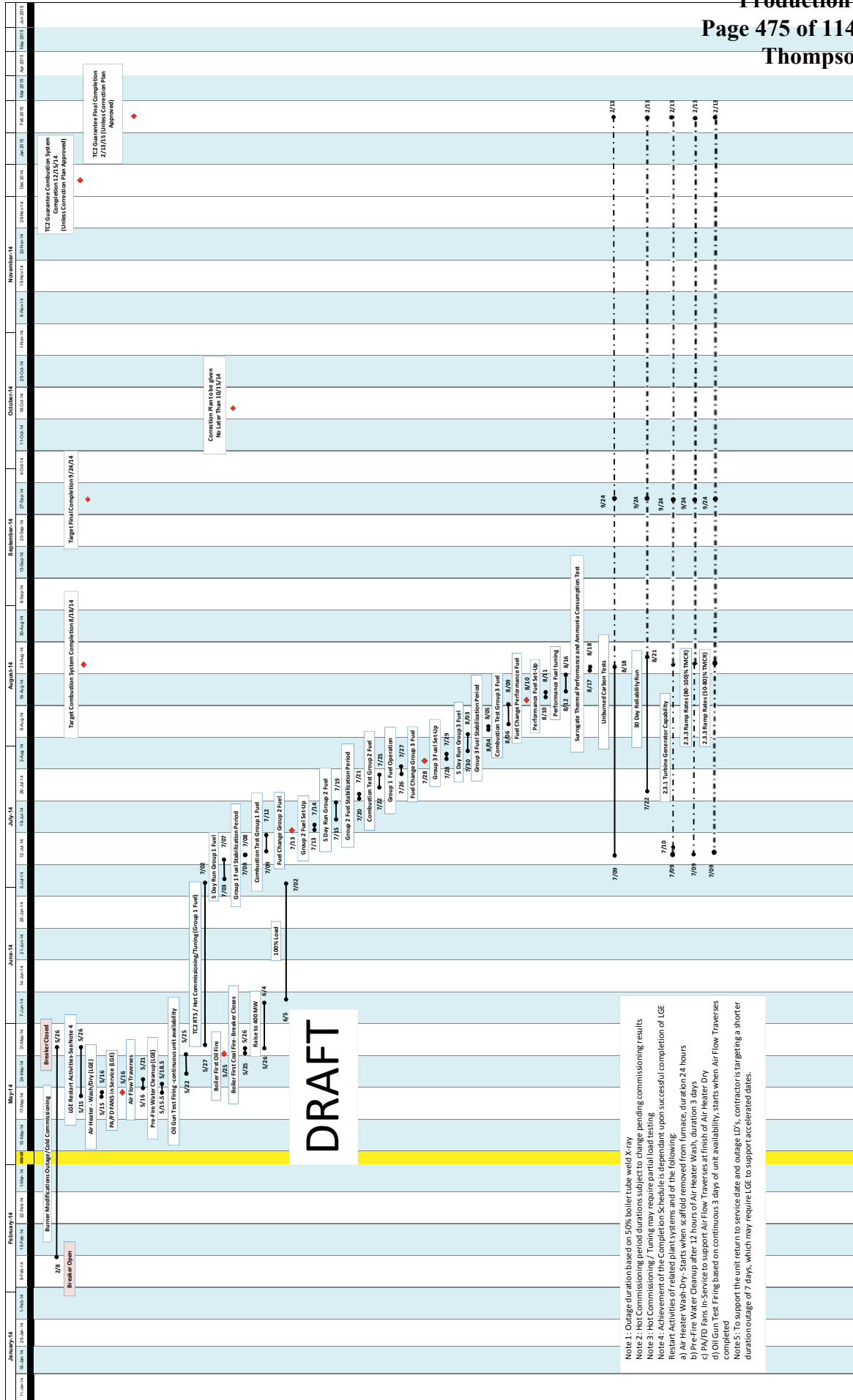
cwatkins@Bechtel.com

work: 301-228-8035 (Frederick)

work: 502-255-5277 (Trimble Site)

cell : 240-793-4490

Trimble County Unit 2
AMENDMENT 6: EXHIBIT 3: ATTACHMENT A
SUBJECT SCHEDULE: COMPLETION SCHEDULE



Note 1: Outage duration based on 50% boiler tube weld X-ray
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 b) Pre-Start Water Cleanup after 12 hours of Air Heater Wash, duration 3 days
 c) Service to support Air Flow Transverses at the Air Heater Dry
 d) Oil Gun Test Firing based on continuous 3 days of unit availability, starts when Air Flow Transverses completed
 Note 5: To support the unit return to service date and outage LD's, contractor is targeting a shorter duration outage of 7 days, which may require LGE to support accelerated dates.

From: Melloan, Ricky(/O=LGE/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=MELLOAN, RICKYCF4)
To: Hill, Ben
CC:
BCC:
Subject: FW: B&V RPM Trimble County Unit 2 - Deposits in Control Valves
Sent: 02/20/2014 10:58:26 AM -0500 (EST)
Attachments:

From: Roach, Sandra A [mailto:RoachSA@bv.com]

Sent: Wednesday, March 13, 2013 10:32 AM

To: Rabe, Phil; Joyce, Jeff; Smith, Timothy (Fuels); Mohn, Laura; Payne, Nicholas; Dorwart, Jordan; Slaughter, Mitch; Bullock, Sam; Raker, Adam; Thomas, Mark; Carlisle, Gary; Melloan, Ricky; Heinz, John; Moore, Emmett; Powell, Richard

Cc: Kirchner, Matt D.; Slack, Eric; Johnson, Scott R.; Shaw, Mark D.; Preston, Michael C. (Mike); Trimble, James T. (Tom)

Subject: B&V RPM Trimble County Unit 2 - Deposits in Control Valves

All ,

B&V has continued with internal discussions in regards to the deposits found in the TC2 Control Valves and the following summarizes the issue to date and details current conclusions and recommendations. Please take a moment to read this email. We would be happy to set up a conference call to discuss finding in further detail. Please reply to this email if you'd like to set up a conference call.

Summary of Issue to Date:

Deposits, which upon analysis were found to be 98% iron, have been found in the reheat and superheat spray flow control valves, the FWH 8A and 8B control valves, and the WCAH 2A control valve (WCAH 2B CV suspected of pluggage). These deposits harden in the control valves, plugging up valve cages, so that adequate control cannot be maintained. Valve trims have been replaced. Additional control valves are suspected of having pluggage.

Current Conclusions:

Flow Accelerated Corrosion

B&V initially suspected that aggressive flow accelerated corrosion (FAC) was the root cause of the deposits in the control valves. However, upon further internal discussion the following has been concluded:

The quantity of corrosion product required to plug multiple control valve cages does not suggest the corrosion product source to be flow accelerated corrosion (FAC). FAC typically happens at a slower rate, is very localized, and the physical particle size of the material lost is very small. All of this would tend to not be sufficient to produce enough (and large enough) corrosion product to plug the trim in multiple control valves. This is not to say that there couldn't be FAC occurring, but it is not likely the root cause of the symptoms exhibited.

Boiler Tube Exfoliation

B&V has investigated the possibility of boiler tube exfoliation being the cause of the deposits. Boiler tube exfoliation is a phenomenon that occurs with certain superheater and reheater tube materials, (e.g., 347H). The exfoliated material is typically magnetite. The magnetite builds up on the tube ID during operation then exfoliates (spalls) when the boiler cools.

B&V Reviewed the materials installed in the Unit 2 Doosan Babcock steam generator. (Materials are listed below.) Although these tube materials will develop corrosion product over time that will exfoliate, as will any material, they have not been known to exhibit the excessive exfoliation problems (causing tube plugging/failures) that 347H materials have. Therefore, boiler tube exfoliation is not a likely the source of the material plugging the control valves.

Superheater (Primary, Platen, and Final)

- ASME SA213 T12
- ASME SA213 T22
- ASME SA213 T23
- ASME SA213 T91
- ASME SA213 T92
- ASME SA213 TP310HCbN

Reheater

- ASME SA210 C
- ASME SA213 T12

- ASME SA213 T22
- ASME SA213 T91
- ASME SA213 TP310HCbN

Improper/ Inadequate Cleaning During Construction

The most likely cause is thought to be improper cleaning of the systems during construction and startup:

Improper/inadequate cleaning during construction/startup is likely the cause of the excessive corrosion product that is plugging the control valves trim. On B&V projects, we typically go to great lengths to ensure that the systems are clean prior to start-up (shot blasting equipment and piping in shop, hydrolasing post installation of piping, etc), then go through high velocity flushes, chemical cleaning, and steam blow activities during startup to ensure a clean system. We are not aware of what measures the contractor on TC2 employed to ensure cleanliness of the steam/feedwater systems. The spray valves plugging would suggest that the feedwater system may not have been adequately cleaned, whereas the heater drain valves plugging would suggest the feedwater heaters and/or extraction piping may not have been adequately cleaned.

If the cause of the corrosion is inadequate cleaning, the good news is that systems will eventually get cleaned up through normal operation. The bad news is that it may require dismantling control valves, strainers, traps, etc. several times.

Recommendations:

- During the upcoming outage, clean the condenser hotwell and deaerator storage tank to remove any sediment and perform an analysis of the sediment to determine the material and document how much material was removed. Other vessels in the FW system may be considered for inspection.
- During the upcoming outage inspect LP Heater 1A Normal Drain Valve and LB Heater 2B Normal Drain Valve for pluggage in valve trim. These NDVs have operated at 100% open much of the last year.
- During the upcoming outage inspect strainers in the condensate and feedwater system for sediment / deposits.
- Develop a FAC monitoring plan. Although we don't think FAC is the cause of the problem, based on findings that the majority of feedwater system piping is carbon steel and does not meet recommended chrome equivalencies to eliminate FAC, establishing a baseline now and developing a plan to monitor in the future would be well advised. (B&V Will be providing an estimate of man hours to make-up P&IDs for area of high risk of FAC).
- Develop a boiler water chemistry monitoring plan. Review lab analyses of grab samples taken at strategic locations in the cycle to help assess the location and extent of further corrosion. (B&V can assist as needed).
- Review the Cleanliness Control Plan used by the contractor to determine the extent of measures taken to ensure the cleanliness of the unit during construction/start-up. This will help ascertain if the corrosion product being discovered now is the result of inadequate cleaning processes. (B&V can assist as needed).

Kind Regards,

SANDRA ROACH, P.E.* | Performance Engineer, Energy Division

Black & Veatch Corporation | 11401 Lamar, Overland Park, KS 66211

+ 1 913-458-6906 p f | +1 256-794-1279 m | roachsa@BV.com

*Licensed in Maryland

Building a World of Difference.®

Please consider the environment before printing my email

Please note that the information and attachments in this email are intended for the exclusive use of the addressee and may contain confidential or privileged information. If you are not the intended recipient, please do not forward, copy or print the message or its attachments. Notify me at the above address, and delete this message and any attachments. Thank you.

From: Anderson, Dave (Trimble County)(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=ANDERSOND)
To: Afiyet, Hamit; Ball, Adam; Bethany, Ron; Boone, James; Bullock, Sam; Byrd, Larry; Cash, Rebecca; Chin, Doug; Craft, Jim; Craven, David; Dorwart, Jordan; Dukes, Christopher; Feider, Ryan; Gilliland, Dave; Gray, Jeffrey; Griffith, Michelle; Hance, Chuck; Hannon, Hannah; Hayes, Christopher; Heinz, John; Henderson, Trent; Hudson, Glen; Jensen, Jack; Jones, Steve; Joyce, Jeff; Joyce, Kenny; Maldonado, Francisco; Melloan, Ricky; Menezes, Tomas; Mills, Ricky; Mohn, Laura; Moore, Emmett; Noonan, Kenny; Park, Marci; Payne, Nicholas; Phelps, Grant; Powell, Richard; Rabe, Phil; Raker, Adam; Ransdell, Charles; Sanders, Matt; Sedam, Dale; Simpson, Jeff; Slaughter, Mitch; Stewart, Robert E. (Trimble); Thomas, Mark; Thurston, Eric; Turner, Haley; Turner, Tyler; Walcott, Danny
CC:
BCC:
Subject: FW: Night shift Report
Sent: 02/16/2014 01:13:10 PM -0500 (EST)
Attachments: TC #2 2014 Spring outage daily report.docx;

All,

Last night's update from project engineering.

Upper arch cleaning is taking longer than expected. Glen Hudson will check with James Dearman to make sure we do not impact Doosan's schedule.

David W. Anderson

Louisville Gas & Electric
Office Ph: 502-627-6313
Cell: 502-667-0549
Email: dave.anderson@lge-ku.com

From: Harris, Gary
Sent: Sunday, February 16, 2014 6:39 AM
To: Straight, Scott
Cc: Anderson, Dave (Trimble County); Gilliland, Dave; Wilson, Gregory; Turner, Haley; Joyce, Jeff; Withrow, Jimmy; Lipp, Joan; Byrd, Larry; Slaughter, Mitch; Rabe, Phil
Subject: Night shift Report



PROJECT ENGINEERING DEPARTMENT
“DAILY CONSTRUCTION REPORT”
NIGHT SHIFT

LG&E KU PROJECT COORDINATORS: Gary Harris, Chuck Wescoat	DATE: Saturday 2-15-2014
CONTRACTOR ON SITE: Bechtel /Southeast	SUPERVISORS NAME; Eric Moore
PROJECT NAME: TC Unit 2 Outage	NIGHT SHIFT HOURS 1900 to 0700
WEATHER	
<u>Temperature</u>	<u>Precipitation</u>
<i>High:</i> 34	<i>Amount:</i> .5” snow fall
<i>Low:</i> 28	<i>Time Beginning:</i> 2200
<i>Wind:</i> Clam	<i>Time Ending:</i> 2/16/14 0030
<i>Other:</i> Cloudy	<i>Type (Rain, Snow, Sleet):</i> snow

MAJOR CONSTRUCTION ACTIVITIES OF THE DAY

TC Unit 2 Burners

~ Southeast boiler- Work on various burner decks hanging rigging, removing bolts on burners. Removing coal pipe and gate valves on all burner levels. Burners removed D1, D2, D3, D4, D5, B1, B2, B4, B5, F3, and F4 and removing the pulled burners from the plant.

~ Southeast boiler –Demo work to the OFA ductwork, cutting it out in small sections for removal. Removing duct work up to dampers on the NE, NW, SE and SW corners until sand blasting is over.

~ Petrochem- Installing scaffold inside the OFA duct in various locations in the NE, NW, SE and SW section.

FRONT WALL

BURNER	Removed						Re-Installed
C1	X						
C2	X						
C3	X						
C4	X						
C5	X						
D1	X						
D2	X						
D3	X						
D4	X						
D5	X						
B1	X						
B2	X						
B3	X						
B4	X						
B5	X						

REAR WALL

BURNER	Removed						Re-Installed
F1	X						
F2	X						
F3	X						
F4	X						
F5							
A1							
A2							
A3	X						
A4							
A5							
E1							
E2							
E3							
E4							
E5							

Work Quality/Observations/Concerns:

-

Safety /Environmental Issue:

- General housekeeping on site is being well maintained and on going.

Other:

-

Contractors on Site

Bechtel- 1
Southeast Boiler- 55
Doosan- 1
Petrochem- 15
Mistras (x-ray)

From: Anderson, Dave (Trimble County)(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=ANDERSON)
To: Afiyet, Hamit; Ball, Adam; Bethany, Ron; Boone, James; Bullock, Sam; Byrd, Larry; Cash, Rebecca; Chin, Doug; Craft, Jim; Craven, David; Dorwart, Jordan; Dukes, Christopher; Feider, Ryan; Gilliland, Dave; Gray, Jeffrey; Griffith, Michelle; Hance, Chuck; Hannon, Hannah; Hayes, Christopher; Heinz, John; Henderson, Trent; Hudson, Glen; Jensen, Jack; Jones, Steve; Joyce, Jeff; Joyce, Kenny; Maldonado, Francisco; Melloan, Ricky; Menezes, Tomas; Mills, Ricky; Mohn, Laura; Moore, Emmett; Noonan, Kenny; Park, Marci; Payne, Nicholas; Phelps, Grant; Powell, Richard; Rabe, Phil; Raker, Adam; Ransdell, Charles; Sanders, Matt; Sedam, Dale; Simpson, Jeff; Slaughter, Mitch; Stewart, Robert E. (Trimble); Thomas, Mark; Thurston, Eric; Turner, Haley; Turner, Tyler; Walcott, Danny; Waller, Logan
CC:
BCC:
Subject: FW: TC #2 2014 Spring outage daily report.docx(Dayshift)
Sent: 02/23/2014 06:03:19 PM -0500 (EST)
Attachments: TC #2 2014 Spring outage daily report.docx;

[FYI.....progress report from project engineering today.](#)

David

From: Withrow, Jimmy
Sent: Sunday, February 23, 2014 5:10 PM
To: Straight, Scott
Cc: Joyce, Jeff; Anderson, Dave (Trimble County); Rabe, Phil; Byrd, Larry; Gilliland, Dave; Slaughter, Mitch; Turner, Haley; Hance, Chuck; Lipp, Joan; Maldonado, Francisco; Lipp, Joan; Dorwart, Jordan; Wilson, Gregory; Harris, Gary; Withrow, Jimmy
Subject: TC #2 2014 Spring outage daily report.docx(Dayshift)



PROJECT ENGINEERING DEPARTMENT
“DAILY CONSTRUCTION REPORT”
DAY SHIFT

LG&E KU PROJECT COORDINATORS: Jimmy Withrow	DATE: Sunday 2-23-2014
CONTRACTOR ON SITE: Bechtel /Southeast	SUPERVISORS NAME; John Gray
PROJECT NAME: TC Unit 2 Outage	DAY SHIFT HOURS 7 to 1700 hours
WEATHER	
<u>Temperature</u>	<u>Precipitation</u>
<i>High:</i> 37	<i>Amount:</i> Trace
<i>Low:</i> 36	<i>Time Beginning:</i> 1500 hrs.
<i>Wind:</i> SW @ 6mph Gust to 14mph	<i>Time Ending:</i>
<i>Other:</i> Cloudy	<i>Type (Rain, Snow, Sleet):</i> Snow

MAJOR CONSTRUCTION ACTIVITIES OF THE DAY

TC Unit 2 Burners

- ~ Southeast boiler- Continuing to remove existing quarls, today they removed E5,E4
- ~ Southeast- Doing prep work to the cut out sections of quarls going to start fit up work in the next day.
- ~ Southeast boiler – Doing demo work to the OFA ductwork and starting to build the new duct on the SE, NE corner. (Ongoing)
- ~ Petrochem- Building and modifying scaffolds in various locations.
- ~ Meiners- Off today.

BURNER	Old Burner Removed	Secondary Air barrel removed	Air Register removed	Old Quarl Removed	New Quarl Fitted	New Quarl Welded	New Burner Installed	New Burner Wired (Complete)
C1	2/15	2/17	2/16	2/20				
C2	2/15	2/17	2/16	2/20				
C3	2/15	2/16	2/16	2/20				
C4	2/15	2/16	2/16	2/20				
C5	2/15	2/16	2/16	2/20				
D1	2/15	2/17	2/17	2/21				
D2	2/15	2/17	2/17	2/21				
D3	2/15	2/15	2/17	2/21				
D4	2/15	2/17	2/17	2/21				
D5	2/15	2/17	2/17	2/21				

Attachment to Response to KIUC-1 Question No. 30(f)

								Production 2
								Page 483 of 1143
								Thompson
B1	2/16	2/18	2/19	2/22				
B2	2/16	2/18	2/19	2/22				
B3	2/10	2/19	2/19	2/22				
B4	2/16	2/19	2/19	2/22				
B5	2/16	2/19	2/19	2/22				
BURNER	Removed	Secondary Air barrel removed	Air Register removed	Old Quarl Removed	New Quarl Fitted	New Quarl Welded	New Burner Installed	New Burner Wired (Complete)
F1	2/15	2/16	2/17	2/21				
F2	2/15	2/16	2/17	2/21				
F3	2/15	2/16	2/17	2/21				
F4	2/15	2/16	2/17	2/20				
F5	2/16	2/16	2/17	2/20				
A1	2/16	2/18	2/18	2/23				
A2	2/16	2/18	2/18	2/22				
A3	2/10	2/18	2/18	2/22				
A4	2/16	2/18	2/18	2/22				
A5	2/16	2/18	2/18	2/22				
E1	2/17	2/19	2/19					
E2	2/17	2/19	2/19					
E3	2/17	2/19	2/19					
E4	2/17	2/19	2/20	2/23				
E5	2/17	2/20	2/20	2/23				

Work Quality/Observations/Concerns:

- Housekeeping continues to look good.
- Burner decks are in good shape.

Safety /Environmental Issue:

-
-

Contractors on Site

Bechtel- 1
Southeast Boiler- 87
Doosan- 11
Petrochem- 22
Meiners- 0

From: Anderson, Dave (Trimble County)(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=ANDERSOND)
To: Afiyet, Hamit; Ball, Adam; Bethany, Ron; Boone, James; Bullock, Sam; Byrd, Larry; Cash, Rebecca; Chin, Doug; Craft, Jim; Craven, David; Dorwart, Jordan; Dukes, Christopher; Feider, Ryan; Gilliland, Dave; Gray, Jeffrey; Griffith, Michelle; Hance, Chuck; Hannon, Hannah; Hayes, Christopher; Heinz, John; Henderson, Trent; Hudson, Glen; Jensen, Jack; Jones, Steve; Joyce, Jeff; Joyce, Kenny; Maldonado, Francisco; Melloan, Ricky; Menezes, Tomas; Mills, Ricky; Mohn, Laura; Moore, Emmett; Noonan, Kenny; Park, Marci; Payne, Nicholas; Phelps, Grant; Powell, Richard; Rabe, Phil; Raker, Adam; Ransdell, Charles; Sanders, Matt; Sedam, Dale; Simpson, Jeff; Slaughter, Mitch; Stewart, Robert E. (Trimble); Thomas, Mark; Thurston, Eric; Turner, Haley; Turner, Tyler; Walcott, Danny
CC:
BCC:
Subject: FW: TC #2 2014 Spring outage daily report.docx (Dayshift)
Sent: 02/15/2014 10:57:07 PM -0500 (EST)
Attachments: TC #2 2014 Spring outage daily report.docx;

All,

Attached is todays update from Project Engineering. Sandblasting was completed and burners are being removed.

Do not forget to sign on fans to obtain clearance for gas path.

Thanks,

David W. Anderson

Louisville Gas & Electric
Office Ph: 502-627-6313
Cell: 502-667-0549
Email: dave.anderson@lge-ku.com

From: Withrow, Jimmy
Sent: Saturday, February 15, 2014 5:42 PM
To: Straight, Scott
Cc: Joyce, Jeff; Anderson, Dave (Trimble County); Rabe, Phil; Byrd, Larry; Slaughter, Mitch; Turner, Haley; Gilliland, Dave; Hance, Chuck; Lipp, Joan; Wilson, Gregory; Harris, Gary; Withrow, Jimmy
Subject: TC #2 2014 Spring outage daily report.docx (Dayshift)



PROJECT ENGINEERING DEPARTMENT
“DAILY CONSTRUCTION REPORT”
DAY SHIFT

LG&E KU PROJECT COORDINATORS: Jimmy Withrow	DATE: Saturday 2-15-2014
CONTRACTOR ON SITE: Bechtel /Southeast	SUPERVISORS NAME; John Gray
PROJECT NAME: TC Unit 2 Outage	DAY SHIFT HOURS 7 to 1900 hours
WEATHER	
<u>Temperature</u>	<u>Precipitation</u>
<i>High:</i> 36	<i>Amount:</i> NTR
<i>Low:</i> 25	<i>Time Beginning:</i>
<i>Wind:</i> Calm	<i>Time Ending:</i>
<i>Other:</i> Flurries/Sunny	<i>Type (Rain, Snow, Sleet):</i>

MAJOR CONSTRUCTION ACTIVITIES OF THE DAY

TC Unit 2 Burners

~ Southeast boiler- Removing the coal piping and PF knife valves on all rows. Staging new burners from the ground to the turbine deck.

~ Southeast- Removed F1, F2, C1.C2,C3,C4,C5 burners today.

~ Southeast boiler – Doing demo work to the OFA ductwork, cutting it out in pieces to construct the new design. (Ongoing)

~ Petrochem- Building and modifying scaffolds in various locations.

~ Meiners- OFF TODAY

~Alstom- Blasting inside the furnace finished around 1100 hrs.

FRONT WALL

BURNER	Removed						Re-Installed
C1	X						
C2	X						
C3	X						
C4	X						
C5	X						
D1							
D2							
D3							
D4							
D5							
B1							
B2							
B3	X						

B4							Production 2
B5							Page 486 of 1143

Thompson

REAR WALL

BURNER	Removed						Re-Installed
F1	X						
F2	X						
F3							
F4							
F5							
A1							
A2							
A3	X						
A4							
A5							
E1							
E2							
E3							
E4							
E5							

Work Quality/Observations/Concerns:

-

Safety /Environmental Issue:

-

Other:

Contractors on Site

Bechtel- 2
 Southeast Boiler- 105
 Doosan- 12
 Petrochem- 21
 Meiners-
 Alstom- 4

From: Melloan, Ricky(/O=LGE/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=MELLOAN, RICKYCF4)
To: roachsa@bv.com
CC:
BCC:
Subject: FW: TC2 Startup
Sent: 04/10/2014 01:23:21 PM -0400 (EDT)
Attachments:

[This went to your LGE address yesterday. Sorry.](#)

From: Melloan, Ricky
Sent: Wednesday, April 09, 2014 12:56 PM
To: Roach, Sandra
Cc: Rabe, Phil
Subject: TC2 Startup

Sandra – We met with Doosan this morning to finalize the TC2 commissioning plan. I will send you a copy of the revised schedule once it has been issued but here are some key dates:

April 28 – Boiler scaffold removed
May 7 - All outage work complete
May 8 Fans in service
May 8-10 Measure and set core air flow
May 10 – 12 balance SA flow to burners
May 12-16 Clean air PF tests
May 20 Test oil guns
May 23 On line
May 23 – 29 400MW
May 29 Raise to full load
May 29 – June NOX/ CO tuning
July 5 Group 1 Fuel Test
July 11 Group 2 Fuel Test
July 26 Group 3 Fuel Test
July 30 performance Test

Rick Melloan
Trimble Co. Station
502-627-6259

From: Mohn, Laura(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=E008837)
To: Bullock, Sam; Sedam, Dale
CC: Henderson, Trent; Turner, Tyler; Melloan, Ricky; Byrd, Larry
BCC:
Subject: Fwd: TC 2 Mill Inspections
Sent: 04/10/2014 11:25:29 AM -0400 (EDT)
Attachments: image001.png;

When will the ring to roll clearance be set or are they already? Can we please document it? See below. I know it may not make sense to cater to Bechtel/Doosan, but it is important in regards to the combustion and efficiency upon startup. We don't want to give them any ammunition against us.

Thanks,

Laura

Begin forwarded message:

From: "Watkins, Clyde" <cwatkins@bechtel.com>
Date: April 10, 2014 at 7:31:40 AM EDT
To: Laura Mohn <Laura.Mohn@lge-ku.com>
Cc: Ricky Melloan <Ricky.Melloan@lge-ku.com>, Phil Rabe <Phil.Rabe@lge-ku.com>, "Kerslake, Ian" <ian.kerslake@doosan.com>, "Gratton, Ron" <Ron.Gratton@doosan.com>
Subject: FW: TC 2 Mill Inspections

Laura,

Please see recommendation below from Scott as it relates to additional dimensional checks while setting the ring-roll clearances. I don't know if this is part of the normal check/verification while setting these clearances or not, but given what was found during the mill E inspection, we believe it makes sense to document the findings.

Scott is on site today if you or Dale would like to get with him for any further clarification.

Mel

Mel Watkins

Project Manager

Trimble County Unit 2 Project

cwatkins@bechtel.com

work: 301-228-8035 (Frederick)

cell : 240-793-4490

From: Scott Vierstra [<mailto:savierstra@earthlink.net>]
Sent: Wednesday, April 09, 2014 10:22 PM
To: Watkins, Clyde
Subject: RE: TC 2 Mill Inspections

Mel,

As discussed earlier today, the dimensional deviations between the rolls and table in the E mill are contributing to a thicker bed depth for a given mill throughput relative to the other mills inspected. This produces a greater

volume of coal being plowed over the vane wheel and an increased propensity for dribble. Why these clearances were different was not readily apparent from the extent of inspections made. However, the clearance profile should be rechecked after the rolls and table segments are restored to their original design contours, the gaps should be rechecked at both the toes and heels. If there is still a deviation in the gaps, the pivot details should be inspected to determine why the fits are not the same as the other mills. Similarly, it would be helpful to know how and why the clearances deteriorated to the condition found during the March 12th inspections.

Scott Vierstra, P.E.
SAVvy Engineering LLC
3635 Esquire Drive
Canal Winchester, OH 43110
Cell 614-519-9211
savierstra@savvyeng.com or savierstra@earthlink.net

From: Scott Vierstra [<mailto:savierstra@earthlink.net>]
Sent: Wednesday, March 12, 2014 4:18 PM
To: Watkins, Clyde (cwatkins@bechtel.com)
Cc: Brann, Devin (dnbrann@bechtel.com); Dearman, James (jdearman@bechtel.com)
Subject: TC 2 Mill Inspections

Mel,

On March 12th, the Trimble County B, C and E mills were inspected in an attempt to identify why the E mill has been requiring a positive primary air bias in order to control coal dribble/spillage. Representing RV Industries in contract to Doosan Babcock, Peter Stanwick, along with Ron Gratton of Doosan Babcock and Devin Brann participated in the inspection.

Dimensional checks of the mill throats/vane wheels found consistency on all three inspected mills. Visually, the wear on the grinding elements also did not appear to show excessive deviations, according to Mr. Stanwick. However, it was noted that there was a considerable difference in the clearances between the rolls and grinding segments in the E mill relative to the B and C mills. The gap between the toe of the rolls and the grinding segments on the B and C mills was on the order of under 1". This is in comparison to a dimension of approximately 2" for the same clearance location in the E mill. This was creating a visually sizable increase in the gap between the two grinding components along the overall toe to heel length for the E mill.



The increased gap between the grinding elements transfers the type of particle size reduction means from direct fracturing of coal particles to attrition (particle to particle contact) and produces a deeper coal bed depth for the same mill coal throughput rate. It also increases the amount of plowing of coal over the wall of the mill table (at the periphery of the grinding segments). This produces an understandable increase in the potential for increased spillage rates. It is recommended that a template be used to evaluate the roll and grinding segment profiles during the current outage in order to determine why there is the increased clearances in the E mill and to provide guidance to the contractor performing the roll weld overlay so as to be consistent and to produce uniform clearances, toe to heel, upon the unit's return to service on all six mills.

There is, of course, the differences in the E mill primary air inlet duct versus all but the A mill, with an offset. Because this has not produced spillage concerns on the A mill and based upon comparison of mill operational data, it is not believed that the duct configuration on the E mill is a concern for potential primary air flow measurement errors and spillage. To date multiple efforts to check the E mill primary air flow calibration have demonstrated consistent results, suggesting that the air flow is reasonably accurate and consistently controlled, relative to the other mills. However, it has been noted that the recommendation to manually blow back and purge the primary air differential transmitter sensing lines on a quarterly basis has not been adhered to – with no manual on-line purging being performed. It is suggested that the E mill primary air flow calibration be checked quarterly without manual purging to determine if there is any indication of a change in the venturi element K-Factor. If not, it might be possible to extend the duration between manual purging, but such should be validated with additional repeated calibration efforts until K-Factor changes are observed or the maximum durations between planned outages are reached between manual purging of the sensing lines.

Scott Vierstra, P.E.

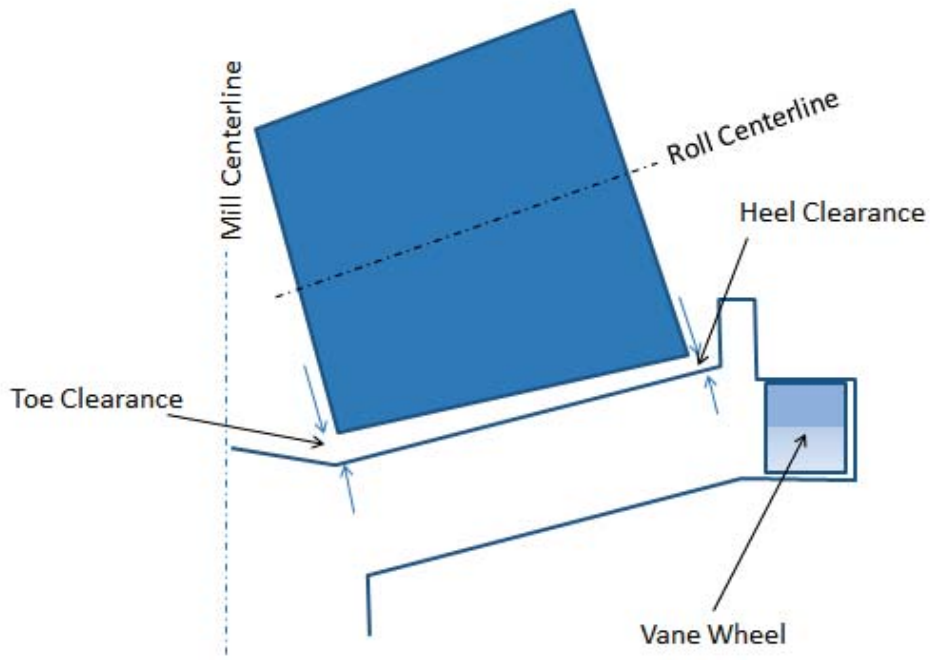
SAVvy Engineering LLC

3635 Esquire Drive

Canal Winchester, OH 43110

Cell 614-519-9211

savierstra@savvyeng.com or savierstra@earthlink.net



From: Mohn, Laura(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=E008837)
To: Melloan, Ricky; Carlisle, Gary
CC:
BCC:
Subject: OFA SMR
Sent: 02/12/2014 07:02:43 AM -0500 (EST)
Attachments: TC2_OFA ports Dec 12th 2013.pdf;

This is the e-mail that was attached to the e-mail I sent Monday that won't open.

Cheers,

Laura

From: Watkins, Clyde [mailto:cwatkins@bechtel.com]
Sent: Thursday, December 12, 2013 6:05 PM
To: Mohn, Laura
Cc: Dearman, James; Craft, Jim
Subject: FW: Combustion & REI Action Item List - Item B57 & B87

Laura,

Forwarding the SMR packages received from Doosan that we discussed on the phone this morning.

Please forward to others that may want them.

Thank You,

Mel Watkins

Project Engineering Manager

Trimble County Unit 2 Project

cwatkins@Bechtel.com

work: 301-228-8035 (Frederick)

work: 502-255-5277 (Trimble Site)

cell : 240-793-4490

From: Cameron, Euan [mailto:Euan.Cameron@doosan.com]
Sent: Thursday, December 12, 2013 9:19 AM
To: Watkins, Clyde
Cc: Hobbs, Donna; McCallum, Neil; Kerslake, Ian; Hammond, Steve; Torkington, Ian R; Groom, David; Reynolds, Paul (Crawley); Hough, David C; Gratton, Ron; Lee, John; Davidson, Gordon; 06350 TRIMBLE COUNTY MAILBOX; Brann, Devin
Subject: RE: Combustion & REI Action Item List - Item B57 & B87

Mel,

In addition to Steve's earlier email, please find attached the second of the more detailed Construction scope write-ups – this one is for the OFA work package.

Please note that this should be read in conjunction with SMR 0156.

Best Regards,

Euan

Title:

SITE WORK PACKAGE

Document Designation:

Document Reference:WP02

Project Name	Project Code	Group Code	Folder Group	Sub Folder Group
TRIMBLE 2	07292A	00	00	00

Status: Issue Date 2013.12.04 Revision Date 2013.12.12 Revision 04

Distribution: No. Pages 8 Appendices 0

Subject:

Additional OFA ports and associated works

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 - 2.4 Erection.....
 - 2.5 Work Access Systems.....
 - 2.6 Tools & Equipment.....
- 3. Quality Management, Acceptance Test and Inspection.....**
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 - 3.2 Quality Control.....
- 4. Bill of Quantities.....**

Introduction

The intent of this document is to give an outline view of the work content including the proposed sequence and must be read in conjunction with the SMR which is the controlling document regarding technical requirements.

It is important to note that the work is to be executed using method statements, technical procedures, safety documents and controls which form part of the subcontractor’s instructions and documentation produced for this work package.

1. Brief Description of Work Package

There are currently 10 OFA (Over Fired Air) ports, (5 in the front wall and 5 in the rear wall, each one is fitted directly above each column of burners). This work pack covers fitting 4 additional OFA ports into the furnace and increasing the ducting size local to the 4 OFA ports. The new ports are fitted at a different elevation as the existing ones due to the new ports being of a slightly larger diameter, they are fitted on the outboard furnace corners.

2. General Information for Construction

2.1 General

Duct Insulation
Duct Support frame
OFA Ducts
OFA windbox
Damper
Damper actuator
Expansion Joint
Replacement Boiler straps
Flow straighteners
Aerofoils
OFA Galleries
OFA Ports
OFA Quarl
OFA Pressure Part attachments
OFA duct doors
Painting
AmStar coating

It is the CONTRACTOR’s responsibility to familiarise themselves with the site environment to ensure that the assembly concept, methods to be employed including dimensional checks are undertaken prior to execution of the work package are satisfactory

2.2 Pre Check for Erection

- Establish suitable laydown areas for the new quarl panels and old quarls.
- Establish the route for transporting the equipment around site up to and down from the work area.
- Carry out any required survey and identify testing of intended lifting points / existing beams.
- Identify welders who are qualified to carry out this task.
- Ensure all personnel have undergone the required rig training for this task.
- Compile the safety and quality documentation packs
- Ensure that all replacement items are available and on site for the work to commence
- Ensure that all special tooling, jigs, jacking systems and equipment are available and in good working order.

2.3 Enabling Works

- Set up all the required temporary services.
- Load test any lifting points as required.
- Engage with the AI inspection authority for pressure part welding.

2.4 Erection

Section 2.4.1 REMOVAL OF EXISTING EQUIPMENT

- 1 Erect scaffolds including safety scaffolds under the ducts and inside the vertical duct sections. There will be a scaffold internal to the furnace which is being dealt with under the burner work pack
- 2 Identify, mark and remove surrounding electrics and any similar item which could be damaged during execution of the work
- 3 Disconnect the damper actuator and store for fitting during re-assembly
- 4 Remove impulse pipework from aerofoils and store for refitting
- 5 Remove insulation as required for access to ducting sections
- 6 Mark termination point on windbox V – type expansion fold
- 7 Support the toggle duct section. It is imperative that only the identified existing steelwork is utilised to support and to rig the existing and new ducting during removal and fitting of the equipment
- 8 Remove the damper and local expansion joint
- 9 Remove the redundant section of windbox ducting to allow introduction of the new OFA penetration to commence
- 10 Remove the toggle duct section and expansion joint
- 11 Remove the 90 degree section of ducting down to the termination point
- 12 Remove the existing (end) OFA port and store to allow it to be refitted later
- 13 Remove the redundant section of the existing windbox support, this is fitted to the furnace corner and a drawing will be available to determine the cut position of the section which would foul the new ducting if it were to remain in position.

Section 2.4.2 MARKING THE NEW OFA PORT CENTRE LINE

- 1 Mark the furnace to determine the centre of the new OFA position and drill a 1/4" hole through the membrane to transfer the datum to the inside of the furnace. The required dimensions and angles required to carry out this activity are identified on the drawing

Section 2.4.3 TEMPORARY SUPPORT ARRANGEMENT TO THE BOILER SUPPORT STRAPS

- 1 The existing boiler straps foul the new OFA port and are to be modified, due to the weight distribution across all the boiler straps it is thought prudent to ensure they remain under load throughout the work. Therefore a temporary load transfer plates require welding to the side of the straps (see drawing).
- 2 Once the plates are welded and any required NDE complete, assemble the threaded rod system and ensure it is correctly tensioned using the hydraulic jacking system. It may be necessary to remove sections of existing finger plates to allow the temporary system to be fitted, new finger plate sections have been supplied in case they are required, and finger plates must be re fitted upon completion of the work
- 3 It is imperative that the boiler straps remain in tension throughout completion of the work and must not be cut until the temporary system is correctly fitted, also the temporary rods must not be de-tensioned until the new straps are fitted and complete
- 4 Mark the cut lines and back marks on the 2 boiler straps and cut both straps ensuring the boiler tubes are not damaged during this process
- 5 Support the boiler straps, then grind away the weld between the seal blocks and boiler straps and remove the redundant boiler strap sections
- 6 With the sections of boiler strap removed the existing cast support strap filler blocks (which will interfere with the new butt welds) must also be removed and any rags removed from the remaining redundant blocks dressed to ensure they do not interfere with the new straps. This operation must be undertaken with extreme care to ensure the tubes are not damaged.
- 7 Additional cast support strap filler blocks are required for the new sections of boiler strap and these must now be welded into position.
- 8 The new sections of boiler strap can now be fitted into position ensuring that the straps are fitted in the correct orientation and that the drilled datum hole in the membrane is central to the boiler straps. The final inspection is to ensure that the support brackets are correctly distanced to allow them to accept the ducting frame (which attaches to the lugs on the new straps plus existing lugs). The straps can be butt welded together once confirmed that they are positioned and orientated correctly, and then the straps welded to the new cast blocks.
- 9 Once the modification work to the straps is confirmed as complete, including any required NDE, the temporary loading system can be de-tensioned and removed. Ensure that any previously removed finger plates are fitted/replaced, new finger plate sections have been supplied for this activity

Section 2.4.4 FITTING OF THE NEW OFA PANEL

- 1 The existing panel area will be marked for removal from the furnace side using a jig frame. This frame will be accurately positioned (firstly on the new panel), then onto the inside furnace wall to ensure the cut / butt weld positions are correct and that the new quarl opening is located in its correct position.
- 2 Fit the marking out frame to the new panel to determine correct fit. Mark the frame to determine which way round it fits and which is top, also to the furnace corner it relates to.
- 3 Fit the marking out frame to the furnace and mark the cut lines and back-marks onto the inside of the furnace tubes. The back-mark will be 1 inch inboard of the final finish dimension and will be marked by fitting a 1 inch spacer inside the frame. The final cut line is marked directly from the frame inner edge. As all these marks will have gone when the final prep is complete a datum mark will also be scribed onto the tube using the jig frames outer edge.
- 4 With the tubes marked out as described, it is imperative to ensure each tube is cut inside of the mark to allow sufficient material for the weld prep to be machined and that each tube is cut in relation to the individual tubes axis
Cutting, prepping and welding of the furnace tubes will only be carried out by personnel who have undergone the correct training and familiarisation in the test rig, as well as having the correct qualifications.
Once the panel has been removed it is imperative that the tube ends are capped at all times they not being worked upon. During machining activities a retrievable core plug must be fitted inside the tube bore and the remaining tubes capped. All core plugs must be uniquely identified and used with a logging system, they must also have a tail so it is easy to visualise that a core plug is in place.
Prior to fitting the new panel, all tube bores are to be inspected internally.
- 5 The existing furnace panel will be rigged prior to cutting; the tubes will be cut using cold cutting and thermal methods, and removed from the furnace via the bottom hopper. The work required to replace the OFA quarl is similar to that required on the burners with the additional complication of the cut line on a number of OFA tubes being underneath the existing boiler support straps. Due to this the support straps require modification prior to the quarl panel being removed along with removal of the attachment welds between the furnace tubes and support straps/blocks as described in section 3
- 6 The existing ends of the furnace tubes are then cleaned and weld prepped back to pre-set back marks and dimensional checks carried out prior to offering the new quarl into position. It is essential that tube ends (existing and new, are capped whenever they are not being worked upon and that cleanliness within the tube bores is kept to a high level (ingress of foreign materials is not acceptable). With the existing tube ends prepped to length, any deposits removed from the tube bore and O/D back to a clean metal surface and visually inspected, the new quarl panel is to be offered up into position. Any minor adjustment should then take place to allow the quarl to be fitted into position and the 40 tube butt welds set for welding. Weld of the 40 butt welds can only commence after all 40 welds are deemed to be achievable. Upon completion of welding the required NDE can be carried out.

SECTION 2.4.5 FITTING THE SEAL RING AND SEAL BOX

- 1 The seal box mounting ring fillet blocks are supplied loose as they would be in the way of the panel butt welds if fitted. These blocks therefore need to be fitted and welded into position once the panel work is complete.
- 2 With the blocks welded the seal ring is to be fitted, the ring fits onto the blocks and is seal welded to the blocks all the way around the outer circumference. The new seal box fits onto the seal ring and is seal welded to the ring. Positioning of the seal box into its correct location is important as it forms part of the datum for the new OFA port position.
- 3 Once the OFA port is fitted and welded into position the letterbox opening in the seal box is used to deposit the pourable refractory. Once the refractory is fitted the letterbox cover plate is seal welded into position

Section 2.4.6 ERECTION OF DUCTING SECTIONS

- 1 Fit temporary packing to allow the toggle duct floor sections to be fitted into position, complete fitting of this section. Ensure that the packing can be removed upon completion of the work by using wedge sections or jacks. It is imperative that only the identified existing/temporary steelwork is utilised to support and to rig the existing and new ducting during removal and fitting of the equipment
- Note: - The new ducting sections have been trial assembled during manufacture and will be uniquely marked to aid assembly.
- 2 Fit the furnace side toggle ducting wall
 - 3 Fit the new aerofoils and weld them into position ensuring they are correctly orientated, they are delivered as complete assemblies already pressure tested.
 - 4 Fit the flow straightening devices ensuring the flow straightener fitted with the access door is in the correct location and the correct way around
 - 5 Fit the remaining toggle duct wall
 - 6 Fit the toggle duct roof sections
 - 7 Ensure all welding to the flow straighteners and aerofoils is complete and that all internal seal welded is complete
 - 8 Fit the 90 degree elbow section of ducting into position and fully seal weld internally
 - 9 Fit the short make up section which fits upstream of the toggle duct complete with its expansion joint, ensuring both ends of the toggle duct remain at the correct respective elevations along with the expansion joint length
 - 10 Once sufficient work on the new OFA penetration is completed the new section of windbox can be fitted by firstly fitting the support frame which attaches to the furnace wall ensuring all pins are correctly fitted and secured. When fitting the pins, alignment of the frame is critical. It is imperative that all the pins are confirmed to be correctly fitted prior to fitting the ducting as access is restricted
 - 11 To allow the new frame to be fitted into position it is probable that 2 or possibly 3 sections of overturning post may need to be removed, an alternative to this would be to cut the new frame into sections of a size which will fit behind the overturning posts (therefore not cutting the overturning posts). If this needs to be done, ensure that the sections (overturning post, or new frame) are match marked upon removal and butt welded back into position in conjunction with fitting the windbox support frame.

- 12 Prior to fitting the new windbox ensure that all work relating to the OFA panel is complete, that the permanent new boiler straps are fitted and complete, the temporary threaded rods are removed and that any support finger plates which were removed have been re-fitted.
- 13 The new windbox duct will be fitted in sections, firstly fitting the furnace side wall of the duct to the support frame, then the windbox floor. The windbox front wall is then fitted ensuring that the opening for the new OFA port is in the correct position to allow alignment of the OFA port to the furnace side penetration. Then fit the 3 internal bracings.
- 14 Finally the windbox roof section will be fitted and then the whole section seal welded internally and the OFA port support steelwork fitted and welded into position, the termination point of the windbox new end will finish with a new V – type expansion fold which will need to be fitted onto the new windbox end.
- 15 Once the windbox section is fitted and complete the new damper is to be fitted into position, the damper is supported on sections and once fitted the joints are to be seal welded.
- 16 The final 2 sections to be fitted are the downstream expansion joint and short make up section, it is imperative that the correct datum and offset to the toggle duct section is maintained during this section of the work.
- 17 At this stage the expansion sliding pin joints are to be fitted at either end of the toggle duct section, the hinges are to be fitted to the exact dimension required and this is to be verified by the manufacturer prior to removing the packing fitted under the toggle duct section and then again after it is removed.
- 18 Refit the damper actuator and electrics ensuring that the damper blades are in the correct position then run the damper through its travel using the actuated motor. This activity is to be verified by the manufacturer.
- 19 Refit any additional electrics which were removed for protection
- 20 Fit the aerofoil impulse pipework, this will require shortening as the new ducting is at a higher elevation to the old.
- 21 Ensure the inside of the ducting access doors are fitted with insulation and that the inner cover is welded into position
- 22 Ensure the traverse points have the end caps fitted and that they are able to be removed during re-commissioning
- 23 Inspect the ducting to ensure all hot cold clearances are achieved
- 24 Fit the ducting insulation including any required modification to the insulation of identified adjacent equipment
- 25 Remove all scaffolding
- 26 Inspect the completed work and sign the completion certificate with the identified responsible signatories.
- 27 Once the ducting is complete the new OFA port plus the original OFA port which was previously removed can both be fitted into position ensuring the fasteners are correctly tightened
- 28 Coating of the OFA panel internally to the furnace will be carried out as a separate activity upon completion of the burner work

Section 2.4.7 POST OUTAGE WORK

- 1 Carry out a leak check on the aerofoil impulse pipework joints once the system is under pressure.
- 2 Complete any work required to any minor modifications of walkways ensuring that safety barriers are fitted until completion

2.5 Work Access Systems

Conventional scaffolds will be fitted to the windbox side and internal to the windbox where required, a design access system is to be fitted within the furnace which will have integral lifting points. Additional scaffold will be required external to the windbox to allow its removal and replacement and for seal welding the ducting internally after erection.

2.6 Tools & Equipment

All construction equipment, assembly tools and lifting systems are provided by the CONTRACTOR to execute the work package

3. Quality Management, Acceptance Test and Inspection

3.1 Quality Assurance

The contractor shall operate a quality management system that meets US and Kentucky State accreditation including any subcontractors they employ.

3.2 Quality Control

The contractor shall determine the scope of inspection and testing requirements according to the US and Kentucky State applicable codes, unless otherwise advised by the ORDERER.

4. Bill of Quantities

All materials associated with this section of the work will be free issue; this includes fasteners and gaskets unless otherwise instructed

From: Hammond, Steve(steve.hammond@doosan.com)
To: Watkins, Clyde; McCallum, Neil; Mohn, Laura; Craft, Jim; Brann, Devin; Melloan, Ricky; Rabe, Phil; Slaughter, Mitch
CC: 06350 TRIMBLE COUNTY MAILBOX; Kerslake, Ian; Gratton, Ron
BCC:
Subject: RE: 07292 - TC2 - Action Items Meeting
Sent: 02/17/2014 03:33:37 PM -0500 (EST)
Attachments: AIL Update_18_Feb_14.xlsx;

All

Please find attached an updated AIL for the meeting on Tuesday 18-Feb-14 at 11am (EST).

Regards

Steve

 Steve Hammond
 Doosan Babcock
 Email: steve.hammond@doosan.com
 Tel: +1 502 255 5262

-----Original Appointment-----

From: Watkins, Clyde [mailto:cwatkins@bechtel.com]
Sent: 31 January 2014 13:11
To: Watkins, Clyde; Hammond, Steve; McCallum, Neil; Mohn, Laura; Craft, Jim (EON); Brann, Devin; Melloan, Ricky
Subject: Action Items Meeting
When: 18 February 2014 11:00-12:00 (UTC-05:00) Eastern Time (US & Canada).
Where: Bechtel Startup Conference Room

When: Occurs every Tuesday effective 2/11/2014 until 5/27/2014 from 11:00 AM to 12:00 PM (UTC-05:00) Eastern Time (US & Canada).

Where: Bechtel Startup Conference Room

Note: The GMT offset above does not reflect daylight saving time adjustments.

~~*~*~*~*~*~*~*~*

This is the proposed meeting date/time. Laura – Please invite others from LGE that may wish to attend.

1. Open Engineering Action Items
2. Open RFI's on Outage Work
- 3.

Produced as Native

Original File Name: AIL Update_18_Feb_14.xlsx

Stored File Name: OpenText00253704.xlsx

From: Hammond, Steve(steve.hammond@doosan.com)
To: Watkins, Clyde; McCallum, Neil; Mohn, Laura; Craft, Jim; Brann, Devin; Melloan, Ricky; Rabe, Phil; Slaughter, Mitch
CC: 06350 TRIMBLE COUNTY MAILBOX; Kerslake, Ian; Gratton, Ron
BCC:
Subject: RE: 07292 - TC2 - Action Items Meeting
Sent: 02/25/2014 10:35:35 AM -0500 (EST)
Attachments: AIL Update_25_Feb_14.xlsx;

All

Please find attached an updated AIL for the meeting on Tuesday 25-Feb-14 at 11am (EST).

Regards

Steve

Steve Hammond
Doosan Babcock
Email: steve.hammond@doosan.com
Tel: +1 502 255 5262

From: Hammond, Steve
Sent: 17 February 2014 20:34
To: 'Watkins, Clyde'; McCallum, Neil; Mohn, Laura; Craft, Jim (EON); Brann, Devin; Melloan, Ricky; 'Rabe, Phil' (Phil.Rabe@lge-ku.com); 'Slaughter, Mitch' (Mitch.Slaughter@lge-ku.com)
Cc: 06350 TRIMBLE COUNTY MAILBOX; Kerslake, Ian; Gratton, Ron
Subject: RE: 07292 - TC2 - Action Items Meeting

All

Please find attached an updated AIL for the meeting on Tuesday 18-Feb-14 at 11am (EST).

Regards

Steve

Steve Hammond
Doosan Babcock
Email: steve.hammond@doosan.com
Tel: +1 502 255 5262

-----Original Appointment-----

From: Watkins, Clyde [<mailto:cwatkins@bechtel.com>]
Sent: 31 January 2014 13:11
To: Watkins, Clyde; Hammond, Steve; McCallum, Neil; Mohn, Laura; Craft, Jim (EON); Brann, Devin; Melloan, Ricky
Subject: Action Items Meeting
When: 18 February 2014 11:00-12:00 (UTC-05:00) Eastern Time (US & Canada).
Where: Bechtel Startup Conference Room

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Where: Bechtel Startup Conference Room

Note: The GMT offset above does not reflect daylight saving time adjustments.

~~*~*~*~*~*~*~*~*

This is the proposed meeting date/time. Laura – Please invite others from LGE that may wish to attend.

1. Open Engineering Action Items
2. Open RFI's on Outage Work
- 3.

Produced as Native

Original File Name: AIL Update_25_Feb_14.xlsx

Stored File Name: OpenText00253706.xlsx

From: Hammond, Steve(steve.hammond@doosan.com)
To: 'Watkins, Clyde'; McCallum, Neil; Mohn, Laura; Craft, Jim; 'Brann, Devin'; Melloan, Ricky; Rabe, Phil; Slaughter, Mitch
CC: 06350 TRIMBLE COUNTY MAILBOX; Kerslake, Ian; Gratton, Ron
BCC:
Subject: RE: 07292 - TC2 - Action Items Meeting
Sent: 03/11/2014 07:48:52 AM -0400 (EDT)
Attachments: AIL Update_11_Mar_14.xlsx;

Mel / Phil

Attached is an update to the AIL for today's meeting.

Mel, I note there is no call in number for this meeting – can you set a call up on your ... 8035 conference code and I will call in at 10am (EST).

Advance notice, I am unable to support a meeting next week, Tuesday 18Mar14, and we can either hold it on Wednesday or cancel the meeting and pick up again the following week.

Let me know which works best for you.

Thanks and regards

Steve

 Steve Hammond
 Doosan Babcock
 Email: steve.hammond@doosan.com
 Tel: +44 1293 584634

-----Original Appointment-----

From: Watkins, Clyde [<mailto:cwatkins@bechtel.com>]
Sent: 31 January 2014 13:11
To: Watkins, Clyde; Hammond, Steve; McCallum, Neil; Mohn, Laura; Craft, Jim (EON); Brann, Devin; Melloan, Ricky
Subject: Action Items Meeting
When: 18 February 2014 11:00-12:00 (UTC-05:00) Eastern Time (US & Canada).
Where: Bechtel Startup Conference Room

When: Occurs every Tuesday effective 2/11/2014 until 5/27/2014 from 11:00 AM to 12:00 PM (UTC-05:00) Eastern Time (US & Canada).

Where: Bechtel Startup Conference Room

Note: The GMT offset above does not reflect daylight saving time adjustments.

~~*~*~*~*~*~*~*~*

This is the proposed meeting date/time. Laura – Please invite others from LGE that may wish to attend.

1. Open Engineering Action Items
2. Open RFI's on Outage Work
- 3.

Produced as Native

Original File Name: AIL Update_11_Mar_14.xlsx

Stored File Name: OpenText00253709.xlsx

From: Hammond, Steve(steve.hammond@doosan.com)
To: 'Watkins, Clyde'; McCallum, Neil; Mohn, Laura; Craft, Jim; 'Brann, Devin'; Melloan, Ricky; Rabe, Phil; Slaughter, Mitch
CC: 06350 TRIMBLE COUNTY MAILBOX; Kerslake, Ian; Gratton, Ron
BCC:
Subject: RE: 07292 - TC2 - Action Items Meeting
Sent: 03/25/2014 07:21:17 AM -0400 (EDT)
Attachments: AIL Update_25_Mar_14.xlsx;

Mel / Phil

Attached is an update to the AIL, I believe it unlikely that today's meeting will take place as it clashes with the Operating Philosophy meeting.

Below are the highlights and actions taken from the AIL for this week;

- # 79 – Mill swings report updated (also see # 106), action item closed.
- # 62.8 – Stall alarm curve issued 05-Mar-14, action item closed.
- # 62.7.4 – Doosan is looking at adding a pipe support at the point where the pipework turns from vertical to horizontal to alleviate the movement issues seen. This is still under investigation but we are planning to complete within the outage window.
- # 84.2.2.1 – Doosan have placed an order on Harriman's for the WCAH handling system based on the previously issued drawing, forecast delivery to TC2 of materials is week commencing 21-Apr-14.
- # 92 – Waiting Bechtel verification of implemented logic to close.
- # 96.1 – Doosan to issue report following inspection on 17-Feb-14, in summary we see that the ash build up is less than previously seen and this is likely due to the improved operation of the existing GE sonic horns and do not see a reason to further enhance the SCR reactor cleaning beyond that currently installed.
- # 97.1 - LGE concern re continuation of increased frequency & potential for tube erosion, Doosan to review and comment - f/c = 25-Apr-14
- # 101 – Following walk down with Mitch a position for the tell-tale drains has been agreed and Doosan have issued SMR0174 for this scope of work which we are planning to complete within the outage window.
- # 106 – Commissioning records package issued, Document # 06350/B230/30000/0001 submitted on Tx 07292A-1345-500081 Dated 18Mar14, action item closed.
- # 2.2.7.2 – Doosan to update RCA with results of inspection completed during Spring 2014 outage, f/c = 17-Apr-14.
- # 99.1 – Doosan to issue conclusions following inspection of Mill E and two others by Peter Stanwicks, f/c = 28-Mar-14.
- # 109 - Doosan to relocate SCR outlet NOx probe - Copy of SMR0169 Rev B issued by e-mail dated 20-Mar-14.
- # 2014-3 – Doosan issued recommendations on 01-Mar-14 for outage work on the ID Fan stall system, comments received from Bechtel. Does LGE-KU have any comment on the proposal?

Let me know if you have any questions regarding these notes.

Thanks and regards

Steve

Steve Hammond
Doosan Babcock
Email: steve.hammond@doosan.com
Tel: +44 1293 584634

-----Original Appointment-----

From: Watkins, Clyde [<mailto:cwatkins@bechtel.com>]
Sent: 31 January 2014 13:11
To: Watkins, Clyde; Hammond, Steve; McCallum, Neil; Mohn, Laura; Craft, Jim (EON); Brann, Devin; Melloan, Ricky
Subject: Action Items Meeting
When: 18 February 2014 11:00-12:00 (UTC-05:00) Eastern Time (US & Canada).
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Where: Bechtel Startup Conference Room

Note: The GMT offset above does not reflect daylight saving time adjustments.

~~*~*~*~*~*~*~*~*

This is the proposed meeting date/time. Laura – Please invite others from LGE that may wish to attend.

1. Open Engineering Action Items
2. Open RFI's on Outage Work
- 3.

Produced as Native

Original File Name: AIL Update_25_Mar_14.xlsx

Stored File Name: OpenText00253711.xlsx

From: Hammond, Steve(steve.hammond@doosan.com)
To: 'Watkins, Clyde'; McCallum, Neil; Mohn, Laura; Craft, Jim; 'Brann, Devin'; Melloan, Ricky; Rabe, Phil; Slaughter, Mitch
CC: 06350 TRIMBLE COUNTY MAILBOX; Kerslake, Ian; Gratton, Ron
BCC:
Subject: RE: 07292 - TC2 - Action Items Meeting
Sent: 04/01/2014 06:04:51 AM -0400 (EDT)
Attachments: AIL Update_01_Apr_14.xlsx;

Mel / Phil

Attached is an update to the AIL for today's meeting.

Advance notice, I am unable to support a meeting next week, Tuesday 08Apr14, as I am out of the office so can I suggest we cancel the meeting and pick up again the following week, Tuesday 15Apr14, when I am back at TC2.

Let me know which works best for you.

Thanks and regards

Steve

 Steve Hammond
 Doosan Babcock
 Email: steve.hammond@doosan.com
 Tel: +44 1293 584634

-----Original Appointment-----

From: Watkins, Clyde [<mailto:cwatkins@bechtel.com>]
Sent: 31 January 2014 13:11
To: Watkins, Clyde; Hammond, Steve; McCallum, Neil; Mohn, Laura; Craft, Jim (EON); Brann, Devin; Melloan, Ricky
Subject: Action Items Meeting
When: 18 February 2014 11:00-12:00 (UTC-05:00) Eastern Time (US & Canada).
Where: Bechtel Startup Conference Room

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~~*~*~*~*~*~*~*~*

This is the proposed meeting date/time. Laura – Please invite others from LGE that may wish to attend.

1. Open Engineering Action Items
2. Open RFI's on Outage Work
- 3.

Produced as Native

Original File Name: AIL Update_01_Apr_14.xlsx

Stored File Name: OpenText00253713.xlsx



PROJECT ENGINEERING DEPARTMENT
“DAILY CONSTRUCTION REPORT”
DAY SHIFT

LG&E KU PROJECT COORDINATORS: Gary Harris Chuck Wescoat	DATE: Friday 2-21-2014
CONTRACTOR ON SITE: Bechtel /Southeast Doosan/ SES	SUPERVISORS NAME; Eric Moore
PROJECT NAME: TC # 2 Spring Outage	2/20/14-2/21/14 NIGHT SHIFT HOURS 1730 to 0400 hours
WEATHER	
<u>Temperature</u>	<u>Precipitation</u>
<i>High:</i> 69	<i>Amount:</i> .25”
<i>Low:</i> 40	<i>Time Beginning:</i> 2/20/14 1900
<i>Wind:</i> S 18-35MPH	<i>Time Ending:</i> 2/21/14 0200
<i>Other:</i> Cloudy	<i>Type (Rain, Snow, Sleet):</i> Rain

MAJOR CONSTRUCTION ACTIVITIES OF THE DAY

TC Unit 2 Burners

- ~ Southeast boiler-Removing secondary air boiler casing for boiler tube modification.
- ~Southeast Boiler-Crew is cutting old quarl out water wall tubes front and rear walls.
- ~ Southeast boiler – Doing demo work to the OFA ductwork and starting to install the new duct on the SE, NE corner.
- ~SES- Crew cleaning SCR

Front Wall BURNER	Old Burner Removed	Secondary Air barrel removed	Air Register removed	Old Quarl Removed	New Quarl Fitted	New Quarl Welded	New Burner Installed	New Burner Wired (Complete)
C1	2/15	2/17	2/16	2/20				
C2	2/15	2/17	2/16	2/20				
C3	2/15	2/16	2/16	2/20				
C4	2/15	2/16	2/16	2/20				
C5	2/15	2/16	2/16	2/20				
D1	2/15	2/17	2/17	2/21				
D2	2/15	2/17	2/17					
D3	2/15	2/15	2/17					
D4	2/15	2/17	2/17					
D5	2/15	2/17	2/17					
B1	2/16	2/18	2/19					
B2	2/16	2/18	2/19					
B3	2/10	2/19	2/19					
B4	2/16	2/19	2/19					
B5	2/16	2/19	2/19					

Attachment to Response to KIUC-1 Question No. 30(f)

Rear Wall BURNER	Removed	Secondary Air barrel removed	Air Register removed	Old Quarl Removed	New Quarl Fitted	New Quarl Welded	New Burner Installed	New Burner Wired (Complete)
F1	2/15	2/16	2/17					
F2	2/15	2/16	2/17					
F3	2/15	2/16	2/17					
F4	2/15	2/16	2/17	2/20				
F5	2/16	2/16	2/17	2/20				
A1	2/16	2/18	2/18					
A2	2/16	2/18	2/18					
A3	2/10	2/18	2/18					
A4	2/16	2/18	2/18					
A5	2/16	2/18	2/18					
E1	2/17	2/19	2/19					
E2	2/17	2/19	2/19					
E3	2/17	2/19	2/19					
E4	2/17	2/19						
E5	2/17							

Production 2
Page 514 of 1143
Thompson

Work Quality/Observations/Concerns:

General housekeeping on site is well maintained.

Safety /Environmental Issue:

One crew member from day shift (Southeast boiler) had a minor burn to hand near the end of his shift. Safety put cream on it. He's back to work. This happened at 1715. Asper James Dearman

Other:

Contractors on Site:

Bechtel- 1
Southeast Boiler- 58
Doosan- 2
SES-6

Attachment to Response to KIUC-1 Question No. 30(f)

Production 2

Page 515 of 1143

Thompson

From: Anderson, Dave (Trimble County)(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=ANDERSOND)
To: Afiyet, Hamit; Ball, Adam; Bethany, Ron; Boone, James; Bullock, Sam; Byrd, Larry; Cash, Rebecca; Chin, Doug; Craft, Jim; Dorwart, Jordan; Dukes, Christopher; Feider, Ryan; Gilliland, Dave; Gray, Jeffrey; Griffith, Michelle; Hance, Chuck; Hannon, Hannah; Hayes, Christopher; Heinz, John; Henderson, Trent; Hudson, Glen; Jensen, Jack; Jones, Steve; Joyce, Jeff; Joyce, Kenny; Maldonado, Francisco; Melloan, Ricky; Menezes, Tomas; Mills, Ricky; Mohn, Laura; Moore, Emmett; Noonan, Kenny; Park, Marci; Payne, Nicholas; Phelps, Grant; Powell, Richard; Rabe, Phil; Raker, Adam; Ransdell, Charles; Sanders, Matt; Sedam, Dale; Simpson, Jeff; Slaughter, Mitch; Stewart, Robert E. (Trimble); Thomas, Mark; Thurston, Eric; Turner, Haley; Turner, Tyler; Walcott, Danny
CC:
BCC:
Subject: TC2 2014 Weekend and First week Coordination.docx
Sent: 02/13/2014 12:50:30 PM -0500 (EST)
Attachments: TC2 2014 Weekend and First week Coordination.docx;

Updated document.

David W. Anderson

Trimble County Outage Coordinator
Tel. 502-627-6313
Fax 502-217-2199
email: dave.anderson@lge-ku.com

TC2 2014 Spring Outage
Weekend and First Week Coordination

- **Friday, February 07, 2014 Offline after peak**
 - At 300 pounds of boiler pressure, inspect leak- **Maldonado**
- **Saturday, February, 8th, 2014**
 - Deslag Boiler & Burners- On site at 10:00 AM.- **Maldonado/ Expro**
 - **Started at 12:15 pm. Estimated 10-12 hrs. worst case.**
 - Disconnect Wiring on Burners- **I/E Maintenance**
 - WESP Irrigation out of service after deslag.- **Operations**
- **Sunday, February, 9th, 2014**
 - Drain Ash Hopper- **Operations**
 - Disconnect Ash Hopper Piping- **Mechanics**
 - Roll Out Ash Hopper- **Doosan/ Mechanics**
 - Ground WESP/ DESP- **I/E Maintenance**
- **Monday, February, 10th, 2014**
 - Boiler Scaffold Build- **SE Boiler (6 shifts)**
 - PJFF Filter Bag Sample Removal- **Mechanics**
 - Pulse Air Out of Service (LOTO)- **Operations**
 - WESP Inspections
 - “Dirty” Inspection- Irrigation out of service and not carded.- **Waller/ Anderson**
 - SCR Doors open for “dirty” Inspection- **Mechanics/ Dorwart**
- **Tuesday, February, 11th, 2014**
 - Boiler Scaffold Build- **SE Boiler (4 shifts)**
 - PJFF Filter Bag Sample Removal

- **Wednesday, February, 12th, 2014**
 - Boiler Scaffold Build- **SE Boiler (2 shifts)**
 - Open Deaerator- **Mechanics (Moved to Saturday 2/15/14)**
 - Place irrigation in service and perform casing washes after “Dirty” Inspection. **(Moved to Monday, 2/17/14)**
 - WESP Inspections- **(Moved to Monday, 2/17/14)**
 - “WET” Inspection- Irrigation in service.- **Siemens, LG&E, PCT, TES**
 - Ground WESP/ DESP- **I/E Maintenance**
 - **CLEAR GAS PATH & SIGN OFF BOTH FANS (Midnight)**
- **Thursday, February, 13th, 2014**
 - Check for any open doors prior to starting fan- **Operations**
 - Put 2A ID Fan in service after scaffold completion.- 17:00-21:00 hrs.-**Operations/ Bechtel/ Doosan**
 - Place 1 Recycle Pump in service to alleviate carry over into the WESP.- **Operations**
 - Sandblasting Burner Fronts/ Amstar (2- 24hr shifts) – 21:00-23:00 **Doosan/ Amstar**
 - Pull 2A Turbine Oil Cooler- **Duncan/ Mechanics**
- **Friday, February 14th, 2014**
 - **SIGN ON GAS PATH- BOTH FANS**
 - Remove 2A ID Fan and open gas path

From: Anderson, Dave (Trimble County)(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=ANDERSOND)
To: Afiyet, Hamit; Ball, Adam; Bethany, Ron; Boone, James; Bullock, Sam; Byrd, Larry; Cash, Rebecca; Chin, Doug; Craft, Jim; Craven, David; Dorwart, Jordan; Dukes, Christopher; Feider, Ryan; Gilliland, Dave; Gray, Jeffrey; Griffith, Michelle; Hance, Chuck; Hannon, Hannah; Hayes, Christopher; Heinz, John; Henderson, Trent; Hudson, Glen; Jensen, Jack; Jones, Steve; Joyce, Jeff; Joyce, Kenny; Maldonado, Francisco; Melloan, Ricky; Menezes, Tomas; Mills, Ricky; Mohn, Laura; Moore, Emmett; Noonan, Kenny; Park, Marci; Payne, Nicholas; Phelps, Grant; Powell, Richard; Rabe, Phil; Raker, Adam; Ransdell, Charles; Richardson, Stephen; Sanders, Matt; Sedam, Dale; Simpson, Jeff; Slaughter, Mitch; Stewart, Robert E. (Trimble); Thomas, Mark; Thurston, Eric; Turner, Haley; Turner, Tyler; Walcott, Danny; Waller, Logan
CC:
BCC:
Subject: TC2 Amstar and Start-up Documents
Sent: 04/11/2014 10:48:47 AM -0400 (EDT)
Attachments: TC2S14 Start-up Outage Planning Schedule.pdf; Restart Programme LG&E Interface (14-04-09).pdf;

FYI.....

Attached are the following documents:

- Start-up outage planning document has the steps listed for Amstar.
- Restart Program- Issued by Doosan and has Mitch's dates included for start-up activities beginning at the end of April.

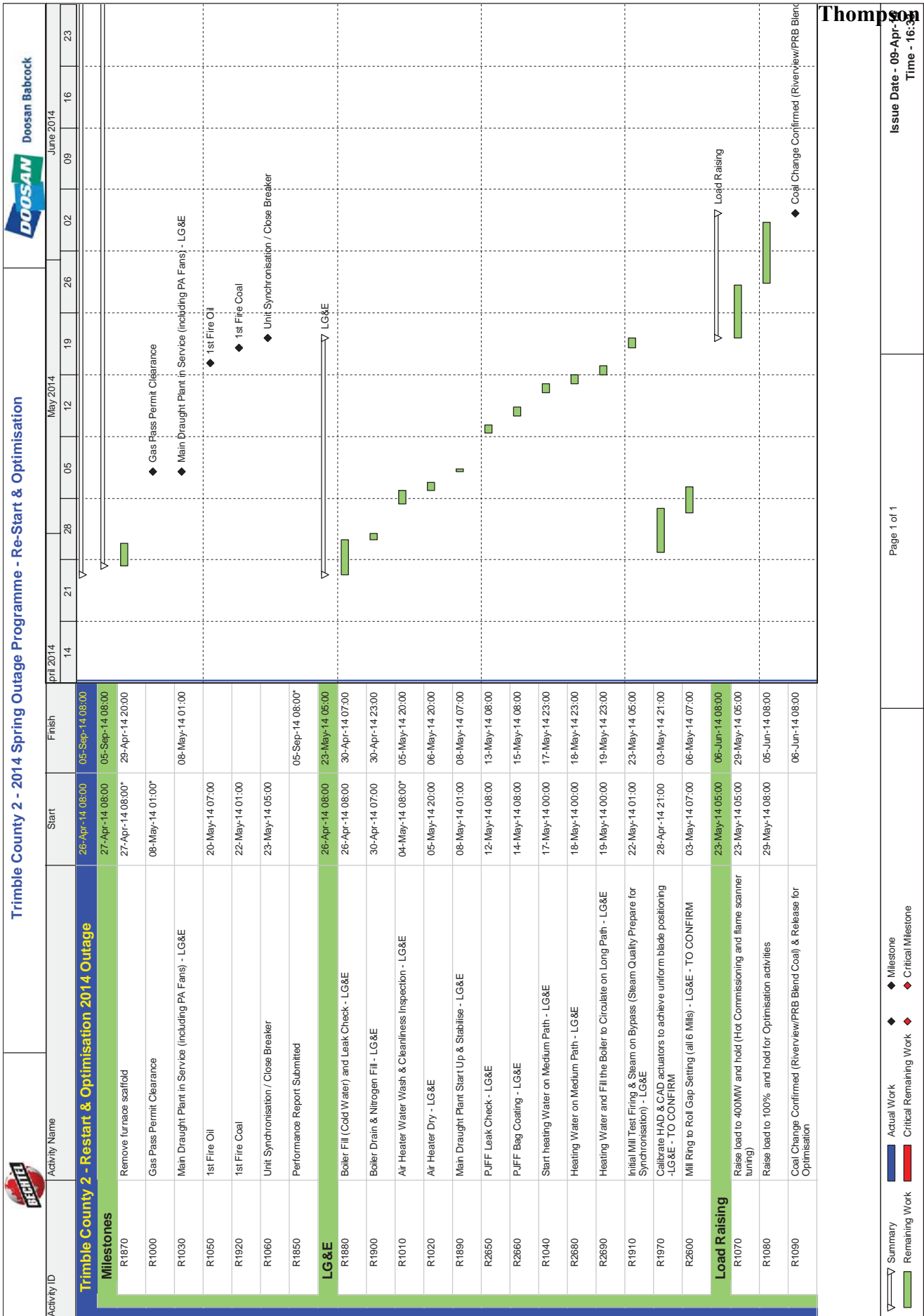
REMEMBER TO SIGN OFF 2A & 2B ID FANS BY 6:00 P.M. SATURDAY, APRIL 12TH!

GAS PATH CLEAR FOR AMSTAR COATING BEGINNING 6:00 PM SATURDAY, APRIL 12TH THROUGH THURSDAY, APRIL 17TH UNLESS OTHERWISE NOTIFIED.

Thanks,

David W. Anderson

Trimble County Outage Coordinator
Tel. 502-627-6313
Fax 502-217-2199
email: dave.anderson@lge-ku.com



ID	Task Mode	Resource Names	Task Name	Start	Finish	% Complete	Gantt Chart												
							1/19	1/26	2/2	2/9	2/16	2/23	3/2	3/9	3/16	3/23	3/30	4/6	4/13
1	✓		Unit Offline- Scheduled time 00:01	Fri 2/7/14	Mon 5/26/14	100%	[Gantt bar from 2/7 to 5/26]												
2	✓	SEdam	Id fan distance pipe installation that will allow isolation of the 2B ID Fan. (Parts to ship 3-28-14 from Howden)	Tue 4/1/14	Mon 4/7/14	100%	[Gantt bar from 4/1 to 4/7]												
3			Amstar Application	Fri 4/11/14	Fri 4/18/14	0%	[Gantt bar from 4/11 to 4/18]												
4	✓	I&E	Power Feed connection for Amstar Equipment	Sat 4/12/14	Sat 4/12/14	0%	[Gantt bar from 4/12 to 4/12]												
5	✓	PIC/ MECH Maint, OPERATIONS	Clear Gas Path & Verify all gas path Doors sealed or closed by 6:00 p.m. Saturday evening.	Sat 4/12/14	Sat 4/12/14	0%	[Gantt bar from 4/12 to 4/12]												
6	✓	R&P Chimney/ Bullock	Stack	Sat 4/12/14	Sat 4/12/14	0%	[Gantt bar from 4/12 to 4/12]												
7	✓	Waller	WESP	Sat 4/12/14	Sat 4/12/14	0%	[Gantt bar from 4/12 to 4/12]												
8	✓	Phelps/ Heinz	SDRS	Sat 4/12/14	Sat 4/12/14	0%	[Gantt bar from 4/12 to 4/12]												
9	✓	Waller	DESP	Sat 4/12/14	Sat 4/12/14	0%	[Gantt bar from 4/12 to 4/12]												
10	✓	H. Turner	PJFF	Sat 4/12/14	Sat 4/12/14	0%	[Gantt bar from 4/12 to 4/12]												
11	✓	SEdam/ Mills	Fans	Sat 4/12/14	Sat 4/12/14	0%	[Gantt bar from 4/12 to 4/12]												
12	✓	DORWART/ SE Boiler	SCR	Sat 4/12/14	Sat 4/12/14	0%	[Gantt bar from 4/12 to 4/12]												
13	✓	Bechtel/ Doosan/ SE Boiler	Boiler	Sat 4/12/14	Sat 4/12/14	0%	[Gantt bar from 4/12 to 4/12]												
14	✓	OPERATIONS	2A ID Fan In Service	Sat 4/12/14	Sat 4/12/14	0%	[Gantt bar from 4/12 to 4/12]												
15	✓	OPERATIONS	2B ID Fan	Fri 4/11/14	Sun 4/13/14	0%	[Gantt bar from 4/11 to 4/13]												
16	✓	OPERATIONS	Transfer 2B ID fan isolation to coupling.	Fri 4/11/14	Sat 4/12/14	0%	[Gantt bar from 4/11 to 4/12]												
17	✓	OPERATIONS/ I&E	Test Run 2B ID fan motor uncoupled	Sat 4/12/14	Sat 4/12/14	0%	[Gantt bar from 4/12 to 4/12]												
18	✓	SEdam/ Mills	Couple 2B ID Fan	Sat 4/12/14	Sat 4/12/14	0%	[Gantt bar from 4/12 to 4/12]												
19	✓	OPERATIONS	Transfer isolation back to breaker isolation	Sat 4/12/14	Sun 4/13/14	0%	[Gantt bar from 4/12 to 4/13]												
20	✓	DOosan/ Amstar	Amstar Application	Sun 4/13/14	Thu 4/17/14	0%	[Gantt bar from 4/13 to 4/17]												
21	✓	OPERATIONS	2A ID Fan out of service (LOTO)	Fri 4/18/14	Fri 4/18/14	0%	[Gantt bar from 4/18 to 4/18]												
22	✓		Water Clean Up	Wed 5/7/14	Wed 5/7/14	0%	[Gantt bar from 5/7 to 5/7]												
23	✓	SUBSTATION	Gas Path Clear	Wed 5/7/14	Wed 5/7/14	0%	[Gantt bar from 5/7 to 5/7]												
24	✓	OPERATIONS	Remove Generator Grounds			0%	[Gantt bar from 5/7 to 5/7]												
25	✓	OPERATIONS	Fans In Service @18:00 hrs.			0%	[Gantt bar from 5/7 to 5/7]												
26	✓	OPERATIONS	PA			0%	[Gantt bar from 5/7 to 5/7]												
27	✓	OPERATIONS	FD			0%	[Gantt bar from 5/7 to 5/7]												
28	✓	OPERATIONS	ID			0%	[Gantt bar from 5/7 to 5/7]												
29	✓	OPERATIONS	Fires in @ 10:00 hrs			0%	[Gantt bar from 5/7 to 5/7]												
30	✓	OPERATIONS	Pressure 1			0%	[Gantt bar from 5/7 to 5/7]												
31	✓	OPERATIONS	Turbine Roll			0%	[Gantt bar from 5/7 to 5/7]												
32	✓	OPERATIONS	Speed Hold 1			0%	[Gantt bar from 5/7 to 5/7]												
33	✓	OPERATIONS	Unit Online- Full Load Monday AM			0%	[Gantt bar from 5/7 to 5/7]												

Task Summary Rollup

Manual Summary

Manual Summary

Start-only

Finish-only

Deadline

Progress

Project Summary

External Tasks

External Milestone

Inactive Milestone

Inactive Summary

Manual Task

Duration-only

Project: TC2S14 Start-up Outage P
Date: Fri 4/11/14

From: Melloan, Ricky(/O=LGE/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=MELLOAN, RICKYCF4)
To: Roach, Sandra
CC: Rabe, Phil
BCC:
Subject: TC2 Startup
Sent: 04/09/2014 12:55:49 PM -0400 (EDT)
Attachments:

Sandra – We met with Doosan this morning to finalize the TC2 commissioning plan. I will send you a copy of the revised schedule once it has been issued but here are some key dates:

April 28 – Boiler scaffold removed
May 7 - All outage work complete
May 8 Fans in service
May 8-10 Measure and set core air flow
May 10 – 12 balance SA flow to burners
May 12-16 Clean air PF tests
May 20 Test oil guns
May 23 On line
May 23 – 29 400MW
May 29 Raise to full load
May 29 – June NOX/ CO tuning
July 5 Group 1 Fuel Test
July 11 Group 2 Fuel Test
July 26 Group 3 Fuel Test
July 30 performance Test

Rick Melloan
Trimble Co. Station
502-627-6259

From: Anderson, Dave (Trimble County)(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=ANDERSON.D)
To: Afiyet, Hamit; Ball, Adam; Bethany, Ron; Boone, James; Bullock, Sam; Byrd, Larry; Cash, Rebecca; Chin, Doug; Craft, Jim; Craven, David; Dorwart, Jordan; Dukes, Christopher; Feider, Ryan; Gilliland, Dave; Gray, Jeffrey; Griffith, Michelle; Hance, Chuck; Hannon, Hannah; Hayes, Christopher; Heinz, John; Henderson, Trent; Hudson, Glen; Jensen, Jack; Jones, Steve; Joyce, Jeff; Joyce, Kenny; Maldonado, Francisco; Melloan, Ricky; Menezes, Tomas; Mills, Ricky; Mohn, Laura; Moore, Emmett; Noonan, Kenny; Park, Marci; Payne, Nicholas; Phelps, Grant; Powell, Richard; Rabe, Phil; Raker, Adam; Ransdell, Charles; Sanders, Matt; Sedam, Dale; Simpson, Jeff; Slaughter, Mitch; Stewart, Robert E. (Trimble); Thomas, Mark; Thurston, Eric; Turner, Haley; Turner, Tyler; Walcott, Danny; Waller, Logan
CC:
BCC:
Subject: TC2S14 Spring Outage Gantt Chart.xlsx
Sent: 03/03/2014 07:23:14 AM -0500 (EST)
Attachments: TC2S14 Spring Outage Gantt Chart.xlsx;

TC2 Outage progress to date.

Thanks,

David W. Anderson

Trimble County Outage Coordinator
Tel. 502-627-6313
Fax 502-217-2199
email: dave.anderson@lge-ku.com

Produced as Native

Original File Name: TC2S14 Spring Outage Gantt Chart.xlsx

Stored File Name: OpenText00253878.xlsx

From: Anderson, Dave (Trimble County)(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=ANDERSOND)
To: Afiyet, Hamit; Ball, Adam; Bethany, Ron; Boone, James; Bullock, Sam; Byrd, Larry; Cash, Rebecca; Chin, Doug; Craft, Jim; Craven, David; Dorwart, Jordan; Dukes, Christopher; Feider, Ryan; Gilliland, Dave; Gray, Jeffrey; Griffith, Michelle; Hance, Chuck; Hannon, Hannah; Hayes, Christopher; Heinz, John; Henderson, Trent; Hudson, Glen; Jensen, Jack; Jones, Steve; Joyce, Jeff; Joyce, Kenny; Maldonado, Francisco; Melloan, Ricky; Menezes, Tomas; Mills, Ricky; Mohn, Laura; Moore, Emmett; Noonan, Kenny; Park, Marci; Payne, Nicholas; Phelps, Grant; Powell, Richard; Rabe, Phil; Raker, Adam; Ransdell, Charles; Richardson, Stephen; Sanders, Matt; Sedam, Dale; Simpson, Jeff; Slaughter, Mitch; Stewart, Robert E. (Trimble); Thomas, Mark; Thurston, Eric; Turner, Haley; Turner, Tyler; Walcott, Danny; Waller, Logan
CC:
BCC:
Subject: TC2S14 Spring Outage Gantt Chart.xlsx
Sent: 03/25/2014 08:55:14 AM -0400 (EDT)
Attachments: TC2S14 Spring Outage Gantt Chart.xlsx;

Latest progress for TC2 Outage.

David W. Anderson

Trimble County Outage Coordinator
Tel. 502-627-6313
Fax 502-217-2199
email: dave.anderson@lge-ku.com

Produced as Native

Original File Name: TC2S14 Spring Outage Gantt Chart.xlsx

Stored File Name: OpenText00253880.xlsx

From: Hammond, Steve(steve.hammond@doosan.com)
To: 'Mel Watkins'; Rabe, Phil
CC: Dukes, Christopher; Carlisle, Gary; Boone, James; 'James T. (Tom) Trimble'; Joyce, Jeff; Craft, Jim; Mohn, Laura; Slaughter, Mitch; Payne, Nicholas; Powell, Richard; Melloan, Ricky; 'Sandra Roach'; Smith, Timothy (Fuels); Henderson, Trent; McCallum, Neil; Davidson, Gordon; Torkington, Ian R; Kerlake, Ian; Gratton, Ron; 06350 TRIMBLE COUNTY MAILBOX; Maunder, Kevin; Jones, Gareth; 'Hobbs, Donna'; 'Babcock, James'; 'Brann, Devin'
BCC:
Subject: 07292 - TC2 - Morning Meeting AIL # 99.1, Alstom Mill Wing Tip Modification - Mill E Investigation
Sent: 03/31/2014 06:25:19 AM -0400 (EDT)
Attachments: VOP Photo's.zip; Orifice Effective Area (SMR0152 - 14Mar14).pdf; 14-02-18; E Row Burner Cartridge.zip;

Mel / Phil,

In response to morning meeting AIL # 99.1, Alstom Mill Wing Tip Modification - Mill E Investigation (i) Inspection of Mill E required during outage, VOP's to be identified & burner pictures to be taken and (ii) Doosan inspection of mill E & two others set for 11~12-Mar-14 - Doosan to issue conclusions following inspection of Mill E and two others by Peter Stanwicks.

(i) Inspection of Mill E required during outage, VOP's to be identified & burner pictures to be taken

Attached to this e-mail are copies of the following photographs

- Each of the variable orifice plates after removal.
- Each of the E row burners after removal.

The extent of closure of the VOP's has been measured and the open area calculated, the attached table shows these dimensions and calculations. In summary the majority (27 of 30) fall in the range of 86% to 97% open but three, F3 – F4 –F5, are set with a significantly smaller open area of 69% to 73%. We have been unable to locate the original settings for these VOP's and at this time can only surmise that these three are not as per the original set up.

Looking forward to the restart, Doosan will not be fitting orifice plates into the carriers ahead of the clean air tests and will size them once the results are available – for info we have a large quantity of plates with differing orifice sizes at TC2 that can be used to set the flows when required.

(ii) Doosan inspection of mill E & two others set for 11~12-Mar-14 - Doosan to issue conclusions following inspection of Mill E and two others by Peter Stanwicks.

An inspection of Mills B, C and E took place on 12-Mar-14, the purpose of which was to identify any causes that could be contributing to the reject rate seen during the wing tip tuning that took place in Oct-13. A copy of the Inspection Findings and Recommendations is attached, in summary;

3.4 Inspection Summary

The inspection did not find a mechanical root cause for the difference in rejects from “E” Mill. The mechanical items which have the most influence on rejects are all in as new condition or typical condition. The inlet ducts and vanes are in good condition. There are no accumulations of debris to restrict or deflect air flow. The vane wheel is in good condition without excessive gaps or wear. The grinding components are in similar condition to other mills. “E” mill is not different from the two other mills inspected with respect to these items.

4. Recommendations

It was indicated re-welding the rolls and rings will be done during this outage. It is highly recommended that wear measurements be taken on all mills before this process. The wear measurements will provide valuable information. First, it will quantify the similarities of “E” Mill rolls to the rest of the mill. Second, it will give a baseline wear rate for predicting future mill maintenance outages. Third, periodic measurements will trend wear rates. A typical Grinding Ring profile wear

profile gage is show and a similar one can be made for the Grinding Rolls.

Since no mechanical cause for the rejects is apparent, operational causes should be investigated. After the outage, confirm air flow quantity on "E" mill. Review Bowl differential pressure and compare to other mills running at the same feed rate. To insure comparable feed rates between pulverizers, the feeder belt speed should be routinely measured by timing a number of belt revolutions. Quantify and document the rejects with quantified rates, composition of rejects and daily logs. This information will help isolate operational modes, transients and techniques that affect the reject rates.

We are aware that LGE-KU are carrying out work on the mills, it would be useful to receive a summary of this works.

It is apparent that the inspection did not reveal any reason for the reject rate seen and the work being carried out on the mills may resolve the issue with no cause having been identified.

If you need anything further please let me know.

Thanks and regards

Steve

Steve Hammond
Doosan Babcock
Email: steve.hammond@doosan.com
Tel: +44 1293 584634

----- IMPORTANT NOTICE. This E-Mail and any files transmitted with it, are confidential and may be privileged and are for the exclusive use of the intended recipient(s). If you are not the intended recipient(s) please note that any form of distribution, copying or use of this communication or the information in it, is strictly prohibited and may be unlawful. If you have received this E-Mail in error please return it to the sender. We should be grateful if you would also copy the communication to postmaster@doosanpowersystems.com then delete the E-Mail and destroy any copies of it. It is your responsibility to scan any attachments for viruses. For further information, visit us at WWW.DOOSANPOWERSYSTEMS.COM -----

From: Anderson, Dave (Trimble County)(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=ANDERSOND)
To: Afiyet, Hamit; Ball, Adam; Bethany, Ron; Boone, James; Bullock, Sam; Byrd, Larry; Cash, Rebecca; Chin, Doug; Craft, Jim; Craven, David; Dorwart, Jordan; Dukes, Christopher; Feider, Ryan; Gilliland, Dave; Gray, Jeffrey; Griffith, Michelle; Hance, Chuck; Hannon, Hannah; Hayes, Christopher; Heinz, John; Henderson, Trent; Hudson, Glen; Jensen, Jack; Jones, Steve; Joyce, Jeff; Joyce, Kenny; Maldonado, Francisco; Melloan, Ricky; Menezes, Tomas; Mills, Ricky; Mohn, Laura; Moore, Emmett; Noonan, Kenny; Park, Marci; Payne, Nicholas; Phelps, Grant; Powell, Richard; Rabe, Phil; Raker, Adam; Ransdell, Charles; Richardson, Stephen; Sanders, Matt; Sedam, Dale; Simpson, Jeff; Slaughter, Mitch; Stewart, Robert E. (Trimble); Thomas, Mark; Thurston, Eric; Turner, Haley; Turner, Tyler; Walcott, Danny; Waller, Logan
CC:
BCC:
Subject: Important notes from todays Bechtel/ Doosan outage Meeting
Sent: 04/08/2014 10:49:31 AM -0400 (EDT)
Attachments:

All,

FYI.....

SAFETY

- TC2 boiler 6th landing- watch your step. Lighting is being relocated and is powered down. Temporary lights are in place but take a flashlight if in this area and watch your step!!!
- TC2 boiler 6th landing- NW corner of boiler OFA steel is being temporarily staged in the walk way. Once again, watch your step!!!!
- Radiography notification has been sent out.

Amstar Preparation

- Need to complete reaction tank work and clear off reaction tank carding (LOTO) by pm Thursday.
- Gas path clear, all gas path openings sealed, and sign OFF both 2A & 2B ID fans by 6:00 pm, Saturday, April 12th, 2014.
- We will discuss coordination of this activity in tomorrow's 1:30 outage progress meeting.

NOx Port Relocation

- TC2 NOx probe ports are being relocated 3 ft. above existing installation prior to lime injection points.- **FEIDER & CEM'S CREW**- Review process and new installation points.

Thanks,

David W. Anderson

Trimble County Outage Coordinator
 Tel. 502-627-6313
 Fax 502-217-2199
 email: dave.anderson@lge-ku.com

From: Hammond, Steve(steve.hammond@doosan.com)
To: 'Watkins, Clyde'; Rabe, Phil; Craft, Jim; Maldonado, Francisco
CC: Mohn, Laura; 'Brann, Devin'; Melloan, Ricky; Slaughter, Mitch; McCallum, Neil; Kerslake, Ian; Gratton, Ron; 06350 TRIMBLE COUNTY MAILBOX
BCC:
Subject: RE: 07292 - TC2 - Action Items Meeting
Sent: 03/04/2014 01:39:33 PM -0500 (EST)
Attachments: 07292 - TC2 - Action Item Meeting # 2014-3, Doosan to Review Tubing to Purge....msg; RE_ 07292 - TC2 - Ashpit Insulation Support Plates (SMR0114).msg;

Mel / Phil,

Following up on the e-mail below can I ask you to expedite a response to the following e-mails;

1. Email dated 01Mar14 titled "07292 - TC2 - Action Item Meeting # 2014-3, Doosan to Review Tubing to Purge Meters on ID Fan - No Expansion Facility Causing Damage to Meters"
2. E-mail dated 26Feb14 to Jim Craft and Francisco Maldonado titled "RE: 07292 - TC2 - Ashpit Insulation Support Plates (SMR0114)"

Let me know if you have any questions regarding these, otherwise I will await your responses.

Thanks and regards

Steve

Steve Hammond
Doosan Babcock
Email: steve.hammond@doosan.com
Tel: +1 502 255 5262

From: Hammond, Steve
Sent: 04 March 2014 12:42
To: 'Watkins, Clyde'; McCallum, Neil; 'Mohn, Laura'; 'Craft, Jim (EON)'; 'Brann, Devin'; 'Melloan, Ricky'; 'Rabe, Phil' (Phil.Rabe@lge-ku.com); 'Slaughter, Mitch' (Mitch.Slaughter@lge-ku.com)
Cc: 06350 TRIMBLE COUNTY MAILBOX; Kerslake, Ian; Gratton, Ron
Subject: RE: 07292 - TC2 - Action Items Meeting

Mel / Phil

Attached is an update to the AIL.

There are minimal changes so can I suggest we cancel this week's meeting and pick up again on 11th March.

I will send an e-mail out later today reminding people of responses awaited to progress outage work.

Let me know if you agree.

Thanks and regards

Steve

Steve Hammond
Doosan Babcock
Email: steve.hammond@doosan.com
Tel: +1 502 255 5262

From: Hammond, Steve

Sent: 25 February 2014 15:36

To: Watkins, Clyde; McCallum, Neil; Mohn, Laura; Craft, Jim (EON); Brann, Devin; Melloan, Ricky; 'Rabe, Phil' (Phil.Rabe@lge-ku.com); 'Slaughter, Mitch' (Mitch.Slaughter@lge-ku.com)

Cc: 06350 TRIMBLE COUNTY MAILBOX; Kerslake, Ian; Gratton, Ron

Subject: RE: 07292 - TC2 - Action Items Meeting

All

Please find attached an updated AIL for the meeting on Tuesday 25-Feb-14 at 11am (EST).

Regards

Steve

Steve Hammond
Doosan Babcock
Email: steve.hammond@doosan.com
Tel: +1 502 255 5262

From: Hammond, Steve

Sent: 17 February 2014 20:34

To: 'Watkins, Clyde'; McCallum, Neil; Mohn, Laura; Craft, Jim (EON); Brann, Devin; Melloan, Ricky; 'Rabe, Phil' (Phil.Rabe@lge-ku.com); 'Slaughter, Mitch' (Mitch.Slaughter@lge-ku.com)

Cc: 06350 TRIMBLE COUNTY MAILBOX; Kerslake, Ian; Gratton, Ron

Subject: RE: 07292 - TC2 - Action Items Meeting

All

Please find attached an updated AIL for the meeting on Tuesday 18-Feb-14 at 11am (EST).

Regards

Steve

Steve Hammond
Doosan Babcock
Email: steve.hammond@doosan.com
Tel: +1 502 255 5262

-----Original Appointment-----

From: Watkins, Clyde [<mailto:cwatkins@bechtel.com>]

Sent: 31 January 2014 13:11

To: Watkins, Clyde; Hammond, Steve; McCallum, Neil; Mohn, Laura; Craft, Jim (EON); Brann, Devin; Melloan, Ricky

Subject: Action Items Meeting

When: 18 February 2014 11:00-12:00 (UTC-05:00) Eastern Time (US & Canada).

Where: Bechtel Startup Conference Room

When: Occurs every Tuesday effective 2/11/2014 until 5/27/2014 from 11:00 AM to 12:00 PM (UTC-05:00) Eastern Time (US & Canada).

Where: Bechtel Startup Conference Room

Note: The GMT offset above does not reflect daylight saving time adjustments.

~~*~*~*~*~*~*~*~*

This is the proposed meeting date/time. Laura – Please invite others from LGE that may wish to attend.

1. Open Engineering Action Items
2. Open RFI's on Outage Work
- 3.

From: Hammond, Steve(steve.hammond@doosan.com)
To: 'Mel Watkins'; Rabe, Phil
CC: Dukes, Christopher; Carlisle, Gary; Boone, James; 'James T. (Tom) Trimble'; Joyce, Jeff; Craft, Jim; Mohn, Laura; Slaughter, Mitch; Payne, Nicholas; Powell, Richard; Melloan, Ricky; Smith, Timothy (Fuels); Henderson, Trent; 'Brann, Devin' (dmbrann@bechtel.com); 'Dearman, James' (jdearman@bechtel.com); McCallum, Neil; Davidson, Gordon; Torkington, Ian R; Kerslake, Ian; Gratton, Ron; 06350 TRIMBLE COUNTY MAILBOX; Lee, John; Huntington, John; Whitehouse, Matthew; Groom, David
BCC:
Subject: 07292 - TC2 - Action Item Meeting # 2014-3, Doosan to Review Tubing to Purge Meters on ID Fan - No Expansion Facility Causing Damage to Meters
Sent: 03/01/2014 01:39:22 PM -0500 (EST)
Attachments: RE_ Trimble County 07292 - ID Fan Stall Warning Probe Analysis (AIL #62.4).msg; ID Fan Purge Units to be Reworked (28Feb14).pdf; Impulse Pipe to be Reworked (28Feb14).pdf;

Mel / Phil

In response to Action Item Meeting # 2014-3, Doosan to review tubing to purge meters on ID fan - No expansion facility causing damage to meters.

- 1) As you are aware Doosan has an outage activity to add additional insulation around the stab ins that were fitted as part of the stall warning system during the Spring 2013 outage, the reason for this is to ensure the purge air that continually bleeds into the fan is sufficiently heated that acid corrosion does not occur – see AIL # 62.4. I have attached our evaluation of the purge air temperatures seen in August 2013 which led to this scope of work.
- 2) Subsequently Doosan was made aware that one of the purge air units had failed and that the cause of failure was thermal expansion. We have surveyed the installation and agree that the pipe exiting the plastic flow meter could be improved by the addition of a short hose to negate the effect of thermal expansion however we do not believe that the inlet to the purge air unit requires the addition of a hose.

Attached to this e-mail is a sheet titled "ID Fan Purge Units to be Reworked (28Feb14)" which shows both the inlet to and outlet from the purge air unit and the position a hose will be added, can I ask you to review and agree this action. Once agreed we will advise the specification of the hose to be used which we expect to be 5" long with compression fittings to suit the tube used at each end and a material of construction to suit the environmental conditions around the ID fan.

- 3) And finally, Doosan will rework the impulse pipe that runs along the upper quadrant of the ID fan casing to ensure that sufficient slope exists to drain any condensation back into the fan.

Attached to this e-mail is a sheet titled "Impulse Pipe to be Reworked (28Feb14)" which shows the impulse pipe on both fans and the action to be taken, can I ask you to review and agree this action.

If you have any questions let me know, otherwise I look forward to your confirmation that this course of action is agreed.

Regards

Steve

Steve Hammond
Doosan Babcock
Email: steve.hammond@doosan.com
Tel: +1 502 255 5262

ID Fan Purge Units – Thermal Expansion – 28Feb14



The purge air inlet pipe to the flow control unit runs between a lower header and the metal body of the flow control unit and by inspection is sufficiently flexible



Replace a 5" section of the flow control unit outlet pipe with flexible hose to remove thermal expansion

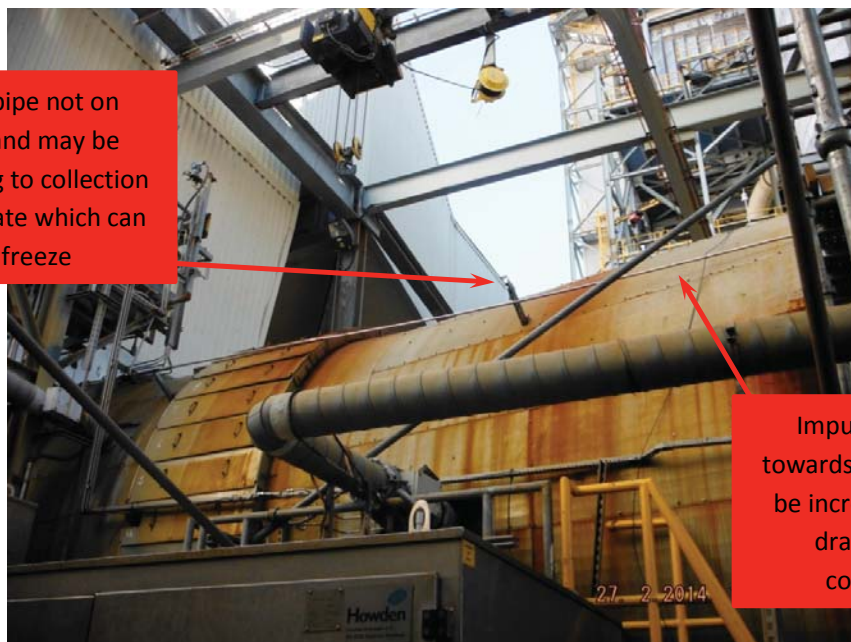
ID Fan Purge Units – Impulse Pipe Slope – 28Feb14

ID Fan A



Impulse pipe sloping towards tapping point and is acceptable

ID Fan B



Impulse pipe not on support and may be contributing to collection of condensate which can then freeze

Impulse pipe slope towards tapping point to be increased to ensure drainage of any condensation

SMR 0127 – Spring 2014 Outage

From: Groom, David(David.Groom@doosan.com)
To: Rabe, Phil; Dukes, Christopher; Carlisle, Gary; Boone, James; 'James T. (Tom) Trimble'; Craft, Jim; Mohr, Laura; Slaughter, Mitch; Payne, Nicholas; Powell, Richard; Melloan, Ricky; Smith, Timothy (Fuels); Crutcher, Tom; Henderson, Trent
CC: Hobbs, Donna; Brann, Devin; McCallum, Neil; Torkington, Ian R; Hammond, Steve; Kerslake, Ian; Gratton, Ron; Davidson, Gordon; 06350 TRIMBLE COUNTY MAILBOX; Holden, Stephen C; Cahill, Michael; Maunder, Kevin; Groom, David; Watkins, Clyde; Babcock, James; Watkins, Clyde; Allen, George K. (Chip); Davis, Thomas W; Dearman, James
BCC:
Subject: RE: Trimble County 07292 - ID Fan Stall Warning Probe Analysis (AIL #62.4)
Sent: 08/28/2013 09:07:31 AM -0400 (EDT)
Attachments: TC2 - ID Fan B Stall Warning Probe Temp Trend.pdf; TC2 - ID Fan A Stall Warning Probe Temp Trend.pdf; ID Fan A - Discharge Stall Warning Probe TC Installation.JPG;

Phil,

I inadvertently missed the LGE-KU guys off the e-mail below regarding ID fan stall warning probe purge air temperatures.

Best Regards

David

-----Original Message-----

From: Groom, David
Sent: 27 August 2013 23:26
To: Watkins, Clyde
Cc: Hobbs, Donna; Brann, Devin; McCallum, Neil; Torkington, Ian R; Hammond, Steve; Kerslake, Ian; Gratton, Ron; Davidson, Gordon; 06350 TRIMBLE COUNTY MAILBOX; Holden, Stephen C; Cahill, Michael; Maunder, Kevin
Subject: Trimble County 07292 - ID Fan Stall Warning Probe Analysis (AIL #62.4)

Mel,

Attached to this mail you will find temperature trends for the x5 ID fan stall warning probe locations on both A & B side fans as recorded by the temporary data logger for the period 14:00 8th August 2013 to 14:00 9th August 2013. I have also included EDS data for the same time period at the GAH exit, Baghouse and ID fan suction for reference.

It is clear to see that the measured probe metal temperatures on both A & B ID fans are mainly at and below the lower ADP limit (245oF) for the range of fuels fired. This is very surprising given that the location of all thermocouples are at the interface of probe to fan casing (refer to attached photo 'ID Fan A - Discharge....'). Both Howden and Doosan expect the outer surface of the fan casing and hence the S.S probe to be very close to flue gas temperature. Furthermore the void between casing and the inside surface of the insulation is also expected to be near to flue gas temperature although can be influenced by ambient conditions depending on the quality of seal between removable insulation cans etc.

On the basis that the fan casing and void in which the probe is positioned is near to gas temperature (340oF) we have calculated that the purge air at a flow rate of 1.7 SCFH would need to pass through only 14mm of piping, be that the purge supply piping or the probe itself, to be above the upper range ADP of 285oF. In all probe positions this is achievable given near flue gas temperatures at the casing and in the insulation void.

We will carry out further investigation into the differences seen between gas temp and probe temps but my initial thoughts are that the probes are being cooled by currents of ambient air that are circulating in the voids around the circumference inlet EJ, inlet cone and diffuser. To eliminate this and promote good void and probe heating I would like to propose the insulation of each purge air probe along with a convective barrier (insulation matting) either side of the probe which would positively isolate it from the rest of the void. Taping of mating removable insulation can surfaces local to the probe would also assist in the retention of heat.

I am also going to suggest that for the inlet cone and discharge areas (easier to access) we monitor the void and fan casing temperatures to confirm and add further weight to the results we are seeing.

I have had confirmation that all thermocouples were inspected for good attachment to probes before the recent insulation works was completed. However, the trends for ID Fan B diffuser and inlet cone S seem very erratic compared to that of inlet cone N and anything on ID fan A ignoring the two spikes, this could indicate possible detachment.

Although these measurements are not giving us the answer we want at present I am struggling with a solution that measures the actual purge air temperature at point of injection which is the figure we are most interested in. Any thermocouple placed down the end of the

purge probe would be subject to disturbance from fan suction/discharge, would have to be needle thin and self supporting over its entire length.

Clearly the onward investigation and insulations works, if agreed, would need to be carried out with the unit and fans still on line. I'm not sure if this is acceptable from a safety perspective or with LG&E for operational reasons. I don't believe this work can be achieved safely from a mobile elevated platform and as such scaffolding would have to be erected in each of the purge probe locations.

I will continue to monitor the datalogger outputs and progress the investigations stated above. I welcome discussion on alternate methods of purge air/probe temperature measurement and application of thermal insulation.

Best Regards

David Groom
Principal Engineer

Doosan Power Systems UK Limited
Doosan House
Crawley Business Quarter
Manor Royal
West Sussex
RH10 9AD

T: 0044 1293 58 4877
F: 0044 1293 58 4331
M: 0044 7507 576 866

From: Hammond, Steve(steve.hammond@doosan.com)
To: 'Watkins, Clyde'; McCallum, Neil; Mohn, Laura; Craft, Jim; 'Brann, Devin'; Melloan, Ricky; Rabe, Phil; Slaughter, Mitch
CC: 06350 TRIMBLE COUNTY MAILBOX; Kerslake, Ian; Gratton, Ron
BCC:
Subject: RE: 07292 - TC2 - Action Items Meeting
Sent: 03/04/2014 07:42:00 AM -0500 (EST)
Attachments: AIL Update_04_Mar_14.xlsx;

Mel / Phil

Attached is an update to the AIL.

There are minimal changes so can I suggest we cancel this week's meeting and pick up again on 11th March.

I will send an e-mail out later today reminding people of responses awaited to progress outage work.

Let me know if you agree.

Thanks and regards

Steve

Steve Hammond
Doosan Babcock
Email: steve.hammond@doosan.com
Tel: +1 502 255 5262

From: Hammond, Steve
Sent: 25 February 2014 15:36
To: Watkins, Clyde; McCallum, Neil; Mohn, Laura; Craft, Jim (EON); Brann, Devin; Melloan, Ricky; 'Rabe, Phil' (Phil.Rabe@lge-ku.com); 'Slaughter, Mitch' (Mitch.Slaughter@lge-ku.com)
Cc: 06350 TRIMBLE COUNTY MAILBOX; Kerslake, Ian; Gratton, Ron
Subject: RE: 07292 - TC2 - Action Items Meeting

All

Please find attached an updated AIL for the meeting on Tuesday 25-Feb-14 at 11am (EST).

Regards

Steve

Steve Hammond
Doosan Babcock
Email: steve.hammond@doosan.com
Tel: +1 502 255 5262

From: Hammond, Steve
Sent: 17 February 2014 20:34
To: 'Watkins, Clyde'; McCallum, Neil; Mohn, Laura; Craft, Jim (EON); Brann, Devin; Melloan, Ricky; 'Rabe, Phil' (Phil.Rabe@lge-ku.com); 'Slaughter, Mitch' (Mitch.Slaughter@lge-ku.com)
Cc: 06350 TRIMBLE COUNTY MAILBOX; Kerslake, Ian; Gratton, Ron
Subject: RE: 07292 - TC2 - Action Items Meeting

All

Please find attached an updated AIL for the meeting on Tuesday 18-Feb-14 at 11am (EST).

Regards

Steve

Steve Hammond
Doosan Babcock
Email: steve.hammond@doosan.com
Tel: +1 502 255 5262

-----Original Appointment-----

From: Watkins, Clyde [<mailto:cwatkins@bechtel.com>]
Sent: 31 January 2014 13:11
To: Watkins, Clyde; Hammond, Steve; McCallum, Neil; Mohn, Laura; Craft, Jim (EON); Brann, Devin; Melloan, Ricky
Subject: Action Items Meeting
When: 18 February 2014 11:00-12:00 (UTC-05:00) Eastern Time (US & Canada).
Where: Bechtel Startup Conference Room

When: Occurs every Tuesday effective 2/11/2014 until 5/27/2014 from 11:00 AM to 12:00 PM (UTC-05:00) Eastern Time (US & Canada).

Where: Bechtel Startup Conference Room

Note: The GMT offset above does not reflect daylight saving time adjustments.

~~*~*~*~*~*~*~*~*

This is the proposed meeting date/time. Laura – Please invite others from LGE that may wish to attend.

- 1. Open Engineering Action Items
- 2. Open RFI's on Outage Work
- 3.

Produced as Native

Original File Name: AIL Update_04_Mar_14.xlsx

Stored File Name: OpenText00254087.xlsx

From: Hammond, Steve(steve.hammond@doosan.com)
To: Watkins, Clyde; Rabe, Phil; Craft, Jim; Maldonado, Francisco
CC: Mohn, Laura; Brann, Devin; Melloan, Ricky; Slaughter, Mitch; McCallum, Neil; Kerslake, Ian; Gratton, Ron; 06350 TRIMBLE COUNTY MAILBOX; Lee, John
BCC:
Subject: RE: 07292 - TC2 - Action Items Meeting
Sent: 03/11/2014 12:41:52 PM -0400 (EDT)
Attachments: 07292 - TC2 - Action Item Meeting # 2014-3, Doosan to Review Tubing to Purge....msg;

Thanks Mel,

Phil / Mitch, do you have any comments re the Email dated 01Mar14 titled "07292 - TC2 - Action Item Meeting # 2014-3, Doosan to Review Tubing to Purge Meters on ID Fan - No Expansion Facility Causing Damage to Meters" ?

Let me know so I can get the hoses sourced and issue a work instruction to our sub-contractors.

Regards

Steve

Steve Hammond
Doosan Babcock
Email: steve.hammond@doosan.com
Tel: +44 1293 584634

From: Watkins, Clyde [<mailto:cwatkins@bechtel.com>]
Sent: 05 March 2014 17:29
To: Hammond, Steve; 'Rabe, Phil' (Phil.Rabe@lge-ku.com); Craft, Jim (EON); Maldonado, Francisco <Francisco.Maldonado@lge-ku.com> (Francisco.Maldonado@lge-ku.com)
Cc: 'Mohn, Laura'; Brann, Devin; 'Melloan, Ricky'; 'Slaughter, Mitch' (Mitch.Slaughter@lge-ku.com); McCallum, Neil; Kerslake, Ian; Gratton, Ron; 06350 TRIMBLE COUNTY MAILBOX
Subject: RE: 07292 - TC2 - Action Items Meeting

Steve,

Please see our comments below:

Impulse Pipe to be Reworked (28Feb14):

1. ID Fan A I agree that the slope does look to be acceptable from the ground. Would need to erect scaffolding and have a level in hand for a 100% no doubt answer however.
2. ID Fan B it is pointed out that the impulse pipe is not on a support, however, if you compare the B fan to the A fan the supports are not in the same location of each respective fan. I would find it prudent to check the location of the support first to make sure it is acceptable before attaching the impulse piping to it. If the support is not in the right location it could cause a dip in the impulse piping.

ID Fan Purge Units to be Reworked (28Feb14):

1. I have concerns about the use of the "flexible hose" proposed as there are no details on what flexible hose they are referring to for use. Can Doosan please provide the style and materials of construction for the planned hoses?

Thank You,

Mel Watkins

Project Engineering Manager
Trimble County Unit 2 Project
cwatkins@Bechtel.com

work: 301-228-8035 (Frederick)
work: 502-255-5277 (Trimble Site)
cell : 240-793-4490

From: Hammond, Steve [<mailto:steve.hammond@doosan.com>]

Sent: Tuesday, March 04, 2014 1:40 PM

To: Watkins, Clyde; 'Rabe, Phil' (Phil.Rabe@lge-ku.com); Craft, Jim (EON); Maldonado, Francisco <Francisco.Maldonado@lge-ku.com> (Francisco.Maldonado@lge-ku.com)

Cc: 'Mohn, Laura'; Brann, Devin; 'Melloan, Ricky'; 'Slaughter, Mitch' (Mitch.Slaughter@lge-ku.com); McCallum, Neil; Kerslake, Ian; Gratton, Ron; 06350 TRIMBLE COUNTY MAILBOX

Subject: RE: 07292 - TC2 - Action Items Meeting

Mel / Phil,

Following up on the e-mail below can I ask you to expedite a response to the following e-mails;

1. Email dated 01Mar14 titled "07292 - TC2 - Action Item Meeting # 2014-3, Doosan to Review Tubing to Purge Meters on ID Fan - No Expansion Facility Causing Damage to Meters"
2. E-mail dated 26Feb14 to Jim Craft and Francisco Maldonado titled "RE: 07292 - TC2 - Ashpit Insulation Support Plates (SMR0114)"

Let me know if you have any questions regarding these, otherwise I will await your responses.

Thanks and regards

Steve

Steve Hammond
Doosan Babcock
Email: steve.hammond@doosan.com
Tel: +1 502 255 5262

From: Hammond, Steve

Sent: 04 March 2014 12:42

To: 'Watkins, Clyde'; McCallum, Neil; 'Mohn, Laura'; 'Craft, Jim (EON)'; 'Brann, Devin'; 'Melloan, Ricky'; 'Rabe, Phil' (Phil.Rabe@lge-ku.com); 'Slaughter, Mitch' (Mitch.Slaughter@lge-ku.com)

Cc: 06350 TRIMBLE COUNTY MAILBOX; Kerslake, Ian; Gratton, Ron

Subject: RE: 07292 - TC2 - Action Items Meeting

Mel / Phil

Attached is an update to the AIL.

There are minimal changes so can I suggest we cancel this week's meeting and pick up again on 11th March.

I will send an e-mail out later today reminding people of responses awaited to progress outage work.

Let me know if you agree.

Thanks and regards

Steve

Steve Hammond
Doosan Babcock
Email: steve.hammond@doosan.com
Tel: +1 502 255 5262

From: Hammond, Steve

Sent: 25 February 2014 15:36

To: Watkins, Clyde; McCallum, Neil; Mohn, Laura; Craft, Jim (EON); Brann, Devin; Melloan, Ricky; 'Rabe, Phil' (Phil.Rabe@lge-ku.com); 'Slaughter, Mitch' (Mitch.Slaughter@lge-ku.com)

Cc: 06350 TRIMBLE COUNTY MAILBOX; Kerslake, Ian; Gratton, Ron

Subject: RE: 07292 - TC2 - Action Items Meeting

All

Please find attached an updated AIL for the meeting on Tuesday 25-Feb-14 at 11am (EST).

Regards

Steve

Steve Hammond
Doosan Babcock
Email: steve.hammond@doosan.com
Tel: +1 502 255 5262

From: Hammond, Steve

Sent: 17 February 2014 20:34

To: 'Watkins, Clyde'; McCallum, Neil; Mohn, Laura; Craft, Jim (EON); Brann, Devin; Melloan, Ricky; 'Rabe, Phil' (Phil.Rabe@lge-ku.com); 'Slaughter, Mitch' (Mitch.Slaughter@lge-ku.com)

Cc: 06350 TRIMBLE COUNTY MAILBOX; Kerslake, Ian; Gratton, Ron

Subject: RE: 07292 - TC2 - Action Items Meeting

All

Please find attached an updated AIL for the meeting on Tuesday 18-Feb-14 at 11am (EST).

Regards

Steve

Steve Hammond
Doosan Babcock
Email: steve.hammond@doosan.com
Tel: +1 502 255 5262

-----Original Appointment-----

From: Watkins, Clyde [<mailto:cwatkins@bechtel.com>]

Sent: 31 January 2014 13:11

To: Watkins, Clyde; Hammond, Steve; McCallum, Neil; Mohn, Laura; Craft, Jim (EON); Brann, Devin; Melloan, Ricky

Subject: Action Items Meeting

When: 18 February 2014 11:00-12:00 (UTC-05:00) Eastern Time (US & Canada).

Where: Bechtel Startup Conference Room

When: Occurs every Tuesday effective 2/11/2014 until 5/27/2014 from 11:00 AM to 12:00 PM (UTC-05:00) Eastern Time (US & Canada).

Where: Bechtel Startup Conference Room

Note: The GMT offset above does not reflect daylight saving time adjustments.

~~*~*~*~*~*~*~*~*

This is the proposed meeting date/time. Laura – Please invite others from LGE that may wish to attend.

1. Open Engineering Action Items
2. Open RFI's on Outage Work
- 3.

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From: Hammond, Steve(steve.hammond@doosan.com)
To: 'Mel Watkins'; Rabe, Phil
CC: Dukes, Christopher; Carlisle, Gary; Boone, James; 'James T. (Tom) Trimble'; Joyce, Jeff; Craft, Jim; Mohn, Laura; Slaughter, Mitch; Payne, Nicholas; Powell, Richard; Melloan, Ricky; Smith, Timothy (Fuels); Henderson, Trent; 'Brann, Devin' (dmbrann@bechtel.com); 'Dearman, James' (jdearman@bechtel.com); McCallum, Neil; Davidson, Gordon; Torkington, Ian R; Kerslake, Ian; Gratton, Ron; 06350 TRIMBLE COUNTY MAILBOX; Lee, John; Huntington, John; Whitehouse, Matthew; Groom, David
BCC:
Subject: 07292 - TC2 - Action Item Meeting # 2014-3, Doosan to Review Tubing to Purge Meters on ID Fan - No Expansion Facility Causing Damage to Meters
Sent: 03/01/2014 01:39:22 PM -0500 (EST)
Attachments: RE_ Trimble County 07292 - ID Fan Stall Warning Probe Analysis (AIL #62.4).msg; ID Fan Purge Units to be Reworked (28Feb14).pdf; Impulse Pipe to be Reworked (28Feb14).pdf;

Mel / Phil

In response to Action Item Meeting # 2014-3, Doosan to review tubing to purge meters on ID fan - No expansion facility causing damage to meters.

- 1) As you are aware Doosan has an outage activity to add additional insulation around the stab ins that were fitted as part of the stall warning system during the Spring 2013 outage, the reason for this is to ensure the purge air that continually bleeds into the fan is sufficiently heated that acid corrosion does not occur – see AIL # 62.4. I have attached our evaluation of the purge air temperatures seen in August 2013 which led to this scope of work.
- 2) Subsequently Doosan was made aware that one of the purge air units had failed and that the cause of failure was thermal expansion. We have surveyed the installation and agree that the pipe exiting the plastic flow meter could be improved by the addition of a short hose to negate the effect of thermal expansion however we do not believe that the inlet to the purge air unit requires the addition of a hose.

Attached to this e-mail is a sheet titled "ID Fan Purge Units to be Reworked (28Feb14)" which shows both the inlet to and outlet from the purge air unit and the position a hose will be added, can I ask you to review and agree this action. Once agreed we will advise the specification of the hose to be used which we expect to be 5" long with compression fittings to suit the tube used at each end and a material of construction to suit the environmental conditions around the ID fan.

- 3) And finally, Doosan will rework the impulse pipe that runs along the upper quadrant of the ID fan casing to ensure that sufficient slope exists to drain any condensation back into the fan.

Attached to this e-mail is a sheet titled "Impulse Pipe to be Reworked (28Feb14)" which shows the impulse pipe on both fans and the action to be taken, can I ask you to review and agree this action.

If you have any questions let me know, otherwise I look forward to your confirmation that this course of action is agreed.

Regards

Steve

Steve Hammond
Doosan Babcock
Email: steve.hammond@doosan.com
Tel: +1 502 255 5262

ID Fan Purge Units – Thermal Expansion – 28Feb14



The purge air inlet pipe to the flow control unit runs between a lower header and the metal body of the flow control unit and by inspection is sufficiently flexible



Replace a 5" section of the flow control unit outlet pipe with flexible hose to remove thermal expansion

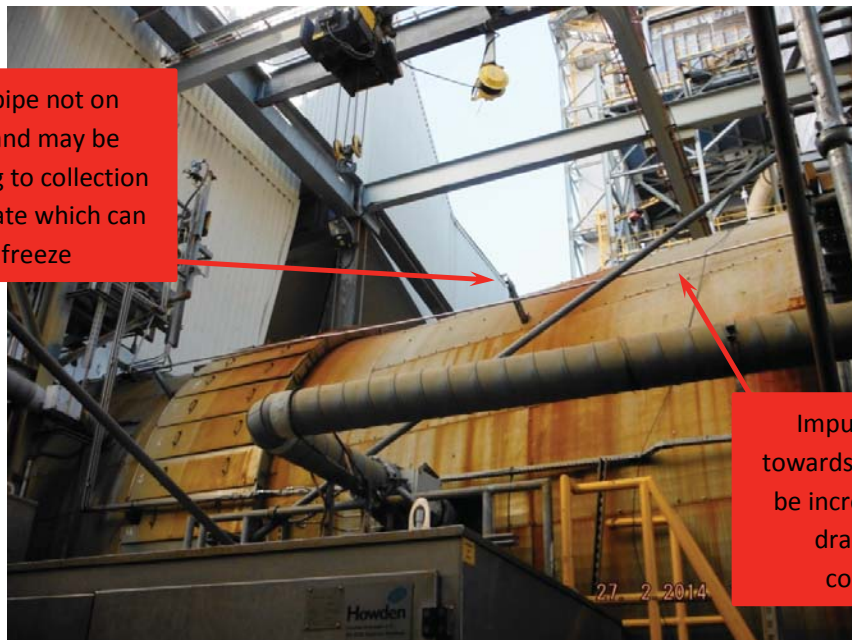
ID Fan Purge Units – Impulse Pipe Slope – 28Feb14

ID Fan A



Impulse pipe sloping towards tapping point and is acceptable

ID Fan B



Impulse pipe not on support and may be contributing to collection of condensate which can then freeze

Impulse pipe slope towards tapping point to be increased to ensure drainage of any condensation

SMR 0127 – Spring 2014 Outage

From: Groom, David(David.Groom@doosan.com)
To: Rabe, Phil; Dukes, Christopher; Carlisle, Gary; Boone, James; 'James T. (Tom) Trimble'; Craft, Jim; Mohr, Laura; Slaughter, Mitch; Payne, Nicholas; Powell, Richard; Melloan, Ricky; Smith, Timothy (Fuels); Crutcher, Tom; Henderson, Trent
CC: Hobbs, Donna; Brann, Devin; McCallum, Neil; Torkington, Ian R; Hammond, Steve; Kerslake, Ian; Gratton, Ron; Davidson, Gordon; 06350 TRIMBLE COUNTY MAILBOX; Holden, Stephen C; Cahill, Michael; Maunder, Kevin; Groom, David; Watkins, Clyde; Babcock, James; Watkins, Clyde; Allen, George K. (Chip); Davis, Thomas W; Dearman, James
BCC:
Subject: RE: Trimble County 07292 - ID Fan Stall Warning Probe Analysis (AIL #62.4)
Sent: 08/28/2013 09:07:31 AM -0400 (EDT)
Attachments: TC2 - ID Fan B Stall Warning Probe Temp Trend.pdf; TC2 - ID Fan A Stall Warning Probe Temp Trend.pdf; ID Fan A - Discharge Stall Warning Probe TC Installation.JPG;

Phil,

I inadvertently missed the LGE-KU guys off the e-mail below regarding ID fan stall warning probe purge air temperatures.

Best Regards

David

-----Original Message-----

From: Groom, David
Sent: 27 August 2013 23:26
To: Watkins, Clyde
Cc: Hobbs, Donna; Brann, Devin; McCallum, Neil; Torkington, Ian R; Hammond, Steve; Kerslake, Ian; Gratton, Ron; Davidson, Gordon; 06350 TRIMBLE COUNTY MAILBOX; Holden, Stephen C; Cahill, Michael; Maunder, Kevin
Subject: Trimble County 07292 - ID Fan Stall Warning Probe Analysis (AIL #62.4)

Mel,

Attached to this mail you will find temperature trends for the x5 ID fan stall warning probe locations on both A & B side fans as recorded by the temporary data logger for the period 14:00 8th August 2013 to 14:00 9th August 2013. I have also included EDS data for the same time period at the GAH exit, Baghouse and ID fan suction for reference.

It is clear to see that the measured probe metal temperatures on both A & B ID fans are mainly at and below the lower ADP limit (245oF) for the range of fuels fired. This is very surprising given that the location of all thermocouples are at the interface of probe to fan casing (refer to attached photo 'ID Fan A - Discharge....'). Both Howden and Doosan expect the outer surface of the fan casing and hence the S.S probe to be very close to flue gas temperature. Furthermore the void between casing and the inside surface of the insulation is also expected to be near to flue gas temperature although can be influenced by ambient conditions depending on the quality of seal between removable insulation cans etc.

On the basis that the fan casing and void in which the probe is positioned is near to gas temperature (340oF) we have calculated that the purge air at a flow rate of 1.7 SCFH would need to pass through only 14mm of piping, be that the purge supply piping or the probe itself, to be above the upper range ADP of 285oF. In all probe positions this is achievable given near flue gas temperatures at the casing and in the insulation void.

We will carry out further investigation into the differences seen between gas temp and probe temps but my initial thoughts are that the probes are being cooled by currents of ambient air that are circulating in the voids around the circumference inlet EJ, inlet cone and diffuser. To eliminate this and promote good void and probe heating I would like to propose the insulation of each purge air probe along with a convective barrier (insulation matting) either side of the probe which would positively isolate it from the rest of the void. Taping of mating removable insulation can surfaces local to the probe would also assist in the retention of heat.

I am also going to suggest that for the inlet cone and discharge areas (easier to access) we monitor the void and fan casing temperatures to confirm and add further weight to the results we are seeing.

I have had confirmation that all thermocouples were inspected for good attachment to probes before the recent insulation works was completed. However, the trends for ID Fan B diffuser and inlet cone S seem very erratic compared to that of inlet cone N and anything on ID fan A ignoring the two spikes, this could indicate possible detachment.

Although these measurements are not giving us the answer we want at present I am struggling with a solution that measures the actual purge air temperature at point of injection which is the figure we are most interested in. Any thermocouple placed down the end of the

Attachment to Response to KIUC-1 Question No. 30(f)

Production 2

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Thompson

purge probe would be subject to disturbance from fan suction/discharge, would have to be needle thin and self supporting over its entire length.

Clearly the onward investigation and insulations works, if agreed, would need to be carried out with the unit and fans still on line. I'm not sure if this is acceptable from a safety perspective or with LG&E for operational reasons. I don't believe this work can be achieved safely from a mobile elevated platform and as such scaffolding would have to be erected in each of the purge probe locations.

I will continue to monitor the datalogger outputs and progress the investigations stated above. I welcome discussion on alternate methods of purge air/probe temperature measurement and application of thermal insulation.

Best Regards

David Groom
Principal Engineer

Doosan Power Systems UK Limited
Doosan House
Crawley Business Quarter
Manor Royal
West Sussex
RH10 9AD

T: 0044 1293 58 4877
F: 0044 1293 58 4331
M: 0044 7507 576 866

From: Hammond, Steve(steve.hammond@doosan.com)
To: Mel Watkins; Rabe, Phil
CC: Dukes, Christopher; Carlisle, Gary; Boone, James; 'James T. (Tom) Trimble'; Joyce, Jeff; Craft, Jim; Mohn, Laura; Slaughter, Mitch; Payne, Nicholas; Powell, Richard; Melloan, Ricky; 'Sandra Roach'; Smith, Timothy (Fuels); Henderson, Trent; Donna Hobbs; 'Brann, Devin' (dmbrann@bechtel.com); 'Dearman, James' (jdearman@bechtel.com); McCallum, Neil; Davidson, Gordon; Torkington, Ian R; Kerlake, Ian; Gratton, Ron; 06350 TRIMBLE COUNTY MAILBOX; Grist, John; Gonese, Jean; Maunder, Kevin; Cameron, Euan
BCC:
Subject: RE: 07292 - TC2 - Spring 2014 Outage Logic Revisions (SMR 0155) - E-mail 1 of 2
Sent: 02/19/2014 04:27:17 PM -0500 (EST)
Attachments: SMR 0155 Rev C 19Feb14 (1).zip;

Mel / Phil,

Please find attached revision C of SMR0155 and updates to the previously issued logics following the comments made by both Bechtel and LGE-KU.

To compliment this I will follow up with a copy of the comments made and responses to each of those comments as well as the operating philosophy and responses to the comments made against that document.

Doosan is aware that a number of the issued logics are outstanding the F(x) details and these will be made available once the operating philosophy has been accepted.

As before and to assist with the understanding of these logic revisions I have attached a copy of the issued operating philosophy which is now at revision B as per the comments above.

Can I ask you to review the SMR and logics as issued and let us have any comments or questions.

Due to its size I am sending this as two e-mails.

Thanks and regards

Steve

Steve Hammond
Doosan Babcock
Email: steve.hammond@doosan.com
Tel: +1 502 255 526

From: Hammond, Steve
Sent: 30 December 2013 09:16
To: Mel Watkins; 'Rabe, Phil' (Phil.Rabe@lge-ku.com)
Cc: 'Christopher Dukes'; 'Gary Carlisle'; 'James Boone'; 'James T. (Tom) Trimble'; 'Jeff Joyce'; 'Jim Craft'; 'Laura Mohn'; 'Mitch Slaughter'; 'Nicholas Payne'; 'Richard Powell'; 'Ricky Melloan'; 'Sandra Roach'; 'Timothy Smith (Trimble)'; 'Trent Henderson'; Donna Hobbs; 'Brann, Devin' (dmbrann@bechtel.com); 'Dearman, James' (jdearman@bechtel.com); McCallum, Neil; Davidson, Gordon; Torkington, Ian R; Kerlake, Ian; Gratton, Ron; 06350 TRIMBLE COUNTY MAILBOX; Grist, John; Gonese, Jean; Maunder, Kevin; Cameron, Euan
Subject: RE: 07292 - TC2 - Spring 2014 Outage Logic Revisions (SMR 0155)

Mel / Phil,

In the absence of any comments since the issue of draft logic's on 12Dec13 please find attached a copy of SMR 0155 – Outage Logic Revisions.

The differences are;

- 600001145B Combustion system Operating Philosophy – Philosophy updated to comments received before 24Dec13.
- Trimble County 2 Burner Modifications - 23Dec13 – Updated to reflect comments/discussions.

As before and to assist with the understanding of these logic revisions I have attached a copy of the issued operating philosophy which is now at revision B as per the comments above.

Can I ask you to review the SMR and logics as issued and let us have any comments or questions – as a part of this review can I ask you to also consider whether additional support (Emerson via Doosan) will be needed to implement and test the logics.

Thanks and regards

Steve

Steve Hammond
Doosan Babcock Limited
Email: steve.hammond@doosan.com
Tel: +44 1293 584634

From: Hammond, Steve
Sent: 12 December 2013 11:26
To: Mel Watkins; 'Rabe, Phil' (Phil.Rabe@lge-ku.com)
Cc: Christopher Dukes; Gary Carlisle; James Boone; James T. (Tom) Trimble; Jeff Joyce; Jim Craft; Laura Mohn; Mitch Slaughter; Nicholas Payne; Richard Powell; Ricky Melloan; Sandra Roach; Timothy Smith (Trimble); Trent Henderson; Donna Hobbs; 'Brann, Devin' (dbrann@bechtel.com); 'Dearman, James' (jdearman@bechtel.com); McCartney, Darren P; Davidson, Gordon; Torkington, Ian R; Kerlake, Ian; Gratton, Ron; 06350 TRIMBLE COUNTY MAILBOX; Grist, John; Gonese, Jean; Maunder, Kevin; Cameron, Euan
Subject: 07292 - TC2 - Spring 2014 Outage Logic Revisions (SMR 0155)

Mel / Phil

You will be aware that there are a number of logic changes that need to be implemented to support the changes being made to the unit during the Spring 2014 outage.

Attached to this e-mail are advance copies of the logic to enable a preliminary review to take place ahead of issuing the final logic revisions which are forecast to be issued at the end of the year.

It should be noted that where f(x) are provided, the data will be provided on the final issue of the logic revisions and will be optimised at site where indicated.

The WCAH logic attached has the 4th drain water thermocouple being deleted as only 3 T/C s are provided with the new WCAH. The existing tag numbers on the WCAH have been maintained so that there no DCS database re-work

To assist with the understanding of these logic revisions I have also attached a copy of the issued operating philosophy, this copy is at revision A and the document itself is currently being updated to reflect comments made – we expect to have this available for issue late this week or early next week.

So, can I ask you to review the logics as issued and let us have any comments or questions.

Thanks and regards

Steve

Steve Hammond
Doosan Babcock Limited
Email: steve.hammond@doosan.com
Tel: +44 1293 584634

Attachment to Response to KIUC-1 Question No. 30(f)

Production 2

Page 551 of 1143

Thompson

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From: Anderson, Dave (Trimble County)(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=ANDERSON)
To: Afiyet, Hamit; Ball, Adam; Bethany, Ron; Boone, James; Bullock, Sam; Byrd, Larry; Cash, Rebecca; Chin, Doug; Craft, Jim; Craven, David; Dorwart, Jordan; Dukes, Christopher; Feider, Ryan; Gilliland, Dave; Gray, Jeffrey; Griffith, Michelle; Hance, Chuck; Hannon, Hannah; Hayes, Christopher; Heinz, John; Henderson, Trent; Hudson, Glen; Jensen, Jack; Jones, Steve; Joyce, Jeff; Joyce, Kenny; Maldonado, Francisco; Melloan, Ricky; Menezes, Tomas; Mills, Ricky; Mohn, Laura; Moore, Emmett; Noonan, Kenny; Park, Marci; Payne, Nicholas; Phelps, Grant; Powell, Richard; Rabe, Phil; Raker, Adam; Ransdell, Charles; Richardson, Stephen; Sanders, Matt; Sedam, Dale; Simpson, Jeff; Slaughter, Mitch; Stewart, Robert E. (Trimble); Thomas, Mark; Thurston, Eric; Turner, Haley; Turner, Tyler; Walcott, Danny; Waller, Logan
CC:
BCC:
Subject: Budget vs Estimates vs Actual.xlsx
Sent: 04/25/2014 10:31:11 AM -0400 (EDT)
Attachments: Budget vs Estimates vs Actual.xlsx;

Latest budget information for current TC2 outage.

Thanks,

David W. Anderson

Trimble County Outage Coordinator
Tel. 502-627-6313
Fax 502-217-2199
email: dave.anderson@lge-ku.com

Produced as Native

Original File Name: Budget vs Estimates vs Actual.xlsx

Stored File Name: OpenText00254198.xlsx

From: Anderson, Dave (Trimble County)(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=ANDERSOND)
To: Afiyet, Hamit; Ball, Adam; Bethany, Ron; Boone, James; Bullock, Sam; Byrd, Larry; Cash, Rebecca; Chin, Doug; Craft, Jim; Craven, David; Dorwart, Jordan; Dukes, Christopher; Feider, Ryan; Gilliland, Dave; Gray, Jeffrey; Griffith, Michelle; Hance, Chuck; Hannon, Hannah; Hayes, Christopher; Heinz, John; Henderson, Trent; Hudson, Glen; Jensen, Jack; Jones, Steve; Joyce, Jeff; Joyce, Kenny; Maldonado, Francisco; Melloan, Ricky; Menezes, Tomas; Mills, Ricky; Mohn, Laura; Moore, Emmett; Noonan, Kenny; Park, Marci; Payne, Nicholas; Phelps, Grant; Powell, Richard; Rabe, Phil; Raker, Adam; Ransdell, Charles; Richardson, Stephen; Sanders, Matt; Sedam, Dale; Simpson, Jeff; Slaughter, Mitch; Stewart, Robert E. (Trimble); Thomas, Mark; Thurston, Eric; Turner, Haley; Turner, Tyler; Walcott, Danny; Waller, Logan
CC:
BCC:
Subject: FW: 07292 TC2 - Outage Programme - 3 Day Forward Plan
Sent: 04/22/2014 06:31:22 AM -0400 (EDT)
Attachments: Trimble County 2 - 2014 Outage - 3 day Programme 21-Apr).pdf; Burner progress (21-Apr).xlsx; Electrical (21-Apr).pdf;

FYI.....

Doosan progress report.

David W. Anderson

Trimble County Outage Coordinator
Tel. 502-627-6313
Fax 502-217-2199
email: dave.anderson@lge-ku.com

From: Fleming, Ian [mailto:ian.fleming@doosan.com]
Sent: Monday, April 21, 2014 4:27 PM
To: Dearman, James; Devin Brann; Moore, Eric; Lee, John; Huntington, John; Hammond, Steve; Gray, John; Fallon, Tim; Clyde Watkins; Kerslake, Ian; Anderson, Dave (Trimble County)
Cc: Shrapnell, Vincent; Elliott, Robert; Whitehouse, Matthew; Cahill, Michael; Farrow, David; Bower, Keith; Matthews, David; Gratton, Ron; Lee, John; Hammond, Steve; Stocker, Mark; Collins, Robert; McCallum, Neil; Martin, Brenda; 06350 TRIMBLE COUNTY MAILBOX; Groom, David; Crain, Carolyn; Wilson, Gregory; Withrow, Jimmy
Subject: 07292 TC2 - Outage Programme - 3 Day Forward Plan

Please find attached copy of 3-day programme as presented today in morning meeting inclusive of progress monitor for burner/throat installation and status of electrical scope.

Regards

Ian Fleming

Senior Project Planning Engineer
Doosan Babcock
Trimble County Site

Tel: 502 255 5210
Email: ian.fleming@doosan.com

Produced as Native

Original File Name: Burner progress (21-Apr).xlsx

Stored File Name: OpenText00254218.xlsx

BURNERS

	Burner control terminated	Burner control loop checked	Beck drive terminated	Beck drive loop checked	Igniter terminated	Igniter loop checked	T/C's terminated to multiplexer	T/C's installed	T/C's loop checked	Flame scanner amplifiers terminated	Flame scanners loop checked to graphics	
C1	✓		✓				✓			✓	✓	
C2	✓		✓				✓			✓	✓	
C3	✓		✓				✓			✓	✓	
C4	✓		✓				✓			✓	✓	
C5	✓		✓				✓			✓	✓	
D1	✓		✓				✓			✓	✓	
D2	✓		✓				✓			✓	✓	
D3	✓		✓				✓			✓	✓	
D4	✓		✓				✓			✓	✓	
D5	✓		✓				✓			✓	✓	
B1	✓		✓				✓			✓	✓	
B2	✓		✓				✓			✓	✓	
B3	✓		✓				✓			✓	✓	
B4	✓		✓				✓			✓	✓	
B5	✓		✓				✓			✓	✓	
F1	✓		✓		✓		✓			✓	✓	
F2	✓		✓		✓		✓			✓	✓	
F3	✓		✓		✓		✓			✓	✓	
F4	✓		✓		✓		✓			✓	✓	
F5	✓		✓		✓		✓			✓	✓	
A1	✓		✓		✓		✓			✓	✓	
A2	✓		✓		✓		✓			✓	✓	
A3	✓		✓		✓		✓			✓	✓	
A4	✓		✓		✓		✓			✓	✓	
A5	✓		✓		✓		✓			✓	✓	
E1	✓		✓		✓		✓			✓	✓	
E2	✓		✓		✓		✓			✓	✓	
E3	✓		✓		✓		✓			✓	✓	
E4	✓		✓		✓		✓			✓	✓	
E5	✓		✓		✓		✓			✓	✓	
DCS	2DCS/JCD027/JH marshalling terminations complete, 4 fibre optic complete, power cable terminations complete											
T/C	Thermocouple data concentrators 2CBCAB003 & 2CBCAB004 compensating cables and power cables terminated											

Highlighted coal flame scanners will be repeat loop checked after rerouting of conduits to opposite side of burner

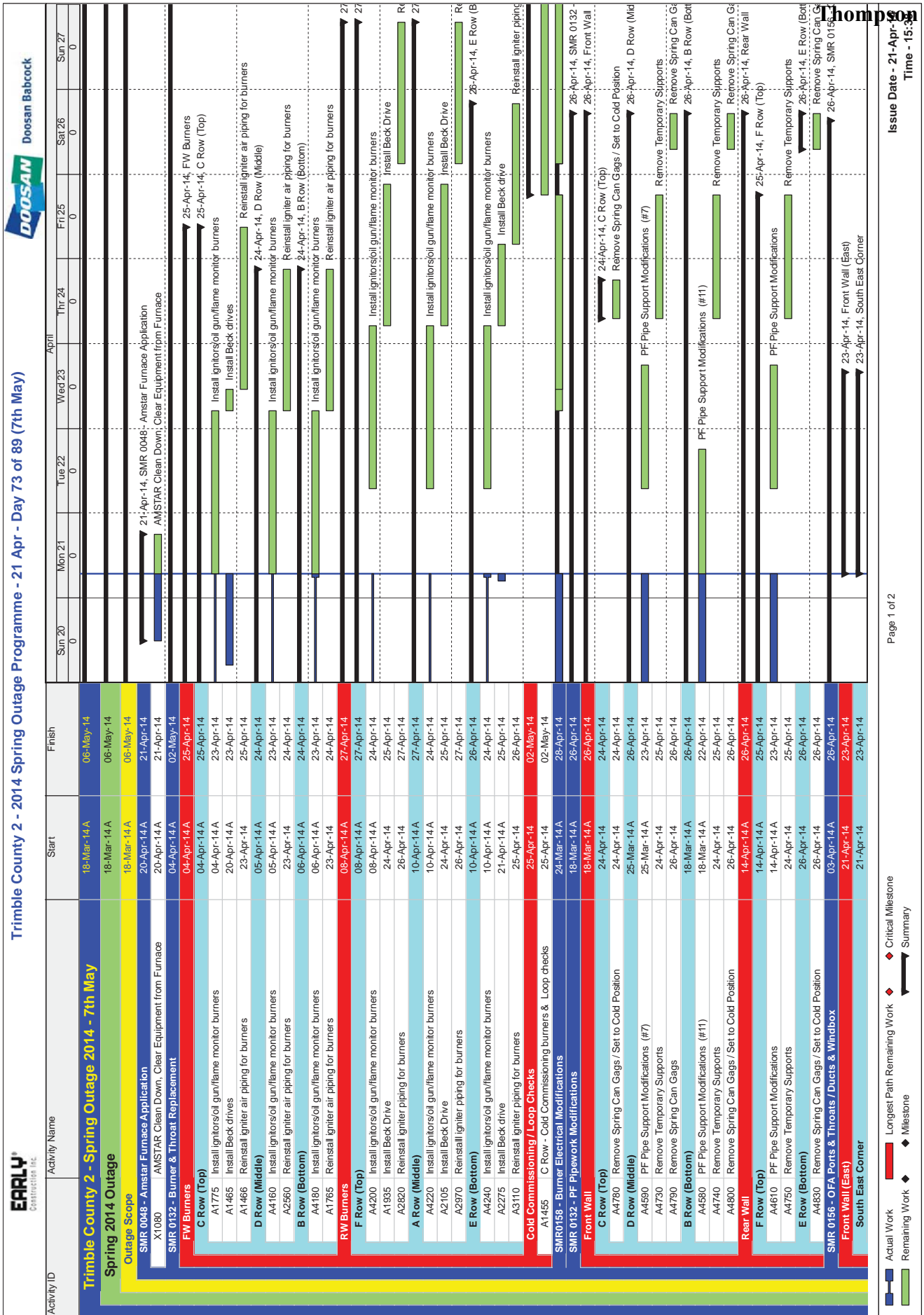
All power supplies are ready but not connected at source

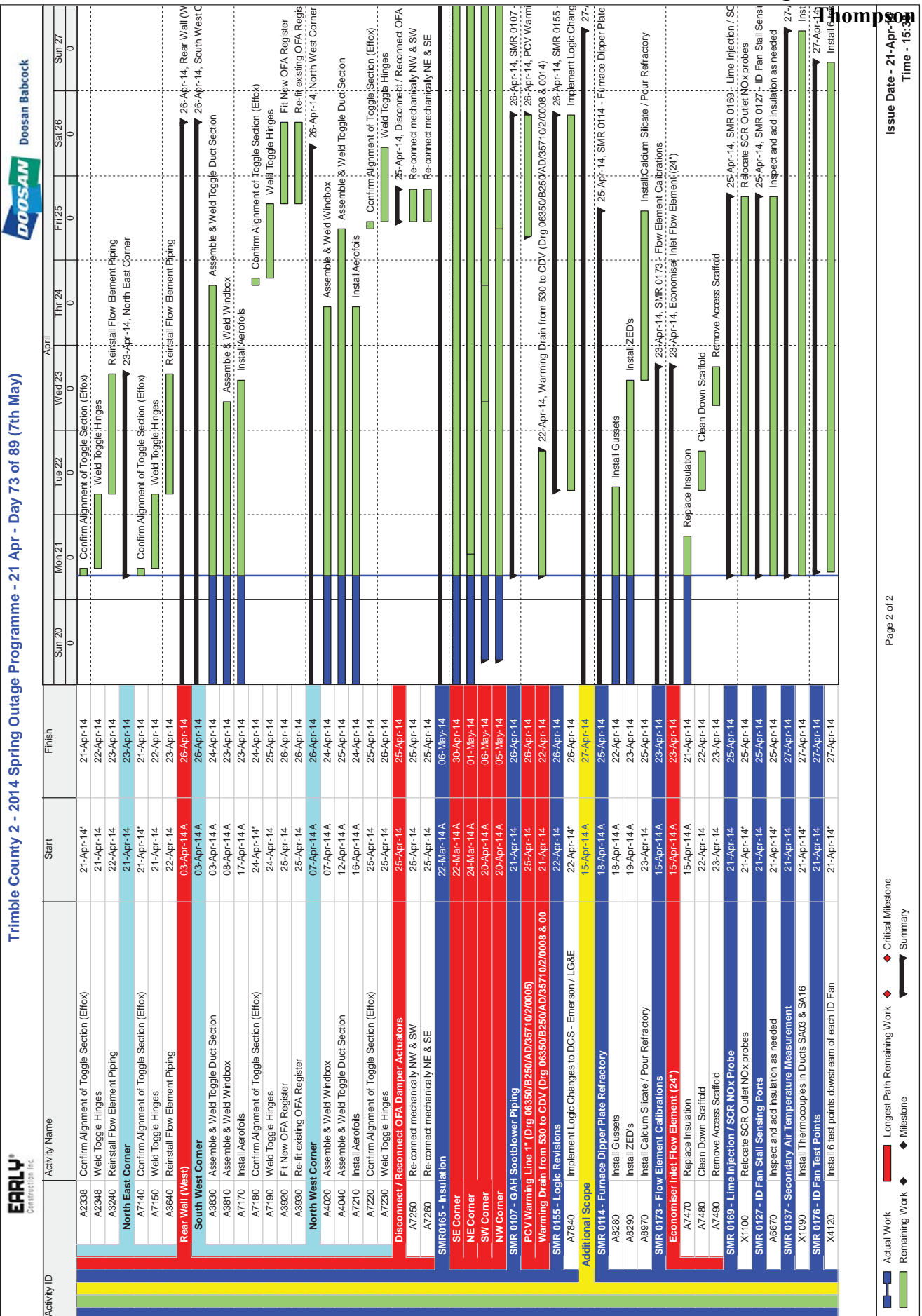
GAH SOOTBLOWERS

GAH SOOTBLOWERS	INSTALLED	SIGNAL CABLES	POWER CABLES	TERMINATED	LOOP CHECKED	IMPULSE PIPING
SBMOV514A	✓	✓	✓	✓		N/A
SBMOV514B	✓	✓	✓	✓		N/A
SBMOV515A	✓	✓	✓	✓		N/A
SBMOV515B	✓	✓	✓	✓		N/A
SBMOV517	✓	✓	✓			N/A
SBMOV520	✓	✓	✓			N/A
SBMOV521	✓	✓	✓			N/A
SBMOV522	✓	✓	✓			N/A
SBP1112	✓	N/A	N/A	N/A	N/A	✓
SBPT111	✓	✓	N/A			
SBPT114	✓	✓	N/A			
SBPT115	✓	✓	N/A			
SBFT113	✓	✓	N/A			
SBTE809		✓	N/A			N/A
SBTE809A		✓	N/A			N/A
SBTE809B		✓	N/A			N/A
SBTE810	✓	✓	N/A			N/A
PLC CAB SBCAB006	✓	✓	✓	✓		N/A
PLC CAB SBCAB003	Existing Cab - Comms cable run to SBCAB006					

OFA DUCTS

OFA	Transmitter stand relocated	Transmitter conduit relocated	Tx ss piping relocated	Lighting relocated	Beam j / b's relocated	Beck actuator drive relocated
NORTH EAST	v	v		v	v	v
SOUTH EAST	v	v		v	v	Scaffold in place - in progress
NORTH WEST	N/A	N/A	N/A	N/A		
SOUTH WEST	N/A	N/A	N/A	N/A		
EAST - 2 conduits to be supported and brackets to reattach						
WCAH - 3 x thermocouples to install on both airheaters to replace existing clamp on devices						





From: Watkins, Clyde(cwatkins@bechtel.com)
To: Melloan, Ricky; Joyce, Jeff
CC:
BCC:
Subject: FW: 07292 TC2 - Restart & Optimisation Programme
Sent: 04/23/2014 12:28:05 PM -0400 (EDT)
Attachments: Restart Programme (14-04-23).pdf;

Rick,

Just received.

Mel

Mel Watkins

Project Manager
Trimble County Unit 2 Project
cwatkins@bechtel.com
work: 301-228-8035 (Frederick)
cell : 240-793-4490

From: Fleming, Ian [mailto:ian.fleming@doosan.com]
Sent: Wednesday, April 23, 2014 11:48 AM
To: Jones, Gareth; Young, Charles E H; Gratton, Ron
Cc: McCallum, Neil; Lee, John; Kerslake, Ian; Davidson, Gordon; Hammond, Steve; London, Alan; Maunder, Kevin; Watkins, Clyde; Mitch Slaughter; Phil Rabe; Dave Anderson ; Dearman, James
Subject: 07292 TC2 - Restart & Optimisation Programme [*EXTERNAL*]

Gents,

Fyi, please find attached latest revision to Restart & Optimisation programme.

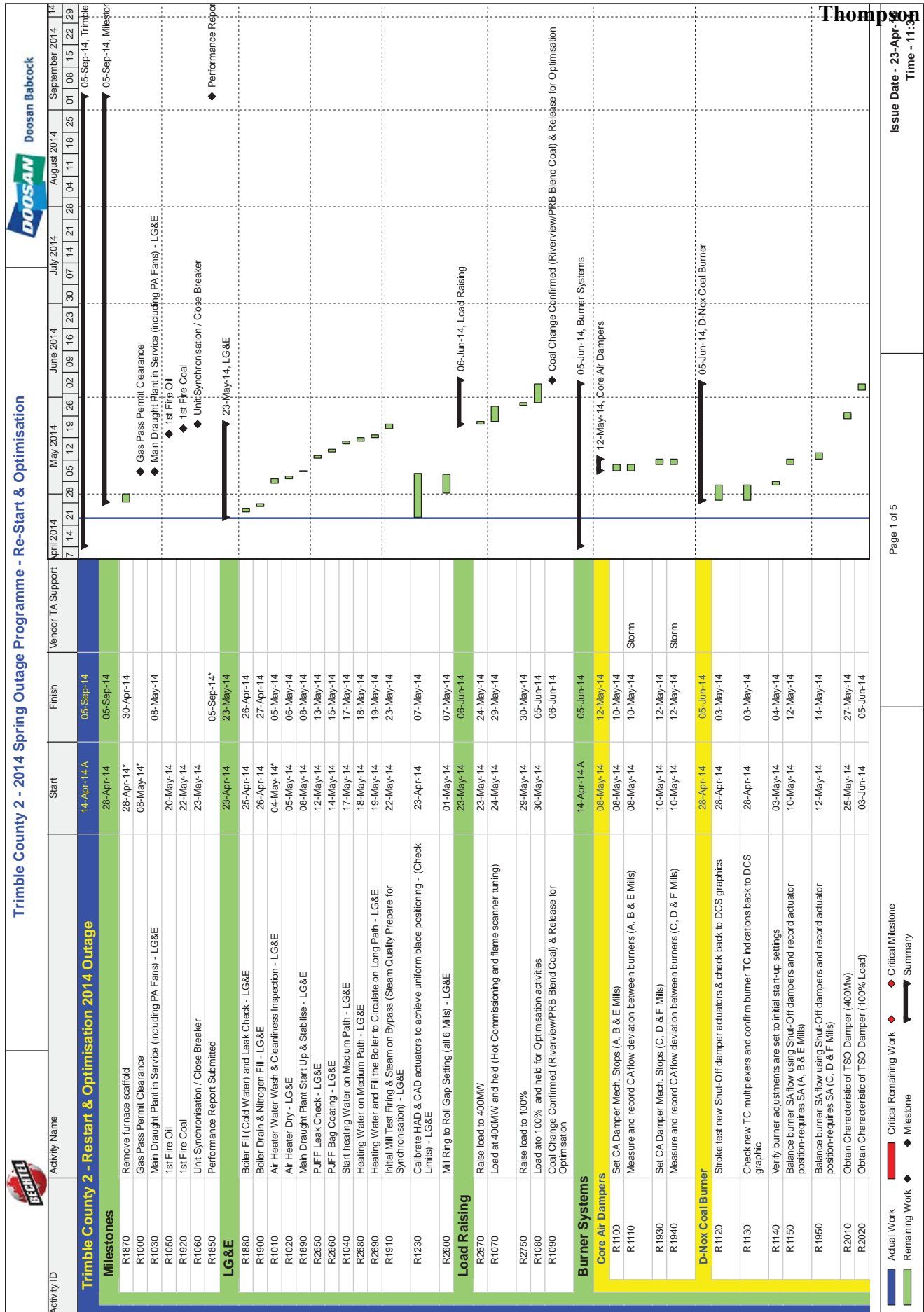
If there are any question or clarification required, please do not hesitate to contact me.

Regards
Ian Fleming

Senior Project Planning Engineer
Doosan Babcock
Trimble County Site

Tel: 502 255 5210
Email: ian.fleming@doosan.com

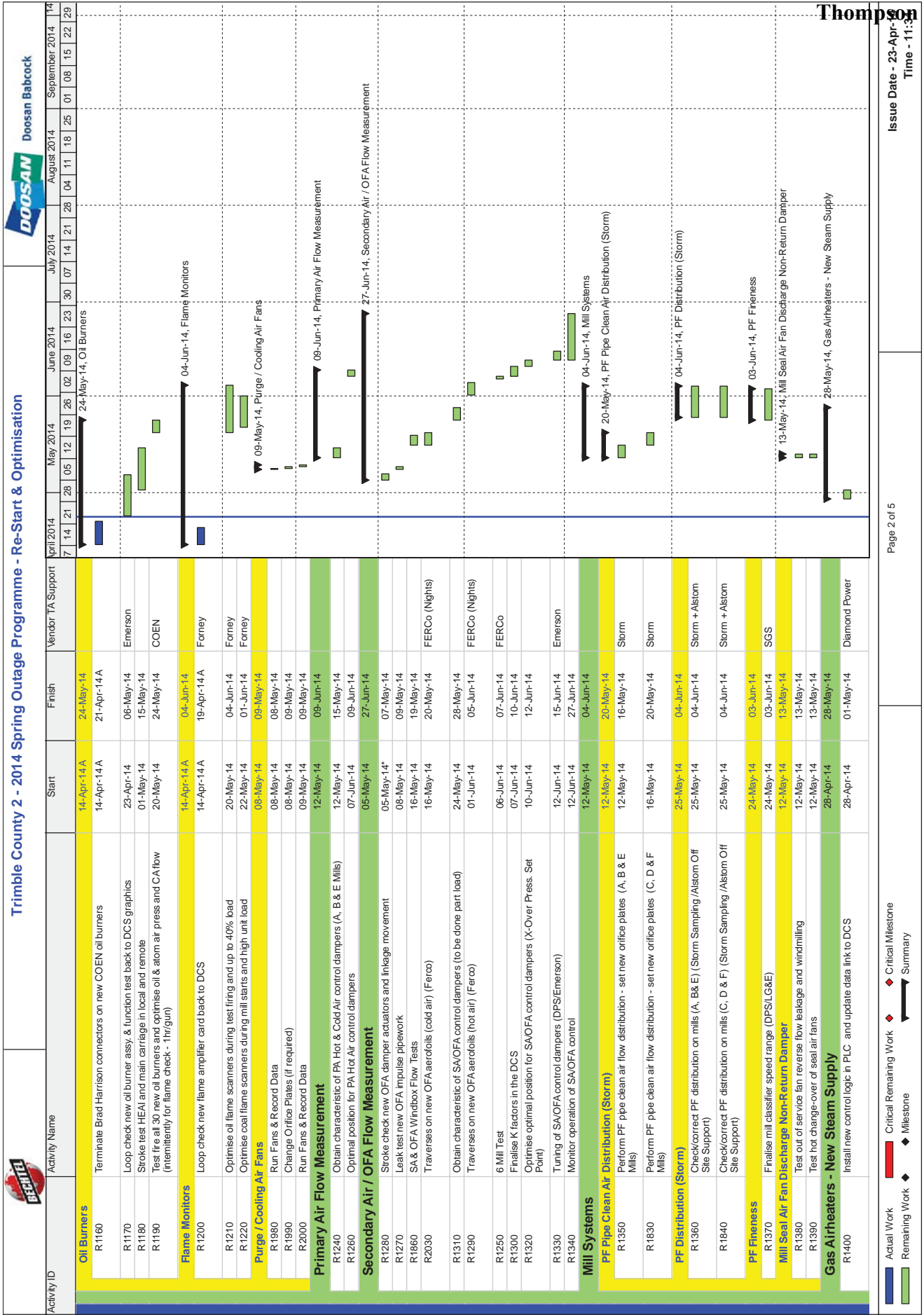
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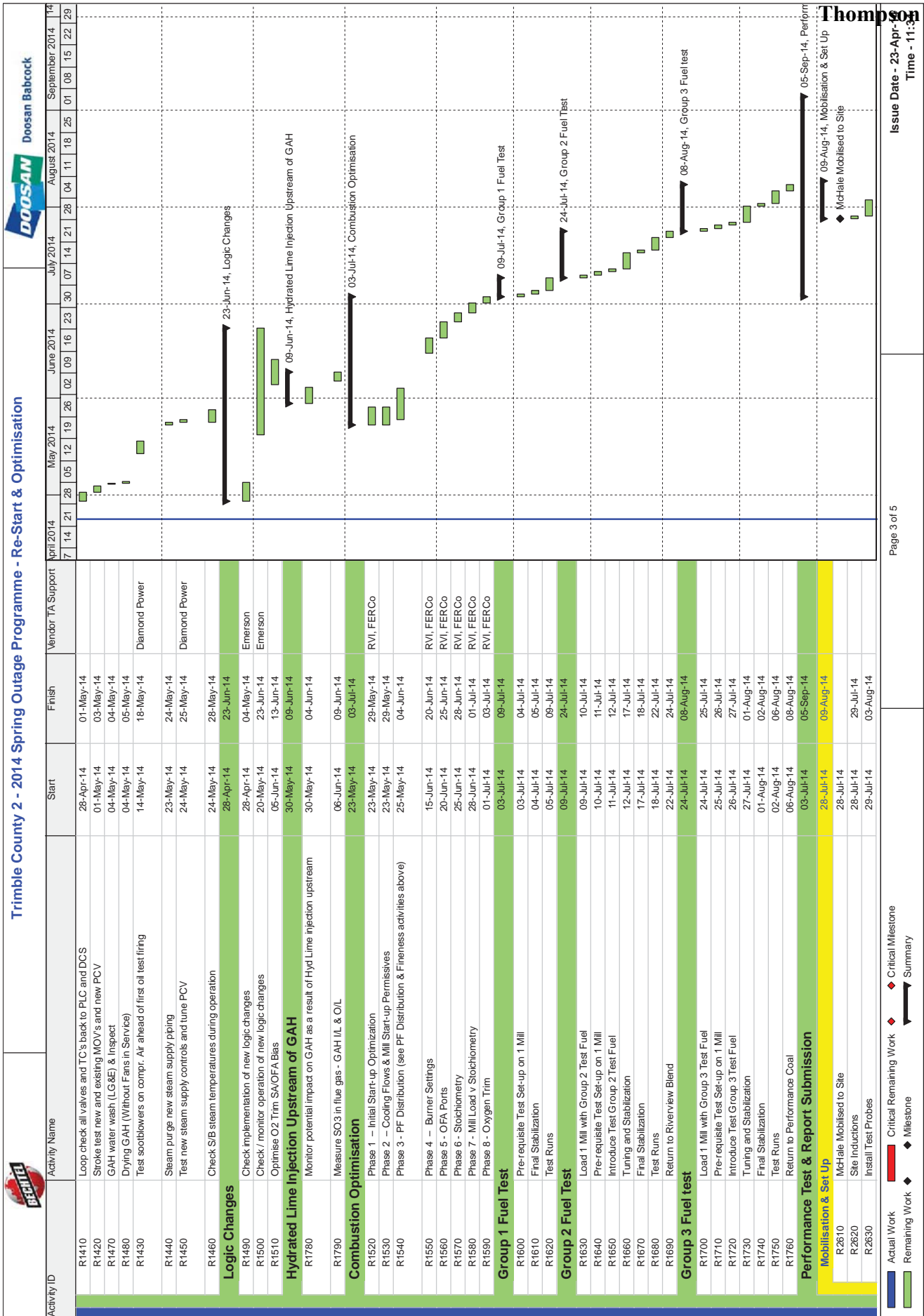


Trimble County 2 - 2014 Spring Outage Programme - Re-Start & Optimisation

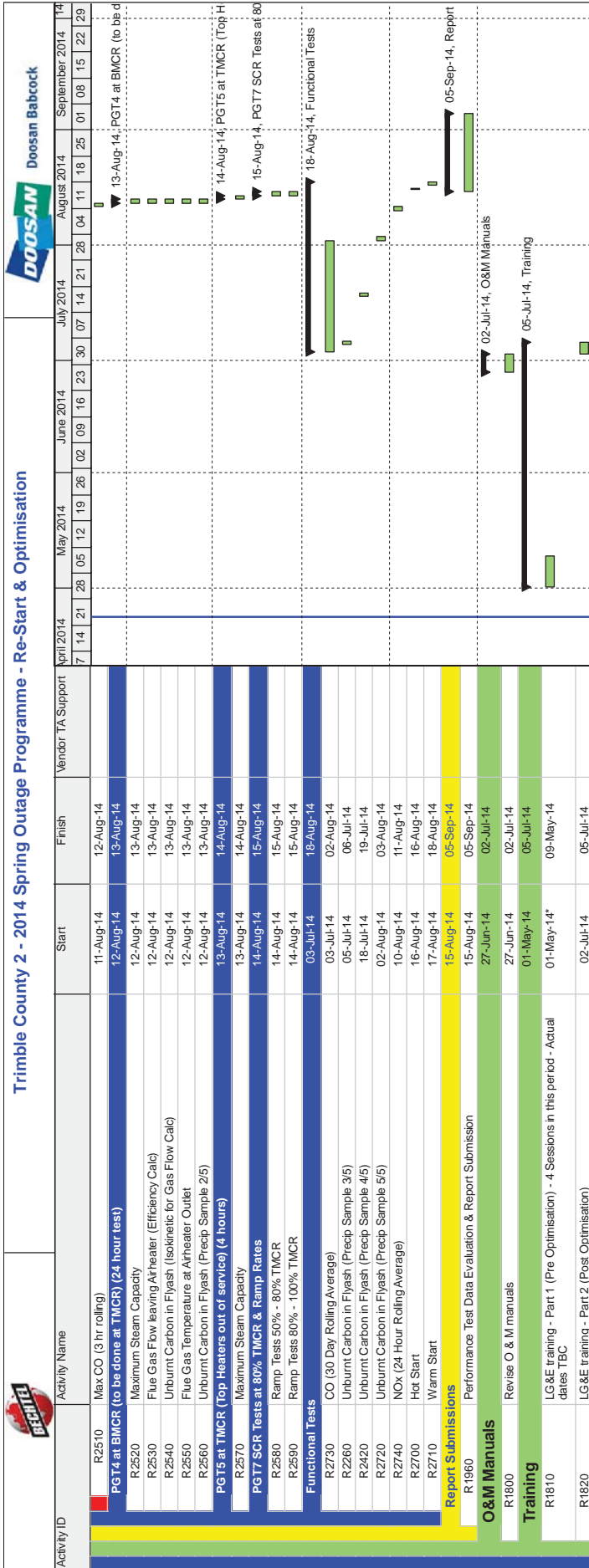


Doosan Babcock





Trimble County 2 - 2014 Spring Outage Programme - Re-Start & Optimisation		Doosan Babcock																																																
Activity ID	Activity Name	Vendor / TA Support	7	14	21	28	05	12	19	26	02	09	16	23	30	07	14	21	28	04	11	18	25	01	08	15	22	29																						
			April 2014							May 2014							June 2014							July 2014							August 2014							September 2014												
			Start	Finish																																														
R2640	Install Test Instruments		29-Jul-14	08-Aug-14																																														
R1770	Preliminary Performance Test	MChale	08-Aug-14	09-Aug-14																																														
Performance Guarantee Tests			09-Jul-14	18-Aug-14																																														
PGT1 at SGPL			09-Aug-14	10-Aug-14																																														
Boiler			09-Aug-14	10-Aug-14																																														
R2040	Boiler Efficiency (Surrogate Test)		09-Aug-14	10-Aug-14																																														
R2050	Airheater Leakage		09-Aug-14	10-Aug-14																																														
R2060	Steam Temp at Superheat Outlet		09-Aug-14	10-Aug-14																																														
R2070	Steam Temp at Reheater Outlet		09-Aug-14	10-Aug-14																																														
R2080	Dust Emission		09-Aug-14	10-Aug-14																																														
R2090	Unburnt Carbon in Flyash (Isokinetic)		09-Aug-14	10-Aug-14																																														
R2100	Unburnt Carbon in Flyash (Precip Sample 1/5)		09-Aug-14	10-Aug-14																																														
R2110	Aux Power (Surrogate Test)		09-Aug-14	10-Aug-14																																														
R2120	Reheat Spray Flow		09-Aug-14	10-Aug-14																																														
SCR			09-Aug-14	10-Aug-14																																														
R2130	NH3 Slip		09-Aug-14	10-Aug-14																																														
R2140	NOx Removal Efficiency (522 lb/h NH3)		09-Aug-14	10-Aug-14																																														
R2150	SCR Pressure Drop		09-Aug-14	10-Aug-14																																														
R2160	NOx Removal Consumption (522 lb/h NH3)		09-Aug-14	10-Aug-14																																														
Gas Emissions			09-Aug-14	10-Aug-14																																														
R2190	Max CO (3 hr rolling)		09-Aug-14	10-Aug-14																																														
PGT2 at SGPL			10-Aug-14	11-Aug-14																																														
Boiler			10-Aug-14	11-Aug-14																																														
R2200	Boiler Efficiency (Surrogate Test)		10-Aug-14	11-Aug-14																																														
R2210	Airheater Leakage		10-Aug-14	11-Aug-14																																														
R2220	Steam Temp at Superheat Outlet		10-Aug-14	11-Aug-14																																														
R2230	Steam Temp at Reheater Outlet		10-Aug-14	11-Aug-14																																														
R2240	Dust Emission		10-Aug-14	11-Aug-14																																														
R2250	Unburnt Carbon in Flyash (Isokinetic)		10-Aug-14	11-Aug-14																																														
R2270	Aux Power (Surrogate Test)		10-Aug-14	11-Aug-14																																														
R2280	Reheat Spray Flow		10-Aug-14	11-Aug-14																																														
SCR			10-Aug-14	11-Aug-14																																														
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R2310	SCR Pressure Drop		10-Aug-14	11-Aug-14																																														
R2320	NOx Removal Consumption (522 lb/h NH3)		10-Aug-14	11-Aug-14																																														
Gas Emissions			10-Aug-14	11-Aug-14																																														
R2350	Max CO (3 hr rolling)		10-Aug-14	11-Aug-14																																														
PGT3 at SGPL (if required)			11-Aug-14	12-Aug-14																																														
Boiler			11-Aug-14	12-Aug-14																																														
R2360	Boiler Efficiency (Surrogate Test)		11-Aug-14	12-Aug-14																																														
R2370	Airheater Leakage		11-Aug-14	12-Aug-14																																														



Doosan Babcock

Issue Date - 23-Apr-2014
Time - 11:55

Page 5 of 5

Legend:
 Actual Work (Red bar)
 Remaining Work (Green bar)
 Critical Remaining Work (Red diamond)
 Critical Milestone (Red diamond)
 Milestone (Black diamond)
 Summary (Black arrow)

From: Anderson, Dave (Trimble County)(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=ANDERSOND)
To: Afiyet, Hamit; Ball, Adam; Bethany, Ron; Boone, James; Bullock, Sam; Byrd, Larry; Cash, Rebecca; Chin, Doug; Craft, Jim; Craven, David; Dorwart, Jordan; Dukes, Christopher; Feider, Ryan; Gilliland, Dave; Gray, Jeffrey; Griffith, Michelle; Hance, Chuck; Hannon, Hannah; Hayes, Christopher; Heinz, John; Henderson, Trent; Hudson, Glen; Jensen, Jack; Jones, Steve; Joyce, Jeff; Joyce, Kenny; Maldonado, Francisco; Melloan, Ricky; Menezes, Tomas; Mills, Ricky; Mohn, Laura; Moore, Emmett; Noonan, Kenny; Park, Marci; Payne, Nicholas; Phelps, Grant; Powell, Richard; Rabe, Phil; Raker, Adam; Ransdell, Charles; Richardson, Stephen; Sanders, Matt; Sedam, Dale; Simpson, Jeff; Slaughter, Mitch; Stewart, Robert E. (Trimble); Thomas, Mark; Thurston, Eric; Turner, Haley; Turner, Tyler; Walcott, Danny; Waller, Logan
CC:
BCC:
Subject: FW: 07292 TC2 - Restart & Optimisation Programme
Sent: 04/23/2014 01:12:42 PM -0400 (EDT)
Attachments: Restart Programme (14-04-23).pdf;

FYI.....

TC2 restart schedule.

David W. Anderson

Trimble County Outage Coordinator
 Tel. 502-627-6313
 Fax 502-217-2199
 email: dave.anderson@lge-ku.com

From: Fleming, Ian [mailto:ian.fleming@doosan.com]
Sent: Wednesday, April 23, 2014 11:48 AM
To: Jones, Gareth; Young, Charles E H; Gratton, Ron
Cc: McCallum, Neil; Lee, John; Kerslake, Ian; Davidson, Gordon; Hammond, Steve; London, Alan; Maunder, Kevin; Clyde Watkins; Slaughter, Mitch; Rabe, Phil; Anderson, Dave (Trimble County); Dearman, James
Subject: 07292 TC2 - Restart & Optimisation Programme

Gents,

Fyi, please find attached latest revision to Restart & Optimisation programme.

If there are any question or clarification required, please do not hesitate to contact me.

Regards
 Ian Fleming

Senior Project Planning Engineer
 Doosan Babcock
 Trimble County Site

Tel: 502 255 5210
 Email: ian.fleming@doosan.com

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Activity ID	Activity Name	Start	Finish	Trimble County 2 - 2014 Spring Outage Programme - Re-Start & Optimisation											
				Doosan Babcock											
				April 2014	May 2014	June 2014	July 2014	August 2014	September 2014	October 2014	November 2014	December 2014	January 2015		
Trimble County 2 - Restart & Optimisation 2014 Outage															
Milestones															
R1870	Remove furnace scaffold	14-Apr-14	05-Sep-14												
R1000	Gas Pass Permit Clearance	28-Apr-14	05-Sep-14												
R1030	Main Draught Plant in Service (including PA Fans) - LG&E	28-Apr-14*	30-Apr-14												
R1050	1st Fire Oil	08-May-14	08-May-14												
R1920	1st Fire Coal	20-May-14													
R1060	Unit Synchronisation / Close Breaker	22-May-14													
R1850	Performance Report Submitted	23-May-14	05-Sep-14*												
LG&E															
R1880	Boiler Fill (Cold Water) and Leak Check - LG&E	23-Apr-14	23-May-14												
R1900	Boiler Drain and Nitrogen Fill - LG&E	25-Apr-14	26-Apr-14												
R1010	Air Heater Water Wash & Cleanliness Inspection - LG&E	26-Apr-14	27-Apr-14												
R1020	Air Heater Dry - LG&E	04-May-14	05-May-14												
R1890	Main Draught Plant Start Up & Stabilise - LG&E	06-May-14	06-May-14												
R2650	PJFF Leak Check - LG&E	08-May-14	08-May-14												
R2680	PJFF Bag Coating - LG&E	12-May-14	13-May-14												
R1040	Start heating Water on Medium Path - LG&E	14-May-14	15-May-14												
R2690	Heating Water on Medium Path - LG&E	17-May-14	17-May-14												
R2690	Heating Water and Fill the Boiler to Circulate on Long Path - LG&E	18-May-14	18-May-14												
R1910	Initial Mill Test Firing & Steam on Bypass (Steam Quality Prepare for Synchronisation) - LG&E	19-May-14	19-May-14												
R1230	Calibrate HAD & CAD actuators to achieve uniform blade positioning - (Check Limits) - LG&E	22-May-14	23-May-14												
R2600	Mill Ring to Roll Gap Setting (all 6 Mills) - LG&E	23-Apr-14	07-May-14												
Load Raising															
R2670	Raise load to 400MW	01-May-14	07-May-14												
R1070	Load at 400MW and held (Hot Commissioning and flame scanner tuning)	23-May-14	06-Jun-14												
R2750	Raise load to 100%	23-May-14	24-May-14												
R1080	Load at 100% and held for Optimisation activities	24-May-14	29-May-14												
R1090	Coal Change Confirmed (Riverview/PRB Blend Coal) & Release for Optimisation	29-May-14	30-May-14												
Burner Systems															
Core Air Dampers															
R1100	Set CA Damper Mech. Stops (A, B & E Mills)	14-Apr-14	05-Jun-14												
R1110	Measure and record CA flow deviation between burners (A, B & E Mills)	08-May-14	12-May-14												
R1930	Set CA Damper Mech. Stops (C, D & F Mills)	08-May-14	10-May-14												
R1940	Measure and record CA flow deviation between burners (C, D & F Mills)	10-May-14	12-May-14												
D-Nox Coal Burner															
R1120	Stroke test new Shut-Off damper actuators & check back to DCS graphics	28-Apr-14	05-Jun-14												
R1130	Check new TC multiplexers and confirm burner TC indications back to DCS graphic	28-Apr-14	03-May-14												
R1140	Verify burner adjustments are set to initial start-up settings	03-May-14	04-May-14												
R1150	Balance burner SA flow using Shut-Off dampers and record actuator position-requires SA (A, B & E Mills)	10-May-14	12-May-14												
R1950	Balance burner SA flow using Shut-Off dampers and record actuator position-requires SA (C, D & F Mills)	12-May-14	14-May-14												
R2010	Obtain Characteristic of TSO Damper (400Mw)	25-May-14	27-May-14												
R2020	Obtain Characteristic of TSO Damper (100% Load)	03-Jun-14	05-Jun-14												

Activity ID	Activity Name	Start	Finish	Vendor / TA Support	Trimble County 2 - 2014 Spring Outage Programme - Re-Start & Optimisation												Doosan Babcock
					April 2014	May 2014	June 2014	July 2014	August 2014	September 2014							
Oil Burners																	
R1160	Terminate Brad Harrison connectors on new COEN oil burners	14-Apr-14 A	24-May-14	21-Apr-14 A													
R1170	Loop check new oil burnerassy, & junction test back to DCS graphics	23-Apr-14	06-May-14	Emerson													
R1180	Stroke test HEAI and main carriage in local and remote	01-May-14	15-May-14	COEN													
R1190	Test fire all 30 new oil burners and optimise oil & atom air press and CA flow (Inadvertently for flame check - 1hr/gun)	20-May-14	24-May-14														
Flame Monitors																	
R1200	Loop check new flame amplifier card back to DCS	14-Apr-14 A	04-Jun-14	Forney													
R1210	Optimise oil flame scanners during test firing and up to 40% load	20-May-14	04-Jun-14	Forney													
R1220	Optimise coal flame scanners during mill starts and high unit load	22-May-14	01-Jun-14	Forney													
Purges / Cooling Air Fans																	
R1980	Run Fans & Record Data	08-May-14	09-May-14														
R1990	Change Orifice Plates (if required)	08-May-14	09-May-14														
R2000	Run Fans & Record Data	09-May-14	09-May-14														
Primary Air Flow Measurement																	
R1240	Obtain characteristic of PA Hot & Cold Air control dampers (A, B & E Mills)	12-May-14	15-May-14														
R1260	Optimal position for PA Hot Air control dampers	07-Jun-14	09-Jun-14														
Secondary Air / OFA Flow Measurement																	
R1280	Stroke check new OFA damper actuators and linkage movement	05-May-14	27-Jun-14														
R1270	Leak test new OFA impulse pipework	05-May-14*	07-May-14														
R1860	SA & OFA Windbox Flow Tests	08-May-14	09-May-14														
R2030	Traverses on new OFA aerotrols (cold air) (Fercoc)	16-May-14	19-May-14	FERCO													
R1310	Obtain characteristic of SA/OFA control dampers (to be done part load)	24-May-14	28-May-14	FERCO													
R1290	Traverses on new OFA aerotrols (hot air) (Fercoc)	01-Jun-14	05-Jun-14	FERCO													
R1250	6 Mill Test	06-Jun-14	07-Jun-14	FERCO													
R1300	Finalise K factors in the DCS	07-Jun-14	10-Jun-14														
R1320	Optimise optimal position for SA/OFA control dampers (X-Over Press. Set Point)	10-Jun-14	12-Jun-14														
R1330	Tuning of SA/OFA control dampers (DPS/Emerson)	12-Jun-14	15-Jun-14	Emerson													
R1340	Monitor operation of SA/OFA control	12-Jun-14	27-Jun-14														
Mill Systems																	
PF Pipe Clean Air Distribution (Storm)																	
R1350	Perform PF pipe clean air flow distribution - set new orifice plates (A, B & E Mills)	12-May-14	20-May-14	Storm													
R1830	Perform PF pipe clean air flow distribution - set new orifice plates (C, D & F Mills)	16-May-14	20-May-14	Storm													
PF Distribution (Storm)																	
R1360	Check/correct PF distribution on mills (A, B & E) (Storm Sampling/Alstom Off Site Support)	25-May-14	04-Jun-14	Storm + Alstom													
R1840	Check/correct PF distribution on mills (C, D & F) (Storm Sampling/Alstom Off Site Support)	25-May-14	04-Jun-14	Storm + Alstom													
PF Fineness																	
R1370	Finalise mill classifier speed range (DPS/LG&E)	24-May-14	05-Jun-14	SGS													
Mill Seal Air Fan Discharge Non-Return Damper																	
R1380	Test out of service fan reverse flow leakage and windmilling	12-May-14	13-May-14														
R1390	Test hot change-over of seal air fans	12-May-14	13-May-14														
Gas Airheaters - New Steam Supply																	
R1400	Install new control logic in PLC and update data link to DCS	28-Apr-14	28-May-14	Diamond Power													



Trimble County 2 - 2014 Spring Outage Programme - Re-Start & Optimisation

Activity Name

Start

Finish

Vendor / TA Support

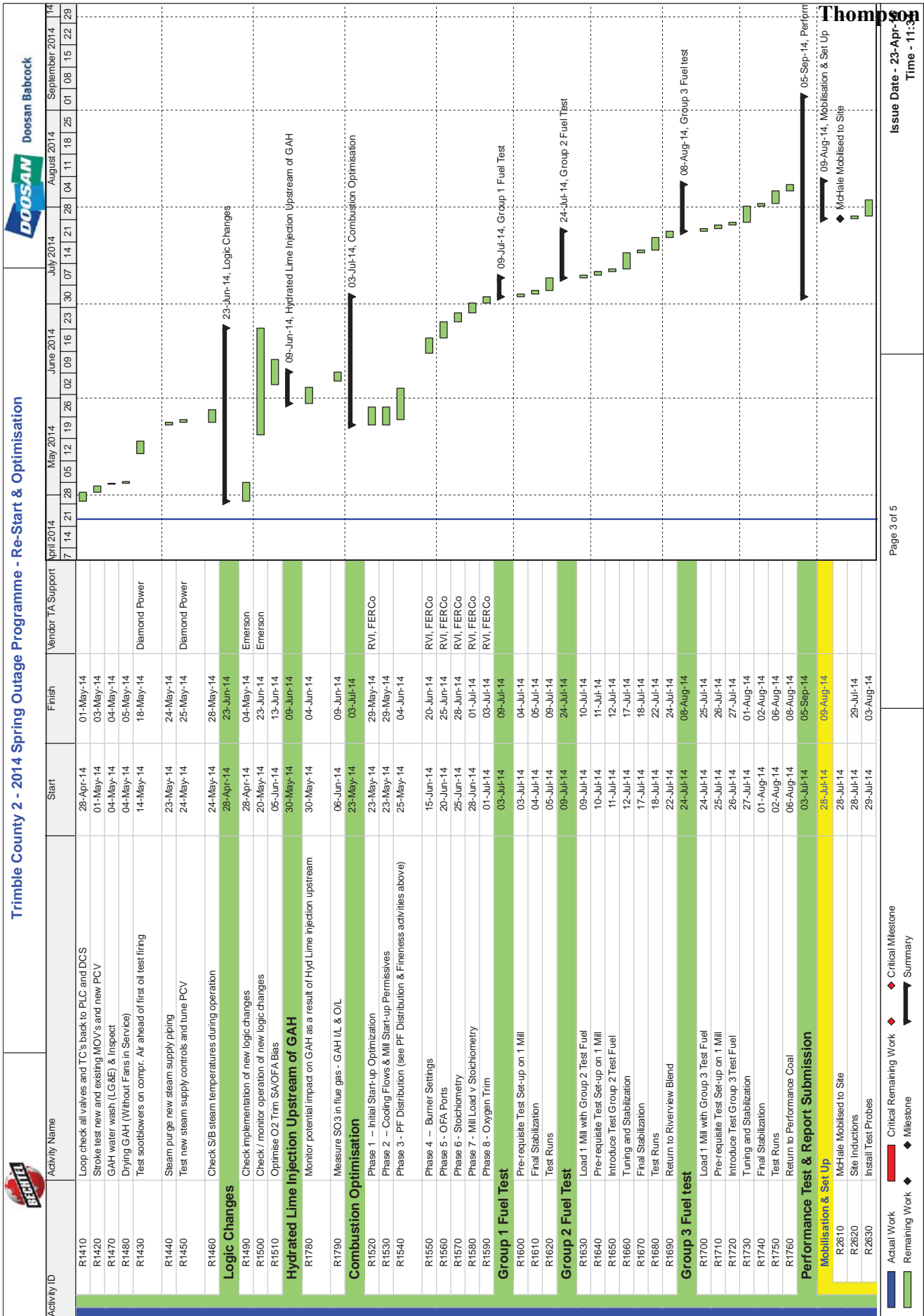
Actual Work

Remaining Work

Critical Remaining Work

Milestone

Summary



Activity ID	Activity Name	Start	Finish	Vendor / TA Support	2014							Doosan Babcock
					April	May	June	July	August	September		
R2640	Install Test Instruments	29-Jul-14	08-Aug-14									
R1770	Preliminary Performance Test	08-Aug-14	09-Aug-14	MChale								
Performance Guarantee Tests												
		09-Jul-14	18-Aug-14									
PGT1 at SGPL												
		09-Aug-14	10-Aug-14									
Boiler												
R2040	Boiler Efficiency (Surrogate Test)	09-Aug-14	10-Aug-14									
R2050	Airheater Leakage	09-Aug-14	10-Aug-14									
R2060	Steam Temp at Superheat Outlet	09-Aug-14	10-Aug-14									
R2070	Steam Temp at Reheater Outlet	09-Aug-14	10-Aug-14									
R2080	Dust Emission	09-Aug-14	10-Aug-14									
R2090	Unburnt Carbon in Flyash (Isokinetic)	09-Aug-14	10-Aug-14									
R2100	Unburnt Carbon in Flyash (Precip Sample 1/5)	09-Aug-14	10-Aug-14									
R2110	Aux Power (Surrogate Test)	09-Aug-14	10-Aug-14									
R2120	Reheat Spray Flow	09-Aug-14	10-Aug-14									
SCR												
R2130	NH3 Slip	09-Aug-14	10-Aug-14									
R2140	NOx Removal Efficiency (522 lb/h NH3)	09-Aug-14	10-Aug-14									
R2150	SCR Pressure Drop	09-Aug-14	10-Aug-14									
R2160	NOx Removal Consumption (522 lb/h NH3)	09-Aug-14	10-Aug-14									
Gas Emissions												
R2190	Max CO (3 hr rolling)	09-Aug-14	10-Aug-14									
PGT2 at SGPL												
		10-Aug-14	11-Aug-14									
Boiler												
R2200	Boiler Efficiency (Surrogate Test)	10-Aug-14	11-Aug-14									
R2210	Airheater Leakage	10-Aug-14	11-Aug-14									
R2220	Steam Temp at Superheat Outlet	10-Aug-14	11-Aug-14									
R2230	Steam Temp at Reheater Outlet	10-Aug-14	11-Aug-14									
R2240	Dust Emission	10-Aug-14	11-Aug-14									
R2250	Unburnt Carbon in Flyash (Isokinetic)	10-Aug-14	11-Aug-14									
R2270	Aux Power (Surrogate Test)	10-Aug-14	11-Aug-14									
R2280	Reheat Spray Flow	10-Aug-14	11-Aug-14									
SCR												
R2290	NH3 Slip	10-Aug-14	11-Aug-14									
R2300	NOx Removal Efficiency (522 lb/h NH3)	10-Aug-14	11-Aug-14									
R2310	SCR Pressure Drop	10-Aug-14	11-Aug-14									
R2320	NOx Removal Consumption (522 lb/h NH3)	10-Aug-14	11-Aug-14									
Gas Emissions												
R2350	Max CO (3 hr rolling)	10-Aug-14	11-Aug-14									
PGT3 at SGPL (if required)												
		11-Aug-14	12-Aug-14									
Boiler												
R2360	Boiler Efficiency (Surrogate Test)	11-Aug-14	12-Aug-14									
R2370	Airheater Leakage	11-Aug-14	12-Aug-14									
R2380	Steam Temp at Superheat Outlet	11-Aug-14	12-Aug-14									
R2390	Steam Temp at Reheater Outlet	11-Aug-14	12-Aug-14									
R2400	Dust Emission	11-Aug-14	12-Aug-14									
R2410	Unburnt Carbon in Flyash (Isokinetic)	11-Aug-14	12-Aug-14									
R2430	Aux Power (Surrogate Test)	11-Aug-14	12-Aug-14									
R2440	Reheat Spray Flow	11-Aug-14	12-Aug-14									
SCR												
R2450	NH3 Slip	11-Aug-14	12-Aug-14									
R2460	NOx Removal Efficiency (522 lb/h NH3)	11-Aug-14	12-Aug-14									
R2470	SCR Pressure Drop	11-Aug-14	12-Aug-14									
R2480	NOx Removal Consumption (522 lb/h NH3)	11-Aug-14	12-Aug-14									
Gas Emissions												
		11-Aug-14	12-Aug-14									



Trimble County 2 - 2014 Spring Outage Programme - Re-Start & Optimisation



Thompson

- Actual Work
- Remaining Work
- Critical Remaining Work
- ◆ Milestone
- ◆ Critical Milestone
- Summary

Trimble County 2 - 2014 Spring Outage Programme - Re-Start & Optimisation		Doosan Babcock	
Activity ID	Activity Name	Start	Finish
R2510	Max CO (3 hr rolling)	11-Aug-14	12-Aug-14
R2520	PGT4 at BMCR (to be done at TMCR) (24 hour test)	12-Aug-14	13-Aug-14
R2530	Maximum Steam Capacity	12-Aug-14	13-Aug-14
R2540	Flue Gas Flow leaving Air Heater (Efficiency Calc)	12-Aug-14	13-Aug-14
R2550	Unburnt Carbon in Flyash (Isokinetic for Gas Flow Calc)	12-Aug-14	13-Aug-14
R2560	Flue Gas Temperature at Airheater Outlet	12-Aug-14	13-Aug-14
R2570	Unburnt Carbon in Flyash (Pretp Sample 2/5)	12-Aug-14	13-Aug-14
R2580	PGT5 at TMCR (Top Heaters out of service) (4 hours)	13-Aug-14	14-Aug-14
R2590	Maximum Steam Capacity	13-Aug-14	14-Aug-14
R2600	PGT7 SCR Tests at 80% TMCR & Ramp Rates	14-Aug-14	15-Aug-14
R2610	Ramp Tests 50% - 80% TMCR	14-Aug-14	15-Aug-14
R2620	Ramp Tests 80% - 100% TMCR	14-Aug-14	15-Aug-14
R2630	Functional Tests	03-Jul-14	18-Aug-14
R2640	CO (30 Day Rolling Average)	03-Jul-14	02-Aug-14
R2650	Unburnt Carbon in Flyash (Pretp Sample 3/5)	05-Jul-14	06-Jul-14
R2660	Unburnt Carbon in Flyash (Pretp Sample 4/5)	18-Jul-14	19-Jul-14
R2670	Unburnt Carbon in Flyash (Pretp Sample 5/5)	02-Aug-14	03-Aug-14
R2680	NOx (24 Hour Rolling Average)	10-Aug-14	11-Aug-14
R2690	Hot Start	16-Aug-14	16-Aug-14
R2700	Warm Start	17-Aug-14	18-Aug-14
R2710	Report Submissions	15-Aug-14	05-Sep-14
R1960	Performance Test Data Evaluation & Report Submission	15-Aug-14	05-Sep-14
R1800	O&M Manuals	27-Jun-14	02-Jul-14
R1810	Training	01-May-14*	09-May-14
R1820	LG&E training - Part 1 (Pre Optimisation) - 4 Sessions in this period - Actual dates TBC	01-May-14*	09-May-14
R1820	LG&E training - Part 2 (Post Optimisation)	02-Jul-14	05-Jul-14

From: Hammond, Steve(steve.hammond@doosan.com)
To: 'Watkins, Clyde'; McCallum, Neil; Mohn, Laura; Craft, Jim; 'Brann, Devin'; Melloan, Ricky; Rabe, Phil; Slaughter, Mitch
CC: 06350 TRIMBLE COUNTY MAILBOX; Kerslake, Ian; Gratton, Ron
BCC:
Subject: RE: 07292 - TC2 - Action Items Meeting
Sent: 04/15/2014 09:32:13 AM -0400 (EDT)
Attachments: AIL Update_15_Apr_14.xlsx;

Mel / Phil

Attached is an update to the AIL for today's meeting.

Regards

Steve

 Steve Hammond
 Doosan Babcock
 Email: steve.hammond@doosan.com
 Tel: +1 502 255 5262

-----Original Appointment-----

From: Watkins, Clyde [<mailto:cwatkins@bechtel.com>]
Sent: 31 January 2014 13:11
To: Watkins, Clyde; Hammond, Steve; McCallum, Neil; Mohn, Laura; Craft, Jim (EON); Brann, Devin; Melloan, Ricky
Subject: Action Items Meeting
When: 18 February 2014 11:00-12:00 (UTC-05:00) Eastern Time (US & Canada).
Where: Bechtel Startup Conference Room

When: Occurs every Tuesday effective 2/11/2014 until 5/27/2014 from 11:00 AM to 12:00 PM (UTC-05:00) Eastern Time (US & Canada).

Where: Bechtel Startup Conference Room

Note: The GMT offset above does not reflect daylight saving time adjustments.

~~*~*~*~*~*~*~*~*

This is the proposed meeting date/time. Laura – Please invite others from LGE that may wish to attend.

1. Open Engineering Action Items
2. Open RFI's on Outage Work
- 3.

Produced as Native

Original File Name: AIL Update_15_Apr_14.xlsx

Stored File Name: OpenText00254332.xlsx

From: Watkins, Clyde(cwatkins@bechtel.com)
To: Straight, Scott; Joyce, Jeff
CC: Melloan, Ricky; Brightman, Jeff
BCC:
Subject: Site Progress Report W/E 11-Apr
Sent: 04/15/2014 03:53:18 PM -0400 (EDT)
Attachments: Site Progress Report 11-Apr.pdf;

Scott, Jeff,

Enclosed please find an updated outage schedule and progress report for the week ending April 11th. The outage continues to progress well, with the mechanical portion of the outage now forecast to complete on May 7th. (Note the attached schedule goes through gas path complete. The cold commissioning schedule is currently being worked at the moment to include LGE activities).

While the schedule for mechanical completion has now improved, we plan to use this additional time to complete additional cold commissioning activities, and are still forecasting to complete the Outage on or before May 24th. The guaranteed outage completion date of May 26th remains unchanged.

We will continue to keep you apprised of the schedule as the work progresses.

Mel

Mel Watkins
Project Manager
Trimble County Unit 2 Project
cwatkins@bechtel.com
work: 301-228-8035 (Frederick)
cell : 240-793-4490



Trimble County Project Site Progress Report

Project : NOx Reduction/Burner Upgrade	Week Ending 11th April 2014
Project Site Manager : J Lee	Contract Number: 07292

Progress Summary				
Earned Value Analysis (%)				
Outage Day No	Date	Planned	Actual	
62	10-Apr	85.6	81.7	

KEY AREAS	CURRENT STATUS
<ul style="list-style-type: none"> Safety 	<ul style="list-style-type: none"> 1 x Accidents (04-04-14) since last report <ul style="list-style-type: none"> 1 – First Aid – Petro-Chem Operative banged his shin on a scaffold pole and received a very minor abrasion and bruise. Wound cleaned and band-aid applied. 0 LTRs 8 Doosan Safety Inspections completed 8 Safety Improvement Observations raised – Reduction in level of input but this is linked to a reduction in hazardous conditions due to on-going compliance checks, main issues noted:- <ul style="list-style-type: none"> Scaffold tags are split for ease of positioning on structure, very easily displaced after accidental contact – Requested SBR foreman to review with Petro-Chem Various safety clips missing from air hoses – Safety clips installed, SBR to remind all in daily STAs Lack of softeners on SBR rigging gear on 6th level – SBR addressed issue within the hour Bolts missing from burner gallery handrails – SBR addressed within the hour Loose nuts & bolts on burner galleries – All loose items placed in buckets or boxes Base plates on roof work scaffold required securing with nails – Petro-Chem addressed within the hour Accumulation of waste materials and trash on the furnace scaffold – SBR to clean down on night shift Sparks falling down into walkway from LG&E / SBR dipper plate activities – Fire blanket increased 2 Quality Improvement Observations raised and closed out.



Trimble County Project Site Progress Report

Project : NOx Reduction/Burner Upgrade	Week Ending 11th April 2014
Project Site Manager : J Lee	Contract Number: 07292

<ul style="list-style-type: none"> • Progress Overview • Burner & Throat Replacement • OFA Ducting & Ports • PF Pipework Modifications & Orifice Plates 	<ul style="list-style-type: none"> • Daily plant walk down between Doosan, Bechtel, LG&E & SBR have been very positive and well received • Additional Doosan & SBR safety resources now on site • Training – SBR completed passport training, tigger training and hole watching training • Positives <ul style="list-style-type: none"> ○ Continued praise from LG&E Plant & Project Engineering Management team for good housekeeping. • Negatives <ul style="list-style-type: none"> ○ Site has been without water / toilets for a number of days due to problems with the site sewage plant. Prompt action by Doosan contract manager resulted in quality portable facilities now being available on site. • Holding Gas Path Cancellation date of 7th May (Outage day 89) • Longest path to completion is OFA Ducting on Rear Wall • AmStar works scheduled to commence 13th April • PF Pipe / Knife Gates connections complete • Oil Gun Igniters installed on 5 rows – E row left out thru AmStar work to allow for air movement. • Cable pulling complete • Cable glanding & terminating in progress (80%) • BMS Flame Scanner Amplifiers card change out in progress (50%) • East Wall <ul style="list-style-type: none"> ○ Windboxes at final welding ○ Setting alignment of Toggle sections ○ Insulation proceeding on Elbow & Toggle sections • West Wall <ul style="list-style-type: none"> ○ Elbow sections at final welding ○ Windboxes build in progress • PF Pipes installation complete • PF Pipe Strengthening S/Work & Support modification in progress
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Trimble County Project Site Progress Report

Project : NOx Reduction/Burner Upgrade	Week Ending 11th April 2014
Project Site Manager : J Lee	Contract Number: 07292

<ul style="list-style-type: none"> • GAH Sootblower Pipework • WCAH / FD Inlet Hoods • Misc Scope • Material Supply • SMR's Completed 	<ul style="list-style-type: none"> • Silencers installed, Roof seals to undertake • Weld Defect Analysis <ul style="list-style-type: none"> ○ 364 of 368 butts complete ○ 325 Radiographed ○ 11 repairs • Cable glanding & terminating in progress (65%) • North (A) Side <ul style="list-style-type: none"> ○ Deflector Plates installed ○ Installing Headers • South (B) Side <ul style="list-style-type: none"> ○ Installing Headers ○ Insulation in progress • Dipper Plates – Commence refit of new plates by LG&E to allow Z plate work to commence. • Economiser Flow Element – Welding completed, cleared radiography and PWHT complete. • All outage materials delivered. • Emergent scope procuring as required. • WCAH Handling System f/cast mid-April <p>Previous Week(s)</p> <ul style="list-style-type: none"> • SMR 152 – PF Orifice Carriers – Note PF Orifice Plates will be fitted as required in Re-Start Phase. • SMR 166 – GAH Sootblower Structural Steel Modifications @ EL702' • SMR 141 – Inspect selected PF pipes for build up, and clean if required • SMR 068 – Replace Mill Seal Air Dampers • SMR 157 – SCR A Side DP Tapping Point • SMR 167 – OFA Structural Steel Modifications • SMR 168 – FD Suction Hood Structural Steel Modifications
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Trimble County Project Site Progress Report

Project : NOx Reduction/Burner Upgrade	Week Ending 11th April 2014
Project Site Manager : J Lee	Contract Number: 07292

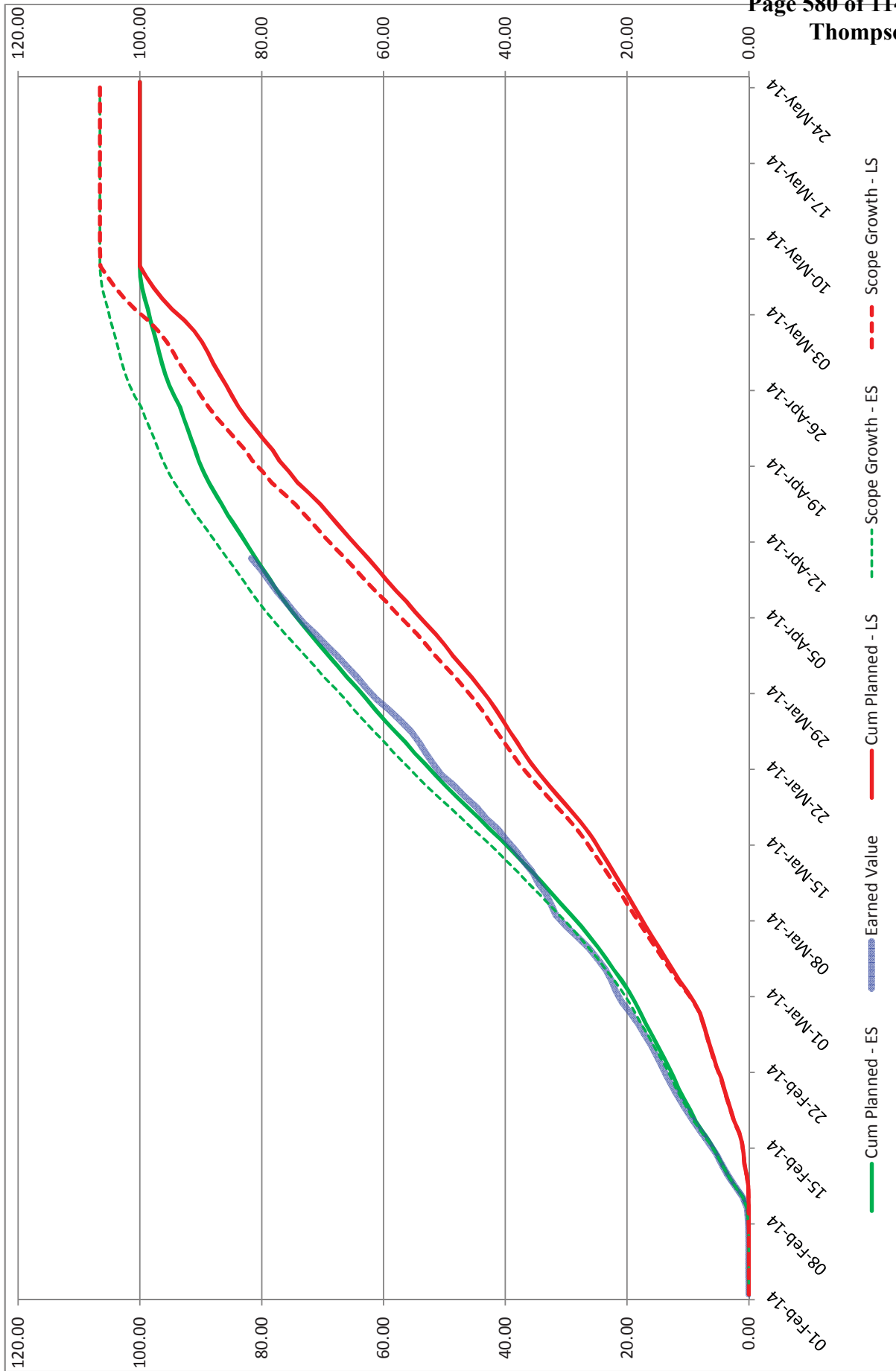
Attachments to Summary Report

Progress Percentage S-Curve, Milestone Schedule

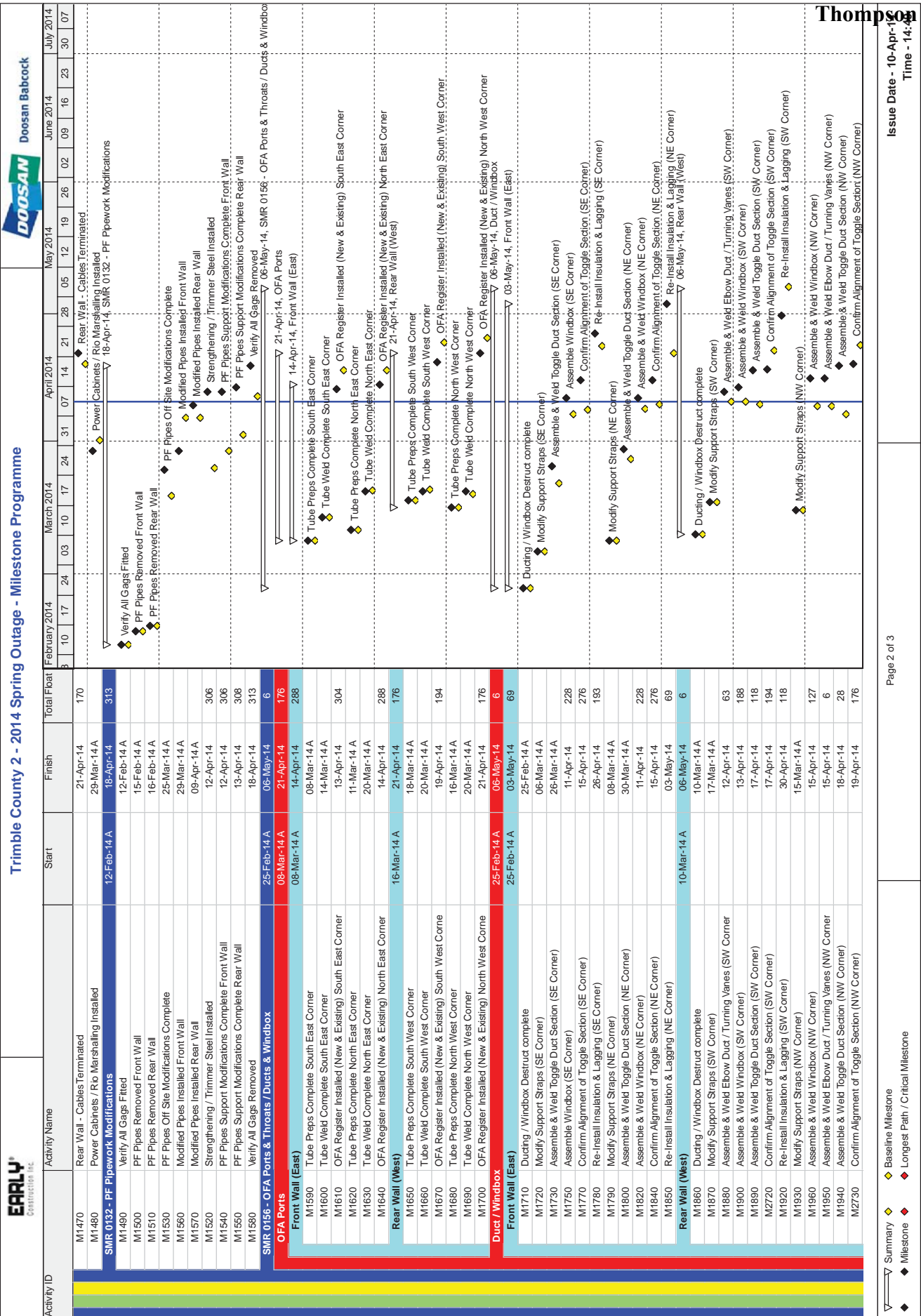
Notes to S-Curves

- Definitions
 - Cum Planned ES – Planned progress based on Early Start of all work, maximizing float
 - Cum Planned LS – Planned progress based on Latest Start of all work, no float
 - Scope Growth ES – As Cum Planned ES, adjusted to include for emergent work scope
 - Scope Growth LS – As Cum Planned LS, adjusted to include for emergent work scope
 - Earned Value – Progress achieved to date
- Criteria
 - Earned value within the envelope of Scope Growth ES & LS curves is acceptable throughout duration of outage
 - Original scope plus Scope Growth determine final percentage value to be achieved
 - Planned + Scope Growth value currently = 106%

Trimble County 2 - 2014 Spring Outage
Overall Project Earned Value S-Curve



Activity ID	Activity Name	Start	Finish	Total Float	Trimble County 2 - 2014 Spring Outage - Milestone Programme															
					February 2014	March 2014	April 2014	May 2014	June 2014	July 2014										
Trimble County 2 - Spring Outage 2014 - 7th May					12															
Trimble County - Doosan					12															
Project Milestones					11															
M1000	Boiler Off Load	08-Feb-14 A	07-May-14																	
M1040	Boiler Released	10-Feb-14 A																		
M1110	Start ID Fan for AmStar Shotblast	14-Feb-14 A																		
M1050	Furnace Scaffold Installed	12-Apr-14																		
M1020	Issue Permit for ID Fan (AmStar)																			
M1060	AmStar Shotblast, Cladding & Passivation																			
M1030	Gas Path Permit Cancellation / Unit Available for Re-Start																			
SMR 0048 - Amstar Furnace Application					152															
M1990	Owner to activate fan for AMSTAR works	13-Apr-14																		
M2000	AMSTAR Coat tubes	13-Apr-14																		
M2010	Remove furnace scaffold	16-Apr-14																		
SMR 0132 - Burner & Throat Replacement					152															
Front Wall					226															
M1120	Burners Removed Row C	19-Feb-14 A																		
M1130	Tube Preps Complete Row C	01-Mar-14 A																		
M1140	Tube Weld Complete Row C	09-Mar-14 A																		
M1150	Burner Installed / Alignment Confirmed Row C	22-Mar-14 A																		
M1160	Mechanical Completion Row C	12-Apr-14																		
M1170	Burners Removed Row D	19-Feb-14 A																		
M1180	Tube Preps Complete Row D	02-Mar-14 A																		
M1190	Tube Weld Complete Row D	14-Mar-14 A																		
M1200	Burner Installed / Alignment Confirmed Row D	23-Mar-14 A																		
M1210	Mechanical Completion Row D	12-Apr-14																		
M1220	Burners Removed Row B	22-Feb-14 A																		
M1230	Tube Preps Complete Row B	06-Mar-14 A																		
M1240	Tube Weld Complete Row B	16-Mar-14 A																		
M1250	Burner Installed / Alignment Confirmed Row B	26-Mar-14 A																		
M1260	Mechanical Completion Row B	12-Apr-14																		
Rear Wall					126															
M1270	Burners Removed F Row	19-Feb-14 A																		
M1280	Tube Preps Complete F Row	04-Mar-14 A																		
M1290	Tube Weld Complete F Row	13-Mar-14 A																		
M1300	Burner Installed / Alignment Confirmed F Row	22-Mar-14 A																		
M1310	Mechanical Completion F Row	13-Apr-14																		
M1320	Burners Removed A Row	20-Feb-14 A																		
M1330	Tube Preps Complete A Row	02-Mar-14 A																		
M1340	Tube Weld Complete A Row	15-Mar-14 A																		
M1350	Burner Installed / Alignment Confirmed A Row	24-Mar-14 A																		
M1360	Mechanical Completion A Row	15-Apr-14																		
M1370	Burners Removed E Row	21-Feb-14 A																		
M1380	Tube Preps Complete E Row	06-Mar-14 A																		
M1390	Tube Weld Complete E Row	20-Mar-14 A																		
M1400	Burner Installed / Alignment Confirmed E Row	26-Mar-14 A																		
M1410	Mechanical Completion E Row	16-Apr-14																		
SMR0158 - Burner Electrical Modifications					280															
M1420	Front Wall - Cable Trays Installed	24-Feb-14 A																		
M1430	Front Wall - Cables Installed	26-Feb-14 A																		
M1440	Front Wall - Cables Terminated	07-Apr-14 A																		
M1450	Rear Wall - Cable Trays Installed	18-Apr-14																		
M1460	Rear Wall - Cables Installed	24-Feb-14 A																		



Trimble County 2 - 2014 Spring Outage - Milestone Programme



Thompson

Activity ID	Activity Name	Start	Finish	Total Float	2014								
					February	March	April	May	June	July			
M1980	Re-install Insulation & Lagging (NW Corner)	01-Apr-14	06-May-14	6									
SMR 0166 - GAH Support Steelwork	Inspect Installation & Sign off - Bechtel/DB/EC	01-Apr-14	01-Apr-14										
SMR 0107 - GAH Scootblower Piping	PCV Warming Line 1" - Installation Complete	01-Apr-14	23-Apr-14	130									
M2040	2" & 3" Scootblower Steam @ 530 - Installation Complete	01-Apr-14	23-Apr-14	90									
M2050	Scootblower Supply from Platen Sub - Installation Complete	01-Apr-14	01-Apr-14										
M2060	6" Pipe from 714' down to 530' - Installation Complete	01-Apr-14	18-Apr-14	170									
M2070	Warming Drain from 530' to CDV - Installation Complete	01-Apr-14	10-Apr-14	180									
M2080	SVE Pipework - Silencers - Installation Complete	01-Apr-14	17-Apr-14	180									
SMR 0170 - Boiler Building Roof Ventilation Fan	Fan Relocated in new location	04-Apr-14	04-Apr-14										
M2100	GAH Scootblower - Cables / hardware installed	31-Mar-14	27-Mar-14	170									
SMR 0159 - GAH Scootblower Electrical Modifications	GAH Scootblower - Terminated/Glanded/Loop Check	27-Apr-14	27-Apr-14	170									
SMR 0095 - WCAH Upgrade	WCAH - South Side - Old Coils / Casings Removed	26-Feb-14	14-Apr-14	183									
M2140	WCAH - South Side - New Coils / Casings Installed	23-Mar-14	23-Mar-14										
M2150	WCAH - South Side - New Headers Installed	12-Apr-14	25-Mar-14	208									
M2160	WCAH - North Side - Old Coils / Casings Removed	07-Apr-14	07-Apr-14										
M2170	WCAH - North Side - New Coils / Casings Installed	14-Apr-14	14-Apr-14										
M2180	WCAH - North Side - New Headers Installed	01-Mar-14	01-Mar-14	143									
M2190	FD Hood - South Side - Crane in Position	18-Mar-14	18-Mar-14										
M2200	FD Hood - North Side - Hood Installed	05-Mar-14	05-Mar-14										
M2210	FD Hood - North Side - Scaffold Access Erected	15-Mar-14	15-Mar-14										
M2220	FD Hood - North Side - Crane in Position	24-Feb-14	24-Feb-14										
M2230	FD Hood - North Side - Hood Installed	20-Feb-14	20-Feb-14										
SMR 0152 - PF Office Plates (#30)	A Mill Complete	20-Feb-14	20-Feb-14										
M2240	B Mill Complete	24-Feb-14	24-Feb-14										
M2250	D Mill Complete	24-Feb-14	24-Feb-14										
M2270	C Mill Complete	24-Feb-14	24-Feb-14										
M2280	E Mill Complete	24-Feb-14	24-Feb-14										
M2290	F Mill Complete	24-Feb-14	24-Feb-14										
SMR 0068 - Mill Seal Air Non Return Dampers	Dampers Installation Complete	02-Mar-14	02-Mar-14										
M2300	Dampers Installation Complete	02-Mar-14	02-Mar-14										
SMR 0114 - Furnace Dipper Plate Refractory	Visual Inspection / Determine Extent of Repairs	09-Feb-14	09-Feb-14	155									
M2310	Repairs Completed	25-Apr-14	25-Apr-14										
M2320	Logic Revisions Finalised	09-Apr-14	09-Apr-14	155									
SMR 0155 - Logic Revisions	Logic Revisions Finalised	09-Apr-14	09-Apr-14	50									
M2330	Logic Changes Implemented	02-May-14	02-May-14										
M2340	Logic Changes Implemented	02-May-14	02-May-14	50									
SMR 0173 - Flow Element Calibrations	Economiser Inlet - Removed for Calibration	27-Feb-14	14-Apr-14	220									
M2350	Economiser Inlet - Re-Fitted	28-Feb-14	28-Feb-14										
M2360	Economiser Inlet - Weld / NDE Complete	31-Mar-14	31-Mar-14										
M2370	Economiser Inlet - Insulation Complete / Scaffold Removed	14-Apr-14	14-Apr-14										
M2380	HP Spray Water - Removed for Calibration	27-Feb-14	27-Feb-14	220									
M2390	HP Spray Water - Re-Fitted	04-Apr-14	04-Apr-14										
M2400	HP Spray Water - Weld / NDE Complete	07-Apr-14	07-Apr-14										
M2410	HP Spray Water - Insulation Complete / Scaffold Removed	14-Apr-14	14-Apr-14	220									
M2420	HP Spray Water - Insulation Complete / Scaffold Removed	14-Apr-14	14-Apr-14										



Trimble County 2 - 2014 Spring Outage - Milestone Programme



Doosan Babcock

Thompson
Issue Date - 10-Apr-14
Time - 14:30

- ◆ Summary
- ◆ Milestone
- ◆ Baseline Milestone
- ◆ Longest Path / Critical Milestone

From: Anderson, Dave (Trimble County)(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=ANDERSOND)
To: Afiyet, Hamit; Ball, Adam; Bethany, Ron; Boone, James; Bullock, Sam; Byrd, Larry; Cash, Rebecca; Chin, Doug; Craft, Jim; Craven, David; Dorwart, Jordan; Dukes, Christopher; Feider, Ryan; Gilliland, Dave; Gray, Jeffrey; Griffith, Michelle; Hance, Chuck; Hannon, Hannah; Hayes, Christopher; Heinz, John; Henderson, Trent; Hudson, Glen; Jensen, Jack; Jones, Steve; Joyce, Jeff; Joyce, Kenny; Maldonado, Francisco; Melloan, Ricky; Menezes, Tomas; Mills, Ricky; Mohn, Laura; Moore, Emmett; Noonan, Kenny; Park, Marci; Payne, Nicholas; Phelps, Grant; Powell, Richard; Rabe, Phil; Raker, Adam; Ransdell, Charles; Richardson, Stephen; Sanders, Matt; Sedam, Dale; Simpson, Jeff; Slaughter, Mitch; Stewart, Robert E. (Trimble); Thomas, Mark; Thurston, Eric; Turner, Haley; Turner, Tyler; Walcott, Danny; Waller, Logan
CC:
BCC:
Subject: TC2S14 Spring Outage Gantt Chart.xlsx
Sent: 04/21/2014 01:24:29 PM -0400 (EDT)
Attachments: TC2S14 Spring Outage Gantt Chart.xlsx;

FYI.....

Up to date outage progress for LG&E.

David W. Anderson

Trimble County Outage Coordinator
Tel. 502-627-6313
Fax 502-217-2199
email: dave.anderson@lge-ku.com

Produced as Native

Original File Name: TC2S14 Spring Outage Gantt Chart.xlsx

Stored File Name: OpenText00254513.xlsx

Produced as Native

Original File Name: Microsoft_Excel_97-2003_Worksheet1.xls

Stored File Name: OpenText00254636.xls

From: Anderson, Dave (Trimble County)(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=ANDERSOND)
To: Afiyet, Hamit; Ball, Adam; Bethany, Ron; Boone, James; Bullock, Sam; Byrd, Larry; Cash, Rebecca; Chin, Doug; Coomer, Timothy; Craven, David; Dorwart, Jordan; Dukes, Christopher; Dunlap, Gary; Feider, Ryan; Gilliland, Dave; Gray, Jeffrey; Griffith, Michelle; Hannon, Hannah; Hayes, Christopher; Henderson, Trent; Hudson, Glen; Jones, Steve; Joyce, Jeff; Joyce, Kenny; Maldonado, Francisco; Menezes, Tomas; Mohn, Laura; Moore, Emmett; Noonan, Kenny; Osgood, Scott; Park, Marci; Parson, Jonathan; Payne, Nicholas; Phelps, Grant; Rabe, Phil; Raker, Adam; Ransdell, Charles; Sanders, Matt; Sedam, Dale; Simpson, Jeff; Slaughter, Mitch; Stewart, Robert E. (Trimble); Stivers, Clinton; Thomas, Mark; Thurston, Eric; Turner, Haley; Turner, Tyler; Walcott, Danny; Waller, Logan; Winburn, Christopher; Craft, Jim; Hance, Chuck; Heinz, John; Jensen, Jack; Melloan, Ricky; Mills, Ricky; Powell, Richard; Richardson, Stephen
CC:
BCC:
Subject: Outage Progress
Sent: 05/10/2014 11:47:38 AM -0400 (EDT)
Attachments:

FYI.....

As of 11:35 AM Saturday:

TC2

- Fans will be removed for service @ 12:00 noon and carded.
- Efoxx is on site for the expansion joint repairs.
- PSG is on site to repair DESP & WESP items listed in Sam Dunkle's report.
- All work is to be completed by late afternoon/ early evening and fans will be placed in service and testing will resume.

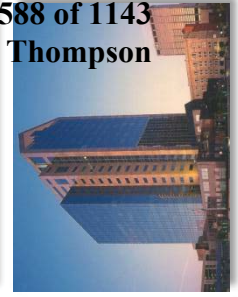
TC1

- Deslag was completed at 3:00 AM.
- Boiler tube overlay and Dutchman repair is in progress and all will be completed late this evening or early Sunday morning.
- Cleaning of 1A fan is in progress and 1B to follow.
- Air Heater Wash has not yet started due to vacuuming top of baskets before starting wash as well as air heater hopper cleaning. Kenny Joyce is on site and safely pushing Thompson to get air heater wash started.
- Ash Pit internal inspection will take place at any time now and repairs will begin as soon as scope is determined.
- Early Construction ash pit external repairs are in progress.
- 1B3 & 1A3 burner work is progressing and should be completed this evening on second shift.
- Air Heater Wash remains the **Critical Path** at this point.
- All other IE/ Mech maintenance activities are in progress.

-
Thanks,

David W. Anderson

Trimble County Outage Coordinator
Tel. 502-627-6313
Fax 502-217-2199
email: dave.anderson@lge-ku.com



PPL companies

Spring 2014 TC2 Outage Considerations

Generation Planning & Analysis

July 27, 2013

Optimal time to start the 15-week TC2 outage is the first week of February 2014; the purchase of additional generating capacity or firm transmission will be needed for February

- TC2 outage can begin as early as 1st week in February.
- 15-week outage period does not include time for testing and/or tuning the unit.
- TC2's availability following outage is uncertain
 - *Unit will be tuned during weeks following outage.*
 - *Burner testing period will extend through summer.*
- If outage begins first week of February, unit will return to service in mid May with time for tuning before June.
- To ensure reliability, the purchase of additional generating capacity or firm transmission will be required for February.
 - *Additional capacity or firm transmission will also be required in late May and early June if TC2's outage extends into June.*



Appendix

Based on GADS data (and assuming TC2 is offline), there's a 5% chance that at least 1,150-1,200 MW will be unavailable

Distribution of Unavailable MWs (Weekdays Only, No TC2, 2000-2011)

Unavailable MWs	Count of Weekday		Probability	Cumulative Probability	Unavailable MWs	Count of Weekday		Probability	Cumulative Probability
	Hours	Weekday				Hours	Weekday		
0-50	9,091		12.1%	12.1%	1150-1200	595		0.8%	95.3%
50-100	4,040		5.4%	17.5%	1200-1250	609		0.8%	96.1%
100-150	4,169		5.5%	23.0%	1250-1300	570		0.8%	96.9%
150-200	5,254		7.0%	30.0%	1300-1350	330		0.4%	97.3%
200-250	4,192		5.6%	35.6%	1350-1400	314		0.4%	97.7%
250-300	3,227		4.3%	39.9%	1400-1450	273		0.4%	98.1%
300-350	3,644		4.9%	44.8%	1450-1500	188		0.3%	98.3%
350-400	3,163		4.2%	49.0%	1500-1550	193		0.3%	98.6%
400-450	3,586		4.8%	53.7%	1550-1600	165		0.2%	98.8%
450-500	4,431		5.9%	59.6%	1600-1650	133		0.2%	99.0%
500-550	3,449		4.6%	64.2%	1650-1700	146		0.2%	99.2%
550-600	3,533		4.7%	68.9%	1700-1750	93		0.1%	99.3%
600-650	3,014		4.0%	72.9%	1750-1800	143		0.2%	99.5%
650-700	2,702		3.6%	76.5%	1800-1850	98		0.1%	99.6%
700-750	2,245		3.0%	79.5%	1850-1900	37		0.0%	99.7%
750-800	1,979		2.6%	82.2%	1900-1950	65		0.1%	99.8%
800-850	1,997		2.7%	84.8%	1950-2000	29		0.0%	99.8%
850-900	1,662		2.2%	87.0%	2000-2050	58		0.1%	99.9%
900-950	1,204		1.6%	88.6%	2050-2100	33		0.0%	99.9%
950-1000	1,433		1.9%	90.5%	2100-2150	12		0.0%	99.9%
1000-1050	1,109		1.5%	92.0%	2150-2200	28		0.0%	100.0%
1050-1100	1,045		1.4%	93.4%	2200+	21		0.0%	100.0%
1100-1150	818		1.1%	94.5%					

Note: Based on GADS data. Planned outage, non-curtailing, and reserve shutdown events are ignored.

Loads around 5,500 MW are not uncommon for early May; loads regularly hit 5,700 – 5,800 MW in late May

Count of High-Load Hours in May

May 1-15					
Load Range	2010	2011	2012	2013	
5000-5100	4	2	6		
5100-5200		3	6		
5200-5300		3	6		
5300-5400		4	4		
5400-5500		5	3		
5500-5600		1	1		
5600-5700					
5700-5800					
5800-5900					
5900-6000					
6000-6100					
6100-6200					
6200-6300					

May 16-31					
Load Range	2010	2011	2012	2013	
5000-5100	9	6	12	11	
5100-5200	3	5	9	9	
5200-5300	8	5	7	8	
5300-5400	2	3	12	4	
5400-5500	9	3	5	5	
5500-5600	10	1	1	4	
5600-5700	1	1	2	2	
5700-5800	2	1	3		
5800-5900		1			
5900-6000		1			
6000-6100		2			
6100-6200		1			
6200-6300		3			

June loads regularly exceed 6,000 MW

Count of High-Load Hours in June

June 1-15					
Load Range	2010	2011	2012	2013	
500-5100	13	8	6	11	
5100-5200	12	7	9	8	
5200-5300	14	8	8	1	
5300-5400	16	9	6	3	
5400-5500	18	11	2	3	
5500-5600	14	8	5	1	
5600-5700	9	5	2	1	
5700-5800	11	4	2	2	
5800-5900	8	7			
5900-6000	3	8		2	
6000-6100	2	10			
6100-6200	2	5		2	
6200-6300	5	11		3	
6300-6400	2	4			
6400-6500	4	2			

June 16-31					
Load Range	2010	2011	2012	2013	
500-5100	8	15	10	12	
5100-5200	17	12	10	13	
5200-5300	7	13	8	6	
5300-5400	19	13	12	19	
5400-5500	18	9	7	6	
5500-5600	13	3	14	14	
5600-5700	16	3	9	11	
5700-5800	12	1	5	3	
5800-5900	13	1	13	2	
5900-6000	12	2	10	3	
6000-6100	6		11		
6100-6200	7		9		
6200-6300	7		11		
6300-6400	3		3		
6400-6500	12		9		



Load levels in late February are comparable to load levels in early

May

Count of High-Load Hours in February

Feb 1-15					
Load Range	2010	2011	2012	2013	
5000-5100	19	13	4	2	
5100-5200	11	12	1	3	
5200-5300	15	24		3	
5300-5400	14	12	2	4	
5400-5500	9	11		4	
5500-5600	7	5		2	
5600-5700	5	4			
5700-5800	5	2		1	
5800-5900	2	1		2	
5900-6000		1		1	
6000-6100		3			
6100-6200					
6200-6300					

Feb 16-28/29					
Load Range	2010	2011	2012	2013	
5000-5100	12			4	
5100-5200	9			3	
5200-5300	13			2	
5300-5400	12				
5400-5500	5			1	
5500-5600	4				
5600-5700					
5700-5800					
5800-5900					
5900-6000					
6000-6100					
6100-6200					
6200-6300					



Given uncertainties that will exist when TC2 comes back on-line, ideal start date for 15-week outage is week of February 3; the purchase of additional generating capacity or firm transmission will likely be required

Resource Summary (1-in-20 Outage Scenario)

Week of ...	Feb 3rd	Feb 10th	Feb 17th	Feb 24th	...	May 5th	May 12th	May 19th	May 26th	June 2nd	June 9th
Total Resources*	8,156	8,156	8,156	8,156	8,156	8,056	8,056	8,056	8,056	8,056	8,056
Access to Markets	0	0	0	0	0	0	0	0	0	0	0
Planned Outages	-570	-570	-570	-570	-570	-570	-570	-570	-570	-570	-570
Unavailable MWs (5%)	-1,150	-1,150	-1,150	-1,150	-1,150	-1,150	-1,150	-1,150	-1,150	-1,150	-1,150
Other Planned Outages	0	0	0	0	0	-483	0	0	0	0	0
Total Supply	6,436	6,436	6,436	6,436	6,436	5,853	6,336	6,336	6,336	6,336	6,336
Peak Demand	5,900	5,900	5,500	5,500	5,500	5,500	5,500	5,800	5,800	6,200	6,200
Contingency Reserves	328	328	328	328	328	328	328	328	328	328	328
Total Demand	6,228	6,228	5,828	5,828	5,828	5,828	5,828	6,128	6,128	6,528	6,528
Excess Capacity	208	208	608	608	608	25	508	208	208	-192	-192

*Total resources exclude all of Paddy's Run in the winter and Paddy's Run 11-12 in the summer.

Weeks included in 12-week outage window.



From: Raker, Adam(/O=LGE/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=RAKER, ADAMB89)
To: Rupinen, Michael; Thurston, Eric; Maldonado, Francisco; Rabe, Phil
CC:
BCC:
Subject: FW: Deposits inside on TC2 Grade 23 roof tubes
Sent: 01/16/2014 12:29:52 PM -0500 (EST)
Attachments: LKE TC 2 boiler tube info.docx.docx; TC2 Steam Tube - 11-12.PDF.PDF;

Phil had asked that I follow up on the discovery last year regarding the 59 g/ft² DWD on the TC2 Roof tubes. There has been some speculation that the tubes are swayed so that they hold condensate but we have not confirmed this. The speculation was substantiated by the evidence of water lines on the tube sample sent to NALCO for DWD analysis. This sample was taken from the D-line back in 2011 which is having a 16" section cut out and replaced during the TC2 spring '14 outage.

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Have there been any further studies on the filming amines in super critical units? Are they water phase only or could these be used to protect the superheater during outages as a "lay-up"? Is there any research on impact on Condensate polishers. If they are detrimental to polishers, can they be effectively removed by filling and draining the boiler or do they need heat. If the latter, we may be able to bypass the polisher during pegging and boiler fill/first fire until the amines are neutralized.

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Sent: Wednesday, December 12, 2012 12:41 PM
To: Craft, Jim
Cc: Raker, Adam; Rupinen, Michael
Subject: FW: Deposits inside on TC2 Grade 23 roof tubes

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Eric P. Thurston
Senior Metallurgical Engineer
LG&E KU Energy LLC.
220 West Main St.
Louisville, KY 40202
P: 502-627-3745
F: 502-217-2792

C: 502-645-3012

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Hope this provides some more info for you.
I am just jaded when I hear of new boiler with tube problems. Seen several with poor alloy etc. So I assume the worst first then go from there.

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Sr. Power ITC
Nalco Company
319-670-0066

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Sent: Monday, December 10, 2012 2:11 PM
To: James Halley
Subject: RE: Deposits inside on TC2 Grade 23 roof tubes

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Sent: Monday, December 10, 2012 2:45 PM
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Eric,
One question, what is the material on the at the 8 O'clock position in the tube.

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319-670-0066

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From: Thurston, Eric [mailto:Eric.Thurston@lge-ku.com]
Sent: Monday, December 10, 2012 1:01 PM
To: James Halley
Cc: Rupinen, Michael; Raker, Adam; Anthony E Schneider
Subject: Deposits inside on TC2 Grade 23 roof tubes

Jim,

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If you have further questions, please call.

Thank you,

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I pulled the retains from the deposit weight. There are mounds of very loosely adherent red iron oxide in scattered spots on both sides throughout. The nature and composition of these corrosion products indicates that they formed due to idle time oxygen corrosion. I also see evidence of waterlines which indicate that a shallow pool of water collected on the bottom side. Friable deposited material formed within that area as well. The metal loss associated with this corrosion was in the form of small and shallow depressions that did not seriously threaten tube integrity. No hard, adherent deposits are evident on the internal surface. Idle time oxygen corrosion may be controlled through use of proper layup practice.

James J. Dillon
SENIOR RESEARCH SCIENTIST, METALLURGY GROUP

Jim,

From Jim's analysis these deposits appear to be corrosion products, from out of service oxygen attack, rather than in situ oxidation due to operating temperature .

From the geometry (roof), it apparently doesn't drain completely.

T23 a 2 1/4 % Cr alloy is no more resistant to out of service DO attack and must be similarly protected.

Tony

Final - Report Number: 766902

Thompson

LOUISVILLE GAS AND ELECTRIC CO TRIMBLE COUNTY STATION

487 CORN CREEK RD

BEDFORD - KY - 40006-8514 - USA

Sold To: 0500061383 Ship To: 0500061383

Representative: Anthony E Schneider

Sample number: NZ001271

Date sampled: 28-Nov-2012

Date received: 30-Nov-2012

Date completed: 4-Dec-2012

Date Authorized: 4-Dec-2012

Sample taken from: TC2 Steam Tube

Analytical Report

Deposit Weight Determination

Sample - As Received

Length of Received Tube Section	17.5 in
Outside Diameter of Tube Section	2.5 in

Results From Hot Side

Surface Area Examined	6.9 in ²
Wall Thickness (Minimum Measured)	0.279 in
Wall Thickness (Maximum Measured)	0.293 in
Deepest Penetration	11 mils
Deposit Loading	59 g/ft²

Note: Material was collected from the internal surfaces and submitted for Deposit Analysis

Results From Cold Side

Surface Area Examined	6.8 in ²
Wall Thickness (Minimum Measured)	0.301 in
Wall Thickness (Maximum Measured)	0.311 in
Deepest Penetration	7 mils
Deposit Loading	13 g/ft²

Method Of Analysis

*Deposit weight determined according to NACE Standard Test Method TM0199-2006.
Chemical cleaning decisions made relative to these values should be based upon equipment manufacturer's guidelines.*

Deepest Penetration and Deposit Loading results are in reference to steam/water side.



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Analytical Report



Before Cleaning



After Cleaning

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Analytical Report



An ISO 9001:2008 Certified Laboratory
Cert. # :05424-2003-AQ-HOU-ANAB

Authorized by Hayes O. Shackelford
Laboratory Technician IV

From: Rupinen, Michael(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=E012532)
To: Raker, Adam; Thurston, Eric; Maldonado, Francisco; Rabe, Phil
CC:
BCC:
Subject: RE: Deposits inside on TC2 Grade 23 roof tubes
Sent: 01/16/2014 01:28:35 PM -0500 (EST)
Attachments:

Adam,

If you would like, I can post your questions below on PowerChem to get other utilities experience...let me know.

In regards to Anodamine, I am not aware of any supercritical units with a deep bed polishers using it (does impact polisher resin). Luminant has two supercritical units with powdered resin polishers feeding it continuously. Anodamine needs temperature to drive the reaction, so it would have to be introduced to the unit while operating and the polisher would have to be taken out of service (Luminant is reporting it takes 30 days to establish the film). It sounds as if nitrogen blanketing would be the best option for layup protection.

Mike

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Sent: Thursday, January 16, 2014 12:30 PM
To: Rupinen, Michael; Thurston, Eric; Maldonado, Francisco; Rabe, Phil
Subject: FW: Deposits inside on TC2 Grade 23 roof tubes

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From: Thurston, Eric(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=E010756)
To: Rupinen, Michael; Raker, Adam; Maldonado, Francisco; Rabe, Phil; Sanders, Matt
CC:
BCC:
Subject: RE: Deposits inside on TC2 Grade 23 roof tubes
Sent: 01/17/2014 09:55:11 AM -0500 (EST)
Attachments:

Adam,

I can't speak to the chemical cleaning of SH in supercritical units. I know of all the SH cleans I've heard in subcrit. units and done analysis on, many have not ended well.

Southeast boiler is just a boilermaker and does not have the capability or expertise to chemical clean. Can one of our chemical clean companies provide any insight?

If we borescope, what would that tell us?

As far as the draining of the roof, since Dec. 2012, we realized there is an ID thickness change from the roof tubes to the cage inlet header, in the direction gravity is supposed to drain these tubes. The roof has to be sloped enough to drain the water past the ID transition thickness and I don't think it is.

Eric Thurston

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Jim Halley
Sr. Power ITC
Nalco Company
319-670-0066

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Sent: Monday, December 10, 2012 1:01 PM
To: James Halley
Cc: Rupinen, Michael; Raker, Adam; Anthony E Schneider
Subject: Deposits inside on TC2 Grade 23 roof tubes

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If you have further questions, please call.

Thank you,

Eric P. Thurston
Senior Metallurgical Engineer
LG&E KU Energy LLC.
220 West Main St.
Louisville, KY 40202
P: 502-627-3745
F: 502-217-2792
C: 502-645-3012

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From: Raker, Adam(/O=LGE/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=RAKER, ADAMB89)
To: Thurston, Eric; Rupinen, Michael; Maldonado, Francisco; Rabe, Phil; Sanders, Matt
CC:
BCC:
Subject: RE: Deposits inside on TC2 Grade 23 roof tubes
Sent: 01/17/2014 10:40:25 AM -0500 (EST)
Attachments:

I knew that Southeast couldn't chem clean, I was wondering about mechanical brushing of the deposits on the roof tubes. I am not sure as to whether we could only chem clean the roof tubes without getting the whole superheater. Borescope would tell us how far the exfoliation deposit extends across the roof. Regardless of what we do, if the roof doesn't drain properly the issue will come back.

-----Original Message-----

From: Thurston, Eric
Sent: Friday, January 17, 2014 9:55 AM
To: Rupinen, Michael; Raker, Adam; Maldonado, Francisco; Rabe, Phil; Sanders, Matt
Subject: RE: Deposits inside on TC2 Grade 23 roof tubes

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Eric Thurston

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To: Raker, Adam; Thurston, Eric; Maldonado, Francisco; Rabe, Phil
Subject: RE: Deposits inside on TC2 Grade 23 roof tubes

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The nature of the deposit is different from typical water wall DWD tubes in that it is not an iron transport problem but an exfoliation of the base metal in-situ.

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Should we consider cleaning the superheater and to what extent. We don't know if this issue is isolated to the roof tubes, I would like to think so.

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Would Southeast be capable?

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We should also shoot a level on the tubes and determine their geometry for certain. Even if we clean the tubes and the roof is bowed, there is very little we can do to prevent the return of the deposit. We can review the draining/venting procedure but if the tubes do not drain back properly, they will hold condensed vapor and continue to corrode the tubes.

We have the capability and have performed nitrogen lay-up in the past but this can't be done if there is any tube work to complete. The SH block valve also does not isolate completely until heat and pressure are present and as such bleeds nitrogen from the system continuously into downstream equipment. This can cause other hazards with confined space atmospheres.

Mike Rupinen,

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From: Thurston, Eric

Sent: Wednesday, December 12, 2012 12:41 PM

To: Craft, Jim

Cc: Raker, Adam; Rupinen, Michael

Subject: FW: Deposits inside on TC2 Grade 23 roof tubes

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Attachment to Response to KIUC-1 Question No. 30(f)

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Thompson

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To: Thurston, Eric; Raker, Adam; Maldonado, Francisco; Rabe, Phil; Sanders, Matt
CC:
BCC:
Subject: RE: Deposits inside on TC2 Grade 23 roof tubes
Sent: 01/17/2014 10:53:12 AM -0500 (EST)
Attachments:

SH can be cleaned if the piping exists to isolate this section and piping exists to allow proper circulation at a high velocity. I know on a drum unit it was anticipated to cost 1M for modifications, plant chose not to and tried a drain and fill, it plugged all the bends. Most SH are not designed for high enough circulation. I would be concerned with any type of mechanical cleaning (brushing) as it will cause the deposits to build up in low areas/bends and plug the tubes. There are chemical cleaning companies I would consider bringing in but all of the piping/modifications would have to be made first.

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Attachment to Response to KIUC-1 Question No. 30(f)

Production 2

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Thompson

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TC-2 Maintenance Outage Spring 2014

Thursday (February 6th 2014)

- Change coal on the mills in service from 70/30 Riverview / PRB to 100% Riverview.
- Change the Hydro-jets to aggressive mode starting the am shift and remain on aggressive until the outage.
- Empty the normal H/L silo if possible.

Friday (February 7th 2014)

- Run Hydro-jets in aggressive mode until the unit is off.
- Check set point on all safeties, scheduled @ 12:00 hrs.
- Start reducing solids in the reaction tank in prep for draining.
- Remove the condenser ball cleaning system from service and card.
- Test run the Trip Manifold Test circuit. (see attached)
- Do not run a casing wash on the WESP before we come off line due to inspection request.
- Start the ramp down to come off line @ 24:00 hrs.
- Unit is scheduled off line @ 03:00 hrs.
- Remove fires from the boiler and start cool down. (increase air flow ~ 4200 KPPH and continue to circulate water). Note: Do not exceed > 100 degs per hour on cool down.
- Isolate and drain the water coils, just after fires are out!
- Isolate and card the ammonia system, open the injection valves and purge the lines on boiler cool down.
- Open available boiler doors for cool down.
- Card equipment as it's available, as per carding request.

Saturday (February 8th 2014)

- Continue boiler cool down until we have about 170 to 180 on spiral and vertical tube temperatures. (~15 hrs.).
- Set up for boiler de-slag.
- Flash drain boiler.
- Card the DESP before fans are out of service to allow for purge.
- Complete boiler cool down, remove the fans from service and card.
- Card burners for change out.
- Remove A/H's from service after fans are out of service.
- Check all hoppers empty.
- Have S/M pin the feedwater line before draining the feedwater system.
- Isolate and drain the condensate and feedwater line.
- Isolate and drain the Deaerator Storage Tank.

Sunday (February 9th 2014)

- Work with SESS on WESP inspection and running casing wash.
- Check the SSC empty and card, drain and card to move.
- Isolate and drain the Hotwell.
- Card equipment as requested.
- Isolate and drain the Stator Cooling System.
- Isolate and drain the Hydrojet System.

Week of 2/10/14

- Drain the reaction tank down and refill with water until the density is 1.06.
- Remove the Turbine from turning gear.
- Card and isolate the Condenser water box and clean.
- ~~Refill the SSC after its back in place and return to service for Amstar Coating removal.~~
- Thursday – We will need to run one I/D fan at min. for Doosan to remove the Amstar Coating (24hrs). Please run the “2A” Recycle Pump and WESP plate irrigation wash when the I/D Fan is in service.
- Isolate and drain the “A” turbine Oil Cooler for removal.

Week of 2/17/14

- Remove the trays in the deaerator heater for inspection.
- Purge the Generator.
- Drain Turbine Oil back for inspection.
- Isolate and drain the Seal Oil System. (Shut down the Seal Oil Vacuum Pump as per the shutdown procedure for extended lay-up).
- Work with SESS and other contractors on WESP inspection and running casing wash.
- Open the doors on the SCR and clean as needed.
- Check the SSC empty and card, drain and card to move, after the burner clean out and removal is complete. (check with Doosan, first).
- Wednesday: Test run the “2A” Recycle Pump for DCS changes (change made to DCS for pump spinning backwards).
- Wednesday: Test run demister wash system for inspection (J.P. Heinz).
- Isolate and drain the demister wash tank.
- Remove Oxidation Air System.
- Card all Recycle pumps. (Note: card the suction and discharge valves open, after the tanks is drained).
- Isolate and drain the Reaction Tank, after the test run on the “2A” Recycle Pump on Wednesday.

Week of 2/24/14

- Set-up and shoot the A1 & A2 condenser.
- Open the lower doors on the PJFF for inspection.
- Remove the Circulation Water System from service.

- Pull cooling tower screens and clean.

Week of 3/3/14

- Set-up and shoot the B1 & B2 condenser. Card; Drain and inspect the hotwell.
- Clean the hotwell pump suction strainers.
- Remove the heads from the "2A" Closed Cooling heat exchanger and clean.

Week of 3/10/14

- Remove the heads from the "2B" Closed Cooling heat exchanger and clean.

Week of 3/17/14

- Pull and inspect the hydrated lime and PAC injection lances.

Week of 3/24/14

- Empty and clean the Cooling Tower basin.

Week of 3/31/14

- Change out Stator Resin.

Week of 4/7/14

- Empty and clean the oil / water separator, repair or replace the screen as needed.
- Inspect the Hotwell flash box.

Week of 4/14/14

- Inspect the boiler drains vessel.
- Work on valve tags and housekeeping.

Week of 4/21/14

- Work on valve tags and housekeeping.

Week of 4/28/14

- Work on valve tags and housekeeping.
- Refill the Cooling Tower.
- Refill the Reaction Tank.

Week of 5/5/14

- Purge the Generator.
- Refill the Turbine Oil System.

Week of 5/12/14

- Refill the Turbine Oil System.
- Complete dye test on the condenser.

- Drain and refill the hotwell.

Week of 5/19/14

- Refill the condensate system.
- Start water clean-up.
- Fans in service on 5/23/14.
- ~~Boiler Hydro?~~
- Fires in the boiler 5/24/14.

TC-2 on Line May 25th

Up-dated 2/18/14 ms

From: Hammond, Steve(steve.hammond@doosan.com)
To: 'Mel Watkins'; Rabe, Phil
CC: Dukes, Christopher; Carlisle, Gary; Boone, James; 'James T. (Tom) Trimble'; Joyce, Jeff; Craft, Jim; Mohn, Laura; Slaughter, Mitch; Payne, Nicholas; Powell, Richard; Melloan, Ricky; Smith, Timothy (Fuels); Henderson, Trent; 'Brann, Devin' (dmbrann@bechtel.com); 'Dearman, James' (jdearman@bechtel.com); McCallum, Neil; Davidson, Gordon; Torkington, Ian R; Kerslake, Ian; Gratton, Ron; 06350 TRIMBLE COUNTY MAILBOX; Lee, John; Huntington, John; Whitehouse, Matthew; Groom, David
BCC:
Subject: 07292 - TC2 - Action Item Meeting # 2014-3, Doosan to Review Tubing to Purge Meters on ID Fan - No Expansion Facility Causing Damage to Meters
Sent: 03/01/2014 01:39:22 PM -0500 (EST)
Attachments: RE_ Trimble County 07292 - ID Fan Stall Warning Probe Analysis (AIL #62.4).msg; ID Fan Purge Units to be Reworked (28Feb14).pdf; Impulse Pipe to be Reworked (28Feb14).pdf;

Mel / Phil

In response to Action Item Meeting # 2014-3, Doosan to review tubing to purge meters on ID fan - No expansion facility causing damage to meters.

- 1) As you are aware Doosan has an outage activity to add additional insulation around the stab ins that were fitted as part of the stall warning system during the Spring 2013 outage, the reason for this is to ensure the purge air that continually bleeds into the fan is sufficiently heated that acid corrosion does not occur – see AIL # 62.4. I have attached our evaluation of the purge air temperatures seen in August 2013 which led to this scope of work.
- 2) Subsequently Doosan was made aware that one of the purge air units had failed and that the cause of failure was thermal expansion. We have surveyed the installation and agree that the pipe exiting the plastic flow meter could be improved by the addition of a short hose to negate the effect of thermal expansion however we do not believe that the inlet to the purge air unit requires the addition of a hose.

Attached to this e-mail is a sheet titled "ID Fan Purge Units to be Reworked (28Feb14)" which shows both the inlet to and outlet from the purge air unit and the position a hose will be added, can I ask you to review and agree this action. Once agreed we will advise the specification of the hose to be used which we expect to be 5" long with compression fittings to suit the tube used at each end and a material of construction to suit the environmental conditions around the ID fan.

- 3) And finally, Doosan will rework the impulse pipe that runs along the upper quadrant of the ID fan casing to ensure that sufficient slope exists to drain any condensation back into the fan.

Attached to this e-mail is a sheet titled "Impulse Pipe to be Reworked (28Feb14)" which shows the impulse pipe on both fans and the action to be taken, can I ask you to review and agree this action.

If you have any questions let me know, otherwise I look forward to your confirmation that this course of action is agreed.

Regards

Steve

Steve Hammond
Doosan Babcock
Email: steve.hammond@doosan.com
Tel: +1 502 255 5262

March 11, 2014

Trimble County Notes for Ops Manager Meeting

Safety

Last employee lost time incident – 11/4/13

Last employee recordable incident – 10/11/13

Last contractor lost time incident – 9/14/13

Last contractor recordable incident – 10/24/13

2 first reports for Plant employees. 0 recordable incident, 0 lost time incidents.

- Contracted warehouse employee got acid on face when opening box containing an acid filled battery. Battery had released acid into package and splashed in face when opening.
- Vacuum truck being operated by contracted cleaning crew in coal handling had the control box catch fire.

One first aid by Generation Engineering contractor when erecting scaffold for TC2 high energy piping inspection. Had to flush eye.

Two near misses reported from Project Engineering contractor performing burner work. One report of possible electrical shock. One drop of coal conduit cover.

Unit Information

TC1

Unit on-line and currently good for full load. Monitoring AH differentials and running with two coal burners blanked off.

Unit tripped from service on 3/6 due to a 1B IDF VFD Coolant Low Level trip. The plastic zip tie holding the capacitive level probe to the side of the tank broke and the probe fell off causing the trip to come in. The startup was delayed a few hours due to the 7KV feed breaker having problems when racking it back in.

TC1 has been experiencing numerous coal mill fires. A plant team has been assembled to investigate. Some air flow measurement issues have been discovered and corrected. Alstom has been engaged and will be coming to site next week for further discussions.

TC2

TC2 is currently off line for planned spring outage to replace burners. Due to return to service on 5/26.

- New boiler tube openings for burners have been put in place and are in the process of being welded out.
- First burner is scheduled for installation on 3/17.
- Change out of SSC sprockets and chain is complete.
- Changing out one ID and one FD fan hub.

Produced as Native

Original File Name: Punch List Issue 12-May.xlsx

Stored File Name: OpenText00278387.xlsx

The LG&E Trimble County 2 Spring 2014 outage was a fourteen (14) week outage. Alstom was on site for seven weeks. The major work being performed was on the firing system including changing out all 30 burners and the addition of two more over fire air ports to the front and rear walls as well as windbox and secondary air duct modifications. This work was overseen by Doosan.

The furnace cavity waterwalls were found to have measureable wastage from corrosion at elevations lower than the Amstar coated sections. A wastage rate of .040"-.050" annual loss was calculated given the UT survey results and using 8000 hours per year and 19000 operational hours for life of unit so far. Large areas of sidewalls especially the Right Sidewall were found to have lost up to 30% MWT. This is primarily in the zone lower than the existing Amstar coating which originally stopped at the centerline of the top burners on the sidewalls. Thus an additional 20' sidewall height partial width was Amstar coated extending downward from this lower boundary of the original coverage.

There was also work done on the ash hopper expansion joints, roof tubes, submerged scraper conveyor, seal skirt, and air heater which was not overseen by Alstom.

A backpass wash was not done prior to inspection which did not allow for a thorough inspection. Instead it was done mid-way through the outage to facilitate repairs. Most of the backpass was not re-inspected after the waterwash. There were on-going repairs at the bottom of the bottom SH bank and the bottom of the top RH bank so both those areas were given a second look in the IK lanes at the rear. This was IK-85/86 for the SH and IK 65/66 lane for the RH. Details on those repairs can be found in the subsequent sections of this summary.

Recommendations:

- 1) Plan for a waterwash at the beginning of the outage for a more thorough backpass inspection.

The following is a synopsis of what was found during the outage and recommendations for the future. Detailed punchlists can be found in the main body of the report. A layout of the unit can be found at the end of this summary for reference.

Superheat (SH) Pendant Platens – 18 Assemblies

The superheat pendant platens are situated at the top of the furnace cavity and can only be inspected from picks up to the steam cooled spacer (SCS), via spider basket or full furnace scaffolding. During this outage, all eighteen assemblies were inspected via both 27' pick and spider basket for a complete inspection of all tube tie elevations. This required the installation of an additional 89 penetrations in the roof to gain access. The steam cooled spacer (SCS) was found to be in good condition.

SH Pendant Platens have a wrap-around tube to help with alignment, which plant personnel have come to identify as paperclip circuit due to its shape. This circuit does not provide adequate alignment and is a place for mechanical abrasion to occur. Widespread minor to moderate abrasion was identified during this outage with worst cases notably having about .150" (moderate loss). This equates to 32% wall loss on inlet legs and 28% wall loss on outlet legs. Due to Unit 2 being a supercritical unit, a more conservative criterion was applied when evaluating severity of abrasion. Wall loss due to mechanical abrasion will continue to be a problem if this design is not improved upon due to the extent of circuit movement.

Furthermore due to the lack of adequate alignment devices, there is considerable misalignment of circuitry throughout the pendants. Besides the extensive abrasions issues identified, this misalignment increases risk for erosion from fly ash and sootblowers, as well exposes circuits to be more prone to wear ash corrosion. Misalignment can also result in interior tubes being exposed to higher than design gas temperatures. Furthermore slag bridging in larger voids between tubes (those misaligned) can become more an issue. Circuits that are misaligned create a space for slag to build up and lead to slags falls which can damage the waterwalls and other circuits lower in the furnace.

There was minor and moderate abrasion found at all three wrap-around tubes (paperclip tie tube) elevations. Approximately 1050 wear pads as well and several padwelds on the wrap-around tubes were installed to provide sacrificial material. Due to time and material constraints not all abrasion issues were addressed. Instead a criteria taking into account severity and difficulty of access was determined. There was general misalignment throughout all the assemblies. A long term solution to restrain and realign the circuitry should be explored for installation in 2016.

Recommendations:

- 1) Look into adding alignment devices throughout the assembly to help maintain alignment and increase tube reliability. As doing this can add stresses to the tubes, this needs to be investigated by qualified personnel.
- 2) Plan for scaffold access next outage to address abrasion issues and install alignment devices

Final Superheat – 34 Assemblies

The final superheat was inspected via scaffold through the middle of the pendants. This gave partial access to both the inlet and the outlet circuits. Similar to the SH Pendant Platens these have the wrap-around tie tubes (paperclip) to help with alignment. This does not provide adequate alignment and is a place for mechanical abrasion to occur. Wall loss due to mechanical abrasion also can occur more readily if this design is not improved upon due to extent of circuit movement. Minor abrasion and sootblower erosion were noted throughout the assemblies.

Recommendations:

- 1) Plan to erect a full scaffold the next outage for a more thorough inspection.
- 2) Plan to have wear pads on hand to address any abrasion issues found.
- 3) Consideration should be given for installing alignment devices based on the solution proposed on the SH pendant platens.
- 4) Consider adding a sootblower indexing kit to reduce the effect of sootblower erosion

Primary Superheat - 101 Assemblies in Top Bank and 202 Assemblies in Lower Two Banks

The primary superheat was fully inspected this outage. No water wash of the assemblies occurred prior to the inspection, so a detailed inspection down in the bank was not possible. All of the sootblower lanes were found to be shielded and overall the shields were in good condition.

Top of top bank

Along the front and rear sets of Economizer Sling (hanger) tubes, there were a total of 34 broken alignment straps. These were weld repaired.

Bottom of Bottom Bank

At the front of the rear hanger tubes in the IK-85/86 soot blower lane there is minor to moderate erosion channeling into the lowest tube of the bottom bank. There was severe erosion on the support brackets noted at 64 of 101 sling (hanger) tubes. These were shielded and the brackets were weld repaired.

Recommendations:

- 1) Continue to monitor alignment straps.
- 2) Continue to monitor tube shields for wear and proper alignment.
- 3) Continue to inspect baffle plates to make sure they are in proper position and not rubbing tubes.
- 4) Inspect around vertical alignment bands to see if the gas channeling has increased and caused damage to the tubing. If so, install a boot shield (or inverted tube shield) to help protect this area.

Economizer – Superheat Side – 62 Assemblies

The economizer on the superheat side is made up of two bare tube banks of assemblies with the headers being outside the sidewalls in enclosures. There was not a water wash or cleaning of the assemblies prior to the inspection, so a detailed inspection down in the bank was not possible. All of the sootblower lanes were found to be shielded and overall the shields were in good condition. All of the support structure appeared to be in good condition

Recommendations:

- 1) Continue to monitor tube shields for wear and proper alignment.
- 2) Provide access to bottom side of lower bank for inspection.

1st Stage Reheat – 202 Assemblies for all Banks

The first stage reheat was fully inspected this outage. There was not a water wash or cleaning of the assemblies prior to inspection, so a detailed inspection down in the bank was not possible. All of the sootblower lanes were found to be shielded and overall the shields were in good condition. The inlet header is located in the backpass and the nipples were inspected for erosion. No significant erosion was found.

Top of Top Bank

Along the front and rear sets of Economizer Sling (hanger) tubes, 141 broken alignment straps were weld repaired.

Between Top and Intermediate Bank

Along the rear set of Economizer Sling (hanger) tubes in the IK 65/66 lane, abrasion was found between the lower tube of the upper bank and the support. There are 101 Economizer Sling (Hanger) tubes. Two sling tubes have two supports. Thus a total of 103 shields were installed to protect the tubes from abrasion. Seven dutchmen (3' length) were installed at the bottom of the top assembly due to that circuit being bent up and contacting the tube above it. It is believed this occurred during original construction and was only able to be identified after the backpass wash occurred.

Recommendations:

- 1) Continue inspection of baffle plates and alignment bands for integrity.
- 2) Continue to monitor shields in sootblower lanes.
- 3) Continue to monitor erosion on RH inlet header nipples.

Economizer – Reheat Side – 62 Assemblies

The economizer on the reheat side is made up of a single bank of bare tube assemblies with the headers being outside the sidewalls in enclosures. There was not a water wash or cleaning of the assemblies prior to inspection, so a detailed inspection down in the bank was not possible. All of the sootblower lanes were found to be shielded and overall the shields were in good condition. All of the support structure appeared to be in good condition.

Recommendations:

- 1) Continue to monitor tube shields for wear and proper alignment.
- 2) Provide access to bottom side of lower bank for inspection.

Final Reheat Pendants – 34 Assemblies

The final reheat pendants are situated between the hanger tubes and screen tubes. The pendants appeared to be in good condition with no significant signs of corrosion. There was minor sootblower erosion noted on all assemblies. There is a T-bar that laterally connects four adjacent assemblies and is located on the front side of both the front and rear anti-vibration straps. These have become deformed creating misalignment between assemblies.

As noted in 2012, the largest area of concern is that the assemblies are starting to “cup.” There is an anti-vibration strap that is about 7’ from the bottom of the assembly. The strap has maintained tube-to-tube spacing, but the front to rear intra-assembly alignment has in some cases been found to be as large as 18”. With this alignment issue, it gives tubes in the middle of the assembly more exposure and greater risk to fly ash and sootblower erosion, as they are no longer as protected by the neighboring tubes. The cupping of the assemblies has also led to uneven (left to right) spacing between the assemblies. Fourteen (14) assemblies were noted as being less one tube diameter of one another as compared to the normal assembly spacing. This can lead to channeled convection pass gas flow and erosion as well as channeled erosion from sootblowers. Assembly to assembly contact abrasion could also occur.

Recommendations:

- 1) Look into adding alignment devices (both intra- and inter- assembly) throughout the assembly to help maintain alignment and increase tube reliability. As doing this can add stresses to the tubes, this needs to be investigated by qualified personnel.
- 2) Continue to monitor for sootblower erosion on front loop and interior of assemblies.
- 3) Consider adding a sootblower indexing kit to reduce the effect of sootblower erosion

Upper Dead Air Space and Penthouse

The upper dead air space (UDAS) and penthouse were inspected for integrity of structures, casing and insulation. There were no significant problems noted in either area.

The interface of the rear wall and upper arch was cracked and overheated allowing for a gap into the UDAS which could lead to flyash infiltration. A refractory repair to seal gap to rear wall was completed from the UDAS. This repair was not overseen by Alstom.

Recommendations:

- 1) Continue inspections to monitor integrity of structures, casing and insulation.

Roof Tubes

Both B and C weld lines were inspected for cracks. These weld lines are directly to the front and rear of the SH Platens. Four membrane cracks were found and repaired this outage. There were also repairs on D weld line, where the hanger tubes penetrate the roof. 204 roof tubes were replaced approximately 16" long. The material consisted of T23 swaged pieces that served as a transition from T23 roof tubes to T12 stubs stemming from the cage inlet header. Several screen tubes were also cut out to gain access to the roof tube welds and were replaced once the roof tube work was completed. These repairs were not overseen by Alstom.

Recommendations:

- 1) Continue to inspect monitor for cracks in future outages

Hanger Tubes, Screen Tubes and Refractory Pier

The screen tubes and hanger tubes were inspected from the arch during this outage. The hanger tubes were found to have no significant problems. The only issue is there is not a large opening for access to the final superheat pendants. This restricts access for personnel as well as scaffolding and equipment.

The screen tubes were found to be in good condition. The refractory pier has degraded in several places across the boiler and large pieces have fallen into the 1st Stage RH.

Recommendations:

- 1) Plan for repairs to the refractory pier in the next outage
- 2) Look into installing a bent tube in the hanger tubes to gain better access to the final superheat.
- 3) Check screen tubes and refractory pier/tube shield interface for areas exposed to possible erosion.
- 4) Continue to monitor shields in sootblower lanes.

Waterwalls

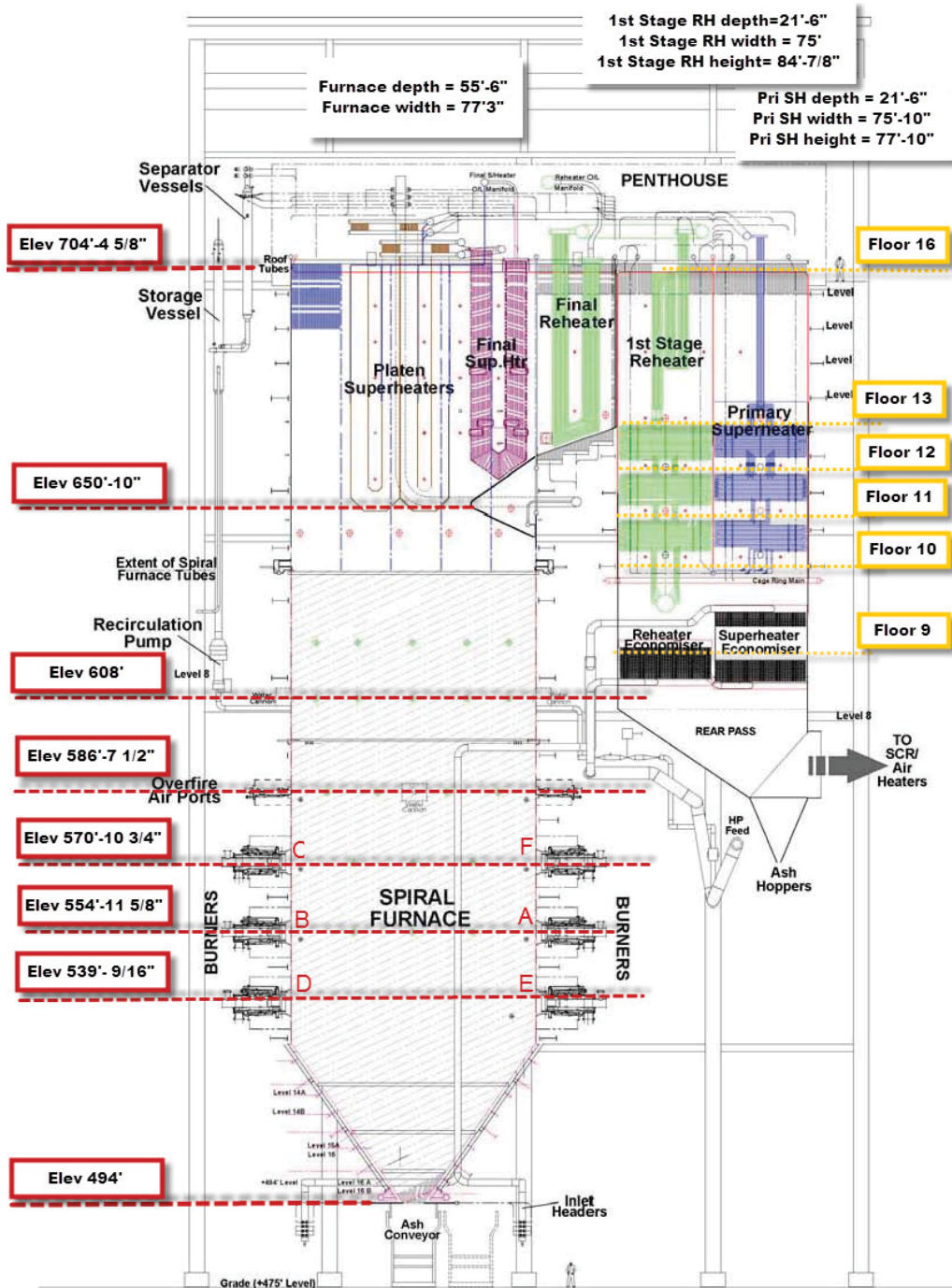
All four walls were inspected during this outage. There was limited access due to the boiler scaffold construction from the cutout slope up to the overfire air ports (OFA) at approximate elevation 586'. At elevation 590' a perimeter scaffold was erected allowing for good access as well as a landing deck for picks. Picks were used to inspect all four walls above that elevation. The cutout slope was not accessible and thus not inspected.

Five elevations of UT readings on both side walls and four elevations on the front and rear wall were taken. There is existing Amstar coating on all four walls and thickness was measured at two locations on the sidewall and three locations on the front and rear walls. The Amstar product coating had been previously applied between elevations 570'-10" - 605' on the sidewalls and 570'-10"- 598' on front and rear walls. The coating was shop applied to original panels and thus the upper boundary elevations are approximate based on construction. Due to significant identified wastage, additional Amstar coating was applied this outage to the sidewalls from elevation 570'-10" to 550'-10". The coating covered 14' on either side of centerline

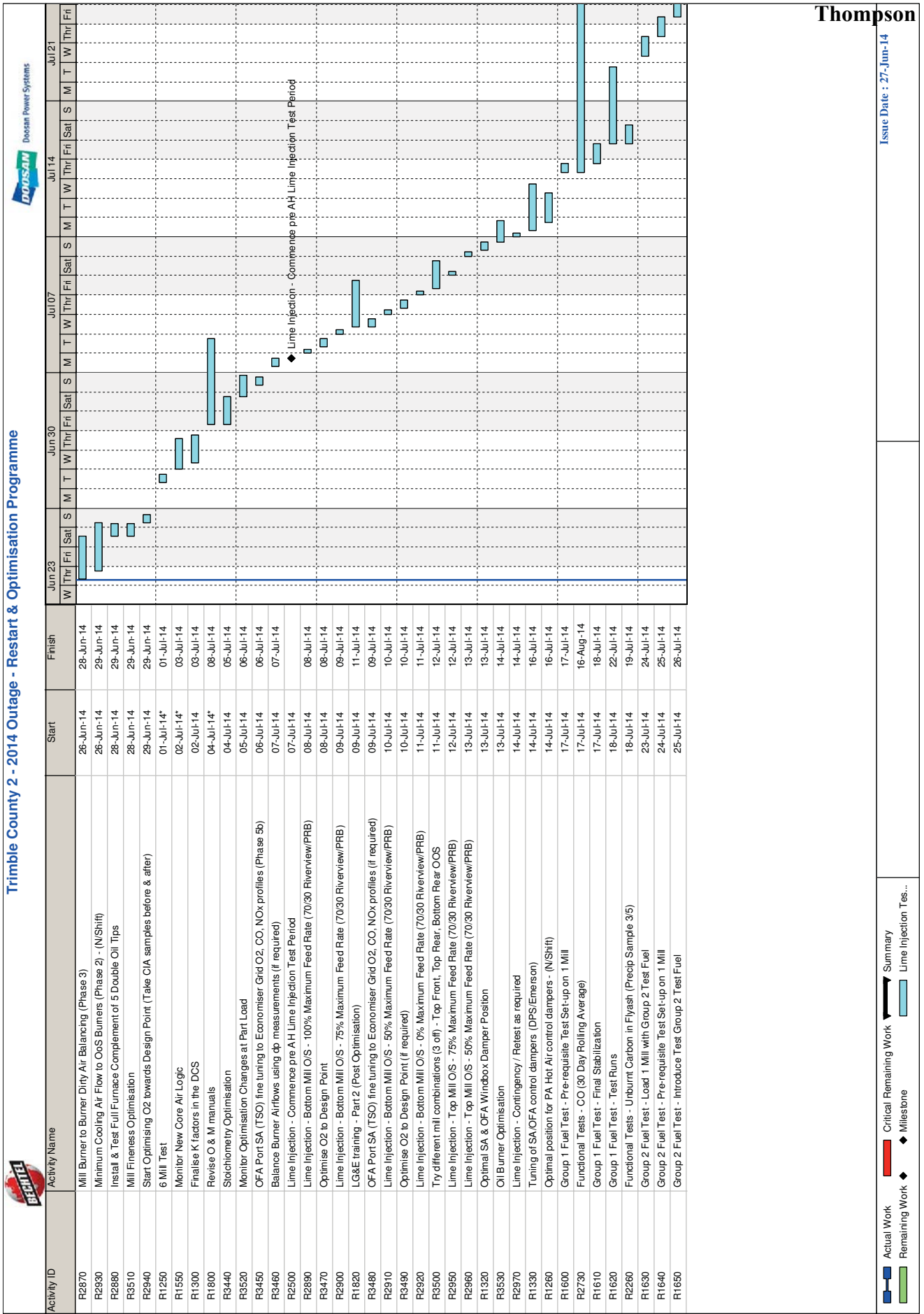
for a total area of 28' wide by 20' tall. This was to address wastage issues identified in the UT survey in previously unprotected zones. Due to time constraints not all areas of concern for wastage were addressed this outage. These should be addressed in the next outage.

Recommendations:

- 1) Plan for possible panel replacements in 2016 based on UT survey findings.
- 2) Plan to sandblast all four walls to clearly define upper Amstar boundary.
- 3) Plan for additional application of AMSTAR coating in 2016 to address wastage concerns based on UT findings and Doosan model predictions due to firing system modification.
- 4) Perform another UT survey to continue to monitor waterwall wastage.
- 5) Inspect around the water cannons to make sure they are not damaging the walls.



TC2 : Boiler Layout



From: Kerslake, Ian(ian.kerslake@doosan.com)
To: Rabe, Phil; Mohn, Laura; Carlisle, Gary; Slaughter, Mitch; 'Dearman, James (jdearman@bechtel.com)', Watkins, Clyde (cwatkins@bechtel.com) (cwatkins@bechtel.com); 'Brann, Devin (dmbrann@bechtel.com)'; 'Babcock, James (jbabcock@bechtel.com)'; 'savierstra@earthlink.net'; 'Scott Viestra' (savierstra@savvyeng.com)
CC: Mackintosh, Alister; Smith, John (Crawley); Jones, Gareth; Maunder, Kevin; Smith, Mike; Gratton, Ron; Farrow, David; Young, Charles E H; Hammond, Steve; Reynolds, Paul (Crawley); Heath, Justin; Davidson, Gordon; McCallum, Neil; Torkington, Ian R; Hough, David C; Cameron, Euan; Grist, John; Gonese, Jean; Elliott, Robert; Sutcliffe, Andrew; Fleming, Ian; Cahill, Michael; Falkner, Robert; Groom, David; 06350 TRIMBLE COUNTY MAILBOX
BCC:
Subject: RE: 07292 TC2 - Updated Restart & Optimisation Programme
Sent: 07/14/2014 12:54:31 PM -0400 (EDT)
Attachments: 50 Day Date Sequential (14-07-14).pdf; Restart Schedule (14-07-14).pdf;

Hi Phil and Mitch,

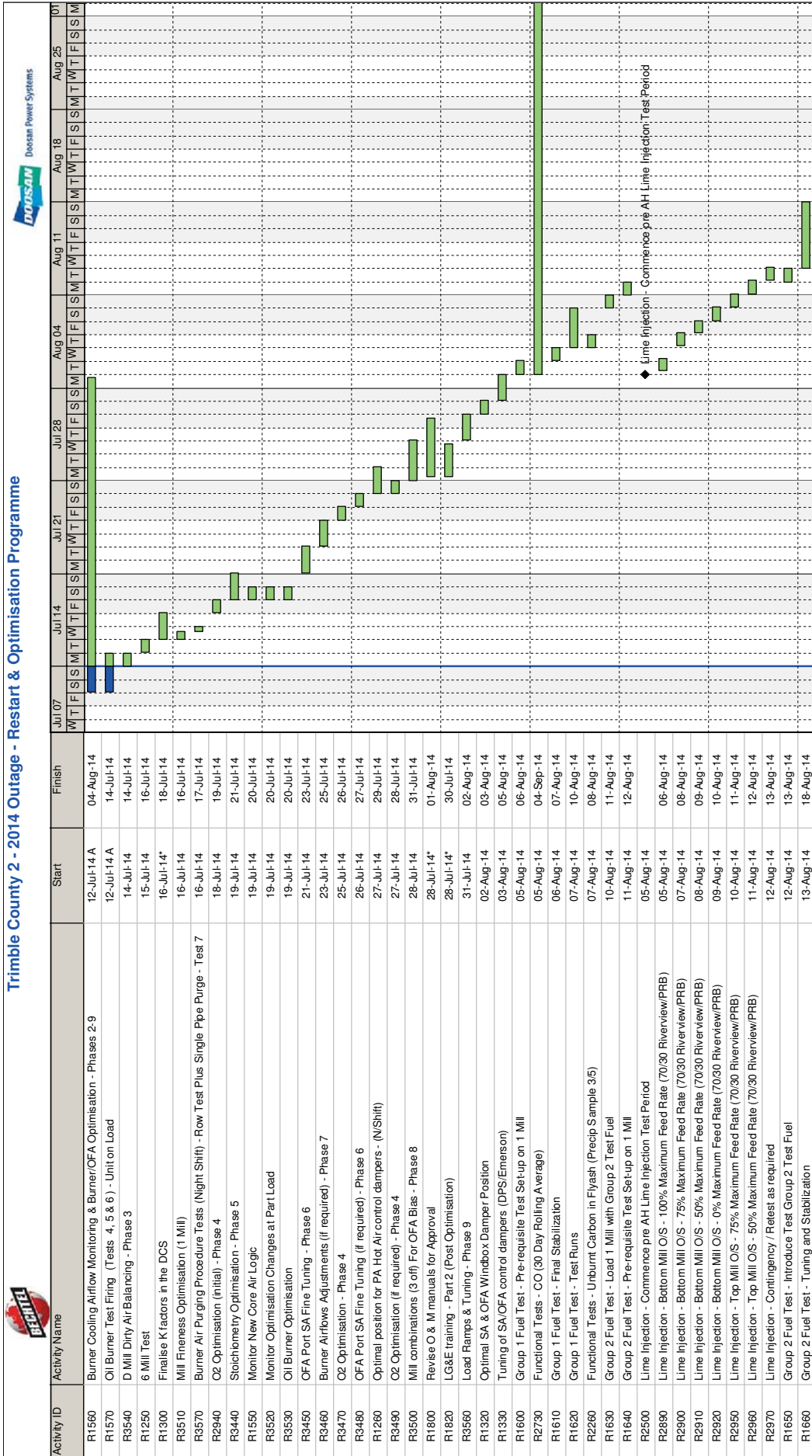
For your information, please find attached copies of the Sequential and Full Restart & Optimisation Programme updated for progress to 14th July '14

Thanks and best regards

Ian Kerslake
Project Procurement Manager
Doosan Babcock Limited
Doosan House
Crawley Business Quarter
Manor Royal, Crawley
West Sussex, RH10 9AD
Tel: +44 (0)1293 584855
Mobile +44 (0) 7774 965780
Email: ian.kerslake@doosan.com

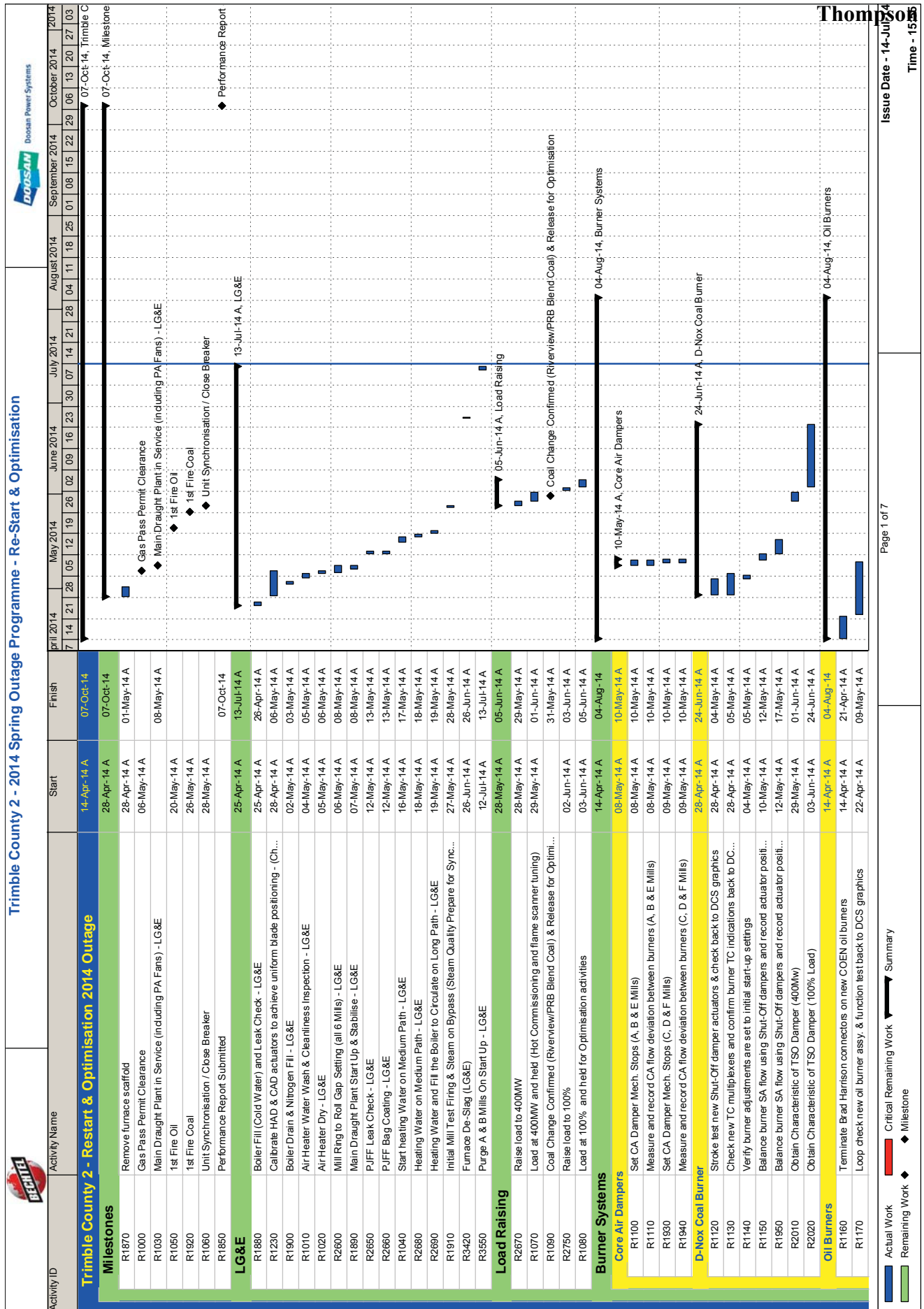
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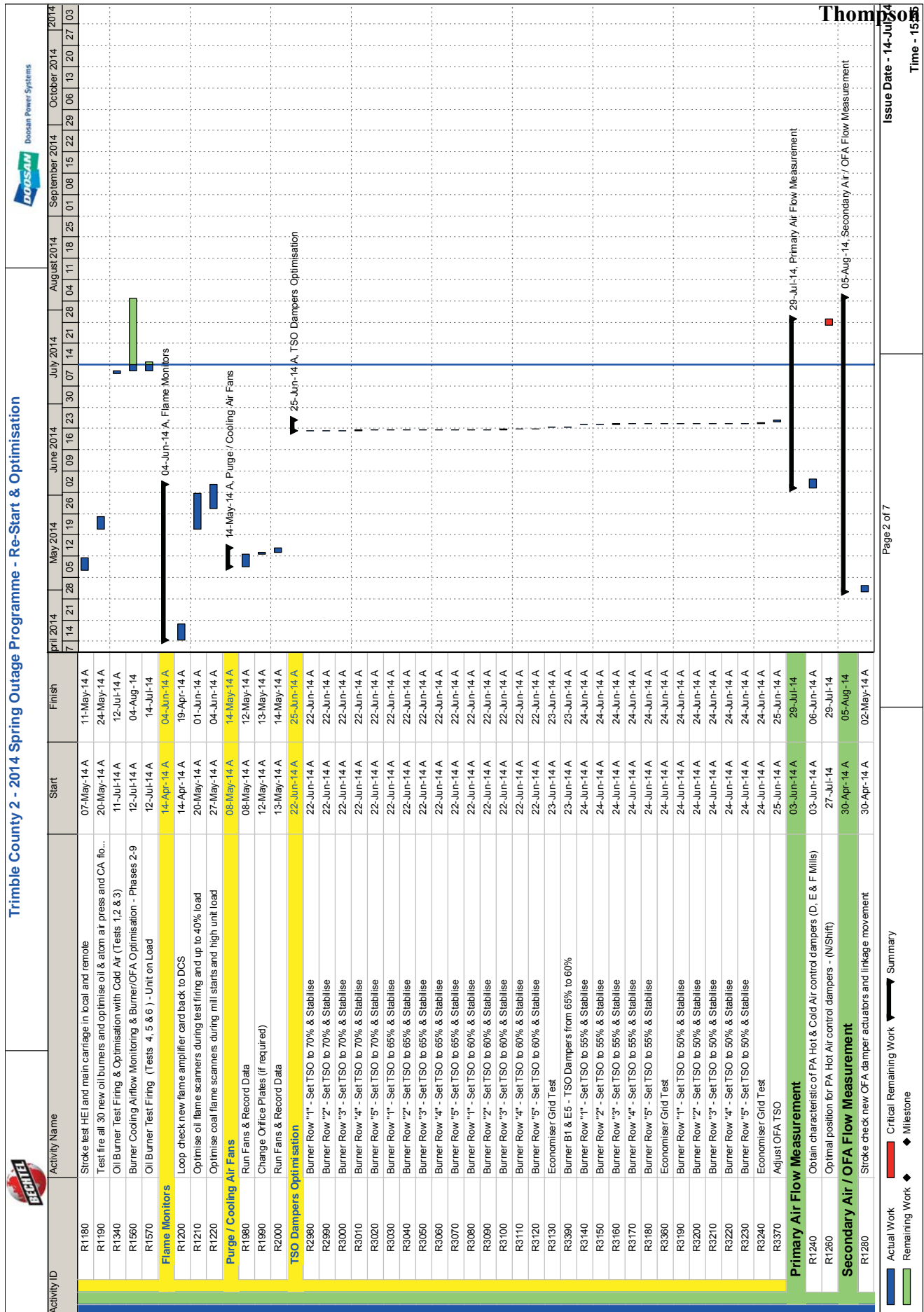
Trimble County 2 - 2014 Outage - Restart & Optimisation Programme

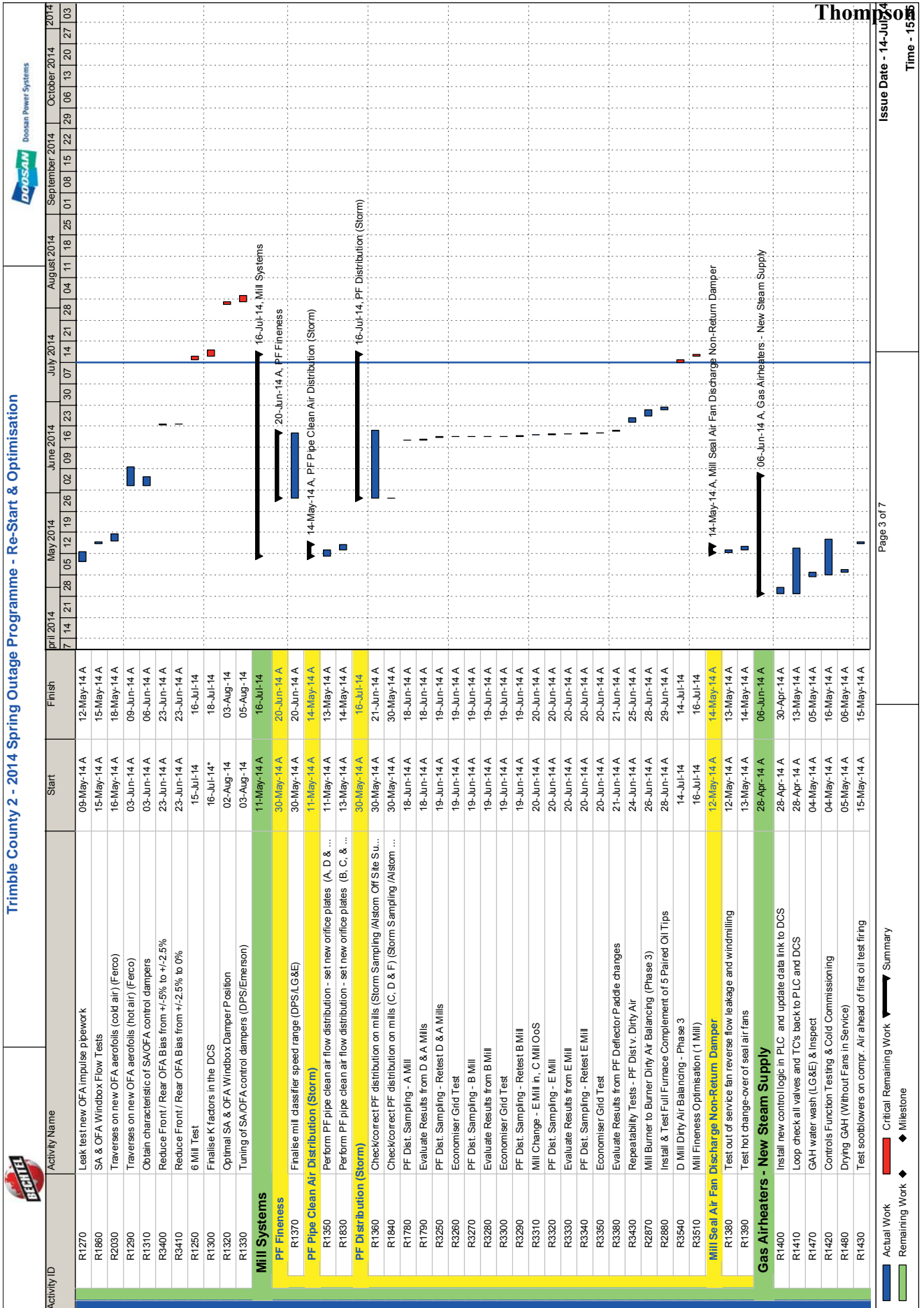


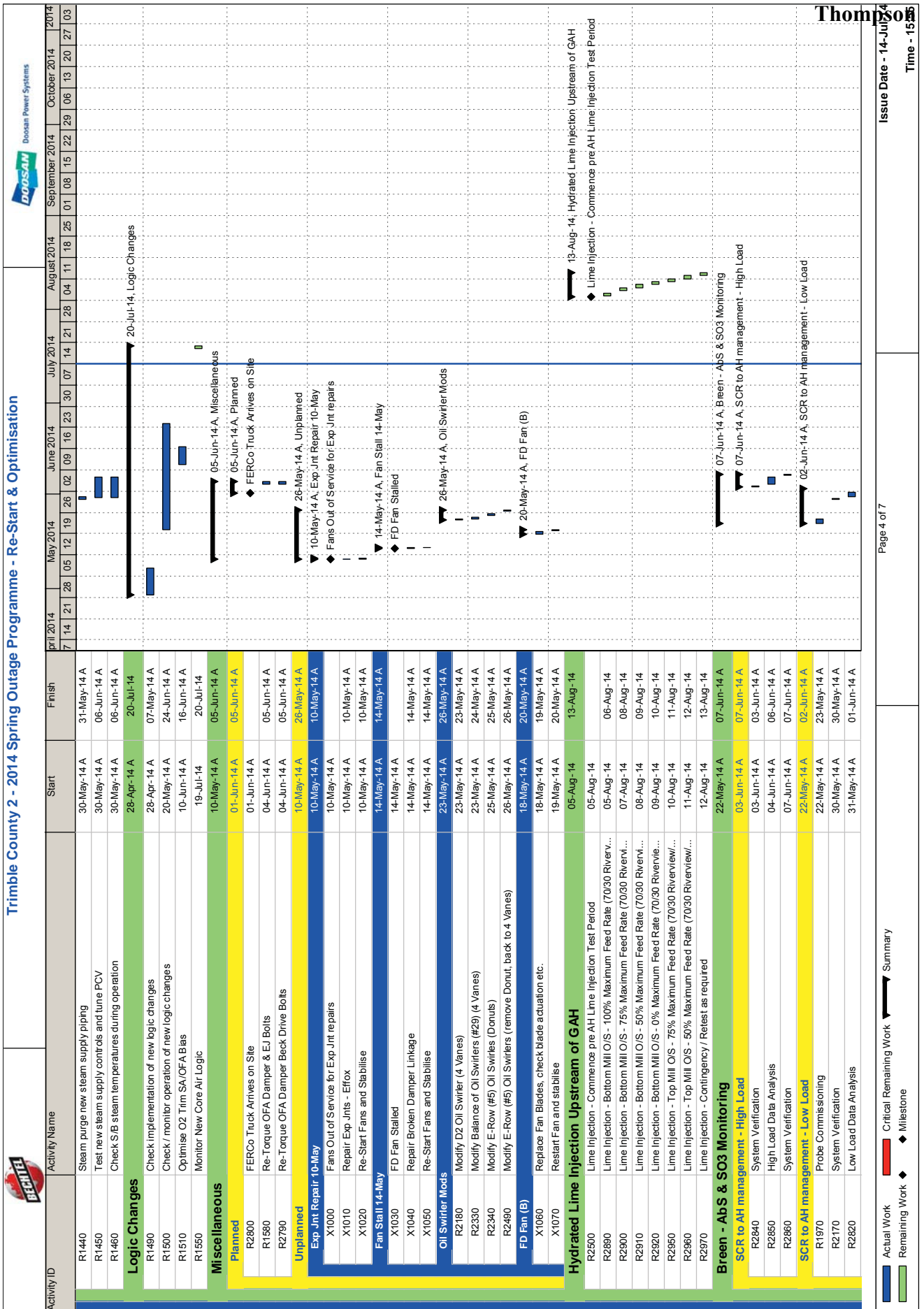
Actual Work
 Remaining Work
 Milestone
 Summary

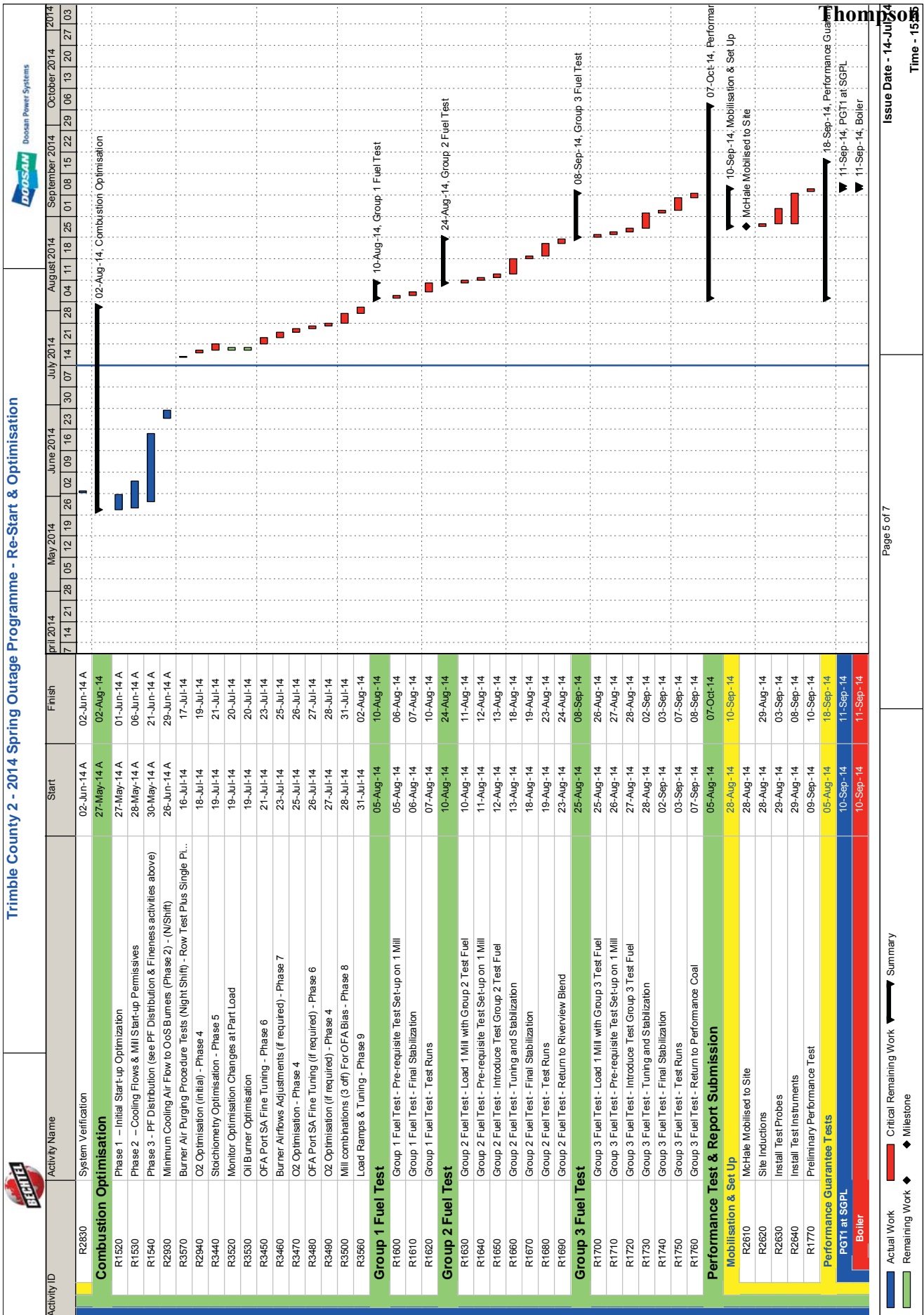
Issue Date : 14-Jul-14

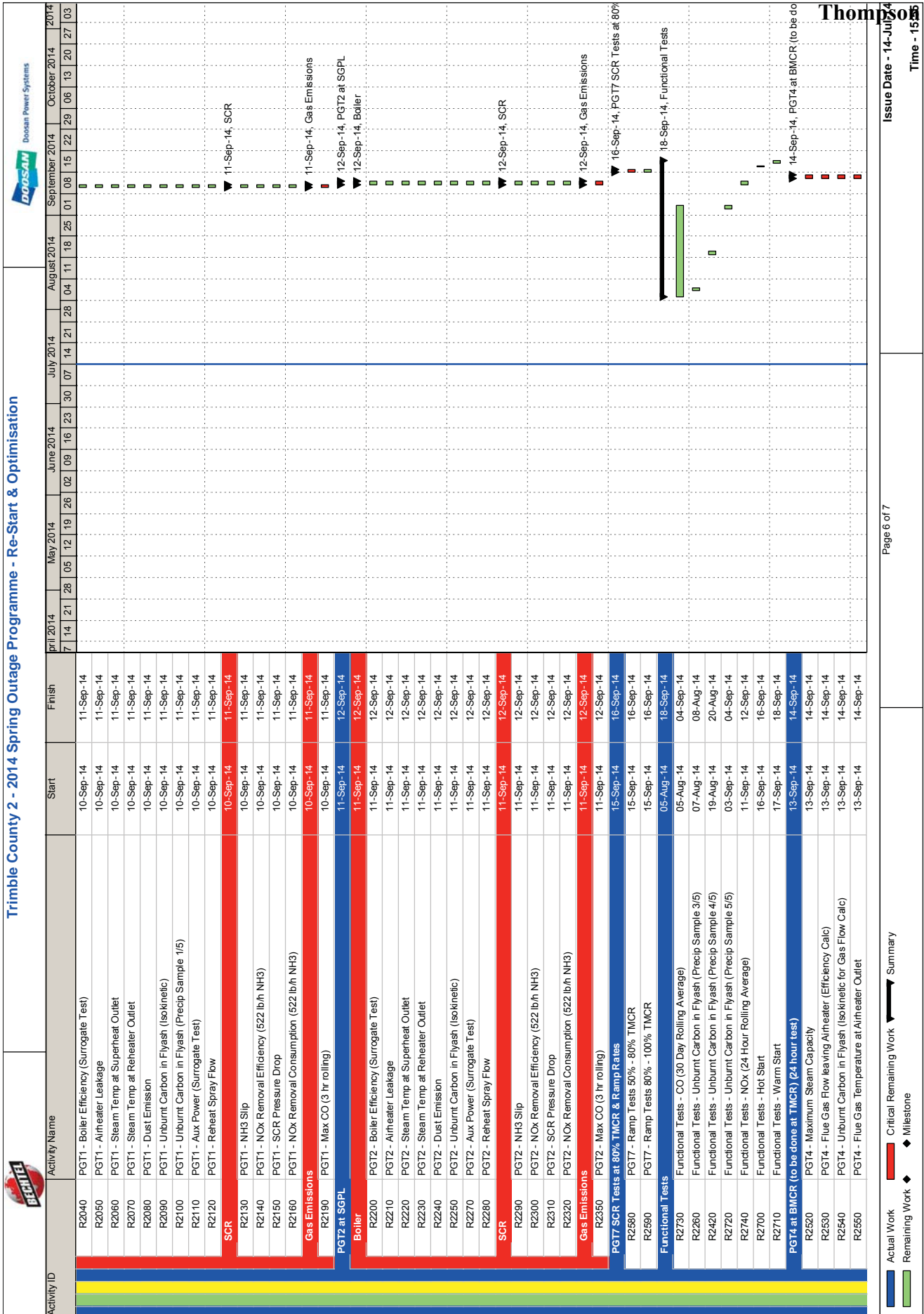


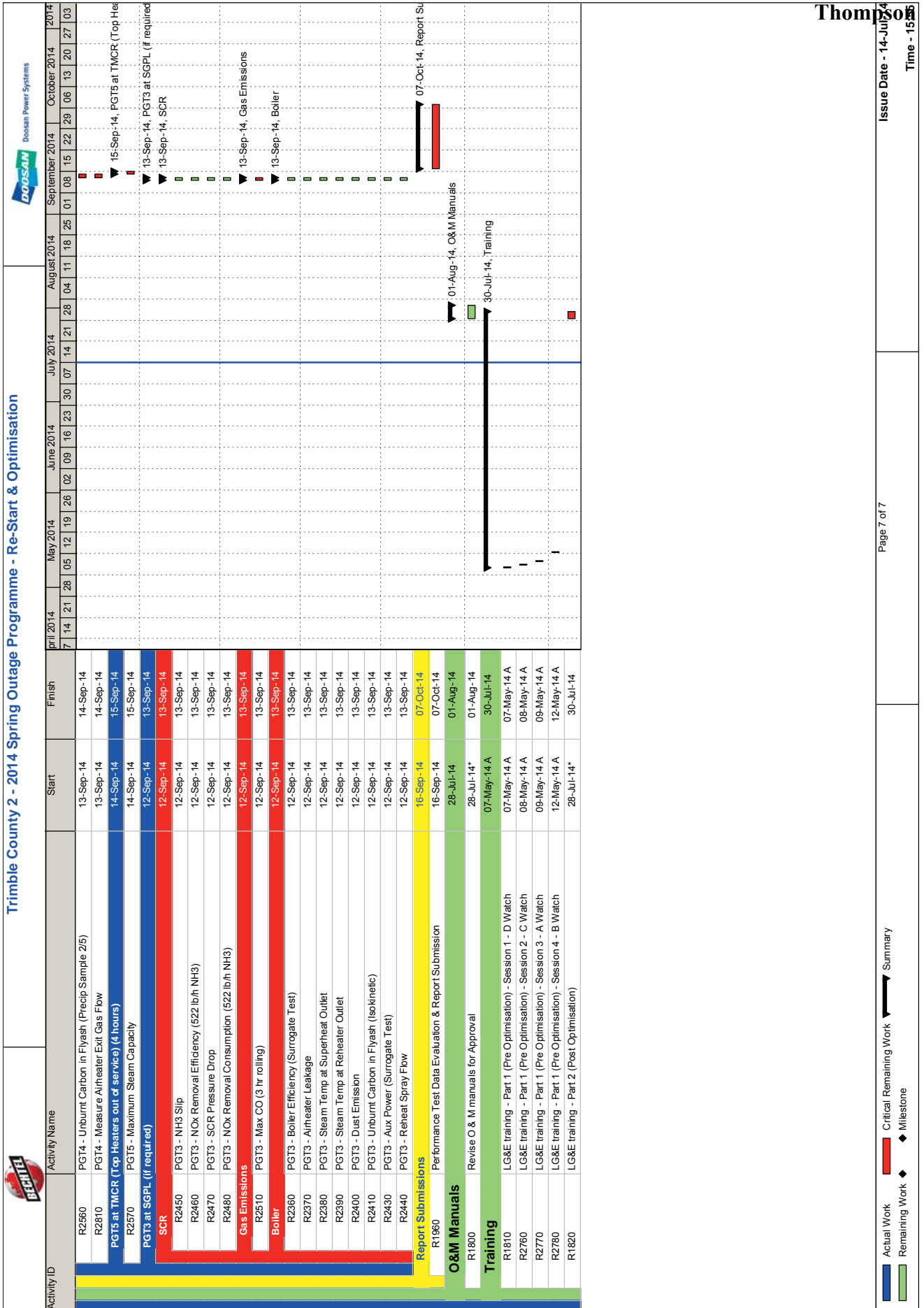












From: Rabe, Phil(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=WEB/CN=PHILRABE)
To: Byrd, Larry
CC:
BCC:
Subject: TC Notes For Ops-Maint July 2014.docx
Sent: 07/16/2014 05:11:53 PM -0400 (EDT)
Attachments: TC Notes For Ops-Maint July 2014.docx;

July 17, 2014

Trimble County Notes for Ops/Maintenance Manager Meeting

Safety

0 recordables for Plant employees and contractors. 2 Employee and 3 Contractor first reports.

- On 6/2, an employee operating a forklift turned and ran the back end into a warehouse storage rack.
- On 6/5, an employee had his foot go into a hole around the 1B TDBFP RH Spray line where it penetrated the floor. Employee experience a leg scrape with minor swelling.
- On 6/18, a contracted employee was removing hose from back of a truck and felt a sting on his forearm. Suspect an insect bite.
- On 6/21, a contracted warehouse employee moving a large pipe hanger located on a pallet had his fingers when the rod moved.
- On 5/27, a contracted employee twisted his ankle while walking on uneven pavement.

Unit Information

TC1

Unit on-line and currently good for full load. Suspect a small leak in the penthouse area. Monitoring same.

Unit experienced a trip on 6/12 while performing a routine lube oil pump swap on the 1A IDF. The fan tripped due to low oil pressure. Investigation of the control circuit revealed a 5 second time delay was in place instead of a 60 second delay. The outage lasted 49 minutes.

On 6/17 unit was removed from service due to a thermowell weld failure on the main steam line. This was a dissimilar metal weld. Unit returned to service on 6/19.

On 7/8 the unit tripped while attempting to change out a servo valve on the turbine #4 CV. Turbine load was dropped to close the #4 CV and a clamp was placed on the FAS. When the disc dump operated, the turbine tripped. The unit returned to service 4 hours and 4 minutes later.

On 7/8 the unit tripped due to feedwater issues picking up load following the outage earlier in the day. The unit was placed back on line 41 minutes later.

TC2

TC2 is currently on line and good for 675 MW. The derate is due to feedwater heater level issues. The #3 heater appears to have a tube leak. Operators are trying to diagnose issues.

Unit was removed from service on 6/29 due turbine EHC issues. While testing turbine valves early on 6/28, the 2A MSV valve closed but would not open back up. Further diagnoses of the valve revealed a need to change out the FAS on the valve. While removing the unit from service, the 2B MSV and 2A CV would not close. The turbine tripped, but the valves remained open and the turbine began to overspeed. I/E personnel on site troubleshooting were able to close the 2B MSV by manually picking up the FAS. This allowed the turbine to come to gear. Investigation of the system revealed significant amounts of contamination caused by water in the system. A full flush and operational testing of the

turbine valves was performed, and a temporary cooler installed on the EHC skid. A full report will be issued in the near future. The unit returned to service on 7/13.

Doosan has resumed boiler tuning, and currently is targeting 8/5 for the first of three fuel box tests.

Combustion Turbines

All CTs are available for full load.

From: Craft, Jim(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=N091379)
To: Joyce, Jeff
CC: Straight, Scott; Rabe, Phil
BCC:
Subject: TC2-WN-0448 Borescope PF Pipe Inspection [WN448]
Sent: 07/16/2014 08:20:21 AM -0400 (EDT)
Attachments:

Jeff,

You have mentioned to me in the past that you were not ready to CLOSE OUT this warranty claim. Are you prepared to close it out at this time? Here is the original wording of the claim,

Description of Deficiency: The fall 2012 outage revealed several PF lines with deposition in the horizontal legs adjacent to the vertical rises to the firing floors. When bringing mills into service the current operation for purging the fuel lines is to purge all 5 PF lines simultaneously. This provides the shortest time for bringing the mill into service. Doosan Power Systems has now deemed it prudent and therefore requires the periodic instigation of single line purges whereby each of the 5 fuel lines are purged independently such that the purge air quantity is higher per pipe and the disturbance factors greater to deter PF from remaining in the pipes. Doosan has stated that the Initial run time duration to be 720 hours. Therefore; once per month each mill shall be subjected to a single line purge. This operating procedure may be acceptable as an interim procedure, but does not comply with the specifications in the EPC Agreement and is not acceptable to LG&E as a permanent solution. Section 6.3.3 of Exhibit A to the EPC Agreement provides in part regarding the PF handling system "The system shall be designed to be fully automatic under normal operating conditions including start up and shutdown and shall require minimum operator intervention." The individual purging does not comply with this. The same section also provides "There shall be no dead areas in the feeder casing, mill, classifier or primary air system where coal or PF can accumulate under any circumstances that should be reasonably anticipated." The deposition in the horizontal legs does not comply with this. The solution must be a design that eliminates the problem of coal deposits in the conduits and any need for independent purging.

Thanks,

Jim Craft

TC2 Warranty Period Manager
Trimble County Generating Station
1-502-627-6377 (Office)
1-502-552-5201 (Cell)
1-502-332-5092 (Pager)
jim.craft@lge-ku.com

From: O'Reilly, Daniel [<mailto:dporeill@bechtel.com>]
Sent: Monday, July 14, 2014 4:59 PM
To: Craft, Jim
Subject: FW: 07292 - TC2 - Morning Meeting AIL # 2.2.7.2, Borescope PF Pipe Inspection [WN448]

Jim,
Do you know what the status is of this review? If the plant is not ready to close, can you identify what actions would be needed to close?
Thanks,
Dan

From: Hammond, Steve [<mailto:steve.hammond@doosan.com>]
Sent: Saturday, April 19, 2014 11:36 AM
To: Watkins, Clyde; 'Phil Rabe'
Cc: Christopher Dukes; Gary Carlisle; James Boone; James T. (Tom) Trimble; Jeff Joyce; Craft, Jim (EON); Laura Mohn; Mitch Slaughter; Nicholas Payne; Richard Powell; Ricky Melloan; Sandra Roach; Timothy Smith (Trimble); Trent Henderson; Dearman, James; Allen, George K. (Chip); Babcock, James; Brann, Devin; O'Reilly, Daniel; McCallum, Neil; Torkington, Ian R; Davidson, Gordon;

Kerslake, Ian; Gratton, Ron; 06350 TRIMBLE COUNTY MAILBOX; Maunder, Kevin
Subject: 07292 - TC2 - Morning Meeting AIL # 2.2.7.2, Borescope PF Pipe Inspection [WN448]

Mel / Phil,

in response to morning meeting AIL # 2.2.7.2, Borescope PF Pipe Inspection

Please find attached a report following the PF pipe inspection carried out in the Spring 2014 outage, for reference we have included the report from the Spring 2013 and Fall 2012 outages as addendums to this report.

Our conclusions which are taken from page 14 of the report are;

Initially air control was in question and this was addressed by installing a venturi flow measurement device, reducing the potential for abnormal velocity reductions and the previously experienced mill perturbations have ceased..

Changes to the mill clear out and attention to steam and water admission to the mills has generally kept the lines clear of excessive condensate or water.

'Tell tales' will be in place and should be used to monitor/confirm that steam/condensate is not passing the inerting valves and leaking into the fuel system.

Lines have generally been clean with the exception of 'F' row.

The recent deposits in lines F2 and F4 are likely the result of water ingress and abnormal operating events and are therefore considered a result of abnormal occurrences.

'F' Row was not in service during the majority of the static pressure measurements so there is no data to trend or see if deposition would have been determined from the results.

In line with the agreement, considering the above there is no need to single line purge after 720 hours. It remains a recommendation, and good practice dictates, periodic single line purges would be beneficial to the long term operability of the unit.

Please confirm this closes this action item and warranty note 0448.

If you have any questions please let us know.

Thanks and regards

Steve

Steve Hammond

Doosan Babcock

Email: steve.hammond@doosan.com

Tel: +1 502 255 5262

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From: Rabe, Phil(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=WEB/CN=PHILRABE)
To: Byrd, Larry
CC: Buckner, Mike
BCC:
Subject: RCFA TC-2 on 6-29-14.xlsx
Sent: 07/17/2014 08:15:48 AM -0400 (EDT)
Attachments: RCFA TC-2 on 6-29-14.xlsx;

Larry,

Here is a start on the RCFA for the TC2 EHC event. Mitch also noticed while reviewing data the HP and LP Turbine bypass valves may need the logic for their operation reviewed. We will work with the DCS folks to look into this further.

Thanks,
Phil

Produced as Native

Original File Name: RCFA TC-2 on 6-29-14.xlsx

Stored File Name: OpenText00280703.xlsx

From: Kerslake, Ian(ian.kerslake@doosan.com)
To: Rabe, Phil; Mohn, Laura; Carlisle, Gary; Slaughter, Mitch; 'Dearman, James (jdearman@bechtel.com)', Watkins, Clyde (cwatkins@bechtel.com) (cwatkins@bechtel.com); 'Brann, Devin (dmbrann@bechtel.com)'; 'Babcock, James (jbabcock@bechtel.com)'; 'savierstra@earthlink.net'; 'Scott Viestra' (savierstra@savvyeng.com)
CC: Mackintosh, Alister; Smith, John (Crawley); Jones, Gareth; Maunder, Kevin; Smith, Mike; Gratton, Ron; Young, Charles E H; Hammond, Steve; Reynolds, Paul (Crawley); Heath, Justin; Davidson, Gordon; McCallum, Neil; Torkington, Ian R; Hough, David C; Cameron, Euan; Grist, John; Gonese, Jean; Elliott, Robert; Sutcliffe, Andrew; Fleming, Ian; Cahill, Michael; Falkner, Robert; Groom, David; 06350 TRIMBLE COUNTY MAILBOX
BCC:
Subject: RE: 07292 TC2 - Updated Restart & Optimisation Programme 21st July '14
Sent: 07/21/2014 11:00:36 AM -0400 (EDT)
Attachments: 50 Day Date Sequential (14-07-21).pdf; Restart Schedule (14-07-21).pdf;

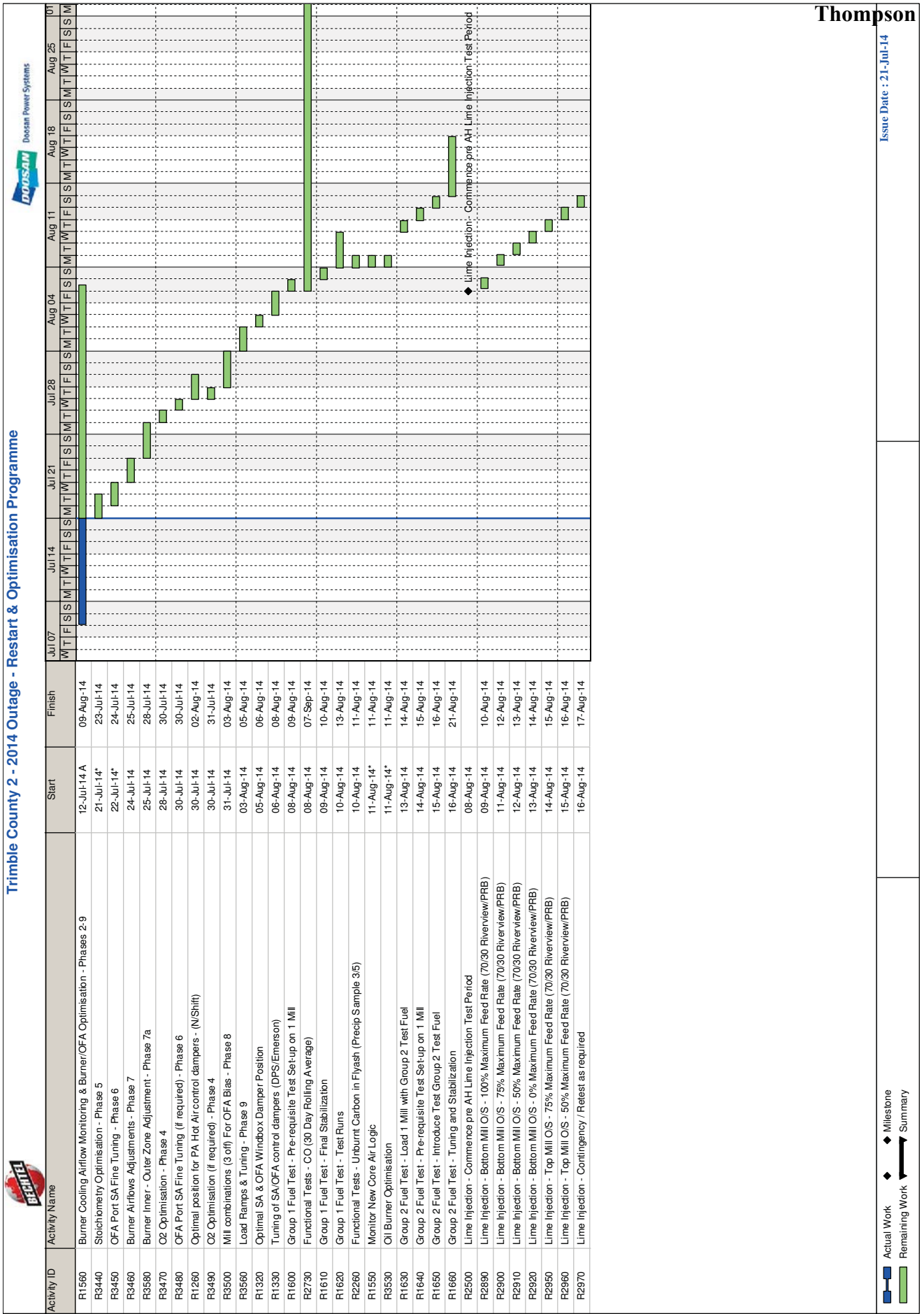
Hi Phil and Mitch,

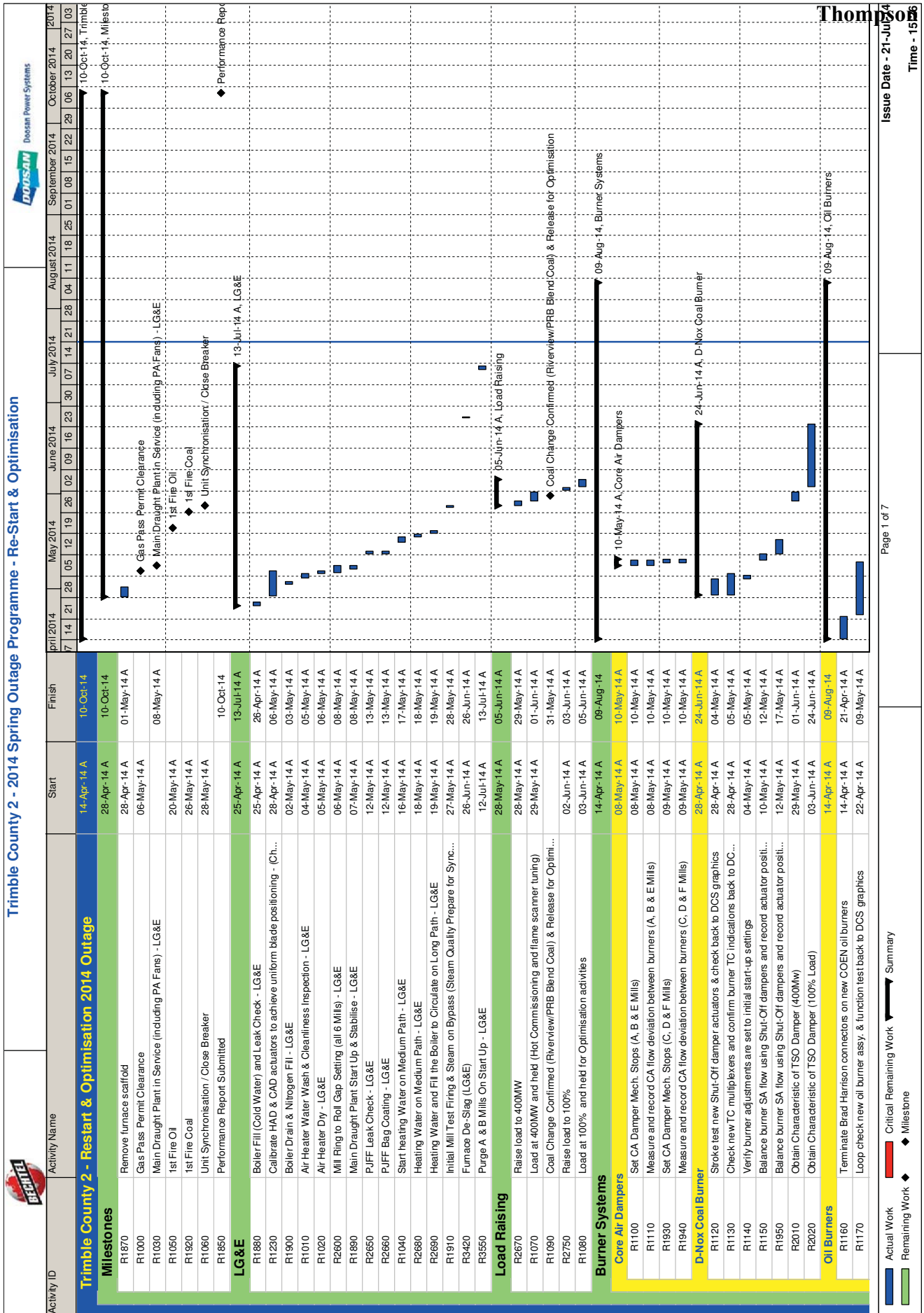
For your information, please find attached copies of the Sequential and Full Restart & Optimisation Programme updated for progress to 21st July '14 and to reflect the Rev 6 D-NOx & OFA Optimisation Procedure issued earlier today

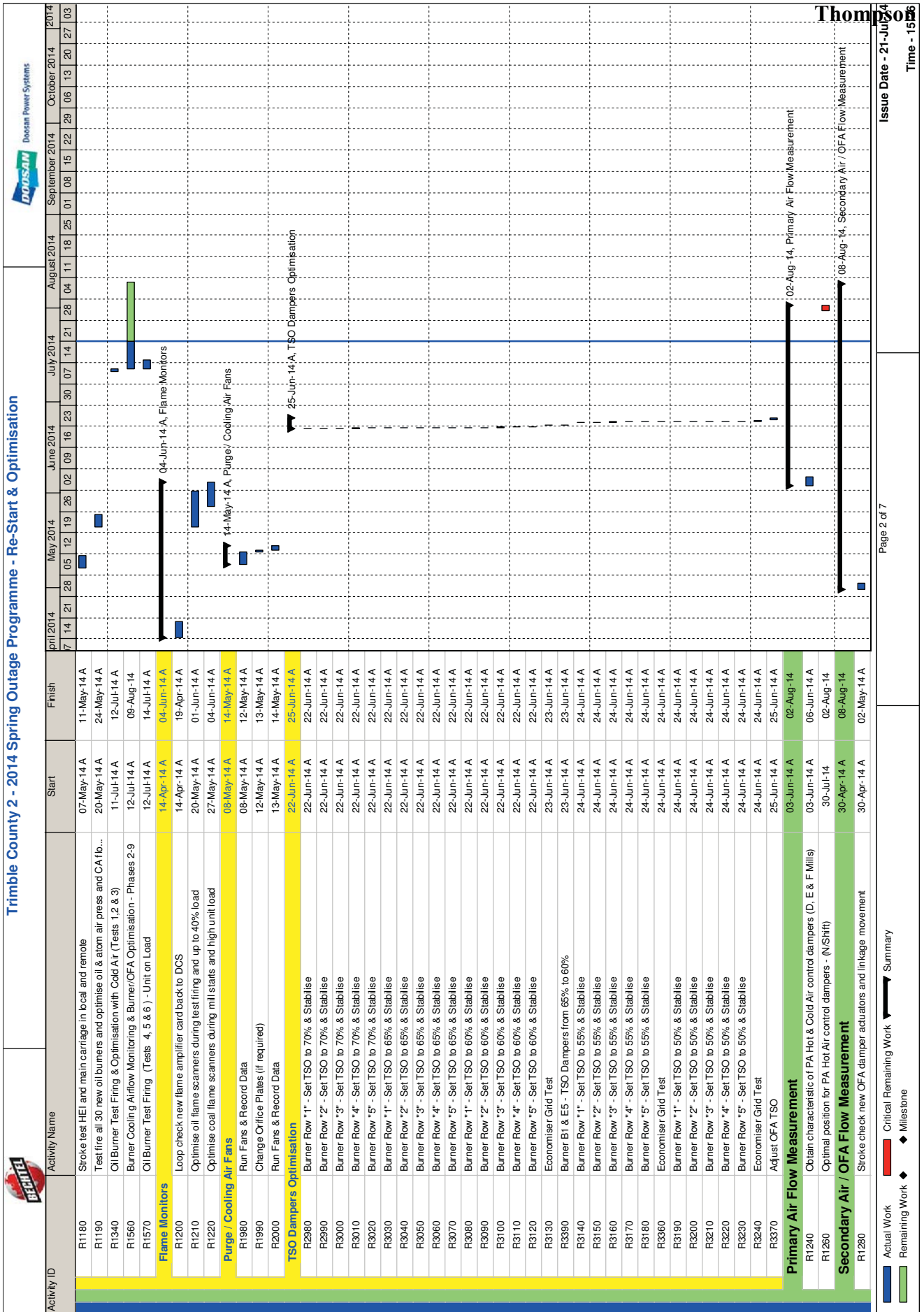
Thanks and best regards

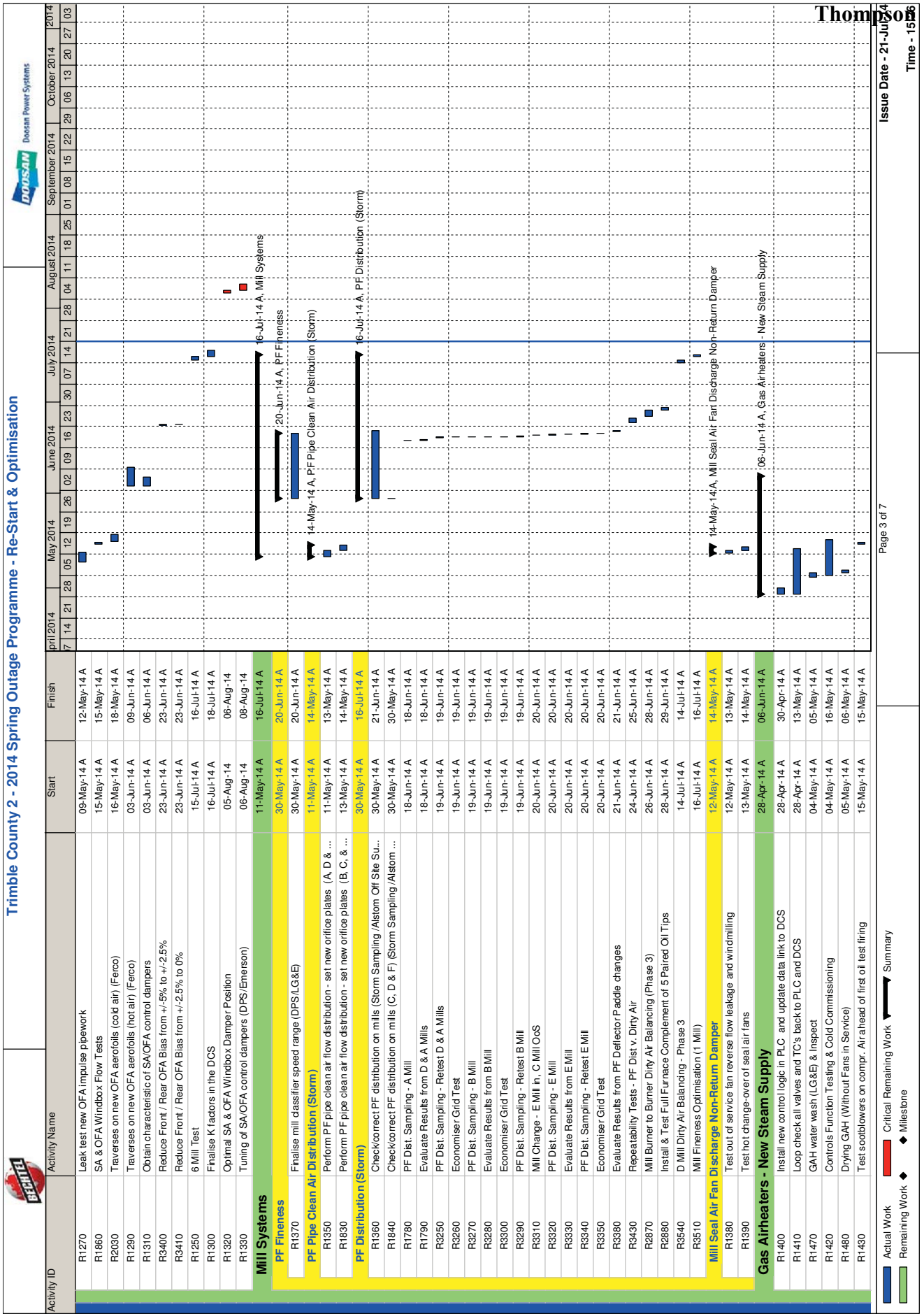
Ian Kerslake
Project Procurement Manager
Doosan Babcock Limited
Doosan House
Crawley Business Quarter
Manor Royal, Crawley
West Sussex, RH10 9AD
Tel: +44 (0)1293 584855
Mobile +44 (0) 7774 965780
Email: ian.kerslake@doosan.com

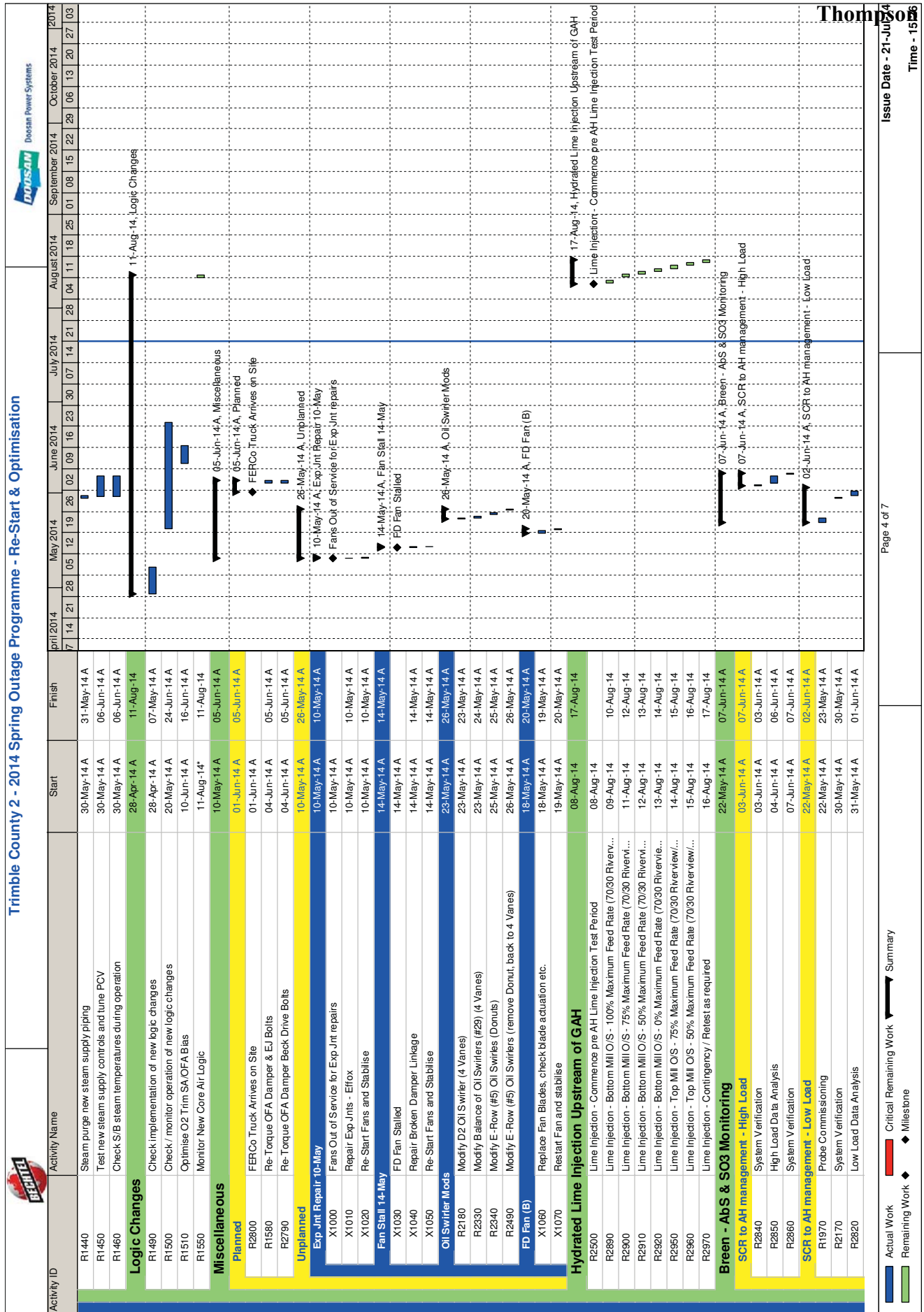
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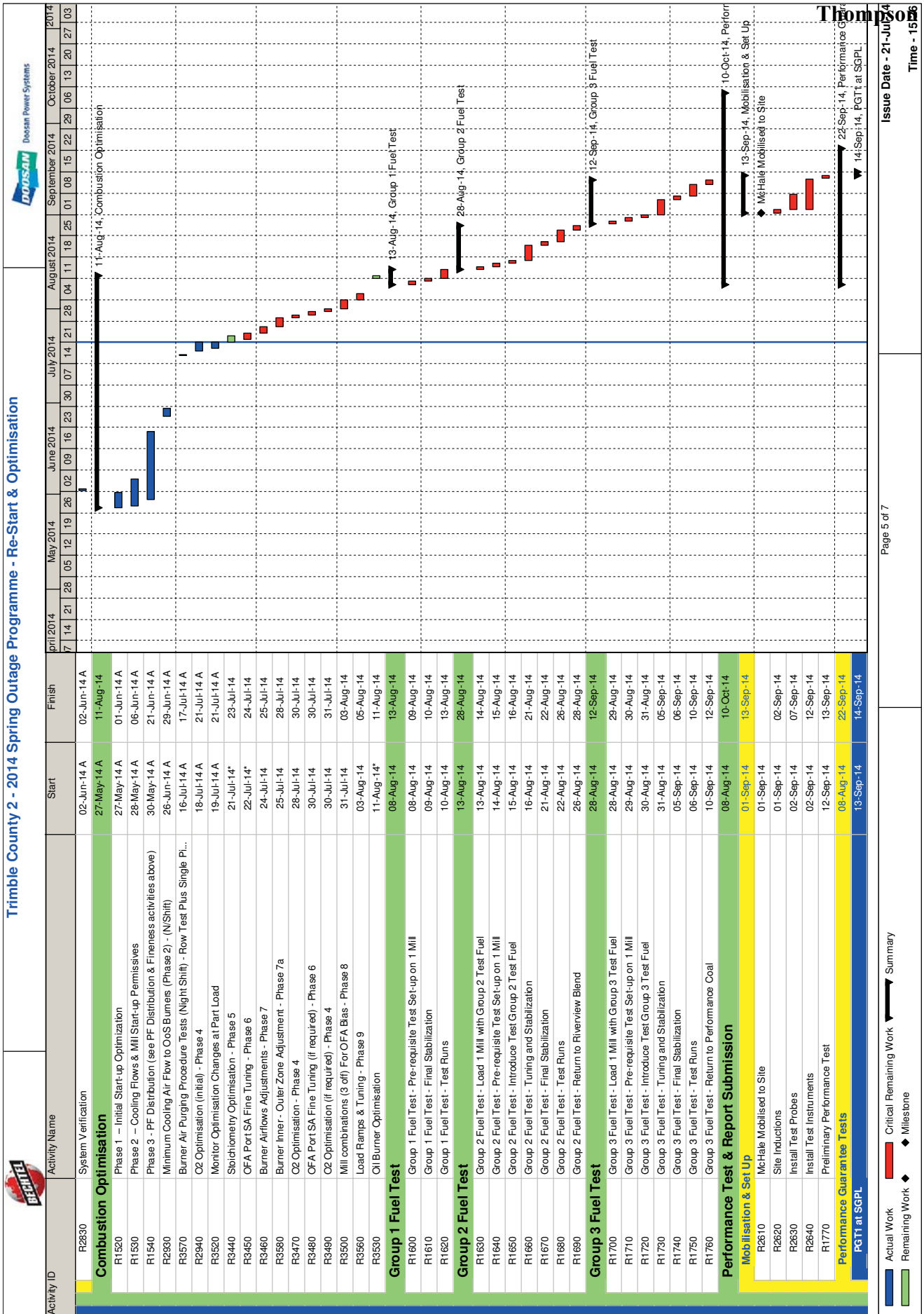


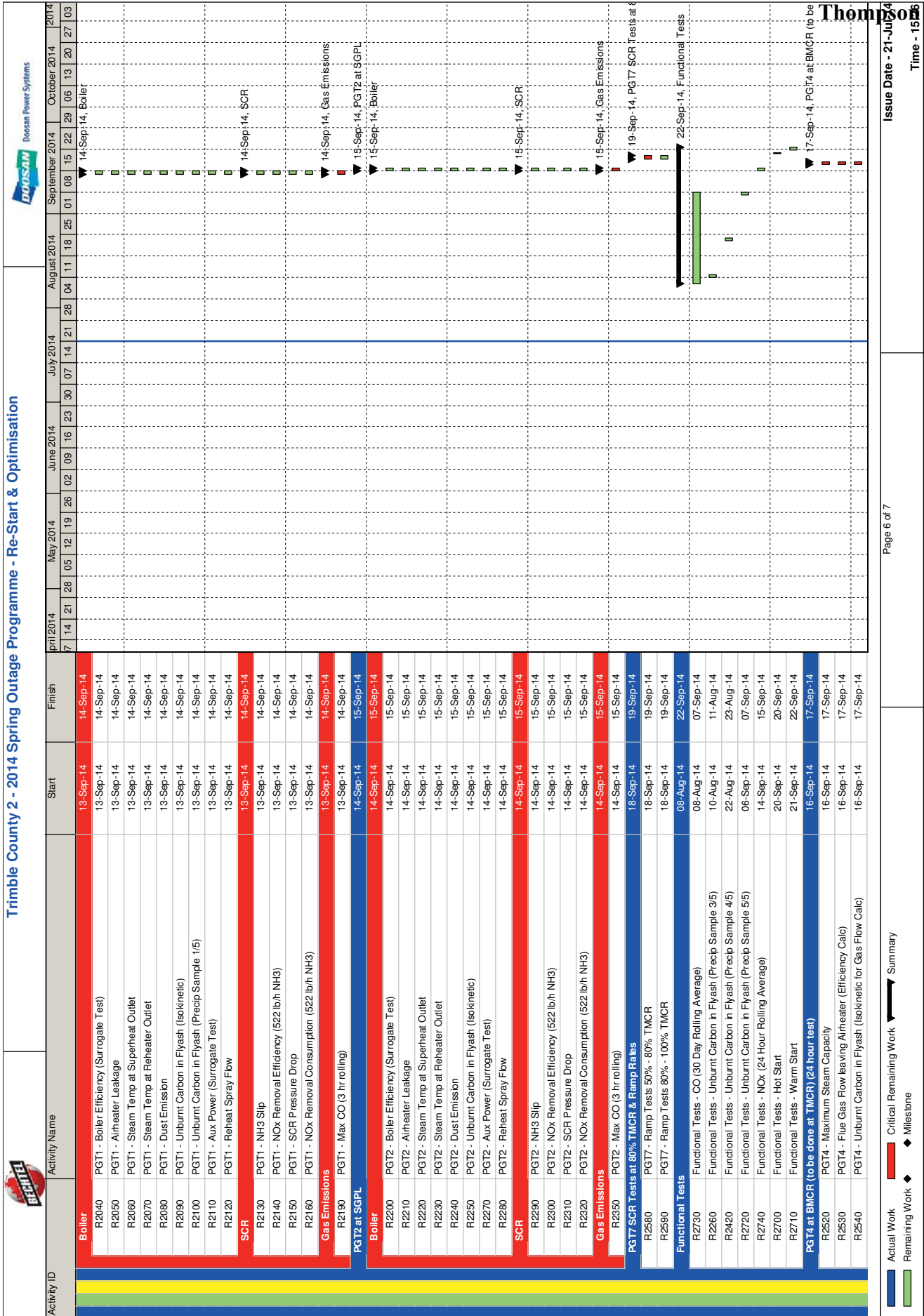












From: Rabe, Phil(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=WEB/CN=PHILRABE)
To: Limberg, Brian
CC:
BCC:
Subject: TC Notes For Ops-Maint July 2014.docx
Sent: 07/17/2014 09:04:04 AM -0400 (EDT)
Attachments: TC Notes For Ops-Maint July 2014.docx;

July 17, 2014

Trimble County Notes for Ops/Maintenance Manager Meeting

Safety

0 recordables for Plant employees and contractors. 2 Employee and 3 Contractor first reports.

- On 6/2, an employee operating a forklift turned and ran the back end into a warehouse storage rack.
- On 6/5, an employee had his foot go into a hole around the 1B TDBFP RH Spray line where it penetrated the floor. Employee experience a leg scrape with minor swelling.
- On 6/18, a contracted employee was removing hose from back of a truck and felt a sting on his forearm. Suspect an insect bite.
- On 6/21, a contracted warehouse employee moving a large pipe hanger located on a pallet had his fingers when the rod moved.
- On 5/27, a contracted employee twisted his ankle while walking on uneven pavement.

Unit Information

TC1

Unit on-line and currently good for full load. Suspect a small leak in the penthouse area. Monitoring same.

Unit experienced a trip on 6/12 while performing a routine lube oil pump swap on the 1A IDF. The fan tripped due to low oil pressure. Investigation of the control circuit revealed a 5 second time delay was in place instead of a 60 second delay. The outage lasted 49 minutes.

On 6/17 unit was removed from service due to a thermowell weld failure on the main steam line. This was a dissimilar metal weld. Unit returned to service on 6/19.

On 7/8 the unit tripped while attempting to change out a servo valve on the turbine #4 CV. Turbine load was dropped to close the #4 CV and a clamp was placed on the FAS. When the disc dump operated, the turbine tripped. The unit returned to service 4 hours and 4 minutes later.

On 7/8 the unit tripped due to feedwater issues picking up load following the outage earlier in the day. The unit was placed back on line 41 minutes later.

TC2

TC2 is currently on line and good for 675 MW. The derate is due to feedwater heater level issues. The #3 heater appears to have a tube leak. Operators are trying to diagnose issues.

Unit was removed from service on 6/29 due turbine EHC issues. While testing turbine valves early on 6/28, the 2A MSV valve closed but would not open back up. Further diagnoses of the valve revealed a need to change out the FAS on the valve. While removing the unit from service, the 2B MSV and 2A CV would not close. The turbine tripped, but the valves remained open and the turbine began to overspeed. I/E personnel on site troubleshooting were able to close the 2B MSV by manually picking up the FAS. This allowed the turbine to come to gear. Investigation of the system revealed significant amounts of contamination caused by water in the system. A full flush and operational testing of the

turbine valves was performed, and a temporary cooler installed on the EHC skid. A full report will be issued in the near future. The unit returned to service on 7/13.

Doosan has resumed boiler tuning, and currently is targeting 8/5 for the first of three fuel box tests.

Combustion Turbines

All CTs are available for full load.

From: Rabe, Phil(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=WEB/CN=PHILRABE)
To: Slaughter, Mitch
CC:
BCC:
Subject: FW: KPSC FAC six month reviews
Sent: 08/18/2014 04:58:42 PM -0400 (EDT)
Attachments: 20140815_Nov13toApr14_TC.xlsx; 20140815_Nov13toApr14_TC_Response.xlsx;

Mitch,

Please take a look at the second attached file with 'response' in the name. I was able to put together a response for all but the TC8 fire protection outage. There was not much detail in the DSL and the only work order I could find was to purchase CO2. It seems like it took a long time to get back in-service, so I'm guessing there was a wait on parts. If you can't remember the details, please see if Ricky Mills or Tomas can remember. They are wanting a response tomorrow if possible.

Thanks,
Phil

From: Simpson, Jeff
Sent: Friday, August 15, 2014 4:03 PM
To: Rabe, Phil
Cc: Byrd, Larry; Joyce, Jeff
Subject: FW: KPSC FAC six month reviews
Importance: High

Phil,
Per my email yesterday we are preparing for the Fuel Adjustment Clause hearings. For the first pass please **respond to the highlighted areas of the attached document on or before Tuesday 8/19/14.**

For each highlighted area please address the following:

- What work was done? How does the performed scope differ from normal?
- Did the scope differ from what was planned?
- Any significant findings? If so, what was the root cause?
- Include additional descriptions for repeat or back-to-back outages with the same reason description.

Thank you,

Jeff Simpson, P.E.
LG&E KU PPL Companies
Generation Engineering
220 W. Main St
Louisville, KY 40202
502-627-4354 office
502-338-0517 cell

From: Simpson, Jeff
Sent: Thursday, August 14, 2014 7:54 AM
To: Didelot, Joe; Wright, Paul; Arnold, Gerald; Edelen, Jim; Payne, Mark; Hensley, Mike; Rabe, Phil
Cc: Burns, Kyle
Subject: KPSC FAC six month reviews
Importance: High

Ops Managers,

The KPSC has initiated the Fuel Adjustment Clause (FAC) six month reviews that will require questions being answered and returned. As done previously, your assistance is needed verifying the accuracy of EFOR events and providing detail. Unfortunately this will require turnaround by mid-next week and we will not receive the data from Gen Planning for review

until today/tomorrow. Most of this information should be readily available but I wanted to give you a heads up

Call/email if you have any questions,

Jeff Simpson, P.E.

LG&E KU PPL Companies

Generation Engineering

220 W. Main St

Louisville, KY 40202

502-627-4354 office

502-338-0517 cell

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Original File Name: 20140815_Nov13toApr14_TC.xlsx

Stored File Name: OpenText00281342.xlsx

Produced as Native

Original File Name: 20140815_Nov13toApr14_TC_Response.xlsx

Stored File Name: OpenText00281343.xlsx

From: Rabe, Phil(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=WEB/CN=PHILRABE)
To: Simpson, Jeff
CC:
BCC:
Subject: Fwd: KPSC FAC six month reviews
Sent: 08/19/2014 09:46:06 AM -0400 (EDT)
Attachments: Copy of 20140815_Nov13toApr14_TC_Response.xlsx; ATT00001.htm;

Sent from my iPhone

Begin forwarded message:

From: "Slaughter, Mitch" <Mitch.Slaughter@lge-ku.com>
Date: August 19, 2014 at 8:57:41 AM EDT
To: "Rabe, Phil" <Phil.Rabe@lge-ku.com>
Subject: RE: KPSC FAC six month reviews

Please see the up-dated attached sheet. The rest looks good, Thanks Mitch.

From: Rabe, Phil
Sent: Monday, August 18, 2014 4:59 PM
To: Slaughter, Mitch
Subject: FW: KPSC FAC six month reviews
Importance: High

Mitch,

Please take a look at the second attached file with 'response' in the name. I was able to put together a response for all but the TC8 fire protection outage. There was not much detail in the DSL and the only work order I could find was to purchase CO2.

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Thanks,
Phil

From: Simpson, Jeff
Sent: Friday, August 15, 2014 4:03 PM
To: Rabe, Phil
Cc: Byrd, Larry; Joyce, Jeff
Subject: FW: KPSC FAC six month reviews
Importance: High

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Thank you,

Jeff Simpson, P.E.

LG&E KU PPL Companies

Generation Engineering

220 W. Main St

Louisville, KY 40202

502-627-4354 office

502-338-0517 cell

From: Simpson, Jeff

Sent: Thursday, August 14, 2014 7:54 AM

To: Didelot, Joe; Wright, Paul; Arnold, Gerald; Edelen, Jim; Payne, Mark; Hensley, Mike; Rabe, Phil

Cc: Burns, Kyle

Subject: KPSC FAC six month reviews

Importance: High

Ops Managers,

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Call/email if you have any questions,

Jeff Simpson, P.E.

LG&E KU PPL Companies

Generation Engineering

220 W. Main St

Louisville, KY 40202

502-627-4354 office

502-338-0517 cell

Produced as Native

Original File Name: Copy of 20140815_Nov13toApr14_TC_Response.xlsx

Stored File Name: OpenText00281401.xlsx

From: Kerslake, Ian(ian.kerslake@doosan.com)
To: Rabe, Phil; Mohn, Laura; Carlisle, Gary; Slaughter, Mitch; 'Dearman, James (jdearman@bechtel.com)', Watkins, Clyde (cwatkins@bechtel.com) (cwatkins@bechtel.com); 'Brann, Devin (dmbrann@bechtel.com)'; 'Babcock, James (jbabcock@bechtel.com)'; 'savierstra@earthlink.net'; 'Scott Viestra' (savierstra@savvyeng.com)
CC: Mackintosh, Alister; Smith, John (Crawley); Jones, Gareth; Maunder, Kevin; Smith, Mike; Gratton, Ron; Young, Charles E H; Hammond, Steve; Reynolds, Paul (Crawley); Heath, Justin; Davidson, Gordon; McCallum, Neil; Torkington, Ian R; Hough, David C; Cameron, Euan; Grist, John; Gonese, Jean; Elliott, Robert; Sutcliffe, Andrew; Fleming, Ian; Cahill, Michael; Falkner, Robert; Groom, David; Bevis, Ivan; Tremlett, Nigel; Bedi, Sanjay; 06350 TRIMBLE COUNTY MAILBOX
BCC:
Subject: RE: 07292 TC2 - Updated Restart & Optimisation Programme 8th Aug '14
Sent: 08/08/2014 10:31:30 AM -0400 (EDT)
Attachments: 50 Day Date Sequential (14-08-08) rev b.pdf; Restart Schedule (14-08-08) rev b.pdf;

Hi Phil and Mitch,

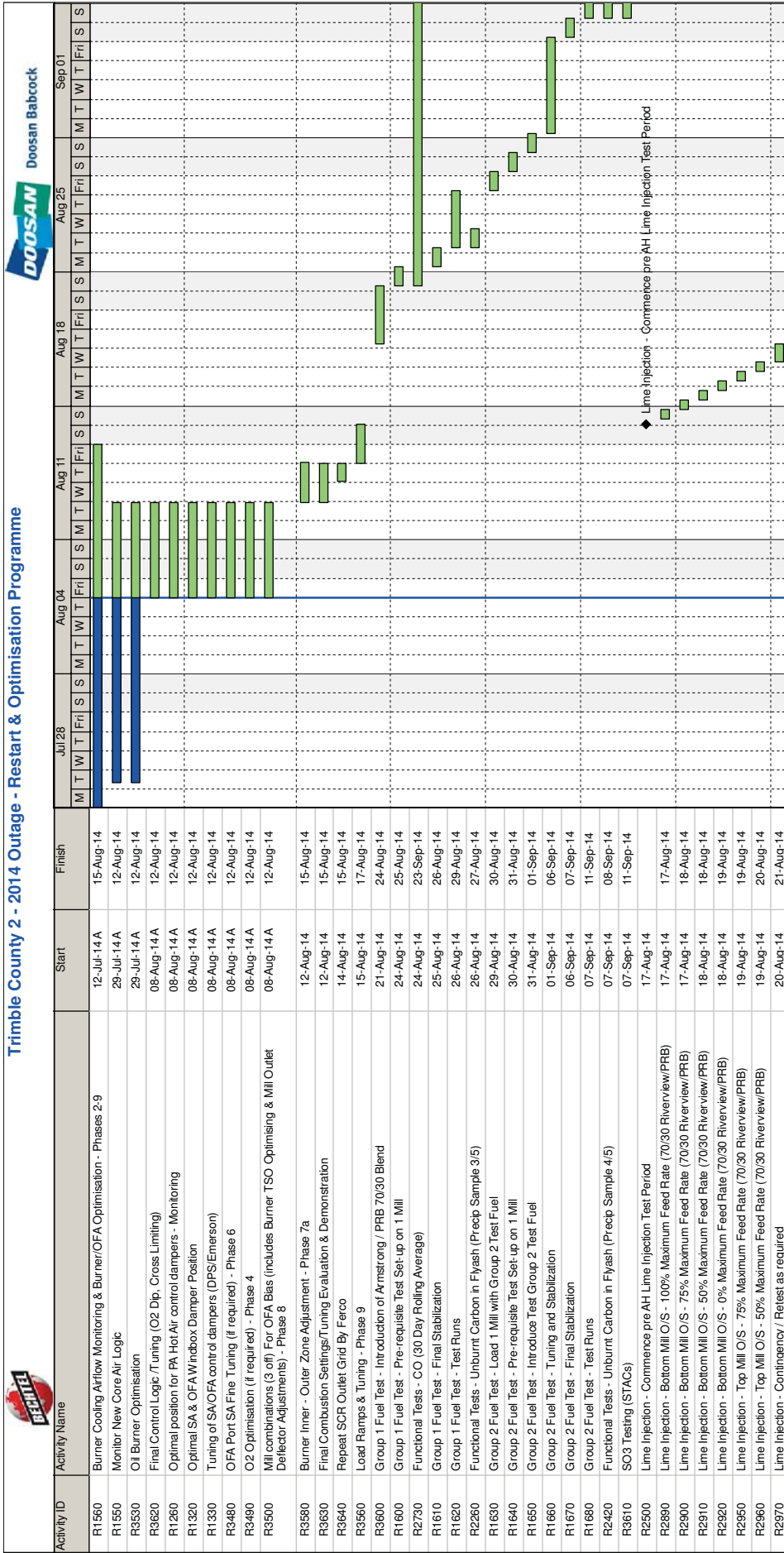
For your information, please find attached copies of the Sequential and Full Restart & Optimisation Programme updated for progress to 8th Aug '14

Thanks and best regards

Ian Kerslake
Project Procurement Manager
Doosan Babcock Limited
Doosan House
Crawley Business Quarter
Manor Royal, Crawley
West Sussex, RH10 9AD
Tel: +44 (0)1293 584855
Mobile +44 (0) 7774 965780
Email: ian.kerslake@doosan.com

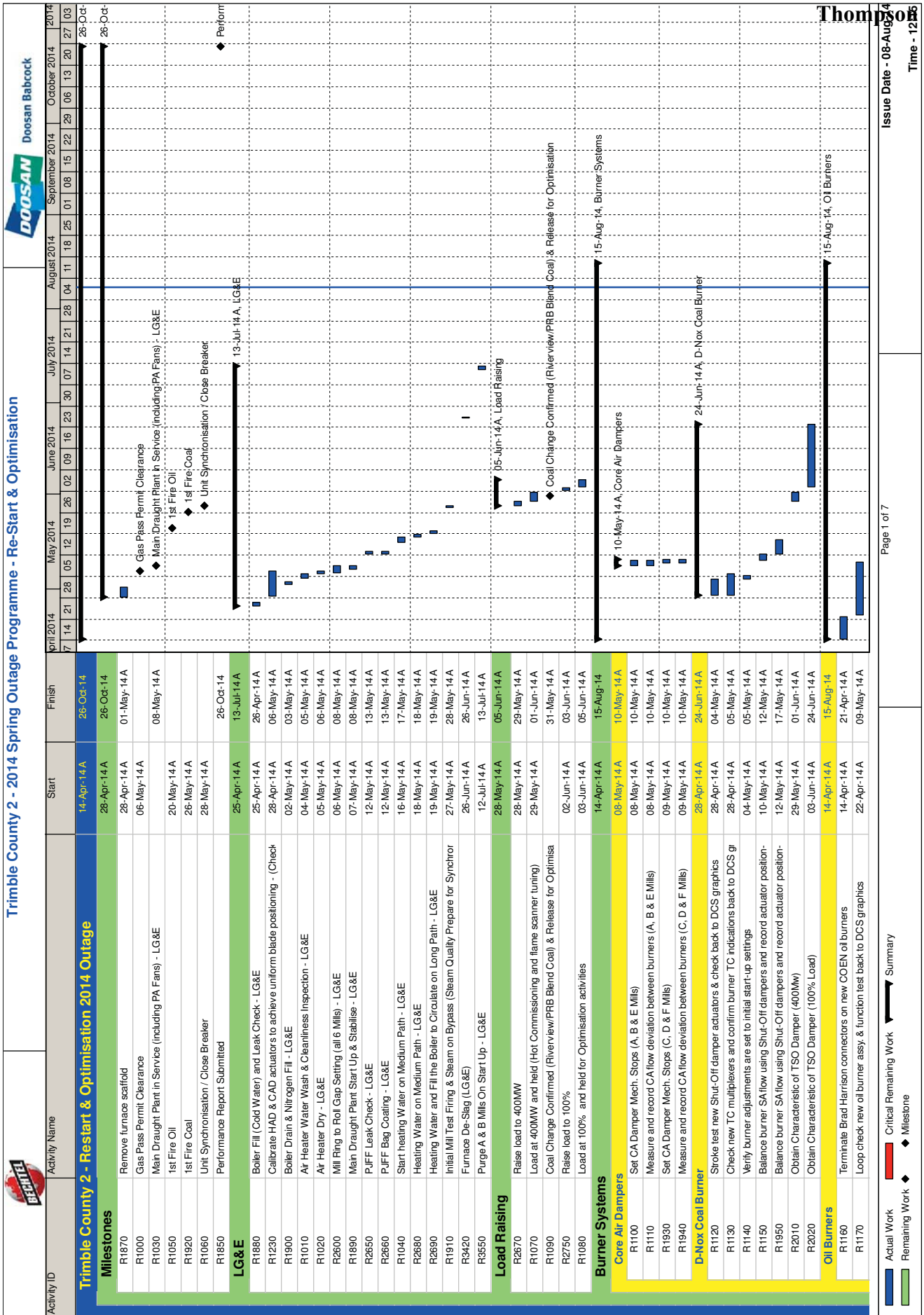
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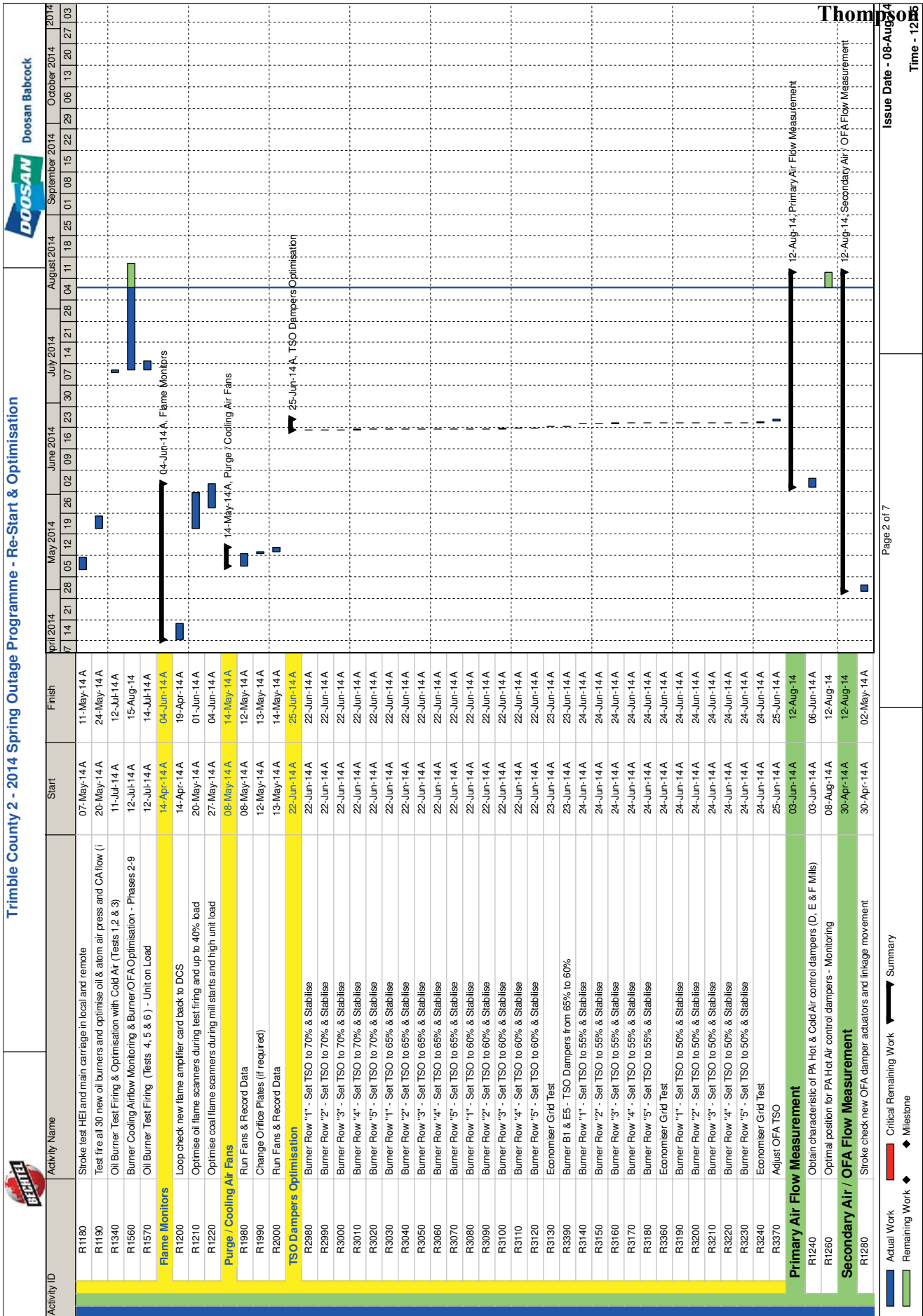
Trimble County 2 - 2014 Outage - Restart & Optimisation Programme



Issue Date : 08-Aug-14

Actual Work
Remaining Work
Milestone
Summary





Trimble County 2 - 2014 Spring Outage Programme - Re-Start & Optimisation

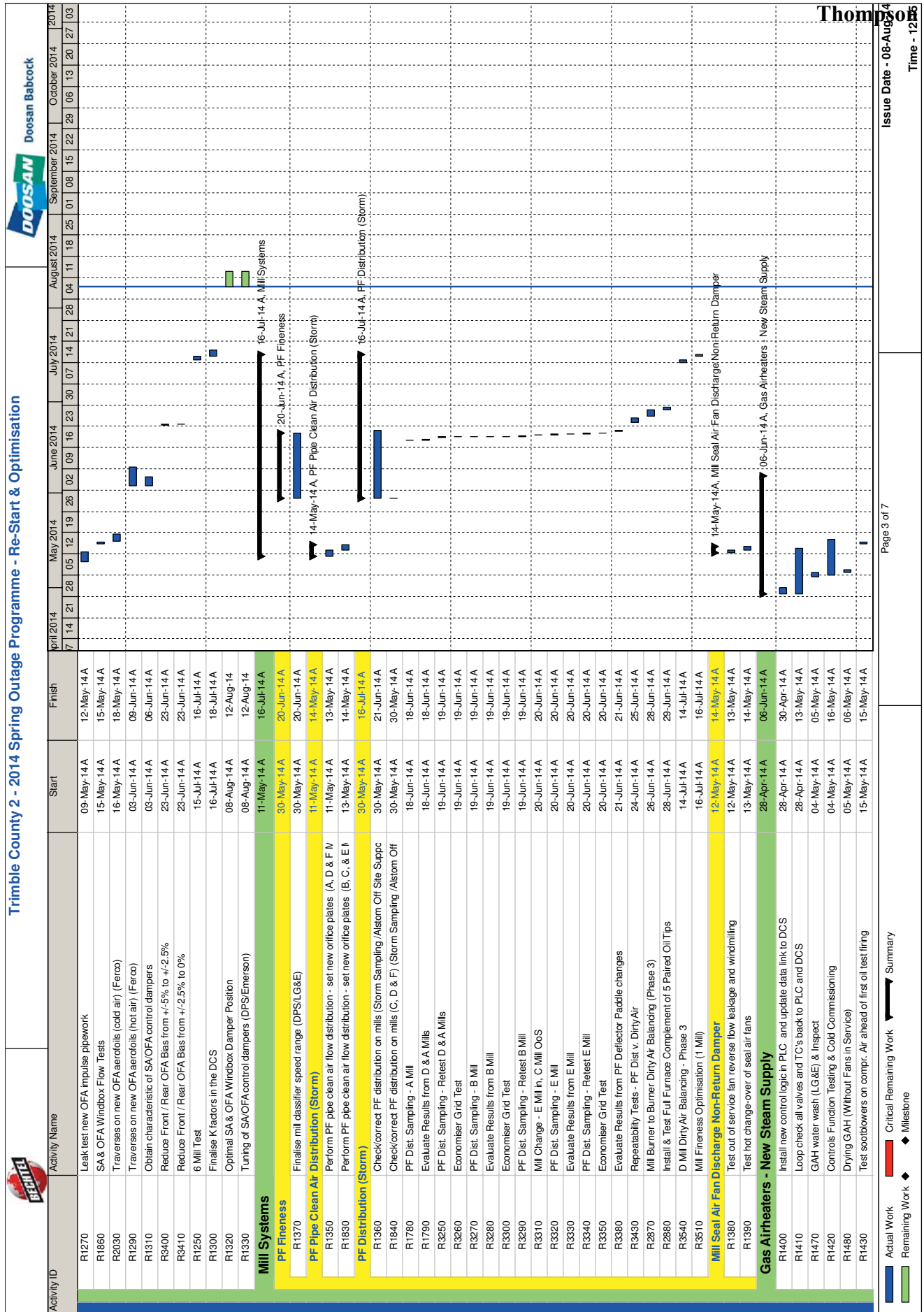


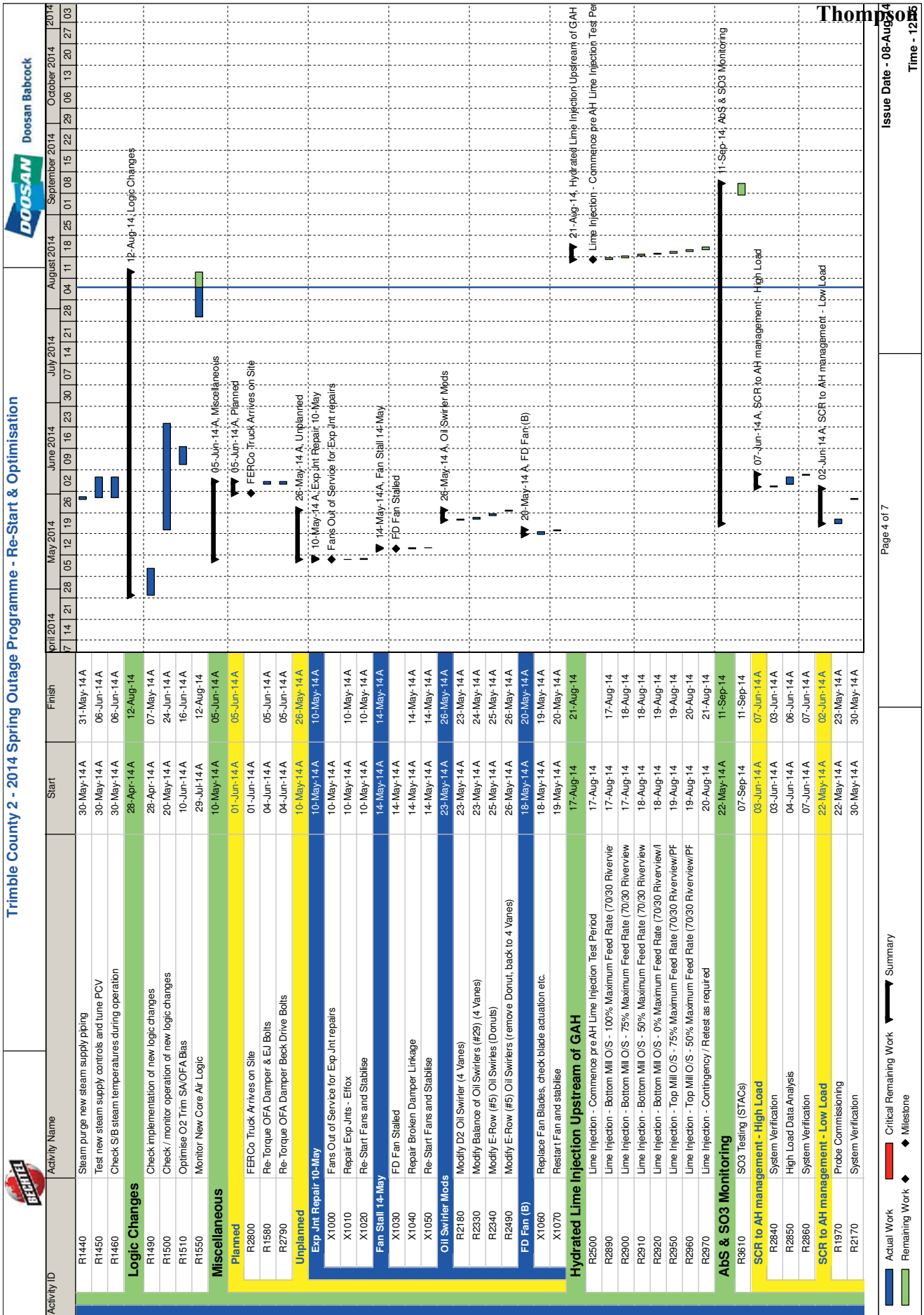
Doosan Babcock

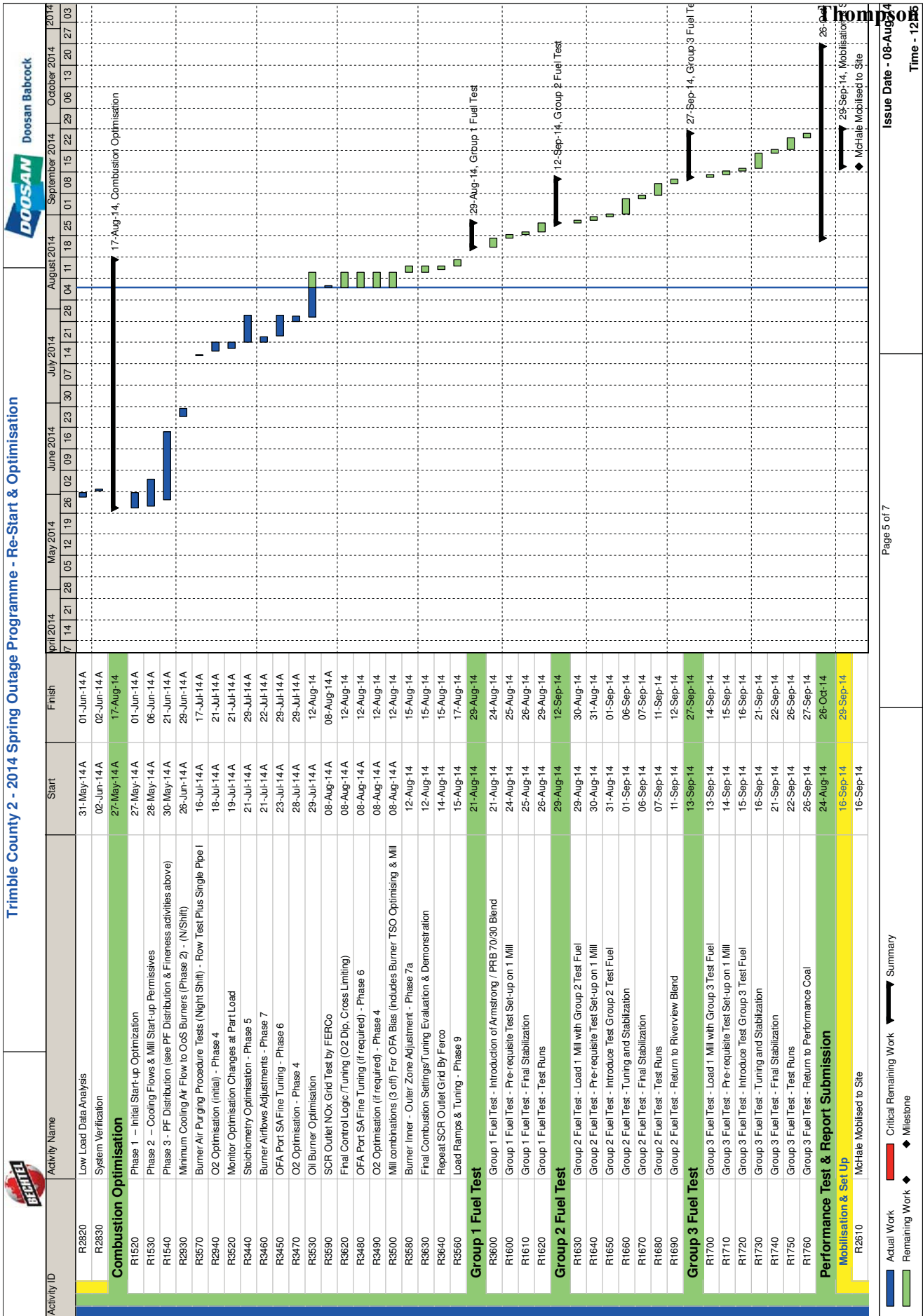
Issue Date - 08-Aug-2014
Time - 12:05

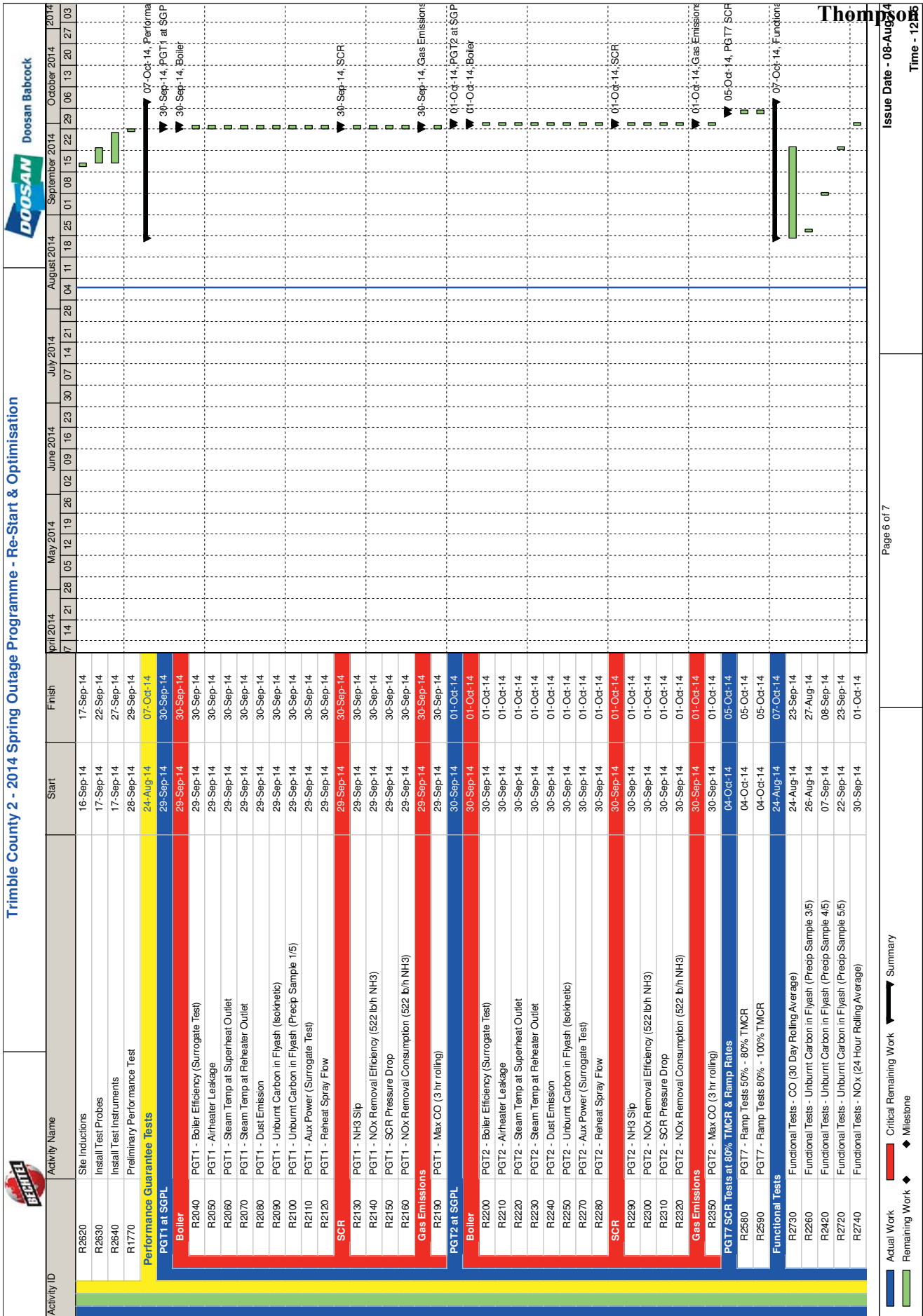
Page 2 of 7

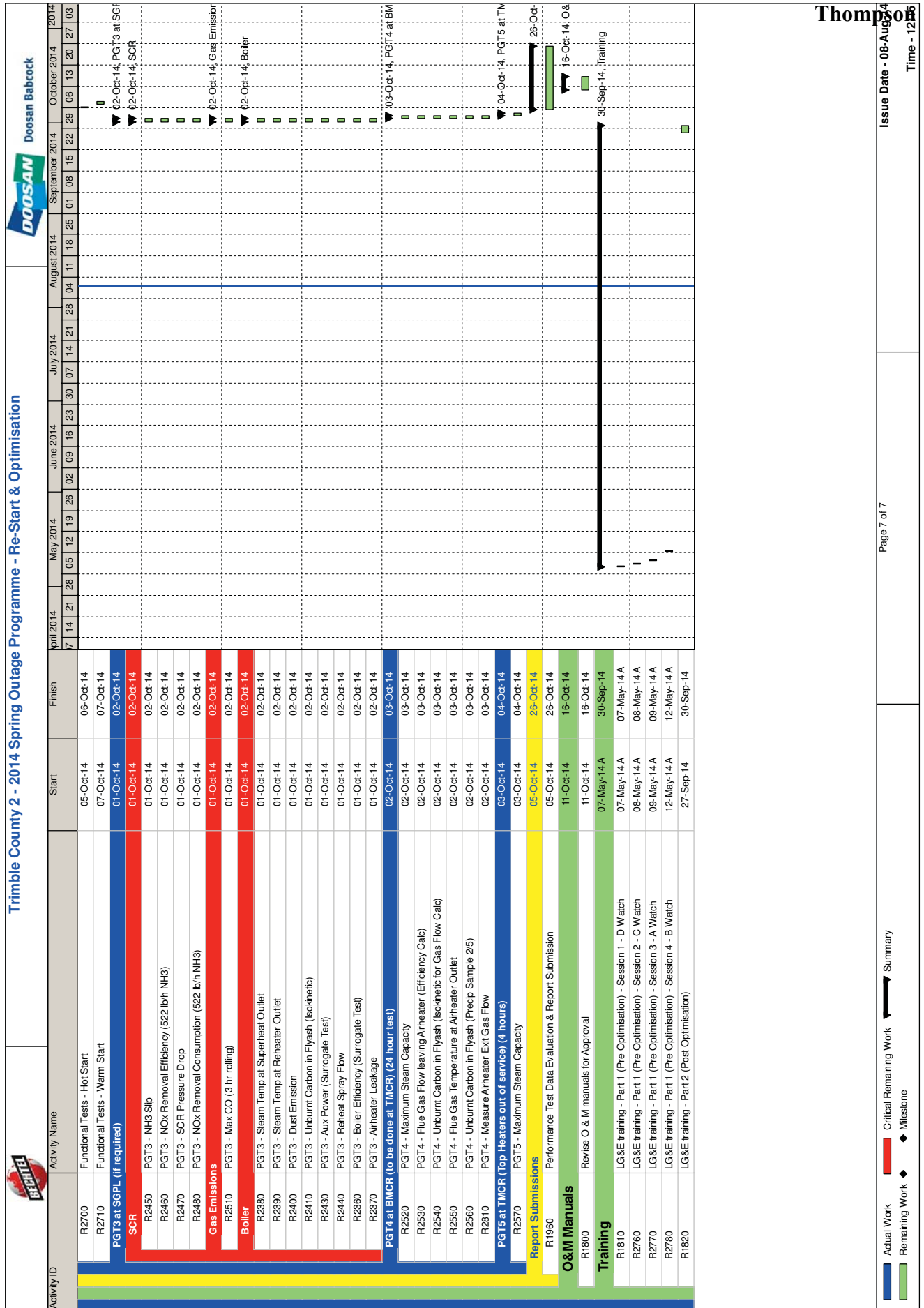
Legend:
█ Actual Work
█ Remaining Work
█ Critical Remaining Work
◆ Milestone
▶ Summary











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Original File Name: 20140815_Nov13toApr14_TC_Response.xlsx

Stored File Name: OpenText00281764.xlsx

From: GMEINDER Jessie(jessie.gmeinder@power.alstom.com)
To: Maldonado, Francisco; Mohn, Laura; Byrd, Larry; Joyce, Jeff; Rabe, Phil; Anderson, Dave (Trimble County), CRISWELL Tony; PALUTA Mark; Ransdell, Charles
CC:
BCC:
Subject: RE: TC2 2014 Spring Outage Review
Sent: 10/02/2014 11:55:58 AM -0400 (EDT)
Attachments: TC2 Spring 2014 Outage Report Review rev10-02-2014.pdf;

All,

Attached is the presentation I talked through yesterday. There are a few additional slides that I had hidden in the interest of time. Please let me know if you have any questions.

Thanks,
Jessie

-----Original Appointment-----

From: Maldonado, Francisco [<mailto:Francisco.Maldonado@lge-ku.com>]
Sent: Thursday, September 25, 2014 11:20 AM
To: Maldonado, Francisco; Mohn, Laura; Byrd, Larry; Joyce, Jeff; Rabe, Phil; Anderson, Dave (Trimble County); CRISWELL Tony; GMEINDER Jessie; PALUTA Mark; TC Fifth Floor Conference Room
Subject: TC2 2014 Spring Outage Review
When: Wednesday, October 01, 2014 9:00 AM-9:30 AM (GMT-05:00) Eastern Time (US & Canada).
Where: 5th Floor Conference Room

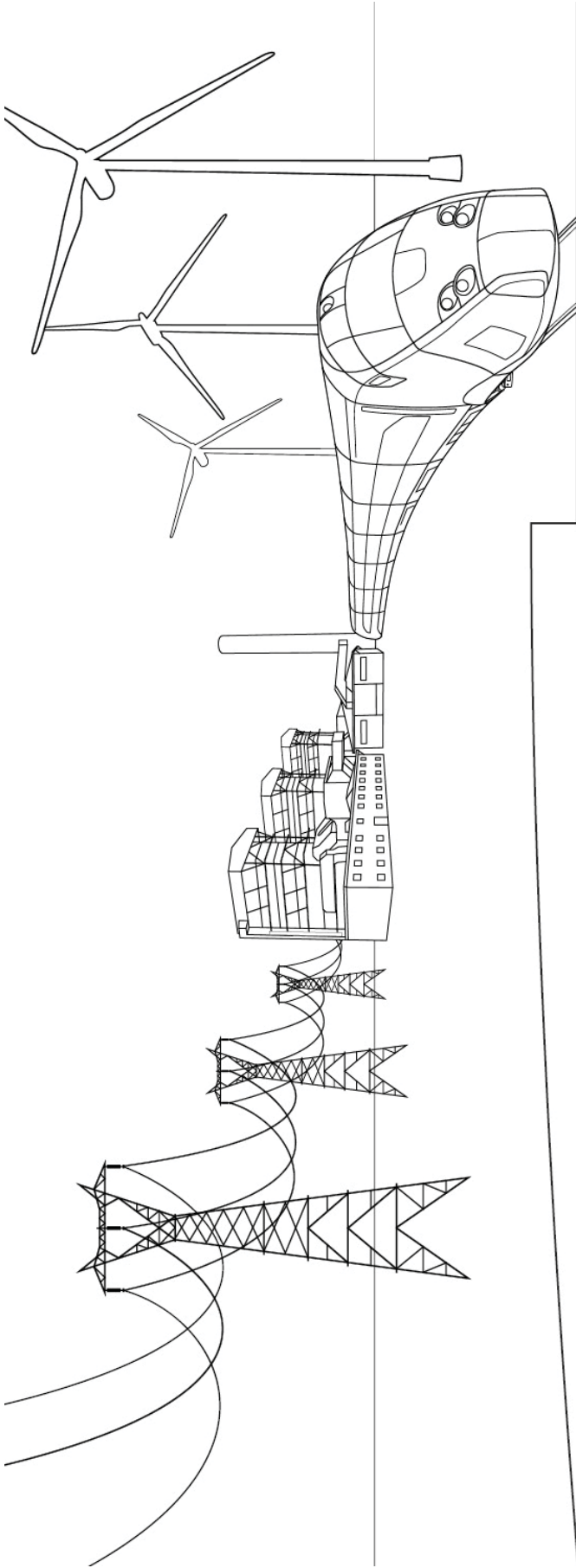
All,

Jessie will be giving a presentation on the major items found during the TC2 2014 spring outage. This meeting will be followed by the TC2 spring 2015 outage planning meeting.

Thanks,
Cisco

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Unit 2 Spring 2014 Outage Review

LG&E Trimble County Generating Station

Alstom Power Field Services Jessie Gmeinder

10/01/2014



- **Inspection Scope & Findings Review**
- Major Findings – SH Platens
- Major Findings - Waterwalls
- 2015 Spring Outage Planning Considerations

Inspection Scope Review

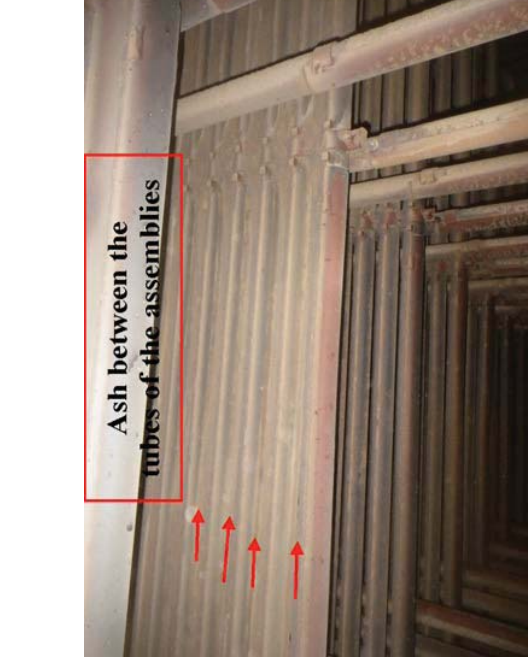
What Was Inspected

- SH Backpass
- RH Backpass
- Final RH Pendant Assemblies
- Final SH Pendant Assemblies
- SH Platen Assemblies
- Waterwalls

SH / RH Backpass

Backpass Wash

- Completed mid-way through outage to facilitate repairs.
- Most of backpass was not reinspected after waterwash.



Lack of initial wash limited access for a thorough inspection

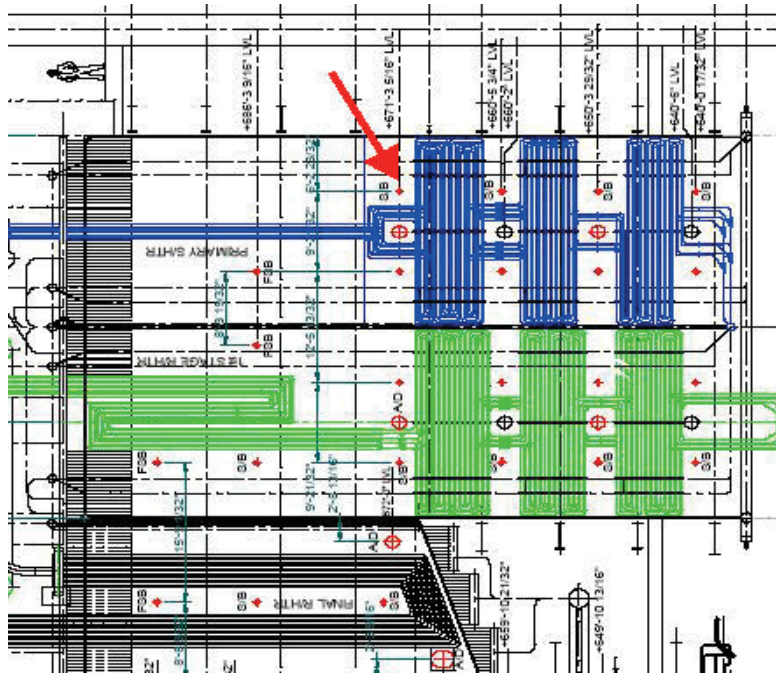
Presentation title - 02/10/2014 - P 4

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SH Backpass

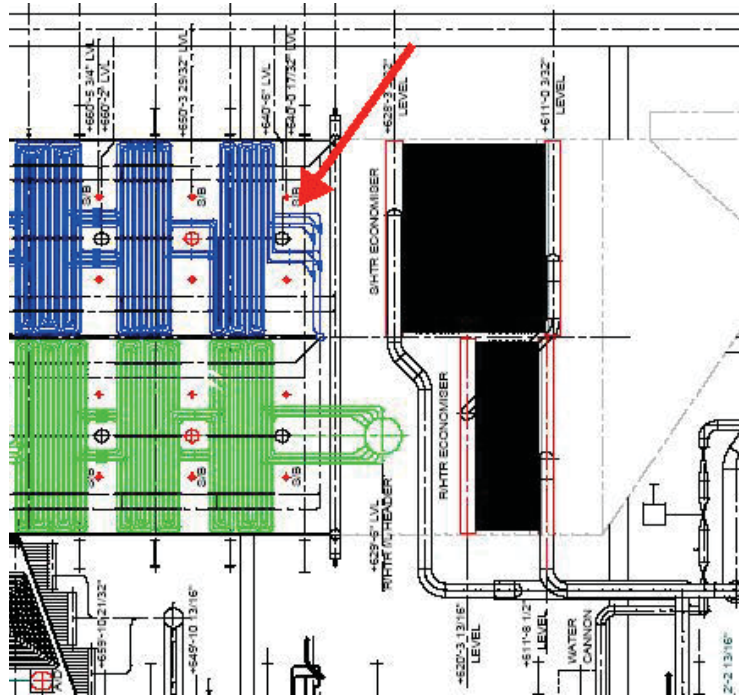
Top of Top Bank



34 out of 202 alignment straps were weld repaired

SH Backpass

Bottom of Bottom Bank



- 64 of 101 sling (hanger) tubes noted for moderate erosion at the support brackets.
- 53 tubes were shielded and the brackets were weld repaired.

Repairs were slightly reduced after an inspection post backpass waterwash

SH Backpass

Bottom of Bottom Bank



Typical Repair with 6" additional tube shield. Plan to do balance in 2016

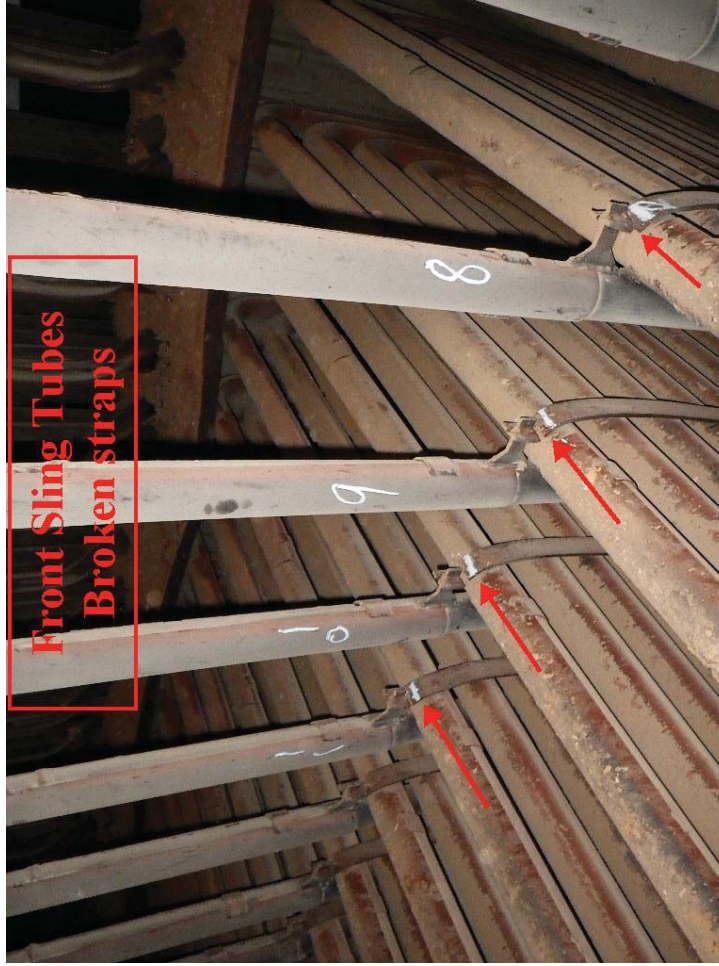
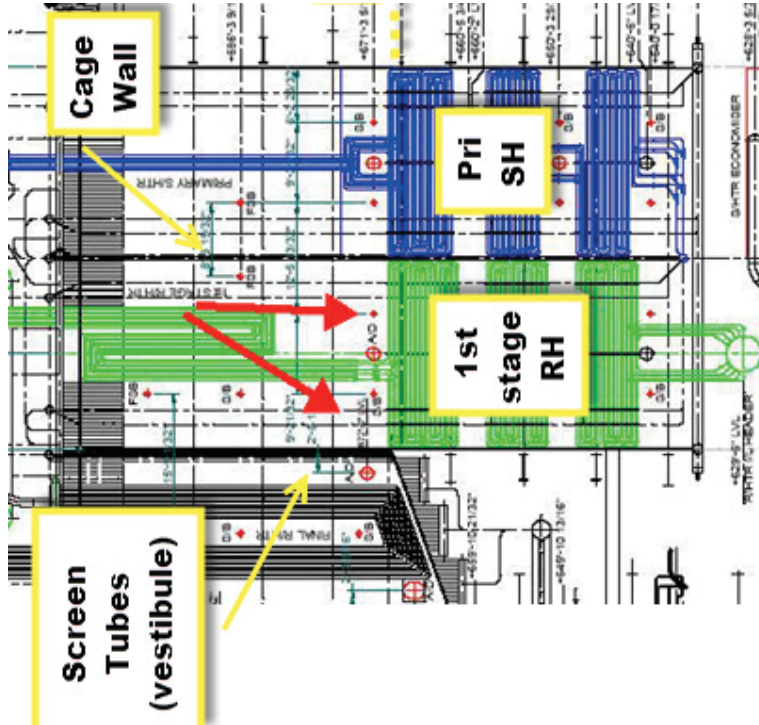
Presentation title - 02/10/2014 - P 7

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RH Backpass

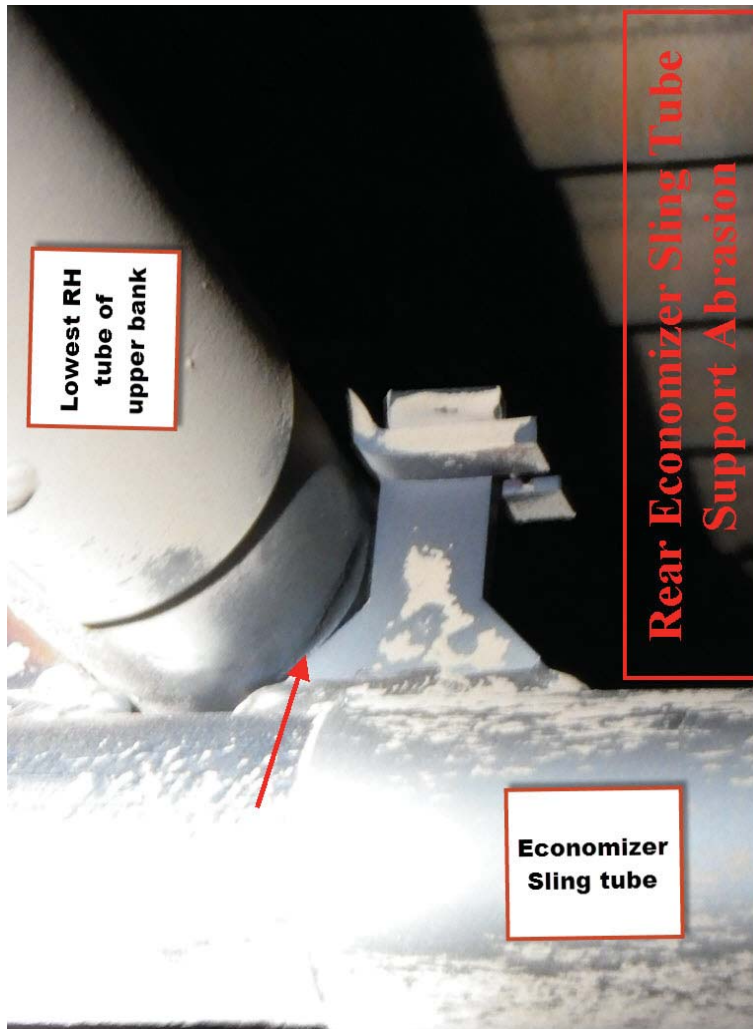
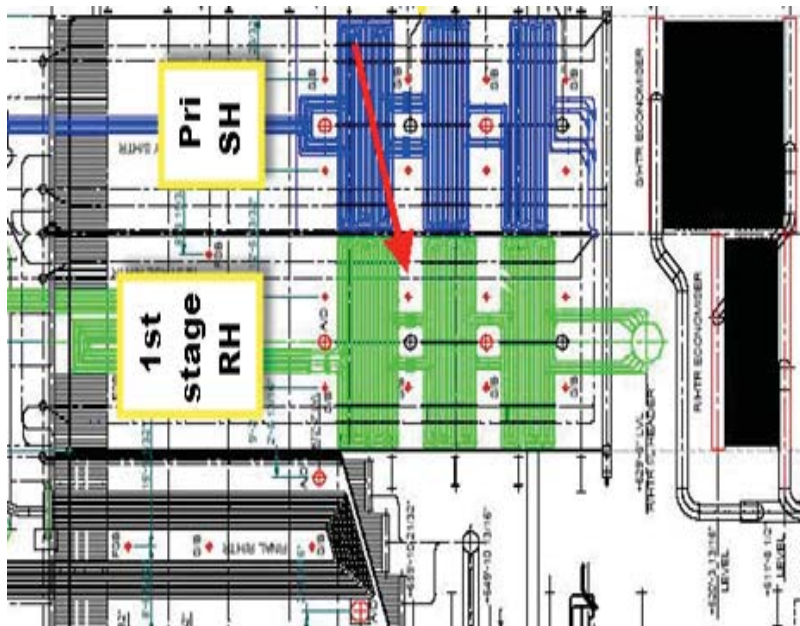
Top of Top Bank



141 out of 202 alignment straps were weld repaired

RH Backpass

Between Top and Intermediate Bank



103 shields were installed IK 65/66 lane to protect the tubes from abrasion.

RH Backpass

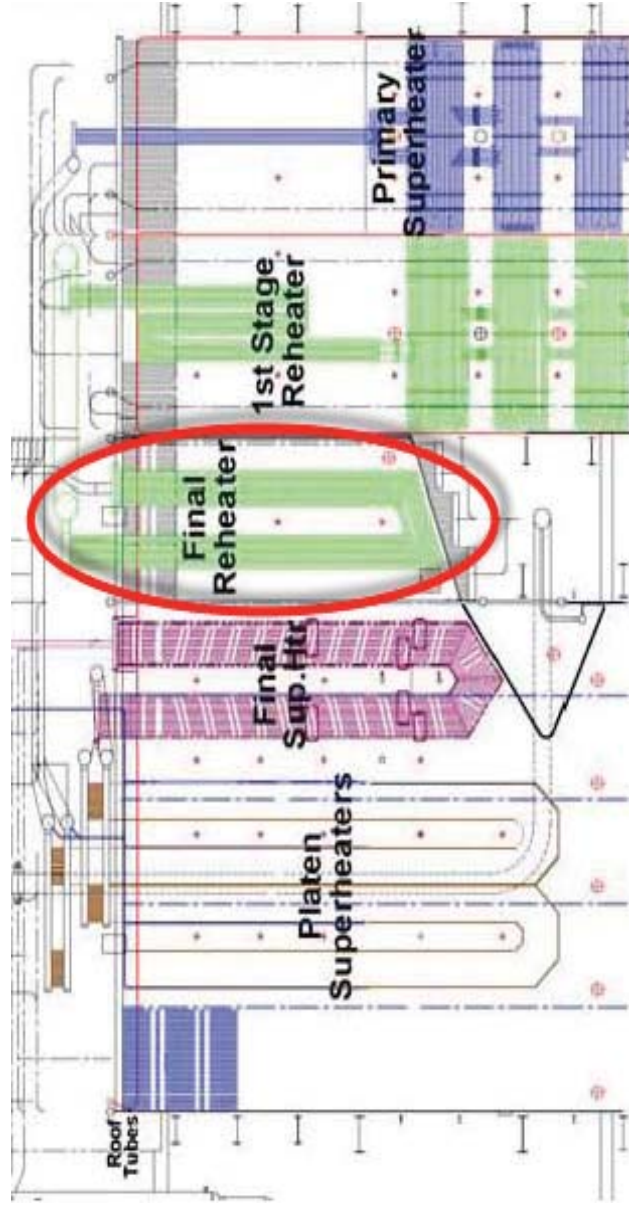
Between Top and Intermediate Bank

- Seven 3' dutchmen installed at the bottom of the top bank assembly due to disfigured circuits possibly caused during original erection



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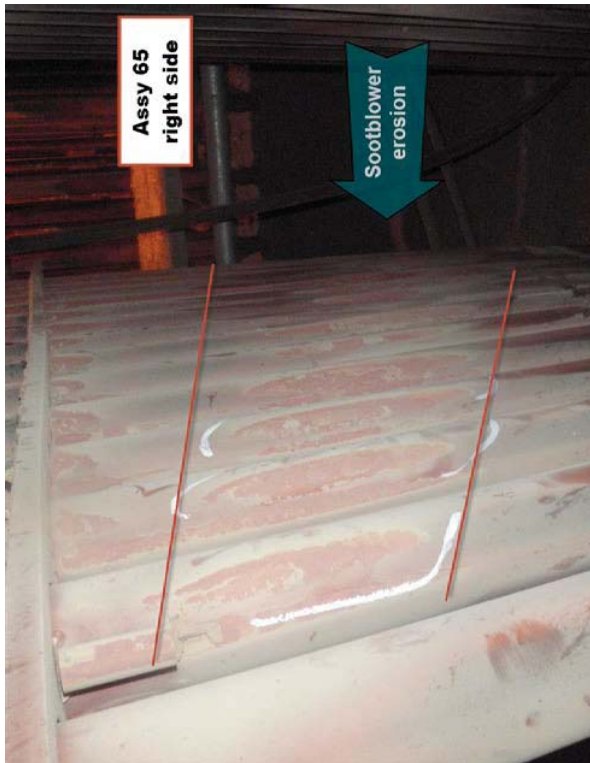
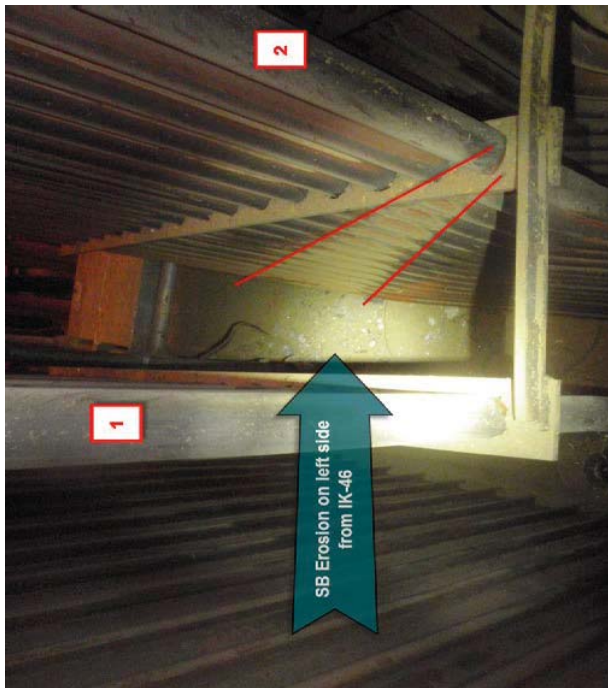
Final RH Pendant Assemblies



- Only minor erosion in IK-46/47 (lower) sootblower lane
- 14 of 68 RH assemblies are within 1 tube OD of each other at the rear; assemblies are to be on ~14" centers;
Effects: slag bridging, effects on gas flow, more risk for channeled sootblower erosion

Final RH Pendant Assemblies

- Minor Erosion in IK-46/47 SB Lane



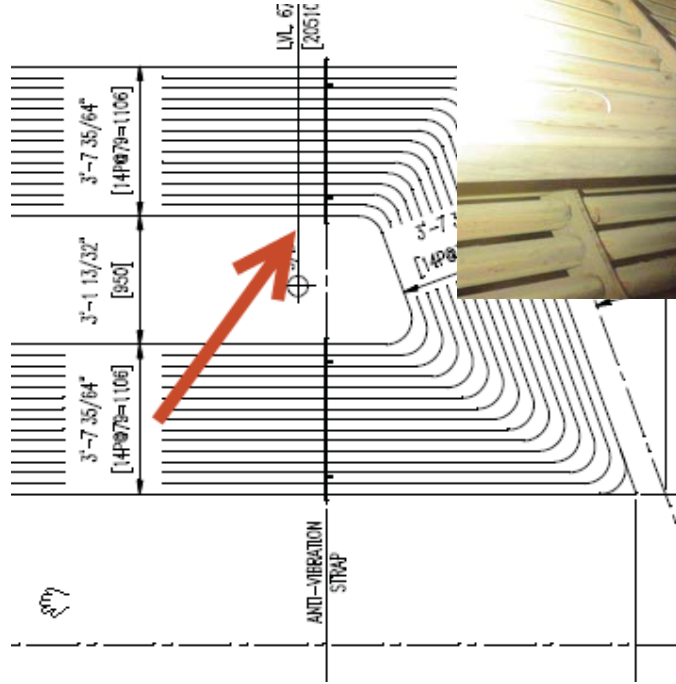
Consider installing SB indexing kits

Presentation title - 02/10/2014 - P 12

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Final RH Pendants – Misalignment & Cupping

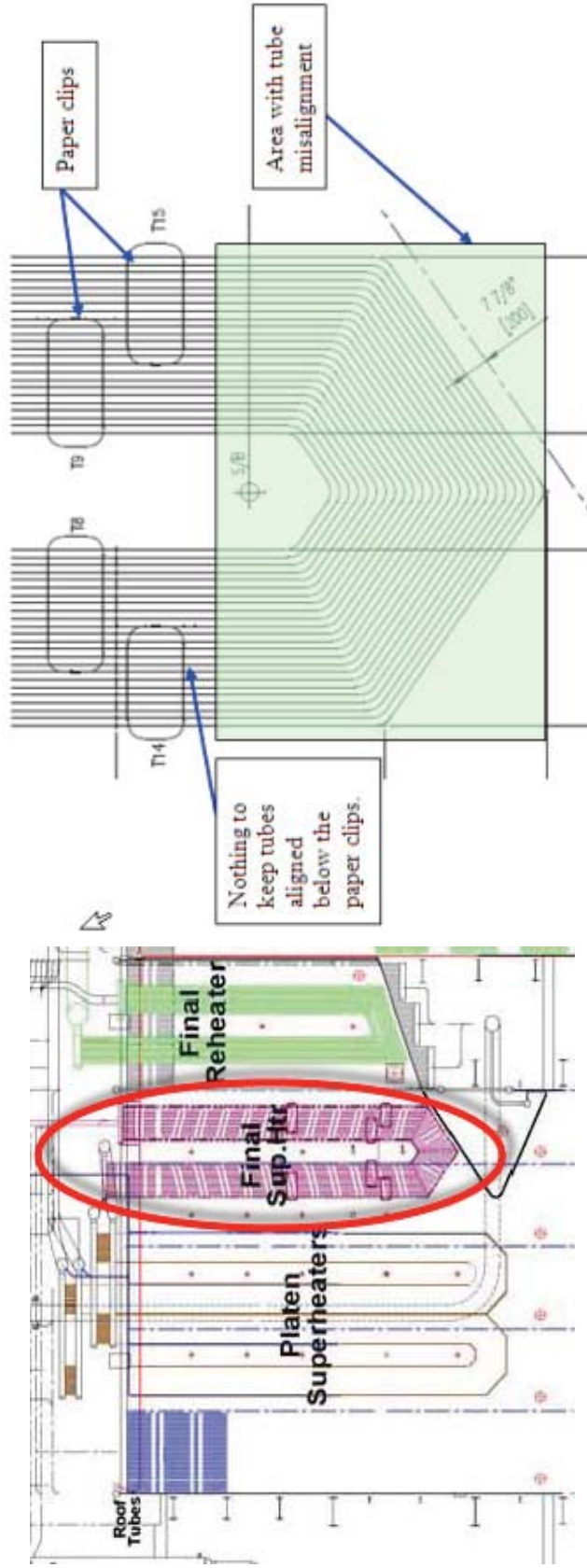


- Assembly to Assembly - 14 of 34 assemblies are within 1 tube diameter of each other at the rear
- Cupping - intra-assembly misalignment out of plain from the inside loop to the outside loop. Consider adding alignment system at rear side of assemblies.

Consider upgrading or installing additional alignment devices

Final SH Pendant Assemblies

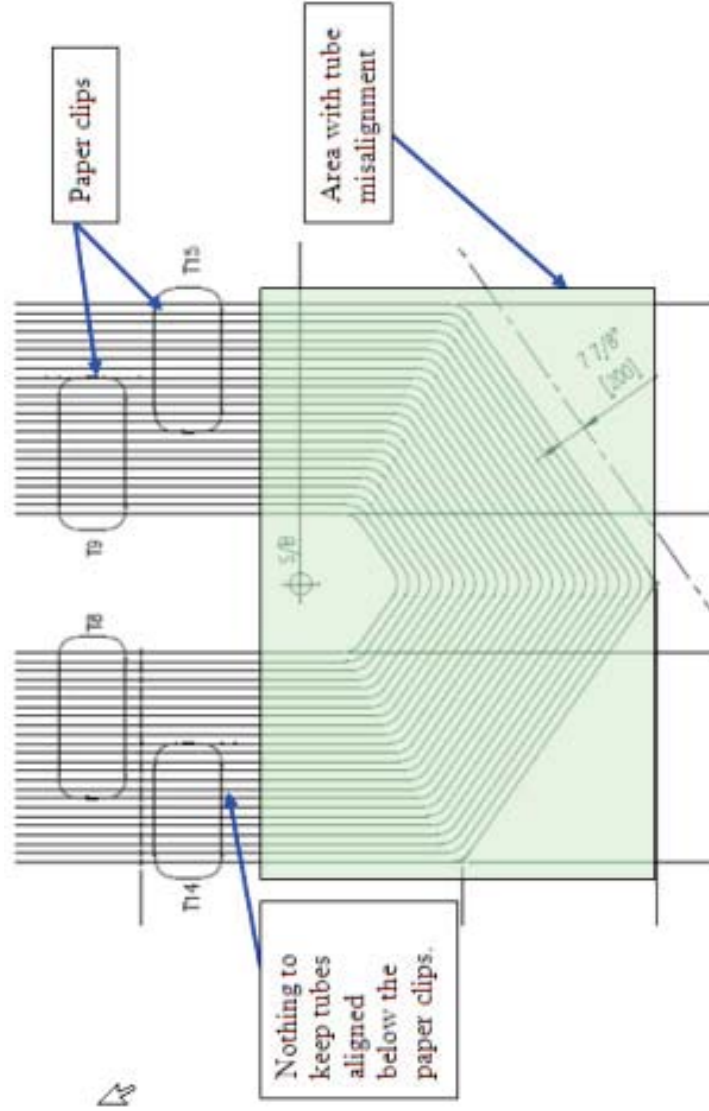
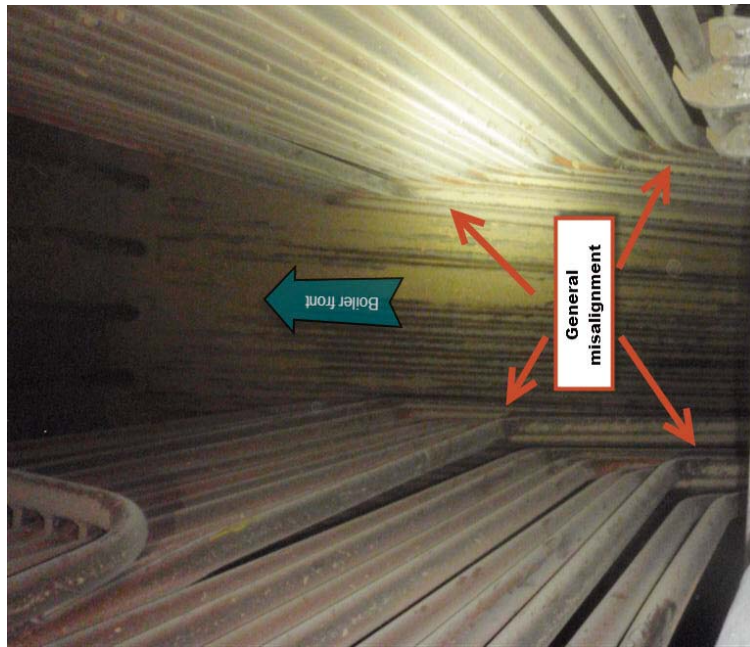
Limited Access to Lower Wrap-around Tube (Paper Clip) Elevation



- Worsening general misalignment as noted in 2012
- Minor sootblower erosion in lower IK lanes
- Only minor mechanical abrasion at wrap-around tubes

Final SH Pendant Assemblies

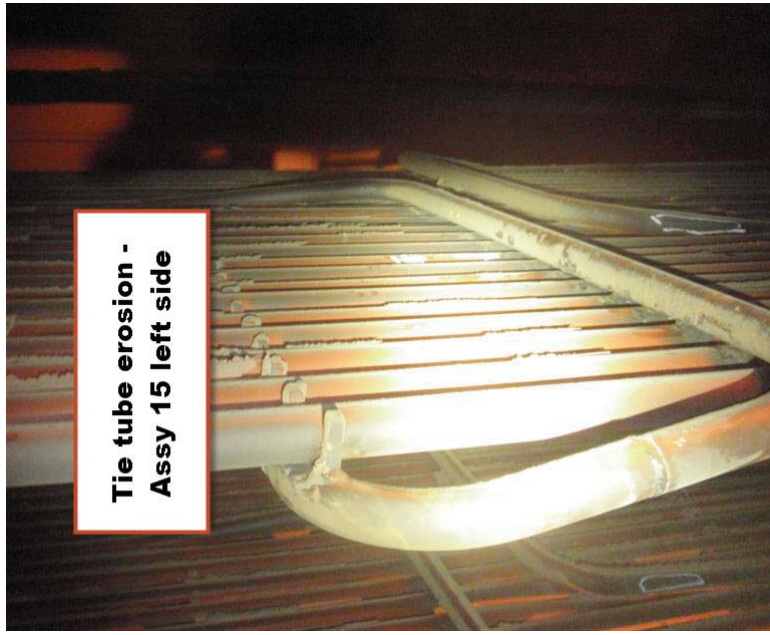
- Worsening general misalignment as noted in 2012



Consider installing additional alignment devices

Final SH Pendant Assemblies - Minor SB Erosion

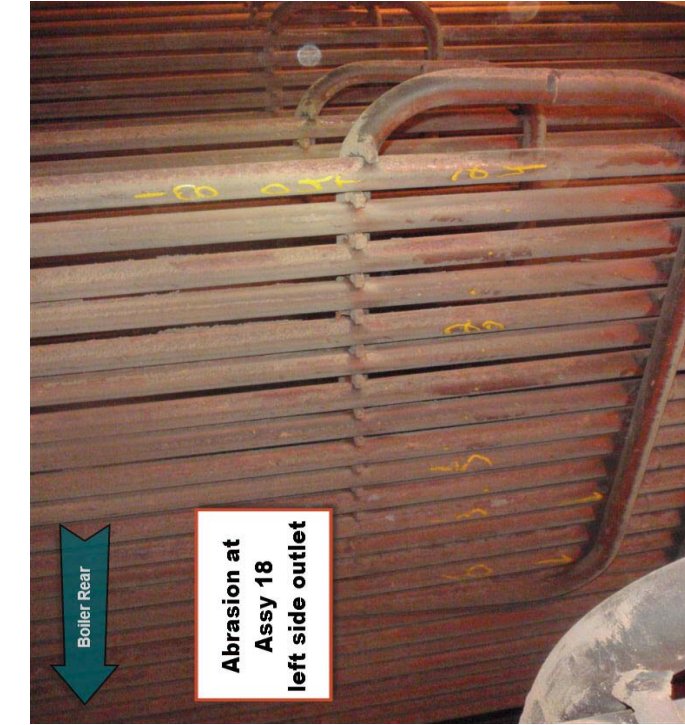
- Found at lower wrap-around tube (paperclip) IK -37/38 lane
- Limited access to front of assembly



Build scaffold for more thorough inspection 2015 outage

Final SH Pendant Assemblies - Minor Mechanical Abrasion

- Only inspected lower tie tube (paperclip) –limited access to front



Build scaffold to inspect front of assemblies and upper tie tube elevation

Presentation title - 02/10/2014 - P 17

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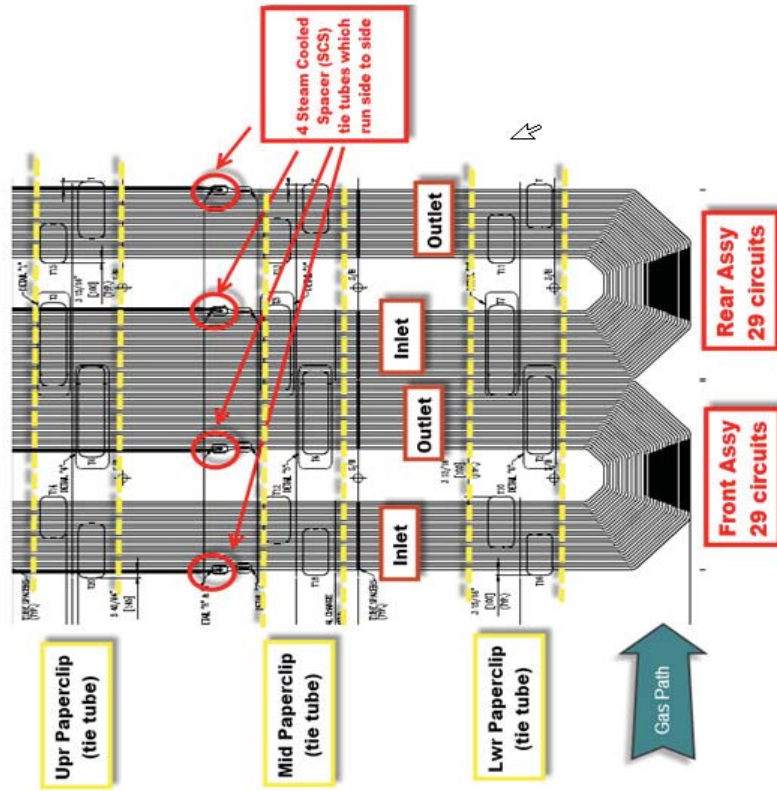


SH Platen Assemblies

18 Assemblies

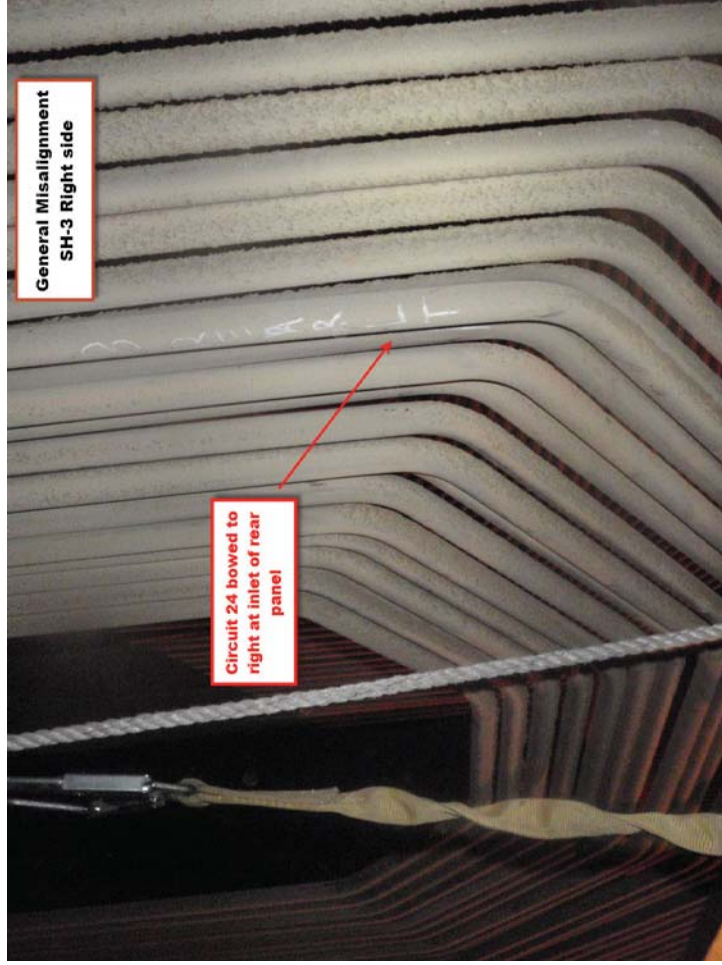


Front and Rear



SH Platen Assemblies

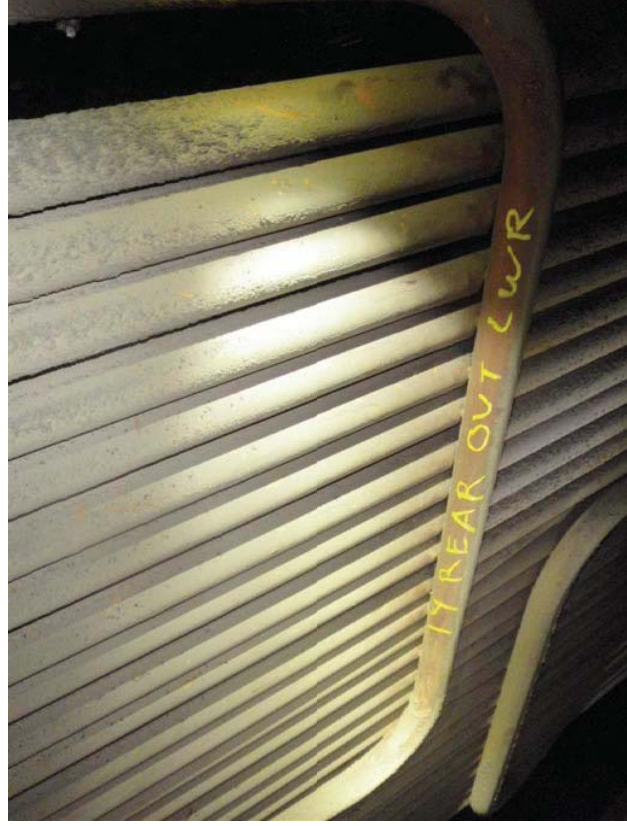
General Misalignment within Assemblies



SH Platen Assemblies

Assembly 14 – Misalignment & Loose Circuitry

- Rear Inlet – loose circuits up to 2.5” away from tie tube
- Rear Outlet - Circuits in plane and snug to tie tube

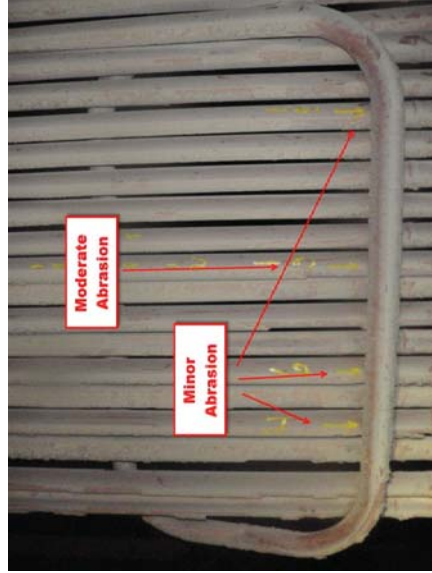
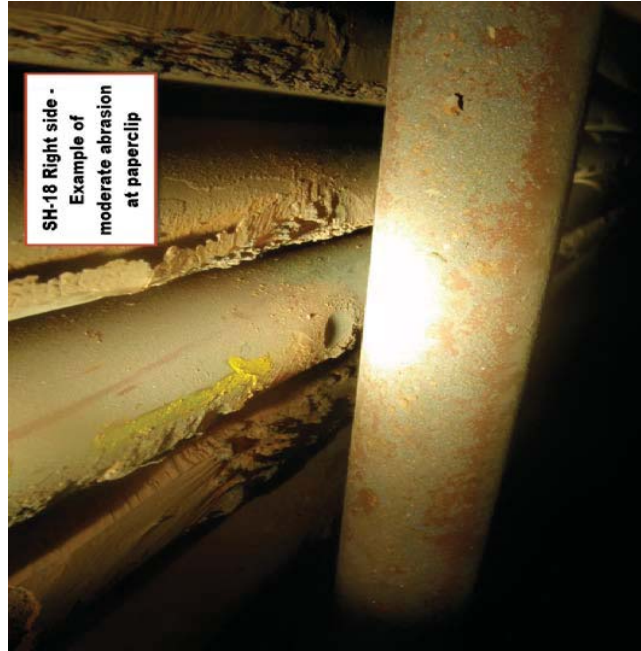


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ALSTOM

SH Platen Assemblies

Minor – Moderate Abrasion



- Found at all 3 tie tube elevations – worse at upper
- Due to component design causing abrasion with up to 30% wall loss

~1250 Wear pads installed as sacrificial material

Presentation title - 02/10/2014 – P 21

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ALSTOM

SH Platen Assemblies

Recommendations

- Discuss the arrangement details and the identified conditions with the OEM to consider their design basis, their recommendations and direction forward
- Consider some short term proof of concept application of limited tube tie application on select areas during the spring 2015 outage
- Provide access for inspection of limited mid and lower wrap-around locations in the spring 2015 short outage (limited due to outage time constraint) to identify if the wear pads held up well
- Provide limited access for corrective measures in spring 2015 to some of the worst upper wrap-around locations in the outlet legs as these were not addressed in the 2014 outage
- Reinspect all areas thoroughly in 2016 to assure no condition advancement in abrasion, panel circuit misalignment, etc. and consider to implement design changes for 2016 if alternatives are determined desirable between discussions with OEM and others
- Implement the aluminum truss scaffolding system beginning in 2016 for more widespread timely access to all SH Panel Assemblies

Waterwalls

Wastage from Corrosion

- Limited UT readings were taken 5 elevations on sidewalls and 4 elevations on front wall / rear wall
 - 10-40 sporadic readings per elevation
- An annual wastage rate of .040”-.050” was calculated utilizing actual operational hours (not calendar months).
- Large areas of sidewalls were found to have lost up to 30% MWT especially the Right Sidewall, almost exclusively below the original coated surface area
- Amstar thickness readings were taken at 2 elevations on both sidewalls and 3 elevations on the front / rear wall and found to be in good condition.

Waterwalls

Wastage Mitigation

- Additional 20' sidewall height partial width (14' on either side of centerline) was Amstar coated extending downward from the lower boundary of the original coverage.
- All affected surface was not covered and additional protection will be required in future outages.
- There is a risk of panel replacement needed in 2016 if reduction in wastage is not achieved with new firing system.

2015 UT efforts critical to assess impact of new burners and for appropriate planning for 2016

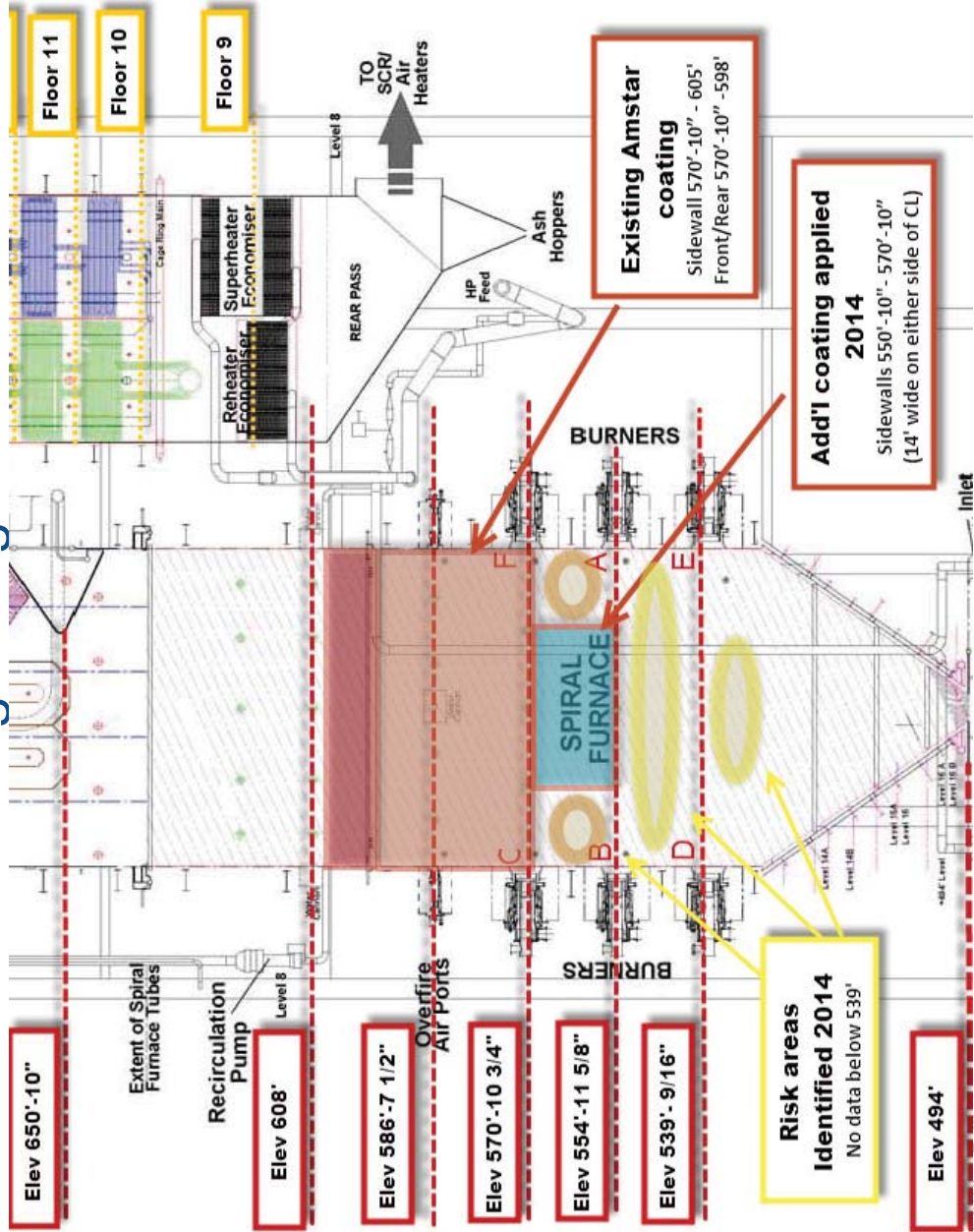
Presentation title - 02/10/2014 - P 24

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ALSTOM

Waterwalls

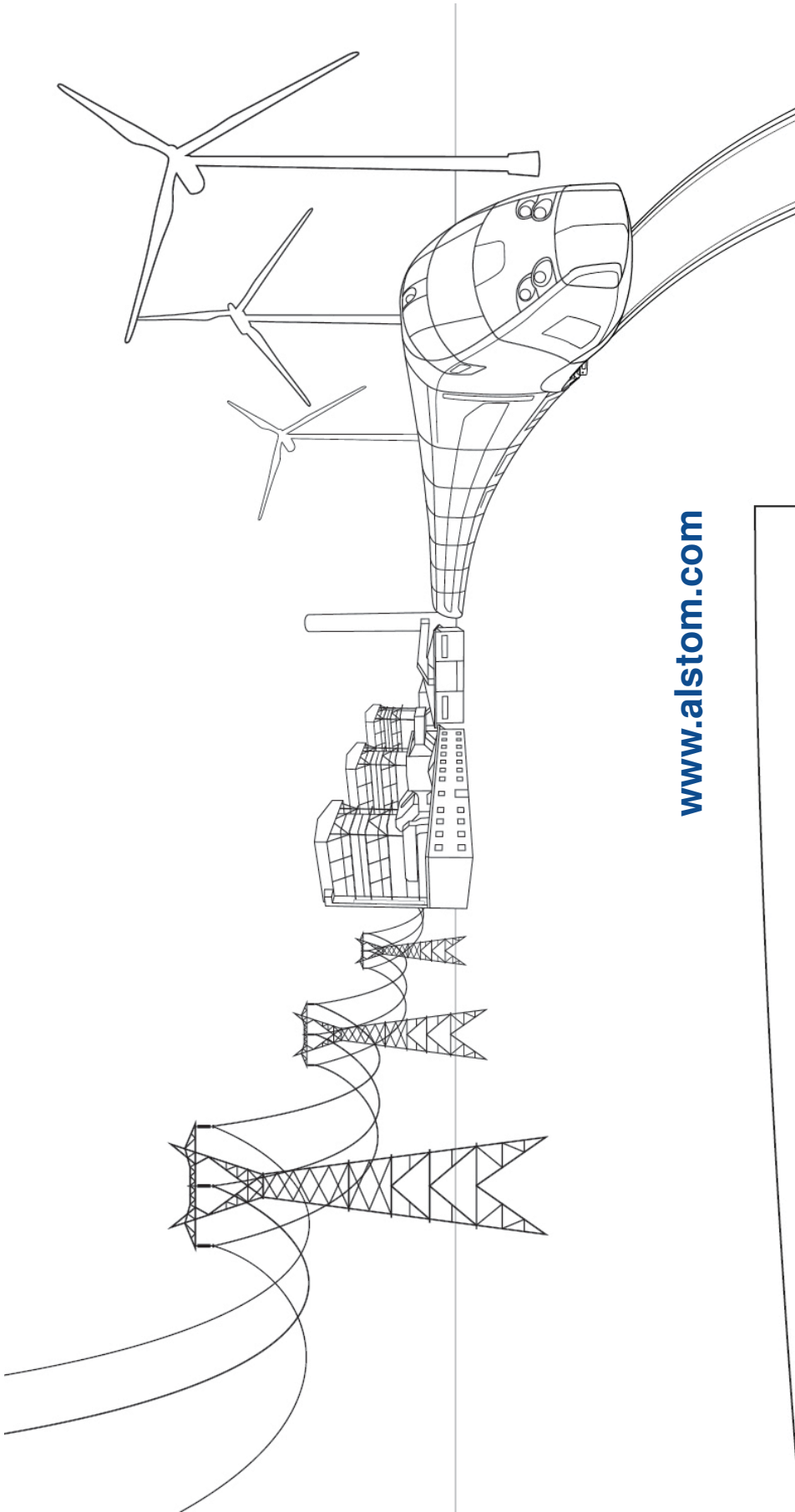
Wastage Mitigation



2015 Spring Outage Planning Considerations

2 week outage

- Backpass wash –Possible repair need at bottom of bottom SH
- Eleven (11) elevations of UT / Amstar thickness readings with sandblast prep required; this is large surface area in active environment and must stay ahead of deterioration curve
- Limited access to select upper wrap-around tube elevations to address moderate abrasion at SH Platen outlet legs; coordinate and include limited inspection at same assemblies of lower & mid wrap-around tubes to inspect 2014 wear pad fix condition
- Cursory inspection of burners after one year with waterwall efforts
- Screen tube scaffold - Target prioritized inspection access to area from recent leak
- Final SH pendant scaffold –Need inspection access to front of assemblies – No prior inspections



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From: Watkins, Clyde(cwatkins@bechtel.com)
To: Rabe, Phil
CC:
BCC:
Subject: FW: Doosan/Bechtel/LGE - Action Items Meeting
Sent: 11/20/2013 08:05:15 AM -0500 (EST)
Attachments: AIL Update_20_Nov_13.xlsx;

Phil,

You okay with cancelling this one, picking it up next week? Any hot issues you need focused on?

Thanks

Mel

Mel Watkins

Project Engineering Manager

Trimble County Unit 2 Project

cwatkins@Bechtel.com

work: 301-228-8035 (Frederick)

work: 502-255-5277 (Trimble Site)

cell : 240-793-4490

From: Hammond, Steve [mailto:steve.hammond@doosan.com]

Sent: Monday, November 18, 2013 2:31 PM

To: Watkins, Clyde; Rabe, Phil

Cc: Carlisle, Gary; Dukes, Christopher; Jeff Joyce; Melloan, Ricky; 'Mohn, Laura'; 'Powell, Richard' (Richard.Powell@lge-ku.com); Slaughter, Mitch; Roach, Sandra A; Gratton, Ron; Maunder, Kevin; Hobbs, Donna; Babcock, James; Brann, Devin; O'Reilly, Daniel; Dearman, James; McCallum, Neil; Torkington, Ian R; Kerslake, Ian; Gratton, Ron; 06350 TRIMBLE COUNTY MAILBOX; Maunder, Kevin; Gonese, Jean; Wright, Paul

Subject: Doosan/Bechtel/LGE - Action Items Meeting

Mel,

I am again in meetings this week with Southeast Boiler regarding the Spring 2014 outage and will be unable to support the AIL on Wednesday 20th.

As we will have missed two weeks I have provided the following notes in lieu of the meeting;

- AIL # 79 - Provide Summary Report of Mill Swings and final resolution - Forecast date to be advised.
- AIL # 62.8 - Revise Stall Alarm curve - Forecast = 22-Nov-13.
- AIL # 84.2 - WCAH Data Sheet - Forecast = 22-Nov-13.
- AIL # 84.2.1.1 - Doosan Response to LGE P&ID comments - This was closed but Phil Rabe asked that we again look at isolation of the individual coils and the position of the thermocouples. Forecast response = 22-Nov-13.
- AIL # 84.2.2.1 - Doosan response to LGE WCAH Racking Sketches comments - Forecast date to be advised.
- AIL # 92 - ID fan Hydraulic Cylinder Failure - Logic mod requested (applies to FD fans also) -
- Chris Dukes of LGE has looked at this and is ok with the logic (E-mail dated 07-Nov-13) and the next stage is approval from Phil Rabe to implement.
- AIL # 94.3 - Monitor/Verify Dry Steam to Air Heater - Doosan response issued 17-Nov-13
- AIL # 96.2 - Stacks to measure SO3, Acid dew point - Closed in meeting dated 06-Nov-13.
- AIL # 96.3 - Hitachi Evaluation of Ash Pluggage and elevated SO3 - Response provided 17-Nov-13, can this be closed?
- AIL # 97.1 - Double Frequency of 4 Platen Lowers (IK 9, 10, 19, 20) Flux Sensor Recommendations - Forecast = 13-Dec-13.
- AIL # 98 - Mill Seal Air Damper Leakage - Comments from Bechtel and LGE responded to on 14Nov13, Doosan are looking to proceed with purchase.

- AIL # 99 - Alstom Mill Wing Tip Modification - Verify required or not - Forecast date to be advised
- AIL # 101 - Coal Pipe Purge Procedures - Verify Current Requirements - Ron to do walk down with Phil and Mitch.
- AIL # 103 - Manual Update - Progress update issued 17-Nov-13
- AIL # 106 - Commissioning Records Package - Forecast date to be advised.
- AIL # 109 - Lime Injection Upstream of Air Heater - We (Doosan and LGE) had a meeting with Mark Thomas (Consultant recommended by LGE) on 14Nov13 and he will issue a proposal for the lances and distribution system on 19Nov13 after Doosan will review and provide a response, Forecast = 29-Nov-13.
- AIL # 110 - Coal Pipe Manometer Data/Analysis - 1st data set issued 06-Nov-13, additional readings required before analysis is progressed.

I am conscious that there are a couple of "To be advised" dates and I will follow up with those shortly.

Attached is an update to the AIL reflecting the above comments, changes are shown in red.

If there are any questions arising from this please let me know, and I will be back in the UK next week so the meeting on Wednesday 27th can go ahead as normal.

Thanks and regards

Steve

Steve Hammond

Doosan Babcock Limited

Email: steve.hammond@doosan.com

Produced as Native

Original File Name: AIL Update_20_Nov_13.xlsx

Stored File Name: OpenText00283291.xlsx

Produced as Native

Original File Name: Doosan Summary - Owner Comments of 01-06-14.xlsx

Stored File Name: OpenText00286415.xlsx

From: Straight, Scott(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=WEB/CN=SCOTTSTRAIGHT)
To: Joyce, Jeff
CC:
BCC:
Subject: FW: TC2 Start Up and Commissioning Meeting Notes 7/1/2014
Sent: 07/01/2014 09:06:01 AM -0400 (EDT)
Attachments: NOx-NH3 Daily Data.xlsx; 07292 TC2 Copy of Outage List - 29th June '14 to 4th July '14.xlsx;

Jeff,

Is any of this outage related to something Bechtel or Doosan did? From reading the notes, I am not picking up on anything, but wanted to make sure.

Scott

From: Whitehead, Karen A. [mailto:WhiteheadKA@bv.com]
Sent: Tuesday, July 01, 2014 9:01 AM
To: Hussey, Ryan J.; Trimble, James T. (Tom); 'jalvey@impa.com'; 'JohnL@impa.com'; 'Childers@imea.org'; 'kwagner@imea.org'; 'aschum@imea.org'; Slaughter, Mitch; Crutcher, Tom; Bowling, Ralph; Straight, Scott; Carlisle, Gary; Slack, Eric; Mohn, Laura; Dorwart, Jordan; Coghill, Joe; Thomas, Mark; Maldonado, Francisco; Gray, Jeffrey; Raker, Adam; Buckner, Mike; Byrd, Larry; Braun, Allen; 'MikeM@impa.com'; Joyce, Kenny; Turner, Haley; Craft, Jim; Dukes, Christopher; Rabe, Phil; Boone, James; Lively, Noel; Melloan, Ricky; Clifford, Troy; Fante, Kevin; Ganote, Gary; Hudson, Glen; Murphy, Wayne; Pickhart, Charlie; Shupe, David; Spalding, Jeff; Payne, Nicholas; Joyce, Jeff; Huguenard, Jim; Craven, David; Burkhardt, Terry; Barnes, Troy; Ransdell, Charles; Turner, Tyler; Henderson, Trent; Anderson, Dave (Trimble County); Allen, Ross; Powell, Richard; Richardson, Stephen; Roach, Sandra A; Martin, Charlie; Willbur, Mickey; Sparks, Patrick
Subject: TC2 Start Up and Commissioning Meeting Notes 7/1/2014

All,

TC2 Unit Status as of approximately 8:00 am:

- The Unit is offline – forced outage
- Water has gotten into the EHC system, so a flush of the system needs to be performed before the unit can come back online.
- As of this morning, it is estimated that the unit will be down until at least Friday (7/4) or Saturday (7/5). There is a possibility that some oil firing could be done on 7/3 to test the oil guns and scanners, to be investigated by LG&E-KU.

Activities Planned:

- Online testing unable to continue until the unit is back on.
- Doosan has generated a list of activities to be completed during the outage. Summary notes follow for today's activities:
 - Item 2 – Doosan is in discussions with Coen and will issue a revised 5 pair oil gun tip testing program targeted today or tomorrow
 - Item 5 -- logic updates list to be provided today.
 - Item 13 – Complete OFA damper bearing and test point insulation, targeted for today
 - Item 15 – OFA port rod adjustments to be finished today
 - Item 16 – complete fitting PA/SA test probes, scaffolding, to be complete today
 - Item 19 – Cold position readings on burner deck access ladders to be reconfirmed today
 - Item 21 – the boiler access doors are open for viewing the burner throats today

Discussion Items:

- Doosan has completed the following activities in the outage list:
 - Item 6 – verification of PF D3 and D4 thermocouple wiring
 - Item 8 - reconcile and test flame scanners to check for faults
 - Item 9 – investigate A3, B4, and C3 oil scanners
 - Item 11 – Set mills A, B, D, and F core air damper min closed stops (although it was noted that A south needs to be repaired. Once the parts have come in, this will be complete)
 - Item 12 – Install permanent mill orifice plates. Doosan to issue a record copy of the orifice details for each pipe in the O&M manual
 - Item 17 - survey of GAH piping and supports
 - Item 18 - Survey of F row PF lines

- Item 26 – Storm and FERCo are demobilized
- Remaining activities should be considered on-going
 - LG&E-KU to look into one of the HP spray thermocouples. It was noted that it is reading about 40F lower than it should.
 - It was noted that the stack CO will be used for upcoming combustion verification testing, rather than the SCR inlet CO.
 - LG&E-KU is installing a permanent boiler instrument grid, to be commissioned the week of 7/14. This will allow some comparison of the FERCo traverse results.
 - Doosan plans to bring Coen and Forney onsite for oil gun and scanner testing, tentatively scheduled for 7/3. The new crossover duct pressures for control of the core air dampers will be determined following testing.
 - Opening up the air heater access doors to view the top GAH baskets is also being considered since upstream limestone injection has been occurring for a short time.

Attached is Doosan's mini-outage work scope. Also attached is the daily NO_x - NH_3 report from 6/29; there are no updates today since the unit is down.

Please let me know if you have any questions.

Regards,

Karen Whitehead, P.E.* | Mechanical Engineer, Steam Generation Section, Energy Division

Black & Veatch Corporation | 11401 Lamar, Overland Park, KS 66211

+ 1 913-458-8480 p | Whiteheadka@BV.com

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Produced as Native

Original File Name: 07292 TC2 Copy of Outage List - 29th June '14 to 4th July '14.xlsx

Stored File Name: OpenText00289085.xlsx

Attachment to Response to KIUC-1 Question No. 30(f)

AUTHORIZATION FOR INVESTMENT PROPOSAL

Production 2

LG&E and KU Services Co.

Louisville Gas and Electric Co.

Kentucky Gas and Electric Co.

Page 71 of 1143

Thompson

Name of Project: TC2 TRANSITION TUBE REPL		Funding Project Type: LGE Steam NonBlnk Excluding Land	
Date Requested: 7/11/2013	Project Number: 140919LGE	Budgeted: no	
Related Project Numbers: 140919KU		If unbudgeted, list alternate budget ref. Number(s): FUNDED FROM GENERATION POOL - THIS IS A 2014 BUDGETED PROJECT THAT NEEDS EARLY ACTIVATION IN ORDER TO ISSUE PO.	
Expected Start Date: 1/1/2009	Expected In Service Date: 12/31/2014	Expected Completion Date: 12/31/2014	
AIP Prepared by: Cuzick, Fred		Phone: 502/627-4122	
Project Manager: Byrd, Larry		Phone: 502/347-4002	
Asset Location: Trimble County - Unit 2		Environmental Code: N/A	
Resp. Center: 002650-GENERAL MANAGER - TC		Product Code: 111 - WHOLESALE GENERATION	

REASONS AND DETAILED DESCRIPTION OF PROJECT

140919LGE-TC2 TRANSITION TUBE REPL

This project is to replace two hundred four transition tubes on the TC2 boiler roof. In 2012 the aforementioned transition tubes were identified, through inspection, to have hardness values above the allowable numbers set forth by ASME codes for this material. The high hardness values make this material very susceptible to cold cracking. Cold cracking is more prevalent and increases in likeliness to happen when the roof tube metal temperatures are at or below 300o F. In the event of a forced outage or planned outage of the unit, tube temperatures will fall below the 300o F and increase the likelihood of creating a crack and subsequent leak in the roof tubes.

The existing transition pieces have been subjected, during manufacturing, to a heating process which tapers (swages) the tube from a certain thickness to a smaller thickness. It has been determined that the high hardness values found, are attributed to this swaging process. The new transition pieces will be fabricated in such a manner that the heated swage process will no longer be required. The tubes will be fabricated to have a thicker wall and machined to match the wall of the existing tubes thus removing the possibility of added heat stress. SEE ATTACHED IP FOR MORE DETAIL.

Attachment to Response to KIUC-1 Question No. 30(f)

Costs	Capital Investment	Cost of Removal/Retirement	Capital Cost Subtotal	Initial O&M Cost	Lifetime Maintenance Cost	O&M Subtotal	TOTAL INVESTMENT
Contract Labor	\$902,266.00	\$252,427.00	\$1,154,693.00	\$0.00	\$0.00	\$0.00	\$1,154,693.00
Other	\$21,925.00	\$0.00	\$21,925.00	\$0.00	\$0.00	\$0.00	\$21,925.00
Local Engineering	\$5,143.00	\$7,573.00	\$12,716.00	\$0.00	\$0.00	\$0.00	\$12,716.00
Subtotal - GAAP	\$929,334.00	\$260,000.00	\$1,189,334.00	\$0.00	\$0.00	\$0.00	\$1,189,334.00
Contributions	(\$232,335.00)	(\$65,000.00)	(\$297,335.00)	\$0.00	\$0.00	\$0.00	(\$297,335.00)
Net Expenditures - GAAP	\$696,999.00	\$195,000.00	\$891,999.00	\$0.00	\$0.00	\$0.00	\$891,999.00
2009 Total	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
2010 Total	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
2011 Total	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
2012 Total	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
2013 Total	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
2014 Total	\$696,999.00	\$195,000.00	\$891,999.00	\$0.00	\$0.00	\$0.00	\$891,999.00

Production 2
Page 712 of 1143
Thompson

Approval Type: Non-IT Projects

Authorized by	Amount	Name	Date Approved	Req'd
Supervisor	\$25,000.00			N
Manager	\$100,000.00	Byrd, Larry	12/6/2013	Y
Budget Coordinator	\$0.00	Cuzick, Fred	12/9/2013	Y
Special Approvers	\$0.00	Feider, Ryan	12/9/2013	Y
Director	\$300,000.00	Joyce, Jeffrey	12/10/2013	Y
Vice President	\$750,000.00	Bowling, Donald	12/10/2013	Y
Investment Committee Coordinator	\$0.00	Kuhl, Megan	12/12/2013	Y
Financial Planning Director	\$0.00	Cosby, David	12/12/2013	Y
Senior Officer	\$1,000,000.00	Thompson, Paul		Y
CFO	\$1,000,001.00	Blake, Kent		Y
CEO	\$1,000,002.00	Staffieri, Victor		Y
Property Accounting	\$0.00	Rose, Bruce		Y

INVESTMENT MATERIALS

UOP #	Utility Account Id		Quantity	Total Cost	
05727	131200	TUBING (ALL) (05727)	204	\$18,678.00	

RETIRED EQUIPEMENT (OR MATERIALS)

UOP #	Utility Account Id		Quantity	Vintage Year	Original Project Number

AIP QUESTIONS

Are there Related Project Numbers?

Provide related project numbers or indicate 'N/A'.

140919KU

Is this an IT related project?

IT project is any project that requires IT involvement or the purchase of hardware and software.

no

Purchase/Sale of Real Estate?

Is this a transaction related to the sale/purchase of land or buildings?

no

AIP QUESTIONS

Budgeted?

Is the project budgeted or unbudgeted?

no

Alternate Budget Numbers?

If the project is unbudgeted, list alternate budget reference numbers. Enter N/A, if none.

FUNDED FROM GENERATION POOL - THIS IS A 2014 BUDGETED PROJECT THAT NEEDS EARLY ACTIVATION IN ORDER TO ISSUE PO.

Legal Asset Retirement Obligation?

Is there a legal or environmental requirement governing disposal of this asset?

no

Leased Asset?

Does this project involve a leased asset?

no

Obsolete Inventory?

Will this project create obsolete inventory?

no

Environmental Project

Is this an Environmental Project?

no

Environmental Cost Recovery

If an environmental project, is this an approved environmental cost recovery (ECR) project?

no

ECR Project Type

If this is an ECR project, indicate the project type.

N/A

ECR Compliance Number

If this is an ECR project, provide the ECR compliance plan number (see the approved project list on the Rates and Regulatory intranet site).

N/A

Environmental Affairs

Does Environmental Affairs need to review this project for environmental permitting issues (based on responses to the six questions in the Investment Proposal)?

no

Research and Experimental Credit

Is this an experimental project with the purpose of improving, enhancing, or adding to a current manufacturing process?

no

Sales Tax-Pollution Control

Is this project done for environmental regulations or statutes? (If yes, may qualify for the Pollution Control Exemption.)

no

Sales Tax-Manufacturing Integration

Is this project integrated in the Manufacturing Process? (Yes to this question and the following two questions may qualify for the New and Expanded Exemption.)

yes

Sales Tax-State Equipment Use

Is this equipment used in the state for the first time?

yes

Sales Tax-Upgrade or Improvement?

Is this project considered an upgrade or improvement? If yes, enter description on next line.

no

Sales Tax-Upgrade Description

Description of upgrade, if applicable (i.e., improved materials, increased capacity, longer life, etc.) from prior question. Enter N/A, if not applicable.

N/A

Produced as Native

Original File Name: TC2 Roof Transition Tube CEM .xlsm

Stored File Name: OpenText00293875.xlsm

Click here to enter text.

Project Name: TC2 Transition Roof Tube Replacement

Total Expenditures: \$ 892k Net IMEA/IMPA Reimbursement

Project Number(s): 140919LGE

Business Unit/Line of Business: Power Generation

Prepared/Presented By: Francisco Maldonado

Executive Summary

This project is to replace two hundred four transition tubes on the TC2 boiler roof (SA213 T23 2.5"x0.28" MWT). In 2012 the aforementioned transition tubes were identified, through inspection, to have hardness values above the allowable numbers set forth by ASME codes for this material. The high hardness values make this material very susceptible to cold cracking. Cold cracking is more prevalent and increases in likeliness to happen when the roof tube metal temperatures are at or below 300° F. In the event of a forced outage or planned outage of the unit, tube temperatures will fall below the 300° F and increase the likelihood of creating a crack and subsequent leak in the roof tubes.

The existing transition pieces have been subjected, during manufacturing, to a heating process which tapers (swages) the tube from a certain thickness to a smaller thickness. It has been determined that the high hardness values found, are attributed to this swaging process. The new transition pieces will be fabricated in such a manner that the heated swage process will no longer be required. The tubes will be fabricated to have a thicker wall and machined to match the wall of the existing tubes thus removing the possibility of added heat stress.

After careful review of the inspection report provided by Structural Integrity, Generation Engineering recommended that the transition tubes be replaced. Other options were explored such as a complete retrofit of the TC2 boiler roof with new material but this option proved to be unnecessary and not economical. The inspection reports show the problem areas are localized in the transition pieces and, as such, should be the areas that are repaired. If the tubes are not replaced, the likelihood of a tube leak increases over time.

This project, if approved, is scheduled to be completed during the TC2 2014 spring outage. Material is estimated to cost approximately \$136k (includes 6% sales tax) and labor is estimated to cost \$975k. The 2014 capital business plan includes \$616k (Net) for this project. The shortfall in the budget will be funded from the anticipated money left over on the TC2 PJFF Replacement Project (137671 LGE) due to favorable pricing received. NOTE: There is a warranty claim against Bechtel for this work.

Background

Trimble County 2 boiler roof is comprised of SA-213 Grade 23 tubes. Grade 23 is a, relatively speaking, new and exotic metal, and as such, there is very little knowledge and history on this material. The ASME code case that governs the manufacturing of Grade 23 is currently in its sixth revision due to the fact that new information has been gathered in the recent years. Unfortunately, some of that information was discovered at Trimble County do to several roof tube leaks and repairs.

The initial interest that led to the metallurgical analyses of the tubes was due to tube failures that occurred at field welds from original fabrication. When the repairs were made to the original tubes, stress concentrations were created. These concentrations created cold cracks in tubes at field weld line "D". It is important to note that poor fabrication was found and repaired at four different field weld lines and only those found and repaired at weld line "D" experienced cold cracking. Subsequent analysis was performed at the different field weld lines throughout the roof. The data shows that high hardness readings were not a global issue but an issue isolated to the "D" weld line.

- **Other Alternatives Considered(1 –Recommendation, 2 –Do nothing, 3 –Next Best Alt)**

1. It is recommended that only the transition pieces be replaced. This recommendation consists of replacing 204 tubes roughly 2 feet long. This is the least invasive and addresses the high hardness issue found during the analytical work performed in 2013.
2. If nothing is done the probability of a tube leak and unit shutdown occurring increases.
3. Next best option is to replace all of the T23 material on the TC2 boiler roof. This option is not very economical because not only will the material need to be replaced but engineering will have to be done to accommodate stresses and supports for the boiler if a new material is used.
4. Another option would be to replace only the tubes that test bad. This would require a complete analysis of each tube. The hardness test is done to a very small portion of the tube (approximately one square inch). To ensure that the structural integrity of each tube has not been compromised every square inch would need to be inspected. This would be a very costly endeavor and there is a high probability that all the tubes will have high hardness values and will need to be replaced.

Project Description

- **Project Scope and Timeline**

This project is scheduled to be completed during the TC2 2014 spring outage beginning in late February. The boiler contractor will remove and replace 204 transition roof tubes. The welds will be x-rayed and acceptance will be in accordance with ASME boiler and state codes. The contractor will also have to cut and re-weld screen tubes that penetrate the roof near the weld line at the cage inlet header. Cutting of the screen tubes is necessary to gain access to the weld line.

Many inspections and tests have been done to determine the best options for repair. Seven roof tubes have been replaced at this weld line and have proven to be the correct fix for the issue. These new tubes have been in service for 6 months and no known issues have been experienced to date.

If approved, the material will be ordered as soon as practical with an expected delivery in late February. The work is expected to take 3 weeks starting in late February. The timeline for the repair will not be an issue due to the fact that the outage is expected to last 10-14 weeks.

- **Project Cost**

The estimated project cost is \$1,190k (gross). This includes \$136k (includes 6% sales tax) for material, \$975k for labor and \$50k for contingency. The labor and material portions will be done on a lump sum basis. Contingency is based on 5% of the project total. Some work has been done in this area and many of the unknowns have been taken into account the 5% will be sufficient in case an unforeseen issue arises.

Economic Analysis and Risks

- **Bid Summary**

Four suppliers were solicited to bid on the T23 roof tube material. Out of the four only two provided a bid. Michigan seamless “no bid” because they did not have the fabrication capabilities to provide the specified tubes and Boiler Tube of America “no bid” for reasons unknown. Refer to table below for an overview of the bidders prices.

Material Bids	Alstom Power	Boiler Tube of America	Minotte	Michigan Seamless Tubing
MBE/WBE				
Total Cost (\$000s)	\$147	No Bid	\$136	No Bid

Labor Bids	A&D	PIC	SE Boiler	TEI	MCS	UGS	Titan
MBE/WBE							
Removal Costs	\$167	\$233	\$195	\$252	\$579	\$1,095	\$936
Installation Costs	\$255	\$544	\$780	\$1,005	\$876	\$1,645	\$2,062
Total Cost (\$000s)	\$422	\$777	\$975	\$1,256	\$1,454	\$2,740	\$2,997

It is likely that we will use Minotte for the material purchase. Minotte is both capable of meeting the required schedule and manufacturing the material to the required specification. It is also likely that Southeast Boiler (SBR) will be used for the labor portion of the project. It was found during bid review that SBR is technically the most competent contractor. Not only do they have experience welding the T23 material but they have experience with welding the T23 material at the TC the roof tube and in particular at weld line "D".

A&D was also considered for the labor portion of this project. Upon review of A&D's bid it was found that their labor hours seemed too low to complete this job and it is very likely that they have underestimated the scope of work associated with this project. Along with low labor hours they lack the technical expertise to work with T23 and would be hard pressed to provide a quality job. PIC was also considered but due to recent history on TC1 boiler projects it has been determined that this project would run the risk of not being completed on time by PIC. PIC is a smaller company that depends heavily on "key" project managers if those project managers are not available for a given job the job seems to suffer. Such was the case on TC1 and the probability of happening again on TC2 is very likely.

- **Budget Comparison and Financial Summary**

Financial Detail by Year (\$000s)	2013	2014	2015	Post 2015	Total
1. Capital Investment Proposed		697			697
2. Cost of Removal Proposed		195			195
3. Total Capital and Removal Proposed (1+2)	-	892	-	-	892
4. Capital Investment 2014 BP		616			616
5. Cost of Removal 2014 BP					-
6. Total Capital and Removal 2014 BP (4+5)	-	616	-	-	616
7. Capital Investment variance to BP (4-1)	-	(81)	-	-	(81)
8. Cost of Removal variance to BP (5-2)	-	(195)	-	-	(195)
9. Total Capital and Removal variance to BP (6-3)	-	(276)	-	-	(276)
10. Project O&M Proposed					-
11. Total Project Proposed (3+10)	-	892	-	-	892
12. Net Income		\$41	\$36	\$916	\$993

Financial Summary (\$000s):

Discount Rate:	6.50%
Capital Breakdown:	
Contract Labor:	\$975
Materials:	\$136
Local Engineering:	\$0
Burdens:	\$24
Contingency:	\$55
Reimbursements:	(\$298)
Net Capital Expenditure:	\$892

Project Presented and alternatives:

Financial Analysis - Project Summary (\$000)	Total Project	Replace 50% (Next Best)	Do Nothing
NPVRR	(\$1,011)	\$138	(\$2,683)
NPV Cash Flows	\$109	\$(5)	\$254
IRR	8.1%	6.4%	-1.4%
ROE	10.0%	5.3%	0.0%

ROE by Year					
	2014	2015	2016	2017	2018
Proposed Project	10.9%	4.9%	7.6%	13.3%	14.3%
Next Best (50% Replacement)	5.3%	-.02%	-1.3%	2.1%	12.7%
Do Nothing	0%	0%	0%	0%	0%

- **Assumptions**

- If this project is not completed, there is a 10% probability that a forced outage will occur of 5 days duration on Trimble County 2 per year.
- The probability of a forced outage due to roof tube leaks increases 1% each year.

- **Environmental**

New Source Review Evaluation, questions 1-6 (as applicable) must be completed on all investment proposals.		
1	Does the project include any new equipment or component with emissions, result in emissions not previously emitted or cause the unit to exceed any emission limit? If yes, Environmental Affairs is required to review this project. If no, go to Question #2.	No
2	Question 2: Is the change a like-kind or functionally equivalent replacement	

	under \$500K? If yes, the project is not subject to NSR and no further evaluation is required. If no, go to Question #3.	No
3	Question 3: Does the equipment change increase the emissions unit's maximum hourly heat input? If yes, Environmental Affairs is required to review this project. If no, go to Question #4.	No
4	Question 4: Does the equipment change increase the emissions unit's electrical output? If yes, Environmental Affairs is required to review this project. If no, go to Question #5.	No
5	Question 5: Has the equipment being repaired/replaced been repaired or replaced in the past at this unit or other units in the fleet? If no, Environmental Affairs is required to review this project. If yes, list any known projects and go to Question #6.	Yes
6	Question 6: Have there been forced outages or unit de-rates in the past 5 years due to this component? If no, the project is not subject to NSR and no further evaluation is required; if the answer is yes, Environmental Affairs needs to review this project.	Yes

Environmental Affairs has reviewed and concluded the project is considered routine maintenance. Please see attached New Source Review document.

- **Risks**

Based on hardness data collected at the roof tubes, it is highly likely that there will be a tube leak forced outages will occur on an increasing basis until transition roof tubes are repaired.

Conclusions and Recommendation

It is recommended that the Investment Committee approve the TC2 Transition Roof Tube Replacement project for \$1,190k gross (\$892k Net) to avoid certain catastrophic tube failure related outages.

From: Hudson, Rusty
Sent: Friday, December 06, 2013 9:18 AM
To: Bowling, Ralph; Joyce, Jeff
Cc: Cuzick, Fred
Subject: TC2 roof tube replacements

The TC2 roof tube replacements project is at \$892k net with \$50k of contingency. The IC threshold is on a net basis, not gross. Given that we are still \$100k under the \$1m threshold, I am okay with this just going through the normal PowerPlant approval process and not the IC if that is okay with you guys. When they get over \$950k I prefer to take them, but with this one I think we will be okay. Rusty



MEMO

To: Financial Planning & Controlling
From: Fred Cuzick- Trimble County
Date: 12-6-13
Re: AIP-140919LGE- TC2 Transition Roof Tubes

The attached AIP for \$892k is included in the proposed 2014 BP which is currently in the process of being approved by RAC, Senior Management and/or the PPL Board. Due to the urgency of the project, it is imperative to open the project in 2013 while waiting on final BP approval expected in December. All spending to occur in 2013 has been approved through the internal RAC process. This project is a high priority so in the event of capital reductions during the approval process, this project would still likely be done.

From: Hudson, Rusty(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=ADMINISTRATIVE/CN=HUDSONR)
To: Thompson, Paul; Joyce, Jeff; Bowling, Ralph; Sinclair, David
CC:
BCC:
Subject: RE: T2
Sent: 07/09/2014 11:27:27 AM -0400 (EDT)
Attachments:

Jeff Spaulding said there have been minimal purchases due to TC2 being down so the forced outage impact through the FAC would be very small. Rusty

From: Thompson, Paul
Sent: Wednesday, July 09, 2014 11:02 AM
To: Joyce, Jeff; Bowling, Ralph; Hudson, Rusty; Sinclair, David
Subject: RE: T2

Let's hope that is the issue.... Thanks and good luck.

Rusty, any calculation on Purchased Power cost impact to us based upon the forced outage?

Thanks,
Paul

From: Joyce, Jeff
Sent: Wednesday, July 09, 2014 10:44 AM
To: Bowling, Ralph; Thompson, Paul
Subject: T2

Paul / Ralph

We have found an *apparent smoking gun in the T2 turbine EHC controls* that has prevented the unit from functioning as intended.

The 2 new shuttle / pilot valves that are in the tripping circuits we installed as a part of the clean-up of the system were found to be different from 2 shuttle pilot valves that we had re-conditioned. They all have the same part numbers, but the spool is different. (These shuttle / pilot valves are items 301 and 305 in the clip from the drawing I've shown below)

We installed the reconditioned valves and did preliminary testing this morning. *It appears we have the system functioning as intended but,* additional verification is needed.

Our path forward today is:

- Clean the sensing lines to the pressure transmitters.
- Restore the system to a normal condition.
- Functionally test the trip system with everything normal.
- Take various EHC fluid samples at various locations before and after the functional test.

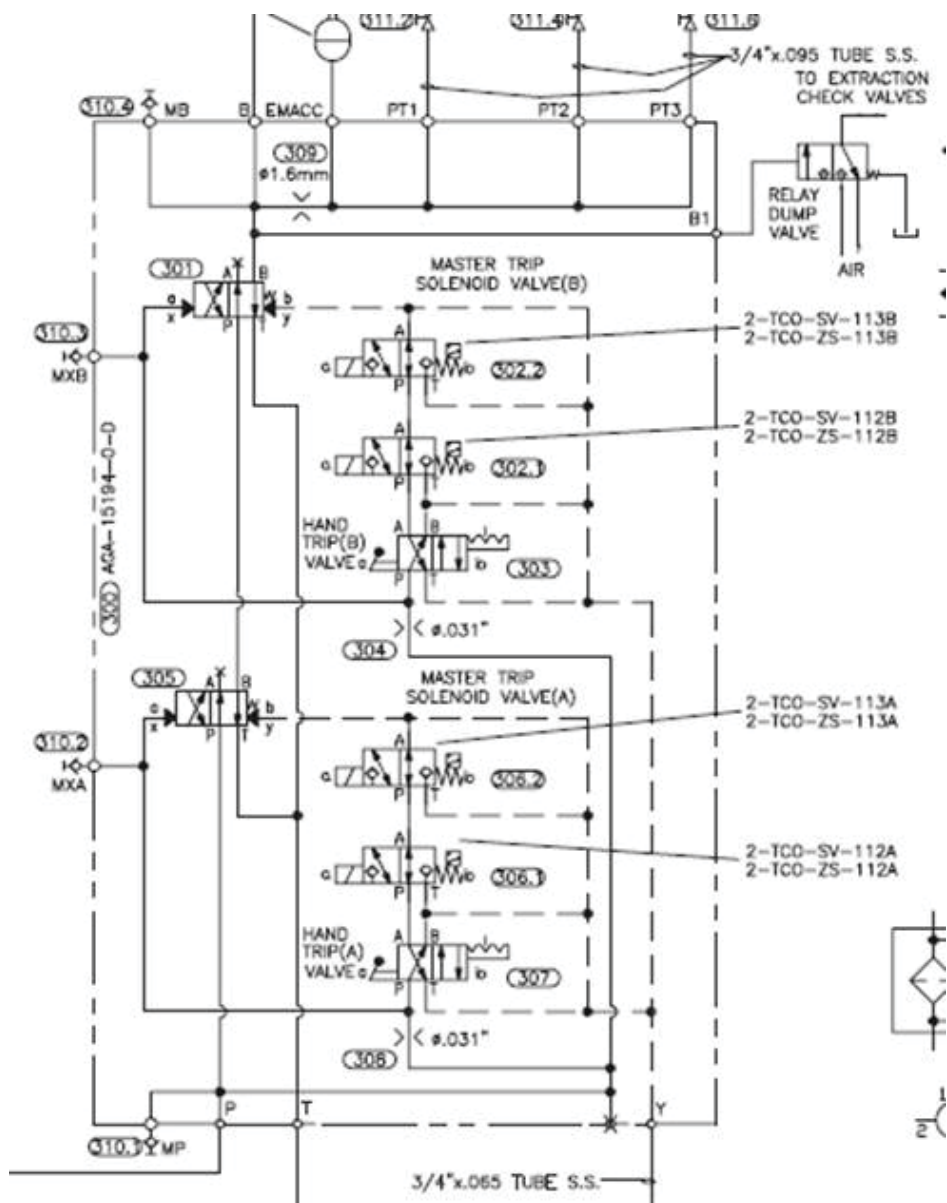
We are working toward being ready for the testing around 2 pm.

Any malfunction will result in additional flushing of the system and review of the system.

With successful completion, we will begin preparing the water for restarting the unit.

We'll give an afternoon update

Jeff J



May management meeting covers key initiatives

Redacted as Unresponsive

Redacted as Unresponsive

Trimble County Unit 2 burner change-out

Laura Shuffett Mohn, group leader, Engineering, discussed the final phase of a 14-week outage for TC2. The action was necessary to replace 30 original coal burners with those of a more advanced design.

Twenty of the burners sustained damage in June 2010 shortly after TC2's start-up. The damaged stemmed from the type of coal used in the burners. The coal would swell and exhibit elasticity, eventually catching fire inside the burner. This type of coal is used to meet stricter emissions regulations.

Although various modification and correction plans were taken, performance issues persisted, leading to a decision to replace the burners. After reviewing proposals from four vendors, the company selected a supplier offering significant design features, expertise and a replacement warranty.

Thirty new burners were installed and have undergone extensive tests and equipment modifications. The next steps are to fire the unit and begin the combustion tuning process. Various types of coal will be burned and tested. The burners are designed to handle a range of coal types. TC2's efficiency and megawatt capacity will be rechecked.

Redacted as Unresponsive

From: Thompson, Paul(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=THOMPSONP)
To: Hudson, Rusty; Joyce, Jeff; Bowling, Ralph; Sinclair, David
CC:
BCC:
Subject: RE: T2
Sent: 07/09/2014 11:37:06 AM -0400 (EDT)
Attachments:

Thanks. That is good.

From: Hudson, Rusty
Sent: Wednesday, July 09, 2014 11:27 AM
To: Thompson, Paul; Joyce, Jeff; Bowling, Ralph; Sinclair, David
Subject: RE: T2

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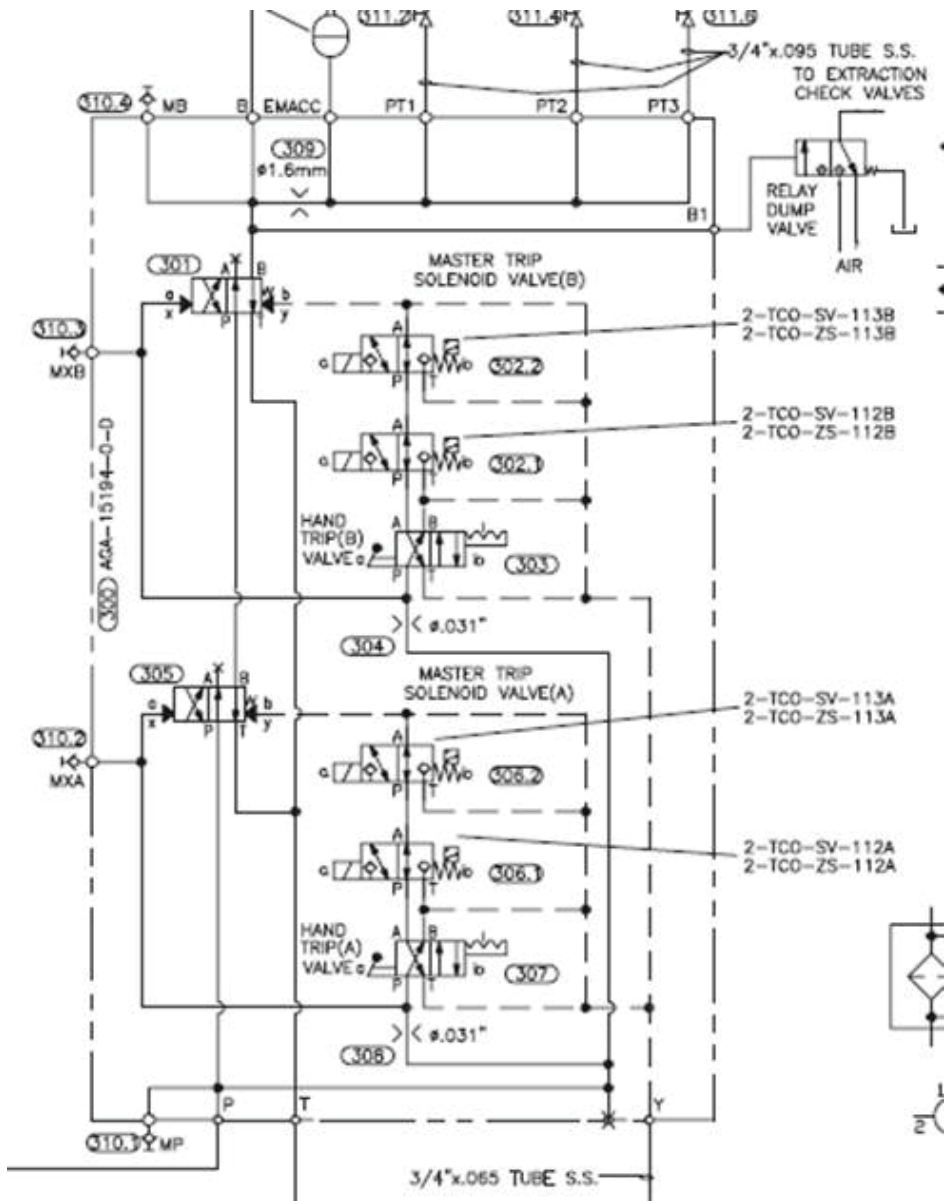
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With successful completion, we will begin preparing the water for restarting the unit.

We'll give an afternoon update

Jeff J



From: Watkins, Clyde(cwatkins@bechtel.com)
To: Mohn, Laura
CC: Anderson, David I; Craft, Jim; O'Reilly, Daniel; Allen, George K. (Chip); Hobbs, Donna; Joyce, Jeff
BCC:
Subject: FW: Combustion & REI Action Item List - Item B57 & B87
Sent: 11/01/2013 11:30:47 AM -0400 (EDT)
Attachments: Spring 2014 Outage Work Scope - SMR Numbers.pdf;

Laura,

Attached is an updated SMR list from Doosan of work activities they are planning during the outage. We also expect to have an updated outage schedule later in November.

Mel

Mel Watkins

Project Engineering Manager

Trimble County Unit 2 Project

cwatkins@Bechtel.com

work: 301-228-8035 (Frederick)

work: 502-255-5277 (Trimble Site)

cell : 240-793-4490

From: Cameron, Euan [mailto:Euan.Cameron@doosan.com]

Sent: Friday, November 01, 2013 9:41 AM

To: Watkins, Clyde

Cc: Hobbs, Donna; McCallum, Neil; Kerslake, Ian; Hammond, Steve; Torkington, Ian R; Groom, David; Reynolds, Paul (Crawley); Hough, David C; Gratton, Ron; Lee, John; Davidson, Gordon; 06350 TRIMBLE COUNTY MAILBOX

Subject: RE: Combustion & REI Action Item List - Item B57 & B87

Mel,

In addition to below, please find attached an updated outage scope list that now shows planned minor activities. This list is as we see it now and will be updated as necessary.

Best Regards,

Euan

From: Cameron, Euan

Sent: 25 October 2013 15:12

To: 'Watkins, Clyde'

Cc: Hobbs, Donna; McCallum, Neil; Kerslake, Ian; Hammond, Steve; Torkington, Ian R; Groom, David; Reynolds, Paul (Crawley); Hough, David C; Gratton, Ron

Subject: RE: Combustion & REI Action Item List - Item B57 & B87

Mel,

As discussed yesterday, please find attached the first of the more detailed Construction scope write-ups – this one is for the burner work package.

Best Regards,

Euan

From: Watkins, Clyde [<mailto:cwatkins@bechtel.com>]

Sent: 16 October 2013 23:35

To: Cameron, Euan

Cc: Hobbs, Donna; McCallum, Neil; Kerslake, Ian; Hammond, Steve; Torkington, Ian R; Groom, David; Reynolds, Paul (Crawley); Hough, David C; Gratton, Ron

Subject: RE: Combustion & REI Action Item List - Item B57 & B87

Euan, Steve,

Do you have an update to this document that you can send me? Looking for a list of all the work that is planned during the 2014 outage. I believe there must be more packages put together than what is shown here.

Thank You

Mel Watkins

Project Engineering Manager
Trimble County Unit 2 Project

cwatkins@Bechtel.com

work: 301-228-8035 (Frederick)

work: 502-255-5277 (Trimble Site)

cell : 240-793-4490

From: Cameron, Euan [<mailto:Euan.Cameron@doosan.com>]

Sent: Friday, August 30, 2013 12:43 PM

To: Watkins, Clyde

Cc: Hobbs, Donna; McCallum, Neil; Kerslake, Ian; Hammond, Steve; Torkington, Ian R; Groom, David; Reynolds, Paul (Crawley); Hough, David C; Gratton, Ron

Subject: Combustion & REI Action Item List - Item B57 & B87

Mel,

Please find attached a summary of the Construction Scope for the February 2014 outage, as per Combustion Action Item B57 & B87.

Best Regards,
Euan

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SPRING 2014 OUTAGE - SMR NUMBERS		
#	Description	SMR #
Main Scope		
1a	Upgrade steam supply to GAH soot blowers - Mechanical works	SMR 0107
1b	Electrical design on-going, Bechtel ECN forecast for issue by 31-Oct-13	SMR 0159
2	Upgrade WCAH and FD outdoor suction duct hood	SMR 0095
3a	Replace burners and throats	SMR 0132
3b	Electrical design on-going, Bechtel ECN forecast for issue by 31-Dec-13	SMR 0158
4	Install # 4 new OFA ports and throats, and upgrade ductwork and wind box	SMR 0156
Additional Scope		
5	Inspect furnace dipper plate refractory, and repair if required	SMR 0114
6	Replace # 2 mill seal air non return dampers	SMR 0068
7	Inspect selected PF pipes for build-up, and clean if required	SMR 0141
8	Inspect ID fan stall sensing ports, clean if required, and add insulation	SMR 0127
9	Install # 48 sonic horn insulation jackets	SMR 0153
10	Support LGE-KU to relocate SCR A side DP tapping point	SMR 0157
11	PA damper checks, and adjust if required	TBC
12	Inspect PA flow element impulse line fittings and ensure they are not covered by insulation	SMR 0101
13	Fit # 30 PF orifice plates	SMR 0152
14	AmStar application	SMR 0048
15	Logic revisions	SMR 0155
Inspections		
14	GAH inspection – Support to OEM TA if required	TBC
15	SCR inspection	TBC

Investment Proposal for Investment Committee Meeting on: _____

Project Name: TC2 Transition Roof Tube Replacement

Total Expenditures: \$ 887k Net IMEA/IMPA Reimbursement

Project Number(s): 140919LGE

Business Unit/Line of Business: Power Generation

Prepared/Presented By: Francisco Maldonado

Executive Summary

This project is to replace two hundred four transition tubes on the TC2 boiler roof (SA213 T23 2.5"x0.28" MWT). In 2012 the aforementioned transition tubes were identified, through inspection, to have hardness values above the allowable numbers set forth by ASME codes for this material. The high hardness values make this material very susceptible to cold cracking. Cold cracking is more prevalent and increases in likeliness to happen when the roof tube metal temperatures are at or below 300° F. In the event of a forced outage or planned outage of the unit, we run a risk of getting below the 300° F and increase the chance of creating a crack in the roof tubes.

It has been determined that high hardness is attributed to the swage process that the transition pieces were subjected to. The new transition pieces will be fabricated in such a manner that the swage process will no longer be required. The tubes will be fabricated to have a thicker wall and machined to match the wall of the existing tubes thus removing the possibility of added heat stress. (See attached inspection report for hardness values)

After careful review of the inspection report provided by Structural Integrity, Generation Engineering recommended that the transition tubes be replaced. Other options were explored such as a complete retrofit of the TC2 boiler roof with new material but this option proved to be unnecessary and not economical. The inspection reports show that the problem areas are localized to the transition pieces and, as such, should be the areas that are repaired. If the tubes are not replaced, the likelihood of a tube leak increases over time.

This project, if approved, is scheduled to be completed during the TC2 2014 spring outage. Material is estimated to cost approximately \$150k and labor is estimated to cost \$975k. The 2014 capital business plan includes \$616k gross for this project.

Background

Trimble County 2 boiler roof is comprised of SA-213 Grade 23 tubes. Grade 23 is a, relatively speaking, new and exotic metal, and as such, there is very little knowledge and history on this material. The ASME code case that governs the manufacturing of Grade 23 is currently in its sixth revision due to the fact that new information has been gathered in the recent years. Unfortunately, some of that information was discovered at Trimble County do to several roof tube leaks and repairs.

The initial interest that led to the metallurgical analyses of the tubes was due to tube failures that occurred at field welds from original fabrication. When the repairs were made to the original tubes, stress concentrations were created. These concentrations created cold cracks in tubes at field weld line "D" (seed attached drawing). It is important to note that poor fabrication was found and repaired at four different field weld lines and only those found and repaired at weld line "D" experienced cold cracking.

- **Other Alternatives Considered(1 –Recommendation, 2 –Do nothing, 3 –Next Best Alt)**
 1. It is recommended that only the transition pieces be replaced. This recommendation consists of replacing 204 tubes roughly 2 feet long. This is the least invasive and addresses the high hardness issues.
 2. If nothing is done the possibility of tube leak and unit shutdown increases.
 3. Next best option is to replace all of the T23 material on the TC2 boiler roof. This option is not very economical because not only will the material need to be replaced but engineering will have to be done to accommodate stresses and supports for the boiler if a new material is used.

Project Description

- **Project Scope and Timeline**

This project is scheduled to be completed during the TC2 2014 spring outage beginning in late February. The boiler contractor will remove and replace 204 transition roof tubes. The welds will be x-rayed and acceptance will be in accordance with ASME boiler and state codes. The contractor will also have to cut and re-weld screen tubes that penetrate the roof near the weld line at the cage inlet header. Cutting of the screen tubes is necessary to gain access to the weld line. This additional work will require additional time and money to complete the project.

Many inspections and tests have been done to determine the best options for repair. Seven roof tubes have been replaced at this weld line and have proven to be the correct fix for the issue. These new tubes have been in service for 6 months and no known issues have been experienced to date.

If approved, the material will be ordered as soon as practical with an expected delivery in late February. The work is expected to take 3 weeks starting in late February. The timeline for the repair will not be an issue due to the fact that the outage is expected to last 10-14 weeks.

- **Project Cost**

The estimated project cost is \$1,182k. This includes \$128k for material, \$975 for labor and \$50k for contingency. The labor and material portions will be done on a lump sum basis. Contingency is based on 5% of the project total. Some work has been done in this area and many of the unknowns have been taken into account the 5% will be sufficient in case an unforeseen issue arises.

Economic Analysis and Risks

- **Bid Summary**

Four suppliers were solicited to bid on the T23 roof tube material. Out of the four only two provided a bid. Michigan seamless “no bid” because they did not have the fabrication capabilities to provide the specified tubes and Boiler Tube of America “no bid” for reasons unknown. Refer to table below for an overview of the bidders prices.

Material Bids	Alstom Power	Boiler Tube of America	Minotte	Michigan Seamless Tubing
MBE/WBE				
Total Cost (\$000s)	\$147	No Bid	\$128	No Bid

Labor Bids	A&D	PIC	SE Boiler	TEI	MCS	UGS	Titan
MBE/WBE							
Removal Costs	\$167	\$233	\$195	\$252	\$579	\$1,095	\$936
Installation Costs	\$255	\$544	\$780	\$1,005	\$876	\$1,645	\$2,062
Total Cost (\$128s)	\$422	\$777	\$975	\$1,256	\$1,454	\$2,740	\$2,997

Labor was bid out as summarized in the table above. After initial review and bid review meetings with the low bidding contractors it was evident that some scope may have been over looked and not included in their bid. The scope will be revised and the project will be bid out again.

- **Budget Comparison and Financial Summary**

Financial Detail by Year (\$000s)	2013	2014	2015	Post 2015	Total
1. Capital Investment Proposed		692			692
2. Cost of Removal Proposed		195			195
3. Total Capital and Removal Proposed (1+2)	-	887	-	-	887
4. Capital Investment 2014 BP		616			616
5. Cost of Removal 2014 BP					-
6. Total Capital and Removal 2014 BP (4+5)	-	616	-	-	616
7. Capital Investment variance to BP (4-1)	-	(76)	-	-	(76)
8. Cost of Removal variance to BP (5-2)	-	(195)	-	-	(195)
9. Total Capital and Removal variance to BP (6-3)	-	(271)	-	-	(271)
10. Project O&M Proposed					-
11. Total Project Proposed (3+10)	-	887	-	-	887
12. Net Income		\$41	\$36	\$916	\$993

Financial Summary (\$000s):

Discount Rate: 6.50%

Capital Breakdown:

Contract Labor: \$128
 Materials: \$975
 Local Engineering: \$0
 Burdens: \$24
 Contingency: \$55
 Reimbursements: (\$295)
 Net Capital Expenditure: \$887

Project Presented and alternatives:

Financial Analysis - Project Summary (\$000)	Total Project	Replace 50% (Next Best)	Do Nothing
NPVRR	(\$1,157)	(\$2,051)	(\$2,683)
NPV Cash Flows	\$132	\$203	\$254
IRR	7.9%	12.9%	-1.4%
ROE	10.4%	22.2%	0.0%

- **Assumptions**

- If this project is not completed, there is a probability that a forced outage will occur of 5 days duration on Trimble County 2 per year.
- The probability of a forced outage due to roof tube leaks increases 1% each year.

- **Environmental**

New Source Review Evaluation, questions 1-6 (as applicable) must be completed on all investment proposals.		
1	Does the project include any new equipment or component with emissions, result in emissions not previously emitted or cause the unit to exceed any emission limit? If yes, Environmental Affairs is required to review this project. If no, go to Question #2.	No
2	Question 2: Is the change a like-kind or functionally equivalent replacement under \$500K? If yes, the project is not subject to NSR and no further evaluation is required. If no, go to Question #3.	No
3	Question 3: Does the equipment change increase the emissions unit's maximum hourly heat input? If yes, Environmental Affairs is required to review this project. If no, go to Question #4.	No
4	Question 4: Does the equipment change increase the emissions unit's electrical output? If yes, Environmental Affairs is required to review this project. If no, go to Question #5.	No
5	Question 5: Has the equipment being repaired/replaced been repaired or replaced in the past at this unit or other units in the fleet? If no, Environmental Affairs is required to review this project. If yes, list any known projects and go to Question #6.	Yes
6	Question 6: Have there been forced outages or unit de-rates in the past 5 years due to this component? If no, the project is not subject to NSR and no further evaluation is required; if the answer is yes, Environmental Affairs needs to review this project.	Yes

- **Risks**

Based on hardness data collected at the roof tubes, it is highly likely that there will be a tube leak forced outages will occur on an increasing basis until transition roof tubes are repaired.

Conclusions and Recommendation

It is recommended that the Investment Committee approve the TC2 Transition Roof Tube Replacement project for \$1,182k gross (\$887k Net) to avoid certain catastrophic tube failure related outages.

From: Maldonado, Francisco(/O=LGE/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=MALDONADO, NOVOA00D)
To: Cuzick, Fred
CC: Joyce, Jeff; Feider, Ryan
BCC:
Subject: RE: TC2 Roof Tube Replacement Investment Proposal.docx
Sent: 11/14/2013 12:01:16 PM -0500 (EST)
Attachments: TC2 Roof Transition Tube Replacement (Revised CEM posted 03-06-13).xslm; TC2 Roof Tube Replacement Investment Proposal.docx;

Fred,

Attached are the revised versions.

Thanks,
Cisco

From: Cuzick, Fred
Sent: Thursday, November 14, 2013 11:08 AM
To: Maldonado, Francisco
Subject: FW: TC2 Roof Tube Replacement Investment Proposal.docx

Cisco, did you add 6% sales tax for materials ? Also, please look at Page 3 The Project cost breakout does not match the Financial Summary Table at the bottom of page 4. Is the materials \$975K or \$128K, because the sales tax is only computed on materials costs in KY ? Please update accordingly and send back with updated CEM also.

Thanks

Fred M. Cuzick , CPA, CGMA
Budget Coordinator
LG&E / Trimble County Station
(502)627-6213 (Office)
(502)627-6226 (Fax)
Fred.Cuzick@lge-ku.com

From: Maldonado, Francisco
Sent: Wednesday, November 13, 2013 9:55 AM
To: Joyce, Jeff; Cuzick, Fred
Subject: TC2 Roof Tube Replacement Investment Proposal.docx

Jeff/Fred,

Attached is the IP for the roof tube project on TC2. I have added the numbers to the comparison table (cost of removal was not estimated in the original budget). I have also removed the sentence about the project going out for rebid and have added a couple of sentences describing the cold cracking.

Please let me know if you need anything else.

Thanks,
Cisco

Produced as Native

Original File Name: TC2 Roof Transition Tube Replacement (Revised CEM posted 03-06-13).xlsm

Stored File Name: OpenText00334366.xlsm

Investment Proposal for Investment Committee Meeting on: _____

Project Name: TC2 Transition Roof Tube Replacement

Total Expenditures: \$ 892k Net IMEA/IMPA Reimbursement

Project Number(s): 140919LGE

Business Unit/Line of Business: Power Generation

Prepared/Presented By: Francisco Maldonado

Executive Summary

This project is to replace two hundred four transition tubes on the TC2 boiler roof (SA213 T23 2.5"x0.28" MWT). In 2012 the aforementioned transition tubes were identified, through inspection, to have hardness values above the allowable numbers set forth by ASME codes for this material. The high hardness values make this material very susceptible to cold cracking. Cold cracking is more prevalent and increases in likeliness to happen when the roof tube metal temperatures are at or below 300° F. In the event of a forced outage or planned outage of the unit, we run a risk of getting below the 300° F and increase the chance of creating a crack in the roof tubes.

It has been determined that high hardness is attributed to the swage process that the transition pieces were subjected to. The new transition pieces will be fabricated in such a manner that the swage process will no longer be required. The tubes will be fabricated to have a thicker wall and machined to match the wall of the existing tubes thus removing the possibility of added heat stress. (See attached inspection report for hardness values)

After careful review of the inspection report provided by Structural Integrity, Generation Engineering recommended that the transition tubes be replaced. Other options were explored such as a complete retrofit of the TC2 boiler roof with new material but this option proved to be unnecessary and not economical. The inspection reports show that the problem areas are localized to the transition pieces and, as such, should be the areas that are repaired. If the tubes are not replaced, the likelihood of a tube leak increases over time.

This project, if approved, is scheduled to be completed during the TC2 2014 spring outage. Material is estimated to cost approximately \$136k (includes 6% sales tax) and labor is estimated to cost \$975k. The 2014 capital business plan includes \$616k gross for this project.

Background

Trimble County 2 boiler roof is comprised of SA-213 Grade 23 tubes. Grade 23 is a, relatively speaking, new and exotic metal, and as such, there is very little knowledge and history on this material. The ASME code case that governs the manufacturing of Grade 23 is currently in its sixth revision due to the fact that new information has been gathered in the recent years. Unfortunately, some of that information was discovered at Trimble County do to several roof tube leaks and repairs.

The initial interest that led to the metallurgical analyses of the tubes was due to tube failures that occurred at field welds from original fabrication. When the repairs were made to the original tubes, stress concentrations were created. These concentrations created cold cracks in tubes at field weld line "D" (seed attached drawing). It is important to note that poor fabrication was found and repaired at four different field weld lines and only those found and repaired at weld line "D" experienced cold cracking.

- **Other Alternatives Considered(1 –Recommendation, 2 –Do nothing, 3 –Next Best Alt)**
 1. It is recommended that only the transition pieces be replaced. This recommendation consists of replacing 204 tubes roughly 2 feet long. This is the least invasive and addresses the high hardness issues.
 2. If nothing is done the possibility of tube leak and unit shutdown increases.
 3. Next best option is to replace all of the T23 material on the TC2 boiler roof. This option is not very economical because not only will the material need to be replaced but engineering will have to be done to accommodate stresses and supports for the boiler if a new material is used.

Project Description

- **Project Scope and Timeline**

This project is scheduled to be completed during the TC2 2014 spring outage beginning in late February. The boiler contractor will remove and replace 204 transition roof tubes. The welds will be x-rayed and acceptance will be in accordance with ASME boiler and state codes. The contractor will also have to cut and re-weld screen tubes that penetrate the roof near the weld line at the cage inlet header. Cutting of the screen tubes is necessary to gain access to the weld line. This additional work will require additional time and money to complete the project.

Many inspections and tests have been done to determine the best options for repair. Seven roof tubes have been replaced at this weld line and have proven to be the correct fix for the issue. These new tubes have been in service for 6 months and no known issues have been experienced to date.

If approved, the material will be ordered as soon as practical with and expected delivery in late February. The work is expected to take 3 weeks starting in late February. The timeline for the repair will not be an issue due to the fact that the outage is expect to last 10-14 weeks.

- **Project Cost**

The estimated project cost is \$1,190k (gross). This includes \$136k (includes 6% sales tax) for material, \$975 for labor and \$50k for contingency. The labor and material portions will be done on a lump sum basis. Contingency is based on 5% of the project total. Some work has been done in this area and many of the unknowns have been taken into account the 5% will be sufficient in case an unforeseen issue arises.

Economic Analysis and Risks

- **Bid Summary**

Four suppliers were solicited to bid on the T23 roof tube material. Out of the four only two provided a bid. Michigan seamless “no bid” because they did not have the fabrication capabilities to provide the specified tubes and Boiler Tube of America “no bid” for reasons unknown. Refer to table below for an over view of the bidders prices.

Material Bids	Alstom Power	Boiler Tube of America	Minotte	Michigan Seamless Tubing
MBE/WBE				
Total Cost (\$000s)	\$147	No Bid	\$136	No Bid

Labor Bids	A&D	PIC	SE Boiler	TEI	MCS	UGS	Titan
MBE/WBE							
Removal Costs	\$167	\$233	\$195	\$252	\$579	\$1,095	\$936
Installation Costs	\$255	\$544	\$780	\$1,005	\$876	\$1,645	\$2,062
Total Cost (\$000s)	\$422	\$777	\$975	\$1,256	\$1,454	\$2,740	\$2,997

- Budget Comparison and Financial Summary**

Financial Detail by Year (\$000s)	2013	2014	2015	Post 2015	Total
1. Capital Investment Proposed		697			697
2. Cost of Removal Proposed		195			195
3. Total Capital and Removal Proposed (1+2)	-	892	-	-	892
4. Capital Investment 2014 BP		616			616
5. Cost of Removal 2014 BP					-
6. Total Capital and Removal 2014 BP (4+5)	-	616	-	-	616
7. Capital Investment variance to BP (4-1)	-	(81)	-	-	(81)
8. Cost of Removal variance to BP (5-2)	-	(195)	-	-	(195)
9. Total Capital and Removal variance to BP (6-3)	-	(276)	-	-	(276)
10. Project O&M Proposed					-
11. Total Project Proposed (3+10)	-	892	-	-	892
12. Net Income		\$41	\$36	\$916	\$993

Financial Summary (\$000s):

Discount Rate: 6.50%

Capital Breakdown:

Contract Labor:	\$975
Materials:	\$136
Local Engineering:	\$0
Burdens:	\$24
Contingency:	\$55
Reimbursements:	(\$298)
Net Capital Expenditure:	\$892

Project Presented and alternatives:

Financial Analysis - Project Summary (\$000)	Total Project	Replace 50% (Next Best)	Do Nothing
NPVRR	(\$1,157)	(\$2,051)	(\$2,683)
NPV Cash Flows	\$132	\$203	\$254
IRR	7.9%	12.9%	-1.4%
ROE	10.4%	22.2%	0.0%

- **Assumptions**

- If this project is not completed, there is a probability that a forced outage will occur of 5 days duration on Trimble County 2 per year.
- The probability of a forced outage due to roof tube leaks increases 1% each year.

- **Environmental**

New Source Review Evaluation, questions 1-6 (as applicable) must be completed on all investment proposals.		
1	Does the project include any new equipment or component with emissions, result in emissions not previously emitted or cause the unit to exceed any emission limit? If yes, Environmental Affairs is required to review this project. If no, go to Question #2.	No
2	Question 2: Is the change a like-kind or functionally equivalent replacement under \$500K? If yes, the project is not subject to NSR and no further evaluation is required. If no, go to Question #3.	No
3	Question 3: Does the equipment change increase the emissions unit's maximum hourly heat input? If yes, Environmental Affairs is required to review this project. If no, go to Question #4.	No
4	Question 4: Does the equipment change increase the emissions unit's electrical output? If yes, Environmental Affairs is required to review this project. If no, go to Question #5.	No
5	Question 5: Has the equipment being repaired/replaced been repaired or replaced in the past at this unit or other units in the fleet? If no, Environmental Affairs is required to review this project. If yes, list any known projects and go to Question #6.	Yes
6	Question 6: Have there been forced outages or unit de-rates in the past 5 years due to this component? If no, the project is not subject to NSR and no further evaluation is required; if the answer is yes, Environmental Affairs needs to review this project.	Yes

- **Risks**

Based on hardness data collected at the roof tubes, it is highly likely that there will be a tube leak forced outages will occur on an increasing basis until transition roof tubes are repaired.

Conclusions and Recommendation

It is recommended that the Investment Committee approve the TC2 Transition Roof Tube Replacement project for \$1,190k gross (\$892k Net) to avoid certain catastrophic tube failure related outages.

TC2 Roof Tube Purchase PROPOSAL:

**Roof Tube Replacement
Project No. 140919LGE**

**Proposal by Jeffrey E. Joyce
Project Engineer: Francisco Maldonado
November 20, 2013**

BACKGROUND

The Trimble County Unit 2 boiler roof is comprised of SA-213 Grade 23 tubes. Grade 23 is a, relatively speaking, new and exotic metal, and as such, there is very little knowledge and history on this material. The ASME code case that governs the manufacturing of Grade 23 is currently in its sixth revision due to the fact that new information has been gathered in the recent years. Unfortunately, some of that information was discovered at Trimble County do to several roof tube leaks and repairs.

The initial interest that led to the metallurgical analysis of the tubes was due to tube failures that occurred at field welds from original fabrication. When the repairs were made to the original tubes, stress concentrations were created. These concentrations created cold cracks in tubes at field weld line "D" (seed attached drawing). It is important to note that poor fabrication was found and repaired at four different field weld lines and only those found and repaired at weld line "D" experienced cold cracking. Subsequent analysis was performed at the different field weld lines throughout the roof. Upon completion of the inspection, including hardness testing, grain evaluation and magnetic particle testing, throughout the TC2 boiler roof it was determined that the faulty material was isolated to the "D" field weld line at the transition pieces between T23 material and T12 material.

The aforementioned transition tubes were identified to have hardness values above the allowable numbers set forth by ASME codes for this material. The high hardness values make this material very susceptible to cold cracking. Cold cracking is more prevalent and increases in likeliness to happen when the roof tube metal temperatures are at or below 300° F. In the event of a forced outage or planned outage of the unit, tube temperatures will fall below the 300° F and increase the likelihood of creating a crack and subsequent leak in the roof tubes.

Upon careful review of the analysis and given the difficulty of repairing a tube leak in this area it was recommended that the transition roof tubes be replaced with T23 tubes that have not been subjected to the heating process which caused the high hardness values.

SCOPE

The proposed roof tube replacement includes the removal of existing tubes and the installation of new transition roof tubes. The new transition tubes are to be 2' long 2.5" OD x 0.569 MWT SA213M T23. One end of the tube shall be MACHINED to taper (15 degree taper) to 2.5" OD x 0.280" MWT to provide correct fit up to the T23 roof tubes and shall be scarfed with a 37-1/2° field weld prep. The other end shall remain as is to provide correct fit up to the T12 inlet header stub.

This project is scheduled to be completed during the TC2 2014 spring outage beginning in late February. The boiler contractor will remove and replace the 204 transition roof tubes. The welds will be x-rayed and acceptance will be in accordance with ASME boiler and state codes. The contractor will also have to cut and re-weld screen tubes that penetrate the roof near the weld line at the cage inlet header. Cutting of the screen tubes is necessary to gain access to the weld line.

Many inspections and tests have been done to determine the best options for repair. Seven roof tubes have been replaced at this weld line and have proven to be the correct fix for the issue. These new tubes have been in service for 6 months and no known issues have been experienced to date.

PROJECT COST

Material purchase cost:

The amount of \$136,000 is sought for the cost of the material required to replace the roof tubes in 2014.

Investment cost:

Total investment costs will include the above material costs and the labor costs to be determined after the labor bid evaluation process is complete.

COST EVALUATION MODEL

A cost evaluation model for the total investment project will include all material and all labor costs including contingency.

The investment proposal will include a sensitivity analysis evaluating the effect of a variation in project costs and other factors affecting life of the facility that could alter the financial analysis.

PROJECT SCHEDULE

This project is scheduled to be completed during the TC2 spring outage starting in February. Material lead times are between 10-14 weeks. The material must be ordered soon in order to be able to complete the project within the outage window.

ASSUMPTIONS

Assumptions which affect project costs and life of the facility will be stated in the investment proposal. These assumptions include catastrophic tube failures resulting in forced outages.

ALTERNATIVES

Several alternatives may be presented. The worse case alternative will be to do nothing which puts the unit at risk for a tube leak forced outage.

RISKS

If tubes are not replaced there is a risk of a probable tube leak forced outage.

If tubes are not ordered in time we will not be able to replace the tubes during the TC2 2014 spring outage window.

FINANCIAL IMPACT

The financial impact of the investment project will be stated listing the total capital investment, NPV, IRR, IOP, ROCE, earnings analysis, and impact of Environmental Cost Recovery.

BUDGET / PLAN PROVISION FOR THE PROJECT

Proposed expenditures for each year from the start of this project to completion will be stated.

PROJECT MANAGEMENT

Key employees related to the success of this project include:

Project Manager:	Jeffrey Joyce
Project Engineer:	Francisco Maldonado

RECOMMENDATION

Approval for the amount of \$136,000 is requested for the cost of purchasing the tubes. The approval will allow for the tubes to be ordered and be able to meet the outage window.

Attachment to Response to KIUC-1 Question No. 30(f)
AUTHORIZATION FOR INVESTMENT PROPOSAL

Production 2

LG&E and KU Services Co.

Louisville Gas and Electric Co.

Kentucky Gas Supply

Page 752 of 1143

Thompson

Name of Project: TC2 TRANSITION TUBE REPL		Funding Project Type: LGE Steam NonBlink Excluding Land	
Date Requested: 7/11/2013	Project Number: 140919LGE	Budgeted: no	
Related Project Numbers: 140919KU		If unbudgeted, list alternate budget ref. Number(s): FUNDED FROM GENERATION POOL - THIS IS A 2014 BUDGETED PROJECT THAT NEEDS EARLY ACTIVATION IN ORDER TO ISSUE PO.	
Expected Start Date: 1/1/2009	Expected In Service Date: 12/31/2014	Expected Completion Date: 12/31/2014	
AIP Prepared by: Cuzick, Fred		Phone: 502/627-4122	
Project Manager: Byrd, Larry		Phone: 502/347-4002	
Asset Location: Trimble County - Unit 2		Environmental Code: N/A	
Resp. Center: 002650-GENERAL MANAGER - TC		Product Code: 111 - WHOLESALE GENERATION	

REASONS AND DETAILED DESCRIPTION OF PROJECT

140919LGE-TC2 TRANSITION TUBE REPL

This project is to replace two hundred four transition tubes on the TC2 boiler roof. In 2012 the aforementioned transition tubes were identified, through inspection, to have hardness values above the allowable numbers set forth by ASME codes for this material. The high hardness values make this material very susceptible to cold cracking. Cold cracking is more prevalent and increases in likeliness to happen when the roof tube metal temperatures are at or below 300o F. In the event of a forced outage or planned outage of the unit, tube temperatures will fall below the 300o F and increase the likelihood of creating a crack and subsequent leak in the roof tubes.

The existing transition pieces have been subjected, during manufacturing, to a heating process which tapers (swages) the tube from a certain thickness to a smaller thickness. It has been determined that the high hardness values found, are attributed to this swaging process. The new transition pieces will be fabricated in such a manner that the heated swage process will no longer be required. The tubes will be fabricated to have a thicker wall and machined to match the wall of the existing tubes thus removing the possibility of added heat stress. SEE ATTACHED IP FOR MORE DETAIL.

Costs	Capital Investment	Cost of Removal/Retirement	Capital Cost Subtotal	Initial O&M Cost	Lifetime Maintenance Cost	O&M Subtotal	Production 2 TOTAL INVESTMENT
Contract Labor	\$902,266.00	\$252,427.00	\$1,154,693.00	\$0.00	\$0.00	\$0.00	\$1,154,693.00
Other	\$21,925.00	\$0.00	\$21,925.00	\$0.00	\$0.00	\$0.00	\$21,925.00
Local Engineering	\$5,143.00	\$7,573.00	\$12,716.00	\$0.00	\$0.00	\$0.00	\$12,716.00
Subtotal - GAAP	\$929,334.00	\$260,000.00	\$1,189,334.00	\$0.00	\$0.00	\$0.00	\$1,189,334.00
Contributions	(\$232,335.00)	(\$65,000.00)	(\$297,335.00)	\$0.00	\$0.00	\$0.00	(\$297,335.00)
Net Expenditures - GAAP	\$696,999.00	\$195,000.00	\$891,999.00	\$0.00	\$0.00	\$0.00	\$891,999.00
2009 Total	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
2010 Total	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
2011 Total	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
2012 Total	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
2013 Total	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
2014 Total	\$696,999.00	\$195,000.00	\$891,999.00	\$0.00	\$0.00	\$0.00	\$891,999.00

Approval Type: Non-IT Projects

Authorized by	Amount	Name	Date Approved	Req'd
Supervisor	\$25,000.00			N
Manager	\$100,000.00	Byrd, Larry	12/6/2013	Y
Budget Coordinator	\$0.00	Cuzick, Fred	12/9/2013	Y
Special Approvers	\$0.00	Feider, Ryan	12/9/2013	Y
Director	\$300,000.00	Joyce, Jeffrey		Y
Vice President	\$750,000.00	Bowling, Donald		Y
Investment Committee Coordinator	\$0.00	Kuhl, Megan		Y
Financial Planning Director	\$0.00	Cosby, David		Y
Senior Officer	\$1,000,000.00	Thompson, Paul		Y
CFO	\$1,000,001.00	Blake, Kent		Y
CEO	\$1,000,002.00	Staffieri, Victor		Y
Property Accounting	\$0.00	Rose, Bruce		Y

INVESTMENT MATERIALS

UOP #	Utility Account Id		Quantity	Total Cost	
05727	131200	TUBING (ALL) (05727)	204	\$18,678.00	

RETIRED EQUIPEMENT (OR MATERIALS)

UOP #	Utility Account Id		Quantity	Vintage Year	Original Project Number

AIP QUESTIONS**Are there Related Project Numbers?**

Provide related project numbers or indicate 'N/A'.

140919KU**Is this an IT related project?**

IT project is any project that requires IT involvement or the purchase of hardware and software.

no**Purchase/Sale of Real Estate?**

Is this a transaction related to the sale/purchase of land or buildings?

no

AIP QUESTIONS

Budgeted?

Is the project budgeted or unbudgeted?

no

Alternate Budget Numbers?

If the project is unbudgeted, list alternate budget reference numbers. Enter N/A, if none.

FUNDED FROM GENERATION POOL - THIS IS A 2014 BUDGETED PROJECT THAT NEEDS EARLY ACTIVATION IN ORDER TO ISSUE PO.

Legal Asset Retirement Obligation?

Is there a legal or environmental requirement governing disposal of this asset?

no

Leased Asset?

Does this project involve a leased asset?

no

Obsolete Inventory?

Will this project create obsolete inventory?

no

Environmental Project

Is this an Environmental Project?

no

Environmental Cost Recovery

If an environmental project, is this an approved environmental cost recovery (ECR) project?

no

ECR Project Type

If this is an ECR project, indicate the project type.

N/A

ECR Compliance Number

If this is an ECR project, provide the ECR compliance plan number (see the approved project list on the Rates and Regulatory intranet site).

N/A

Environmental Affairs

Does Environmental Affairs need to review this project for environmental permitting issues (based on responses to the six questions in the Investment Proposal)?

no

Research and Experimental Credit

Is this an experimental project with the purpose of improving, enhancing, or adding to a current manufacturing process?

no

Sales Tax-Pollution Control

Is this project done for environmental regulations or statutes? (If yes, may qualify for the Pollution Control Exemption.)

no

Sales Tax-Manufacturing Integration

Is this project integrated in the Manufacturing Process? (Yes to this question and the following two questions may qualify for the New and Expanded Exemption.)

yes

Sales Tax-State Equipment Use

Is this equipment used in the state for the first time?

yes

Sales Tax-Upgrade or Improvement?

Is this project considered an upgrade or improvement? If yes, enter description on next line.

no

Sales Tax-Upgrade Description

Description of upgrade, if applicable (i.e., improved materials, increased capacity, longer life, etc.) from prior question. Enter N/A, if not applicable.

N/A

Produced as Native

Original File Name: TC2 Roof Transition Tube CEM .xlsm

Stored File Name: OpenText00334802.xlsm

Click here to enter text.

Project Name: TC2 Transition Roof Tube Replacement

Total Expenditures: \$ 892k Net IMEA/IMPA Reimbursement

Project Number(s): 140919LGE

Business Unit/Line of Business: Power Generation

Prepared/Presented By: Francisco Maldonado

Executive Summary

This project is to replace two hundred four transition tubes on the TC2 boiler roof (SA213 T23 2.5"x0.28" MWT). In 2012 the aforementioned transition tubes were identified, through inspection, to have hardness values above the allowable numbers set forth by ASME codes for this material. The high hardness values make this material very susceptible to cold cracking. Cold cracking is more prevalent and increases in likeliness to happen when the roof tube metal temperatures are at or below 300° F. In the event of a forced outage or planned outage of the unit, tube temperatures will fall below the 300° F and increase the likelihood of creating a crack and subsequent leak in the roof tubes.

The existing transition pieces have been subjected, during manufacturing, to a heating process which tapers (swages) the tube from a certain thickness to a smaller thickness. It has been determined that the high hardness values found, are attributed to this swaging process. The new transition pieces will be fabricated in such a manner that the heated swage process will no longer be required. The tubes will be fabricated to have a thicker wall and machined to match the wall of the existing tubes thus removing the possibility of added heat stress.

After careful review of the inspection report provided by Structural Integrity, Generation Engineering recommended that the transition tubes be replaced. Other options were explored such as a complete retrofit of the TC2 boiler roof with new material but this option proved to be unnecessary and not economical. The inspection reports show the problem areas are localized in the transition pieces and, as such, should be the areas that are repaired. If the tubes are not replaced, the likelihood of a tube leak increases over time.

This project, if approved, is scheduled to be completed during the TC2 2014 spring outage. Material is estimated to cost approximately \$136k (includes 6% sales tax) and labor is estimated to cost \$975k. The 2014 capital business plan includes \$616k (Net) for this project. The shortfall in the budget will be funded from the anticipated money left over on the TC2 PJFF Replacement Project (137671 LGE) due to favorable pricing received. NOTE: There is a warranty claim against Bechtel for this work.

Background

Trimble County 2 boiler roof is comprised of SA-213 Grade 23 tubes. Grade 23 is a, relatively speaking, new and exotic metal, and as such, there is very little knowledge and history on this material. The ASME code case that governs the manufacturing of Grade 23 is currently in its sixth revision due to the fact that new information has been gathered in the recent years. Unfortunately, some of that information was discovered at Trimble County do to several roof tube leaks and repairs.

The initial interest that led to the metallurgical analyses of the tubes was due to tube failures that occurred at field welds from original fabrication. When the repairs were made to the original tubes, stress concentrations were created. These concentrations created cold cracks in tubes at field weld line "D". It is important to note that poor fabrication was found and repaired at four different field weld lines and only those found and repaired at weld line "D" experienced cold cracking. Subsequent analysis was performed at the different field weld lines throughout the roof. The data shows that high hardness readings were not a global issue but an issue isolated to the "D" weld line.

- **Other Alternatives Considered(1 –Recommendation, 2 –Do nothing, 3 –Next Best Alt)**

1. It is recommended that only the transition pieces be replaced. This recommendation consists of replacing 204 tubes roughly 2 feet long. This is the least invasive and addresses the high hardness issue found during the analytical work performed in 2013.
2. If nothing is done the probability of a tube leak and unit shutdown occurring increases.
3. Next best option is to replace all of the T23 material on the TC2 boiler roof. This option is not very economical because not only will the material need to be replaced but engineering will have to be done to accommodate stresses and supports for the boiler if a new material is used.
4. Another option would be to replace only the tubes that test bad. This would require a complete analysis of each tube. The hardness test is done to a very small portion of the tube (approximately one square inch). To ensure that the structural integrity of each tube has not been compromised every square inch would need to be inspected. This would be a very costly endeavor and there is a high probability that all the tubes will have high hardness values and will need to be replaced.

Project Description

- **Project Scope and Timeline**

This project is scheduled to be completed during the TC2 2014 spring outage beginning in late February. The boiler contractor will remove and replace 204 transition roof tubes. The welds will be x-rayed and acceptance will be in accordance with ASME boiler and state codes. The contractor will also have to cut and re-weld screen tubes that penetrate the roof near the weld line at the cage inlet header. Cutting of the screen tubes is necessary to gain access to the weld line.

Many inspections and tests have been done to determine the best options for repair. Seven roof tubes have been replaced at this weld line and have proven to be the correct fix for the issue. These new tubes have been in service for 6 months and no known issues have been experienced to date.

If approved, the material will be ordered as soon as practical with an expected delivery in late February. The work is expected to take 3 weeks starting in late February. The timeline for the repair will not be an issue due to the fact that the outage is expected to last 10-14 weeks.

- **Project Cost**

The estimated project cost is \$1,190k (gross). This includes \$136k (includes 6% sales tax) for material, \$975k for labor and \$50k for contingency. The labor and material portions will be done on a lump sum basis. Contingency is based on 5% of the project total. Some work has been done in this area and many of the unknowns have been taken into account the 5% will be sufficient in case an unforeseen issue arises.

Economic Analysis and Risks

- **Bid Summary**

Four suppliers were solicited to bid on the T23 roof tube material. Out of the four only two provided a bid. Michigan seamless “no bid” because they did not have the fabrication capabilities to provide the specified tubes and Boiler Tube of America “no bid” for reasons unknown. Refer to table below for an overview of the bidders prices.

Material Bids	Alstom Power	Boiler Tube of America	Minotte	Michigan Seamless Tubing
MBE/WBE				
Total Cost (\$000s)	\$147	No Bid	\$136	No Bid

Labor Bids	A&D	PIC	SE Boiler	TEI	MCS	UGS	Titan
MBE/WBE							
Removal Costs	\$167	\$233	\$195	\$252	\$579	\$1,095	\$936
Installation Costs	\$255	\$544	\$780	\$1,005	\$876	\$1,645	\$2,062
Total Cost (\$000s)	\$422	\$777	\$975	\$1,256	\$1,454	\$2,740	\$2,997

It is likely that we will use Minotte for the material purchase. Minotte is both capable of meeting the required schedule and manufacturing the material to the required specification. It is also likely that Southeast Boiler (SBR) will be used for the labor portion of the project. It was found during bid review that SBR is technically the most competent contractor. Not only do they have experience welding the T23 material but they have experience with welding the T23 material at the TC the roof tube and in particular at weld line "D".

A&D was also considered for the labor portion of this project. Upon review of A&D's bid it was found that their labor hours seemed too low to complete this job and it is very likely that they have underestimated the scope of work associated with this project. Along with low labor hours they lack the technical expertise to work with T23 and would be hard pressed to provide a quality job. PIC was also considered but due to recent history on TC1 boiler projects it has been determined that this project would run the risk of not being completed on time by PIC. PIC is a smaller company that depends heavily on "key" project managers if those project managers are not available for a given job the job seems to suffer. Such was the case on TC1 and the probability of happening again on TC2 is very likely.

- **Budget Comparison and Financial Summary**

Financial Detail by Year (\$000s)	2013	2014	2015	Post 2015	Total
1. Capital Investment Proposed		697			697
2. Cost of Removal Proposed		195			195
3. Total Capital and Removal Proposed (1+2)	-	892	-	-	892
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9. Total Capital and Removal variance to BP (6-3)	-	(276)	-	-	(276)
10. Project O&M Proposed					-
11. Total Project Proposed (3+10)	-	892	-	-	892
12. Net Income		\$41	\$36	\$916	\$993

Financial Summary (\$000s):

Discount Rate:	6.50%
Capital Breakdown:	
Contract Labor:	\$975
Materials:	\$136
Local Engineering:	\$0
Burdens:	\$24
Contingency:	\$55
Reimbursements:	(\$298)
Net Capital Expenditure:	\$892

Project Presented and alternatives:

Financial Analysis - Project Summary (\$000)	Total Project	Replace 50% (Next Best)	Do Nothing
NPVRR	(\$1,011)	\$138	(\$2,683)
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ROE by Year					
	2014	2015	2016	2017	2018
Proposed Project	10.9%	4.9%	7.6%	13.3%	14.3%
Next Best (50% Replacement)	5.3%	-.02%	-1.3%	2.1%	12.7%
Do Nothing	0%	0%	0%	0%	0%

- **Assumptions**

- If this project is not completed, there is a 10% probability that a forced outage will occur of 5 days duration on Trimble County 2 per year.
- The probability of a forced outage due to roof tube leaks increases 1% each year.

- **Environmental**

New Source Review Evaluation, questions 1-6 (as applicable) must be completed on all investment proposals.		
1	Does the project include any new equipment or component with emissions, result in emissions not previously emitted or cause the unit to exceed any emission limit? If yes, Environmental Affairs is required to review this project. If no, go to Question #2.	No
2	Question 2: Is the change a like-kind or functionally equivalent replacement	

	under \$500K? If yes, the project is not subject to NSR and no further evaluation is required. If no, go to Question #3.	No
3	Question 3: Does the equipment change increase the emissions unit's maximum hourly heat input? If yes, Environmental Affairs is required to review this project. If no, go to Question #4.	No
4	Question 4: Does the equipment change increase the emissions unit's electrical output? If yes, Environmental Affairs is required to review this project. If no, go to Question #5.	No
5	Question 5: Has the equipment being repaired/replaced been repaired or replaced in the past at this unit or other units in the fleet? If no, Environmental Affairs is required to review this project. If yes, list any known projects and go to Question #6.	Yes
6	Question 6: Have there been forced outages or unit de-rates in the past 5 years due to this component? If no, the project is not subject to NSR and no further evaluation is required; if the answer is yes, Environmental Affairs needs to review this project.	Yes

Environmental Affairs has reviewed and concluded the project is considered routine maintenance. Please see attached New Source Review document.

- **Risks**

Based on hardness data collected at the roof tubes, it is highly likely that there will be a tube leak forced outages will occur on an increasing basis until transition roof tubes are repaired.

Conclusions and Recommendation

It is recommended that the Investment Committee approve the TC2 Transition Roof Tube Replacement project for \$1,190k gross (\$892k Net) to avoid certain catastrophic tube failure related outages.

From: Hudson, Rusty
Sent: Friday, December 06, 2013 9:18 AM
To: Bowling, Ralph; Joyce, Jeff
Cc: Cuzick, Fred
Subject: TC2 roof tube replacements

The TC2 roof tube replacements project is at \$892k net with \$50k of contingency. The IC threshold is on a net basis, not gross. Given that we are still \$100k under the \$1m threshold, I am okay with this just going through the normal PowerPlant approval process and not the IC if that is okay with you guys. When they get over \$950k I prefer to take them, but with this one I think we will be okay. Rusty



MEMO

To: Financial Planning & Controlling
From: Fred Cuzick- Trimble County
Date: 12-6-13
Re: AIP-140919LGE- TC2 Transition Roof Tubes

The attached AIP for \$892k is included in the proposed 2014 BP which is currently in the process of being approved by RAC, Senior Management and/or the PPL Board. Due to the urgency of the project, it is imperative to open the project in 2013 while waiting on final BP approval expected in December. All spending to occur in 2013 has been approved through the internal RAC process. This project is a high priority so in the event of capital reductions during the approval process, this project would still likely be done.

Attachment to Response to KIUC-1 Question No. 30(f)

AUTHORIZATION FOR INVESTMENT PROPOSAL

Production 2

LG&E and KU Services Co.

Louisville Gas and Electric Co.

Kentucky Gas Supply

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Thompson

Name of Project: TC2 TRANSITION TUBE REPL		Funding Project Type: LGE Steam NonBlnk Excluding Land	
Date Requested: 7/11/2013	Project Number: 140919LGE	Budgeted: no	
Related Project Numbers: 140919KU		If unbudgeted, list alternate budget ref. Number(s): FUNDED FROM GENERATION POOL - THIS IS A 2014 BUDGETED PROJECT THAT NEEDS EARLY ACTIVATION IN ORDER TO ISSUE PO.	
Expected Start Date: 1/1/2009	Expected In Service Date: 12/31/2014	Expected Completion Date: 12/31/2014	
AIP Prepared by: Cuzick, Fred		Phone: 502/627-4122	
Project Manager: Byrd, Larry		Phone: 502/347-4002	
Asset Location: Trimble County - Unit 2		Environmental Code: N/A	
Resp. Center: 002650-GENERAL MANAGER - TC		Product Code: 111 - WHOLESALE GENERATION	

REASONS AND DETAILED DESCRIPTION OF PROJECT

140919LGE-TC2 TRANSITION TUBE REPL

This project is to replace two hundred four transition tubes on the TC2 boiler roof. In 2012 the aforementioned transition tubes were identified, through inspection, to have hardness values above the allowable numbers set forth by ASME codes for this material. The high hardness values make this material very susceptible to cold cracking. Cold cracking is more prevalent and increases in likeliness to happen when the roof tube metal temperatures are at or below 300o F. In the event of a forced outage or planned outage of the unit, tube temperatures will fall below the 300o F and increase the likelihood of creating a crack and subsequent leak in the roof tubes.

The existing transition pieces have been subjected, during manufacturing, to a heating process which tapers (swages) the tube from a certain thickness to a smaller thickness. It has been determined that the high hardness values found, are attributed to this swaging process. The new transition pieces will be fabricated in such a manner that the heated swage process will no longer be required. The tubes will be fabricated to have a thicker wall and machined to match the wall of the existing tubes thus removing the possibility of added heat stress. SEE ATTACHED IP FOR MORE DETAIL.

Attachment to Response to KIUC-1 Question No. 30(f)

Costs	Capital Investment	Cost of Removal/Retirement	Capital Cost Subtotal	Initial O&M Cost	Lifetime Maintenance Cost	O&M Subtotal	TOTAL INVESTMENT
Contract Labor	\$902,266.00	\$252,427.00	\$1,154,693.00	\$0.00	\$0.00	\$0.00	\$1,154,693.00
Other	\$21,925.00	\$0.00	\$21,925.00	\$0.00	\$0.00	\$0.00	\$21,925.00
Local Engineering	\$5,143.00	\$7,573.00	\$12,716.00	\$0.00	\$0.00	\$0.00	\$12,716.00
Subtotal - GAAP	\$929,334.00	\$260,000.00	\$1,189,334.00	\$0.00	\$0.00	\$0.00	\$1,189,334.00
Contributions	(\$232,335.00)	(\$65,000.00)	(\$297,335.00)	\$0.00	\$0.00	\$0.00	(\$297,335.00)
Net Expenditures - GAAP	\$696,999.00	\$195,000.00	\$891,999.00	\$0.00	\$0.00	\$0.00	\$891,999.00
2009 Total	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
2010 Total	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
2011 Total	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
2012 Total	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
2013 Total	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
2014 Total	\$696,999.00	\$195,000.00	\$891,999.00	\$0.00	\$0.00	\$0.00	\$891,999.00

Production 2
Page 765 of 1143
Thompson

Approval Type: Non-IT Projects

Authorized by	Amount	Name	Date Approved	Req'd
Supervisor	\$25,000.00			N
Manager	\$100,000.00	Byrd, Larry	12/6/2013	Y
Budget Coordinator	\$0.00	Cuzick, Fred		Y
Special Approvers	\$0.00	Feider, Ryan		Y
Director	\$300,000.00	Joyce, Jeffrey		Y
Vice President	\$750,000.00	Bowling, Donald		Y
Investment Committee Coordinator	\$0.00	Kuhl, Megan		Y
Financial Planning Director	\$0.00	Cosby, David		Y
Senior Officer	\$1,000,000.00	Thompson, Paul		Y
CFO	\$1,000,001.00	Blake, Kent		Y
CEO	\$1,000,002.00	Staffieri, Victor		Y
Property Accounting	\$0.00	Rose, Bruce		Y

INVESTMENT MATERIALS

UOP #	Utility Account Id		Quantity	Total Cost	
05727	131200	TUBING (ALL) (05727)	204	\$18,678.00	

RETIRED EQUIPEMENT (OR MATERIALS)

UOP #	Utility Account Id		Quantity	Vintage Year	Original Project Number

AIP QUESTIONS

Are there Related Project Numbers?

Provide related project numbers or indicate 'N/A'.

140919KU

Is this an IT related project?

IT project is any project that requires IT involvement or the purchase of hardware and software.

no

Purchase/Sale of Real Estate?

Is this a transaction related to the sale/purchase of land or buildings?

no

AIP QUESTIONS

Attachment to Response to KIUC-1 Question No. 30(f)

Production 2

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Thompson

Budgeted?

Is the project budgeted or unbudgeted?

no

Alternate Budget Numbers?

If the project is unbudgeted, list alternate budget reference numbers. Enter N/A, if none.

FUNDED FROM GENERATION POOL - THIS IS A 2014 BUDGETED PROJECT THAT NEEDS EARLY ACTIVATION IN ORDER TO ISSUE PO.

Legal Asset Retirement Obligation?

Is there a legal or environmental requirement governing disposal of this asset?

no

Leased Asset?

Does this project involve a leased asset?

no

Obsolete Inventory?

Will this project create obsolete inventory?

no

Environmental Project

Is this an Environmental Project?

no

Environmental Cost Recovery

If an environmental project, is this an approved environmental cost recovery (ECR) project?

no

ECR Project Type

If this is an ECR project, indicate the project type.

N/A

ECR Compliance Number

If this is an ECR project, provide the ECR compliance plan number (see the approved project list on the Rates and Regulatory intranet site).

N/A

Environmental Affairs

Does Environmental Affairs need to review this project for environmental permitting issues (based on responses to the six questions in the Investment Proposal)?

no

Research and Experimental Credit

Is this an experimental project with the purpose of improving, enhancing, or adding to a current manufacturing process?

no

Sales Tax-Pollution Control

Is this project done for environmental regulations or statutes? (If yes, may qualify for the Pollution Control Exemption.)

no

Sales Tax-Manufacturing Integration

Is this project integrated in the Manufacturing Process? (Yes to this question and the following two questions may qualify for the New and Expanded Exemption.)

yes

Sales Tax-State Equipment Use

Is this equipment used in the state for the first time?

yes

Sales Tax-Upgrade or Improvement?

Is this project considered an upgrade or improvement? If yes, enter description on next line.

no

Sales Tax-Upgrade Description

Description of upgrade, if applicable (i.e., improved materials, increased capacity, longer life, etc.) from prior question. Enter N/A, if not applicable.

N/A

Produced as Native

Original File Name: TC2 Roof Transition Tube CEM .xlsm

Stored File Name: OpenText00334835.xlsm

Click here to enter text.

Project Name: TC2 Transition Roof Tube Replacement

Total Expenditures: \$ 892k Net IMEA/IMPA Reimbursement

Project Number(s): 140919LGE

Business Unit/Line of Business: Power Generation

Prepared/Presented By: Francisco Maldonado

Executive Summary

This project is to replace two hundred four transition tubes on the TC2 boiler roof (SA213 T23 2.5"x0.28" MWT). In 2012 the aforementioned transition tubes were identified, through inspection, to have hardness values above the allowable numbers set forth by ASME codes for this material. The high hardness values make this material very susceptible to cold cracking. Cold cracking is more prevalent and increases in likeliness to happen when the roof tube metal temperatures are at or below 300° F. In the event of a forced outage or planned outage of the unit, tube temperatures will fall below the 300° F and increase the likelihood of creating a crack and subsequent leak in the roof tubes.

The existing transition pieces have been subjected, during manufacturing, to a heating process which tapers (swages) the tube from a certain thickness to a smaller thickness. It has been determined that the high hardness values found, are attributed to this swaging process. The new transition pieces will be fabricated in such a manner that the heated swage process will no longer be required. The tubes will be fabricated to have a thicker wall and machined to match the wall of the existing tubes thus removing the possibility of added heat stress.

After careful review of the inspection report provided by Structural Integrity, Generation Engineering recommended that the transition tubes be replaced. Other options were explored such as a complete retrofit of the TC2 boiler roof with new material but this option proved to be unnecessary and not economical. The inspection reports show the problem areas are localized in the transition pieces and, as such, should be the areas that are repaired. If the tubes are not replaced, the likelihood of a tube leak increases over time.

This project, if approved, is scheduled to be completed during the TC2 2014 spring outage. Material is estimated to cost approximately \$136k (includes 6% sales tax) and labor is estimated to cost \$975k. The 2014 capital business plan includes \$616k (Net) for this project. The shortfall in the budget will be funded from the anticipated money left over on the TC2 PJFF Replacement Project (137671 LGE) due to favorable pricing received. NOTE: There is a warranty claim against Bechtel for this work.

Background

Trimble County 2 boiler roof is comprised of SA-213 Grade 23 tubes. Grade 23 is a, relatively speaking, new and exotic metal, and as such, there is very little knowledge and history on this material. The ASME code case that governs the manufacturing of Grade 23 is currently in its sixth revision due to the fact that new information has been gathered in the recent years. Unfortunately, some of that information was discovered at Trimble County do to several roof tube leaks and repairs.

The initial interest that led to the metallurgical analyses of the tubes was due to tube failures that occurred at field welds from original fabrication. When the repairs were made to the original tubes, stress concentrations were created. These concentrations created cold cracks in tubes at field weld line "D". It is important to note that poor fabrication was found and repaired at four different field weld lines and only those found and repaired at weld line "D" experienced cold cracking. Subsequent analysis was performed at the different field weld lines throughout the roof. The data shows that high hardness readings were not a global issue but an issue isolated to the "D" weld line.

- **Other Alternatives Considered(1 –Recommendation, 2 –Do nothing, 3 –Next Best Alt)**

1. It is recommended that only the transition pieces be replaced. This recommendation consists of replacing 204 tubes roughly 2 feet long. This is the least invasive and addresses the high hardness issue found during the analytical work performed in 2013.
2. If nothing is done the probability of a tube leak and unit shutdown occurring increases.
3. Next best option is to replace all of the T23 material on the TC2 boiler roof. This option is not very economical because not only will the material need to be replaced but engineering will have to be done to accommodate stresses and supports for the boiler if a new material is used.
4. Another option would be to replace only the tubes that test bad. This would require a complete analysis of each tube. The hardness test is done to a very small portion of the tube (approximately one square inch). To ensure that the structural integrity of each tube has not been compromised every square inch would need to be inspected. This would be a very costly endeavor and there is a high probability that all the tubes will have high hardness values and will need to be replaced.

Project Description

- **Project Scope and Timeline**

This project is scheduled to be completed during the TC2 2014 spring outage beginning in late February. The boiler contractor will remove and replace 204 transition roof tubes. The welds will be x-rayed and acceptance will be in accordance with ASME boiler and state codes. The contractor will also have to cut and re-weld screen tubes that penetrate the roof near the weld line at the cage inlet header. Cutting of the screen tubes is necessary to gain access to the weld line.

Many inspections and tests have been done to determine the best options for repair. Seven roof tubes have been replaced at this weld line and have proven to be the correct fix for the issue. These new tubes have been in service for 6 months and no known issues have been experienced to date.

If approved, the material will be ordered as soon as practical with an expected delivery in late February. The work is expected to take 3 weeks starting in late February. The timeline for the repair will not be an issue due to the fact that the outage is expected to last 10-14 weeks.

- **Project Cost**

The estimated project cost is \$1,190k (gross). This includes \$136k (includes 6% sales tax) for material, \$975k for labor and \$50k for contingency. The labor and material portions will be done on a lump sum basis. Contingency is based on 5% of the project total. Some work has been done in this area and many of the unknowns have been taken into account the 5% will be sufficient in case an unforeseen issue arises.

Economic Analysis and Risks

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	under \$500K? If yes, the project is not subject to NSR and no further evaluation is required. If no, go to Question #3.	No
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Cc: Cuzick, Fred
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From: Fred Cuzick- Trimble County
Date: 12-6-13
Re: AIP-140919LGE- TC2 Transition Roof Tubes

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From: Cuzick, Fred(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=E009048)
To: Maldonado, Francisco
CC: Joyce, Jeff
BCC:
Subject: FW: TC2 Roof Tube Project
Sent: 12/06/2013 09:52:41 AM -0500 (EST)
Attachments: TC2 Roof Transition Tube Replacement (Revised CEM posted 03-06-13) - Next Be....xlsm; TC2 Roof Transition Tube Replacement (Revised CEM posted 03-06-13).xlsm; TC2 Roof Tube Replacement Investment Proposal.docx;

Cisco, has this project been reviewed by Environmental Affairs ? Rusty just mentioned that we need to add language that it has been reviewed and is Ok with them. If you could add that language and send back to me, I can get this started going in the approval process.

Thanks

Fred M. Cuzick, CPA, CGMA
Budget Coordinator
LG&E / Trimble County Station
(502)627-6213 (Office)
(502)627-6226 (Fax)
Fred.Cuzick@lge-ku.com

From: Maldonado, Francisco
Sent: Thursday, November 21, 2013 3:38 PM
To: Hudson, Rusty; Joyce, Jeff; Cuzick, Fred
Cc: Byrd, Larry; Ransdell, Charles
Subject: RE: TC2 Roof Tube Project

See attached and comments in red.

From: Hudson, Rusty
Sent: Thursday, November 21, 2013 12:01 PM
To: Maldonado, Francisco; Joyce, Jeff; Cuzick, Fred
Cc: Byrd, Larry; Ransdell, Charles
Subject: RE: TC2 Roof Tube Project

I had a few comments Francisco.

- I would state early on in the paper if we have a warranty claim against Bechtel for this work, and if not, what the reason is. **See added sentence in executive summary.**
- On page 3, second line under project cost, the \$975 needs a "k" with it. **Fixed.**
- On page 4 we rule out A&D and PIC but don't say who we are leaning toward, so I would add that in (presume it is SE Boiler) **See paragraph on page 4 right below the table.**
- The financial table on page 4 states that we have \$616k in the '14 BP for this project, but the executive summary states \$821k, so we need to fix one of those. We also need to say how we are funding the 2014 shortfall to budget, I don't believe I have taken that to the RAC yet. **I have changed \$821k to %616k. See additional sentence on page 1 for budget funding.**
- For the table on page 5 that lists the different options, we need to list the ROE by year for each option for 2014-2018. **See table on page 5.**
- I can't trace back in the CEM the results for the 50% replacement but the IRR and ROE for that option don't make sense to me (being that high). **The high numbers were due to the availability improvement not being changed from one CEM to the other. I have fixed the issue see CEM's attached.**
- For the first assumption listed we need to state what the probability is that we are using in the CEM for failure. **Fixed.**
- Jeff, given that we appear to be fairly comfortable with the dollar estimate, I will leave it up to you and Ralph as to whether or not it needs to go to the IC. Given that you have \$100k of cushion, I don't personally think you need to if your confidence level of staying under \$1,000k net is high.

Rusty

From: Maldonado, Francisco
Sent: Thursday, November 21, 2013 9:58 AM
To: Hudson, Rusty; Joyce, Jeff; Cuzick, Fred
Cc: Byrd, Larry; Ransdell, Charles
Subject: TC2 Roof Tube Project

All,

Attached is the latest revised CEM and IP for the TC2 roof tube replacement project. Please let me know of any comments or questions.

Thanks,

Francisco Maldonado

Mechanical Engineer
Trimble County Station, LG&E
487 Corn Creek Road
Bedford, KY 40006
Phone: (502) 627-6218
Mobile: (502) 662-2880

Produced as Native

Original File Name: TC2 Roof Transition Tube Replacement (Revised CEM posted 03-06-13) - Next Best Option.xlsm

Stored File Name: OpenText00334848.xlsm

Produced as Native

Original File Name: TC2 Roof Transition Tube Replacement (Revised CEM posted 03-06-13).xlsm

Stored File Name: OpenText00334849.xlsm

Investment Proposal for Investment Committee Meeting on: _____

Project Name: TC2 Transition Roof Tube Replacement

Total Expenditures: \$ 892k Net IMEA/IMPA Reimbursement

Project Number(s): 140919LGE

Business Unit/Line of Business: Power Generation

Prepared/Presented By: Francisco Maldonado

Executive Summary

This project is to replace two hundred four transition tubes on the TC2 boiler roof (SA213 T23 2.5"x0.28" MWT). In 2012 the aforementioned transition tubes were identified, through inspection, to have hardness values above the allowable numbers set forth by ASME codes for this material. The high hardness values make this material very susceptible to cold cracking. Cold cracking is more prevalent and increases in likeliness to happen when the roof tube metal temperatures are at or below 300° F. In the event of a forced outage or planned outage of the unit, tube temperatures will fall below the 300° F and increase the likelihood of creating a crack and subsequent leak in the roof tubes.

The existing transition pieces have been subjected, during manufacturing, to a heating process which tapers (swages) the tube from a certain thickness to a smaller thickness. It has been determined that the high hardness values found, are attributed to this swaging process. The new transition pieces will be fabricated in such a manner that the heated swage process will no longer be required. The tubes will be fabricated to have a thicker wall and machined to match the wall of the existing tubes thus removing the possibility of added heat stress.

After careful review of the inspection report provided by Structural Integrity, Generation Engineering recommended that the transition tubes be replaced. Other options were explored such as a complete retrofit of the TC2 boiler roof with new material but this option proved to be unnecessary and not economical. The inspection reports show the problem areas are localized in the transition pieces and, as such, should be the areas that are repaired. If the tubes are not replaced, the likelihood of a tube leak increases over time.

This project, if approved, is scheduled to be completed during the TC2 2014 spring outage. Material is estimated to cost approximately \$136k (includes 6% sales tax) and labor is estimated to cost \$975k. The 2014 capital business plan includes \$616k (Net) for this project. The shortfall in the budget will be funded from the anticipated money left over on the TC2 PJFF Replacement Project (137671 LGE) due to favorable pricing received. NOTE: There is a warranty claim against Bechtel for this work.

Background

Trimble County 2 boiler roof is comprised of SA-213 Grade 23 tubes. Grade 23 is a, relatively speaking, new and exotic metal, and as such, there is very little knowledge and history on this material. The ASME code case that governs the manufacturing of Grade 23 is currently in its sixth revision due to the fact that new information has been gathered in the recent years. Unfortunately, some of that information was discovered at Trimble County do to several roof tube leaks and repairs.

The initial interest that led to the metallurgical analyses of the tubes was due to tube failures that occurred at field welds from original fabrication. When the repairs were made to the original tubes, stress concentrations were created. These concentrations created cold cracks in tubes at field weld line "D". It is important to note that poor fabrication was found and repaired at four different field weld lines and only those found and repaired at weld line "D" experienced cold cracking. Subsequent analysis was performed at the different field weld lines throughout the roof. The data shows that high hardness readings were not a global issue but an issue isolated to the "D" weld line.

- **Other Alternatives Considered(1 –Recommendation, 2 –Do nothing, 3 –Next Best Alt)**

1. It is recommended that only the transition pieces be replaced. This recommendation consists of replacing 204 tubes roughly 2 feet long. This is the least invasive and addresses the high hardness issue found during the analytical work performed in 2013.
2. If nothing is done the probability of a tube leak and unit shutdown occurring increases.
3. Next best option is to replace all of the T23 material on the TC2 boiler roof. This option is not very economical because not only will the material need to be replaced but engineering will have to be done to accommodate stresses and supports for the boiler if a new material is used.
4. Another option would be to replace only the tubes that test bad. This would require a complete analysis of each tube. The hardness test is done to a very small portion of the tube (approximately one square inch). To ensure that the structural integrity of each tube has not been compromised every square inch would need to be inspected. This would be a very costly endeavor and there is a high probability that all the tubes will have high hardness values and will need to be replaced.

Project Description

- **Project Scope and Timeline**

This project is scheduled to be completed during the TC2 2014 spring outage beginning in late February. The boiler contractor will remove and replace 204 transition roof tubes. The welds will be x-rayed and acceptance will be in accordance with ASME boiler and state codes. The contractor will also have to cut and re-weld screen tubes that penetrate the roof near the weld line at the cage inlet header. Cutting of the screen tubes is necessary to gain access to the weld line.

Many inspections and tests have been done to determine the best options for repair. Seven roof tubes have been replaced at this weld line and have proven to be the correct fix for the issue. These new tubes have been in service for 6 months and no known issues have been experienced to date.

If approved, the material will be ordered as soon as practical with an expected delivery in late February. The work is expected to take 3 weeks starting in late February. The timeline for the repair will not be an issue due to the fact that the outage is expected to last 10-14 weeks.

- **Project Cost**

The estimated project cost is \$1,190k (gross). This includes \$136k (includes 6% sales tax) for material, \$975k for labor and \$50k for contingency. The labor and material portions will be done on a lump sum basis. Contingency is based on 5% of the project total. Some work has been done in this area and many of the unknowns have been taken into account the 5% will be sufficient in case an unforeseen issue arises.

Economic Analysis and Risks

- **Bid Summary**

Four suppliers were solicited to bid on the T23 roof tube material. Out of the four only two provided a bid. Michigan seamless “no bid” because they did not have the fabrication capabilities to provide the specified tubes and Boiler Tube of America “no bid” for reasons unknown. Refer to table below for an overview of the bidders prices.

Material Bids	Alstom Power	Boiler Tube of America	Minotte	Michigan Seamless Tubing
MBE/WBE				
Total Cost (\$000s)	\$147	No Bid	\$136	No Bid

Labor Bids	A&D	PIC	SE Boiler	TEI	MCS	UGS	Titan
MBE/WBE							
Removal Costs	\$167	\$233	\$195	\$252	\$579	\$1,095	\$936
Installation Costs	\$255	\$544	\$780	\$1,005	\$876	\$1,645	\$2,062
Total Cost (\$000s)	\$422	\$777	\$975	\$1,256	\$1,454	\$2,740	\$2,997

It is likely that we will use Minotte for the material purchase. Minotte is both capable of meeting the required schedule and manufacturing the material to the required specification. It is also likely that Southeast Boiler (SBR) will be used for the labor portion of the project. It was found during bid review that SBR is technically the most competent contractor. Not only do they have experience welding the T23 material but they have experience with welding the T23 material at the TC the roof tube and in particular at weld line "D".

A&D was also considered for the labor portion of this project. Upon review of A&D's bid it was found that their labor hours seemed too low to complete this job and it is very likely that they have underestimated the scope of work associated with this project. Along with low labor hours they lack the technical expertise to work with T23 and would be hard pressed to provide a quality job. PIC was also considered but due to recent history on TC1 boiler projects it has been determined that this project would run the risk of not being completed on time by PIC. PIC is a smaller company that depends heavily on "key" project managers if those project managers are not available for a given job the job seems to suffer. Such was the case on TC1 and the probability of happening again on TC2 is very likely.

- **Budget Comparison and Financial Summary**

Financial Detail by Year (\$000s)	2013	2014	2015	Post 2015	Total
1. Capital Investment Proposed		697			697
2. Cost of Removal Proposed		195			195
3. Total Capital and Removal Proposed (1+2)	-	892	-	-	892
4. Capital Investment 2014 BP		616			616
5. Cost of Removal 2014 BP					-
6. Total Capital and Removal 2014 BP (4+5)	-	616	-	-	616
7. Capital Investment variance to BP (4-1)	-	(81)	-	-	(81)
8. Cost of Removal variance to BP (5-2)	-	(195)	-	-	(195)
9. Total Capital and Removal variance to BP (6-3)	-	(276)	-	-	(276)
10. Project O&M Proposed					-
11. Total Project Proposed (3+10)	-	892	-	-	892
12. Net Income		\$41	\$36	\$916	\$993

Financial Summary (\$000s):

Discount Rate:	6.50%
Capital Breakdown:	
Contract Labor:	\$975
Materials:	\$136
Local Engineering:	\$0
Burdens:	\$24
Contingency:	\$55
Reimbursements:	(\$298)
Net Capital Expenditure:	\$892

Project Presented and alternatives:

Financial Analysis - Project Summary (\$000)	Total Project	Replace 50% (Next Best)	Do Nothing
NPVRR	(\$1,011)	\$138	(\$2,683)
NPV Cash Flows	\$109	\$(5)	\$254
IRR	8.1%	6.4%	-1.4%
ROE	10.0%	5.3%	0.0%

ROE by Year					
	2014	2015	2016	2017	2018
Proposed Project	10.9%	4.9%	7.6%	13.3%	14.3%
Next Best (50% Replacement)	5.3%	-.02%	-1.3%	2.1%	12.7%
Do Nothing	0%	0%	0%	0%	0%

- **Assumptions**

- If this project is not completed, there is a 10% probability that a forced outage will occur of 5 days duration on Trimble County 2 per year.
- The probability of a forced outage due to roof tube leaks increases 1% each year.

- **Environmental**

New Source Review Evaluation, questions 1-6 (as applicable) must be completed on all investment proposals.		
1	Does the project include any new equipment or component with emissions, result in emissions not previously emitted or cause the unit to exceed any emission limit? If yes, Environmental Affairs is required to review this project. If no, go to Question #2.	No
2	Question 2: Is the change a like-kind or functionally equivalent replacement	

	under \$500K? If yes, the project is not subject to NSR and no further evaluation is required. If no, go to Question #3.	No
3	Question 3: Does the equipment change increase the emissions unit's maximum hourly heat input? If yes, Environmental Affairs is required to review this project. If no, go to Question #4.	No
4	Question 4: Does the equipment change increase the emissions unit's electrical output? If yes, Environmental Affairs is required to review this project. If no, go to Question #5.	No
5	Question 5: Has the equipment being repaired/replaced been repaired or replaced in the past at this unit or other units in the fleet? If no, Environmental Affairs is required to review this project. If yes, list any known projects and go to Question #6.	Yes
6	Question 6: Have there been forced outages or unit de-rates in the past 5 years due to this component? If no, the project is not subject to NSR and no further evaluation is required; if the answer is yes, Environmental Affairs needs to review this project.	Yes

- **Risks**

Based on hardness data collected at the roof tubes, it is highly likely that there will be a tube leak forced outages will occur on an increasing basis until transition roof tubes are repaired.

Conclusions and Recommendation

It is recommended that the Investment Committee approve the TC2 Transition Roof Tube Replacement project for \$1,190k gross (\$892k Net) to avoid certain catastrophic tube failure related outages.

From: "Maldonado, Francisco" <>

Production 2

To: =?utf-8?Q?Craft
_Jim?=<Jim.Craft@lge-ku.com>

Page 786 of 1143

Thompson

Date: 1/20/2014 8:35:15 AM

Subject: TC2 Roof Tube Investment Proposal

Attachments: TC2 Roof Tube Replacement Investment Proposal.1.docx

Jim,

Attached is the investment proposal for the roof tube project. Please let me know if this is what you were looking for and if you need anything else.

Thanks,

Francisco Maldonado

Mechanical Engineer

Trimble County Station, LG&E

487 Corn Creek Road

Bedford, KY 40006

Phone: (502) 627-6218

Mobile: (502) 662-2880

Investment Proposal for Investment Committee Meeting on: _____

Project Name: TC2 Transition Roof Tube Replacement

Total Expenditures: \$ 892k Net IMEA/IMPA Reimbursement

Project Number(s): 140919LGE

Business Unit/Line of Business: Power Generation

Prepared/Presented By: Francisco Maldonado

Executive Summary

This project is to replace two hundred four transition tubes on the TC2 boiler roof (SA213 T23 2.5"x0.28" MWT). In 2012 the aforementioned transition tubes were identified, through inspection, to have hardness values above the allowable numbers set forth by ASME codes for this material. The high hardness values make this material very susceptible to cold cracking. Cold cracking is more prevalent and increases in likeliness to happen when the roof tube metal temperatures are at or below 300° F. In the event of a forced outage or planned outage of the unit, tube temperatures will fall below the 300° F and increase the likelihood of creating a crack and subsequent leak in the roof tubes.

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Trimble County 2 boiler roof is comprised of SA-213 Grade 23 tubes. Grade 23 is a, relatively speaking, new and exotic metal, and as such, there is very little knowledge and history on this material. The ASME code case that governs the manufacturing of Grade 23 is currently in its sixth revision due to the fact that new information has been gathered in the recent years. Unfortunately, some of that information was discovered at Trimble County do to several roof tube leaks and repairs.

The initial interest that led to the metallurgical analyses of the tubes was due to tube failures that occurred at field welds from original fabrication. When the repairs were made to the original tubes, stress concentrations were created. These concentrations created cold cracks in tubes at field weld line "D". It is important to note that poor fabrication was found and repaired at four different field weld lines and only those found and repaired at weld line "D" experienced cold cracking. Subsequent analysis was performed at the different field weld lines throughout the roof. The data shows that high hardness readings were not a global issue but an issue isolated to the "D" weld line.

- **Other Alternatives Considered(1 –Recommendation, 2 –Do nothing, 3 –Next Best Alt)**

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Project Description

- **Project Scope and Timeline**

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If approved, the material will be ordered as soon as practical with an expected delivery in late February. The work is expected to take 3 weeks starting in late February. The timeline for the repair will not be an issue due to the fact that the outage is expected to last 10-14 weeks.

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Economic Analysis and Risks

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9. Total Capital and Removal variance to BP (6-3)	-	(276)	-	-	(276)
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Burdens:	\$24
Contingency:	\$55
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Project Presented and alternatives:

Financial Analysis - Project Summary (\$000)	Total Project	Replace 50% (Next Best)	Do Nothing
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Do Nothing	0%	0%	0%	0%	0%

- **Assumptions**

- If this project is not completed, there is a 10% probability that a forced outage will occur of 5 days duration on Trimble County 2 per year.
- The probability of a forced outage due to roof tube leaks increases 1% each year.

- **Environmental**

New Source Review Evaluation, questions 1-6 (as applicable) must be completed on all investment proposals.		
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2	Question 2: Is the change a like-kind or functionally equivalent replacement under \$500K? If yes, the project is not subject to NSR and no further evaluation is required. If no, go to Question #3.	No
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- **Risks**

Based on hardness data collected at the roof tubes, it is highly likely that there will be a tube leak forced outages will occur on an increasing basis until transition roof tubes are repaired.

Conclusions and Recommendation

It is recommended that the Investment Committee approve the TC2 Transition Roof Tube Replacement project for \$1,190k gross (\$892k Net) to avoid certain catastrophic tube failure related outages.

Produced as Native

Original File Name: Microsoft_Excel_97-2003_Worksheet1.xls

Stored File Name: OpenText00335540.xls

From: Anderson, Dave (Trimble County)(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=ANDERSON)
To: Afiyet, Hamit; Ball, Adam; Bethany, Ron; Boone, James; Bullock, Sam; Byrd, Larry; Cash, Rebecca; Chin, Doug; Craft, Jim; Dorwart, Jordan; Dukes, Christopher; Feider, Ryan; Gilliland, Dave; Gray, Jeffrey; Griffith, Michelle; Hance, Chuck; Hannon, Hannah; Hayes, Christopher; Heinz, John; Henderson, Trent; Hudson, Glen; Jensen, Jack; Jones, Steve; Joyce, Jeff; Joyce, Kenny; Maldonado, Francisco; Melloan, Ricky; Menezes, Tomas; Mills, Ricky; Mohn, Laura; Moore, Emmett; Noonan, Kenny; Park, Marci; Payne, Nicholas; Phelps, Grant; Powell, Richard; Rabe, Phil; Raker, Adam; Ransdell, Charles; Sanders, Matt; Sedam, Dale; Simpson, Jeff; Slaughter, Mitch; Stewart, Robert E. (Trimble); Thomas, Mark; Thurston, Eric; Turner, Haley; Turner, Tyler; Walcott, Danny
CC:
BCC:
Subject: TC2S14 Spring Outage Plan.xlsm
Sent: 02/05/2014 12:49:56 PM -0500 (EST)
Attachments: TC2S14 Spring Outage Plan.xlsm; TC2 2014 Weekend and First week Coordination.docx; Outage Programme - Preliminary Issue (13-01-31).docx;

All,

For today's meeting we will discuss the first 7 days of outage. I have provided documents consisting of: Outage Plan, The first weekend and week of outage planning and Doosan's latest schedule.

Thanks,

David W. Anderson

Trimble County Outage Coordinator
Tel. 502-627-6313
Fax 502-217-2199
email: dave.anderson@lge-ku.com

TC U2 Spring 2014 Outage		Trimble County - Outage Programme - Preliminary												31-Jan-14 16:02													
Activity ID	Activity Name	Start	Finish	February 2014			March 2014			April 2014			May 2014			June 2014											
				03	10	17	24	03	10	17	24	31	07	14	21	28	05	12	19	26	02	09	16	23			
<p>TC U2 Spring 2014 Outage</p> <p>Key Milestones</p> <p>M1000 Boiler Off Load</p> <p>M1010 Gas Path Permit Cancellation</p> <p>M1020 Issue Permit FD Fan</p> <p>M1030 Unit Outage Completion</p> <p>Premobilization</p> <p>Preoutage</p> <p>Outage</p> <p>Boiler Offline</p> <p>A1150 Boiler Offline/Doors Open (LG&E)</p> <p>A1160 Remove insulation/cladding on Burners</p> <p>A1170 Burner electrical disconnects (LG&E)</p> <p>A1180 Blasting for Slag</p> <p>A1190 Inspect for clinkers</p> <p>A1340 Boiler Water Wash (LG&E)</p> <p>A1310 Roll Conveyor Out</p> <p>A1200 Boiler Released</p> <p>A1220 Gag 2 PF Pipes/Remove 2 Burners</p> <p>A1230 Install scaffold</p> <p>A1235 Remove burner bolts/disconnect hoses</p> <p>A1206 Remove coal pipe elbows East Wall</p> <p>A1225 Temporary Cover on exterior wall</p> <p>A1216 Remove coal pipe elbows West Wall</p> <p>A1240 Roll conveyor in</p> <p>A1250 Install blank over Burner openings</p> <p>A1330 Mark off area for Anstar shot blast</p> <p>A1260 Shot blast/Anstar coating</p> <p>A1270 Clean Scaffold top/bottom</p> <p>A1280 Inspect burner openings for slag</p> <p>A1285 Remove Slag debris from Burner Throats</p> <p>A1290 Run Conveyor (LG&E)</p> <p>A1300 Roll Conveyor out</p> <p>Burner Replacement</p> <p>FW Burners</p> <p>A1320 Remove ignitor air piping for burners 1-5</p> <p>A2580 Stage/set up rigging for burner removal</p> <p>A2640 Remove PF Knife Valves 1 - 5</p> <p>A1350 Remove burners 1 - 5</p> <p>A1370 Establish cut lines for panels 1-5</p> <p>A1355 Remove Quarries</p> <p>A1380 Saw cut panels 1 - 5</p> <p>A1360 Stage/set up rigging for panel removal</p> <p>A1390 Remove panels & seal box 1 - 5</p> <p>A1400 Machine/prep panels 1-5</p> <p>A1410 Fit and tack panels 1-5</p>																											
		02-Dec-13A	18-May-14																								
		08-Feb-14	18-May-14																								
		08-Feb-14*	04-May-14																								
		05-May-14	18-May-14*																								
		02-Dec-13A	14-Jan-14																								
		07-Jan-14A	10-Feb-14																								
		24-Jan-14	18-May-14																								
		08-Feb-14	18-Feb-14																								
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		10-Feb-14	12-Feb-14																								
		10-Feb-14	17-Feb-14																								
		10-Feb-14	12-Feb-14																								
		10-Feb-14	17-Feb-14																								
		13-Feb-14	13-Feb-14																								
		13-Feb-14	13-Feb-14																								
		13-Feb-14	14-Feb-14																								
		14-Feb-14	15-Feb-14																								
		15-Feb-14	15-Feb-14																								
		15-Feb-14	17-Feb-14																								
		17-Feb-14	18-Feb-14																								
		18-Feb-14	18-Feb-14																								
		01-Feb-14	04-May-14																								
		10-Feb-14	11-Feb-14																								
		11-Feb-14	12-Feb-14																								
		14-Feb-14	16-Feb-14																								
		17-Feb-14	22-Feb-14																								
		22-Feb-14	23-Feb-14																								
		22-Feb-14	23-Feb-14																								
		23-Feb-14	24-Feb-14																								
		23-Feb-14	24-Feb-14																								
		24-Feb-14	26-Feb-14																								
		26-Feb-14	01-Mar-14																								
		01-Mar-14	04-Mar-14																								

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Trimble County - Outage Programme - Preliminary

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Activity ID	Activity Name	Start	Finish	February 2014				March 2014				April 2014				May 2014				June 2014							
				03	10	17	24	03	10	17	24	03	10	17	24	03	10	17	24	03	10	17	24	03	10	16	23
A1420	Weld out panels 1 - 5	04-Mar-14	08-Mar-14																								
A1430	NDE panels 1 - 5	09-Mar-14	11-Mar-14																								
A1433	Install peanuts/membrane	11-Mar-14	14-Mar-14																								
A1440	Install burners/confirm burner alignment 1 - 5	14-Mar-14	20-Mar-14																								
A1443	Field weld burner front plate to mounting rin	20-Mar-14	21-Mar-14																								
A1445	Fit & Weld Seal Box/Windbox Seal Plate	21-Mar-14	23-Mar-14																								
A1450	Reinstall refractory	23-Mar-14	25-Mar-14																								
A1453	Reinstall Knife gate	25-Mar-14	27-Mar-14																								
A1456	Reinstall cooling air	27-Mar-14	29-Mar-14																								
A1465	Install Beck drives	29-Mar-14	31-Mar-14																								
A1775	Install ignitors/oil gun/flame monitor burners	31-Mar-14	01-Apr-14																								
A1466	re-install igniter air piping for burners 1 - 5	01-Apr-14	03-Apr-14																								
A1455	Cold Commissioning burners 1 - 5	03-Apr-14	06-Apr-14																								
A7010	Remove PF Knife Valves 6 - 10	16-Feb-14	18-Feb-14																								
A1470	Remove igniter air piping for burners 6 - 10	22-Feb-14	22-Feb-14																								
A1490	Stage/set up rigging for burner removal	22-Feb-14	23-Feb-14																								
A1500	Remove burners 6 - 10	23-Feb-14	27-Feb-14																								
A1505	Remove Quart tiles	27-Feb-14	01-Mar-14																								
A1510	Stage/set rigging for panel removal	01-Mar-14	02-Mar-14																								
A1520	Establish cut lines for panels 6 - 10	02-Mar-14	03-Mar-14																								
A1530	Saw cut panels 6 - 10	03-Mar-14	05-Mar-14																								
A1540	Remove panels & seal box 6 - 10	05-Mar-14	07-Mar-14																								
A1550	Machine/prep panels 6 - 10	07-Mar-14	10-Mar-14																								
A1560	Fit and tack panels 6 - 10	10-Mar-14	13-Mar-14																								
A1570	Weld out panels 6 - 10	13-Mar-14	17-Mar-14																								
A1580	NDE panels 6 - 10	17-Mar-14	18-Mar-14																								
A1582	Install peanuts/membrane	18-Mar-14	21-Mar-14																								
A1595	Install burners/confirm burner alignment 6 - 10	21-Mar-14	27-Mar-14																								
A1590	Fit & Weld Seal Box/Windbox Seal Plate	27-Mar-14	29-Mar-14																								
A2590	Field weld Burner front plate to mounting rin	27-Mar-14	29-Mar-14																								
A1595	Reinstall refractory	29-Mar-14	31-Mar-14																								
A1597	Reinstall Knife gate	31-Mar-14	02-Apr-14																								
A1599	Reinstall cooling air	02-Apr-14	04-Apr-14																								
A1600	Install Beck drives	04-Apr-14	06-Apr-14																								
A4060	Install ignitors/oil gun/flame monitor burners	06-Apr-14	07-Apr-14																								
A1610	Reinstall igniter air piping for burners 6 - 10	07-Apr-14	09-Apr-14																								
A4070	Cold Commissioning burners 6 - 10	09-Apr-14	12-Apr-14																								
A7020	Remove PF Knife Valves 11 - 15	18-Feb-14	20-Feb-14																								
A1620	Remove igniter air piping for burners 11 - 15	27-Feb-14	28-Feb-14																								
A1640	Stage/set up rigging for burner removal	28-Feb-14	01-Mar-14																								
A1650	Remove burners 11 - 15	01-Mar-14	05-Mar-14																								
A1655	Remove Quart tiles	05-Mar-14	07-Mar-14																								
A1660	Stage/set up rigging for panel removal	07-Mar-14	08-Mar-14																								
A1670	Establish cut lines for panels 11 - 15	08-Mar-14	09-Mar-14																								
A1680	Saw cut panels 11 - 15	09-Mar-14	11-Mar-14																								
A1690	Remove panels & seal box 11 - 15	11-Mar-14	13-Mar-14																								
A1700	Machine/prep panels 11 - 15	13-Mar-14	15-Mar-14																								

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Remaining Level of Effort
 Actual Work

Remaining Work
 Critical Remaining Work
 Milestone
 Critical Mil.

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Trimble County - Outage Programme - Preliminary

TC U2 Spring 2014 Outage

Activity ID	Activity Name	Start	Finish	February 2014				March 2014				April 2014				May 2014				June 2014			
				03	10	17	24	03	10	17	24	07	14	21	28	05	12	19	26	02	09	16	23
A1710	Fit and tack panels 11 - 15	15-Mar-14	18-Mar-14																				
A1720	Weld out panels 11 - 15	18-Mar-14	22-Mar-14																				
A1730	NDE panels 11 - 15	22-Mar-14	24-Mar-14																				
A1733	Install peanuts/membrane	24-Mar-14	27-Mar-14																				
A1738	Install burners/confirm burner alignment 11	27-Mar-14	02-Apr-14																				
A1739	Fit & Weld Seal Box/Windbox seal plate	02-Apr-14	04-Apr-14																				
A2600	Field weld Burner front plate to mounting rin	02-Apr-14	04-Apr-14																				
A1745	Reinstall refractory	04-Apr-14	06-Apr-14																				
A1750	Reinstall Knife gate	06-Apr-14	08-Apr-14																				
A1755	Reinstall cooling air	08-Apr-14	10-Apr-14																				
A1760	Install Beck Drives	10-Apr-14	12-Apr-14																				
A4080	Install ignitors/oil gun/flame monitor burners	12-Apr-14	13-Apr-14																				
A1765	Reinstall igniter air piping for burners 11 - 1	13-Apr-14	15-Apr-14																				
A4090	Cold Commissioning burners 11 - 15	15-Apr-14	18-Apr-14																				
Cooling fans																							
A5650	Disconnect Electrical by LG&E	03-Feb-14*	04-Feb-14																				
A5660	Disconnect from ductwork	04-Feb-14	05-Feb-14																				
A5670	Unbolt from floor & store	05-Feb-14	06-Feb-14																				
A5650	Re-instate Cooling fans / electrical connecto	25-Apr-14	29-Apr-14																				
RW Burners																							
A1770	Remove cooling air fans (LG&E)	01-Feb-14	04-Feb-14																				
A1780	Remove igniter air piping for burners 16 - 20	10-Feb-14*	11-Feb-14																				
A1790	Stage/set up rigging for burner removal	11-Feb-14	12-Feb-14																				
A7030	Remove PF Knife Valves 16 - 20	16-Feb-14	18-Feb-14																				
A1800	Remove burners 16 - 20	19-Feb-14	24-Feb-14																				
A1810	Remove Quart tiles	24-Feb-14	26-Feb-14																				
A1820	Stage/set up rigging for panel removal	26-Feb-14	27-Feb-14																				
A1830	Establish cut lines for panels 16 - 20	27-Feb-14	28-Feb-14																				
A1840	Saw cut panels 16 - 20	28-Feb-14	02-Mar-14																				
A1850	Remove panels & seal box 16 - 20	02-Mar-14	04-Mar-14																				
A1860	Machine/prep panels 16 - 20	04-Mar-14	07-Mar-14																				
A1870	Fit and tack panels 16 - 20	07-Mar-14	10-Mar-14																				
A1880	Weld out panels 16 - 20	10-Mar-14	15-Mar-14																				
A1890	NDE Panels 16 - 20	15-Mar-14	17-Mar-14																				
A1895	Install peanuts/membrane	17-Mar-14	20-Mar-14																				
A1910	Install burners/confirm burner alignment 16	20-Mar-14	27-Mar-14																				
A1912	Fit & Weld Seal Box/Windbox Seal Plate	27-Mar-14	28-Mar-14																				
A2610	Field weld Burner front plate to mounting rin	27-Mar-14	28-Mar-14																				
A1915	Reinstall refractory	28-Mar-14	30-Mar-14																				
A1920	Reinstall Knife gate	30-Mar-14	01-Apr-14																				
A1925	Reinstall cooling air	01-Apr-14	03-Apr-14																				
A1935	Install Beck Drive	03-Apr-14	05-Apr-14																				
A4100	Install ignitors/oil gun/flame monitor burners	05-Apr-14	07-Apr-14																				
A1930	Reinstall igniter piping for burners 16 - 20	07-Apr-14	09-Apr-14																				
A4110	Cold Commissioning burners 16 - 20	09-Apr-14	12-Apr-14																				
A7040	Remove PF Knife Valves 21 - 25	18-Feb-14	20-Feb-14																				
A1940	Remove igniter piping for burners 21 - 25	24-Feb-14	25-Feb-14																				

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Remaining Level of Effort Actual Work Remaining Work Critical Remaining Work Milestone Critical Mil...

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Trimble County - Outage Programme - Preliminary

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Activity ID	Activity Name	Start	Finish	February 2014					March 2014					April 2014					May 2014					June 2014								
				03	10	17	24	03	10	17	24	31	07	14	21	28	05	12	19	26	02	09	16	23								
A1960	Stage/set up rigging for burner removal	25-Feb-14	25-Feb-14																													
A1970	Remove burners 21 - 25	25-Feb-14	01-Mar-14																													
A1980	Remove Quart tiles	01-Mar-14	03-Mar-14																													
A1990	Stage/set up rigging for panel removal	03-Mar-14	04-Mar-14																													
A2000	Establish cut lines for panels 21 - 25	04-Mar-14	05-Mar-14																													
A2010	Saw cut panels 21 - 25	05-Mar-14	07-Mar-14																													
A2020	Remove panels & Seal box 21 - 25	07-Mar-14	09-Mar-14																													
A2030	Machine/prep panels 21 - 25	09-Mar-14	12-Mar-14																													
A2040	Fit and tack panels 21 - 25	12-Mar-14	15-Mar-14																													
A2050	Weld out panels 21 - 25	15-Mar-14	19-Mar-14																													
A2060	NDE panels 21 - 25	19-Mar-14	20-Mar-14																													
A2065	Install peanuts/membrane	20-Mar-14	23-Mar-14																													
A2070	Install burners/confirm burner alignment 21	27-Mar-14	02-Apr-14																													
A2075	Fit & Weld Seal Box/Window Seal Plate	02-Apr-14	04-Apr-14																													
A2820	Field weld Burner front plate to mounting rin	02-Apr-14	04-Apr-14																													
A2080	Reinstall refractory	04-Apr-14	06-Apr-14																													
A2085	Reinstall Knife gate	06-Apr-14	08-Apr-14																													
A2090	Reinstall cooling air	08-Apr-14	10-Apr-14																													
A2105	Install Beek Drive	10-Apr-14	12-Apr-14																													
A4120	Install ignitors/oil gun/flame monitor burners	12-Apr-14	13-Apr-14																													
A4130	Reinstall igniter piping for burners 21 - 25	13-Apr-14	15-Apr-14																													
A4130	Cold Commissioning burners 21 - 25	15-Apr-14	18-Apr-14																													
A7050	Remove PF Knife Valves 26 - 30	20-Feb-14	22-Feb-14																													
A2110	Remove igniter piping for burners 26 - 30	01-Mar-14	02-Mar-14																													
A2130	Stage/set up rigging for burner removal	02-Mar-14	03-Mar-14																													
A2140	Remove burners 26 - 30	03-Mar-14	07-Mar-14																													
A2150	Remove Quart tiles	07-Mar-14	09-Mar-14																													
A2160	Stage/set up rigging for panel removal	09-Mar-14	10-Mar-14																													
A2170	Establish cut lines for panels 26 - 30	10-Mar-14	11-Mar-14																													
A2180	Saw cut panels 26 - 30	11-Mar-14	13-Mar-14																													
A2190	Remove panels/Seal Box 26 - 30	13-Mar-14	15-Mar-14																													
A2200	Machine/prep panels 26 - 30	15-Mar-14	17-Mar-14																													
A2210	Fit and tack panels 26 - 30	17-Mar-14	20-Mar-14																													
A2220	Weld out panels 26 - 20	20-Mar-14	24-Mar-14																													
A2230	NDE panels 26 - 30	24-Mar-14	26-Mar-14																													
A2235	Install peanuts/membrane	26-Mar-14	29-Mar-14																													
A2250	Install burners/confirm burner alignment 26	02-Apr-14	09-Apr-14																													
A2252	Fit & Weld Seal Box/Window Seal Plate	09-Apr-14	11-Apr-14																													
A2830	Field weld Burner front plate to mounting rin	09-Apr-14	11-Apr-14																													
A2255	Reinstall refractory	11-Apr-14	13-Apr-14																													
A2265	Reinstall knife gate	13-Apr-14	15-Apr-14																													
A2267	Reinstall cooling air	15-Apr-14	17-Apr-14																													
A2275	Install Beek drive	17-Apr-14	19-Apr-14																													
A4140	Install ignitors/oil gun/flame monitor burners	19-Apr-14	21-Apr-14																													
A2270	Reinstall igniter piping for burners 26 - 30	21-Apr-14	23-Apr-14																													
A4150	Cold Commissioning burners 26 - 30	23-Apr-14	26-Apr-14																													
Electrical																																
				10-Feb-14 02-May-14																												

Remaining Level of Effort

Actual Work

Remaining Work

Critical Remaining Work

Milestone

Critical Mil...

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Activity ID	Activity Name	Start	Finish	February 2014							March 2014							April 2014							May 2014							June 2014		
				03	10	17	24	03	10	17	24	31	07	14	21	28	05	12	19	26	02	09	16	23										
16th Floor Elevation GAH Sootblower SMR 0159																																		
A2280	Remove/Protect any cables hardware, etc.f	12-Feb-14	28-Feb-14	Remove/Protect any cables hardware, etc.f for and/or during installation																														
A2400	Cable trays/conduit cables 16th floor elev	12-Feb-14	15-Feb-14	Cable trays/conduit cables 16th floor elev																														
A2430	Hardware 16th floor elevation	16-Feb-14	20-Feb-14	Hardware 16th floor elevation																														
Section Valve Station GAH Sootblower																																		
A6370	Cable trays/ Conduit	28-Feb-14	01-Apr-14	01-Apr-14, Section Valve Station GAH Sootblower																														
A6380	Cables	28-Feb-14	10-Mar-14	Cable trays/ Conduit																														
A6390	Hardware	10-Mar-14	16-Mar-14	Hardware																														
A6400	Terminate and gland cables loop checks	16-Mar-14	22-Mar-14	Cables																														
OFA																																		
A6410	Remove/protect any cables hardware etc for	22-Mar-14	01-Apr-14	Terminate and gland cables loop checks																														
A6420	Disconnect supply at damper	15-Feb-14	11-Apr-14	11-Apr-14, OFA																														
A6430	Reconnect supply and loop checks	16-Feb-14	18-Feb-14	Remove/protect any cables hardware etc for and/or during installation																														
Burners																																		
A6440	Remove/protect any cables hardware for an	10-Apr-14	11-Apr-14	Disconnect supply at damper																														
A6490	Front Wall Middle Row Cable Trays Conduit	10-Feb-14	25-Feb-14	Reconnect supply and loop checks																														
A6500	Front Wall Middle Row Cables	15-Feb-14	25-Feb-14	Remove/protect any cables hardware for and/or during installation																														
A6510	Front Wall Middle Row Terminate & Gland c	22-Feb-14	01-Mar-14	Front Wall Middle Row Cable Trays Conduit																														
A6520	Front Wall Bottom Row terminate & gland c	04-Apr-14	19-Apr-14	Front Wall Middle Row Cables																														
A6530	Front Wall bottom row cables	16-Feb-14	07-Mar-14	Front Wall bottom row cable trays conduit																														
A6540	Front Wall Bottom Row terminate & gland c	03-Mar-14	22-Mar-14	Front Wall bottom row cables																														
A6460	Front Wall Top Row Cable Trays Conduit	10-Apr-14	25-Apr-14	Front Wall bottom row cable trays conduit																														
A6470	Front Wall Top Row Cables	21-Feb-14	12-Mar-14	Front Wall Top Row Cable Trays Conduit																														
A6480	Front Wall Top Row Terminate & Gland Ca	07-Mar-14	26-Mar-14	Front Wall Top Row Cables																														
A6610	Rear Wall bottom row cable trays conduit	29-Mar-14	13-Apr-14	Front Wall Top Row Terminate & Gland Cables Loop checks																														
A6620	Rear Wall bottom row cables	15-Feb-14	06-Mar-14	Front Wall Bottom Row terminate & gland cables loop checks																														
A6630	Rear Wall Bottom Row terminate & gland c	02-Mar-14	21-Mar-14	Front Wall Top Row Cables																														
A6590	Rear Wall Middle Row Cable Trays Conduit	17-Apr-14	02-May-14	Rear Wall bottom row cables																														
A6600	Rear Wall Middle Row Cable Trays Conduit	20-Feb-14	11-Mar-14	Rear Wall bottom row cable trays conduit																														
A6550	Rear Wall Middle Row Terminate & Gland c	08-Mar-14	02-Apr-14	Rear Wall Middle Row Cable Trays Conduit																														
A6560	Rear Wall Top Row Cable Trays Conduit	10-Apr-14	25-Apr-14	Rear Wall Middle Row Cables																														
A6570	Rear Wall Top Row Terminate & Gland Cab	26-Feb-14	17-Mar-14	Rear Wall Top Row Cable Trays Conduit																														
Roll back/Clean up																																		
A2290	Roll back/clean up	13-Mar-14	01-Apr-14	Rear Wall Top Row Cables																														
PF Pipes																																		
A4160	Gag all necessary spring cans Upper Level	03-May-14	04-May-14	Hardware Cabinets power Rio/Marshaling																														
A4240	Temp Support for loose end PF Sections U	10-Feb-14	18-Apr-14	18-Apr-14, PF Pipe																														
A4250	Removal of PF Knife Valve Upper Level	10-Feb-14	10-Feb-14	14, Front Wall																														
A4260	Remove PF Pipe Upper Level	11-Feb-14	12-Feb-14	Gag all necessary spring cans Upper Level																														
A4270	Clean up and remove debris and loose mat	14-Feb-14	16-Feb-14	Temp Support for loose end PF Sections Upper Level																														
A4180	Gag all necessary spring cans Middle Level	17-Feb-14	20-Feb-14	Removal of PF Knife Valve Upper Level																														
A4200	Temp Support for loose end PF sections Ml	21-Feb-14	21-Feb-14	Clean up and remove debris and loose material upper level																														
A4210	Removal of PF Knife Valves Middle Level	11-Feb-14	11-Feb-14	Gag all necessary spring cans Middle Level																														
A4220	Rig & Remove PF Pipe Middle Level	12-Feb-14	13-Feb-14	Temp Support for loose end PF sections Middle Level																														
A4230	Clean up and remove debris and loose mate	16-Feb-14	18-Feb-14	Removal of PF Knife Valves Middle Level																														
Legend																																		
<ul style="list-style-type: none"> Remaining Level of Effort Actual Work Milestone Remaining Work Critical Remaining Work Critical Mil... 																																		

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Trimble County - Outage Programme - Preliminary

TC Uz Spring 2014 Outage

Activity ID	Activity Name	Start	Finish	2014																		
				03	10	17	24	03	10	17	24	31	07	14	21	28	05	12	19	26	02	09
A4740	Remove Temporary Supports Lower Level	13-Apr-14	14-Apr-14																			
A4780	Remove Spring Can Gags Upper Level	15-Apr-14	15-Apr-14																			
A4790	Remove Spring Can Gags Middle Level	16-Apr-14	16-Apr-14																			
A4800	Remove Spring Can Gags Lower Level	17-Apr-14	17-Apr-14																			
A4820	Supervisor Verify all gags removed	18-Apr-14	18-Apr-14																			
OFA Ports																						
A2291	Remove insulation	10-Feb-14	25-Apr-14																			
East Wall (Front)																						
A2301	Modify PF pipe Supports (all 4 corners)	10-Feb-14	12-Feb-14																			
A2295	Demo Dampers	12-Feb-14	19-Feb-14																			
A2292	Remove DP piping	12-Feb-14	14-Feb-14																			
A2294	Remove redundant ducting	12-Feb-14	19-Feb-14																			
A2298	Remove OFA register (1 per corner) & store	12-Feb-14	12-Feb-14																			
A2300	Remove south window/duct	12-Feb-14	15-Feb-14																			
A2304	Doors - Save for reinstallation	12-Feb-14	15-Feb-14																			
A2296	Modify scaffold for boiler straps	19-Feb-14	20-Feb-14																			
South East Corner																						
A2305	Install jacks	20-Feb-14	10-Apr-14																			
A2310	Modify support straps	20-Feb-14	22-Feb-14																			
A2315	Install OFA support frame	22-Feb-14	23-Feb-14																			
A2325	Assemble 90 duct & windbox	23-Feb-14	05-Mar-14																			
A2335	Fit & Weld Turning Vanes	05-Mar-14	07-Mar-14																			
A2790	Seal Weld 90 Duct	07-Mar-14	15-Mar-14																			
A2320	Establish cut lines	22-Feb-14	23-Feb-14																			
A2330	Stage/install rigging	23-Feb-14	24-Feb-14																			
A2340	Remove panel	24-Feb-14	26-Feb-14																			
A2350	Machine/prep panel	26-Feb-14	01-Mar-14																			
A2360	Fit/tack panel	01-Mar-14	03-Mar-14																			
A2370	Weld out/complete panel	03-Mar-14	05-Mar-14																			
A2380	NDE panel	05-Mar-14	06-Mar-14																			
A2390	Assemble Toggle	06-Mar-14	16-Mar-14																			
A2820	Reinstall Doors (3 locations)	12-Mar-14	13-Mar-14																			
A2328	Seal Weld Toggle OFA duct	15-Mar-14	23-Mar-14																			
A2410	Reinstall DP	16-Mar-14	17-Mar-14																			
A2415	Remove temp steel supports	23-Mar-14	25-Mar-14																			
A2830	Fit New OFA Register	23-Mar-14	26-Mar-14																			
A2840	Re-fit existing OFA Register	26-Mar-14	27-Mar-14																			
A2420	Reinstall insulation/lagging	27-Mar-14	10-Apr-14																			
North East Corner																						
A3400	Install jacks	24-Feb-14	15-Apr-14																			
A3410	Modify support straps	25-Feb-14	27-Feb-14																			
A3420	Install OFA support frame	27-Feb-14	28-Feb-14																			
A3430	Assemble 90 duct & windbox	28-Feb-14	10-Mar-14																			
A3440	Fit & Weld Turning Vanes	10-Mar-14	12-Mar-14																			
A3450	Seal Weld 90 Duct	12-Mar-14	20-Mar-14																			
A3460	Establish cut lines	27-Feb-14	28-Feb-14																			
A3470	Stage/install rigging	28-Feb-14	01-Mar-14																			

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■ Remaining Level of Effort
■ Actual Work
■ Remaining Work
■ Critical Remaining Work
◆ Milestone
◆ Critical Milestone

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Trimble County - Outage Programme - Preliminary

TC U2 Spring 2014 Outage

Activity ID	Activity Name	Start	Finish	2014																																
				February			March			April			May																							
				03	10	17	24	03	10	17	24	03	10	17	24	03	10	17	24	03	10	17	24	31	07	14	21	28	05	12	19	26	02	09	16	23
A3480	Remove panel	01-Mar-14	03-Mar-14				■																													
A3490	Machine/prep panel	03-Mar-14	06-Mar-14				■																													
A3500	Fit/track panel	06-Mar-14	08-Mar-14					■																												
A3510	Weld out/complete panel	08-Mar-14	10-Mar-14						■																											
A3520	NDE panel	10-Mar-14	10-Mar-14							■																										
A3530	Assemble Toggle	10-Mar-14	20-Mar-14								■																									
A3540	Reinstate Doors (3 locations)	16-Mar-14	17-Mar-14									■																								
A3550	Seal Weld Toggle OFA duct	20-Mar-14	28-Mar-14										■																							
A3560	Reinstall DP	20-Mar-14	21-Mar-14											■																						
A3570	Remove temp steel supports	28-Mar-14	30-Mar-14												■																					
A3580	Fit New OFA Register	28-Mar-14	31-Mar-14													■																				
A3590	Re-fit existing OFA Register	31-Mar-14	01-Apr-14														■																			
A3600	Reinstall insulation/lagging	01-Apr-14	15-Apr-14															■																		
Disconnect OFA Damper Actuators				11-Feb-14																																
A5680	Disconnect Electrical by LG&E	10-Feb-14	10-Feb-14	▼																																
A5690	Disconnect mechanically NE & SE	10-Feb-14	11-Feb-14																																	
A5700	Disconnect mechanically NW & SW	10-Feb-14	11-Feb-14																																	
West (Rear)				25-Apr-14																																
A2990	Remove insulation	19-Feb-14	20-Feb-14																																	
A3380	Modify PF pipe Supports (all 4 corners)	19-Feb-14	20-Feb-14																																	
A2970	Demo Dampers	20-Feb-14	27-Feb-14																																	
A2980	Remove DP piping	20-Feb-14	22-Feb-14																																	
A3000	Remove redundant ducting	20-Feb-14	27-Feb-14																																	
A3030	Remove OFA register (1 per corner) & store	20-Feb-14	21-Feb-14																																	
A2870	Remove west windbox/duct	21-Feb-14	24-Feb-14																																	
A3320	Doors - Save for reinstalation	21-Feb-14	23-Feb-14																																	
A3010	Modify scaffold for boiler straps	27-Feb-14	28-Feb-14																																	
South West Corner				20-Apr-14																																
A3620	Install jacks	28-Feb-14	01-Mar-14																																	
A3630	Modify support straps	01-Mar-14	03-Mar-14																																	
A3640	Install OFA support frame	03-Mar-14	04-Mar-14																																	
A3650	Assemble 90 duct & windbox	05-Mar-14	15-Mar-14																																	
A3660	Fit & Weld Turning Vanes	15-Mar-14	17-Mar-14																																	
A3670	Seal Weld 90 Duct	17-Mar-14	25-Mar-14																																	
A3680	Establish cut lines	03-Mar-14	04-Mar-14																																	
A3690	Stage/install rigging	04-Mar-14	05-Mar-14																																	
A3700	Remove panel	05-Mar-14	07-Mar-14																																	
A3710	Machine/prep panel	07-Mar-14	10-Mar-14																																	
A3720	Fit/track panel	10-Mar-14	12-Mar-14																																	
A3730	Weld out/complete panel	12-Mar-14	14-Mar-14																																	
A3740	NDE panel	14-Mar-14	15-Mar-14																																	
A3750	Assemble Toggle	16-Mar-14	26-Mar-14																																	
A3760	Reinstate Doors (3 locations)	22-Mar-14	23-Mar-14																																	
A3770	Seal Weld Toggle OFA duct	25-Mar-14	02-Apr-14																																	
A3780	Reinstall DP	26-Mar-14	27-Mar-14																																	
A3790	Remove temp steel supports	02-Apr-14	04-Apr-14																																	
A3800	Fit New OFA Register	02-Apr-14	05-Apr-14																																	

■ Remaining Level of Effort
 ■ Actual Work
 ◆ Milestone
 ◆ Remaining Work
 ◆ Critical Remaining Work
 ◆ Critical Mill...

TASK filter: All Activities

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Activity ID	Activity Name	Start	Finish	February 2014			March 2014			April 2014			May 2014			June 2014							
				03	10	17	24	03	10	17	24	31	07	14	21	28	05	12	19	26	02	09	16
A3810	Re-fit existing OFA Register	05-Apr-14	06-Apr-14																				
A3820	Reinstall insulation/lagging	06-Apr-14	20-Apr-14																				
North West Corner																							
A3840	Install jacks	05-Mar-14	25-Apr-14																				
A3850	Modify support straps	06-Mar-14	08-Mar-14																				
A3860	Install OFA support frame	08-Mar-14	09-Mar-14																				
A3870	Assemble 90 duct & windbox	10-Mar-14	20-Mar-14																				
A3880	Fit & Weld Turning Vanes	20-Mar-14	22-Mar-14																				
A3890	Seal Weld 90 Duct	22-Mar-14	30-Mar-14																				
A3900	Establish out lines	08-Mar-14	09-Mar-14																				
A3910	Stage/install rigging	10-Mar-14	12-Mar-14																				
A3920	Remove panel	12-Mar-14	14-Mar-14																				
A3930	Machine/prep panel	14-Mar-14	16-Mar-14																				
A3940	Fit/lack panel	16-Mar-14	18-Mar-14																				
A3950	Weld out/complete panel	18-Mar-14	19-Mar-14																				
A3960	NDE panel	20-Mar-14	27-Mar-14																				
A3970	Assemble Toggle	26-Mar-14	30-Mar-14																				
A3980	Reinstate Doors (3 locations)	30-Mar-14	07-Apr-14																				
A3990	Seal Weld Toggle OFA duct	07-Apr-14	09-Apr-14																				
A4000	Reinstall DIP	11-Apr-14	25-Apr-14																				
A4010	Remove temp steel supports	07-Apr-14	10-Apr-14																				
A4020	Fit New OFA Register	10-Apr-14	11-Apr-14																				
A4030	Re-fit existing OFA Register	11-Apr-14	18-May-14																				
A4040	Reinstall insulation/lagging	14-Apr-14	16-Apr-14																				
Amstar Furnace Application (SMR0048)																							
C1068	Clear scaffold for AMSTAR / Partial Strip	17-Apr-14	18-Apr-14																				
C1069	AMSTAR Prep wall tubes	19-Apr-14	19-Apr-14																				
A6100	Roll Conveyor in	05-May-14	12-May-14																				
C1241	Owner to activate fan for AMSTAR works	08-May-14	13-May-14																				
C1070	AMSTAR Coat tubes	12-May-14	13-May-14																				
A1226	Roll Conveyor out	13-May-14	16-May-14																				
C1071	Remove furnace scaffold	13-May-14	18-May-14																				
A6110	Roll Back & Clean Up	16-May-14	18-May-14																				
C1251	Replace Ash Hopper/ancillary works	18-May-14	18-May-14																				
C1261	Close All Doors & Verify (LG&E)	13-Feb-14	06-Mar-14																				
WCAH Upgrade SMR095																							
A6680	Pull Old Coils North End	13-Feb-14	18-Feb-14																				
A6690	Deflector plates North End	13-Feb-14	16-Feb-14																				
A6700	New Coils in North End	28-Feb-14	28-Feb-14																				
A6710	Move Header North End	13-Feb-14	06-Mar-14																				
A6720	Pull Old Coils South End	13-Feb-14	18-Feb-14																				
A6730	Deflector plates South End	18-Feb-14	16-Feb-14																				
A6740	New Coils in South End	28-Feb-14	28-Feb-14																				
A6750	Move Header South End	11-Mar-14	06-Mar-14																				
FD Outdoor Suction Duct Hood																							
A6890	Build Scaffold FD Hoods North End	13-Mar-14	13-Mar-14																				
A6900	Pull Screen FD Hoods North End	13-Mar-14	16-Mar-14																				

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TASK filter: All Activities

Remaining Level of Effort

Actual Work

Remaining Work

Critical Remaining Work

Milestone

Critical Milestone

Trimble County - Outage Programme - Preliminary

Activity ID	Activity Name/Start	Finish	2014																				
			February			March			April			May			June								
			03	10	17	24	03	10	17	24	31	07	14	21	28	05	12	19	26	02	09	16	23
A6910	Inspect Welds FD Hoods North End	16-Mar-14																					
A6920	Repair/Add Weld/FD Hoods North End	18-Mar-14																					
A6930	Fly Hoods up FD Hoods North End	21-Mar-14																					
A6940	Weld Out FD Hoods North End	23-Mar-14																					
A6840	Pull Screen FD Hoods South End	11-Mar-14																					
A6850	Inspect Welds FD Hoods South End	14-Mar-14																					
A6860	Repair/Add Weld/FD Hoods South End	16-Mar-14																					
A6870	Fly Hoods up FD Hoods South End	19-Mar-14																					
A6880	Weld Out FD Hoods South End	21-Mar-14																					
A6800	FD Suction Hood Structural Steel ModificationsSMR	06-Mar-14																					
A6810	Locate & Stage Material North Side	06-Mar-14																					
A6820	Remove Handrail & Grating North Side	06-Mar-14																					
A6830	Install Plates North Side	07-Mar-14																					
A6830	Weld Out North Side	09-Mar-14																					
A6760	Locate & Stage Material South Side	06-Mar-14																					
A6770	Remove Handrail & Grating South Side	07-Mar-14																					
A6780	Install Plates South Side	07-Mar-14																					
A6790	Weld Out South Side	09-Mar-14																					
A6640	SMR0127 ID Fan Stial Sensing Ports	17-Feb-14																					
A6650	Build Scaffolding	17-Feb-14																					
A6650	Inspect and add insulation as needed	19-Feb-14																					
A6660	Completion inspection	21-Feb-14																					
A6670	Remove Scaffold	22-Feb-14																					
A6670	Remove Scaffold	24-Feb-14																					
A5230	Sootblower Piping	24-Jan-14																					
A5230	Install support steel work	24-Jan-14																					
A5240	Install supports	05-Feb-14																					
A5250	Install prefabricated spool pieces	05-Feb-14																					
A5260	fit, set & weld closure	05-Feb-14																					
A5270	Local heat treatment and radiography	12-Feb-14																					
A5190	Soot Blower Supply from Platen Stub	15-Feb-14																					
A5200	Install support steel work	15-Feb-14																					
A5200	Install supports	02-Mar-14																					
A5210	Install pre fabricated spool pieces	02-Mar-14																					
A5220	Fit set and weld closure	02-Mar-14																					
A5340	Heat treatment and radiography	14-Mar-14																					
A5060	6" Pipe from 714 down to 530	14-Mar-14																					
A5060	Install Support Steel work	14-Mar-14																					
A5070	Install supports	22-Mar-14																					
A5460	Install pre fabricated spool pieces	22-Mar-14																					
A5470	Dis invest redundant pipe	29-Mar-14																					
A5480	Install pre fabricated spool pieces	29-Mar-14																					
A5490	Fit set and weld closure	05-Apr-14																					
A5560	Local heat and radiography	10-Apr-14																					
A5350	Warning Drain from 530 to CDV	17-Feb-14																					
A5350	Install support steel work	17-Feb-14																					
A5360	Install supports	26-Feb-14																					

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TASK filter: All Activities

Trimble County - Outage Programme - Preliminary

31-Jan-14 16:02

Activity ID	Activity Name	Start	Finish	Gantt Chart (Timeline from Jan to Jun 2014)																							
				03	10	17	24	03	10	17	24	31	07	14	21	28	05	12	19	26	02	09	16	23			
A5370	Install pre fabricated spool pieces	08-Mar-14	13-Mar-14	[Green bar: 08-Mar-14 to 13-Mar-14]																							
A5380	Fit set and weld closure	14-Mar-14	19-Mar-14	[Green bar: 14-Mar-14 to 19-Mar-14]																							
A5390	Local heat and radiography	20-Mar-14	21-Mar-14	[Green bar: 20-Mar-14 to 21-Mar-14]																							
Install SVE Pipes work																											
A5500	Install Support Steel work	22-Mar-14	09-May-14	[Green bar: 22-Mar-14 to 09-May-14]																							
A5570	Build weather proof enclosure	22-Mar-14	23-Mar-14	[Green bar: 22-Mar-14 to 23-Mar-14]																							
A5580	Remove Roofing Materials	24-Mar-14	25-Mar-14	[Green bar: 24-Mar-14 to 25-Mar-14]																							
A5510	Install supports	29-Mar-14	01-Apr-14	[Green bar: 29-Mar-14 to 01-Apr-14]																							
A5520	Reposition roof air fan	02-Apr-14	11-Apr-14	[Green bar: 02-Apr-14 to 11-Apr-14]																							
A5530	Install pre fabricated spool pieces	12-Apr-14	14-Apr-14	[Green bar: 12-Apr-14 to 14-Apr-14]																							
A5540	Fit set and weld closure	15-Apr-14	17-Apr-14	[Green bar: 15-Apr-14 to 17-Apr-14]																							
A5590	Install Silencers 2 off	18-Apr-14	03-May-14	[Green bar: 18-Apr-14 to 03-May-14]																							
A5600	Reinstate Roofing	04-May-14	07-May-14	[Green bar: 04-May-14 to 07-May-14]																							
A5610	Remove weather proof enclosure	08-May-14	09-May-14	[Green bar: 08-May-14 to 09-May-14]																							
PCV Warming Line 1"																											
A4900	Install support steel work	10-Feb-14	20-Feb-14	[Green bar: 10-Feb-14 to 20-Feb-14]																							
A4910	Install Supports	10-Feb-14*	12-Feb-14	[Green bar: 10-Feb-14 to 12-Feb-14]																							
A4920	Install pre fabricated spool pieces	13-Feb-14	18-Feb-14	[Green bar: 13-Feb-14 to 18-Feb-14]																							
A4930	New lapping into existing line	13-Feb-14	16-Feb-14	[Green bar: 13-Feb-14 to 16-Feb-14]																							
A4940	Fit Set & weld closure	13-Feb-14	18-Feb-14	[Green bar: 13-Feb-14 to 18-Feb-14]																							
A4960	Valve Strip & Rebuild CV051	17-Feb-14	18-Feb-14	[Green bar: 17-Feb-14 to 18-Feb-14]																							
A4950	Heat Treat & radiography	19-Feb-14	20-Feb-14	[Green bar: 19-Feb-14 to 20-Feb-14]																							
Boiler Roof Fan SMR 170																											
A6960	Build Scaffold	25-Mar-14	12-Apr-14	[Green bar: 25-Mar-14 to 12-Apr-14]																							
A6980	Roof Material Removed	30-Mar-14	01-Apr-14	[Green bar: 30-Mar-14 to 01-Apr-14]																							
A6970	Scaffold Build up underneath from 17th Flo	01-Apr-14	03-Apr-14	[Green bar: 01-Apr-14 to 03-Apr-14]																							
A6980	Install support steel under roof	03-Apr-14	07-Apr-14	[Green bar: 03-Apr-14 to 07-Apr-14]																							
A6990	Build Tracking System to move fan	07-Apr-14	10-Apr-14	[Green bar: 07-Apr-14 to 10-Apr-14]																							
A7000	Move Fan and install in new location	10-Apr-14	12-Apr-14	[Green bar: 10-Apr-14 to 12-Apr-14]																							
Miscellaneous Scope																											
Replace Seal air non return dampers																											
A5740	Build Scaffold	03-Mar-14	08-Mar-14	[Green bar: 03-Mar-14 to 08-Mar-14]																							
A5750	Remove insulation	04-Mar-14	04-Mar-14	[Green bar: 04-Mar-14 to 04-Mar-14]																							
A5760	Remove Damper (2 Off)	05-Mar-14	05-Mar-14	[Green bar: 05-Mar-14 to 05-Mar-14]																							
A5770	Install New Damper (2 off)	06-Mar-14	06-Mar-14	[Green bar: 06-Mar-14 to 06-Mar-14]																							
A5780	Reinstate insulation	07-Mar-14	07-Mar-14	[Green bar: 07-Mar-14 to 07-Mar-14]																							
A5790	Remove Scaffold	08-Mar-14	08-Mar-14	[Green bar: 08-Mar-14 to 08-Mar-14]																							
Install 30 PF office plates																											
A5800	Build Scaffold A	27-Feb-14	27-Feb-14	[Green bar: 27-Feb-14 to 27-Feb-14]																							
A5810	Install Restraints between PF Pipes A	28-Feb-14	28-Feb-14	[Green bar: 28-Feb-14 to 28-Feb-14]																							
A5820	Remove existing offices (5) A	01-Mar-14	03-Mar-14	[Green bar: 01-Mar-14 to 03-Mar-14]																							
A5830	Clean Faces & Install new offices A	04-Mar-14	06-Mar-14	[Green bar: 04-Mar-14 to 06-Mar-14]																							
A5840	Remove Restraints A	07-Mar-14	07-Mar-14	[Green bar: 07-Mar-14 to 07-Mar-14]																							
A6120	Build Scaffold B	08-Mar-14	08-Mar-14	[Green bar: 08-Mar-14 to 08-Mar-14]																							
A6130	Install Restraints between PF Pipes A	09-Mar-14	09-Mar-14	[Green bar: 09-Mar-14 to 09-Mar-14]																							
A6140	Remove existing offices (5) B	10-Mar-14	12-Mar-14	[Green bar: 10-Mar-14 to 12-Mar-14]																							

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Remaining Level of Effort
Actual Work

Remaining Work
Critical Remaining Work

◆ Milestone
◆ Critical Mil...

TASK filter: All Activities

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TC2 2014 Spring Outage
Weekend and First Week Coordination

- **Friday, Feb. 7th / Tuesday, Feb. 11th**
 - At 300 pounds of boiler pressure, inspect leak- **Maldonado**
- **Saturday, Feb. 8th / Wednesday, Feb. 12th**
 - Deslag Boiler & Burners- On site for standby at 4:00 AM.-
Maldonado/ TBD
 - Internal Boiler Wash after deslag- **TBD**
 - Disconnect Wiring on Burners- **I/E Maintenance**
 - WESP Irrigation out of service after deslag.- **Operations**
- **Sunday, Feb. 9th / Thursday, Feb. 13th**
 - Drain Ash Hopper- **Operations**
 - Disconnect Ash Hopper Piping- **Mechanics**
 - Roll Out Ash Hopper- **Doosan**
- **Monday, Feb. 10th / Friday, Feb. 14th**
 - Boiler Scaffold Build- **SE Boiler (6 shifts)**
 - PJFF Filter Bag Sample Removal- **Mechanics**
 - Pulse Air Out of Service (LOTO)- **Operations**
 - SCR Doors open for “dirty” Inspection- **Mechanics/ Dorwart**
 - WESP Inspections
 - “Dirty” Inspection- Irrigation out of service and not carded.- **Waller/ Anderson**
 - Place irrigation in service and perform casing washes after “Dirty” Inspection.
 - Pull 2A Turbine Oil Cooler- **Duncan/ Mechanics**

- **Tuesday, Feb. 11th / Saturday, Feb. 15th**
 - Boiler Scaffold Build- **SE Boiler (4 shifts)**
 - PJFF Filter Bag Sample Removal
 - Pulse Air Out of Service (LOTO)- **Operations**
 - **WESP Inspections**
 - “WET” Inspection- Irrigation in service.- **Siemens, LG&E, PCT, TES**
- **Wednesday, Feb. 12th / Sunday, Feb. 16th**
 - Boiler Scaffold Build- **SE Boiler (2 shifts)**
 - Open Deaerator- **Mechanics**
- **Thursday, Feb. 13th / Monday, Feb. 17th**
 - Check for any open doors prior to starting fan- **Operations**
 - Put 2A ID Fan in service after scaffold completion.-
Operations/ Bechtel/ Doosan
 - Place 1 Recycle Pump in service to alleviate carry over into the WESP.- **Operations**
 - Sandblasting Burner Fronts/ Amstar- **Doosan/**
- **Friday, Feb. 14th / Tuesday, Feb. 18th**
 - Drain Reaction Tank- **Operations**
 - Reaction Tank Clean-out/Inspection – **Heinz/Phelps**

Produced as Native

Original File Name: TC2S14 Spring Outage Plan.xlsm

Stored File Name: OpenText00335692.xlsm

From: Watkins, Clyde(cwatkins@bechtel.com)
To: Straight, Scott; Joyce, Jeff
CC: Melloan, Ricky; Brightman, Jeff; Wodka, Nancy (PLG); Snyder, John
BCC:
Subject: FW: Here is LGE version, found an err in Doosan will fix and resend
Sent: 02/11/2014 06:07:18 PM -0500 (EST)
Attachments: Trimble Combustion System Milestone Schedule Rev P (2-10-14).pdf; Trimble TC2 Re-Start (14-02-06 IF).pdf;

Scott, Jeff,

Enclosed are two schedules:

1. Amendment 6 schedule, updated to show the outage duration of 105 days (15 weeks), Added key milestone dates for first oil fire, first coal fire, unit at 400 MW's, unit at full load, and other minor changes.
2. Doosan Detailed commissioning schedule. Note the Doosan outage duration will differ due to the float in the Amendment 6 schedule as well as other minor variances. The purpose of providing the Doosan detailed commissioning schedule is so that LGE can see the activities that are driving the restart durations.

Mel

Mel Watkins

Project Engineering Manager

Trimble County Unit 2 Project

cwatkins@Bechtel.com

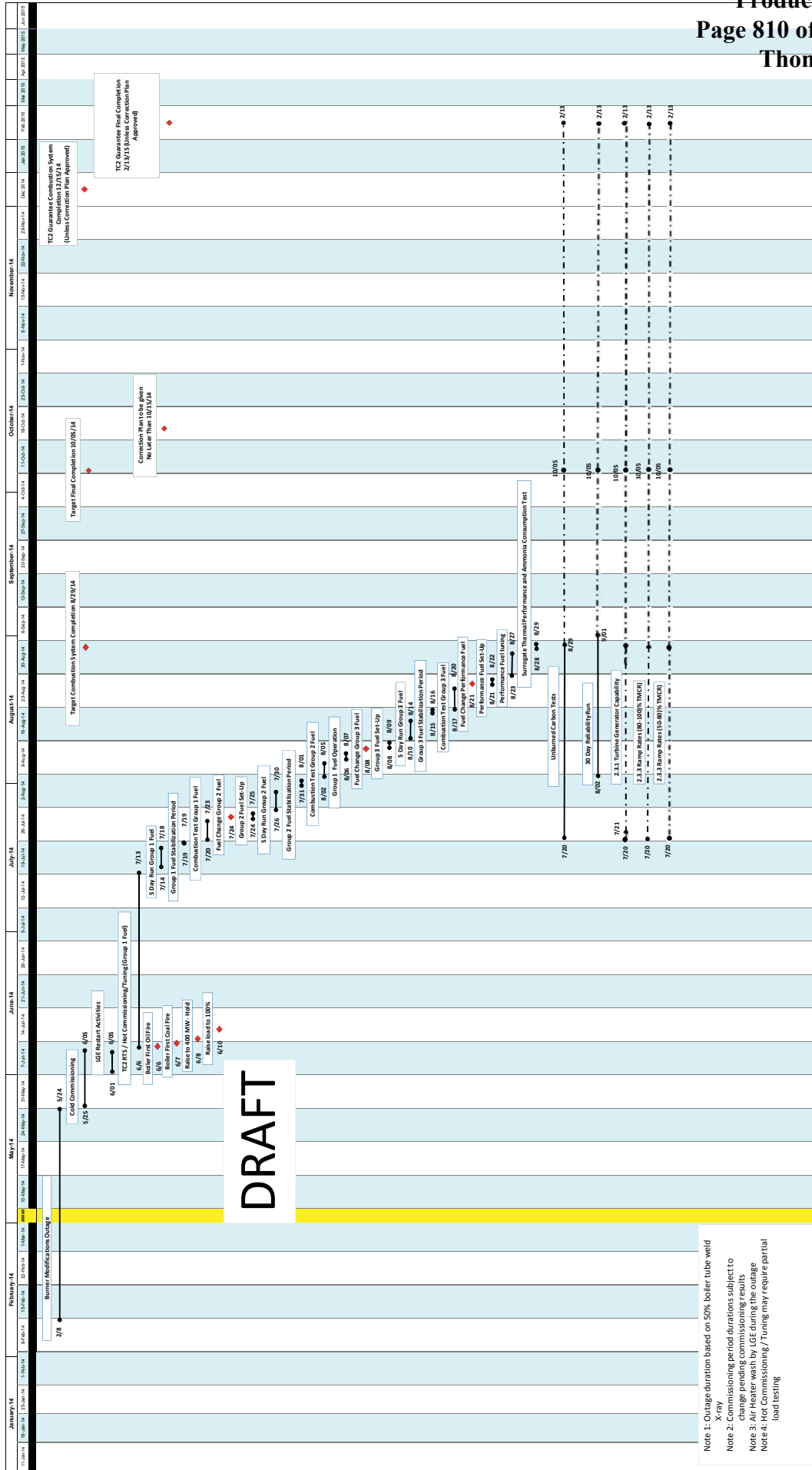
work: 301-228-8035 (Frederick)

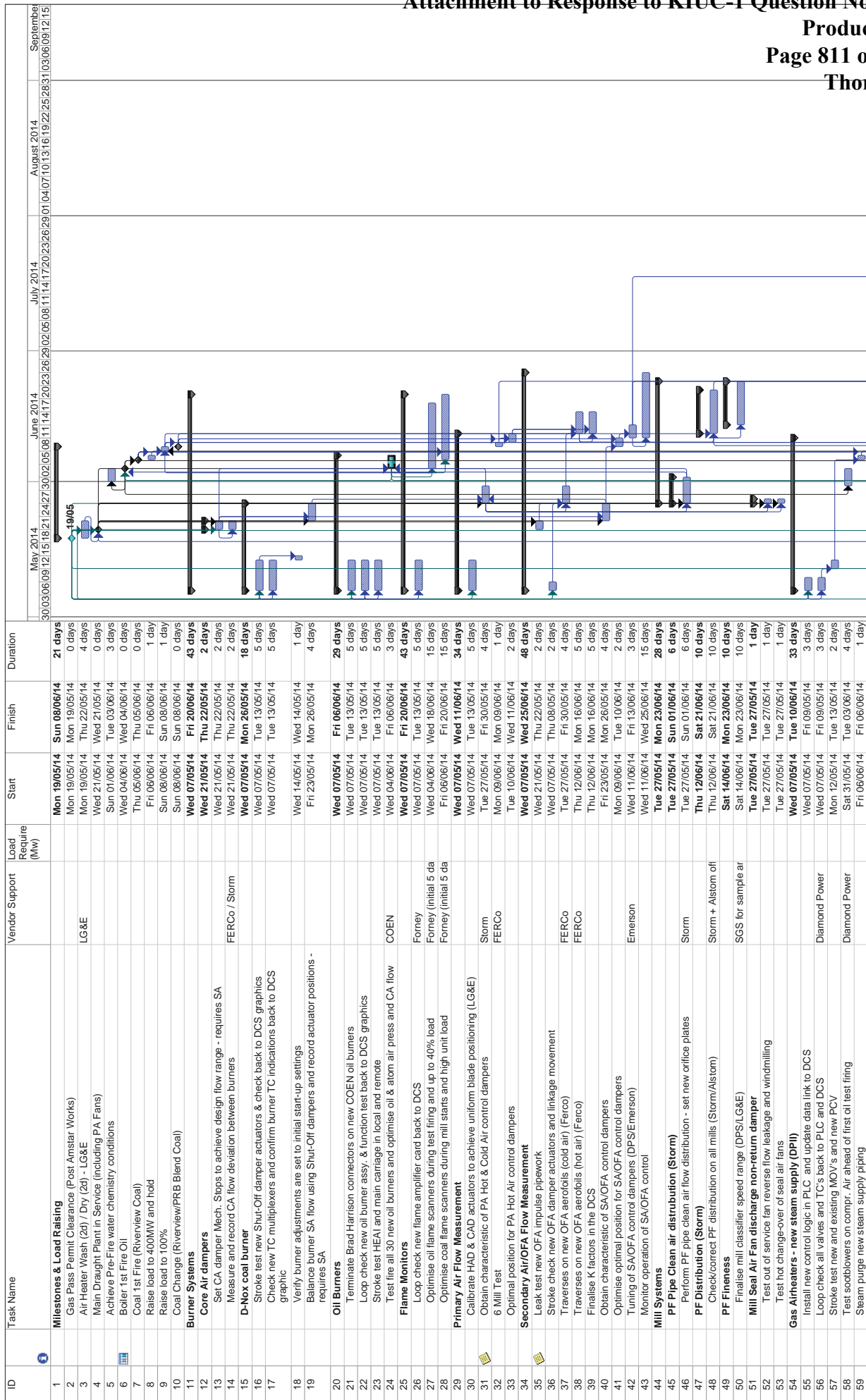
work: 502-255-5277 (Trimble Site)

cell : 240-793-4490

Rev. P - Draft issued for Review 10 Feb 2014

Trimble County Unit 2
AMENDMENT 6: EXHIBIT 3: ATTACHMENT A
SUBJECT SCHEDULE: COMPLETION SCHEDULE





Trimble TC2 Re-Start (14-02-06 IF)

Task Split Milestone Summary

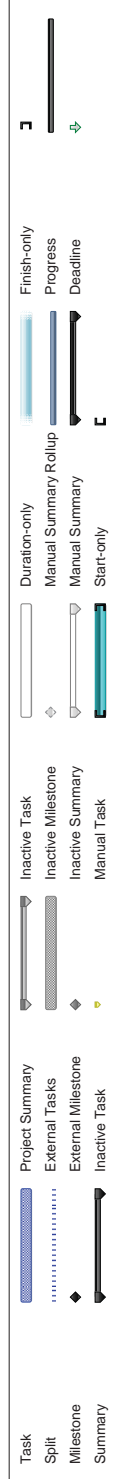
Project Summary External Milestone Inactive Task

Duration-only Manual Summary Rollup Manual Summary Start-only

Finish-only Progress Deadline

Page 1

ID	Task Name	Vendor Support	Load Require (Mw)	Start	Finish	Duration
60	Test new steam supply controls and tune PCV	Diamond Power		Sat 07/06/14	Sat 07/06/14	1 day
61	Check SB steam temperatures during operation			Sat 07/06/14	Tue 10/06/14	4 days
62	GAH water wash (LG&E) & inspect			Mon 19/05/14	Tue 20/05/14	2 days
63	Drying GAH (fans in service)			Wed 21/05/14	Thu 22/05/14	2 days
64	Logic Changes			Wed 07/05/14	Mon 07/07/14	60 days
65	Check implementation of new logic changes	Emerson		Wed 07/05/14	Wed 14/05/14	6 days
66	Check / monitor operation of new logic changes	Emerson		Wed 07/05/14	Mon 07/07/14	34 days
67	Optimise O2 Trim SA/OFA Bias			Mon 09/06/14	Wed 18/06/14	10 days
68	Combustion Optimisation			Wed 04/06/14	Fri 11/07/14	38 days
69	Phase 1 - Initial Start-up Optimisation	RVI		Wed 04/06/14	Wed 04/06/14	0 days
70	Phase 2 - Cooling Flows & Mill Start-up Permissives			Thu 05/06/14	Thu 05/06/14	0 days
71	Phase 3 - PF Distribution			Thu 12/06/14	Thu 12/06/14	0 days
72	Phase 4 - Burner Settings	RVI		Tue 24/06/14	Sat 28/06/14	5 days
73	Phase 5 - OFA Ports	RVI		Sun 29/06/14	Thu 03/07/14	5 days
74	Phase 6 - Stoichiometry	RVI		Fri 04/07/14	Sun 06/07/14	3 days
75	Phase 7 - Mill Load v Stoichiometry	RVI		Mon 07/07/14	Wed 09/07/14	3 days
76	Phase 8 - Oxygen Trim	RVI		Thu 10/07/14	Fri 11/07/14	2 days
77	Group 1 Fuel test			Sat 12/07/14	Thu 17/07/14	6 days
78	Pre-requisite Test Set-up on 1 Mill			Sat 12/07/14	Sat 12/07/14	1 day
79	Final Stabilization			Sun 13/07/14	Sun 13/07/14	1 day
80	Test Runs			Mon 14/07/14	Thu 17/07/14	4 days
81	Group 2 Fuel test			Fri 18/07/14	Fri 01/08/14	15 days
82	Load 1 Mill with Group 2 Test Fuel			Fri 18/07/14	Fri 18/07/14	1 day
83	Pre-requisite Test Set-up on 1 Mill			Sat 19/07/14	Sat 19/07/14	1 day
84	Introduce Test Group 2 Test Fuel			Sun 20/07/14	Sun 20/07/14	1 day
85	Tuning and Stabilization			Mon 21/07/14	Fri 25/07/14	5 days
86	Final Stabilization			Sat 26/07/14	Sat 26/07/14	1 day
87	Test Runs			Sun 27/07/14	Wed 30/07/14	4 days
88	Return to Riverview Blend			Thu 31/07/14	Fri 01/08/14	2 days
89	Group 3 Fuel test			Sat 02/08/14	Thu 21/08/14	15 days
90	Load 1 Mill with Group 2 Test Fuel			Sat 02/08/14	Sat 02/08/14	1 day
91	Pre-requisite Test Set-up on 1 Mill			Mon 04/08/14	Mon 04/08/14	1 day
92	Introduce Test Group 2 Test Fuel			Tue 05/08/14	Tue 05/08/14	1 day
93	Tuning and Stabilization			Wed 06/08/14	Tue 12/08/14	5 days
94	Final Stabilization			Wed 13/08/14	Wed 13/08/14	1 day
95	Test Runs			Thu 14/08/14	Tue 19/08/14	4 days
96	Return to Performance Coal			Wed 20/08/14	Thu 21/08/14	2 days
97	Performance Test			Fri 22/08/14	Wed 10/09/14	14 days
98	Performance Test			Mon 09/06/14	Sun 15/06/14	7 days
99	Hydrated Lime injection upstream of GAH			Mon 09/06/14	Fri 13/06/14	5 days
100	Monitor potential impact on GAH as a result of Hyd Lime injection upstream			Fri 13/06/14	Sun 15/06/14	3 days
101	Measure SO3 in flue gas - GAH I/L & O/L			Sun 13/07/14	Thu 17/07/14	5 days
102	O & Manuals			Sun 13/07/14	Thu 17/07/14	5 days
103	Revise O & M manuals			Wed 14/05/14	Sun 20/07/14	68 days
104	Training			Wed 14/05/14	Thu 15/05/14	2 days
105	LG&E training - Part 1 (Pre Optimisation)			Fri 18/07/14	Sun 20/07/14	3 days
106	LG&E training - Part 2 (Post Optimisation)			Fri 18/07/14	Sun 20/07/14	3 days



Trimble TC2 Re-Start (14-02-06 IF)



Trimble County Project Site Progress Report

Project : NOx Reduction/Burner Upgrade	Week Ending 9th May 2014
Project Site Manager : J Lee	Contract Number: 07292

KEY AREAS	CURRENT STATUS
<ul style="list-style-type: none"> • Safety 	<ul style="list-style-type: none"> • 1 x Accidents since last report <ul style="list-style-type: none"> ○ 1 x First Aid (6-5-14) – A Petro-Chem insulator was installing insulation on the OFA ducting when an insulation pin went through his glove and punctured his hand (small puncture wound). The wound was clean and dressed at site and he then attended the local hospital for a “precautionary” TB injection. He returned to his normal duties. The incident was reported to Bechtel in a timely manner. • 0 LTRs • 5 Recorded Doosan Safety Inspections completed • 2 Safety Improvement Observations raised – <ul style="list-style-type: none"> ○ Poor housekeeping on OFA level. SBR crew detaled to address. ○ Sparks falling to basement area from hot work activities on rear wall burner decks. Area barricaded and fire watcher detailed. • Daily plant walk down between Doosan, Bechtel, LG&E & SBR continue, no issues raised. • Final weekly SBR safety meeting attended • Positives <ul style="list-style-type: none"> ○ Continued praise from LG&E Plant & Project Engineering Management team for good housekeeping. Bechtel site team very positive with how things are progressing.
<ul style="list-style-type: none"> • Progress Overview 	<ul style="list-style-type: none"> • Gas Path Cancellation achieved one day early – 6th May • Punch List priority 1 items (Gas Path Cancellation) all cleared. Progressively clearing remaining items. • Restart programme commenced – Core Air & Purge Air Testing in progress, currently on schedule.



Trimble County Project Site Progress Report

Project : NOx Reduction/Burner Upgrade	Week Ending 9th May 2014
Project Site Manager : J Lee	Contract Number: 07292

<ul style="list-style-type: none"> • Burner & Throat Replacement <ul style="list-style-type: none"> ○ SMR's 132 & 158 • OFA Ducting & Ports <ul style="list-style-type: none"> ○ SMR 156 • PF Pipework Modifications <ul style="list-style-type: none"> ○ SMR 132 • GAH Sootblower Pipework <ul style="list-style-type: none"> ○ SMR 107 & 159 • WCAH / FD Inlet Hoods <ul style="list-style-type: none"> ○ SMR 095 • Remaining Miscellaneous Scope <ul style="list-style-type: none"> ○ PA Flow Impulse Lines – SMR 101 ○ Hydrojet Pipework – SMR 117C ○ ID Fan Stall Sensing Ports–SMR 127 ○ Logic Revisions – SMR 155 ○ Insulation – SMR 165 ○ WCAH Handling System – SMR 177 • Material Supply 	<ul style="list-style-type: none"> • Commissioning activities in progress • Punch List items in progress, cable management and gallery mods. • Insulation proceeding • PF Pipes – Verified all gags removed. • Diamond Power returning to site on Monday 12 May to complete logic implementation and function testing • Punch List items in progress • Valve platform • Insulation on headers to finalise • Insulation mods in progress. • Complete, at final inspect • Stall lines to level. • Logics complete with exception of GAH (see above) • Progressive through to end of cold air flow testing • Non outage work • WCAH Handling System f/cast end -May
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Trimble County Project Site Progress Report

Project : NOx Reduction/Burner Upgrade

Week Ending 9th May 2014

Project Site Manager : J Lee

Contract Number: 07292

- **SMR's Completed**

- SMR 176 - ID Fan Test Ports
- SMR 178 - Air Heater Test Points

Previous Week(s)

- SMR 048 – AmStar Application
- SMR 114 – Furnace Dipper Plate Refractory
- SMR 137 – Reposition SA Thermocouples
- SMR 169 – SCR NOx Probe
- SMR 170 – Boiler Building Roof Ventilation Fan
- SMR 171 - PF Pipe Support Structural Steel Modifications
- SMR 172 – Purge Air Pipework
- SMR 173 – Economiser Inlet Flow Element
- SMR 174 – Mill Inerting Lines – Tell Tail Drain
- SMR 175 – Purge Air Fan Pipework Mods
- SMR 132A – Core Air Test Points
- SMR 152 – PF Orifice Carriers – Note PF Orifice Plates will be fitted as required in Re-Start Phase.
- SMR 166 – GAH Sootblower Structural Steel Modifications @ EL702'
- SMR 141 – Inspect selected PF pipes for build up, and clean if required
- SMR 068 – Replace Mill Seal Air Dampers
- SMR 157 – SCR A Side DP Tapping Point
- SMR 167 – OFA Structural Steel Modifications
- SMR 168 – FD Suction Hood Structural Steel Modifications

Attachments to Summary Report

Milestone Schedule, Restart Schedule

Activity ID	Activity Name	Start	Finish	Total Float	Trimble County 2 - 2014 Spring Outage - Milestone Programme												Doosan Babcock	
					Feb 2014	Mar 2014	Apr 2014	May 2014	Jun 2014	Jul 2014								
Trimble County 2 - Spring Outage 2014 - 7th May					49													
Trimble County - Doosan					49													
Project Milestones					49													
M1000	Boiler Off Load	08-Feb-14 A	13-May-14															
M1040	Boiler Released	08-Feb-14 A	13-May-14															
M1100	Start ID Fan for AmStar Shoiblast	08-Feb-14 A	13-May-14															
M1050	Furnace Scaffold Installed	10-Feb-14 A	14-Feb-14 A															
M1020	Issue Permit for ID Fan (AmStar)	12-Apr-14 A	21-Apr-14 A															
M1060	AmStar Shoiblast, Cladding & Passivation	06-May-14 A	06-May-14 A															
M1030	Gas Path Permit Cancellation / Unit Available for Re-Start	01-May-14 A	01-May-14 A															
SMR 0048 - Amstar Furnace Application																		
M1990	Owner to activate fan for AMSTAR works	13-Apr-14 A	13-Apr-14 A															
M2000	AMSTAR Coat tubes	21-Apr-14 A	21-Apr-14 A															
M2010	Remove furnace scaffold	01-May-14 A	01-May-14 A															
SMR 0132 - Burner & Throat Replacement																		
Front Wall																		
M1120	Burners Removed Row C	19-Feb-14 A	19-Feb-14 A															
M1130	Tube Preps Complete Row C	01-Mar-14 A	01-Mar-14 A															
M1140	Tube Weld Complete Row C	09-Mar-14 A	09-Mar-14 A															
M1150	Burner Installed / Alignment Confirmed Row C	22-Mar-14 A	22-Mar-14 A															
M1160	Mechanical Completion Row C	02-May-14 A	02-May-14 A															
M1170	Burners Removed Row D	19-Feb-14 A	19-Feb-14 A															
M1180	Tube Preps Complete Row D	02-Mar-14 A	02-Mar-14 A															
M1190	Tube Weld Complete Row D	14-Mar-14 A	14-Mar-14 A															
M1200	Burner Installed / Alignment Confirmed Row D	23-Mar-14 A	23-Mar-14 A															
M1210	Mechanical Completion Row D	02-May-14 A	02-May-14 A															
M1220	Burners Removed Row B	22-Feb-14 A	22-Feb-14 A															
M1230	Tube Preps Complete Row B	06-Mar-14 A	06-Mar-14 A															
M1240	Tube Weld Complete Row B	16-Mar-14 A	16-Mar-14 A															
M1250	Burner Installed / Alignment Confirmed Row B	26-Mar-14 A	26-Mar-14 A															
M1260	Mechanical Completion Row B	02-May-14 A	02-May-14 A															
Rear Wall																		
M1270	Burners Removed F Row	19-Feb-14 A	19-Feb-14 A															
M1280	Tube Preps Complete F Row	04-Mar-14 A	04-Mar-14 A															
M1290	Tube Weld Complete F Row	13-Mar-14 A	13-Mar-14 A															
M1300	Burner Installed / Alignment Confirmed F Row	22-Mar-14 A	22-Mar-14 A															
M1310	Mechanical Completion F Row	02-May-14 A	02-May-14 A															
M1320	Burners Removed A Row	20-Feb-14 A	20-Feb-14 A															
M1330	Tube Preps Complete A Row	02-Mar-14 A	02-Mar-14 A															
M1340	Tube Weld Complete A Row	15-Mar-14 A	15-Mar-14 A															
M1350	Burner Installed / Alignment Confirmed A Row	24-Mar-14 A	24-Mar-14 A															
M1360	Mechanical Completion A Row	02-May-14 A	02-May-14 A															
M1370	Burners Removed E Row	21-Feb-14 A	21-Feb-14 A															
M1380	Tube Preps Complete E Row	06-Mar-14 A	06-Mar-14 A															
M1390	Tube Weld Complete E Row	20-Mar-14 A	20-Mar-14 A															
M1400	Burner Installed / Alignment Confirmed E Row	26-Mar-14 A	26-Mar-14 A															
M1410	Mechanical Completion E Row	02-May-14 A	02-May-14 A															
SMR0158 - Burner Electrical Modifications																		
M1420	Front Wall - Cable Trays Installed	24-Feb-14 A	25-Apr-14 A															
M1430	Front Wall - Cables Installed	07-Apr-14 A	07-Apr-14 A															
M1440	Front Wall - Cables Terminated	25-Apr-14 A	25-Apr-14 A															
M1450	Rear Wall - Cable Trays Installed	24-Feb-14 A	24-Feb-14 A															
M1460	Rear Wall - Cables Installed	07-Apr-14 A	07-Apr-14 A															

Activity ID	Activity Name	Start	Finish	Total Float	Trimble County 2 - 2014 Spring Outage - Milestone Programme												
					February 2014	March 2014	April 2014	May 2014	June 2014	July 2014							
M1470	Rear Wall - Cables Terminated		25-Apr-14 A														
M1480	Power Cabinets /Ro Marshaling Installed		09-Mar-14 A														
SMR 0132 - PF Pipework Modifications		12-Feb-14 A	05-May-14 A														
M1490	Verify All Gags Fitted		12-Feb-14 A														
M1500	PF Pipes Removed Front Wall		15-Feb-14 A														
M1510	PF Pipes Removed Rear Wall		16-Feb-14 A														
M1530	PF Pipes Off Site Modifications Complete		25-Mar-14 A														
M1560	Modified Pipes Installed Front Wall		29-Mar-14 A														
M1570	Modified Pipes Installed Rear Wall		09-Apr-14 A														
M1540	PF Pipes Support Modifications Complete Front Wall		21-Apr-14 A														
M1550	PF Pipes Support Modifications Complete Rear Wall		21-Apr-14 A														
M1520	Strengthening / Trimmer Steel Installed		25-Apr-14 A														
M1580	Verify All Gags Removed		05-May-14 A														
SMR 0156 - OFA Ports & Throats / Ducts & Windbox		25-Feb-14 A	13-May-14	38													
OFA Ports		08-Mar-14 A	23-Apr-14 A														
Front Wall (East)		08-Mar-14 A															
M1590	Tube Preps Complete South East Corner		08-Mar-14 A														
M1600	Tube Weld Complete South East Corner		14-Mar-14 A														
M1610	OFA Register Installed (New & Existing) South East Corner		11-Mar-14 A														
M1620	Tube Preps Complete North East Corner		13-Mar-14 A														
M1630	Tube Weld Complete North East Corner		20-Mar-14 A														
M1640	OFA Register Installed (New & Existing) North East Corner		14-Apr-14 A														
M1650	Tube Preps Complete South West Corner		16-Mar-14 A														
M1660	Tube Weld Complete South West Corner		18-Mar-14 A														
M1670	OFA Register Installed (New & Existing) South West Corner		20-Mar-14 A														
M1680	Tube Preps Complete North West Corner		22-Apr-14 A														
M1690	Tube Weld Complete North West Corner		16-Mar-14 A														
M1700	OFA Register Installed (New & Existing) North West Corner		20-Mar-14 A														
Duct / Windbox		25-Feb-14 A	13-May-14	38													
Front Wall (East)		25-Feb-14 A															
M1710	Ducting / Windbox Destruct complete		13-May-14														
M1720	Modify Support Straps (SE Corner)		25-Feb-14 A														
M1730	Assemble & Weld Toggle Duct Section (SE Corner)		06-Mar-14 A														
M1750	Assemble Windbox (SE Corner)		26-Mar-14 A														
M1770	Confirm Alignment of Toggle Section (SE Corner)		13-Apr-14 A														
M1780	Re-install Insulation & Lagging (SE Corner)		22-Apr-14 A														
M1790	Modify Support Straps (NE Corner)		13-May-14														
M1800	Assemble & Weld Toggle Duct Section (NE Corner)		30-Mar-14 A														
M1820	Assemble & Weld Windbox (NE Corner)		14-Apr-14 A														
M1840	Confirm Alignment of Toggle Section (NE Corner)		22-Apr-14 A														
M1850	Re-install Insulation & Lagging (NE Corner)		11-May-14														
Rear Wall (West)		10-Mar-14 A	12-May-14	54													
M1860	Ducting / Windbox Destruct complete		10-Mar-14 A														
M1870	Modify Support Straps (SW Corner)		17-Mar-14 A														
M1880	Assemble & Weld Elbow Duct / Turning Vanes (SW Corner)		15-Apr-14 A														
M1900	Assemble & Weld Windbox (SW Corner)		28-Apr-14 A														
M2720	Confirm Alignment of Toggle Section (SW Corner)		29-Apr-14 A														
M1890	Assemble & Weld Toggle Duct Section (SW Corner)		01-May-14 A														
M1920	Re-install Insulation & Lagging (SW Corner)		12-May-14														
M1930	Modify Support Straps (NW Corner)		15-Mar-14 A														
M1950	Assemble & Weld Elbow Duct / Turning Vanes (NW Corner)		14-Apr-14 A														
M2730	Confirm Alignment of Toggle Section (NW Corner)		24-Apr-14 A														
M1960	Assemble & Weld Windbox (NW Corner)		28-Apr-14 A														
M1940	Assemble & Weld Toggle Duct Section (NW Corner)		30-Apr-14 A														



Trimble County 2 - 2014 Spring Outage - Milestone Programme

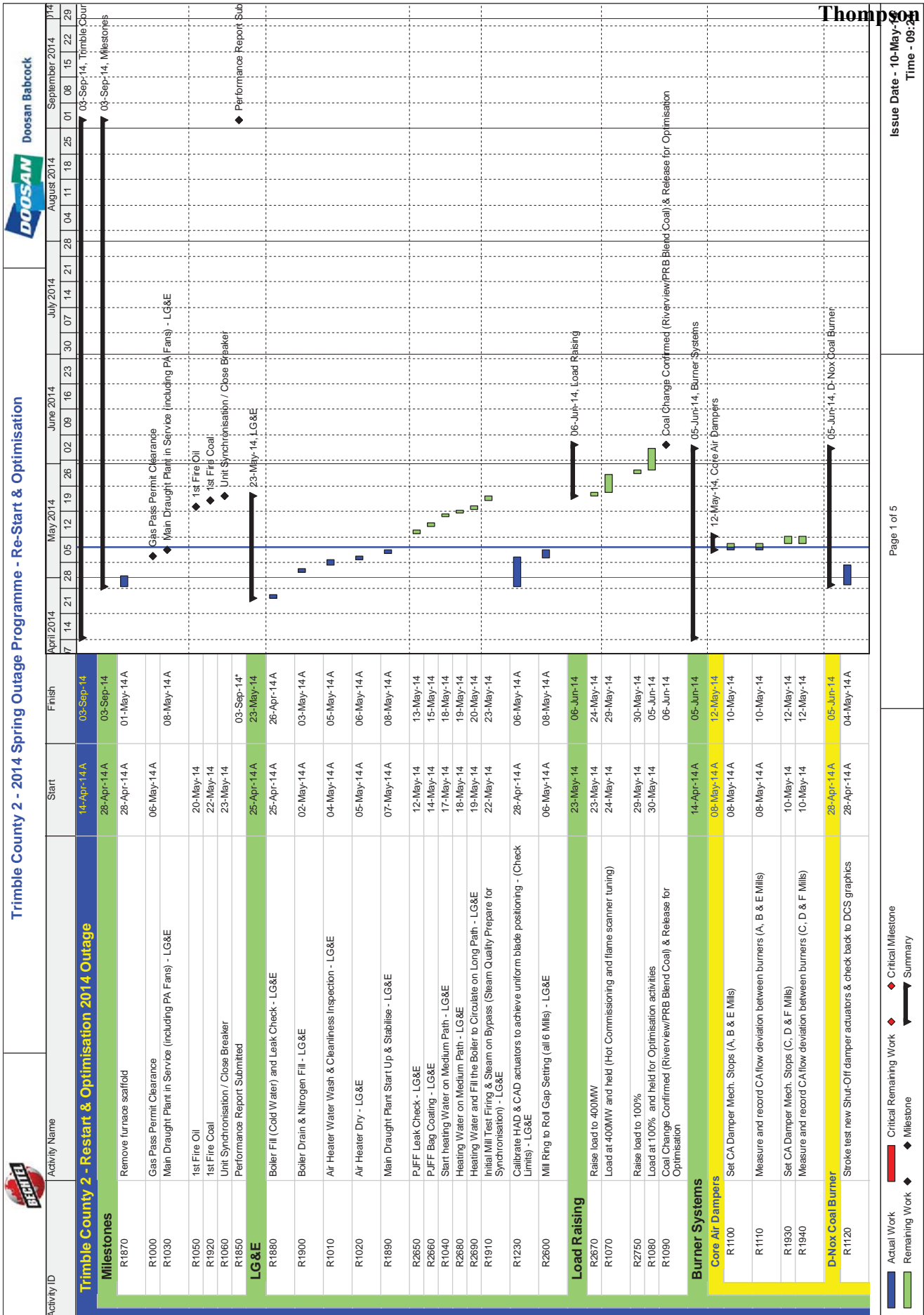


Doosan Babcock

Thompson

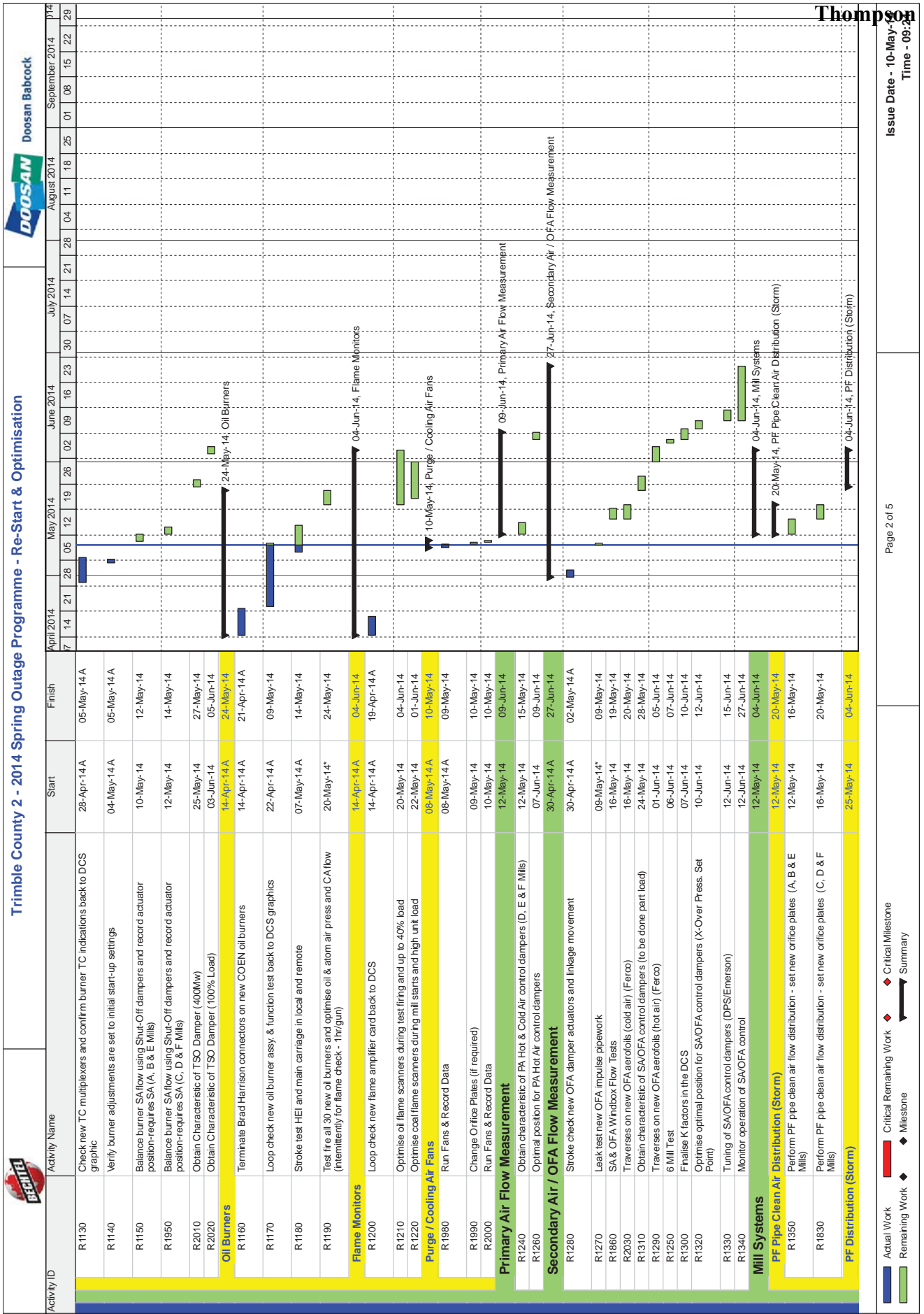
Activity ID	Activity Name	Start	Finish	Total Float	2014							Doosan Babcock	
					February	March	April	May	June	July			
M1980	Re-Install Insulation & Lagging (NW Corner)	01-Apr-14 A	12-May-14	58									
SMR 0166 - GAH Support Steelwork	Inspect Installation & Sign-off - Bechtel / DB / EC	01-Apr-14 A	01-Apr-14 A										
SMR 0107 - GAH Sootblower Piping	PCV Warming Line 1" - Installation Complete	01-Apr-14 A	24-Apr-14 A										
M2030	2" & 3" Sootblower Steam @ 530" - Installation Complete	01-Apr-14 A	01-Apr-14 A										
M2050	Sootblower Supply from Platen Sub - Installation Complete	01-Apr-14 A	01-Apr-14 A										
M2060	6" Pipe from 714" down to 530" - Installation Complete	01-Apr-14 A	01-Apr-14 A										
M2070	Warming Drain from 530" to CDV - Installation Complete	01-Apr-14 A	01-Apr-14 A										
M2080	SVE Pipework - Silencers - Installation Complete	01-Apr-14 A	01-Apr-14 A										
M2090	SVE Pipework - Roofing - Re-Installation Complete	01-Apr-14 A	01-Apr-14 A										
SMR 0170 - Boiler Building Roof Ventilation Fan	Fan Relocated in new location	04-Apr-14 A	04-Apr-14 A										
M2100	GAH Sootblower - Cables / hardware installed	31-Mar-14 A	13-May-14	39									
M2120	GAH Sootblower - Terminated/Glanded/Loop Check	13-May-14*	15-May-14*	39									
SMR 0095 - WCAH Upgrade	WCAH - South Side - Old Coils / Casings Removed	26-Feb-14 A	15-Apr-14 A										
M2140	WCAH - South Side - New Coils / Casings Installed	23-Mar-14 A	23-Mar-14 A										
M2150	WCAH - South Side - New Headers Installed	12-Apr-14 A	12-Apr-14 A										
M2160	WCAH - North Side - Old Coils / Casings Removed	25-Mar-14 A	25-Mar-14 A										
M2170	WCAH - North Side - New Coils / Casings Installed	07-Apr-14 A	07-Apr-14 A										
M2180	WCAH - North Side - New Headers Installed	15-Apr-14 A	15-Apr-14 A										
M2190	FD Hood - South Side - Crane in Position	01-Mar-14 A	01-Mar-14 A										
M2200	FD Hood - South Side - Hood Installed	18-Mar-14 A	18-Mar-14 A										
M2210	FD Hood - North Side - Scaffold Access Erected	05-Mar-14 A	05-Mar-14 A										
M2220	FD Hood - North Side - Crane in Position	15-Mar-14 A	15-Mar-14 A										
M2230	FD Hood - North Side - Hood Installed	27-Mar-14 A	27-Mar-14 A										
SMR 0152 - PF Orifice Plates (#30)	A Mill Complete	20-Feb-14 A	24-Feb-14 A										
M2240	B Mill Complete	20-Feb-14 A	20-Feb-14 A										
M2260	D Mill Complete	24-Feb-14 A	24-Feb-14 A										
M2250	E Mill Complete	24-Feb-14 A	24-Feb-14 A										
M2270	C Mill Complete	24-Feb-14 A	24-Feb-14 A										
M2280	F Mill Complete	24-Feb-14 A	24-Feb-14 A										
M2290	F Mill Complete	24-Feb-14 A	24-Feb-14 A										
SMR 0068 - Mill Seal Air Non Return Dampers	Dampers Installation Complete	02-Mar-14 A	02-Mar-14 A										
M2300	Dampers Installation Complete	02-Mar-14 A	02-Mar-14 A										
SMR 0114 - Furnace Dipper Plate Refractory	Visual Inspection / Determine Extent of Repairs	09-Feb-14 A	09-Feb-14 A										
M2310	Repairs Completed	09-Feb-14 A	09-Feb-14 A										
M2320	Repairs Completed	27-Apr-14 A	27-Apr-14 A										
SMR 0155 - Logic Revisions	Logic Revisions Finalised	09-Apr-14 A	09-Apr-14 A										
M2330	Logic Revisions Implemented	07-May-14 A	07-May-14 A										
M2340	Logic Changes Implemented	07-May-14 A	07-May-14 A										
SMR 0173 - Flow Element Calibrations	Economiser Inlet - Removed for Calibration	27-Feb-14 A	27-Feb-14 A										
M2350	Economiser Inlet - Re-Fitted	28-Feb-14 A	28-Feb-14 A										
M2360	Economiser Inlet - Weld / NDE Complete	31-Mar-14 A	31-Mar-14 A										
M2370	Economiser Inlet - Insulation Complete / Scaffold Removed	07-Apr-14 A	07-Apr-14 A										
M2380	HP Spray Water - Removed for Calibration	25-Apr-14 A	25-Apr-14 A										
M2390	HP Spray Water - Re-Fitted	27-Feb-14 A	27-Feb-14 A										
M2400	HP Spray Water - Weld / NDE Complete	04-Apr-14 A	04-Apr-14 A										
M2410	HP Spray Water - Insulation Complete / Scaffold Removed	04-Apr-14 A	04-Apr-14 A										
M2420	HP Spray Water - Insulation Complete / Scaffold Removed	19-Apr-14 A	19-Apr-14 A										

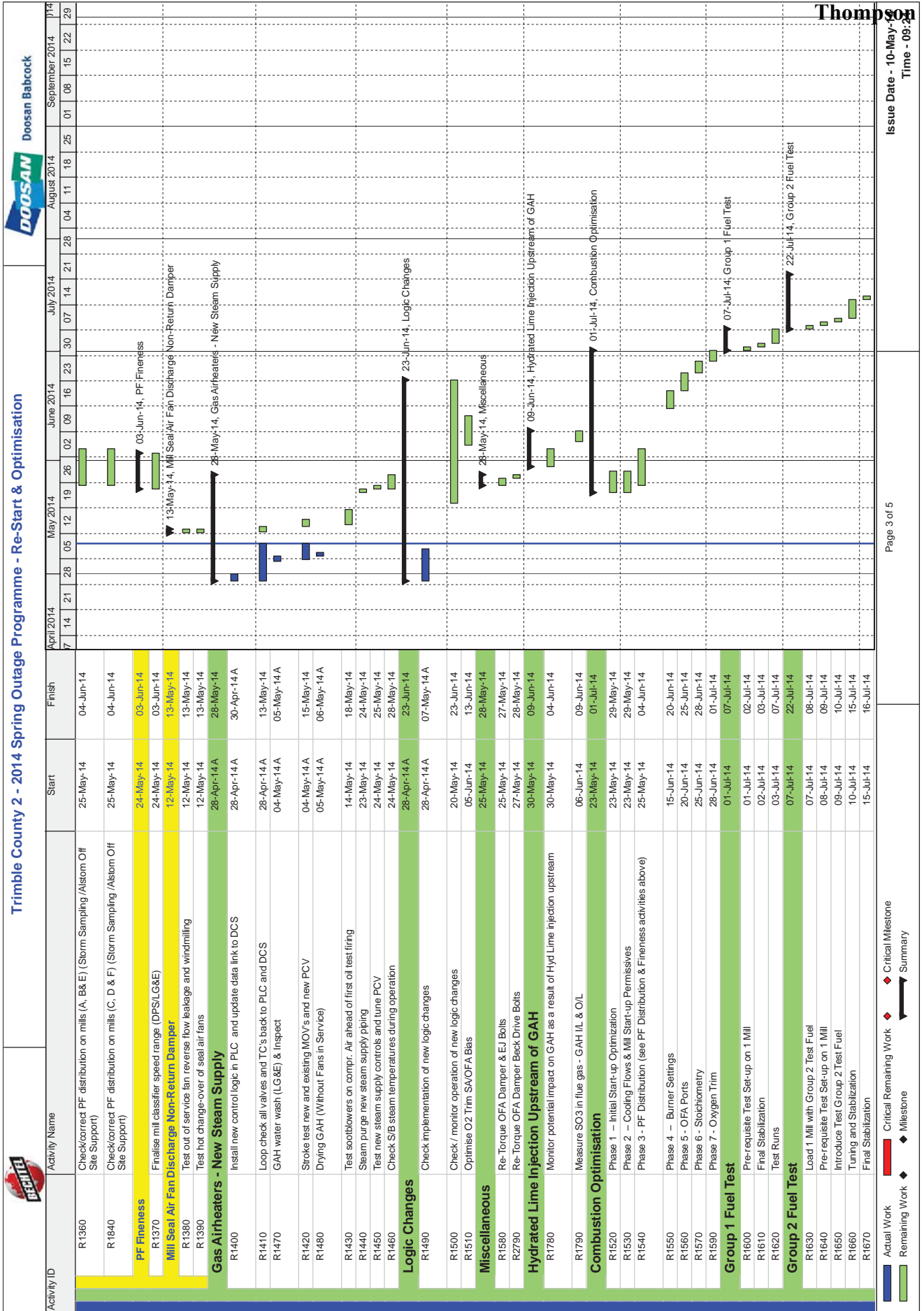
Summary
 Milestone
 Longest Path / Critical Milestone

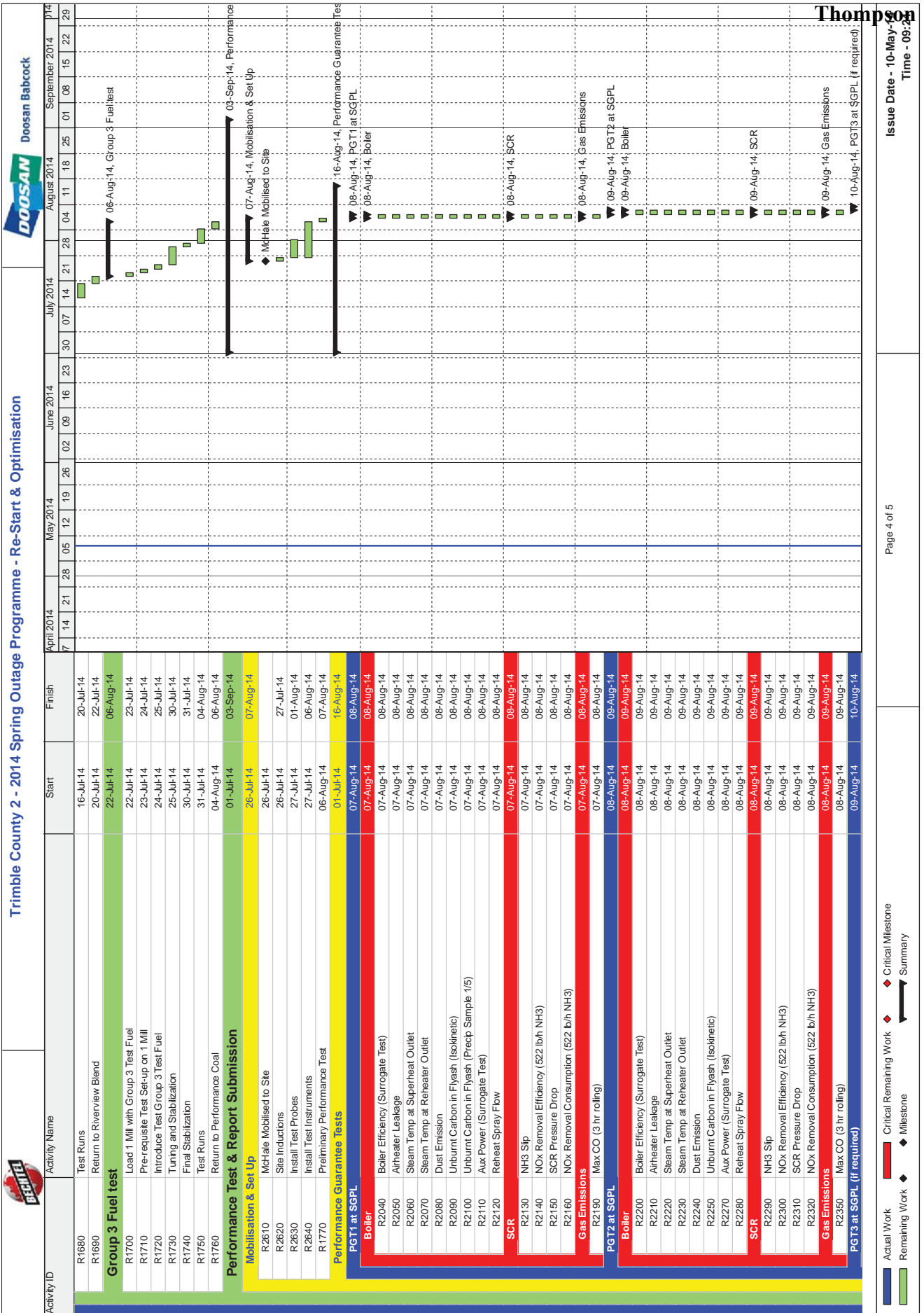


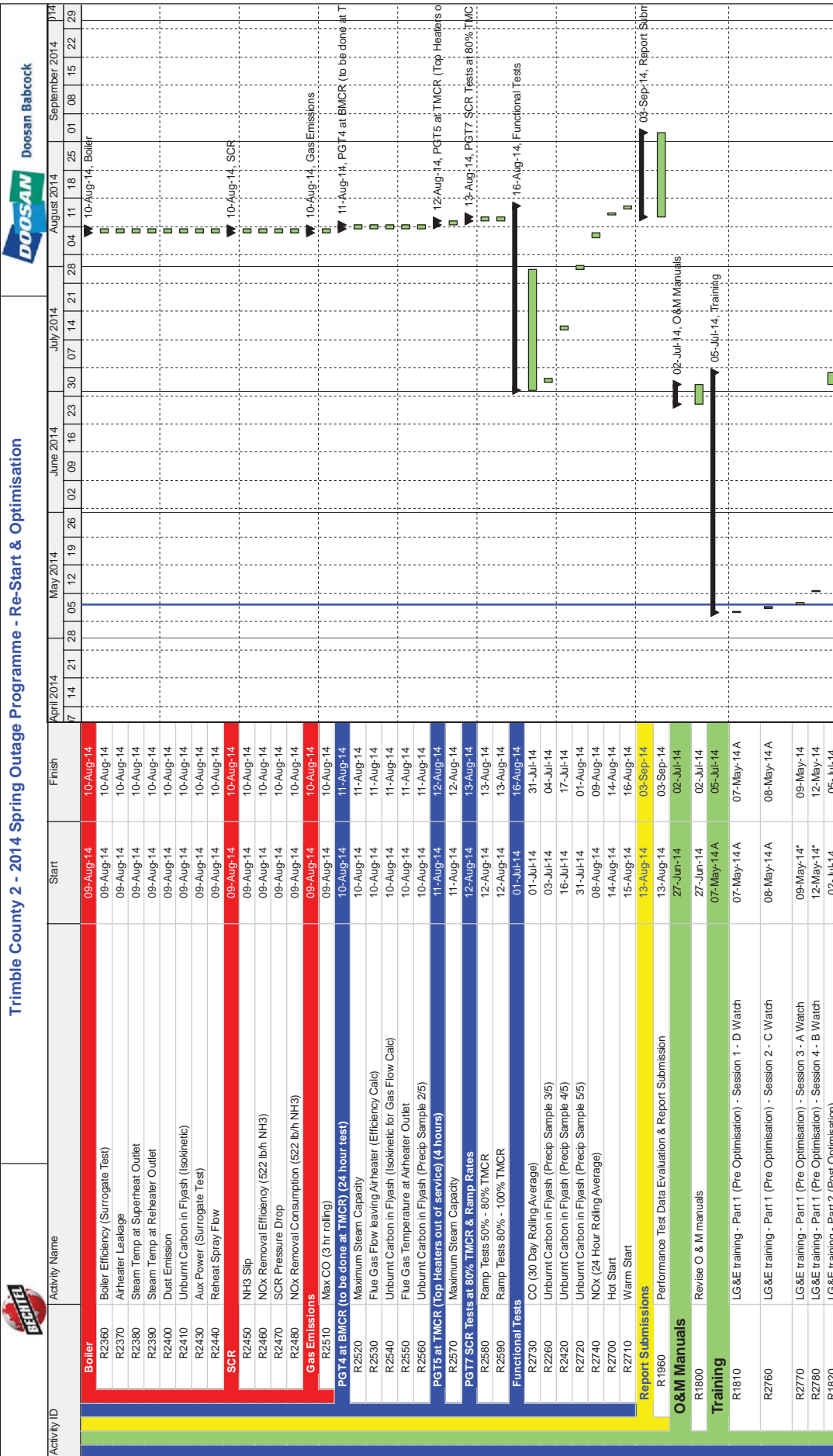
█ Actual Work
█ Remaining Work
█ Critical Remaining Work
◆ Milestone
◆ Critical Milestone
→ Summary

Thompson









Trimble County 2 - 2014 Spring Outage Programme - Re-Start & Optimisation



Doosan Babcock

May management meeting covers key initiatives

Redacted as Unresponsive

Redacted as Unresponsive

Trimble County Unit 2 burner change-out

Laura Shuffett Mohn, group leader, Engineering, discussed the final phase of a 15-week outage for TC2. The action was necessary to replace 30 original coal burners with those of a more advanced design.

Most of the burners sustained damage in June 2010 shortly after TC2 started firing on coal. The damaged stemmed from the original burner design and its inability to burn certain types of coal used in the LGE-KU coal fleet. The coal would swell and exhibit elasticity, eventually catching fire inside the burner.

Although various modification and correction plans were taken, performance issues persisted, leading to a decision to replace the burners. After reviewing proposals from four other vendors, the company selected to utilize the original burner supplier to replace the burners under warranty with a new design that offered the most impressive burner with significant design features.

Thirty new burners have been installed and and substantial equipment modifications have been made. The next steps are to fire the unit and begin the combustion tuning process. The originally specified types of coal will be burned and tested. TC2's efficiency and megawatt capacity will be rechecked with the newly installed burners.

Redacted as Unresponsive

From: Craft, Jim(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=N091379)
To: Turner, Haley
CC: Mohn, Laura; Joyce, Jeff
BCC:
Subject: PJFF RCA Results
Sent: 05/22/2014 08:38:20 AM -0400 (EDT)
Attachments: BPC cmmnts to TC2 FF Pressure Drop RCA revC.DOC;

Haley,

Please see my comments below in **GREEN** about what is stated in the attached draft letter. I know that everyone on the SESS team has worked diligently to come to these conclusions but I don't necessarily agree with all their findings. I have participated in almost every conference call and I have purposely sat back and listened (with minimal vocal involvement) as to how SESS has slowly and purposely steered the group to the findings they are proposing. I would be the first to say that we as a plant can very well make improvements in how we operate our equipment and I'm sure better care of the bags will be taken moving forward but all this letter does is point the finger right back at how LG&E has OPERATED the PJFF in the past. (**How convenient!**) Bechtel and even more so SESS our merely posturing themselves to better defend themselves legally on an issue that has had a profound effect on how we have operated this unit in the past. I **DO NOT** want anyone within LG&E to think that I agree with these findings by having my name on the document.

6.0 CONCLUSIONS & FINDINGS:

The performance observed is a result of a combination of variables and operating conditions. The fabric filter design was based on an air to cloth ratio utilizing the flue gas design flow conditions (6:1 with one compartment per casing out of service and 5:1 when all compartments are in service). The plant normally runs with all compartments in service but at flue gas flows approaching the specified maximum operating condition which is 25% higher than the design flow conditions. Determination of overall contractual design parameters compared to "design conditions" is beyond the scope of this analysis.

FF bag permeability loss (**Where is the laboratory proof of permeability loss of our bags over what would have been expected over their life span?**) (**Hasn't your bag people told us that the bags we sent to them for testing did not show signs of unexpected bag permeability loss**) (**ETS told us in our conference call that the bags looked normal other than at the folded areas (for shipping) of the bags?**) over the operating life cycle has contributed to an increase of FF pressure drop which has necessitated bypassing the FF at times to prevent encroachment on the ID fan stall limit and duct design pressure. Two operating factors were identified which may have had a negative impact on bag permeability; 1) exposure to ammonium bisulfate resulting from ammonia slip in the SCR (**ETS told us that they did not observe ABS on our bags and they were very well aware of what ABS looked like on bags they had analyzed**) and, 2) exposure to hydrocarbons during oil firing (oily soot) (**ETS told us that they did not observe an unusual amount of oily residue on the bags for the service life they had seen**). While the amount of permeability deterioration from each factor cannot be quantified, the potential for these factors to create permeability loss makes it important to be sure the unit operation minimizes the exposure of the bags to oil-firing and ammonia slip. New bags were installed during the recent outage and operational changes must be implemented to prevent the future exposure to these substances. These operational changes will reduce the influences of factors that could potentially increase pressure drop across the FF, thus avoiding the need to operate the FF in partial bypass. In addition to the benefit of minimizing pressure drop across the FF, the PAC injection system can be utilized without the concern of PAC material bypassing the FF and possibly resulting in mercury re-emission issues in the absorber (refer to the Mercury Emissions Control RCA).

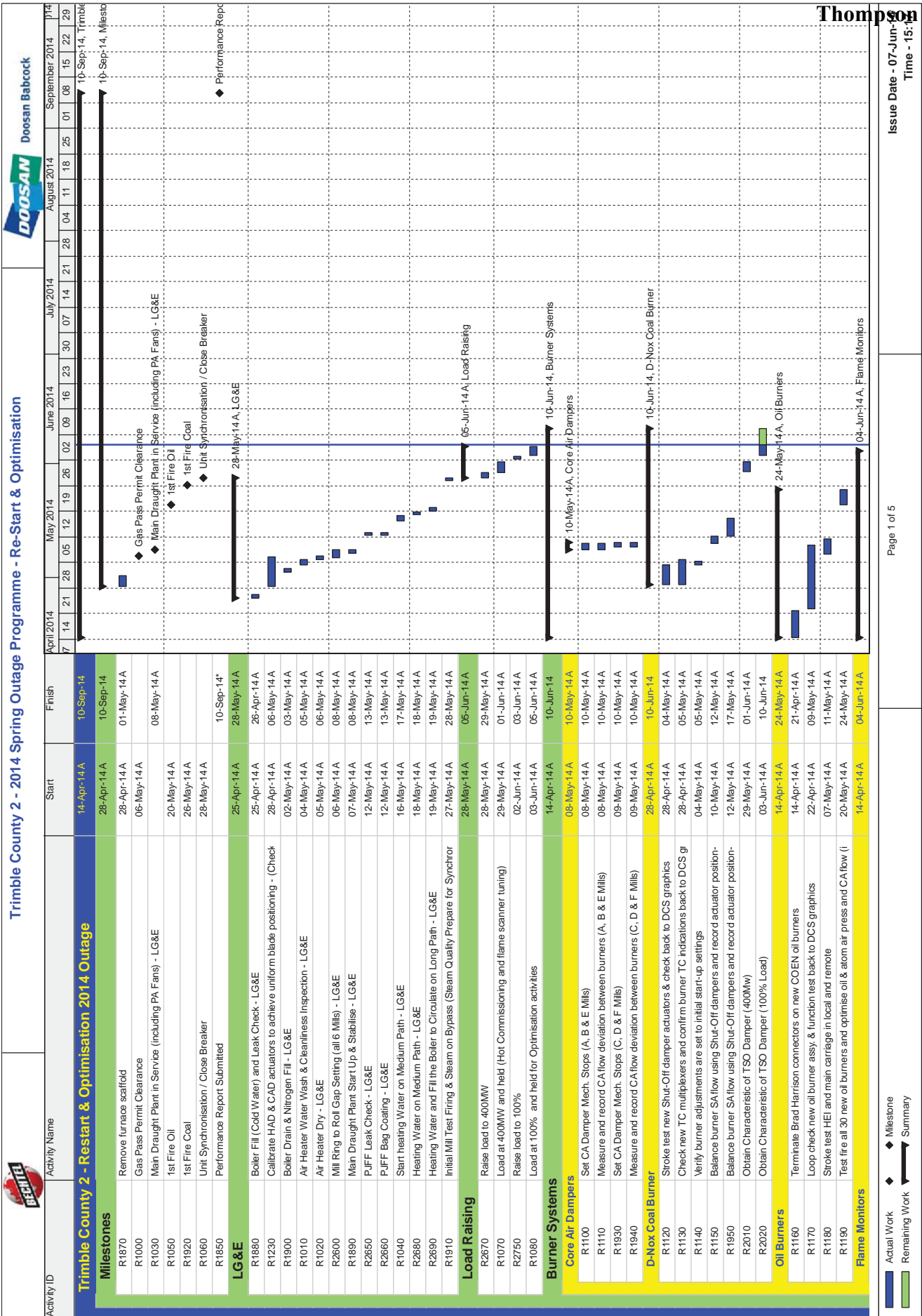
7.0 ADDITIONAL ANALYSIS:

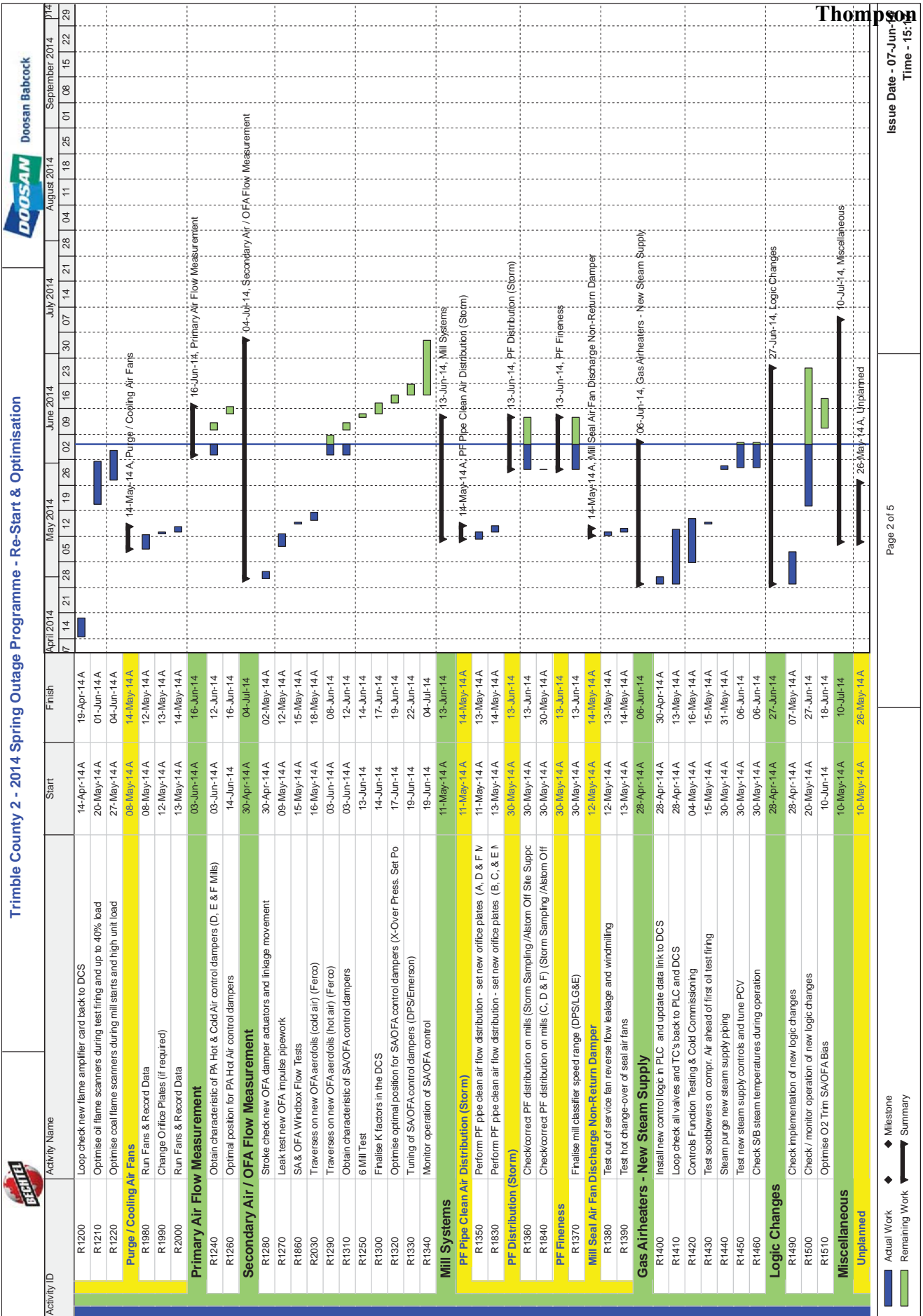
7.1 Hydrocarbon contamination results from exposure to oil fire during startup when firing a combination of coal and oil. The hydrocarbons bond to the fibers in the bag membrane, resulting in permeability loss. The potential for hydrocarbon contamination increases when an inadequate coating on the bags is in place during this time. Plant operational issues have necessitated an unusually high number of startups compared to a typical plant. While bags have been initially coated prior to first fire coming out of an extended outage, there may have been several

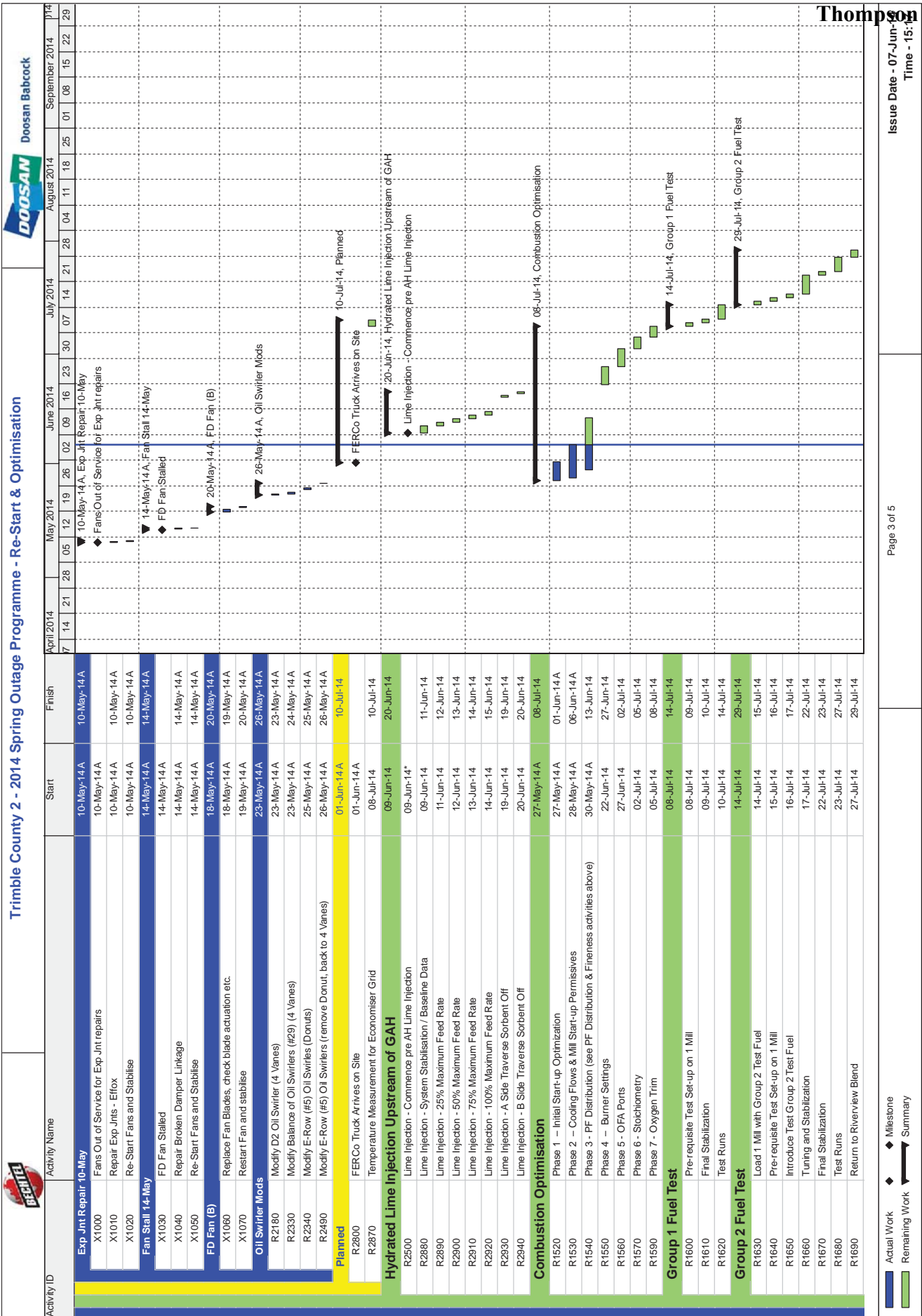
occasions where coating was not re-established prior to shorter outages where oil has been found. **I believe that the “may have” should be removed. Either we have or have not followed SESS’s recommendations for coating of the bags during outages and I don’t know what those recommendations are)** [Comment from Dan O’Reilly: I was not on the call with ETS but didn’t they say that little evidence of hydrocarbons was found on the bags? Doesn’t that reduce the importance of this issue?]

- 7.2 Plant operational records indicate operational periods with ammonia overfeed. Excess ammonia results in the formation of ammonium bisulfate in the flue gas. This sticky substance adheres to the FF bags (**Once again, ETS did not observe what they felt was ABS on our bags**) and is not removed during pulse cleaning, resulting in loss of permeability.
- 7.3 The clean side of the bags was exposed to ash as a result of the following:
- a. problems with overfilling hoppers during the first year of operation may have led to abrading the lower portion of some bags, causing small leaks,
 - b. small tears in the membrane where it had been weakened at natural bag folds for shipment and where the bags have been heavily pulsed due to issues stated in 7.1 and 7.2, and
 - c. leaks at the upper cuff due to either damage or leaks at the tube sheet seal.
- Pulse air for cleaning drives the particulates in the reverse direction to flue gas flow, into the fabric from the clean side, resulting in permeability loss.

Jim







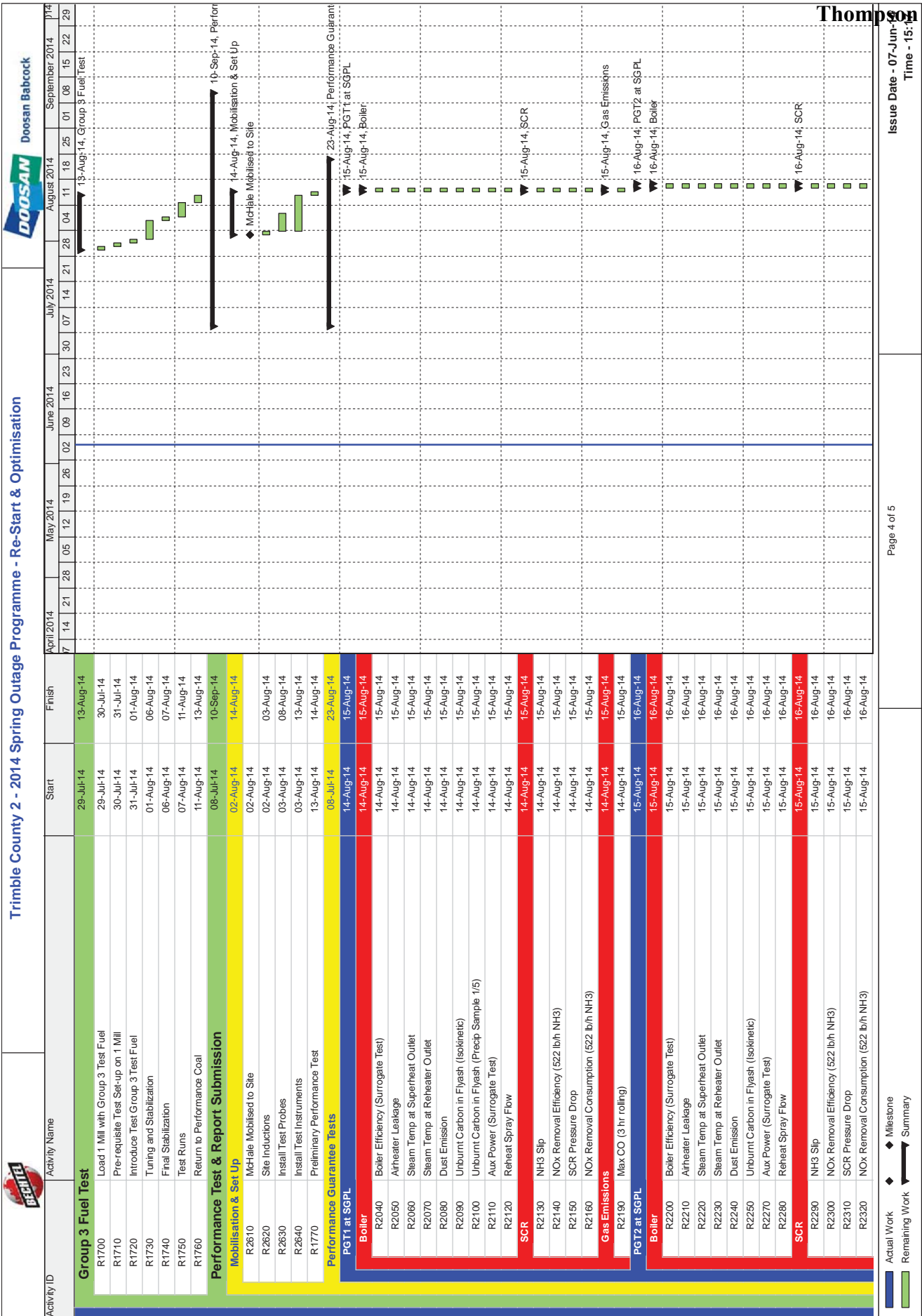
Thompson



Trimble County 2 - 2014 Spring Outage Programme - Re-Start & Optimisation



Doosan Babcock

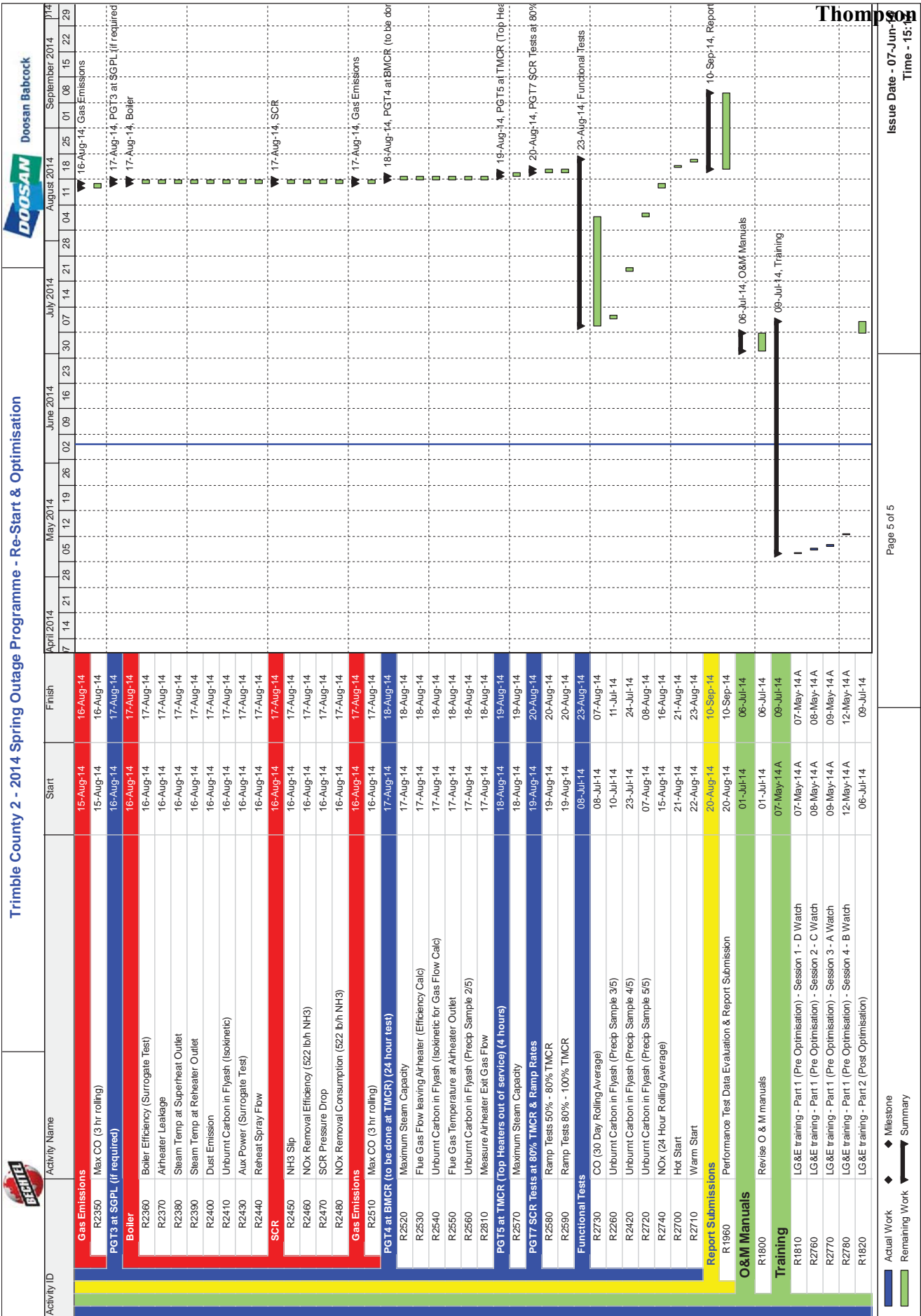


Trimble County 2 - 2014 Spring Outage Programme - Re-Start & Optimisation



Doosan Babcock

Thompson



From: Hudson, Rusty(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=ADMINISTRATIVE/CN=HUDSONR)
To: Joyce, Jeff
CC:
BCC:
Subject: FW: Billing Issue May Invoice
Sent: 06/23/2014 10:00:35 AM -0400 (EDT)
Attachments: KU TC 2 IMEA-IMPA Fuel Support 05.14.xlsm; Fuel for Disallowed TC2 Support 05.14.xlsm;

Jeff, here is the answer from Raible. Even if we forward this to Jack, we may want to schedule a conference call with him, us and Eric. I am not sure it is super clear, at least it isn't to me. Rusty

From: Raible, Eric
Sent: Monday, June 23, 2014 9:57 AM
To: Hudson, Rusty; DiEnno, Heather
Cc: Herm, Patrick; Garrett, Chris
Subject: RE: Billing Issue May Invoice
Importance: High

Rusty – here is the calculation information. Gross Gen @ TC2 was 28,413 Mwh, unit auxiliary was 2,100 Mwh and station/reserve auxiliary usage was 9,392 Mwh for the TC2 unit in May 2014. This lowered the total net generation from TC2 to 16,921 Mwh for the month. The station/reserve aux power is provided by other network company units to support TC2 while on outage and I believe this should be included in the calculations for billing during the month. IMPA and IMEA received their allotments from the normal gross generation of the unit in the hours that the unit was running. Based on discussions with Charlie Freibert and Glenn Flood, that while it looks weird – IMEA and IMPA received their correct normal allotments of 3,196 for IMEA and 3,396 for IMPA, and these allotments are 18.953% & 20.135%, respectively for IMEA & IMPA, of total TC2 net generation for May 2014 and those costs that the company provided should be recovered through the billing process.

Once this allotment/net TC2 generation % is calculated, then you just multiply these percentages by the total TC2 Fuel and variable costs for the month. I have attached the LG&E IMEA/IMPA and KU IMEA/IMPA support calculations separately. Within these calculations, I have split them into sections of recovery – 1) recovery of TC2 costs for the direct unit auxiliary and 2) recovery of the TC2 costs for the station/reserve unit auxiliary. As you can see from the support, the % split from the straight direct unit auxiliary is approximately the 25% we are used to. But the fact that the unit ran on its own so little during the month at the end of the month, that it needed the large amount of station/reserve aux to run its operations while out of service. I also believe the detailed calculation will assist in the assumptions that IMEA received 18.9% and LGE received 117% of net generation during the month. In actuality, IMEA received 18.953%, IMPA received 20.135% and LG&E/KU received 60.912% of total net TC2 generation for the month. Total costs of TC2 for fuel & variable costs were \$1,796,088.24 for May-2014 to which IMEA was billed their above % shares totaling \$340,408.66 for IMEA and \$361,637.74 for IMPA.

I am on vacation, but am available to discuss. Send me an email or give me a call (502-415-3129)

Thanks,
T. Eric Raible, CPA
Manager, Regulatory Accounting & Reporting
Controller Group
LG&E and KU
P: 627-3426
F: 217-4800

From: Hudson, Rusty
Sent: Monday, June 23, 2014 7:41 AM
To: DiEnno, Heather; Raible, Eric
Cc: Herm, Patrick
Subject: FW: Billing Issue May Invoice

Would the answers to this come from someone in your groups? Rusty

From: Joyce, Jeff

Sent: Monday, June 23, 2014 7:38 AM
To: Hudson, Rusty
Subject: FW: Billing Issue May Invoice

Just got back in and will be digging into this. I'm not sure who does all the arithmetic in the billing -----

Thanks
Jeff J

From: Jack Alvey [<mailto:jalvey@impa.com>]
Sent: Friday, June 20, 2014 5:05 PM
To: Joyce, Jeff
Subject: Billing Issue May Invoice

Jeff:

As discussed in my message to you, we noticed that IMPA was being billed 20.135% on the Fuel and Reactants on the May invoice. Our attention was drawn to it because we have never had a percentage this high with our 12.88% ownership level. We believe that that the amounts in the calculation for the "IMPA Portion of TC Unit 2 Generation" should include gross generation, unit auxiliary usage, and possibly Allocated Auxiliary Usage if it is required for unit operation. The factor that is driving such a high percentage is the inclusion of the Reserve Auxiliary Usage into the Fuel and Reactant charges. Beside our point that the Reserve Auxiliary amount shouldn't be included here, the amount (9070 MWh) is higher than any we found through sampling other months when TC2 was shut-down for all or a large part of month. Was the meter reading correct?

Using the rationale that determined IMPA to have a 20.135% share, results in IMEA having an 18.9% share and LGE having a 117% share of TC2 Net Generation which shows that there is an error in the calculation. This calculation is causing an additional charge of ~\$126,000 for IMPA on this invoice. We calculate IMPA's percentage to be 13.07%, arrived at by taking 3396 MWh/ (Gross Generation-Auxiliary Usage-Allocated Auxiliary Usage).

There were two other items that we would like to point out that we noticed during this review.

1. The Participation Agreement section that is referenced for TC2 on the "Trimble County 2 Invoice Notes" page should read Article 9.2.1. The Article 7.1.1 that is listed is for TC1.
2. We are not sure of what the basis is for applying the 1.0033 loss factor on TC2 in this Fuel and Reactant billing section. The TC1 Participation Agreement specifies this loss factor in 7.1.1. The TC2 agreement does not specify a loss factor to be applied in 9.2.1.

I attached a couple of documents for reference. The Invoice notes attachment is two pages but the pages are identical. For some reason the scanner doubled it up.

Let me know if/when you want to discuss. Thanks.

Jack

Jack F. Alvey
Senior Vice President, Generation
Indiana Municipal Power Agency
11610 North College Avenue
Carmel, IN 46032
317-575-3876
317-575-3372 fax

Produced as Native

Original File Name: Fuel for Disallowed TC2 Support 05.14.xlsm

Stored File Name: OpenText00338121.xlsm

Produced as Native

Original File Name: KU TC 2 IMEA-IMPA Fuel Support 05.14.xlsm

Stored File Name: OpenText00338122.xlsm

From: Anderson, Dave (Trimble County)/(O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=ANDERSON)
To: Joyce, Jeff
CC:
BCC:
Subject: Emailing: TC2S14 Spring Outage Plan.xlsm
Sent: 07/16/2014 09:33:25 AM -0400 (EDT)
Attachments: TC2S14 Spring Outage Plan.xlsm;

FYI....

David W. Anderson
Trimble County Outage Coordinator
Tel. 502-627-6313
Fax 502-217-2199
email: dave.anderson@lge-ku.com

Your message is ready to be sent with the following file or link attachments:

TC2S14 Spring Outage Plan.xlsm

Note: To protect against computer viruses, e-mail programs may prevent sending or receiving certain types of file attachments. Check your e-mail security settings to determine how attachments are handled.

Produced as Native

Original File Name: TC2S14 Spring Outage Plan.xlsm

Stored File Name: OpenText00338405.xlsm

From: Mohn, Laura(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=E008837)
To: Joyce, Jeff
CC:
BCC:
Subject: RE: FOR YOUR REVIEW: Mgmt Mtg Recap
Sent: 05/21/2014 09:52:42 AM -0400 (EDT)
Attachments:

Ok, got it. Thanks!

From: Joyce, Jeff
Sent: Wednesday, May 21, 2014 9:17 AM
To: Mohn, Laura
Subject: RE: FOR YOUR REVIEW: Mgmt Mtg Recap

A nit. I would say allow instead of utilize in the paragraph about the supplier providing the new burners

Thx

Jeff

Sent from my Verizon Wireless 4G LTE Tablet

----- Original message -----

From: "Mohn, Laura" <Laura.Mohn@lge-ku.com>
Date: 05/21/2014 8:53 AM (GMT-05:00)
To: "Joyce, Jeff" <Jeff.Joyce@lge-ku.com>
Subject: RE: FOR YOUR REVIEW: Mgmt Mtg Recap

Jeff,

After reviewing with Rick Melloan this morning, we made a few changes. To make it easier for you to review, below is the final version I would like to send back to communications:

Trimble County Unit 2 burner change-out

Laura Shuffett Mohn, group leader, Engineering, discussed the final phase of a 15-week outage for TC2. The action was necessary to replace 30 original coal burners with those of a more advanced design.

Most of the burners sustained damage in June 2010 shortly after the initial TC2 start-up. The damaged stemmed from the original burner design and its inability to burn certain types of coal specified in the contract.

Although various modification and correction plans were taken, performance issues persisted, leading to a decision to replace the burners. After reviewing proposals from four other vendors, the company elected to utilize the original burner supplier to replace the burners under warranty with a new design that offered the most impressive burner with significant design improvements.

Thirty new burners have been installed and substantial equipment modifications have been made. The next steps are to fire the unit and begin the combustion tuning process. The originally specified types of coal will be burned and tested. TC2's efficiency and megawatt capacity will be rechecked with the newly installed burners.

Can you let me know if this is ok with you?

Thanks,

Laura

From: Mohn, Laura
Sent: Tuesday, May 20, 2014 10:42 PM
To: Joyce, Jeff
Subject: FW: FOR YOUR REVIEW: Mgmt Mtg Recap
Importance: High

Hi Jeff,

Can you please take a look at the revisions I made to the news transmission article that was written about the manager's meeting last week and let me know if you are okay with it or have any additional changes? I tried to capture the major things without re-writing too much of it. The deadline given is **noon Wednesday (5/21)**.

Thank you,

Laura

<< File: Mohn_Management_meeting_May_2014_draft_NT.docx >>

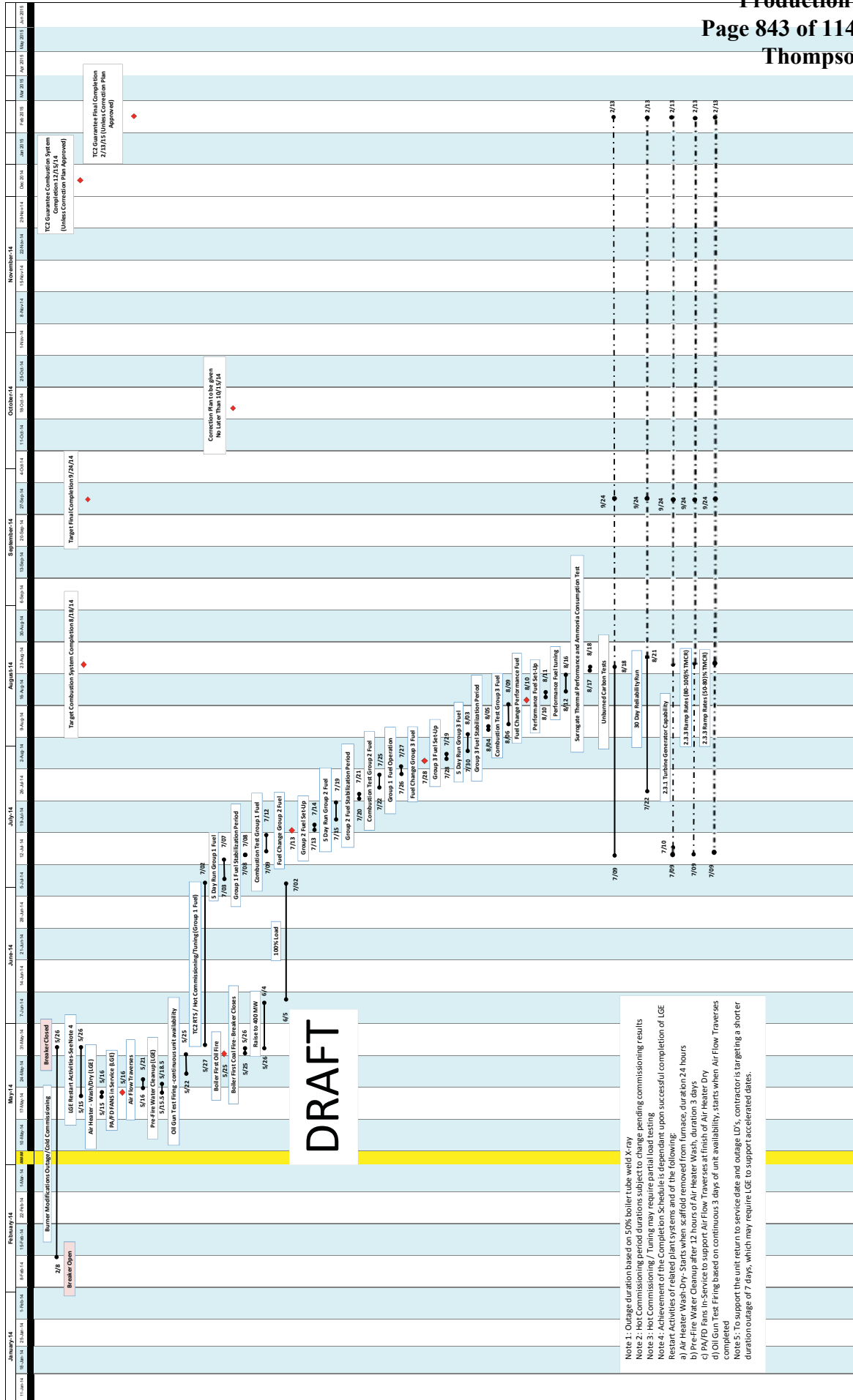
From: Stairs, Cindy
Sent: Tuesday, May 20, 2014 10:34 AM
To: Blake, Kent; Edmister, Kevin; Pfisterer, Jean Ann; Troutman, Alpha; Carr, Darin; Mohn, Laura; Thompson, Paul; Noble, Phil; Reynolds, Gerald; Tummonds, David; Pottinger, Paula; Whelan, Chris
Cc: Shemwell, Lauren; Worthington, Annalee; Dunker, Donn
Subject: FOR YOUR REVIEW: Mgmt Mtg Recap
Importance: High

The attached document is a recap of last Thursday's management meeting, which Internal Comms will publish this week in News Transmission. This document is being sent to all presenters for your review of your respective section. (For ease of review, names are listed in bold, and the recap follows the order of presentations from the meeting.)

Please let us know **by noon tomorrow** if any edits need to be made to your section prior to publication.

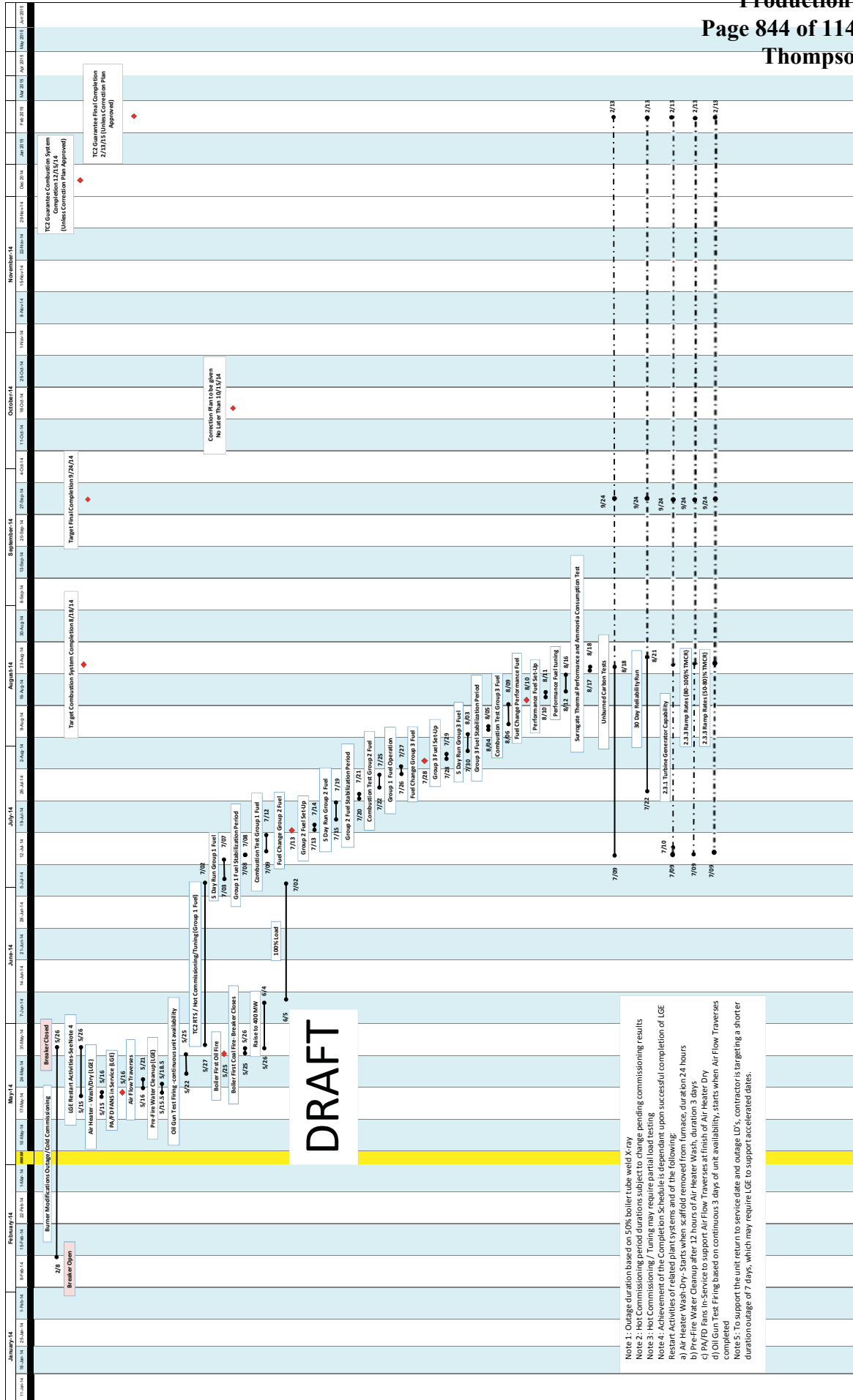
Thanks,
Cindy

Trimble County Unit 2
AMENDMENT 6: EXHIBIT 3: ATTACHMENT A
SUBJECT SCHEDULE: COMPLETION SCHEDULE



Note 1: Outage duration based on 50% boiler tube weld X-ray
 Note 2: Hot Commissioning period durations subject to change pending commissioning results
 Note 3: Hot Commissioning / Tuning may require partial load testing
 Note 4: Achievement of the Completion Schedule is dependent upon successful completion of LGE Restart Activities of related plant systems and of the following:
 a) Air Heater Wash-Dry - Starts when scaffold removed from furnace, duration 24 hours
 b) Pre-Start Water Cleanup after 12 hours of Air Heater Wash, duration 3 days
 c) Service to support Air Flow Transverses at the Air Heater Dry
 d) Oil Gun Test Firing based on continuous 3 days of unit availability, starts when Air Flow Transverses completed
 Note 5: To support the unit return to service date and outage LD's, contractor is targeting a shorter duration outage of 7 days, which may require LGE to support accelerated dates.

Trimble County Unit 2
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From: Joyce, Jeff(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=WEB/CN=JEFFJOYCE)
To: Byrd, Larry; Anderson, Dave (Trimble County); Henderson, Trent
CC:
BCC:
Subject: Fwd: 07292 - TC2 - Action Item Meeting # 2014-3, Doosan to Review Tubing to Purge Meters on ID Fan - No Expansion Facility Causing Damage to Meters
Sent: 03/02/2014 07:58:32 AM -0500 (EST)
Attachments: RE_ Trimble County 07292 - ID Fan Stall Warning Probe Analysis (AIL #62.4).msg; ID Fan Purge Units to be Reworked (28Feb14).pdf; Impulse Pipe to be Reworked (28Feb14).pdf;

Fyi

Sent from my Verizon Wireless 4G LTE smartphone

----- Original message -----

From: "Hammond, Steve"
Date: 03/01/2014 1:40 PM (GMT-05:00)
To: 'Mel Watkins' , "Rabe, Phil"
Cc: "Dukes, Christopher" , "Carlisle, Gary" , "Boone, James" , "James T. (Tom) Trimble" , "Joyce, Jeff" , "Craft, Jim" , "Mohn, Laura" , "Slaughter, Mitch" , "Payne, Nicholas" , "Powell, Richard" , "Melloan, Ricky" , "Smith, Timothy (Fuels)" , "Henderson, Trent" , ""Brann, Devin' (dmbrann@bechtel.com)"" , ""Dearman, James' (jdearman@bechtel.com)"" , "McCallum, Neil" , "Davidson, Gordon" , "Torkington, Ian R" , "Kerslake, Ian" , "Gratton, Ron" , 06350 TRIMBLE COUNTY MAILBOX <06350.trimblecountymailbox@doosan.com> , "Lee, John" , "Huntington, John" , "Whitehouse, Matthew" , "Groom, David"
Subject: 07292 - TC2 - Action Item Meeting # 2014-3, Doosan to Review Tubing to Purge Meters on ID Fan - No Expansion Facility Causing Damage to Meters

Mel / Phil

In response to Action Item Meeting # 2014-3, Doosan to review tubing to purge meters on ID fan - No expansion facility causing damage to meters.

- 1) As you are aware Doosan has an outage activity to add additional insulation around the stab ins that were fitted as part of the stall warning system during the Spring 2013 outage, the reason for this is to ensure the purge air that continually bleeds into the fan is sufficiently heated that acid corrosion does not occur – see AIL # 62.4. I have attached our evaluation of the purge air temperatures seen in August 2013 which led to this scope of work.
- 2) Subsequently Doosan was made aware that one of the purge air units had failed and that the cause of failure was thermal expansion. We have surveyed the installation and agree that the pipe exiting the plastic flow meter could be improved by the addition of a short hose to negate the effect of thermal expansion however we do not believe that the inlet to the purge air unit requires the addition of a hose.

Attached to this e-mail is a sheet titled "ID Fan Purge Units to be Reworked (28Feb14)" which shows both the inlet to and outlet from the purge air unit and the position a hose will be added, can I ask you to review and agree this action. Once agreed we will advise the specification of the hose to be used which we expect to be 5" long with compression fittings to suit the tube used at each end and a material of construction to suit the environmental conditions around the ID fan.

- 3) And finally, Doosan will rework the impulse pipe that runs along the upper quadrant of the ID fan casing to ensure that sufficient slope exists to drain any condensation back into the fan.

Attached to this e-mail is a sheet titled "Impulse Pipe to be Reworked (28Feb14)" which shows the impulse pipe on both fans and the action to be taken, can I ask you to review and agree this action.

If you have any questions let me know, otherwise I look forward to your confirmation that this course of action is agreed.

Regards

Steve

Steve Hammond

Doosan Babcock

Email: steve.hammond@doosan.com

Tel: +1 502 255 5262

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**Weekly Report
May 12, 2014**

Station / Area: Trimble County Station**Safety:**

- 52 days since last OSHA recordable incident (3/20/14).
- 47 days since last lost-time incident (3/25/14).
- 45 days since last contractor OSHA recordable incident (3/27/14)

Environmental:

Week Ending May 11 th 2014	TC1	TC2	CTs
SO2 (Sulfur Dioxide)	0	0	
NOx (Nitrous Oxide)	0	0	
PM (Particulate Matter)	0	0	0
CO (Carbon Monoxide)		0	
CO_CORR (Carbon Monoxide-Corrected)			0
NOX CORR (Nitrous Oxide-Corrected)			0
CH2O (Formaldehyde)			0
Sulfur Content of Natural Gas			0
CO (Carbon Monoxide)		0	
Hg (Mercury)		0	
VOC (Volatile Organic Compounds)		0	
H2SO4 (Sulfuric Acid Mist)		0	
Fluorides		0	
HCl (Hydrochloric Acid)		0	
HAPS (Hazardous Air Pollutants)		0	
Pb (Lead)		0	

- SCR and hydrated lime systems in service.

Unit Status:○ **Unit 1:**

- TC1 start-up in progress this morning.
- TC1 was off-line this weekend to clean air heaters and was ID fans. Other work included bottom ash hopper repairs, boiler deslag, boiler tube work, burner work and breaker inspection and repair.
- The turbine/generator T7 bearing vibration is currently running around 3 to 4 mils. Monitoring same.
- Still troubleshooting mill fire issues. Monitoring same.

- Monitoring oil leak on turbine generator #10 bearing. Adjusted vapor extractor pressure to minimize leak.
- **SO₃ Removal System:**
 - TC1 – Hydrated lime injection in service.
- **Unit 2:**
 - TC2 off-line for planned burner outage and the bulk of the outage work is complete. Current return to service is 5/26 according to Bechtel's schedule.
 - Air flow testing is in progress.
 - Plant and Bechtel are still evaluating punch list and warranty work scope that is not disputed and non-outage. Still working off punch list items. Station developed list of open items and design issues for PE.
 - "A" limestone ball mill gear box change out is on hold due to issues with the clutch (parts on order).
- **Common:**
 - N/A
- **Combustion Turbines:**
 - All CTs are available.

Fuel/Limestone Inventory:

- TC1 and TC2 High Sulfur
 - 226,957.39 (21 days)
- TC2
 - PRB – 104,047.62 (45 days @ 30%)
- Limestone
 - 62,326 tons

Material Handling:

- 15 coal barges and 2 limestone barges in the last 7 days.
- Barges in the fleet:
 - 9 Barges TC1 & TC2 High Sulfur Coal (Riverview)
 - 0 Barges TC2 PRB Coal
 - 0 Barges Limestone
- Issues:
 - None

People:

- N/A

Other:

- Synmat trucking gypsum to Certaineed Plant in Carrollton on part-time basis.

From: "Joyce, Jeff" <

Production 2

To: =?utf-8?Q?Mohn

Page 850 of 1143

Laura?=<Laura.Mohn@lge-ku.com>

Thompson

Date: 5/21/2014 5:16:51 AM

Subject: RE: FOR YOUR REVIEW: Mgmt Mtg Recap

A nit. I would say allow instead of utilize in the paragraph about the supplier providing the new burners

Thx

Jeff

Sent from my Verizon Wireless 4G LTE Tablet

----- Original message -----

From: "Mohn, Laura" <Laura.Mohn@lge-ku.com>

Date: 05/21/2014 8:53 AM (GMT-05:00)

To: "Joyce, Jeff" <Jeff.Joyce@lge-ku.com>

Subject: RE: FOR YOUR REVIEW: Mgmt Mtg Recap

Jeff,

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Can you let me know if this is ok with you?

Thanks,

Laura

From: Mohn, Laura
Sent: Tuesday, May 20, 2014 10:42 PM
To: Joyce, Jeff
Subject: FW: FOR YOUR REVIEW: Mgmt Mtg Recap
Importance: High

Production 2
Page 851 of 1143
Thompson

Hi Jeff,

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Thank you,

Laura

<< File: Mohn Management meeting May 2014 draft NT.docx >>

From: Stairs, Cindy
Sent: Tuesday, May 20, 2014 10:34 AM
To: Blake, Kent; Edmister, Kevin; Pfisterer, Jean Ann; Troutman, Alpha; Carr, Darin; Mohn, Laura; Thompson, Paul; Noble, Phil; Reynolds, Gerald; Tummonds, David; Pottinger, Paula; Whelan, Chris
Cc: Shemwell, Lauren; Worthington, Annalee; Dunker, Donn
Subject: FOR YOUR REVIEW: Mgmt Mtg Recap
Importance: High

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Please let us know by noon tomorrow if any edits need to be made to your section prior to publication.

Thanks,
Cindy

Produced as Native

Original File Name: Trimble Combustion System Milestone Schedule Rev N (1-31-14).xlsx

Stored File Name: OpenText00373308.xlsx

Power Generation
Week Ending 07/05/14

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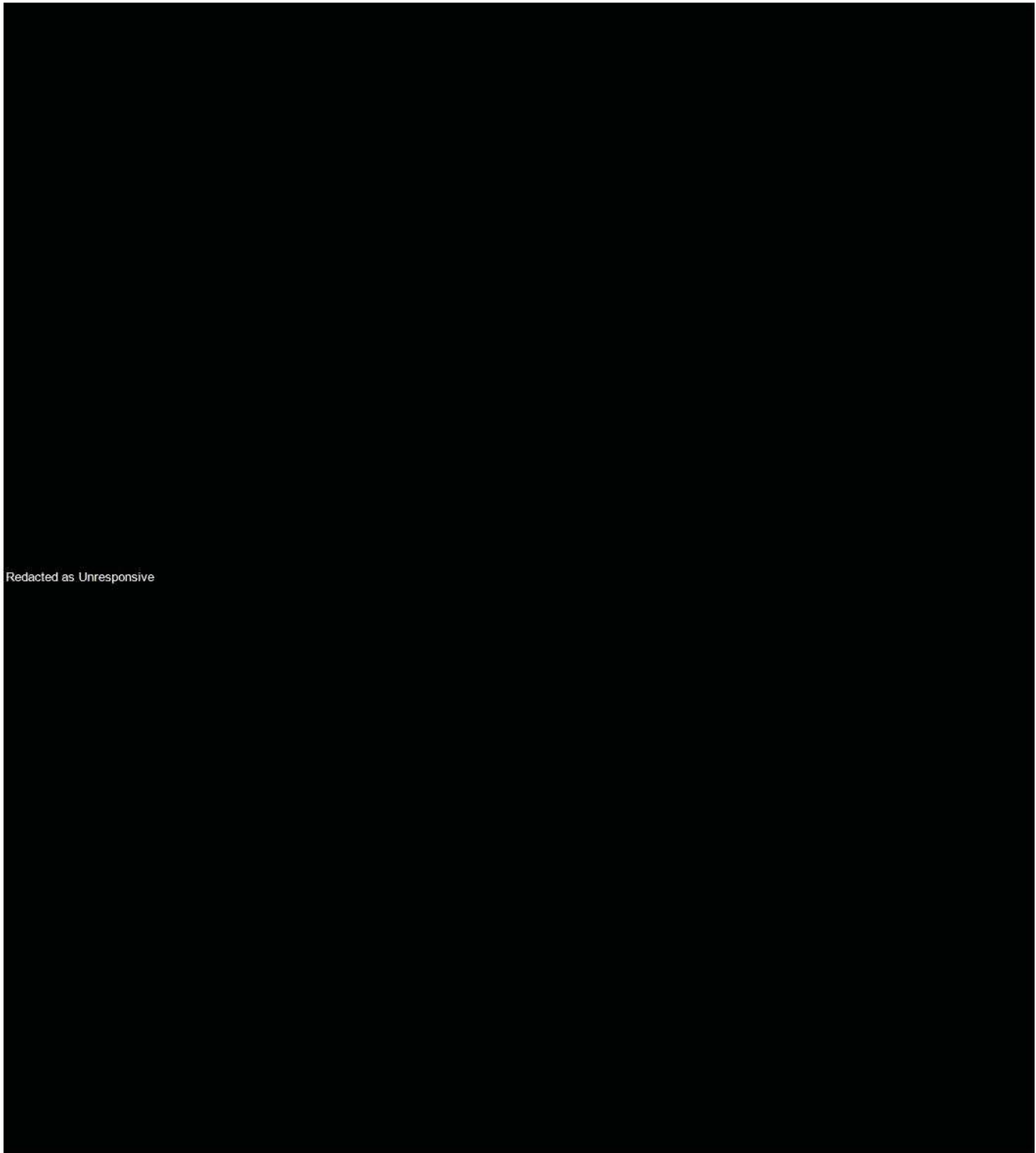
- **Unit 2:**

- Unit off line due to turbine EHC system issues.
- Found and repaired tube leak on boiler. Leak located on north wall, west side near the OFA elevation.
- Made temporary adjustments to the economizer inlet line hangers. Further modifications will be required during a future outage.
- Emptied coal from the 2D coal silo.
- Doosan continuing to work with Coen to address oil gun issues.
- Plant and Bechtel are still evaluating punch list and warranty work scope that is not disputed and non-outage. Still working off punch list items. Station developed list of open items and design issues for PE.
- "A" limestone ball mill gear box change out work resumed today. Expect to be able to run mill by this Tuesday.

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Power Generation
Week Ending 07/11/14

Redacted as Unresponsive



- **Unit 2:**

- Unit on-line and good for full load. Returned to service on 7/13.
- Found and repaired tube leak on boiler. Leak located on north wall, west side near the OFA elevation.
- Made temporary adjustments to the economizer inlet line hangers. Further modifications will be required during a future outage.
- Doosan continuing to work with Coen to address oil gun issues.
- Plant and Bechtel are still evaluating punch list and warranty work scope that is not disputed and non-outage. Still working off punch list items. Station developed list of open items and design issues for PE.
- Doosan continuing to tune the boiler.

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From: Whitehead, Karen A.(WhiteheadKA@bv.com)
To: Hussey, Ryan J.; Trimble, James T. (Tom); 'jalvey@impa.com'; 'JohnL@impa.com'; 'Childers@imea.org'; 'Thompson' 'kwagner@imea.org'; 'aschum@imea.org'; Slaughter, Mitch; Crutcher, Tom; Bowling, Ralph; Straight, Scott; Carlisle, Gary; Slack, Eric; Mohn, Laura; Dorwart, Jordan; Coghill, Joe; Thomas, Mark; Maldonado, Francisco; Gray, Jeffrey; Raker, Adam; Buckner, Mike; Byrd, Larry; Braun, Allen; 'MikeM@impa.com'; Joyce, Kenny; Turner, Haley; Craft, Jim; Dukes, Christopher; Rabe, Phil; Boone, James; Lively, Noel; Melloan, Ricky; Clifford, Troy; Fante, Kevin; Ganote, Gary; Hudson, Glen; Murphy, Wayne; Pickhart, Charlie; Shupe, David; Spalding, Jeff; Payne, Nicholas; Joyce, Jeff; Huguenard, Jim; Craven, David; Burkhardt, Terry; Barnes, Troy; Ransdell, Charles; Turner, Tyler; Henderson, Trent; Anderson, Dave (Trimble County); Allen, Ross; Powell, Richard; Richardson, Stephen; Roach, Sandra A; Martin, Charlie; Willbur, Mickey; Sparks, Patrick
CC:
BCC:
Subject: TC2 Start Up and Commissioning Meeting Notes 7/10/2014
Sent: 07/10/2014 08:59:08 AM -0400 (EDT)
Attachments: NOx-NH3 Daily Data.xlsx;

All,

TC2 Unit Status as of approximately 8:00 am:

- The Unit is offline – forced outage
- The EHC system contamination levels are within acceptable limits. The system has been functionally tested.
- Unit 2 steam seals are in place and water on the medium path is being heated.
- As of this morning, it is estimated that the unit will be ready to start firing oil guns Friday morning (7/11).

Activities Planned:

- Online testing unable to continue until the unit is back on.
- Coen, Forney, and Emerson are currently on site and will be present for unit startup.
- Repairs will be made to the mechanical stop on one of the A burner row core air dampers
- Doosan and LG&E-KU will perform a walkdown of the burner and OFA levels today to make sure all cables, hoses, etc. are connected as they should be and have not been disturbed during the outage.

Discussion Items:

- The new 5 pair oil guns will be tested when the unit comes back online during the cold start. A revised oil gun test procedure has been provided.
- Additional purge testing will be performed when the unit is coming up on load as mills A and B must be purged. A revised purge procedure will be provided.
- Doosan had recommended that 3 windbox pressure transmitters be checked and recalibrated. This has been completed by LG&E-KU.
- The A3 coal valve has been rebuilt and reinstalled.
- Doosan to resume issuing 3-day look ahead schedules today.

Attached is the daily NO_x-NH₃ report from 6/29; there are no updates today since the unit is down.

Please let me know if you have any questions.

Regards,

Karen Whitehead, P.E.* | Mechanical Engineer, Steam Generation Section, Energy Division

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Power Generation
Week Ending 07/18/14

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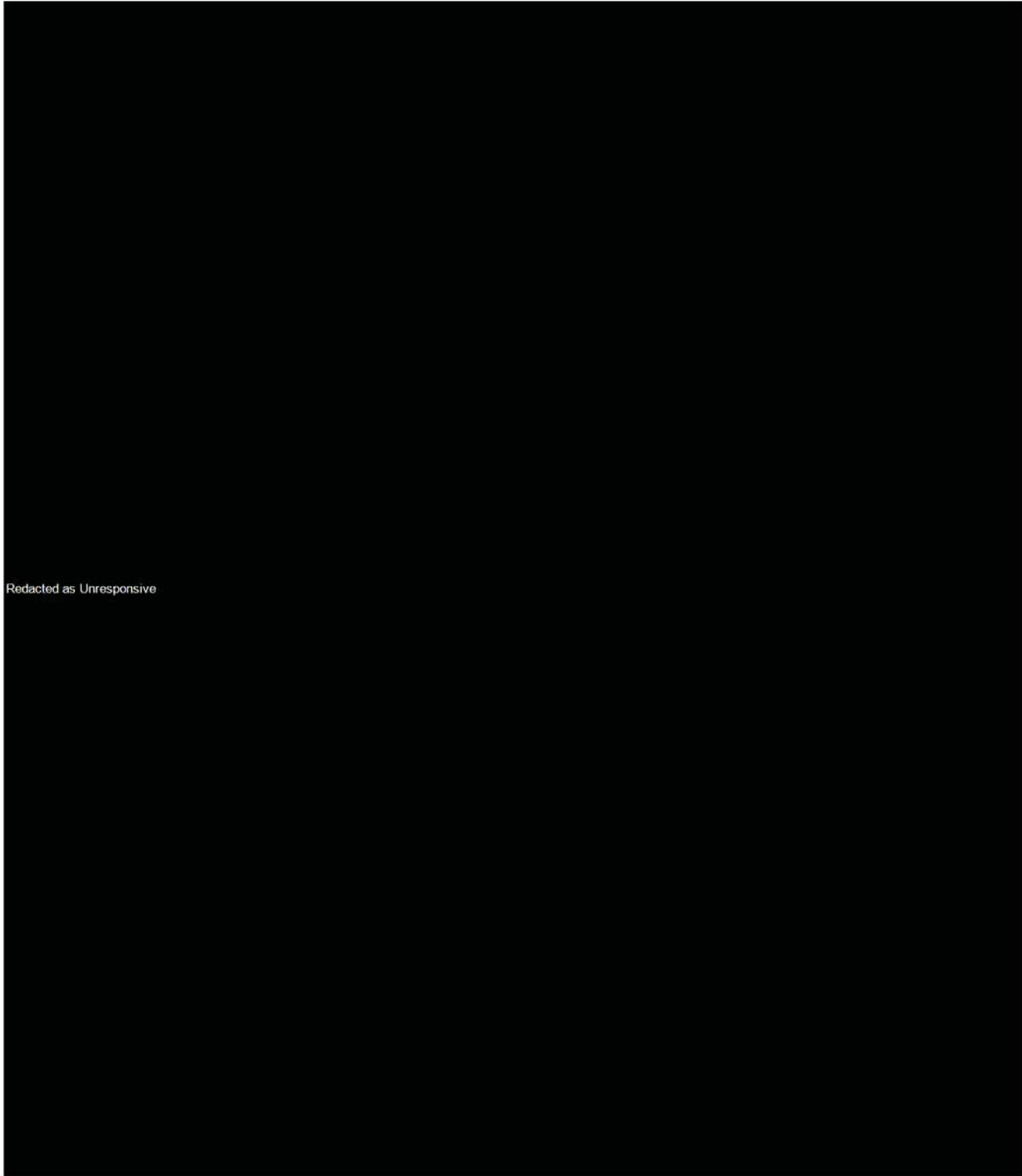
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- **Unit 2:**

- Unit on-line and good for full load.
- Made temporary adjustments to the economizer inlet line hangers. Further modifications will be required during a future outage.
- Doosan continuing to work with Coen to address oil gun issues.
- Plant and Bechtel are still evaluating punch list and warranty work scope that is not disputed and non-outage. Still working off punch list items. Station developed list of open items and design issues for PE.
- Doosan continuing to tune the boiler.
- Doosan is working on A/H sootblower issues, making changes to the control logic with input from the OEM.
- Doosan is looking into air flow issues related to load changes. We are asking them to look at the slow recovery of O₂ vs fuel on load changes.

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Power Generation
Week Ending 07/25/14



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- **Unit 2:**

- Unit on-line and good for full load.
- The unit tripped off on Wednesday due to a lockout on the Main Aux and Res. Aux 14KV Transformers. The lock out was from water getting in the “B” Bus of the 14KV gear. The water issue has been addressed and the transformers; switchgear and bus work was inspected and repaired.
- The unit returned to service @ 13:39 on Friday the 25th.
- The plant is working on the list of problems that were encountered when we had a loss of power to equipment from the 14KV lockout.
- Made temporary adjustments to the economizer inlet line hangers. Further modifications will be required during a future outage.
- Doosan continuing to work with Coen to address oil gun issues.
- Plant and Bechtel are still evaluating punch list and warranty work scope that is not disputed and non-outage. Still working off punch list items. Station developed list of open items and design issues for PE.
- Doosan continuing to tune the boiler.
- Doosan is looking into air flow issues related to load changes. We are asking them to look at the slow recovery of O2 vs fuel on load changes. Doosan has offered two logic changes to fix this issue, The plant is reviewing each before installing and testing the changes.

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From: Maldonado, Francisco(/O=LGE/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=MALDONADO, NOVOA00D)
To: Hudson, Rusty; Joyce, Jeff; Cuzick, Fred
CC: Byrd, Larry; Ransdell, Charles
BCC:
Subject: TC2 Roof Tube Project
Sent: 11/21/2013 09:57:32 AM -0500 (EST)
Attachments: TC2 Roof Transition Tube Replacement (Revised CEM posted 03-06-13).xslm; TC2 Roof Tube Replacement Investment Proposal.docx;

All,

Attached is the latest revised CEM and IP for the TC2 roof tube replacement project. Please let me know of any comments or questions.

Thanks,

Francisco Maldonado

Mechanical Engineer

Trimble County Station, LG&E

487 Corn Creek Road

Bedford, KY 40006

Phone: (502) 627-6218

Mobile: (502) 662-2880

Produced as Native

Original File Name: TC2 Roof Transition Tube Replacement (Revised CEM posted 03-06-13).xlsm

Stored File Name: OpenText00404576.xlsm

Investment Proposal for Investment Committee Meeting on: _____

Project Name: TC2 Transition Roof Tube Replacement

Total Expenditures: \$ 892k Net IMEA/IMPA Reimbursement

Project Number(s): 140919LGE

Business Unit/Line of Business: Power Generation

Prepared/Presented By: Francisco Maldonado

Executive Summary

This project is to replace two hundred four transition tubes on the TC2 boiler roof (SA213 T23 2.5"x0.28" MWT). In 2012 the aforementioned transition tubes were identified, through inspection, to have hardness values above the allowable numbers set forth by ASME codes for this material. The high hardness values make this material very susceptible to cold cracking. Cold cracking is more prevalent and increases in likeliness to happen when the roof tube metal temperatures are at or below 300° F. In the event of a forced outage or planned outage of the unit, tube temperatures will fall below the 300° F and increase the likelihood of creating a crack and subsequent leak in the roof tubes.

The existing transition pieces have been subjected, during manufacturing, to a heating process which tapers (swages) the tube from a certain thickness to a smaller thickness. It has been determined that the high hardness values found, are attributed to this swaging process. The new transition pieces will be fabricated in such a manner that the heated swage process will no longer be required. The tubes will be fabricated to have a thicker wall and machined to match the wall of the existing tubes thus removing the possibility of added heat stress.

After careful review of the inspection report provided by Structural Integrity, Generation Engineering recommended that the transition tubes be replaced. Other options were explored such as a complete retrofit of the TC2 boiler roof with new material but this option proved to be unnecessary and not economical. The inspection reports show the problem areas are localized in the transition pieces and, as such, should be the areas that are repaired. If the tubes are not replaced, the likelihood of a tube leak increases over time.

This project, if approved, is scheduled to be completed during the TC2 2014 spring outage. Material is estimated to cost approximately \$136k (includes 6% sales tax) and labor is estimated to cost \$975k. The 2014 capital business plan includes \$821k (Net) for this project.

Background

Trimble County 2 boiler roof is comprised of SA-213 Grade 23 tubes. Grade 23 is a, relatively speaking, new and exotic metal, and as such, there is very little knowledge and history on this material. The ASME code case that governs the manufacturing of Grade 23 is currently in its sixth revision due to the fact that new information has been gathered in the recent years. Unfortunately, some of that information was discovered at Trimble County do to several roof tube leaks and repairs.

The initial interest that led to the metallurgical analyses of the tubes was due to tube failures that occurred at field welds from original fabrication. When the repairs were made to the original tubes, stress concentrations were created. These concentrations created cold cracks in tubes at field weld line "D". It is important to note that poor fabrication was found and repaired at four different field weld lines and only those found and repaired at weld line "D" experienced cold cracking. Subsequent analysis was performed at the different field weld lines throughout the roof. The data shows that high hardness readings were not a global issue but an issue isolated to the "D" weld line.

- **Other Alternatives Considered(1 –Recommendation, 2 –Do nothing, 3 –Next Best Alt)**
 1. It is recommended that only the transition pieces be replaced. This recommendation consists of replacing 204 tubes roughly 2 feet long. This is the least invasive and addresses the high hardness issue found during the analytical work performed in 2013.
 2. If nothing is done the probability of a tube leak and unit shutdown occurring increases.
 3. Next best option is to replace all of the T23 material on the TC2 boiler roof. This option is not very economical because not only will the material need to be replaced but engineering will have to be done to accommodate stresses and supports for the boiler if a new material is used.
 4. Another option would be to replace only the tubes that test bad. This would require a complete analysis of each tube. The hardness test is done to a very small portion of the tube (approximately one square inch). To ensure that the structural integrity of each tube has not been compromised every square inch would need to be inspected. This would be a very costly endeavor and there is a high probability that all the tubes will have high hardness values and will need to be replaced.

Project Description

- **Project Scope and Timeline**

This project is scheduled to be completed during the TC2 2014 spring outage beginning in late February. The boiler contractor will remove and replace 204 transition roof tubes. The welds will be x-rayed and acceptance will be in accordance with ASME boiler and state codes. The contractor will also have to cut and re-weld screen tubes that penetrate the roof near the weld line at the cage inlet header. Cutting of the screen tubes is necessary to gain access to the weld line.

Many inspections and tests have been done to determine the best options for repair. Seven roof tubes have been replaced at this weld line and have proven to be the correct fix for the issue. These new tubes have been in service for 6 months and no known issues have been experienced to date.

If approved, the material will be ordered as soon as practical with an expected delivery in late February. The work is expected to take 3 weeks starting in late February. The timeline for the repair will not be an issue due to the fact that the outage is expected to last 10-14 weeks.

- **Project Cost**

The estimated project cost is \$1,190k (gross). This includes \$136k (includes 6% sales tax) for material, \$975 for labor and \$50k for contingency. The labor and material portions will be done on a lump sum basis. Contingency is based on 5% of the project total. Some work has been done in this area and many of the unknowns have been taken into account the 5% will be sufficient in case an unforeseen issue arises.

Economic Analysis and Risks

- **Bid Summary**

Four suppliers were solicited to bid on the T23 roof tube material. Out of the four only two provided a bid. Michigan seamless “no bid” because they did not have the fabrication capabilities to provide the specified tubes and Boiler Tube of America “no bid” for reasons unknown. Refer to table below for an overview of the bidders prices.

Material Bids	Alstom Power	Boiler Tube of America	Minotte	Michigan Seamless Tubing
MBE/WBE				
Total Cost (\$000s)	\$147	No Bid	\$136	No Bid

Labor Bids	A&D	PIC	SE Boiler	TEI	MCS	UGS	Titan
MBE/WBE							
Removal Costs	\$167	\$233	\$195	\$252	\$579	\$1,095	\$936
Installation Costs	\$255	\$544	\$780	\$1,005	\$876	\$1,645	\$2,062
Total Cost (\$000s)	\$422	\$777	\$975	\$1,256	\$1,454	\$2,740	\$2,997

It is likely that we will use Minotte for the material purchase. Minotte is both capable of meeting the required schedule and manufacturing the material to the required specification. It is also likely that Southeast Boiler (SBR) will be used for the labor portion of the project. It was found during bid review that SBR is technically the most competent contractor. Not only do they have experience welding the T23 material but they have experience with welding the T23 material at the TC the roof tube and in particular at weld line "D".

A&D was also considered for the labor portion of this project. Upon review of A&D's bid it was found that their labor hours seemed too low to complete this job and it is very likely that they have underestimated the scope of work associated with this project. Along with low labor hours they lack the technical expertise to work with T23 and would be hard pressed to provide a quality job. PIC was also considered but due to recent history on TC1 boiler projects it has been determined that this project would run the risk of not being completed on time by PIC. PIC is a smaller company that depends heavily on "key" project managers if those project managers are not available for a given job the job seems to suffer. Such was the case on TC1 and the probability of happening again on TC2 is very likely.

- **Budget Comparison and Financial Summary**

Financial Detail by Year (\$000s)	2013	2014	2015	Post 2015	Total
1. Capital Investment Proposed		697			697
2. Cost of Removal Proposed		195			195
3. Total Capital and Removal Proposed (1+2)	-	892	-	-	892
4. Capital Investment 2014 BP		616			616
5. Cost of Removal 2014 BP					-
6. Total Capital and Removal 2014 BP (4+5)	-	616	-	-	616
7. Capital Investment variance to BP (4-1)	-	(81)	-	-	(81)
8. Cost of Removal variance to BP (5-2)	-	(195)	-	-	(195)
9. Total Capital and Removal variance to BP (6-3)	-	(276)	-	-	(276)
10. Project O&M Proposed					-
11. Total Project Proposed (3+10)	-	892	-	-	892
12. Net Income		\$41	\$36	\$916	\$993

Financial Summary (\$000s):

Discount Rate:	6.50%
Capital Breakdown:	
Contract Labor:	\$975
Materials:	\$136
Local Engineering:	\$0
Burdens:	\$24
Contingency:	\$55
Reimbursements:	(\$298)
Net Capital Expenditure:	\$892

Project Presented and alternatives:

Financial Analysis - Project Summary (\$000)	Total Project	Replace 50% (Next Best)	Do Nothing
NPVRR	(\$1,140)	(\$2,051)	(\$2,683)
NPV Cash Flows	\$131	\$203	\$254
IRR	7.9%	12.9%	-1.4%
ROE	10.3%	22.2%	0.0%

- **Assumptions**

- If this project is not completed, there is a probability that a forced outage will occur of 5 days duration on Trimble County 2 per year.
- The probability of a forced outage due to roof tube leaks increases 1% each year.

- **Environmental**

New Source Review Evaluation, questions 1-6 (as applicable) must be completed on all investment proposals.		
1	Does the project include any new equipment or component with emissions, result in emissions not previously emitted or cause the unit to exceed any emission limit? If yes, Environmental Affairs is required to review this project. If no, go to Question #2.	No
2	Question 2: Is the change a like-kind or functionally equivalent replacement under \$500K? If yes, the project is not subject to NSR and no further evaluation is required. If no, go to Question #3.	No
3	Question 3: Does the equipment change increase the emissions unit's maximum hourly heat input? If yes, Environmental Affairs is required to review this project. If no, go to Question #4.	No
4	Question 4: Does the equipment change increase the emissions unit's electrical output? If yes, Environmental Affairs is required to review this project. If no, go to Question #5.	No
5	Question 5: Has the equipment being repaired/replaced been repaired or replaced in the past at this unit or other units in the fleet? If no,	Yes

	Environmental Affairs is required to review this project. If yes, list any known projects and go to Question #6.	
6	Question 6: Have there been forced outages or unit de-rates in the past 5 years due to this component? If no, the project is not subject to NSR and no further evaluation is required; if the answer is yes, Environmental Affairs needs to review this project.	Yes

- **Risks**

Based on hardness data collected at the roof tubes, it is highly likely that there will be a tube leak forced outages will occur on an increasing basis until transition roof tubes are repaired.

Conclusions and Recommendation

It is recommended that the Investment Committee approve the TC2 Transition Roof Tube Replacement project for \$1,190k gross (\$892k Net) to avoid certain catastrophic tube failure related outages.

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Original File Name: Microsoft_Excel_97-2003_Worksheet1.xls

Stored File Name: OpenText00404578.xls

Produced as Native

Original File Name: Do Nothing Case - TC2 PJFF Bags - CEM.xlsm

Stored File Name: OpenText00404943.xlsm

Produced as Native

Original File Name: Investment Case - TC2 PJFF Bags - CEM.xlsm

Stored File Name: OpenText00404944.xlsm

Investment Proposal for Investment Committee Meeting on: September 26, 2013

Project Name: TC2 PJFF Bag Replacement

Total Expenditures: \$1,326k (Net IMEA/IMPA Reimbursement), Including 10% Contingency

Project Number(s): 137671LGE

Business Unit/Line of Business: Power Generation

Prepared/Presented By: Jeff Joyce/Haley Turner

Executive Summary

The scope of this project includes the purchase and installation of the filter bags required to replace all the bags in the TC2 pulse jet fabric filter (PJFF). The scope includes the removal of the existing bags and installation of the new bags. The purchase of two compartments of spare filter bags is included to replace damaged bags in future outages. Cages fit tightly down into the filter bags and can damage the bags if they have broken or bent wires. Damaged cages will be replaced as needed; therefore, the project includes purchasing approximately 2,200 cages. Leak-testing to ensure proper installation and pre-coating is also included.

The particulate emissions on TC2 have increased in the last year due to the increasing amount of broken bags in the PJFF. The particulate limit on TC2 is 0.015 lb/MBTU in a 24 hour day. This limit is extremely low, and does not allow for a significant number of broken bags. If the bags are not changed out in the next outage maintaining compliance will become more difficult, the unit will need to be load limited and additional outages will be required. The option to change the bags in one compartment at a time would decrease the bag life of the new bags due to the majority of the air flow going through these new, more permeable bags. .

It is recommended this project be approved in order to meet the TC2 particulate limits. A total of \$1,929k net IMEA/IMPA reimbursement was included in the 2014 BP (\$2,572k gross). The total requested project funding is \$1,326k net (\$1,768k gross). The bag order and labor contract will be awarded in the fourth quarter of 2013, and bags will be received in January/February, 2014.

Background

The TC2 coal-fired unit at the Trimble County Generating Station began generating power in May 2010 and entered into commercial operation on January 22, 2011. The unit has a pulse jet fabric filter (PJFF) which contains 13,000 filter bags across twelve compartments. The bags are 5" diameter and 26' long. The filter bags were originally expected to last 4 years.

During original construction, Siemens installed 16 oz/yd Acid Resistant Fiberglass bags with a PTFE membrane. Five compartments of bags were replaced in September, 2011 due to ash bridging issues which overheated the bags. The new bags installed were 22 oz/yd Acid Resistant Fiberglass bags, which Siemens recommended for long-term strength.

Approximately 100 bags were replaced in the fall of 2012 due to failure and another 300 were found in the spring of 2013. One thousand bags, in total, were replaced in the spring of 2013, including broken bags and the perimeter bags around those failures.

Sample bags have been sent out for testing during each outage, and the permeability and strength monitored over time. Due to the tests results showing degradation and the increasing amount of broken bags found during outages, it is necessary to replace the bags very soon in order to ensure the continued reliability of the unit. The bags have only been in service for 2 ½ years.

The pressure drop across the fabric filter has been and is higher than originally expected for TC2. It is believed this high differential pressure is the result of higher than original design gas flows through the filter and the particulate loads. The high differential pressure has required more frequent pulse cleaning of the bags. This increased pulsing has caused the bags to fail prematurely.

• Other Alternatives Considered

- Recommendation
Replace all the bags in the PJFF as explained in the project scope. This alternative has the least risk to the unit generation and maintains particulate emissions compliance..
- Do Nothing
Do not replace the filter bags and continue to run until particulate emission limits force the unit offline. This would be expected to occur in about one year or less. This alternative would put the plant's reliability at risk. Therefore, it is not considered practical.
- Next Best Alternative
Replace one compartment of bags at a time on line. This alternative would cause a decrease in bag life due to increased flow through the new bags as they are installed. (The ash would take the path of least resistance, through the compartment with the newest bags.) This alternative also carries a significantly higher safety risk, since the bags would be replaced while the unit remains online, The added risk and potential additional costs could easily surpass any cost savings or other benefits.

Project Description

- **Project Scope and Timeline**

The scope of this project includes the purchase and installation of the filter bags required to replace all 13,000 bags in the TC2 pulse jet fabric filter (PJFF). The scope includes the removal of the existing bags and installation of the new bags. Damaged cages will be replaced as needed, and the project includes sufficient funds to replace approximately 2,200 cages. Leak-testing to ensure proper installation and pre-coating is also included in the project.

September, 2013 - Investment Committee meeting and approval

October, 2013 - Issue purchase order for bags/cages

October, 2013 - Secure installation contractor

January, 2014 - Receive bags/cages

February, 2014 - Replace all bags and cages as needed, during planned TC2 2014 outage

March, 2014 - Receive leak test and pre-coat material

April, 2014 - Conduct leak test and pre-coat before coming on-line

- **Project Cost**

The project cost for this project including materials and labor is \$1,326k net IMEA/IMPA reimbursement (\$1,768k gross). A contingency of 10% is included in the project costs. The contingency is based on the degree of difference in the bids and the estimated values for precoat, leak testing and cages. All materials and labor bids are lump sum.

Economic Analysis and Risks

- **Bid Summary**

Below is a summary of the bids the plant has received for bags and installation. GE Air Filtration was eliminated due to poor quality of submitted bag sample. US Air Filtration was also eliminated due to submitting a bid for bags that does not meet the coating specification nor the mullen burst strength requirement. In addition, US Air Filtration does not provide labor to install bags and therefore their bags would have to be purchased through a labor contractor (PSG) who would actually install them.

The four remaining bidders have been asked to add costs for cages, leak testing, precoating and a 3 year warranty so that they can be further evaluated. The current estimate for these items is \$300k. BWF is the preferred bidder at this time due to lower costs, higher bag quality, included warranty, and being located in Hebron, KY. They were also the only bidder to include options for leak testing, precoating, and a 3 year warranty in their initial bid.

	BWF (\$)	FLSmith (\$)	Menardi (\$)	Midwesco (\$)	GE AF (\$)	PSG/ USAF (\$)
Supply 15k bags	1,032,950	1,079,432	1,003,580	1,047,146	1,022,660	840,923
Install new bags	124,720	275,463	396,537	164,790	289,350	205,000
Cages, warranty	150,000	300,000	300,000	300,000	300,000	300,000
Total	1,307,670	1,654,895	1,700,000	1,511,936	1,612,010	1,345,923

- Budget Comparison and Financial Summary (net IMEA/IMPA 25% Reimbursement)**

Financial Detail by Year (\$000s)	2014	2015	2016	Post 2016	Total
1. Capital Investment Proposed	1,326	-	-	-	1,326
2. Cost of Removal Proposed					-
3. Total Capital and Removal Proposed (1+2)	1,326	-	-	-	1,326
4. Capital Investment 2014 BP	1,929				1,929
5. Cost of Removal 2014 BP					-
6. Total Capital and Removal 2014 BP (4+5)	1,929	-	-	-	1,929
7. Capital Investment variance to BP (4-1)	603	-	-	-	603
8. Cost of Removal variance to BP (5-2)	-	-	-	-	-
9. Total Capital and Removal variance to BP (6-3)	603	-	-	-	603
10. Project O&M Proposed					-
11. Total Project Proposed (3+10)	1,326	-	-	-	1,326

Financial Summary (\$000s):

Discount Rate:	6.5%
Capital Breakdown:	
Labor:	\$0
Contract Labor:	\$200
Materials:	\$1,305
Local Engineering:	\$30
Burdens:	\$72
Contingency (10%):	\$161
Reimbursements:	(\$442)
Net Capital Expenditure:	\$1,326

Project Presented:

Financial Analysis - Project Summary (\$000)	Total Project	Do Nothing Case
NPVRR	1719k	2316k
NPV Cash Flows	34	0
ROE - 2014	13.6%	0.0%
ROE - 2015	10.3%	0.0%
ROE - 2016	10.3%	0.0%
ROE - 2017	10.3%	0.0%
ROE - 2018	10.3%	0.0%
ROE - Life of Project	10.4%	0.0%

-
-
-
-

Assumptions

This project assumes that the unit's generating output would be derated by 5% if the bags were not replaced in 2014 as planned, and that the existing bags could only stay in service for one additional year. All of the existing bags would then require replacement sometime in 2015, in order for TC2 to remain in compliance with all particulate emission limits..

- **Environmental**

New Source Review Evaluation, questions 1-6 (as applicable) must be completed on all investment proposals.		
1	Does the project include any new equipment or component with emissions, result in emissions not previously emitted or cause the unit to exceed any emission limit? If yes, Environmental Affairs is required to review this project. If no, go to Question #2.	No
2	Question 2: Is the change a like-kind or functionally equivalent replacement under \$500K? If yes, the project is not subject to NSR and no further evaluation is required. If no, go to Question #3.	No
3	Question 3: Does the equipment change increase the emissions unit's maximum hourly heat input? If yes, Environmental Affairs is required to review this project. If no, go to Question #4.	No
4	Question 4: Does the equipment change increase the emissions unit's electrical output? If yes, Environmental Affairs is required to review this project. If no, go to Question #5.	No
5	Question 5: Has the equipment being repaired/replaced been repaired or replaced in the past at this unit or other units in the fleet? If no, Environmental Affairs is required to review this project. If yes, list any known projects and go to Question #6.	Yes (Project "TC2WARNTY")
6	Question 6: Have there been forced outages or unit de-rates in the past 5 years due to this component? If no, the project is not subject to NSR and no further evaluation is required; if the answer is yes, Environmental Affairs needs to review this project.	Yes

Note: Environmental Affairs has not reviewed this project, yet, but has been contacted.

- **Risks**

The risks of not completing the project include:

- Failure to meet particulate emissions limit: TC2 is subject to a particulate emission limit of 0.015 lb/MBTU per day. If the filter bags are not replaced the particulate emissions will continue to increase, risk to the unit's reliability ..
- Unplanned unit derates: If the bags are not replaced the particulate emissions will continue to increase and the unit's load will have to be decreased sufficiently to stay in regulatory compliance.
- Changing bags online: The bags could be changed one compartment at a time while the unit remains online, however, the life expectancy of the new bags would be greatly affected due to air flow taking the path of least resistance through the new, clean bags. Also changing the bags online has a higher safety risk..

Conclusions and Recommendation

In order to ensure compliance with all TC2 particulate emission limits, it is recommended that the Investment Committee approve the TC2 PJFF Bag Replacement project for \$1,326 net IMEA/IMPA reimbursement.

Produced as Native

Original File Name: Microsoft_Excel_97-2003_Worksheet1.xls

Stored File Name: OpenText00404946.xls

Investment Proposal for Investment Committee Meeting on: _____

Project Name: TC2 Transition Roof Tube Replacement

Total Expenditures: \$ 892k Net IMEA/IMPA Reimbursement

Project Number(s): 140919LGE

Business Unit/Line of Business: Power Generation

Prepared/Presented By: Francisco Maldonado

Executive Summary

This project is to replace two hundred four transition tubes on the TC2 boiler roof (SA213 T23 2.5"x0.28" MWT). In 2012 the aforementioned transition tubes were identified, through inspection, to have hardness values above the allowable numbers set forth by ASME codes for this material. The high hardness values make this material very susceptible to cold cracking. Cold cracking is more prevalent and increases in likeliness to happen when the roof tube metal temperatures are at or below 300° F. In the event of a forced outage or planned outage of the unit, tube temperatures will fall below the 300° F and increase the likelihood of creating a crack and subsequent leak in the roof tubes.

The existing transition pieces have been subjected, during manufacturing, to a heating process which tapers (swages) the tube from a certain thickness to a smaller thickness. It has been determined that the high hardness values found, are attributed to this swaging process. The new transition pieces will be fabricated in such a manner that the heated swage process will no longer be required. The tubes will be fabricated to have a thicker wall and machined to match the wall of the existing tubes thus removing the possibility of added heat stress. (See attached inspection report for hardness values)

After careful review of the inspection report provided by Structural Integrity, Generation Engineering recommended that the transition tubes be replaced. Other options were explored such as a complete retrofit of the TC2 boiler roof with new material but this option proved to be unnecessary and not economical. The inspection reports show the problem areas are localized in the transition pieces and, as such, should be the areas that are repaired. If the tubes are not replaced, the likelihood of a tube leak increases over time.

This project, if approved, is scheduled to be completed during the TC2 2014 spring outage. Material is estimated to cost approximately \$136k (includes 6% sales tax) and labor is estimated to cost \$975k. The 2014 capital business plan includes \$821k (Net) for this project.

Background

Trimble County 2 boiler roof is comprised of SA-213 Grade 23 tubes. Grade 23 is a, relatively speaking, new and exotic metal, and as such, there is very little knowledge and history on this material. The ASME code case that governs the manufacturing of Grade 23 is currently in its sixth revision due to the fact that new information has been gathered in the recent years. Unfortunately, some of that information was discovered at Trimble County do to several roof tube leaks and repairs.

The initial interest that led to the metallurgical analyses of the tubes was due to tube failures that occurred at field welds from original fabrication. When the repairs were made to the original tubes, stress concentrations were created. These concentrations created cold cracks in tubes at field weld line “D” (seed attached drawing). It is important to note that poor fabrication was found and repaired at four different field weld lines and only those found and repaired at weld line “D” experienced cold cracking. Subsequent analysis was performed at the different field weld lines throughout the roof. The data shows that high hardness readings were not a global issue but an issue isolated to the “D” weld line.

- **Other Alternatives Considered(1 –Recommendation, 2 –Do nothing, 3 –Next Best Alt)**
 1. It is recommended that only the transition pieces be replaced. This recommendation consists of replacing 204 tubes roughly 2 feet long. This is the least invasive and addresses the high hardness issue found during the analytical work performed in 2013.
 2. If nothing is done the probability of a tube leak and unit shutdown occurring increases.
 3. Next best option is to replace all of the T23 material on the TC2 boiler roof. This option is not very economical because not only will the material need to be replaced but engineering will have to be done to accommodate stresses and supports for the boiler if a new material is used.
 4. Another option would be to replace only the tubes that test bad. This would require a complete analysis of each tube. The hardness test is done to a very small portion of the tube (approximately one square inch). To ensure that the structural integrity of each tube has not been compromised every square inch would need to be inspected. This would be a very costly endeavor and there is a high probability that all the tubes will have high hardness values and will need to be replaced.

Project Description

- **Project Scope and Timeline**

This project is scheduled to be completed during the TC2 2014 spring outage beginning in late February. The boiler contractor will remove and replace 204 transition roof tubes. The welds will be x-rayed and acceptance will be in accordance with ASME boiler and state codes. The contractor will also have to cut and re-weld screen tubes that penetrate the roof near the weld line at the cage inlet header. Cutting of the screen tubes is necessary to gain access to the weld line.

Many inspections and tests have been done to determine the best options for repair. Seven roof tubes have been replaced at this weld line and have proven to be the correct fix for the issue. These new tubes have been in service for 6 months and no known issues have been experienced to date.

If approved, the material will be ordered as soon as practical with an expected delivery in late February. The work is expected to take 3 weeks starting in late February. The timeline for the repair will not be an issue due to the fact that the outage is expected to last 10-14 weeks.

- **Project Cost**

The estimated project cost is \$1,190k (gross). This includes \$136k (includes 6% sales tax) for material, \$975 for labor and \$50k for contingency. The labor and material portions will be done on a lump sum basis. Contingency is based on 5% of the project total. Some work has been done in this area and many of the unknowns have been taken into account the 5% will be sufficient in case an unforeseen issue arises.

Economic Analysis and Risks

- **Bid Summary**

Four suppliers were solicited to bid on the T23 roof tube material. Out of the four only two provided a bid. Michigan seamless “no bid” because they did not have the fabrication capabilities to provide the specified tubes and Boiler Tube of America “no bid” for reasons unknown. Refer to table below for an overview of the bidders prices.

Material Bids	Alstom Power	Boiler Tube of America	Minotte	Michigan Seamless Tubing
MBE/WBE				
Total Cost (\$000s)	\$147	No Bid	\$136	No Bid

Labor Bids	A&D	PIC	SE Boiler	TEI	MCS	UGS	Titan
MBE/WBE							
Removal Costs	\$167	\$233	\$195	\$252	\$579	\$1,095	\$936
Installation Costs	\$255	\$544	\$780	\$1,005	\$876	\$1,645	\$2,062
Total Cost (\$000s)	\$422	\$777	\$975	\$1,256	\$1,454	\$2,740	\$2,997

It is likely that we will use Minotte for the material purchase. Minotte is both capable of meeting the required schedule and manufacturing the material to the required specification. It is also likely that Southeast Boiler (SBR) will be used for the labor portion of the project. It was found during bid review that SBR is technically the most competent contractor. Not only do they have experience welding the T23 material but they have experience with welding the T23 material at the TC the roof tube and in particular at weld line "D".

- **Budget Comparison and Financial Summary**

Financial Detail by Year (\$000s)	2013	2014	2015	Post 2015	Total
1. Capital Investment Proposed		697			697
2. Cost of Removal Proposed		195			195
3. Total Capital and Removal Proposed (1+2)	-	892	-	-	892
4. Capital Investment 2014 BP		616			616
5. Cost of Removal 2014 BP					-
6. Total Capital and Removal 2014 BP (4+5)	-	616	-	-	616
7. Capital Investment variance to BP (4-1)	-	(81)	-	-	(81)
8. Cost of Removal variance to BP (5-2)	-	(195)	-	-	(195)
9. Total Capital and Removal variance to BP (6-3)	-	(276)	-	-	(276)
10. Project O&M Proposed					-
11. Total Project Proposed (3+10)	-	892	-	-	892
12. Net Income		\$41	\$36	\$916	\$993

Financial Summary (\$000s):

Discount Rate: 6.50%

Capital Breakdown:

Contract Labor: \$975
 Materials: \$136
 Local Engineering: \$0
 Burdens: \$24
 Contingency: \$55
 Reimbursements: (\$298)
 Net Capital Expenditure: \$892

Project Presented and alternatives:

Financial Analysis - Project Summary (\$000)	Total Project	Replace 50% (Next Best)	Do Nothing
NPVRR	(\$1,140)	(\$2,051)	(\$2,683)
NPV Cash Flows	\$131	\$203	\$254
IRR	7.9%	12.9%	-1.4%
ROE	10.3%	22.2%	0.0%

- **Assumptions**

- If this project is not completed, there is a probability that a forced outage will occur of 5 days duration on Trimble County 2 per year.
- The probability of a forced outage due to roof tube leaks increases 1% each year.

- **Environmental**

New Source Review Evaluation, questions 1-6 (as applicable) must be completed on all investment proposals.		
1	Does the project include any new equipment or component with emissions, result in emissions not previously emitted or cause the unit to exceed any emission limit? If yes, Environmental Affairs is required to review this project. If no, go to Question #2.	No
2	Question 2: Is the change a like-kind or functionally equivalent replacement under \$500K? If yes, the project is not subject to NSR and no further evaluation is required. If no, go to Question #3.	No
3	Question 3: Does the equipment change increase the emissions unit's maximum hourly heat input? If yes, Environmental Affairs is required to review this project. If no, go to Question #4.	No
4	Question 4: Does the equipment change increase the emissions unit's electrical output? If yes, Environmental Affairs is required to review this project. If no, go to Question #5.	No
5	Question 5: Has the equipment being repaired/replaced been repaired or replaced in the past at this unit or other units in the fleet? If no, Environmental Affairs is required to review this project. If yes, list any known projects and go to Question #6.	Yes
6	Question 6: Have there been forced outages or unit de-rates in the past 5 years due to this component? If no, the project is not subject to NSR and no further evaluation is required; if the answer is yes, Environmental Affairs needs to review this project.	Yes

- **Risks**

Based on hardness data collected at the roof tubes, it is highly likely that there will be a tube leak forced outages will occur on an increasing basis until transition roof tubes are repaired.

Conclusions and Recommendation

It is recommended that the Investment Committee approve the TC2 Transition Roof Tube Replacement project for \$1,190k gross (\$892k Net) to avoid certain catastrophic tube failure related outages.

Produced as Native

Original File Name: Microsoft_Excel_97-2003_Worksheet1.xls

Stored File Name: OpenText00405482.xls

Produced as Native

Original File Name: TC2 Roof Transition Tube Replacement (Revised CEM posted 03-06-13).xlsm

Stored File Name: OpenText00405524.xlsm

Investment Proposal for Investment Committee Meeting on: _____

Project Name: TC2 Transition Roof Tube Replacement

Total Expenditures: \$ 887k Net IMEA/IMPA Reimbursement

Project Number(s): 140919LGE

Business Unit/Line of Business: Power Generation

Prepared/Presented By: Francisco Maldonado

Executive Summary

This project is to replace two hundred four transition tubes on the TC2 boiler roof (SA213 T23 2.5"x0.28" MWT). In 2012 the aforementioned transition tubes were identified, through inspection, to have hardness values above the allowable numbers set forth by ASME codes for this material. The high hardness values make this material very susceptible to cold cracking and thus requiring the immediate shut down of the unit if a crack ever occurred. It has been determined that the major contributing factor for the high hardness numbers is the swage process that the transition pieces were subjected to. The new transition pieces will be fabricated in such a manner that the swage process will no longer be required. The tubes will be fabricated to have a thicker wall and machined to match the wall of the existing tubes thus removing the possibility of added heat stress. (See attached inspection report for hardness values)

After careful review of the inspection report provided by Structural Integrity, Generation Engineering recommended that the transition tubes be replaced. Other options were explored such as a complete retrofit of the TC2 boiler roof with new material but this option proved to be unnecessary and not economical. The inspection reports show that the problem areas are localized to the transition pieces and, as such, should be the areas that are repaired. If the tubes are not replaced, the likelihood of a tube leak increases over time.

This project, if approved, is scheduled to be completed during the TC2 2014 spring outage. Material is estimated to cost approximately \$150k and labor is estimated to cost \$975k. The 2014 capital business plan includes \$616k gross for this project.

The labor portion of this project will be rebid due to inconsistencies within the bids. With the approval of this project we will be able to order material and have it manufactured by the time the outage starts.

Background

Trimble County 2 boiler roof is comprised of SA-213 Grade 23 tubes. Grade 23 is a, relatively speaking, new and exotic metal, and as such, there is very little knowledge and history on this material. The ASME code case that governs the manufacturing of Grade 23 is currently in its sixth revision due to the fact that new information has been gathered in the recent years. Unfortunately, some of that information was discovered at Trimble County do to several roof tube leaks and repairs.

The initial interest that led to the metallurgical analyses of the tubes was due to tube failures that occurred at field welds from original fabrication. When the repairs were made to the original tubes, stress concentrations were created. These concentrations created cold cracks in tubes at field weld line "D" (see attached drawing). It is important to note that poor fabrication was found and repaired at four different field weld lines and only those found and repaired at weld line "D" experienced cold cracking.

- **Other Alternatives Considered(1 –Recommendation, 2 –Do nothing, 3 –Next Best Alt)**
 1. It is recommended that only the transition pieces be replaced. This recommendation consists of replacing 204 tubes roughly 2 feet long. This is the least invasive and addresses the high hardness issues.
 2. If nothing is done the possibility of tube leak and unit shutdown increases.
 3. Next best option is to replace all of the T23 material on the TC2 boiler roof. This option is not very economical because not only will the material need to be replaced but engineering will have to be done to accommodate stresses and supports for the boiler if a new material is used.

Project Description

- **Project Scope and Timeline**

This project is scheduled to be completed during the TC2 2014 spring outage beginning in late February. The boiler contractor will remove and replace 204 transition roof tubes. The welds will be x-rayed and acceptance will be in accordance with ASME boiler and state codes. The contractor will also have to cut and re-weld screen tubes that penetrate the roof near the weld line at the cage inlet header. Cutting of the screen tubes is necessary to gain access to the weld line. This additional work will require additional time and money to complete the project.

Many inspections and tests have been done to determine the best options for repair. Seven roof tubes have been replaced at this weld line and have proven to be the correct fix for the issue. These new tubes have been in service for 6 months and no known issues have been experienced to date.

If approved, the material will be ordered as soon as practical with and expected delivery in late February. The work is expected to take 3 weeks starting in late February. The timeline for the repair will not be an issue due to the fact that the outage is expect to last 10-14 weeks.

- **Project Cost**

The estimated project cost is \$1,182k. This includes \$128k for material, \$975 for labor and \$50k for contingency. The labor and material portions will be done on a lump sum basis. Contingency is based on 5% of the project total. Some work has been done in this area and many of the unknowns have been taken into account the 5% will be sufficient in case an unforeseen issue arises.

Economic Analysis and Risks

- **Bid Summary**

Four suppliers were solicited to bid on the T23 roof tube material. Out of the four only two provided a bid. Michigan seamless “no bid” because they did not have the fabrication capabilities to provide the specified tubes and Boiler Tube of America “no bid” for reasons unknown. Refer to table below for an over view of the bidders prices.

Material Bids	Alstom Power	Boiler Tube of America	Minotte	Michigan Seamless Tubing
MBE/WBE				
Total Cost (\$000s)	\$147	No Bid	\$128	No Bid

Labor Bids	A&D	PIC	SE Boiler	TEI	MCS	UGS	Titan
MBE/WBE							
Removal Costs	\$167	\$233	\$195	\$252	\$579	\$1,095	\$936
Installation Costs	\$255	\$544	\$780	\$1,005	\$876	\$1,645	\$2,062
Total Cost (\$128s)	\$422	\$777	\$975	\$1,256	\$1,454	\$2,740	\$2,997

Labor was bid out as summarized in the table above. After initial review and bid review meetings with the low bidding contractors it was evident that some scope may have been over looked and not included in their bid. The scope will be revised and the project will be bid out again.

- **Budget Comparison and Financial Summary**

Financial Detail by Year (\$000s)	2013	2014	2015	Post 2015	Total
1. Capital Investment Proposed		692			692
2. Cost of Removal Proposed		195			195
3. Total Capital and Removal Proposed (1+2)	-	887	-	-	887
4. Capital Investment 2014 BP					-
5. Cost of Removal 2014 BP					-
6. Total Capital and Removal 2014 BP (4+5)	-	-	-	-	-
7. Capital Investment variance to BP (4-1)	-	(692)	-	-	(692)
8. Cost of Removal variance to BP (5-2)	-	(195)	-	-	(195)
9. Total Capital and Removal variance to BP (6-3)	-	(887)	-	-	(887)
10. Project O&M Proposed					-
11. Total Project Proposed (3+10)	-	887	-	-	887

Financial Summary (\$000s):

Discount Rate: 6.50%

Capital Breakdown:

Contract Labor:	\$128
Materials:	\$975
Local Engineering:	\$0
Burdens:	\$24
Contingency:	\$55
Reimbursements:	(\$295)
Net Capital Expenditure:	\$887

Project Presented and alternatives:

Financial Analysis - Project Summary (\$000)	Total Project	Replace 50% (Next Best)	Do Nothing
NPVRR	(\$1,157)	(\$2,051)	(\$2,683)
NPV Cash Flows	\$132	\$203	\$254
IRR	7.9%	12.9%	-1.4%
ROE	10.4%	22.2%	0.0%

- **Assumptions**

- If this project is not completed, there is a probability that a forced outage will occur of 5 days duration on Trimble County 2 per year.
- The probability of a forced outage due to roof tube leaks increases 1% each year.

- **Environmental**

New Source Review Evaluation, questions 1-6 (as applicable) must be completed on all investment proposals.		
1	Does the project include any new equipment or component with emissions, result in emissions not previously emitted or cause the unit to exceed any emission limit? If yes, Environmental Affairs is required to review this project. If no, go to Question #2.	No
2	Question 2: Is the change a like-kind or functionally equivalent replacement under \$500K? If yes, the project is not subject to NSR and no further evaluation is required. If no, go to Question #3.	No
3	Question 3: Does the equipment change increase the emissions unit's maximum hourly heat input? If yes, Environmental Affairs is required to review this project. If no, go to Question #4.	No
4	Question 4: Does the equipment change increase the emissions unit's electrical output? If yes, Environmental Affairs is required to review this project. If no, go to Question #5.	No
5	Question 5: Has the equipment being repaired/replaced been repaired or replaced in the past at this unit or other units in the fleet? If no, Environmental Affairs is required to review this project. If yes, list any known projects and go to Question #6.	Yes
6	Question 6: Have there been forced outages or unit de-rates in the past 5 years due to this component? If no, the project is not subject to NSR and no further evaluation is required; if the answer is yes, Environmental Affairs needs to review this project.	Yes

- **Risks**

Based on hardness data collected at the roof tubes, it is highly likely that there will be a tube leak forced outages will occur on an increasing basis until transition roof tubes are repaired.

Conclusions and Recommendation

It is recommended that the Investment Committee approve the TC2 Transition Roof Tube Replacement project for \$1,182k gross (\$887k Net) to avoid certain catastrophic tube failure related outages.

Produced as Native

Original File Name: Microsoft_Excel_97-2003_Worksheet1.xls

Stored File Name: OpenText00405526.xls

From: Maldonado, Francisco(/O=LGE/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=MALDONADO, NOVOA00D)
To: Hudson, Rusty; Joyce, Jeff; Cuzick, Fred
CC: Byrd, Larry; Ransdell, Charles
BCC:
Subject: RE: TC2 Roof Tube Project
Sent: 11/21/2013 03:38:03 PM -0500 (EST)
Attachments: TC2 Roof Transition Tube Replacement (Revised CEM posted 03-06-13) - Next Be....xlsm; TC2 Roof Transition Tube Replacement (Revised CEM posted 03-06-13).xlsm; TC2 Roof Tube Replacement Investment Proposal.docx;

See attached and comments in red.

From: Hudson, Rusty
Sent: Thursday, November 21, 2013 12:01 PM
To: Maldonado, Francisco; Joyce, Jeff; Cuzick, Fred
Cc: Byrd, Larry; Ransdell, Charles
Subject: RE: TC2 Roof Tube Project

I had a few comments Francisco.

- I would state early on in the paper if we have a warranty claim against Bechtel for this work, and if not, what the reason is. See added sentence in executive summary.
- On page 3, second line under project cost, the \$975 needs a “k” with it. Fixed.
- On page 4 we rule out A&D and PIC but don’t say who we are leaning toward, so I would add that in (presume it is SE Boiler) See paragraph on page 4 right below the table.
- The financial table on page 4 states that we have \$616k in the ’14 BP for this project, but the executive summary states \$821k, so we need to fix one of those. We also need to say how we are funding the 2014 shortfall to budget, I don’t believe I have taken that to the RAC yet. I have changed \$821k to %616k. See additional sentence on page 1 for budget funding.
- For the table on page 5 that lists the different options, we need to list the ROE by year for each option for 2014-2018. See table on page 5.
- I can’t trace back in the CEM the results for the 50% replacement but the IRR and ROE for that option don’t make sense to me (being that high). The high numbers were due to the availability improvement not being changed from one CEM to the other. I have fixed the issue see CEM’s attached.
- For the first assumption listed we need to state what the probability is that we are using in the CEM for failure. Fixed.
- Jeff, given that we appear to be fairly comfortable with the dollar estimate, I will leave it up to you and Ralph as to whether or not it needs to go to the IC. Given that you have \$100k of cushion, I don’t personally think you need to if your confidence level of staying under \$1,000k net is high.

Rusty

From: Maldonado, Francisco
Sent: Thursday, November 21, 2013 9:58 AM
To: Hudson, Rusty; Joyce, Jeff; Cuzick, Fred
Cc: Byrd, Larry; Ransdell, Charles
Subject: TC2 Roof Tube Project

All,

Attached is the latest revised CEM and IP for the TC2 roof tube replacement project. Please let me know of any comments or questions.

Thanks,

Francisco Maldonado

*Mechanical Engineer
Trimble County Station, LG&E*

487 Corn Creek Road
Bedford, KY 40006
Phone: (502) 627-6218
Mobile: (502) 662-2880

Produced as Native

Original File Name: TC2 Roof Transition Tube Replacement (Revised CEM posted 03-06-13) - Next Best Option.xlsm

Stored File Name: OpenText00406081.xlsm

Produced as Native

Original File Name: TC2 Roof Transition Tube Replacement (Revised CEM posted 03-06-13).xlsm

Stored File Name: OpenText00406082.xlsm

Investment Proposal for Investment Committee Meeting on: _____

Project Name: TC2 Transition Roof Tube Replacement

Total Expenditures: \$ 892k Net IMEA/IMPA Reimbursement

Project Number(s): 140919LGE

Business Unit/Line of Business: Power Generation

Prepared/Presented By: Francisco Maldonado

Executive Summary

This project is to replace two hundred four transition tubes on the TC2 boiler roof (SA213 T23 2.5"x0.28" MWT). In 2012 the aforementioned transition tubes were identified, through inspection, to have hardness values above the allowable numbers set forth by ASME codes for this material. The high hardness values make this material very susceptible to cold cracking. Cold cracking is more prevalent and increases in likeliness to happen when the roof tube metal temperatures are at or below 300° F. In the event of a forced outage or planned outage of the unit, tube temperatures will fall below the 300° F and increase the likelihood of creating a crack and subsequent leak in the roof tubes.

The existing transition pieces have been subjected, during manufacturing, to a heating process which tapers (swages) the tube from a certain thickness to a smaller thickness. It has been determined that the high hardness values found, are attributed to this swaging process. The new transition pieces will be fabricated in such a manner that the heated swage process will no longer be required. The tubes will be fabricated to have a thicker wall and machined to match the wall of the existing tubes thus removing the possibility of added heat stress.

After careful review of the inspection report provided by Structural Integrity, Generation Engineering recommended that the transition tubes be replaced. Other options were explored such as a complete retrofit of the TC2 boiler roof with new material but this option proved to be unnecessary and not economical. The inspection reports show the problem areas are localized in the transition pieces and, as such, should be the areas that are repaired. If the tubes are not replaced, the likelihood of a tube leak increases over time.

This project, if approved, is scheduled to be completed during the TC2 2014 spring outage. Material is estimated to cost approximately \$136k (includes 6% sales tax) and labor is estimated to cost \$975k. The 2014 capital business plan includes \$616k (Net) for this project. The shortfall in the budget will be funded from the anticipated money left over on the TC2 PJFF Replacement Project (137671 LGE) due to favorable pricing received. NOTE: There is a warranty claim against Bechtel for this work.

Background

Trimble County 2 boiler roof is comprised of SA-213 Grade 23 tubes. Grade 23 is a, relatively speaking, new and exotic metal, and as such, there is very little knowledge and history on this material. The ASME code case that governs the manufacturing of Grade 23 is currently in its sixth revision due to the fact that new information has been gathered in the recent years. Unfortunately, some of that information was discovered at Trimble County do to several roof tube leaks and repairs.

The initial interest that led to the metallurgical analyses of the tubes was due to tube failures that occurred at field welds from original fabrication. When the repairs were made to the original tubes, stress concentrations were created. These concentrations created cold cracks in tubes at field weld line "D". It is important to note that poor fabrication was found and repaired at four different field weld lines and only those found and repaired at weld line "D" experienced cold cracking. Subsequent analysis was performed at the different field weld lines throughout the roof. The data shows that high hardness readings were not a global issue but an issue isolated to the "D" weld line.

- **Other Alternatives Considered(1 –Recommendation, 2 –Do nothing, 3 –Next Best Alt)**

1. It is recommended that only the transition pieces be replaced. This recommendation consists of replacing 204 tubes roughly 2 feet long. This is the least invasive and addresses the high hardness issue found during the analytical work performed in 2013.
2. If nothing is done the probability of a tube leak and unit shutdown occurring increases.
3. Next best option is to replace all of the T23 material on the TC2 boiler roof. This option is not very economical because not only will the material need to be replaced but engineering will have to be done to accommodate stresses and supports for the boiler if a new material is used.
4. Another option would be to replace only the tubes that test bad. This would require a complete analysis of each tube. The hardness test is done to a very small portion of the tube (approximately one square inch). To ensure that the structural integrity of each tube has not been compromised every square inch would need to be inspected. This would be a very costly endeavor and there is a high probability that all the tubes will have high hardness values and will need to be replaced.

Project Description

- **Project Scope and Timeline**

This project is scheduled to be completed during the TC2 2014 spring outage beginning in late February. The boiler contractor will remove and replace 204 transition roof tubes. The welds will be x-rayed and acceptance will be in accordance with ASME boiler and state codes. The contractor will also have to cut and re-weld screen tubes that penetrate the roof near the weld line at the cage inlet header. Cutting of the screen tubes is necessary to gain access to the weld line.

Many inspections and tests have been done to determine the best options for repair. Seven roof tubes have been replaced at this weld line and have proven to be the correct fix for the issue. These new tubes have been in service for 6 months and no known issues have been experienced to date.

If approved, the material will be ordered as soon as practical with and expected delivery in late February. The work is expected to take 3 weeks starting in late February. The timeline for the repair will not be an issue due to the fact that the outage is expected to last 10-14 weeks.

- **Project Cost**

The estimated project cost is \$1,190k (gross). This includes \$136k (includes 6% sales tax) for material, \$975k for labor and \$50k for contingency. The labor and material portions will be done on a lump sum basis. Contingency is based on 5% of the project total. Some work has been done in this area and many of the unknowns have been taken into account the 5% will be sufficient in case an unforeseen issue arises.

Economic Analysis and Risks

- **Bid Summary**

Four suppliers were solicited to bid on the T23 roof tube material. Out of the four only two provided a bid. Michigan seamless “no bid” because they did not have the fabrication capabilities to provide the specified tubes and Boiler Tube of America “no bid” for reasons unknown. Refer to table below for an over view of the bidders prices.

Material Bids	Alstom Power	Boiler Tube of America	Minotte	Michigan Seamless Tubing
MBE/WBE				
Total Cost (\$000s)	\$147	No Bid	\$136	No Bid

Labor Bids	A&D	PIC	SE Boiler	TEI	MCS	UGS	Titan
MBE/WBE							
Removal Costs	\$167	\$233	\$195	\$252	\$579	\$1,095	\$936
Installation Costs	\$255	\$544	\$780	\$1,005	\$876	\$1,645	\$2,062
Total Cost (\$000s)	\$422	\$777	\$975	\$1,256	\$1,454	\$2,740	\$2,997

It is likely that we will use Minotte for the material purchase. Minotte is both capable of meeting the required schedule and manufacturing the material to the required specification. It is also likely that Southeast Boiler (SBR) will be used for the labor portion of the project. It was found during bid review that SBR is technically the most competent contractor. Not only do they have experience welding the T23 material but they have experience with welding the T23 material at the TC the roof tube and in particular at weld line "D".

A&D was also considered for the labor portion of this project. Upon review of A&D's bid it was found that their labor hours seemed too low to complete this job and it is very likely that they have underestimated the scope of work associated with this project. Along with low labor hours they lack the technical expertise to work with T23 and would be hard pressed to provide a quality job. PIC was also considered but due to recent history on TC1 boiler projects it has been determined that this project would run the risk of not being completed on time by PIC. PIC is a smaller company that depends heavily on "key" project managers if those project managers are not available for a given job the job seems to suffer. Such was the case on TC1 and the probability of happening again on TC2 is very likely.

- **Budget Comparison and Financial Summary**

Financial Detail by Year (\$000s)	2013	2014	2015	Post 2015	Total
1. Capital Investment Proposed		697			697
2. Cost of Removal Proposed		195			195
3. Total Capital and Removal Proposed (1+2)	-	892	-	-	892
4. Capital Investment 2014 BP		616			616
5. Cost of Removal 2014 BP					-
6. Total Capital and Removal 2014 BP (4+5)	-	616	-	-	616
7. Capital Investment variance to BP (4-1)	-	(81)	-	-	(81)
8. Cost of Removal variance to BP (5-2)	-	(195)	-	-	(195)
9. Total Capital and Removal variance to BP (6-3)	-	(276)	-	-	(276)
10. Project O&M Proposed					-
11. Total Project Proposed (3+10)	-	892	-	-	892
12. Net Income		\$41	\$36	\$916	\$993

Financial Summary (\$000s):

Discount Rate:	6.50%
Capital Breakdown:	
Contract Labor:	\$975
Materials:	\$136
Local Engineering:	\$0
Burdens:	\$24
Contingency:	\$55
Reimbursements:	(\$298)
Net Capital Expenditure:	\$892

Project Presented and alternatives:

Financial Analysis - Project Summary (\$000)	Total Project	Replace 50% (Next Best)	Do Nothing
NPVRR	(\$1,011)	\$138	(\$2,683)
NPV Cash Flows	\$109	\$(5)	\$254
IRR	8.1%	6.4%	-1.4%
ROE	10.0%	5.3%	0.0%

ROE by Year					
	2014	2015	2016	2017	2018
Proposed Project	10.9%	4.9%	7.6%	13.3%	14.3%
Next Best (50% Replacement)	5.3%	-.02%	-1.3%	2.1%	12.7%
Do Nothing	0%	0%	0%	0%	0%

- **Assumptions**

- If this project is not completed, there is a 10% probability that a forced outage will occur of 5 days duration on Trimble County 2 per year.
- The probability of a forced outage due to roof tube leaks increases 1% each year.

- **Environmental**

New Source Review Evaluation, questions 1-6 (as applicable) must be completed on all investment proposals.		
1	Does the project include any new equipment or component with emissions, result in emissions not previously emitted or cause the unit to exceed any emission limit? If yes, Environmental Affairs is required to review this project. If no, go to Question #2.	No
2	Question 2: Is the change a like-kind or functionally equivalent replacement	

	under \$500K? If yes, the project is not subject to NSR and no further evaluation is required. If no, go to Question #3.	No
3	Question 3: Does the equipment change increase the emissions unit's maximum hourly heat input? If yes, Environmental Affairs is required to review this project. If no, go to Question #4.	No
4	Question 4: Does the equipment change increase the emissions unit's electrical output? If yes, Environmental Affairs is required to review this project. If no, go to Question #5.	No
5	Question 5: Has the equipment being repaired/replaced been repaired or replaced in the past at this unit or other units in the fleet? If no, Environmental Affairs is required to review this project. If yes, list any known projects and go to Question #6.	Yes
6	Question 6: Have there been forced outages or unit de-rates in the past 5 years due to this component? If no, the project is not subject to NSR and no further evaluation is required; if the answer is yes, Environmental Affairs needs to review this project.	Yes

- **Risks**

Based on hardness data collected at the roof tubes, it is highly likely that there will be a tube leak forced outages will occur on an increasing basis until transition roof tubes are repaired.

Conclusions and Recommendation

It is recommended that the Investment Committee approve the TC2 Transition Roof Tube Replacement project for \$1,190k gross (\$892k Net) to avoid certain catastrophic tube failure related outages.

Produced as Native

Original File Name: Microsoft_Excel_97-2003_Worksheet1.xls

Stored File Name: OpenText00406084.xls

Investment Proposal for Investment Committee Meeting on: _____

Project Name: TC2 Transition Roof Tube Replacement

Total Expenditures: \$ 892k Net IMEA/IMPA Reimbursement

Project Number(s): 140919LGE

Business Unit/Line of Business: Power Generation

Prepared/Presented By: Francisco Maldonado

Executive Summary

This project is to replace two hundred four transition tubes on the TC2 boiler roof (SA213 T23 2.5"x0.28" MWT). In 2012 the aforementioned transition tubes were identified, through inspection, to have hardness values above the allowable numbers set forth by ASME codes for this material. The high hardness values make this material very susceptible to cold cracking. Cold cracking is more prevalent and increases in likeliness to happen when the roof tube metal temperatures are at or below 300° F. In the event of a forced outage or planned outage of the unit, tube metal temperatures will fall below the 300° F and increase the likelihood of creating a crack and subsequent leak in the roof tubes.

It has been determined that high hardness is attributed to the swage process that the transition pieces were subjected to during manufacturing. The new transition pieces will be fabricated in such a manner that the swage process will no longer be required. The tubes will be fabricated to have a thicker wall and machined to match the wall of the existing tubes thus removing the possibility of added heat stress. (See attached inspection report for hardness values)

After careful review of the inspection report provided by Structural Integrity, Generation Engineering recommended that the transition tubes be replaced. Other options were explored such as a complete retrofit of the TC2 boiler roof with new material but this option proved to be unnecessary and not economical. The inspection reports show the problem areas are localized in the transition pieces and, as such, should be the areas that are repaired. If the tubes are not replaced, the likelihood of a tube leak increases over time.

This project, if approved, is scheduled to be completed during the TC2 2014 spring outage. Material is estimated to cost approximately \$136k (includes 6% sales tax) and labor is estimated to cost \$975k. The 2014 capital business plan includes \$616k gross for this project.

Background

Trimble County 2 boiler roof is comprised of SA-213 Grade 23 tubes. Grade 23 is a, relatively speaking, new and exotic metal, and as such, there is very little knowledge and history on this material. The ASME code case that governs the manufacturing of Grade 23 is currently in its sixth revision due to the fact that new information has been gathered in the recent years. Unfortunately, some of that information was discovered at Trimble County do to several roof tube leaks and repairs.

The initial interest that led to the metallurgical analyses of the tubes was due to tube failures that occurred at field welds from original fabrication. When the repairs were made to the original tubes, stress concentrations were created. These concentrations created cold cracks in tubes at field weld line "D" (seed attached drawing). It is important to note that poor fabrication was found and repaired at four different field weld lines and only those found and repaired at weld line "D" experienced cold cracking.

- **Other Alternatives Considered(1 –Recommendation, 2 –Do nothing, 3 –Next Best Alt)**
 1. It is recommended that only the transition pieces be replaced. This recommendation consists of replacing 204 tubes roughly 2 feet long. This is the least invasive and addresses the high hardness issue found during the analytical work performed in 2013.
 2. If nothing is done the probability of tube leak and unit shutdown occurring increases.
 3. Next best option is to replace all of the T23 material on the TC2 boiler roof. This option is not very economical because not only will the material need to be replaced but engineering will have to be done to accommodate stresses and supports for the boiler if a new material is used.

Project Description

- **Project Scope and Timeline**

This project is scheduled to be completed during the TC2 2014 spring outage beginning in late February. The boiler contractor will remove and replace 204 transition roof tubes. The welds will be x-rayed and acceptance will be in accordance with ASME boiler and state codes. The contractor will also have to cut and re-weld screen tubes that penetrate the roof near the weld line at the cage inlet header. Cutting of the screen tubes is necessary to gain access to the weld line.

Many inspections and tests have been done to determine the best options for repair. Seven roof tubes have been replaced at this weld line and have proven to be the correct fix for the issue. These new tubes have been in service for 6 months and no known issues have been experienced to date.

If approved, the material will be ordered as soon as practical with an expected delivery in late February. The work is expected to take 3 weeks starting in late February. The timeline for the repair will not be an issue due to the fact that the outage is expected to last 10-14 weeks.

- **Project Cost**

The estimated project cost is \$1,190k (gross). This includes \$136k (includes 6% sales tax) for material, \$975 for labor and \$50k for contingency. The labor and material portions will be done on a lump sum basis. Contingency is based on 5% of the project total. Some work has been done in this area and many of the unknowns have been taken into account the 5% will be sufficient in case an unforeseen issue arises.

Economic Analysis and Risks

- **Bid Summary**

Four suppliers were solicited to bid on the T23 roof tube material. Out of the four only two provided a bid. Michigan seamless “no bid” because they did not have the fabrication capabilities to provide the specified tubes and Boiler Tube of America “no bid” for reasons unknown. Refer to table below for an overview of the bidders prices.

Material Bids	Alstom Power	Boiler Tube of America	Minotte	Michigan Seamless Tubing
MBE/WBE				
Total Cost (\$000s)	\$147	No Bid	\$136	No Bid

Labor Bids	A&D	PIC	SE Boiler	TEI	MCS	UGS	Titan

MBE/WBE							
Removal Costs	\$167	\$233	\$195	\$252	\$579	\$1,095	\$936
Installation Costs	\$255	\$544	\$780	\$1,005	\$876	\$1,645	\$2,062
Total Cost (\$000s)	\$422	\$777	\$975	\$1,256	\$1,454	\$2,740	\$2,997

- Budget Comparison and Financial Summary**

Financial Detail by Year (\$000s)	2013	2014	2015	Post 2015	Total
1. Capital Investment Proposed		697			697
2. Cost of Removal Proposed		195			195
3. Total Capital and Removal Proposed (1+2)	-	892	-	-	892
4. Capital Investment 2014 BP		616			616
5. Cost of Removal 2014 BP					-
6. Total Capital and Removal 2014 BP (4+5)	-	616	-	-	616
7. Capital Investment variance to BP (4-1)	-	(81)	-	-	(81)
8. Cost of Removal variance to BP (5-2)	-	(195)	-	-	(195)
9. Total Capital and Removal variance to BP (6-3)	-	(276)	-	-	(276)
10. Project O&M Proposed					-
11. Total Project Proposed (3+10)	-	892	-	-	892
12. Net Income		\$41	\$36	\$916	\$993

Financial Summary (\$000s):

Discount Rate: 6.50%

Capital Breakdown:

Contract Labor:	\$975
Materials:	\$136
Local Engineering:	\$0
Burdens:	\$24
Contingency:	\$55
Reimbursements:	(\$298)
Net Capital Expenditure:	\$892

Project Presented and alternatives:

Financial Analysis - Project Summary (\$000)	Total Project	Replace 50% (Next Best)	Do Nothing
---	------------------	----------------------------	------------

NPVRR	(\$1,157)	(\$2,051)	(\$2,683)
NPV Cash Flows	\$132	\$203	\$254
IRR	7.9%	12.9%	-1.4%
ROE	10.4%	22.2%	0.0%

- **Assumptions**

- If this project is not completed, there is a probability that a forced outage will occur of 5 days duration on Trimble County 2 per year.
- The probability of a forced outage due to roof tube leaks increases 1% each year.

- **Environmental**

New Source Review Evaluation, questions 1-6 (as applicable) must be completed on all investment proposals.		
1	Does the project include any new equipment or component with emissions, result in emissions not previously emitted or cause the unit to exceed any emission limit? If yes, Environmental Affairs is required to review this project. If no, go to Question #2.	No
2	Question 2: Is the change a like-kind or functionally equivalent replacement under \$500K? If yes, the project is not subject to NSR and no further evaluation is required. If no, go to Question #3.	No
3	Question 3: Does the equipment change increase the emissions unit's maximum hourly heat input? If yes, Environmental Affairs is required to review this project. If no, go to Question #4.	No
4	Question 4: Does the equipment change increase the emissions unit's electrical output? If yes, Environmental Affairs is required to review this project. If no, go to Question #5.	No
5	Question 5: Has the equipment being repaired/replaced been repaired or replaced in the past at this unit or other units in the fleet? If no, Environmental Affairs is required to review this project. If yes, list any known projects and go to Question #6.	Yes
6	Question 6: Have there been forced outages or unit de-rates in the past 5 years due to this component? If no, the project is not subject to NSR and no further evaluation is required; if the answer is yes, Environmental Affairs needs to review this project.	Yes

- **Risks**

Based on hardness data collected at the roof tubes, it is highly likely that there will be a tube leak forced outages will occur on an increasing basis until transition roof tubes are repaired.

Conclusions and Recommendation

It is recommended that the Investment Committee approve the TC2 Transition Roof Tube Replacement project for \$1,190k gross (\$892k Net) to avoid certain catastrophic tube failure related outages.

Produced as Native

Original File Name: TC2S14 Spring Outage Plan.xlsm

Stored File Name: OpenText00409941.xlsm

Produced as Native

Original File Name: TC2S14 Spring Outage Gantt Chart.xlsx

Stored File Name: OpenText00410540.xlsx

From: Cuzick, Fred(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=E009048)
To: Anderson, Dave (Trimble County)
CC: Byrd, Larry
BCC:
Subject: FW: TC2S14 Spring Outage Gantt Chart.xlsx
Sent: 01/23/2014 01:43:43 PM -0500 (EST)
Attachments: TC2S14 Spring Outage Gantt Chart.xlsx;

Dave, have you provided any updates to this since you sent this out? Also, can you provide me a breakdown of the \$3.7M outage costs over the months that the work is to be performed? I know that I am going to have to forecast as accurate as I can.

Thanks

Fred M. Cuzick, CPA, CGMA
Budget Coordinator
LG&E / Trimble County Station
(502)627-6213 (Office)
(502)627-6226 (Fax)
Fred.Cuzick@lge-ku.com

From: Anderson, Dave (Trimble County)
Sent: Tuesday, December 10, 2013 1:29 PM
To: Boone, James; Bullock, Sam; Byrd, Larry; Craft, Jim; Cuzick, Fred; Dorwart, Jordan; Dukes, Christopher; Feider, Ryan; Gilliland, Dave; Gray, Jeffrey; Hannon, Hannah; Heinz, John; Henderson, Trent; Jensen, Jack; Joyce, Jeff; Joyce, Kenny; Maldonado, Francisco; Melloan, Ricky; Mills, Ricky; Mohn, Laura; Moore, Emmett; Noonan, Kenny; Payne, Nicholas; Phelps, Grant; Powell, Richard; Rabe, Phil; Raker, Adam; Ransdell, Charles; Sedam, Dale; Slaughter, Mitch; Stewart, Robert E. (Trimble); Thomas, Mark; Turner, Haley; Turner, Tyler; Walcott, Danny; Hayes, Christopher; Craft, Jim
Subject: TC2S14 Spring Outage Gantt Chart.xlsx

All,

Attached is the latest Excel sheet with work scope for the TC2 Spring outage. This includes budget amounts so please do not forward to Bechtel/ Doosan, contractors.... without management approval.

The next phase is for all planners and others in charge of projects to make sure cost estimates (exclude internal labor) are assigned in Maximo to the "other" field.

I will be running reports from Maximo and updating periodically.

Thanks,

David W. Anderson
Trimble County Outage Coordinator
Tel. 502-627-6313
Fax 502-217-2199
email: dave.anderson@lge-ku.com

Trimble County - Outage Programme - Preliminary		31-Jan-14 16:02																						
Activity ID	Activity Name	Start	Finish	February 2014			March 2014			April 2014			May 2014			June 2014								
				03	10	17	24	03	10	17	24	31	07	14	21	28	05	12	19	26	02	09	16	23
TC U2 Spring 2014 Outage																								
Key Milestones																								
M1000	Boiler Off Load	08-Feb-14*	18-May-14																					
M1010	Gas Path Permit Cancellation	08-Feb-14*	18-May-14																					
M1020	Issue Permit FD Fan	05-May-14	04-May-14																					
M1030	Unit Outage Completion	18-May-14*	18-May-14																					
Premobilization																								
Preoutage																								
Outage																								
A1150	Boiler Offline/Doors Open (LG&E)	08-Feb-14	18-May-14																					
A1160	Remove insulation/cladding on Burners	08-Feb-14	13-Feb-14																					
A1170	Burner electrical disconnects (LG&E)	08-Feb-14	10-Feb-14																					
A1180	Blasting for Slag	08-Feb-14	08-Feb-14																					
A1190	Inspect for clinkers	08-Feb-14	08-Feb-14																					
A1340	Boiler Water Wash (LG&E)	08-Feb-14	09-Feb-14																					
A1310	Roll Conveyor Out	09-Feb-14	09-Feb-14																					
A1200	Boiler Released	10-Feb-14	09-Feb-14																					
A1220	Gag 2 PF Pipes/Remove 2 Burners	10-Feb-14	10-Feb-14																					
A1230	Install scaffold	10-Feb-14	13-Feb-14																					
A1235	Remove burner bolts/disconnect hoses	10-Feb-14	12-Feb-14																					
A1206	Remove coal pipe elbows East Wall	10-Feb-14	17-Feb-14																					
A1225	Temporary Cover on exterior wall	10-Feb-14	12-Feb-14																					
A1216	Remove coal pipe elbows West Wall	10-Feb-14	17-Feb-14																					
A1240	Roll conveyor in	13-Feb-14	13-Feb-14																					
A1250	Install blank over Burner openings	13-Feb-14	13-Feb-14																					
A1330	Mark off area for Anstar shot blast	13-Feb-14	13-Feb-14																					
A1260	Shot blast/Anstar coating	13-Feb-14	14-Feb-14																					
A1270	Clean Scaffold top/bottom	14-Feb-14	15-Feb-14																					
A1280	Inspect burner openings for slag	15-Feb-14	15-Feb-14																					
A1285	Remove Slag debris from Burner Throats	15-Feb-14	17-Feb-14																					
A1290	Run Conveyor (LG&E)	17-Feb-14	18-Feb-14																					
A1300	Roll Conveyor out	18-Feb-14	18-Feb-14																					
Burner Replacement																								
A1320	Remove ignitor air piping for burners 1-5	04-May-14	18-Apr-14																					
A2580	Stage/set up rigging for burner removal	10-Feb-14	11-Feb-14																					
A2640	Remove PF Knife Valves 1 - 5	11-Feb-14	12-Feb-14																					
A1350	Remove burners 1 - 5	14-Feb-14	16-Feb-14																					
A1370	Establish cut lines for panels 1-5	17-Feb-14	22-Feb-14																					
A1355	Remove Quar tiles	22-Feb-14	23-Feb-14																					
A1380	Saw cut panels 1 - 5	23-Feb-14	24-Feb-14																					
A1360	Stage/set up rigging for panel removal	23-Feb-14	24-Feb-14																					
A1390	Remove panels & seal box 1 - 5	24-Feb-14	26-Feb-14																					
A1400	Machine/prep panels 1-5	26-Feb-14	01-Mar-14																					
A1410	Fit and tack panels 1-5	01-Mar-14	04-Mar-14																					

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TASK filter: All Activities

Page 1 of 12

Activity ID	Activity Name	Start	Finish	February 2014				March 2014				April 2014				May 2014				June 2014			
				03	10	17	24	03	10	17	24	07	14	21	28	05	12	19	26	02	09	16	23
A1420	Weld out panels 1 - 5	04-Mar-14	08-Mar-14																				
A1430	NDE panels 1 - 5	09-Mar-14	11-Mar-14																				
A1433	Install peanuts/membrane	11-Mar-14	14-Mar-14																				
A1440	Install burners/confirm burner alignment 1 - 5	14-Mar-14	20-Mar-14																				
A1443	Field weld burner front plate to mounting rin	20-Mar-14	21-Mar-14																				
A1445	Fit & Weld Seal Box/Window Seal Plate	21-Mar-14	23-Mar-14																				
A1450	Reinstall refractory	23-Mar-14	25-Mar-14																				
A1453	Reinstall Knife gate	25-Mar-14	27-Mar-14																				
A1456	Reinstall cooling air	27-Mar-14	29-Mar-14																				
A1465	Install Beck drives	29-Mar-14	31-Mar-14																				
A1775	Install ignitors/oil gun/flame monitor burners	31-Mar-14	01-Apr-14																				
A1466	re-install igniter air piping for burners 1 - 5	01-Apr-14	03-Apr-14																				
A1455	Cold Commissioning burners 1 - 5	03-Apr-14	06-Apr-14																				
A7010	Remove PF Knife Valves 6 - 10	16-Feb-14	18-Feb-14																				
A1470	Remove igniter air piping for burners 6 - 10	22-Feb-14	22-Feb-14																				
A1490	Stage/set up rigging for burner removal	22-Feb-14	23-Feb-14																				
A1500	Remove burners 6 - 10	23-Feb-14	27-Feb-14																				
A1505	Remove Quart tiles	27-Feb-14	01-Mar-14																				
A1510	Stage/set rigging for panel removal	01-Mar-14	02-Mar-14																				
A1520	Establish cut lines for panels 6 - 10	02-Mar-14	03-Mar-14																				
A1530	Saw cut panels 6 - 10	03-Mar-14	05-Mar-14																				
A1540	Remove panels & seal box 6 - 10	05-Mar-14	07-Mar-14																				
A1550	Machine/prep panels 6 - 10	07-Mar-14	10-Mar-14																				
A1560	Fit and tack panels 6 - 10	10-Mar-14	13-Mar-14																				
A1570	Weld out panels 6 - 10	13-Mar-14	17-Mar-14																				
A1580	NDE panels 6 - 10	17-Mar-14	18-Mar-14																				
A1582	Install peanuts/membrane	18-Mar-14	21-Mar-14																				
A1595	Install burners/confirm burner alignment 6 - 10	21-Mar-14	27-Mar-14																				
A1590	Fit & Weld Seal Box/Window Seal Plate	27-Mar-14	29-Mar-14																				
A2590	Field weld Burner front plate to mounting rin	27-Mar-14	29-Mar-14																				
A1595	Reinstall refractory	29-Mar-14	31-Mar-14																				
A1597	Reinstall Knife gate	31-Mar-14	02-Apr-14																				
A1599	Reinstall cooling air	02-Apr-14	04-Apr-14																				
A1600	Install Beck drives	04-Apr-14	06-Apr-14																				
A4060	Install ignitors/oil gun/flame monitor burners	06-Apr-14	07-Apr-14																				
A1610	Reinstall igniter air piping for burners 6 - 10	07-Apr-14	09-Apr-14																				
A4070	Cold Commissioning burners 6 - 10	09-Apr-14	12-Apr-14																				
A7020	Remove PF Knife Valves 11 - 15	18-Feb-14	20-Feb-14																				
A1620	Remove igniter air piping for burners 11 - 15	27-Feb-14	28-Feb-14																				
A1640	Stage/set up rigging for burner removal	28-Feb-14	01-Mar-14																				
A1650	Remove burners 11 - 15	01-Mar-14	05-Mar-14																				
A1655	Remove Quart tiles	05-Mar-14	07-Mar-14																				
A1660	Stage/set up rigging for panel removal	07-Mar-14	08-Mar-14																				
A1670	Establish cut lines for panels 11 - 15	08-Mar-14	09-Mar-14																				
A1680	Saw cut panels 11 - 15	09-Mar-14	11-Mar-14																				
A1690	Remove panels & seal box 11 - 15	11-Mar-14	13-Mar-14																				
A1700	Machine/prep panels 11 - 15	13-Mar-14	15-Mar-14																				

■ Remaining Level of Effort
 ■ Remaining Work
 ■ Critical Remaining Work
 ◆ Milestone
 ◆ Critical Mil...

■ Actual Work
 ■ Remaining Work
 ■ Critical Remaining Work
 ◆ Milestone
 ◆ Critical Mil...

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 TASK filter: All Activities
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31-Jan-14 16:02

Trimble County - Outage Programme - Preliminary

TC U2 Spring 2014 Outage

Activity ID	Activity Name	Start	Finish	February 2014				March 2014				April 2014				May 2014				June 2014			
				03	10	17	24	03	10	17	24	31	07	14	21	28	05	12	19	26	02	09	16
A1710	Fit and tack panels 11 - 15	15-Mar-14	18-Mar-14																				
A1720	Weld out panels 11 - 15	18-Mar-14	22-Mar-14																				
A1730	NDE panels 11 - 15	22-Mar-14	24-Mar-14																				
A1733	Install peanuts/membrane	24-Mar-14	27-Mar-14																				
A1738	Install burners/confirm burner alignment 11	27-Mar-14	02-Apr-14																				
A1739	Fit & Weld Seal Box/Window seal plate	02-Apr-14	04-Apr-14																				
A2600	Field weld Burner front plate to mounting rin	02-Apr-14	04-Apr-14																				
A1745	Reinstall refractory	04-Apr-14	06-Apr-14																				
A1750	Reinstall Knife gate	06-Apr-14	08-Apr-14																				
A1755	Reinstall cooling air	08-Apr-14	10-Apr-14																				
A1760	Install Beck Drives	10-Apr-14	12-Apr-14																				
A4080	Install ignitors/oil gun/flame monitor burners	12-Apr-14	13-Apr-14																				
A1765	Reinstall igniter air piping for burners 11 - 1	13-Apr-14	15-Apr-14																				
A4090	Cold Commissioning burners 11 - 15	15-Apr-14	18-Apr-14																				
Cooling fans																							
A5650	Disconnect Electrical by LG&E	03-Feb-14*	04-Feb-14																				
A5660	Disconnect from ductwork	04-Feb-14	05-Feb-14																				
A5670	Unbolt from floor & store	05-Feb-14	06-Feb-14																				
A5650	Re-instate Cooling fans / electrical connecto	25-Apr-14	29-Apr-14																				
RW Burners																							
A1770	Remove cooling air fans (LG&E)	01-Feb-14	04-Feb-14																				
A1780	Remove igniter air piping for burners 16 - 20	10-Feb-14*	11-Feb-14																				
A1790	Stage/set up rigging for burner removal	11-Feb-14	12-Feb-14																				
A7030	Remove PF Knife Valves 16 - 20	16-Feb-14	18-Feb-14																				
A1800	Remove burners 16 - 20	19-Feb-14	24-Feb-14																				
A1810	Remove Quart tiles	24-Feb-14	26-Feb-14																				
A1820	Stage/set up rigging for panel removal	26-Feb-14	27-Feb-14																				
A1830	Establish cut lines for panels 16 - 20	27-Feb-14	28-Feb-14																				
A1840	Saw cut panels 16 - 20	28-Feb-14	02-Mar-14																				
A1850	Remove panels & seal box 16 - 20	02-Mar-14	04-Mar-14																				
A1860	Machine/prep panels 16 - 20	04-Mar-14	07-Mar-14																				
A1870	Fit and tack panels 16 - 20	07-Mar-14	10-Mar-14																				
A1880	Weld out panels 16 - 20	10-Mar-14	15-Mar-14																				
A1890	NDE Panels 16 - 20	15-Mar-14	17-Mar-14																				
A1895	Install peanuts/membrane	17-Mar-14	20-Mar-14																				
A1910	Install burners/confirm burner alignment 16	20-Mar-14	27-Mar-14																				
A1912	Fit & Weld Seal Box/Window Seal Plate	27-Mar-14	28-Mar-14																				
A2610	Field weld Burner front plate to mounting rin	27-Mar-14	28-Mar-14																				
A1915	Reinstall refractory	28-Mar-14	30-Mar-14																				
A1920	Reinstall Knife gate	30-Mar-14	01-Apr-14																				
A1925	Reinstall cooling air	01-Apr-14	03-Apr-14																				
A1935	Install Beck Drive	03-Apr-14	05-Apr-14																				
A4100	Install ignitors/oil gun/flame monitor burners	05-Apr-14	07-Apr-14																				
A1930	Reinstall igniter piping for burners 16 - 20	07-Apr-14	09-Apr-14																				
A4110	Cold Commissioning burners 16 - 20	09-Apr-14	12-Apr-14																				
A7040	Remove PF Knife Valves 21 - 25	18-Feb-14	20-Feb-14																				
A1940	Remove igniter piping for burners 21 - 25	24-Feb-14	25-Feb-14																				

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Remaining Level of Effort Remaining Work Critical Remaining Work Milestone Critical Mil...

Activity ID	Activity Name	Start	Finish	February 2014	March 2014	April 2014	May 2014	June 2014
A2280	16th Floor Elevation GAH Sootblower SMR 0159	12-Feb-14	28-Feb-14	Remove/Protect any cables hardware, etc for and/or during installation				
A2400	Cable trays/conduit cables 16th floor elev	12-Feb-14	15-Feb-14					
A2430	Hardware 16th floor elevation	16-Feb-14	20-Feb-14					
A2440	Section Valve Station GAH Sootblower	21-Feb-14	28-Feb-14	Hardware 16th floor elevation				
A6370	Cable trays/ Conduit	28-Feb-14	01-Apr-14		Cable trays/ Conduit			
A6380	Cables	28-Feb-14	10-Mar-14		Cables			
A6390	Hardware	10-Mar-14	16-Mar-14		Hardware			
A6400	Terminate and gland cables loop checks	16-Mar-14	22-Mar-14			Terminate and gland cables loop checks		
A6410	OFA	15-Feb-14	11-Apr-14	Remove/protect any cables hardware etc for and/or during installation				
A6420	Remove/protect any cables hardware etc for and/or during installation	15-Feb-14	16-Feb-14			11-Apr-14, OFA		
A6430	Disconnect supply at damper	16-Feb-14	18-Feb-14					
A6430	Reconnect supply and loop checks	10-Apr-14	11-Apr-14				Reconnect supply and loop checks	
A6440	Burners	10-Feb-14	02-May-14					
A6440	Remove/protect any cables hardware for and/or during installation	15-Feb-14	25-Feb-14				02-May-14, Burners	
A6490	Front Wall Middle Row Cable Trays Conduit	10-Feb-14	01-Mar-14					
A6500	Front Wall Middle Row Cables	22-Feb-14	19-Mar-14					
A6510	Front Wall Middle Row Terminate & Gland c	04-Apr-14	09-Apr-14					
A6520	Front Wall bottom row cable trays conduit	16-Feb-14	07-Mar-14					
A6530	Front Wall bottom row cables	03-Mar-14	22-Mar-14					
A6540	Front Wall Bottom Row terminate & gland c	10-Apr-14	25-Apr-14					
A6460	Front Wall Top Row Cable Trays Conduit	21-Feb-14	12-Mar-14					
A6470	Front Wall Top Row Cables	07-Mar-14	26-Mar-14					
A6480	Front Wall Top Row Terminate & Gland Ca	29-Mar-14	13-Apr-14					
A6610	Rear Wall bottom row cable trays conduit	15-Feb-14	06-Mar-14					
A6620	Rear Wall bottom row cables	02-Mar-14	21-Mar-14					
A6630	Rear Wall Bottom Row terminate & gland c	17-Apr-14	02-May-14					
A6590	Rear Wall Middle Row Cable Trays Conduit	20-Feb-14	11-Mar-14					
A6590	Rear Wall Middle Row Cables	08-Mar-14	02-Apr-14					
A6600	Rear Wall Middle Row Terminate & Gland c	10-Apr-14	25-Apr-14					
A6550	Rear Wall Top Row Cable Trays Conduit	26-Feb-14	17-Mar-14					
A6560	Rear Wall Top Row Cables	13-Mar-14	01-Apr-14					
A6570	Rear Wall Top Row Terminate & Gland Cab	03-Apr-14	18-Apr-14					
A6450	Hardware Cabinets power Rto/Marshaling	17-Mar-14*	25-Mar-14					
A2290	Roll back/clean up	03-May-14	04-May-14					
PF Pipes		10-Feb-14	18-Apr-14					
A4160	Gag all necessary spring cans Upper Level	10-Feb-14	10-Feb-14					
A4240	Temp Support for loose end PF Sections Upper Level	11-Feb-14	12-Feb-14					
A4250	Removal of PF Knife Valve Upper Level	14-Feb-14	16-Feb-14					
A4260	Remove PF Pipe Upper Level	17-Feb-14	20-Feb-14					
A4270	Clean up and remove debris and loose mat	21-Feb-14	21-Feb-14					
A4180	Gag all necessary spring cans Middle Level	11-Feb-14	11-Feb-14					
A4200	Temp Support for loose end PF sections Middle Level	12-Feb-14	13-Feb-14					
A4210	Removal of PF Knife Valves Middle Level	16-Feb-14	18-Feb-14					
A4220	Rig & Remove PF Pipe Middle Level	18-Feb-14	22-Feb-14					
A4230	Clean up and remove debris and loose mate	22-Feb-14	23-Feb-14					

Legend:

- Remaining Level of Effort
- Actual Work
- Milestone
- Remaining Work
- Critical Remaining Work
- Critical Mil...

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Activity ID	Activity Name	Start	Finish	February 2014		March 2014				April 2014				May 2014				June 2014				
				03	10	17	24	01	08	15	22	29	06	13	20	27	04	11	18	25	01	08
A4190	Gag all necessary spring cans Lower Level	12-Feb-14	12-Feb-14																			
A4280	Temp Support for loose end PF sections Me	13-Feb-14	14-Feb-14																			
A4290	Removal of PF Knife Valve Mezz/Lower Lev	18-Feb-14	20-Feb-14																			
A4300	Remove PF Pipe Mezz/Lower Level	20-Feb-14	26-Feb-14																			
A4310	Clean up and remove debris and loose mat	26-Feb-14	27-Feb-14																			
A4470	PF Pipe Off Site for Modification By others	26-Feb-14	26-Mar-14																			
A4660	Strengthen steel/trimmer steel	27-Feb-14	13-Mar-14																			
A4510	PF Pipe Support Modifications Upper Level	27-Feb-14	23-Mar-14																			
A4690	Remove Temporary Supports Upper Level	19-Mar-14	20-Mar-14																			
A4550	Stage Modified PF Piping	26-Mar-14	28-Mar-14																			
A4570	Install Modified PF Piping Upper Level	28-Mar-14	01-Apr-14																			
A4750	Remove Spring Can Gags Upper Level	06-Apr-14	07-Apr-14																			
A4500	PF Pipe Support Modifications Middle Level	09-Mar-14	02-Apr-14																			
A4580	Install Modified PF Piping Middle Level	01-Apr-14	05-Apr-14																			
A4700	Remove Temporary Supports Middle Level	02-Apr-14	04-Apr-14																			
A4780	Remove Spring Can Gags Middle Level	07-Apr-14	08-Apr-14																			
A4490	PF Pipe Support Modifications Lower Level	05-Mar-14	29-Mar-14																			
A4710	Remove Temporary Supports Lower Level	04-Apr-14	06-Apr-14																			
A4590	Install Modified PF Piping Mezz/Lower Level	05-Apr-14	09-Apr-14																			
A4770	Remove Spring Can Gags Lower Level	08-Apr-14	09-Apr-14																			
A4810	Supervisor Verify all gags removed	09-Apr-14	10-Apr-14																			
Rear Wall																						
A4320	Gag all necessary spring cans Upper Level	10-Feb-14	18-Apr-14																			
A4330	Gag all necessary spring cans Middle Level	10-Feb-14	10-Feb-14																			
A4350	Temp support for loose end PF Sections Up	11-Feb-14	11-Feb-14																			
A4340	Gag all necessary spring cans Lower Level	12-Feb-14	12-Feb-14																			
A4390	Temp support for loose end PF Sections Mi	12-Feb-14	13-Feb-14																			
A4430	Temp Support for loose end PF pipe Mezz/	13-Feb-14	14-Feb-14																			
A4360	Removal of PF Knife Valve Upper Level	16-Feb-14	18-Feb-14																			
A4370	Remove PF Pipe Upper Level	18-Feb-14	22-Feb-14																			
A4400	Removal of PF Knife Valve Middle Level	18-Feb-14	20-Feb-14																			
A4410	Remove PF Pipe Middle Level	20-Feb-14	22-Feb-14																			
A4440	Removal of PF Knife Valve Mezz/Lower Lev	20-Feb-14	22-Feb-14																			
A4450	Remove PF Pipe Mezz/Lower Level	22-Feb-14	26-Feb-14																			
A4380	Clean up and remove debris and loose mat	22-Feb-14	23-Feb-14																			
A4420	Clean up and remove debris and loose mat	24-Feb-14	25-Feb-14																			
A4460	Clean up and remove debris and loose mat	27-Feb-14	27-Feb-14																			
A4480	PF Pipe off site for modifications by others	27-Feb-14	26-Mar-14																			
A4520	PF Pipe Support Modifications Upper Level	28-Feb-14	23-Mar-14																			
A4530	PF Pipe Support Modifications Middle Level	04-Mar-14	23-Mar-14																			
A4540	PF Pipe Support Modifications Lower Level	08-Mar-14	31-Mar-14																			
A4560	Stage Modified PF Piping	27-Mar-14	28-Mar-14																			
A4600	Install Modified PF Piping Upper Level	01-Apr-14	04-Apr-14																			
A4610	Install Modified PF Piping Middle Level	05-Apr-14	06-Apr-14																			
A4720	Remove Temporary Supports Upper Level	05-Apr-14	06-Apr-14																			
A4620	Install Modified PF Piping Mezz/Lower Level	09-Apr-14	12-Apr-14																			
A4730	Remove Temporary Supports Middle Level	09-Apr-14	10-Apr-14																			

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Remaining Level of Effort █ Remaining Work ◆ Milestone ◆
 Actual Work █ Critical Remaining Work ◆ Critical Milestone ◆

Trimble County - Outage Programme - Preliminary

Activity ID	Activity Name	Start	Finish	February 2014	March 2014	April 2014	May 2014	June 2014
A4740	Remove Temporary Supports Lower Level	13-Apr-14	14-Apr-14					
A4780	Remove Spring Can Gags Upper Level	15-Apr-14	15-Apr-14					
A4790	Remove Spring Can Gags Middle Level	16-Apr-14	16-Apr-14					
A4800	Remove Spring Can Gags Lower Level	17-Apr-14	17-Apr-14					
A4820	Supervisor Verify all gags removed	18-Apr-14	18-Apr-14					
OFA Ports								
		10-Feb-14	25-Apr-14					
East Wall (Front)								
A2291	Remove insulation	10-Feb-14	12-Feb-14					
A2301	Modify PF pipe Supports (all 4 corners)	10-Feb-14	12-Feb-14					
A2295	Demo Dampers	12-Feb-14	19-Feb-14					
A2292	Remove DP piping	12-Feb-14	14-Feb-14					
A2294	Remove redundant ducting	12-Feb-14	19-Feb-14					
A2298	Remove OFA register (1 per corner) & store	12-Feb-14	12-Feb-14					
A2300	Remove south window/duct	12-Feb-14	15-Feb-14					
A2304	Doors - Save for reinstallation	15-Feb-14	15-Feb-14					
A2296	Modify scaffold for boiler straps	19-Feb-14	20-Feb-14					
South East Corner								
A2305	Install jacks	20-Feb-14	10-Apr-14					
A2310	Modify support straps	20-Feb-14	22-Feb-14					
A2315	Install OFA support frame	22-Feb-14	23-Feb-14					
A2325	Assemble 90 duct & windbox	23-Feb-14	05-Mar-14					
A2335	Fit & Weld Turning Vanes	05-Mar-14	07-Mar-14					
A2790	Seal Weld 90 Duct	07-Mar-14	15-Mar-14					
A2320	Establish cut lines	22-Feb-14	23-Feb-14					
A2330	Stage/install rigging	23-Feb-14	24-Feb-14					
A2340	Remove panel	24-Feb-14	26-Feb-14					
A2350	Machine/prep panel	26-Feb-14	01-Mar-14					
A2360	Fit/tack panel	01-Mar-14	03-Mar-14					
A2370	Weld out/complete panel	03-Mar-14	05-Mar-14					
A2380	NDE panel	05-Mar-14	06-Mar-14					
A2390	Assemble Toggle	06-Mar-14	16-Mar-14					
A2820	Reinstall Doors (3 locations)	12-Mar-14	13-Mar-14					
A2328	Seal Weld Toggle OFA duct	15-Mar-14	23-Mar-14					
A2410	Reinstall DP	16-Mar-14	17-Mar-14					
A2415	Remove temp steel supports	23-Mar-14	25-Mar-14					
A2830	Fit New OFA Register	23-Mar-14	26-Mar-14					
A2840	Re-fit existing OFA Register	26-Mar-14	27-Mar-14					
A2420	Reinstall insulation/rigging	27-Mar-14	10-Apr-14					
North East Corner								
A3400	Install jacks	24-Feb-14	15-Apr-14					
A3410	Modify support straps	25-Feb-14	27-Feb-14					
A3420	Install OFA support frame	27-Feb-14	28-Feb-14					
A3430	Assemble 90 duct & windbox	28-Feb-14	10-Mar-14					
A3440	Fit & Weld Turning Vanes	10-Mar-14	12-Mar-14					
A3450	Seal Weld 90 Duct	12-Mar-14	20-Mar-14					
A3460	Establish cut lines	27-Feb-14	28-Feb-14					
A3470	Stage/install rigging	28-Feb-14	01-Mar-14					

Remaining Level of Effort

Actual Work

Remaining Work

Critical Remaining Work

Milestone

Critical Mil...

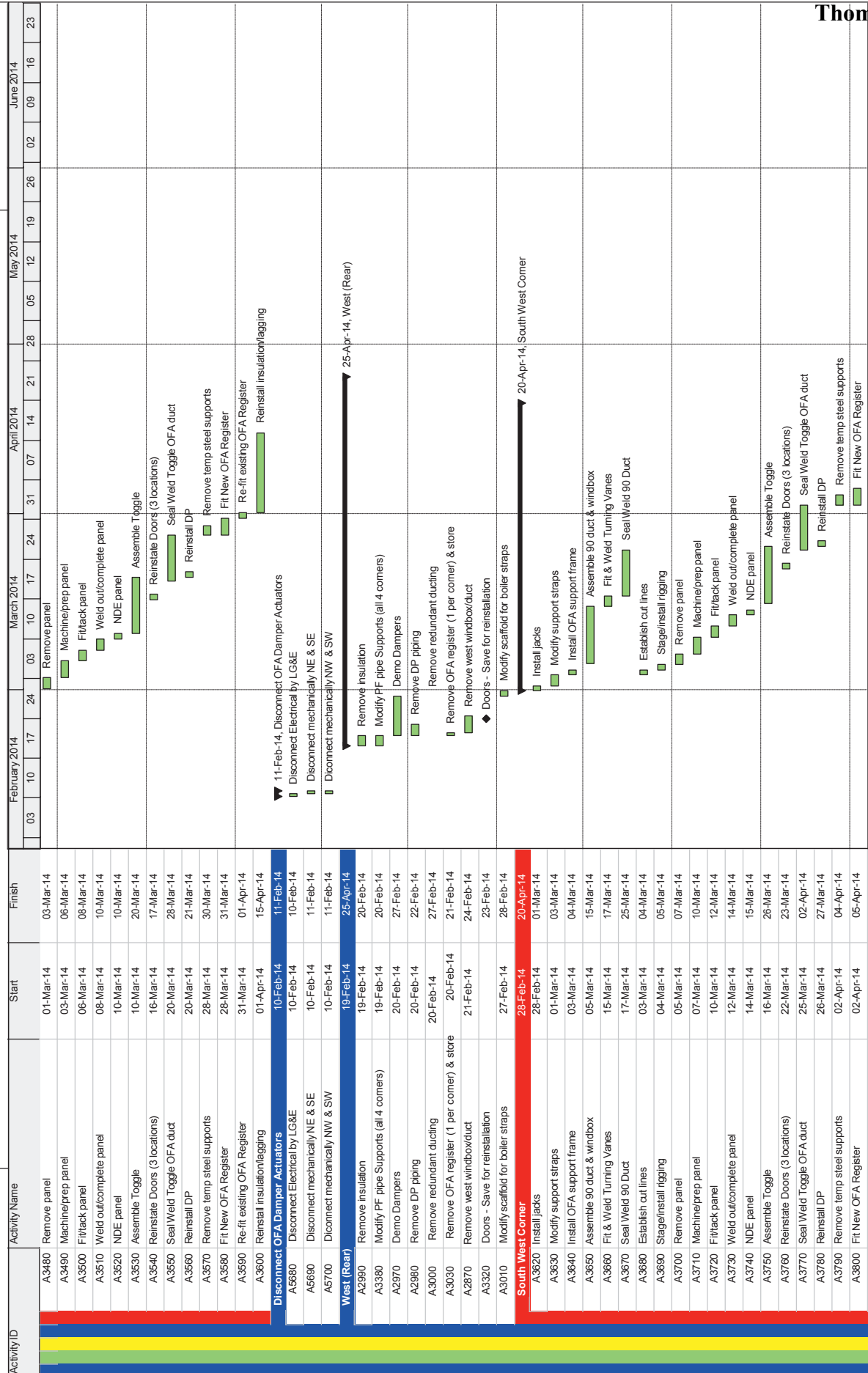
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Trimble County - Outage Programme - Preliminary

TC Uz Spring 2014 Outage



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■ Remaining Level of Effort
■ Actual Work
◆ Remaining Work
◆ Critical Remaining Work
◆ Milestone
◆ Critical Mil...

Trimble County - Outage Programme - Preliminary

Activity ID	Activity Name	Start	Finish	February 2014			March 2014			April 2014			May 2014			June 2014			
				03	10	17	24	03	10	17	24	31	07	14	21	28	05	12	19
A3810	Re-fit existing OFA Register	05-Apr-14	06-Apr-14																
A3820	Reinstall insulation/lagging	06-Apr-14	20-Apr-14																
North West Corner																			
A3840	Install jacks	05-Mar-14	25-Apr-14																
A3850	Modify support straps	06-Mar-14	08-Mar-14																
A3860	Install OFA support frame	08-Mar-14	09-Mar-14																
A3870	Assemble 90 duct & windbox	10-Mar-14	20-Mar-14																
A3880	Fit & Weld Turning Vanes	20-Mar-14	22-Mar-14																
A3890	Seal Weld 90 Duct	22-Mar-14	30-Mar-14																
A3900	Establish out lines	08-Mar-14	09-Mar-14																
A3910	Stage/install rigging	10-Mar-14	12-Mar-14																
A3920	Remove panel	12-Mar-14	14-Mar-14																
A3930	Machine/prep panel	14-Mar-14	16-Mar-14																
A3940	Fit/lack panel	16-Mar-14	18-Mar-14																
A3950	Weld out/complete panel	18-Mar-14	19-Mar-14																
A3960	NDE panel	20-Mar-14	27-Mar-14																
A3970	Assemble Toggle	26-Mar-14	30-Mar-14																
A3980	Reinstall Doors (3 locations)	30-Mar-14	31-Mar-14																
A4000	Reinstall DP	07-Apr-14	09-Apr-14																
A4010	Remove temp steel supports	10-Apr-14	11-Apr-14																
A4020	Fit New OFA Register	11-Apr-14	25-Apr-14																
A4030	Re-fit existing OFA Register	14-Apr-14	18-Apr-14																
A4040	Reinstall insulation/lagging	14-Apr-14	16-Apr-14																
Amstar Furnace Application (SMR0048)																			
C1068	Clear scaffold for AMSTAR / Partial Strip	17-Apr-14	18-Apr-14																
C1069	AMSTAR Prep wall tubes	19-Apr-14	19-Apr-14																
A6100	Roll Conveyor in	05-May-14	12-May-14																
C1241	Owner to activate fan for AMSTAR works	12-May-14	13-May-14																
C1070	AMSTAR Coat tubes	13-May-14	16-May-14																
A1226	Roll Conveyor out	16-May-14	18-May-14																
C1071	Remove furnace scaffold	18-May-14	18-May-14																
A6710	Roll Back & Clean Up	18-May-14	18-May-14																
C1251	Replace Ash Hopper/ancillary works	18-May-14	18-May-14																
C1261	Close All Doors & Verify (LG&E)	18-May-14	18-May-14																
WCAH Upgrade SMR095																			
A6880	Pull Old Coils North End	13-Feb-14	18-Feb-14																
A6690	Deflector plates North End	13-Feb-14	16-Feb-14																
A6700	New Coils in North End	28-Feb-14	28-Feb-14																
A6710	Move Header North End	13-Feb-14	06-Mar-14																
A6720	Pull Old Coils South End	13-Feb-14	18-Feb-14																
A6730	Deflector plates South End	13-Feb-14	16-Feb-14																
A6740	New Coils in South End	28-Feb-14	28-Feb-14																
A6750	Move Header South End	28-Feb-14	06-Mar-14																
FD Outdoor Suction Duct Hood																			
A6890	Build Scaffold FD Hoods North End	11-Mar-14	13-Mar-14																
A6900	Pull Screen FD Hoods North End	13-Mar-14	16-Mar-14																

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Trimble County - Outage Programme - Preliminary

TC U2 Spring 2014 Outage

Activity ID	Activity Name / Start	Finish	2014																				
			February 2014			March 2014			April 2014			May 2014			June 2014								
			03	10	17	24	03	10	17	24	31	07	14	21	28	05	12	19	26	02	09	16	23
A6910	Inspect Welds FD Hoods North End	16-Mar-14																					
A6920	Repair/Add Weld/FD Hoods North End	18-Mar-14																					
A6930	Fly Hoods up FD Hoods North End	21-Mar-14																					
A6940	Weld Out FD Hoods North End	23-Mar-14																					
A6840	Pull Screen FD Hoods South End	11-Mar-14																					
A6850	Inspect Welds FD Hoods South End	14-Mar-14																					
A6860	Repair/Add Weld/FD Hoods South End	16-Mar-14																					
A6870	Fly Hoods up FD Hoods South End	19-Mar-14																					
A6880	Weld Out FD Hoods South End	21-Mar-14																					
A6800	FD Suction Hood Structural Steel Modifications	06-Mar-14																					
A6810	Locate & Stage Material North Side	06-Mar-14																					
A6820	Remove Handrail & Grating North Side	06-Mar-14																					
A6830	Install Plates North Side	07-Mar-14																					
A6830	Weld Out North Side	09-Mar-14																					
A6760	Locate & Stage Material South Side	06-Mar-14																					
A6770	Remove Handrail & Grating South Side	07-Mar-14																					
A6780	Install Plates South Side	07-Mar-14																					
A6790	Weld Out South Side	09-Mar-14																					
A6640	SMR0127 ID Fan Stall Sensing Ports	17-Feb-14																					
A6650	Build Scaffolding	17-Feb-14																					
A6650	Inspect and add insulation as needed	19-Feb-14																					
A6660	Completion inspection	21-Feb-14																					
A6670	Remove Scaffold	22-Feb-14																					
A6670	Remove Scaffold	24-Feb-14																					
A5230	Sootblower Piping	24-Jan-14																					
A5230	Install support steel work	18-Feb-14																					
A5240	Install supports	24-Jan-14																					
A5250	Install prefabricated spool pieces	05-Feb-14																					
A5260	fit, set & weld closure	05-Feb-14																					
A5270	Local heat treatment and radiography	12-Feb-14																					
A5190	Soot Blower Supply from Platen Stub	15-Feb-14																					
A5200	Install support steel work	01-Mar-14																					
A5200	Install supports	02-Mar-14																					
A5210	Install pre fabricated spool pieces	02-Mar-14																					
A5220	Fit set and weld closure	02-Mar-14																					
A5340	Heat treatment and radiography	14-Mar-14																					
A5060	6" Pipe from 714 down to 530	14-Mar-14																					
A5060	Install Support Steel work	14-Mar-14																					
A5070	Install supports	22-Mar-14																					
A5460	Install pre fabricated spool pieces	22-Mar-14																					
A5470	Dis invest redundant pipe	28-Mar-14																					
A5480	Install pre fabricated spool pieces	04-Apr-14																					
A5490	Fit set and weld closure	29-Mar-14																					
A5560	Local heat and radiography	05-Apr-14																					
A5560	Local heat and radiography	10-Apr-14																					
A5350	Warning Drain from 530 to CDV	17-Feb-14																					
A5350	Install support steel work	17-Feb-14																					
A5360	Install supports	26-Feb-14																					

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Legend:

- Remaining Level of Effort (Green bar)
- Actual Work (Blue bar)
- Remaining Work (Green diamond)
- Critical Remaining Work (Red diamond)
- Milestone (Black diamond)
- Critical Milestone (Red diamond)

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Trimble County - Outage Programme - Preliminary

TC U2 Spring 2014 Outage

Activity ID	Activity Name	Start	Finish	February 2014	March 2014	April 2014	May 2014	June 2014
A5370	Install pre fabricated spool pieces	08-Mar-14	13-Mar-14					
A5380	Fit set and weld closure	14-Mar-14	19-Mar-14					
A5390	Local heat and radiography	20-Mar-14	21-Mar-14					
Install SVE Pipes work								
A5500	Install Support Steel work	22-Mar-14	09-May-14					
A5570	Build weather proof enclosure	22-Mar-14	28-Mar-14	Install pre fabricated spool pieces	Fit set and weld closure			
A5580	Remove Roofing Materials	24-Mar-14	23-Mar-14	Local heat and radiography				
A5510	Install supports	29-Mar-14	01-Apr-14					
A5520	Reposition roof air fan	02-Apr-14	11-Apr-14					
A5530	Install pre fabricated spool pieces	12-Apr-14	14-Apr-14					
A5540	Fit set and weld closure	15-Apr-14	17-Apr-14					
A5590	Install Silencers 2 off	18-Apr-14	03-May-14					
A5600	Reinstate Roofing	04-May-14	07-May-14					
A5610	Remove weather proof enclosure	08-May-14	09-May-14					
PCV Warming Line 1"								
A4900	Install support steel work	10-Feb-14	20-Feb-14	20-Feb-14, PCV Warming Line 1"				
A4910	Install Supports	10-Feb-14*	12-Feb-14	Install support steel work				
A4920	Install pre fabricated spool pieces	13-Feb-14	18-Feb-14	Install Supports				
A4930	New lapping into existing line	13-Feb-14	16-Feb-14	Install pre fabricated spool pieces				
A4940	Fit Set & weld closure	13-Feb-14	14-Feb-14	New lapping into existing line				
A4960	Valve Strip & Rebuild CV051	17-Feb-14	18-Feb-14	Fit Set & weld closure				
A4950	Heat Treat & radiography	19-Feb-14	20-Feb-14	Valve Strip & Rebuild CV051				
Boiler Roof Fan SMR 170								
A6950	Build Scaffold	25-Mar-14	12-Apr-14	Heat Treat & radiography				
A6960	Roof Material Removed	30-Mar-14	01-Apr-14					
A6970	Scaffold Build up underneath from 17th Flo	01-Apr-14	03-Apr-14					
A6980	Install support steel under roof	03-Apr-14	07-Apr-14					
A6990	Build Tracking System to move fan	07-Apr-14	10-Apr-14					
A7000	Move Fan and install in new location	10-Apr-14	12-Apr-14					
Miscellaneous Scope								
Replace Seal air non return dampers								
A5740	Build Scaffold	03-Mar-14	08-Mar-14	08-Mar-14, Replace Seal air non return dampers				
A5750	Remove Insulation	04-Mar-14	04-Mar-14	Build Scaffold				
A5760	Remove Damper (2 Off)	05-Mar-14	05-Mar-14	Remove Insulation				
A5770	Install New Damper (2 off)	06-Mar-14	06-Mar-14	Remove Damper (2 Off)				
A5780	Reinstate Insulation	07-Mar-14	07-Mar-14	Install New Damper (2 off)				
A5790	Remove Scaffold	08-Mar-14	08-Mar-14	Reinstate Insulation				
Install 30 PF office plates								
A5800	Build Scaffold A	27-Feb-14	27-Feb-14	Remove Scaffold				
A5810	Install Restraints between PF Pipes A	28-Feb-14	28-Feb-14	Build Scaffold A				
A5820	Remove existing offices (5) A	01-Mar-14	03-Mar-14	Install Restraints between PF Pipes A				
A5830	Clean Faces & Install new offices A	04-Mar-14	06-Mar-14	Remove existing offices (5) A				
A5840	Remove Restraints A	07-Mar-14	07-Mar-14	Clean Faces & Install new offices A				
A6120	Build Scaffold B	08-Mar-14	08-Mar-14	Remove Restraints A				
A6130	Install Restraints between PF Pipes A	09-Mar-14	09-Mar-14	Build Scaffold B				
A6140	Remove existing offices (5) B	10-Mar-14	12-Mar-14	Install Restraints between PF Pipes A				

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TASK filter: All Activities

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Remaining Level of Effort Remaining Work Milestone Critical Remaining Work Critical Mil...

TC2 2014 Spring Outage
Weekend and First Week Coordination

- **Friday, February 07, 2014 Offline after peak**
 - At 300 pounds of boiler pressure, inspect leak- **Maldonado**
- **Saturday, February, 8th, 2014**
 - Deslag Boiler & Burners- On site at 10:00 AM.- **Maldonado/ Expro**
 - **Started at 12:15 pm. Estimated 10-12 hrs. worst case.**
 - Disconnect Wiring on Burners- **I/E Maintenance**
 - WESP Irrigation out of service after deslag.- **Operations**
- **Sunday, February, 9th, 2014**
 - Drain Ash Hopper- **Operations**
 - Disconnect Ash Hopper Piping- **Mechanics**
 - Roll Out Ash Hopper- **Doosan/ Mechanics**
 - Ground WESP/ DESP- **I/E Maintenance**
- **Monday, February, 10th, 2014**
 - Boiler Scaffold Build- **SE Boiler (6 shifts)**
 - PJFF Filter Bag Sample Removal- **Mechanics**
 - Pulse Air Out of Service (LOTO)- **Operations**
 - WESP Inspections
 - “Dirty” Inspection- Irrigation out of service and not carded.- **Waller/ Anderson**
 - Place irrigation in service and perform casing washes after “Dirty” Inspection.
 - Pull 2A Turbine Oil Cooler- **Duncan/ Mechanics**
 - SCR Doors open for “dirty” Inspection- **Mechanics/ Dorwart**

- **Tuesday, February, 11th, 2014**
 - Boiler Scaffold Build- **SE Boiler (4 shifts)**
 - PJFF Filter Bag Sample Removal
 - Pulse Air Out of Service (LOTO)- **Operations**
 - WESP Inspections
 - “WET” Inspection- Irrigation in service.- **Siemens, LG&E, PCT, TES**
- **Wednesday, February, 12th, 2014**
 - Boiler Scaffold Build- **SE Boiler (2 shifts)**
 - Open Deaerator- **Mechanics**
 - Ground WESP/ DESP- **I/E Maintenance**
 - **CLEAR GAS PATH & SIGN OFF BOTH FANS**
- **Thursday, February, 13th, 2014**
 - Check for any open doors prior to starting fan- **Operations**
 - Put 2A ID Fan in service after scaffold completion.-
Operations/ Bechtel/ Doosan
 - Place 1 Recycle Pump in service to alleviate carry over into the WESP.- **Operations**
 - Sandblasting Burner Fronts/ Amstar (2- 24hr shifts) -
Doosan/
- **Friday, February 14th, 2014**
 - **SIGN ON GAS PATH- BOTH FANS**
 - Drain Reaction Tank- **Operations**
 - Remove 2A ID Fan and open gas path
 - Reaction Tank Clean-out/Inspection – **Heinz/Phelps**

TC2 2014 Spring Outage
Weekend and First Week Coordination

- **Friday, February 07, 2014 Offline after peak**
 - At 300 pounds of boiler pressure, inspect leak- **Maldonado**
- **Saturday, February, 8th, 2014**
 - Deslag Boiler & Burners- On site at 10:00 AM.- **Maldonado/ Expro**
 - **Started at 12:15 pm. Estimated 10-12 hrs. worst case.**
 - Disconnect Wiring on Burners- **I/E Maintenance**
 - WESP Irrigation out of service after deslag.- **Operations**
- **Sunday, February, 9th, 2014**
 - Drain Ash Hopper- **Operations**
 - Disconnect Ash Hopper Piping- **Mechanics**
 - Roll Out Ash Hopper- **Doosan/ Mechanics**
 - Ground WESP/ DESP- **I/E Maintenance**
- **Monday, February, 10th, 2014**
 - Boiler Scaffold Build- **SE Boiler (6 shifts)**
 - PJFF Filter Bag Sample Removal- **Mechanics**
 - Pulse Air Out of Service (LOTO)- **Operations**
 - WESP Inspections
 - “Dirty” Inspection- Irrigation out of service and not carded.- **Waller/ Anderson**
 - Place irrigation in service and perform casing washes after “Dirty” Inspection.
 - Pull 2A Turbine Oil Cooler- **Duncan/ Mechanics**
 - SCR Doors open for “dirty” Inspection- **Mechanics/ Dorwart**

- **Tuesday, February, 11th, 2014**
 - Boiler Scaffold Build- **SE Boiler (4 shifts)**
 - PJFF Filter Bag Sample Removal
 - Pulse Air Out of Service (LOTO)- **Operations**
 - WESP Inspections
 - “WET” Inspection- Irrigation in service.- **Siemens, LG&E, PCT, TES**
- **Wednesday, February, 12th, 2014**
 - Boiler Scaffold Build- **SE Boiler (2 shifts)**
 - Open Deaerator- **Mechanics**
 - Ground WESP/ DESP- **I/E Maintenance**
 - **CLEAR GAS PATH & SIGN OFF BOTH FANS**
- **Thursday, February, 13th, 2014**
 - Check for any open doors prior to starting fan- **Operations**
 - Put 2A ID Fan in service after scaffold completion.-
Operations/ Bechtel/ Doosan
 - Place 1 Recycle Pump in service to alleviate carry over into the WESP.- **Operations**
 - Sandblasting Burner Fronts/ Amstar (2- 24hr shifts) -
Doosan/
- **Friday, February 14th, 2014**
 - **SIGN ON GAS PATH- BOTH FANS**
 - Drain Reaction Tank- **Operations**
 - Remove 2A ID Fan and open gas path
 - Reaction Tank Clean-out/Inspection – **Heinz/Phelps**

Produced as Native

Original File Name: TC2S14 Spring Outage Gantt Chart.xlsx

Stored File Name: OpenText00413168.xlsx

Produced as Native

Original File Name: Budget vs Estimates vs Actual.xlsx

Stored File Name: OpenText00413259.xlsx

Produced as Native

Original File Name: Budget vs Estimates vs Actual.xlsx

Stored File Name: OpenText00413261.xlsx

Produced as Native

Original File Name: Budget vs Estimates vs Actual.xlsx

Stored File Name: OpenText00413526.xlsx

Produced as Native

Original File Name: Budget vs Estimates vs Actual.xlsx

Stored File Name: OpenText00413528.xlsx

Produced as Native

Original File Name: Budget vs Estimates vs Actual.xlsx

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Produced as Native

Original File Name: TC2 SPRING 2014 OUTAGE March estimates.xlsx

Stored File Name: OpenText00413861.xlsx

Produced as Native

Original File Name: COMMITMENTS 3-24-14.xlsx

Stored File Name: OpenText00414086.xlsx

Produced as Native

Original File Name: TC2 SPRING 2014 OUTAGE March estimates (2).xlsx

Stored File Name: OpenText00414138.xlsx

From: Cuzick, Fred(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=E009048)
To: Henderson, Trent; Sedam, Dale; Waller, Logan; Maldonado, Francisco; Mills, Ricky; Dorwart, Jordan; Phelps, Grant; Bullock, Sam; Feider, Ryan
CC: Joyce, Jeff; Byrd, Larry; Anderson, Dave (Trimble County)
BCC:
Subject: March outage Estimates (Need input for un-invoiced O&M work performed)
Sent: 03/24/2014 04:27:52 PM -0400 (EDT)
Attachments: TC2 SPRING 2014 OUTAGE March estimates.xlsx;

Attached is a file with March estimates of \$1.9M related to outage O&M work that was provided to me for the last Forecast. Your name was listed as a Proponent, so I need feedback on your project costs now that we are at the end of March almost. I would like a response back by at least March 27.

I need to know **(1)** VENDOR performing work, **(2)** How much of each amount will be completed and un-invoiced at March 31 (Amount to accrue), **(3)** Have we paid anything yet for these ?

Thanks for your help.

Fred M. Cuzick , CPA, CGMA
Budget Coordinator
LG&E / Trimble County Station
(502)627-6213 (Office)
(502)627-6226 (Fax)
Fred.Cuzick@lge-ku.com

Produced as Native

Original File Name: TC2 SPRING 2014 OUTAGE March estimates.xlsx

Stored File Name: OpenText00414210.xlsx

From: Henderson, Trent(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=HENDERST)
To: Cuzick, Fred
CC: Byrd, Larry
BCC:
Subject: March outage estimates
Sent: 03/25/2014 12:36:14 PM -0400 (EDT)
Attachments: Copy of TC2 SPRING 2014 OUTAGE March estimates.xlsx;

Fred,

Here is a copy of the worksheet that has Ricky Mills and myself updates. Sam said he talked to you about his items already. If there is anything more you need please let me know.

Thanks,

Trent L. Henderson

Maintenance Coordinator

Trimble Co. Station

Louisville Gas & Electric

Office 502-627-6158

Fax 502-217-2828

trent.henderson@lge-ku.com

Produced as Native

Original File Name: Copy of TC2 SPRING 2014 OUTAGE March estimates.xlsx

Stored File Name: OpenText00414212.xlsx

Produced as Native

Original File Name: TC2S14 Spring Outage Gantt Chart.xlsx

Stored File Name: OpenText00414551.xlsx

Produced as Native

Original File Name: TC2 SPRING 2014 OUTAGE March estimates.xlsx

Stored File Name: OpenText00415030.xlsx

Produced as Native

Original File Name: Budget vs Estimates vs Actual.xlsx

Stored File Name: OpenText00415180.xlsx

Produced as Native

Original File Name: Budget vs Estimates vs Actual.xlsx

Stored File Name: OpenText00415981.xlsx

Produced as Native

Original File Name: Budget vs Estimates vs Actual.xlsx

Stored File Name: OpenText00415983.xlsx

**Power Generation
Week Ending 02/21/14**

E.W. Brown Generating Station

Safety:

- As of Monday, 02/24/14, there have been 295 days since the last reportable incident (05/04/13).

Environmental:

No issues or exceedances to report.

Week ending 2/22/2013	MS002	Limit	CS123	Limit
SO ₂ (lb/mmbtu)	Offline	5.15	0.070	5.15
SO ₂ (YTD Tons)	Offline	N/A	184.6	N/A
NO _x *(YTD Average)(lb/mmbtu)	Offline	N/A	0.205	N/A
Opacity**	Offline	40%	N/A	N/A
PM (lb/mmbtu)	N/A	N/A	0.008	N/A

* NO_x limit for Units 1,2 & 3 is calculated on an annual basis

**Opacity Trigger Level is 29.6%

Consent Decree Requirements		Limit
Unit 3 SO ₂ 30 Day (lb/mmbtu)	0.071	0.100
Unit 3 SO ₂ 30 Day Removal Efficiency	98.6%	97%
Unit 3 NO _x 30 Day (lb/mmbtu)	0.032	0.070
Unit 3 NO _x 30 Day (lb/mmbtu)	0.032	0.080
Unit 3 NO _x (YTD tons)	45.8	N/A
Unit 3 SO ₂ (YTD tons)	109.7	2,300

Unit Status:

- Unit 1 is online and available for full load.
- Unit 2 is online and is currently derated to 130 MWs due to a vertical shaft failure on 2-2 Mill. U2 was removed from service 2/21/14 at 22:13 to repair condenser leak and ash hopper expansion joint. This unit was returned to service 2/23/14 at 02:07.
- Unit 3 is online and available for full load.
- CT Units 5, 6, 7, 8, 9, 10 & 11 are available for full load as needed. CT Units 9 and 10 are currently available on gas only due to oil valve issues.

- Dix Hydro Units 2 & 3 are available as needed. Dix Unit 1 is available conditionally, as long as Herrington Lake level is above 735.0. Dix Unit 1 has ongoing Johnson Valve issues that are being evaluated for repair at a later date.
- Herrington Lake level is 739.6 as of Monday, 02/24/14.

Fuel Inventory Status (Tons / Days)

- Approximately 159,078 tons
- Approximately 25 days

Major Project(s) Update:

- **UNIT 3 PJFF PROJECT** – Contract awarded to AMEC. AMEC to mobilize on site in May 2014. Currently planning schedule and work scope to relocate Unit 3 SO3 mitigation silos this spring to make room for PJFF structure.
- **UNIVERSITY OF KENTUCKY SLIP STREAM (CO2 CAPTURE) PROJECT** - Bid specification review and site walk down scheduled for afternoon of 2-24-2014. Ten contractors have shown interest in attending the bid specification review.
- **UNIT 3 SERVICE WATER PUMP VFDs** -- 3-1 and 3-2 Service Water Pump VFD tie-in has been rescheduled to occur in the Brown FGD Spring Outage of 2014.
- **CCRT Project** – Contract has been awarded to Skanska. Jeff Heun, Tim Coomer, Steve Anderson, and Don Duncan traveled to Wateree Plant in Eastover, South Carolina on 2-18 to see an in-service bottom ash dewatering system. General arrangement drawing for the E.W. Brown system are undergoing final review. Jeff Heun and Don Duncan are meeting with Skanska on 2-26-2014 to discuss final details of general arrangement.
- **STS Upgrade** - Brown is in process of reviewing the existing STS database for validity and conversion to a “task” based format. First implementation has tentatively been scheduled for Brown Unit 3 in October of 2014.

Other

- Rough Terrain Forklift Training 2/18 & 2/19.
- Diversity Phase 4 Training Thursday, 02/20.

Cane Run, Ohio Falls and CTs:**Safety:****Cane Run:**

- 210 days since last OSHA Recordable incident on 7/29/13.
- 1,229 days since last lost time incident on 10/14/10.

Ohio Falls:

- 1,474 days since last OSHA Recordable incident on 2/11/10.
- 9,303 days since last lost time incident on 9/12/88.

Environmental:

Emission Exceedences	Unit 4	Unit 5	Unit 6
SO₂	None	None	None
NO_x	None	None	None
PM	None	None	None

Current Unit Status:

- U4 is on-line and good for full load.
- U5 is on-line and good for full load.
- U6 is on-line and good for full load.

Unit Events from 2/17/14 to 2/23/14:

- U4 – (Maintenance Outage) Off-line at 22:14 on 2/18/14 to 0:32 on 2/20/14 – Governor valve sticking @ 155 MW– Lubrication Issues.
- U5 – (Forced Outage) Off-line at 4:01 on 2/21/14 to 2/21/14 at 14:53 – 5A ID Fan trip.
- U6 – (Maintenance Outage) – Off-line at 15:01 on 2/17/14 to 22:51 on 2/23/14 - #3 & #4 Turbine Bearing Replacement.

Ohio Falls:

- **Unit 1** The hydro turbine is installed. Draft tube scaffolding is removed and the associated equipment is now being installed. Generator rotor is being assembled for installation this week. Metering shop is conducting a check out on the generator metering and protection relays.
- **Unit 2** is on outage due to an issue with the lower turbine guide bearing and inner head cover. The unit overhaul has now been rescheduled to follow the Unit 5 repairs.
- **Unit 5** is unavailable due to the separation of the hydro turbine runner. Voith began partial disassembly of the unit until the head gates and tailgates can be transferred to Unit 5. Voith estimates that the retrieval of the runner and restoration of the Unit to take 3-4 months. This work will immediately follow the commissioning of Unit 1.

Combustion Turbines:

- GT 11: Available
- PR 11: Available
- PR 12: Unavailable due to locked up fire pump
- PR 13: Unavailable due to planned outage
- Zorn: Available

Fuel Inventory Status (Tons / Days):

126,617 Tons in Inventory - approximately 21.8 days

Ghent**Safety:**

No new issues to report.

42 days since last OSHA recordable injury. (1-13-14)
 94 days since last lost time injury. (11-15-13)
 47 days since last contractor OSHA recordable injury. (1-8-14)

2014 incidents:

1-3-14 Employee tripped on scaffold in Unit 3 basement and fractured left arm.
 1-8-14 Contractor got lime in eye while cleaning Unit 4 Lime sorbent injection system.
 1-13-14 Employee slipped on side of road beside Limestone pile and tore meniscus in right knee.

Environmental:**Emission Exceedences
Week ending Feb 23rd**

	Unit 1	Unit 2	Unit 3	Unit 4
SO2	0	0	0	0
NOx	0	0	0	0
PM	0	0	0	0
H2S04	0	0	0	0

No new issues to report.

Unit Status:**Unit 1**

- Unit good for full load. (517 mw's)
- Unit was removed from service on Saturday, 2-22-14 after a Reheat Pentent Tube leak was detected. Leak was pad welded and released for service and unit was placed back on line on Sunday, 2-23-14 @ 11:03.
- Completed bi-annual testing for H2SO4 according to our Consent Decree. All tests were in compliance.
- Short derate on Friday, 2-21-14 when 1-6 Mill North Journal failed. Replaced Journal and placed mill back in service.
- Derate on Friday night 2-21-14 when 1-2 Mill North Journal failed. Replaced Journal and placed mill back in service.
- 1-4 Recycle pump gear reducer failed on Monday, 6-10-13 with High temperatures. Inspection revealed gear damage. Reducer was rebuilt and now waiting on new oil pump. Due in the next few weeks.

Unit 2

- Unit good for full load. (523 mw's)
- Condenser tube leak issue looks like it is partially a problem with the 2-3 Condensate pump. Isolated pump and chemistry issues started clearing up. Still seeing issues though and will need leak test on Condenser completed during upcoming outage.

- Had short derate on 2-17-14 when 2-4 Mill North Journal failed. Replaced Journal and released unit back to full load.
- Short derate on 2-18-14 when rock got hung in 2-5 Mill feeder. Cleared out and returned to service.
- Had short derate on 2-19-14 when 2-6 Mill Feeder splice came apart. Replaced belt and returned to service.
- Having many problems with Fly Ash and Wet Ash. Pulling times keep extending due to various reasons.
- Unit was originally scheduled to come off line on 2-22-14 for its planned Fall Outage. Due to the colder weather forecasted for this week, we were asked to keep the unit on for another week to help out the system. Now unit is scheduled to come off line on 2-29-14.

Unit 3

- Unit good for full load. (527 mw's)
- 3-2 ID Fan is plugging up lube oil filter periodically.
- 3-1 FD Fan operating with indication of inlet vanes not opening completely. Will need unit off to inspect fan internally. Causing load limits on unit.
- Had various derates through the week due to H₂SO₄ running just above the limit.
- Air Heater differentials are increasing. Have lowered removal rate on SCR to reduce any Ammonia Slip issues.

Unit 4

- Unit good for full load (534 mw's).
- 4-1 ID Fan started leaking Hydraulic fluid for blade pitch control on inside of fan on 1-11-14. Running fan in hand with Hydraulic pumps off as much as possible. Will need unit off for repair.

Coal Yard:

- 72 barges unloaded over the past 7 days.
- Barges in Fleet: 3 High Sulfur and 5 Limestone.
- Sample system OOS, 9-9-13 due to failure of Primary Cutter and Frame.

Fuel Inventory Status (Tons / Days)

- High Sulfur Inventory on 2-15-14 is 499,891 tons (Approximate 24 day supply). This is a decrease in inventory from 2-8-14 of 39,680 tons.

Major Project(s) Update:

- Charah building base to new Landfill. Sand has been installed on top of liner. Liner has been electrically tested. Now Gypsum has been placed over approximately 97% of the area and is near completion. Placing bottom ash over Gypsum now to prevent erosion of material. Schedule is delayed and placement of material will start when CCR dewatering equipment is completed.

- Porta-reclaimer is under construction. Due to be ready for testing and commissioning in late March/April timeframe. Submerged Flight Conveyors are being commissioned.
- Unit 3 Baghouse Construction has all hoppers and compartments in place as of Wednesday, 11-27-13. The New Unit 3 ID Fans are now assembled. Ductwork is now being installed.
- Unit 4 Baghouse Construction continues with Hoppers and Compartments being installed in structure steel.
- Continued test running equipment on Unit 1 and 2 Fly Ash systems and transferred Flyash dry again this week. Will be continuing checkout of this equipment.
- Inspected Units 3 and 4 Reserve transformer low side bus to 4kv switchgear on Sunday morning in prep for modifications to be made when a new Unit 4 Reserve Transformer is installed later this year.

People:

Steve Butcher and Damien Jagers started as new employees at Ghent on 2-17-14. Steve will be working as a Mechanic in the Scrubber Maintenance Department and Damien will be working as an Electrician in our Electric Shop.

Clifford Dillie is the newest employee to start at Ghent. Clifford starts today, 2-24-14 in as an Electrician in our Electric Shop.

Jared Kelley also starts today in the Warehouse Department as a Buyer in the company's Commercial Group.

Please welcome Steve, Damien, Clifford and Jared to Ghent when you see them.

Organizational Process and/or Significant Activities:

DCS alarm management in progress on Unit 1, 2, 3 & 4

	2-17-14	2-11-14
Data from:		
Unit 1 Average Alarm rate per 10/min	3.8	4.1
Snapshot # of alarms	27	27
Alarm count for most recent 24 hr period	405	570
Unit 2 Average Alarm rate per 10/min	1.4	1.4
Snapshot # of alarms	11	19
Alarm count for most recent 24 hr period	339	95
Unit 3 Average Alarm rate per 10/min	3.1	3.7
Snapshot # of alarms	20	19
Alarm count for most recent 24 hr period	511	295
Unit 4 Average Alarm rate per 10/min	2.5	4.5
Snapshot # of alarms	40	22
Alarm count for most recent 24 hr period	369	223

Other: Team Incentive Awards to be deposited or mailed March 7

Why not avoid a trip to the bank and the risk that your check gets lost, by signing up for direct deposit?

How do you take advantage of direct deposit?

You have a great opportunity to begin direct deposit of your regular pay *and* have your TIA payment directly deposited on March 7. All you need to do is complete the direct deposit enrollment process **by Feb. 28** using one of three easy methods:

- Set up direct deposit via MyHR at work.
- Set up direct deposit via MyHR from home.
- Complete a paper direct deposit form and mail or fax it to the Payroll office, as indicated. *Payroll will need the completed form by close of business Feb. 27.*

What if you split your direct deposit of your regular pay between accounts?

Your TIA payment will automatically go into your “balance/remainder” account. This is the account where the remainder of your pay goes after set amounts are deposited into other accounts you have designated.

- There is *no action required* unless you want your TIA payment deposited into a different account. To confirm your deposit is going to the account you want, you can view your remainder account selection in MyHR.
- To select a different account, use MyHR to do so (e.g., savings, checking, credit union) by **Feb. 28**. Any changes made for the TIA payment will not impact your future regular pay deposits.

If you deposit your regular pay into one account

No action is needed. The TIA payment will be deposited into that account on March 7.

If you don't elect direct deposit, a check will be mailed to your address on March 7.

You can view the amount of your deposit or your check in MyHR on March 6. Please contact the [Payroll Department](#) with any questions.

Ghent Unit 1 - 56 Days since last unplanned Outage/Trip	1 Day since last Outage
Ghent Unit 2 - 64 Days since last unplanned Outage/Trip	64 Days since last Outage
Ghent Unit 3 - 30 Days since last unplanned Outage/Trip	23 Days since last Outage
Ghent Unit 4 - 15 Days since last unplanned Outage/Trip	15 Days since last Outage

Annual ‘Unit Start’ Tabulation	2014	2013	2012	2011	2010	2009	2008
Ghent Unit 1	2	8	18	10	7	15	17
Ghent Unit 2	0	9	9	11	7	21(2)	19(3)
Ghent Unit 3	5	13	10	11	14	17(3)	20(1)
<u>Ghent Unit 4</u>	<u>2</u>	<u>16</u>	<u>12</u>	<u>15</u>	<u>20</u>	<u>18</u>	<u>17</u>
Ghent Totals	9	46	49	47	48	71	73

() Indicates Reserve Outages included in ‘Unit Startup’ totals.

Green River Power Plant**Safety:**

968 days since last lost workday injury.

15 day since last recordable incident.

76 days since last contractor recordable incident and LWD.

Environmental:

Week ending 2/23/14	Unit 3	Unit 4
SO ₂ *	0	0
NO _x **	Yearly	Yearly
Opacity***	0	0
PM (if applicable)	N/A	N/A
Opacity Trigger (if applicable)****	0	0

* SO₂ limit for Units #3 & 4 are 4.56 lb/mmbtu

** Nox limit for Units #3 & 4 is calculated on an annual basis

*** Opacity limit for Units #3 & 4 is 20% based on a 6 min average

**** Unit #3's opacity trigger is 22.4%, Unit #4's is 13.4%

Unit Status:

Unit #3 is online and available for 75 MW. (75 MW winter rating)

Derate – 15 MW – 4-4 Pyrite Gate Stuck Open

2/19/2014 22:00	2/19/2014 23:20
Duration 1.33 hrs	Cause Code 0346
Eqv. Dur. 0.27 hrs	

Reserve Shutdown

2/21/2014 23:55	2/22/2014 23:25
Duration 23.50 hrs	Cause Code 0000

Forced Outage – B4 Attenuator Leak

2/22/2014 23:25	2/23/2014 01:09
Duration 1.73 hrs	Cause Code 0580

Reserve Shutdown

2/23/2014 01:09	2/24/2014 02:29
Duration 22.85 hrs	Cause Code 0000

Unit #4 is online and available for 105 MW. (105 MW winter rating)

Fuel Inventory Status (Tons / Days)

As of 02/23/14, 59,404 tons (approximately 28 days @ 2,100 tons/day usage rate) of coal are on hand.

Mill Creek Station**Safety:**

On 2-18-14 and R&P employee working for TeleCom slipped and fell by Unit 1&2 stack, receiving a laceration to the forehead and experiencing pain between his shoulder and down his left arm. He was transported to University Hospital by EMS. Employee suffered cracked ribs and shoulder blade.

LG&E

- 133 days since the last OSHA recordable incident. (10/14/13)
- 428 days since the last lost-time incident. (12/23/12)
- 240 days since the last contractor OSHA recordable injury. (06/28/13)

Environmental:

The permitted ash pond direct discharge valve remains open to control pond level. The permitted discharge is within specifications.

Emission Exceedances	Unit 1	Unit 2	Unit 3	Unit 4
S02	None	None	None	None
NOx	N/A	N/A	None	None
PM	None	None	None	None

Unit Status:

Unit 1 – On Line and good for full load.

- FGD Unit - Normal operation.
- Monitoring leak on Turbine Crossover Piping
- Unit came off line @ 2226 hrs. 2-18-14 to wash air heaters.
- Unit came back on line @ 1758 hrs. 2-22-14

Unit 2 – On Line and good for full load.

- FGD Unit - Normal operation.
- Monitoring small external boiler tube leak on Mezz landing #1 corner.
- Unit to come off this morning to repair boiler leak on mezz.
- Unit came back on line @ 1340 hrs. 2-18-14, boiler tube leak repairs.

Unit 3 – On Line and good for full load.

- FGD Unit - Normal Operation
- SCR is in service @ 60% NOx removal rate.

Unit 4 – On Line with a 518MW Load Limit due to max steam flow.

- FGD Unit - Normal Operation
- SCR is in service @ 50% NOx removal rate.

Fuel Inventory (Tons / Days)

Through Thursday 2/20/14: approximately 579,036 tons or 39.39 days.

Major Project(s) Update: as of 2-21-14

Zachry:

- General Notes:
 - Continuing installation of rebar and forms for common pipe rack foundation.
 - Demolition of forms for piers at common pipe rack foundations.
 - Backfilling and compacting stone around common pipe rack foundations at column row 24-8 area.
 - Messier hauling off spoils.
 - BESI testing compaction.
 - Dewatering work areas as needed.
 - Electricians are conducting PM's site wide and repairing lighting on existing pipe rack.
 - Pre-assembling common pipe rack sections with piping at laydown.
 - Fabricating 12" M.E. (Mist Eliminator) wash piping in South laydown yard. Pipe has been staged at the MC Engineering office.
 - PM on all units 1 & 2 & 4 were completed on 2-21-14.
 - Poured remainder of deep well #2 duct bank and filled col. row 2.5 & 3 foundation for seal slab- 5 yards.
 - Zachry started on the rework of the fire water line around the old fuel oil tanks at 10:30 AM. The first PIV at the shaker house would not close. The valve handle broke. Operations had to go back to the valve just south of F house, which kills all the fire water to the south. Line was cut back in at 3:30 PM. For less than a minute. Repairs were made and the line cut in. No leaks. Zachry pipe crew has left at 8 PM.

- Units 1 & 2:
 - Excavating for South Ash pipe rack foundations.
 - Messier trucking spoils offsite.
 - Installing rebar and forms for South Ash Pipe rack foundations.
 - Continuing installation of rebar at WFGD electrical enclosure.
 - Electricians installing grounding in slab at WFGD Electrical Building.
 - Working on 1 & 2 pre-alignment, pumps to gear boxes.

- Unit 4:
 - Poured concrete for duct support foundations- 15 yards.
 - Poured concrete for WFGD pipe rack piers- 10 yards.
 - Installing forms, rebar and anchor bolts for duct supports on North side of PJFF.
 - Demoing forms for duct supports on North side of PJFF.
 - Forming piers for Fly Ash pipe rack.
 - Installing rebar for Unit 4 ID (west) fan foundation.
 - Installing rebar, forms and anchor bolts for WFGD pipe rack.
 - Began prep work for Fly Ash Transfer Station foundation.

- Electricians installing cable tray in Absorber Recycle Pump House and repairing temporary power supplying PJFF.
- Completing fit- up and welding PJFF compartments.
- Welding on stainless Pulse Air Piping for PJFF.
- Erecting pump house steel.
-
- Evans:
 - Installing wall penetrations at SDRS Common Electric Building.
- CDI:
 - Laminating joint on cans G & H.
- Plasticon:
 - Work continues on the fabrication of the transition piece from round to rectangle for unit 3. Prep work continues for the laying out of the flanges to be drilled on the breech duct.
 - Working on lower stiffener for the transition piece in the factory.
 - Adjusting spools on mandrel for Unit 3 cans.
- Babcock Power:
 - Overseeing Stebbins.
- Stebbins:
 - Poured 10 yards on unit 4 tower wall, tying rebar, setting block and tile.
 - Worked on inlet forms and scaffolding.
 - Set tile and block, and tying rebar on unit 1&2 tower.
 - Working on inlet scaffolding and forms.
 - Started installing M.E. (Mist Eliminator) wash nozzles Unit 4.
 - Set 2" nozzle Mist Eliminator (Delta P)
 - Current elevation at 102' 7".
- Tate:
 - Off till Monday.(see notes)
- Marietta Silo:
 - Continuing installation of bin floor in D silo.
 - Installing rebar for floor in C silo.
- Berkel:
 - Installing piles for South Common Pipe Rack.
 - Loading out spoils and Kentuckiana Trucking hauling offsite.
 - AMEC providing testing and QC for pile installation.
 - Mindel and Scott marking pile locations.
- Marmon:

- Backfilling bore pit and compacting, opening trench for cable run.

- Kelley Const. (Administration building)
 - Kelley construction overseeing contractors.
 - Metropolis completed tying rebar for fire wall footing south of F4 through F5.
 - Metropolis poured Firewall footing to block out for further excavation.(68 yards total)
 - Asher Engineering onsite testing concrete.

-
- REMARKS BY CONTRACTOR (Delays, Interruption, Deviations, Activities, Unusual Occurrences, etc. relevant to work):
-

LG&E-KU COMMENTS AND/OR EXCEPTIONS:

- Walked Down Demo and Isolation of Coal Handling Computer and UPS Feed,
- Pulling Prints from DMS for Demo and Reference Points.
- PE questioned grounding in common pipe rack areas; Zachry is referencing prints and will reply.
- Unit 4 underflow tank sustained damage from the high winds, Report to follow.
- The correct numbers for today's total are not right. They can be updated at a later date.

NCR ISSUES/REWORK COMMENTS:

ZACHRY CONTRACTORS EMPLOYEE NUMBERS REPORT: Zachry-410, AMEC-1, Babcock-2, Badger-1, BESI-1, Berkel-10, Bloodhound-0, Clyde Bergemann-2, CDI-8, Hayward-Baker-3, Messier-9, Marietta Silos-14, Marmon Utility/Anderson Wood-4, Mindel & Scott-1, Plasticon- 9, Stebbins-38, Sunbelt-0, Tate-5 and Evans-7, Concrete Coring and Coring-0.

PROJECT ENGINEERING CONTRACTORS EMPLOYEE NUMBERS REPORT: JY Legner-1, Black & Veatch-1, Kelley Construction-2, and Richardson Contracting-0, Asher Engineering-1, Mathes Drilling Services-0, Meiners-0, Pin Point-0, Henderson Electric-0, Metropolis concrete-6.

Other:

Limestone Inventory: "A" LST – 24.0' "B" LST – 23.9'.

- The "A" Limestone train is out of service to repair mill bearings.
- The "B" Limestone train is out of service, available.
- The "C" Limestone train is in service.

Gypsum: Loaded no (0) barges last week.

Trimble County Station**Safety:**

- 133 days since last OSHA recordable incident (10/11/13).
- 111 days since last lost-time incident (11/4/13).
- 125 days since last contractor OSHA recordable incident (10/24/13)

Environmental:

Week Ending February 23 rd 2014	TC1	TC2	CTs
SO2 (Sulfur Dioxide)	0	0	
NOx (Nitrous Oxide)	0	0	
PM (Particulate Matter)	0	0	0
CO (Carbon Monoxide)		0	
CO_CORR (Carbon Monoxide-Corrected)			0
NOX CORR (Nitrous Oxide-Corrected)			0
CH2O (Formaldehyde)			0
Sulfur Content of Natural Gas			0
CO (Carbon Monoxide)		0	
Hg (Mercury)		0	
VOC (Volatile Organic Compounds)		0	
H2SO4 (Sulfuric Acid Mist)		0	
Fluorides		0	
HCl (Hydrochloric Acid)		0	
HAPS (Hazardous Air Pollutants)		0	
Pb (Lead)		0	

- SCR and hydrated lime systems in service.

Unit Status:

- **Unit 1:**
 - TC1 on-line and good for full load.
 - The turbine/generator T7 bearing vibration is currently running around 3 to 4 mils. Monitoring same.
 - Experienced one fire on the 1B coal mill and one fire on the 1D coal mill. Troubleshooting is on-going.
 - Monitoring oil leak on turbine generator #10 bearing.
 - Dresser Rep on-site to look at bearing temperature issues on the 1B oxidation air compressor.
 - Monitoring AH differential pressures.
- **SO₃ Removal System:**
 - TC1 – Hydrated lime injection in service.

- **Unit 2:**
 - TC2 off-line for planned burner outage. Current return to service is 5/26.
 - Outage is currently on schedule.
 - Ran various irrigation water tests on the WESP, and performed inspections.
 - Reaction tank is drained and inspection to start this week.
 - SCR mechanical cleaning is complete.
 - Bag house fabric filter replacement to start this week (BWF).
 - Other TC2 outage work to start this week (Week #3) includes:
 - Boiler inspection (Alstom)
 - SCR catalyst change-out
 - Ductwork inspection
 - Hydrated lime project
 - BFP recirc valve inspections and repairs
 - BCP thrust bearing inspection
 - Deaerator inspection
 - ID and FD fans
 - FM Global TC2 boiler and unfired pressure vessel inspections
 - Plant and Bechtel are still evaluating punch list and warranty work scope that is not disputed and non-outage. Still working off punch list items. Station developed list of open items and design issues for PE.

- **Common:**
 - The B Ash Pond pump has been pulled and shipped to the Central Service Shop and repairs are in process.

- **Combustion Turbines:**
 - All CTs are available.

Fuel/Limestone Inventory:

- TC1 and TC2 High Sulfur
 - 301,647.74 (28.7 days @ 70%)

- TC2
 - PRB – 54,904.0 (24 days @ 30%)

- Limestone
 - 35,576 Tons

Material Handling:

- 24 coal barges and 6 limestone barges in the last 7 days.

- Barges in the fleet:
 - 3 Barges TC1 & TC2 High Sulfur Coal (Riverview)
 - 0 Barges TC2 PRB Coal
 - 0 Barges Limestone

- Issues:
 - Barge unloader out of service to replace one of the bucket chain drive sprockets.

Other:

- Synmat trucking gypsum to Certaineed Plant in Carrollton on part-time basis.
- Shipped one fly ash barge to Holcim. One is scheduled to be loaded this week as weather allows.

Tyrone**Safety:**

- 6317 days since last lost time accident
- 251 days since last reportable incident

Unit Status:

- Tyrone 3 on Retired Status at 2400 hours on 2/1/13
- Days On Line (MTD 0 days, YTD 0 days)
- Haefling Unit 1 Reserve
- Haefling Unit 2 Reserve
- Haefling Unit 3 Retired 12/3/13

Fuel Inventory Status (Tons / Days)

- Total coal inventory has been transported to Brown, 9,587 tons were transported

Tyrone Retirement Activities

- Tagging and inventory of machinery with petroleum products completed. On 8/5/13 the petroleum product removal work was completed 9/12/13 approximately 12,500 gallons of oil was taken for recycling.
- Completed retirement budget planning, and IP for retirement activities
- Fuel oil inventory moved to Haefling Plant during the week of Feb. 18, 2013. Tyrone storage tanks are now empty, tank cleaning completed 5/14/13 by PECCO
- Defined scope of work for chimney capping project, RFP has been issued, bid evaluation in progress, contract awarded to R & P, work began 7/11/13, chimney capping was completed 8/2/13.
- Defined scope of work for reclaim hopper closure, RFP has been issued, bid evaluation in progress, contract awarded to R & P, work to begin 7/18/13, reclaim hopper closure was completed 8/8/13.
- Defined scope of work for wells closure, bid evaluation in progress, contract awarded, well closure completed 8/14/13
- Assisted with salvageable material removal from Tyrone to Green River and Cane Run.
- Plant metering moved outside plant, meter reading to be assumed by meter reading staff on 4/24/13 Permit from KDOW for coal pile reclamation has been received, permit has also been received from Woodford County.
- Defining scope of work for Coal Pile Reclamation, evaluating contractor versus company labor option, purchase order issued to Claunch Construction for scope of work. This work was completed 9/12/13.
- Defining scope of work for removing intake structure pumping equipment, RFP has been issued, bid evaluation completed, contract awarded to R & P, Service water pumps and motors have been removed, CW motors have been removed. Removed equipment has been stored on the main floor of the building.
- Sewage water treatment plant has been closed. Notifications to the state agencies were mailed by Mike Winkler on 5/8/13.

- Oil water separators were pumped and cleaned, work completed 6/21/13, one motor failed on OWS, replacement motor has been installed.
- Conveyor room dust collection system has been removed and transported to Brown
- Shop lathe and milling machine have been moved to Brown CT site
- Material needed at Green River plant has been removed by Mike Ron electric and is ready for transport to Tyrone, material was transported to Green River 8/15/13
- Defining scope of work for chemical removal. RFP for this work has been issued. Site visit was conducted for potential bidders on 9/12/13. Bids are due 9/27/13, contract has been awarded 10/18/13 this work is scheduled to begin on 10/28/13
- Chemical Removal work began 10/31/13. This project should take a couple of weeks and is the last known environmental task other than ash pond closure. Chemical inventory is complete. Disposal will begin after useable materials are transferred to other sites, work completed 12/23/13.
- Audit of plant environmental closure was conducted on 1/31/14. Final follow up closure tasks to follow.
- 2/10/14 - Work is continuing on plant closure security plan. Waiting for response from corporate security.

ID	Crew	Resource Names	Work Order	Location	Task Name	% Complete	Start	Finish	October	November
1				TC000AC-- AUX COOLING		0%				
2				TC000AH- ASH HANDLING		0%				
3	TCMSLENGMECH	Maldonado	6535461	TC0002AH-BACSCRAXXX	Initial basalt tile on TC2 SSC.	0%	Sun 2/2/14	Mon 2/3/14		
4	TCMSLENGMECH	Maldonado	6522371	TC0002AH-BACSCRAXXX	Submerged Scraper Conveyor inspection and Marl Analysis	50%	Mon 2/24/14	Mon 2/24/14		
5	TCMSL6	Jensen/ Mills	6541411	TC0002AH-BACSRAPCNV	Remove S.S.C	50%	Tue 2/18/14	Thu 2/20/14		
6				TC000CH- Coal Handling		0%	Wed 2/19/14	Wed 2/19/14		
7	TCMSLENG	Moore		TC000RS- Reactant Supply	TC Replace Coal Stackler/ Reclaimer Cables	0%	Mon 3/17/14	Fri 4/11/14		
8				TC000RS- Reactant Supply		0%				
9	TCMSLENGMECH	Ball		TC2 LST Pumps- Backup		0%				
10	TCMSLENGMECH	Dorwart	6532525	TC000RS-MILA--GEARBOX	Reactant Prep - A Ball Mill Gearbox Changeout	0%	Mon 3/17/14	Fri 3/28/14		
11				TC002AS- AUX STEAM		0%				
12				TC002BL- BOILER		0%				
13	TCMSLENGMECH	Dorwart	6532040	TC002BL-BCWPMP	TC2 BCP - Thrust Inspection	0%	Mon 2/24/14	Fri 2/28/14		
14	TCMSLENGMECH	Dorwart	6532526	TC002BL-FRNXXX	TC2 CO Monitor System	0%	Mon 2/17/14	Fri 4/11/14		
15	TCMSLENGMECH	Maldonado	6535458	TC002BL-FRNXXX	TC2 boiler inspections and punchlist repairs resulting from inspections.	0%	Mon 2/24/14	Mon 2/24/14		
16	TCMSLENGMECH	Maldonado	6535695	TC002BL-FRNXXX	External boiler leak Unit 2 10th landing southwest corner at spiral to vertical transition zone.	0%	Mon 2/3/14	Mon 2/3/14		
17	TCBW	Dearman/ Craft	6414714	TC002BL-FRNXXX	Following four (4) events in which a total of nine (9) boiler roof tubes failed, LG&E arranged for (Roof Tube Repla.)	0%	Mon 2/24/14	Mon 4/21/14		
18	TCMC	Bullock	6540329	TC002BL-FRNXXX	TC2 Boiler Deslag Spring 2014.	100%	Fri 2/14/14	Mon 6/9/14		
19	TCMC	Bullock	647897	TC002BL-FRNXXX	During the Spring 2013 TC2 Outage, repairs were made to the membrane along the line where the undern (Insp/ Repairs)	0%				
20	TCMSL2	Powell/ Henderson	6530117	TC002BL-RH-2A-CV130A	PM-ANNUAL-OUTAGE-"A" Reheat Spray Water Control Valve 2-AT CV-130A. Check calibration, stroke	0%	Mon 3/3/14	Fri 3/7/14		
21	TCMSL2	Powell/ Henderson	6530118	TC002BL-RH-2B-CV130B	PM-ANNUAL-OUTAGE-"B" Reheat Spray Water Control Valve 2-AT CV-130B. Check calibration, stroke	0%	Mon 3/3/14	Fri 3/7/14		
22	TCMSLENGMECH	Maldonado	653702	TC002BL-SH-XXX	Pretest safety valves and repair valves as needed during outage.	100%	Thu 1/30/14	Thu 1/30/14		
23	TCMSL2	Powell/ Henderson	6530114	TC002BL-SH-VLVXXX	PM-ANNUAL-OUTAGE- STAGE 1 "B" SH Spray Water Control Valve 2-AT CV-110B. Check calibration, stroke	0%	Thu 10/24/13	Fri 2/14/14		
24	TCMSL2	Powell/ Henderson	6530113	TC002BL-SH-VLVXXX	PM-ANNUAL-OUTAGE- STAGE 1 "A" SH Spray Water Control Valve 2-AT CV-110A. Check calibration, stroke	0%	Thu 10/24/13	Fri 2/14/14		
25	TCMSL2	Powell/ Henderson	6530115	TC002BL-SH-VLVXXX	PM-ANNUAL-OUTAGE- STAGE 2 "A" SH Spray Water Control Valve 2-AT CV-120A. Check calibration, stroke	0%	Mon 3/17/14	Fri 3/21/14		
26	TCMSL2	Powell/ Henderson	6530116	TC002BL-SH-VLVXXX	PM-ANNUAL-OUTAGE- STAGE 2 "B" SH Spray Water Control Valve 2-AT CV-120B. Check calibration, stroke	0%	Mon 3/17/14	Fri 3/21/14		
27	TCMSL6	Jensen/ Mills	6520711	TC002BL-SH-2A-CV902A	Replace the 2A Electromatic manual isolation valve gearbox.	0%	Fri 2/14/14	Sat 2/15/14		
28	TCMSL6	Jensen/ Mills	6535744	TC002BL-SH-PSV904	TC2 main steam safety PSV 904 is leaking through	0%	Mon 2/10/14	Tue 2/11/14		
29	TCMSLENGMECH	Maldonado	6365256	TC002BL-DORXXX	TC2 BWWP- Work Platform- (May cancel)	0%				
30	TCMSLENGMECH	Maldonado	6501870	TC002BL-FRNXXX	TC2 Ashpit Refractory--Inspect refractory and make any needed repairs.	0%	Mon 3/17/14	Thu 3/20/14		

Task
 Split
 Milestone
 Summary

Project Summary
 External Tasks
 External Milestone
 Inactive Task

Inactive Milestone
 Inactive Summary
 Manual Task
 Duration-only

Manual Summary Rollup
 Manual Summary
 Start-only
 Finish-only

Deadline
 Progress

ID	Crew	Resource Names	Work Order	Location	Task Name	% Complete	Start	Finish	October	November
31	TCMSLENGMECH	Maldonado	6521228	TC002BL-FRNXXX	Boiler inspection doors installation	0%	Mon 2/17/14	Fri 3/21/14	Oct	Nov
32	TCMSLENGMECH	Dorwart/ Hamit			HEP Inspections	0%	Mon 1/20/14	Thu 3/13/14		
33				TC002CA-COMPRESSED A		0%				
34	TCMSL2	Powell/ Henderson	6531289	TC002CA-IAE2A-AIRDRYER	2A Instr. Air Dryer- Rebuild actuators and check desiccant level.	0%				
35	TCMSL2	Powell/ Henderson	6531290	TC002CA-IAE2B-AIRDRYER	2B Instr. Air Dryer- Rebuild actuators and check desiccant level.	0%				
36				TC002CAE- CONTROL AND		0%				
37				TC002CBA- COMBUSTION		0%				
38	TCMSLENGMECH	Maldonado	6535456	TC002CBAAH7XXX	TC2 Air Heater inspections and repairs.	0%	Mon 2/24/14	Mon 2/24/14		
39	TCBW	Dearman/ Craft	6412361	TC002CBAWAHXXX	The present state of the Water Coil Air Heaters (WCAH) system on TC2 needs to be corrected. While L	0%				
40	TCBW	Dearman/ Craft	6430848	TC002CBASLA2A-MILSABFAN	Either the 2A or 2B Mill Seal Air Fan is turning backwards when the alternating fan is in service. L	0%				
41	TCMSL2	Powell/ Henderson	6479417	TC002CBAFD-2A-DMPFCD020A	Check the calibration of the 2A FD Fan blade actuator and its associated linkages.	0%				
42	TCMSL2	Powell/ Henderson	6479419	TC002CBAFD-2B-DMPFCD020B	Check the calibration of the 2B FD Fan blade actuator and its associated linkages.	0%				
43	TCMSL6	Jensen/ Mills	6535967	TC002CBADMPXXX	Replace all linkage arm nuts with lock nuts or apply lockite on all TC2 burner windbox dampers	0%	Mon 2/24/14	Mon 2/24/14		
44					Ductwork inspections	0%	Fri 2/21/14	Wed 2/26/14		
45				TC002CCW- CLOSED COOL		0%				
46				TC002CI- ACTIVATED CARB		0%				
47				TC002CND- CONDENSATE		0%				
48	TCMSL6	Jensen/ Mills	6536625	TC002CNDDEAXXX	TC2 Deaerator - Open/ Close Doors on heater and storage tank, both ends	50%	Fri 2/14/14	Sat 2/15/14		
49	TCMSLENGMECH	Dorwart	6532527	TC002CNDEAHTR	TC2 DA NDE Inspection and Needed Repairs	0%	Mon 2/24/14	Fri 2/28/14		
50	TCMSLENGMECH	Dorwart	6532528	TC002CW-CONXIC	TC2 Condenser EC Inspection	0%	Mon 2/17/14	Fri 2/21/14		
51				TC002CTH- HYPERBOLIC		0%				
52	TCMSLENGMECH	Dorwart	6540759	TC002CTHCW-2A-CIPMP	TC2 NDCT Pump Impeller and Screen Inspections	0%	Mon 3/24/14	Fri 4/4/14		
53	TCMSLENGCIVL	Phelps	6504096	TC002CTHSTRXXX	WO for TC2 hyperbolic cooling tower inspection	0%	Mon 3/24/14	Fri 4/4/14		
54				TC002CU-DCS- COMPUTER		0%				
55				TC002CW- CIRCULATING W		0%				
56	TCMSLENGMECH	Dorwart	6535765	TC002CW-CONXIC	TC2 Condenser Hotwell Inspection	0%				
57	TCMSLENGMECH	Dorwart	6539385	TC002CW-CONXIC	TC2 Circulating Water Line Inspection	0%				
58	TCMSL6	Jensen/ Mills	6540440	TC002CW-CONXIC	Inspect TC2 waterboxes for cracks. Some vibration heard in B2 HP cond inlet.	0%				
59				TC002EHC- ELECTRO-HYD		0%				
60	TCMSLENGMECH	Ball			TC2 EHC Temp Control Upgrade	0%				
61				TC002ESPDRY- ELECTROS		0%				
62	TCMSL2	Powell/ Henderson	6530141	TC002ESPDRY	PM-ANNUAL-OUTAGE- DESP OUTAGE MAINTENANCE.	0%	Mon 2/10/14	Fri 2/21/14		
63				TC002ESPWET- ELECTROS		0%				

Task Summary Rollup

Manual Summary

Manual Summary

Start-only

Finish-only

Inactive Milestone

Inactive Summary

Manual Task

Duration-only

Project Summary

External Tasks

External Milestone

Inactive Task

Task Split Milestone Summary

Deadline Progress

ID	Crew	Resource Names	Work Order	Location	Task Name	% Complete	Start	Finish	October	November
64	TCBW/ TCMSLCC	Deaman/ Craft/ Walcott	6410930	TC002ESPWETXXX	An inspection performed by LG&E, SESS and Bechtel of the WESP water irrigation balancing during the	75%	Fri 2/14/14	Wed 2/19/14	Oct	Nov
65	TCMSL2	Powell/ Henderson	6530140	TC002ESPWET	PM-ANNUAL-OUTAGE PM - WESP OUTAGE MAINTENANCE INSPECTIONS.	50%	Mon 2/10/14	Fri 2/21/14		
66						0%				
67	TCMSL2	Powell/ Henderson	6530148	TC002EXC-EXCITER	PM-ANNUAL- OUTAGE - Generator maintenance for outages.	25%	Mon 2/10/14	Fri 3/7/14		
68						0%				
69	TCBW	Deaman/ Craft	6470242	TC002FG-FLUE GAS	There are several holes in the expansion on the 2A I.D. Fan discharge at about the 12 o'clock posit	0%	Mon 2/24/14	Wed 2/26/14		
70	TCMSL2	Powell/ Henderson	6479416	TC002FG-ID-2A-IDFAN	Calibrate the 2B ID Fan blade actuator and associated linkages.	0%				
71	TCMSL2	Powell/ Henderson	6479413	TC002FG-ID-2B-IDFAN	Calibrate the 2B ID Fan blade actuator and associated linkages.	0%				
72	TCMSL2	Powell/ Henderson	6529472	TC002FG-ID-O2XXX	Pull and respect TC2 O2 probes.	0%	Mon 2/10/14	Wed 2/12/14		
73	TCMSL6	Jensen/ Mills	6539213	TC002FG-ID-2A-IDFAN	PM-OUTAGE-ANNUAL - & - 2A I.D. FAN VISUAL INSPECTION	0%				
74	TCMSL6	Jensen/ Mills	6539214	TC002FG-ID-2B-IDFAN	PM-OUTAGE-ANNUAL - & - 2B I.D. FAN VISUAL INSPECTION	0%				
75						0%				
76						0%				
77						0%				
78	TCMSL2	Powell/ Henderson	6487154	TC002FW-FEEDWATER	BFP Study	0%	Mon 2/24/14	Fri 2/28/14		
79	TCMSL2	Powell/ Henderson	6530235	TC002FV-MFP2C1MTR	Inspect the 2A TDBFP recirc valve 2-BFD-CV-054A valve appears to be leaking through.	0%				
80	TCMSL2	Powell/ Henderson	6529471	TC002FV-TFP2B-RECCV054B	Open and inspect both North and South MDBFP motors.	0%	Mon 2/10/14	Fri 2/14/14		
81	TCMSL6	Jensen/ Mills	6539228	TC002FW-FWHPPG	Pull and inspect the 2B TDBFP recirc valve. 2-BFD-CV-054B	0%	Mon 2/24/14	Fri 2/28/14		
82	TCMSL6	Jensen/ Mills	6534338	TC002FV-FWH6A-HP-HTR	PM-OUTAGE - & - PIN FEEDWATER PIPING HANGERS	50%	Fri 2/14/14	Fri 2/14/14		
83	TCMSL6	Jensen/ Mills	6534382	TC002FV-FWH6B-HP-HTR	Install HP 6A Feedwater HTR Diaphragm per 2014 procedure.	0%	Mon 3/3/14	Fri 3/7/14		
84	TCMSL6	Jensen/ Mills	6534395	TC002FV-FWH8A-HP-HTR	Install HP 6B Feedwater HTR Diaphragm per 2014 procedure.	0%	Mon 3/3/14	Fri 3/7/14		
85	TCMSL6	Jensen/ Mills	6534396	TC002FV-FWH8B-HP-HTR	Install HP 6A Feedwater HTR Diaphragm per 2014 procedure.	0%	Mon 3/3/14	Fri 3/7/14		
86						0%				
87	TCMSL2	Powell/ Henderson	6542399	TC002GA-GENERATOR AN	Clean and inspect brush rigging on TC2 generator	0%	Thu 2/13/14	Mon 2/17/14		
88	TCMSLENG	Moore	6469864	TC002GA-FLDXXX	Install Gross MW transducer for AGC indication	0%				
89						0%				
90						0%				
91						0%				
92						0%				
93	TCMSLENGMECH	Mohn	6354888	TC002HVC-HEATING VEN	Installation of new HL system.	0%	Mon 2/24/14	Mon 5/26/14		
94	TCMSLENGMECH	Sedam	6444001	TC002PFC-PRIMARY FUEL	TC2 PA Fan Ext Bearing Coolers	0%				
95	TCPIC	Sedam	6538209	TC002PFCBURXXX	Bechtel and Doosan burner inspection observation work order.	0%	Mon 2/10/14	Fri 5/23/14		
96	TCMSL6	Jensen/ Mills	6539211	TC002PFCPUA	Make repairs to TC2 Pulverizers per Alstom TA's report.	0%				
97	TCMSL6	Jensen/ Mills	6539201	TC002PFCPUA	TC2 Pulverizers during spring 2014 outage.	0%	Thu 2/13/14	Fri 2/21/14		
98	TCMSL6	Jensen/ Mills	6539202	TC002PFCPUA2A-FAN	PM-OUTAGE-SEMI-ANNUAL - & - 2A P.A. FAN INSPECTION	0%				
99	TCMSL6	Jensen/ Mills	6539202	TC002PFCPUA2B-FAN	PM-OUTAGE-ANNUAL - & - 2A P.A. FAN VISUALLY INSPECTION	0%				
100	TCMSL6	Jensen/ Mills	6539212	TC002PFCPUA2B-FAN	PM-OUTAGE-ANNUAL - & - 2B P.A. FAN VISUAL INSPECTION	0%				

Manual Summary Rollup

Manual Summary

Start-only

Finish-only

Inactive Milestone

Inactive Summary

Manual Task

Duration-only

Project Summary

External Tasks

External Milestone

Inactive Task

Task

Split

Milestone

Summary

Deadline

Progress

Project: TC2S14 High Level Outage
Date: Wed 2/19/14

ID	Crew	Resource Names	Work Order	Location	Task Name	% Complete	Start	Finish	October	November	Nov
101	TCMSL2	Powell/ Henderson	6530111	TC002PFCBURXXX	IE support for bumer replacement project.	0%	Sat 2/11/14	Fri 5/2/14	Oct		
102				TC002PJFCMPXXX	TC002PJF- PULSE JET FABR	0%					
103	TCENGSCHEM	Turner/ Waller	6535720	TC002PJFCMPXXX	Bag replacements (leak test & pre-coat of new bags)(Seals)	0%	Mon 2/24/14	Fri 3/14/14			
104	TCMSL6	Jensen/ Mills	6539215	TC002PJFCMPXXX	Remove 12 Sample bags from four different compartments and place the compartment doors back in place	100%	Fri 2/14/14	Mon 6/9/14			
105				TC002PLT- PLANT MISC.	Service Reqs- Alstom, Howden, MD&A, Diamond Power	0%					
106				TC002PRD- POWER ISTRIB		0%					
107				TC002SCR- SELECTIVE CAT		0%					
108				TC002SCRMODCATALYST	TC2 SCR - Layer 1 Off-site Clean and store - Capital	0%	Mon 4/14/14	Fri 4/25/14			
109	TCMSLENGMECH	Dorwart	6535768	TC002SCRMODCATALYST	TC2 - Layer 1 Catalyst Changeout - Capital	0%	Mon 2/24/14	Fri 4/11/14			
110	TCMSLENGMECH	Dorwart	6489828	TC002SCRMODCATALYST	TC2 SCR Catalyst Cleaning in Situ - Capital	0%	Mon 2/10/14	Fri 2/14/14			
111	TCMSLENGMECH	Dorwart	6494218	TC002SCRMODCATALYST	TC2 SCR Catalyst Seals - Capital	0%	Fri 2/28/14	Fri 2/28/14			
112	TCMSLENGMECH	Dorwart	6494221	TC002SCRMODCATALYST	Bechtel to modify existing Ammonia piping at the storage tank pump skid to eliminate damage to the tr	0%					
113	TCBW	Dearman/ Craft	6511593	TC002SCRAMTRNPPG	TC2 SCR Catalyst Samples	0%	Thu 2/20/14	Fri 2/21/14			
114	TCMSL6	Jensen/ Mills	6539015	TC002SCRMODCATALYST	TC2 Open SCR Doors - 14 total	50%	Fri 2/14/14	Mon 6/9/14			
115	TCMSL6	Jensen/ Mills	6536621	TC002SCRMODXXX		0%					
116				TC002SDP- SUMPS AND DR		0%					
117				TC002SDR- SDRS SCRUBB		0%					
118	TCMSL6	Jensen/ Mills	6497684	TC002SDRDEINNOZZLES	Please check Operation and change nozzles as needed on the following Mist Eliminator bottom zones.	0%					
119	TCMSL6	Jensen/ Mills	6536019	TC002SDRTRNKXXX	Open doors during 2014 TC2 spring outage	50%	Fri 2/14/14				
120	TCMSLENGCIVL	Phelps	6504192	TC002SDRBLDPG	extend TC2 gypsum line to the west ~500'-700' in gypsum storage pond	0%	Mon 2/24/14	Fri 3/7/14			
121	TCMSLENGCIVL	Phelps	6538933	TC002SDRTRNKXXX	Clean out TC2 reaction tank at beginning of outage	0%	Mon 2/24/14	Fri 2/28/14			
122	TCMC	Bullock	6540330	TC002SDRSRTRKXXX	TC2 Stack Inspection Spring 2014.	0%					
123				TC002STB- STRUCTURES &		0%					
124				TC002SW- SERVICE WATE		0%					
125				TC002TA- TURBINE & AUX		0%					
126	TCMSLENGMECH	Ball	6535788	TC002TA-CTL-MARKVI	TC2 HMI update- Turbine Controls	0%	Wed 4/30/14	Fri 5/2/14			
127	CMIRS1	Noonan/ Jones	6475510	TC002TA-TURXXX	TC2 Turbine/ Generator- #11 bearing. It appears that the right side horizontal joint is slightly	0%					
128	CMIRS1	Noonan/ Jones	6540323	TC002TA-TURXXX	TC2 last stage turbine bucket (L-0) Inspection.	0%					
129	TCBW	Dearman/ Craft	6473483	TC002TA-HP-VLXXX	2-TDR-V022 Isolation valve is leaking at the body gasket. Replace the valve.	0%					
130	TCMC	Bullock	6501962	TC002TA-LO-2A-CLR	2A (East) Turbine Oil Cooler should be pulled and sent off site to be cleaned. 3/4" Square Stock Gas	0%	Thu 2/13/14	Tue 2/18/14			
131	TCMSL6	Jensen/ Mills	6538179	TC002TA-LO-2A-CLR	Remove and clean 2A turbine lube oil cooler.	0%	Mon 2/17/14	Fri 2/28/14			
132				TC002TRF- TRANSFORMER		0%					
133				TC002WTR- WATER TREA		0%					

Project: TC2S14 High Level Outage
Date: Wed 2/19/14

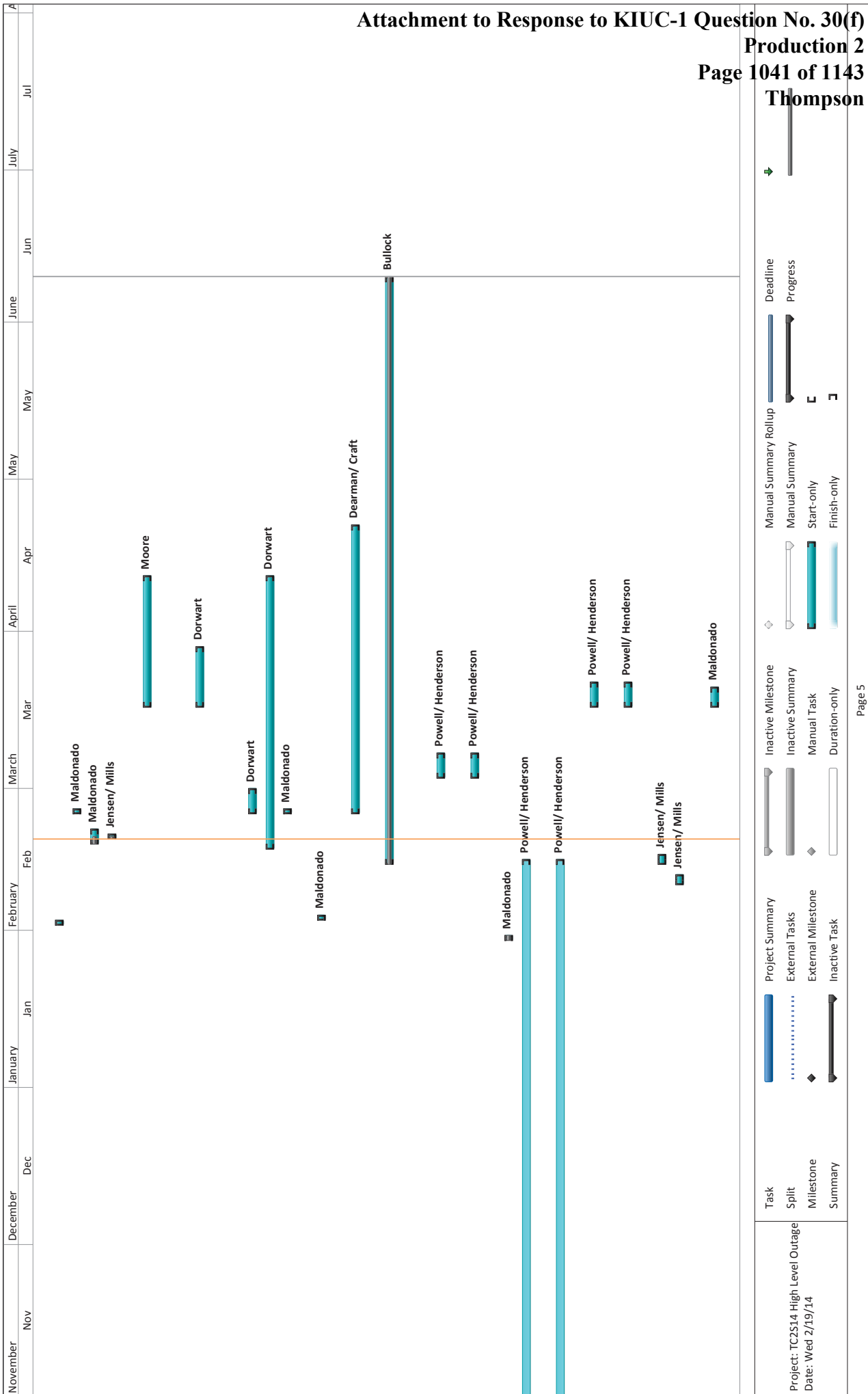
Task Split Milestone Summary

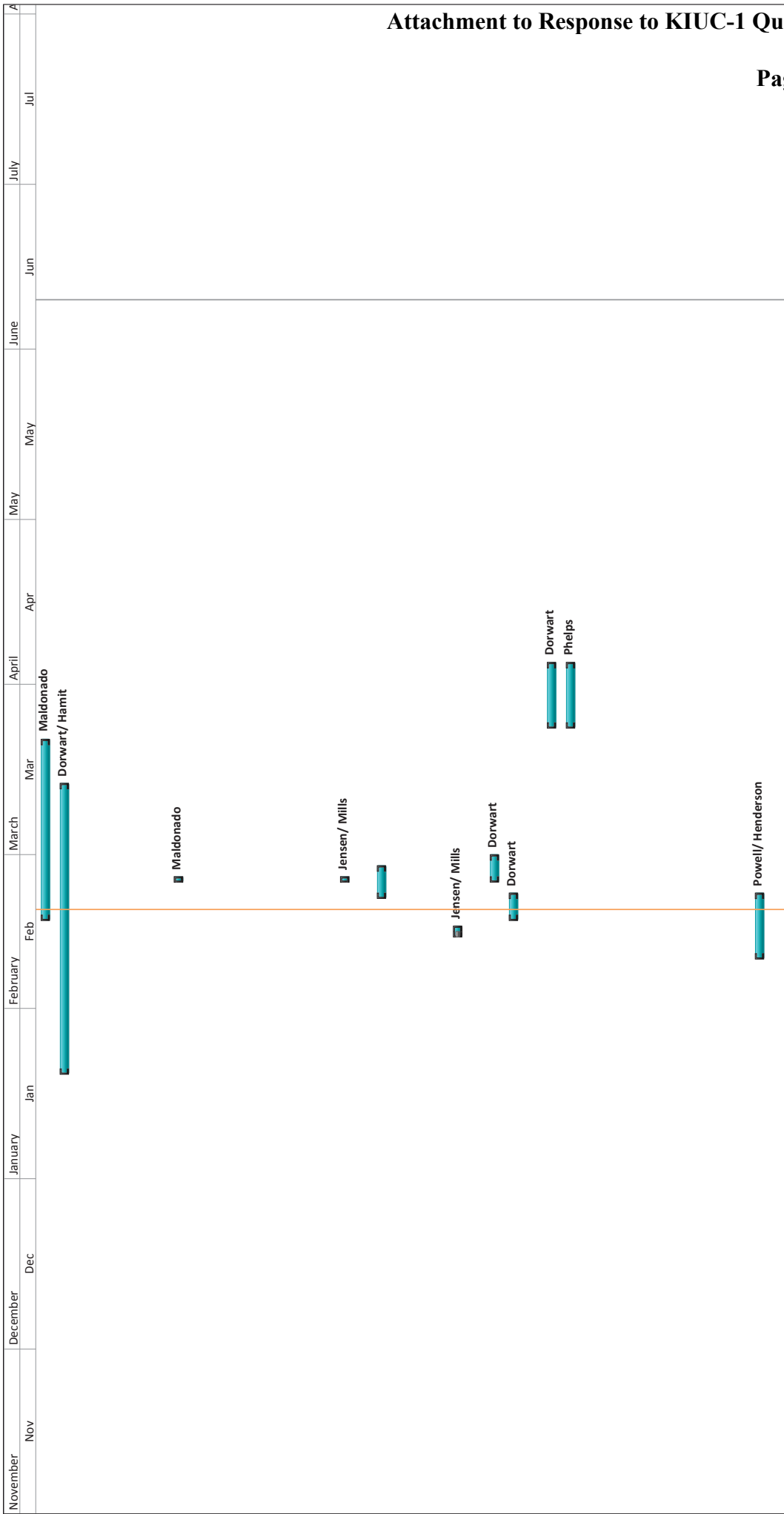
Project Summary External Tasks External Milestone Inactive Task

Inactive Milestone Inactive Summary Manual Task Duration-only

Manual Summary Rollup Manual Summary Start-only Finish-only

Deadline Progress



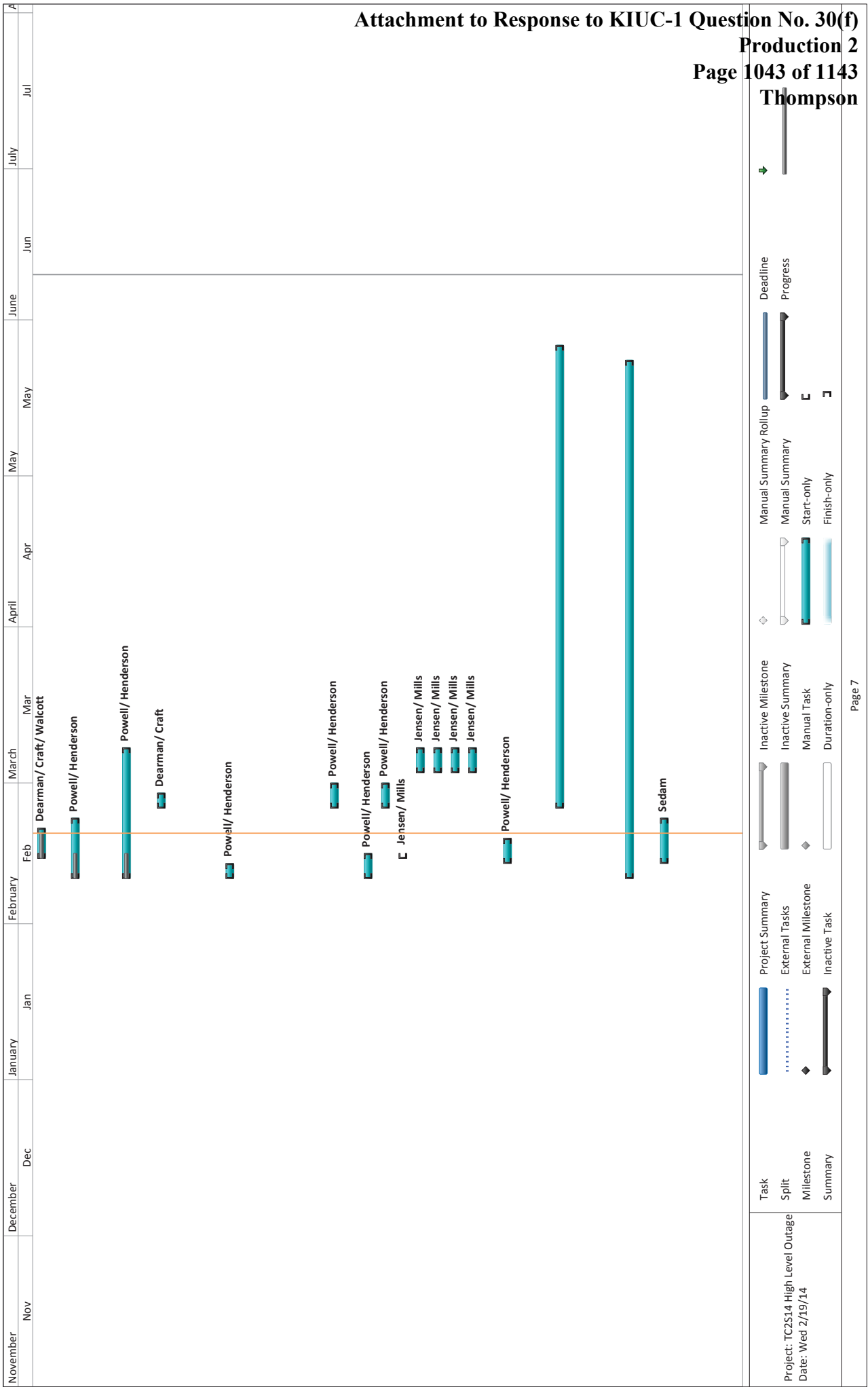


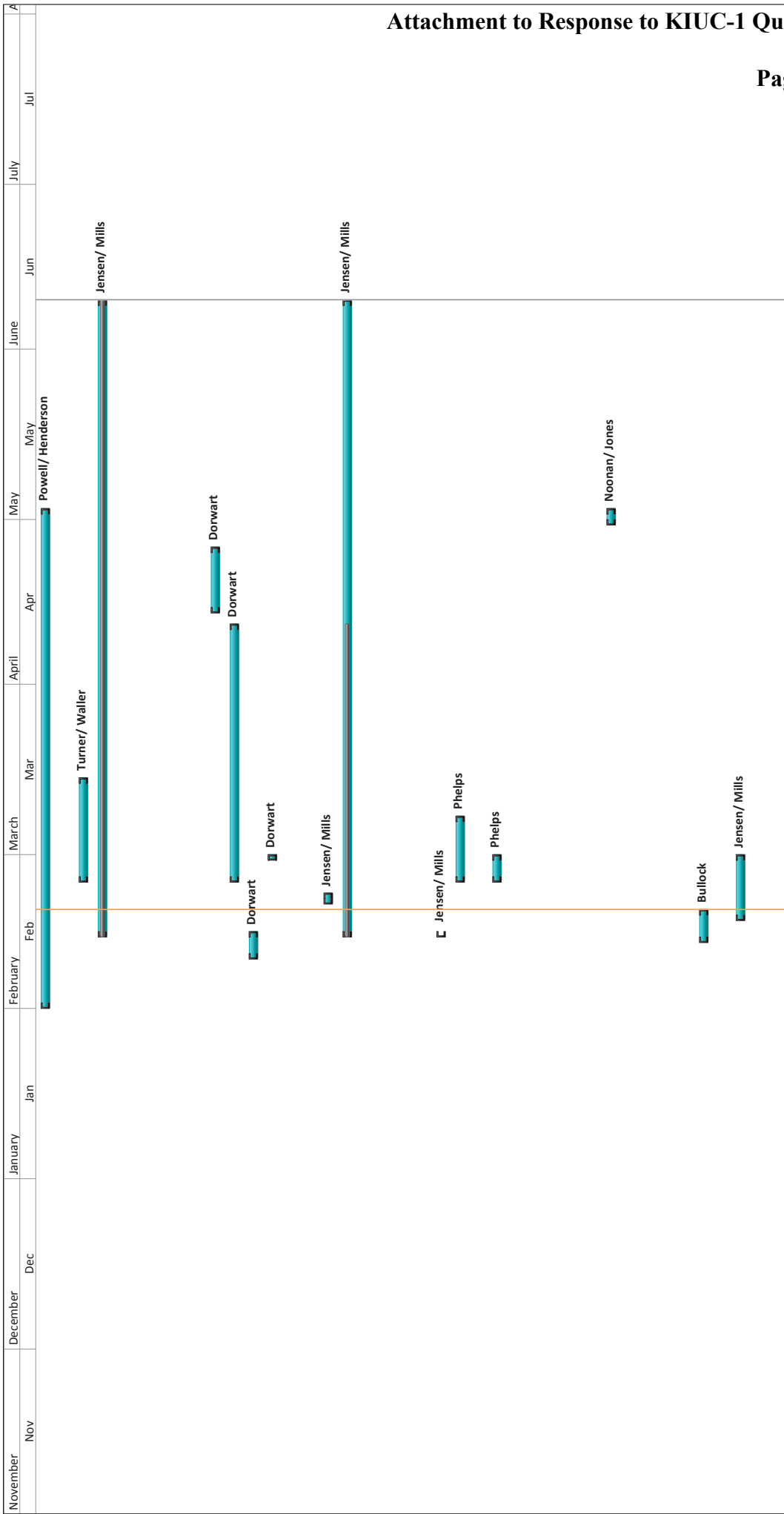
Task Summary Rollup: Manual Summary Rollup Manual Summary Start-only Finish-only

Task Legend:

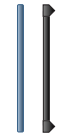
- Task: Solid blue bar
- Split: Dotted blue bar
- Milestone: Diamond symbol
- Summary: Arrow symbol
- Project Summary: Solid blue bar
- External Tasks: Dotted blue bar
- External Milestone: Diamond symbol
- Inactive Task: Solid grey bar
- Inactive Milestone: Diamond symbol
- Inactive Summary: Arrow symbol
- Manual Task: Solid teal bar
- Duration-only: Light blue bar

Deadline: Progress:





Deadline
Progress



Manual Summary Rollup
Manual Summary
Start-only
Finish-only



Inactive Milestone
Inactive Summary
Manual Task
Duration-only



Project Summary
External Tasks
External Milestone
Inactive Task



Task
Split
Milestone
Summary

Project: TC2S14 High Level Outage
Date: Wed 2/19/14

From: Joyce, Jeff(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=WEB/CN=JEFFJOYCE)
To: Byrd, Larry; Anderson, Dave (Trimble County); Henderson, Trent
CC:
BCC:
Subject: Fwd: 07292 - TC2 - Action Item Meeting # 2014-3, Doosan to Review Tubing to Purge Meters on ID Fan - No Expansion Facility Causing Damage to Meters
Sent: 03/02/2014 07:58:32 AM -0500 (EST)
Attachments: RE_ Trimble County 07292 - ID Fan Stall Warning Probe Analysis (AIL #62.4).msg; ID Fan Purge Units to be Reworked (28Feb14).pdf; Impulse Pipe to be Reworked (28Feb14).pdf;

Fyi

Sent from my Verizon Wireless 4G LTE smartphone

----- Original message -----

From: "Hammond, Steve"
Date: 03/01/2014 1:40 PM (GMT-05:00)
To: 'Mel Watkins' , "Rabe, Phil"
Cc: "Dukes, Christopher" , "Carlisle, Gary" , "Boone, James" , "James T. (Tom) Trimble" , "Joyce, Jeff" , "Craft, Jim" , "Mohn, Laura" , "Slaughter, Mitch" , "Payne, Nicholas" , "Powell, Richard" , "Melloan, Ricky" , "Smith, Timothy (Fuels)" , "Henderson, Trent" , ""Brann, Devin' (dmbrann@bechtel.com)"" , ""Dearman, James' (jdearman@bechtel.com)"" , "McCallum, Neil" , "Davidson, Gordon" , "Torkington, Ian R" , "Kerslake, Ian" , "Gratton, Ron" , 06350 TRIMBLE COUNTY MAILBOX <06350.trimblecountymailbox@doosan.com> , "Lee, John" , "Huntington, John" , "Whitehouse, Matthew" , "Groom, David"
Subject: 07292 - TC2 - Action Item Meeting # 2014-3, Doosan to Review Tubing to Purge Meters on ID Fan - No Expansion Facility Causing Damage to Meters

Mel / Phil

In response to Action Item Meeting # 2014-3, Doosan to review tubing to purge meters on ID fan - No expansion facility causing damage to meters.

- 1) As you are aware Doosan has an outage activity to add additional insulation around the stab ins that were fitted as part of the stall warning system during the Spring 2013 outage, the reason for this is to ensure the purge air that continually bleeds into the fan is sufficiently heated that acid corrosion does not occur – see AIL # 62.4. I have attached our evaluation of the purge air temperatures seen in August 2013 which led to this scope of work.
- 2) Subsequently Doosan was made aware that one of the purge air units had failed and that the cause of failure was thermal expansion. We have surveyed the installation and agree that the pipe exiting the plastic flow meter could be improved by the addition of a short hose to negate the effect of thermal expansion however we do not believe that the inlet to the purge air unit requires the addition of a hose.

Attached to this e-mail is a sheet titled "ID Fan Purge Units to be Reworked (28Feb14)" which shows both the inlet to and outlet from the purge air unit and the position a hose will be added, can I ask you to review and agree this action. Once agreed we will advise the specification of the hose to be used which we expect to be 5" long with compression fittings to suit the tube used at each end and a material of construction to suit the environmental conditions around the ID fan.

- 3) And finally, Doosan will rework the impulse pipe that runs along the upper quadrant of the ID fan casing to ensure that sufficient slope exists to drain any condensation back into the fan.

Attached to this e-mail is a sheet titled "Impulse Pipe to be Reworked (28Feb14)" which shows the impulse pipe on both fans and the action to be taken, can I ask you to review and agree this action.

If you have any questions let me know, otherwise I look forward to your confirmation that this course of action is agreed.

Regards

Steve

Steve Hammond

Doosan Babcock

Email: steve.hammond@doosan.com

Tel: +1 502 255 5262

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ID Fan Purge Units – Thermal Expansion – 28Feb14



The purge air inlet pipe to the flow control unit runs between a lower header and the metal body of the flow control unit and by inspection is sufficiently flexible



Replace a 5" section of the flow control unit outlet pipe with flexible hose to remove thermal expansion

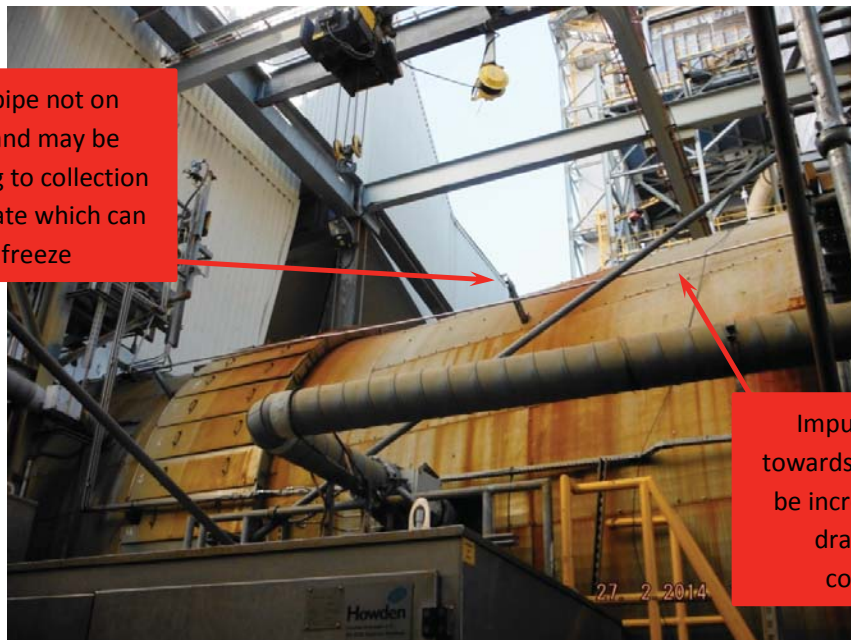
ID Fan Purge Units – Impulse Pipe Slope – 28Feb14

ID Fan A



Impulse pipe sloping towards tapping point and is acceptable

ID Fan B



Impulse pipe not on support and may be contributing to collection of condensate which can then freeze

Impulse pipe slope towards tapping point to be increased to ensure drainage of any condensation

SMR 0127 – Spring 2014 Outage

Produced as Native

Original File Name: Budget vs Estimates vs Actual.xlsx

Stored File Name: OpenText00416620.xlsx

Produced as Native

Original File Name: Budget vs Estimates vs Actual.xlsx

Stored File Name: OpenText00416622.xlsx

From: Hammond, Steve(steve.hammond@doosan.com)
To: Craft, Jim; Maldonado, Francisco
CC: Turner, Tyler; Joyce, Jeff; Byrd, Larry; McCallum, Neil; Davidson, Gordon; Torkington, Ian R; Kerslake, Ian; Gratton, Ron; 06350 TRIMBLE COUNTY MAILBOX; Lee, John; Huntington, John; Fleming, Ian; Cahill, Michael
BCC:
Subject: RE: 07292 - TC2 - Ashpit Insulation Support Plates (SMR0114)
Sent: 02/26/2014 01:37:53 PM -0500 (EST)
Attachments: 06350-B250-31000-1034 A.pdf;

Jim / Francisco

Following up on our meeting yesterday.

1. Doosan undertook a final review of the history of this and found that the vertical plates were not installed at the instruction of LGE-KU, e-mail dated 12Apr12, as there were concerns that the plates could fall into the SCC causing it to jam and the need for a short outage to free the SCC.
2. Doosan has reviewed the zed plate design and simplified it such that it retains the characteristics of the original but has added strength to negate the issues we have seen over the last few years. Attached to this e-mail is a copy of 06350/B250/DD/31000/2/1034 Revision A titled "Furnace Hopper Dipper Plate Zed Plate Modification" which depicts the zed plates and the method of attachment to the box beam using three gusset plates per zed plate.
3. The proposed methodology and scope split tentatively discussed would be;
 - LGE-KU to erect throat scaffold that includes a 'dance floor' to protect from work being carried out in the furnace.
 - Doosan to remove existing zed plates.
 - LGE-KU to repair dipper plates – Note these are fabricated from Chinese Q345 10mm plate, the American equivalent is A572 Gr50 3/8" Plate.
 - Doosan to break away the refractory and calcium silicate to expose the area required to weld the gusset plates to the box beam.
 - Doosan to weld gusset plates in place.
 - Doosan to fit and weld zed plate to gusset plates.
 - Doosan to re-instate refractory.
 - LGE-KU to remove scaffolding.
 -
4. As per my earlier e-mail we would be looking to have the repairs to the dipper plate completed by LGE-KU no later than 29th March 2014.

If you would review this and confirm agreement with the notes.

If you need anything further please let me know.

Regards

Steve

Steve Hammond
Doosan Babcock
Email: steve.hammond@doosan.com
Tel: +1 502 255 5262

From: Hammond, Steve
Sent: 22 February 2014 20:46
To: 'Craft, Jim'
Cc: Turner, Tyler; Maldonado, Francisco; Joyce, Jeff; Byrd, Larry; McCallum, Neil; Davidson, Gordon; Torkington, Ian R; Kerslake, Ian; Gratton, Ron; 06350 TRIMBLE COUNTY MAILBOX; Lee, John; Huntington, John; Fleming, Ian; Cahill, Michael

Subject: RE: 07292 - TC2 - Ashpit Insulation Support Plates (SMR0114)

Jim

Thanks for the response.

Doosan has discussed the comments made and agree that replacing the zed plates should be our responsibility, to that end we are making arrangements to procure material and have our outage sub-contractor carry out the work with in the current outage time scale.

I believe there are two points we need to close out;

1. The west side refractory was replaced by LGE-KU with a different system and installation of the new zed plates will require an amount of this to be broken away and replaced with Superwool as per the drawing. Doosan does not know whether the LGE-KU installed refractory will break away in a similar fashion to that on the north, east and south sides and would ask for details of the refractory and how it was applied so this can be looked at, and discussed further if necessary.
2. During our inspection of the support plates it was noted that there are a number of repairs required to the dipper plate itself which would be the responsibility of LGE-KU. To ensure timely completion of the insulation support plates we would ask that the repairs to the dipper plates are completed no later than 29th March 2014. I expect that LGE-KU will require scaffold access to complete this work and we will work with you regarding safe access to erect – and leave in place as we will most likely need the same scaffold structure to carry out our work.

If you need to discuss these points with me then let me know.

Regards

Steve

Steve Hammond
Doosan Babcock
Email: steve.hammond@doosan.com
Tel: +1 502 255 5262

From: Craft, Jim [mailto:Jim.Craft@lge-ku.com]
Sent: 21 February 2014 14:54
To: Hammond, Steve
Cc: Turner, Tyler; Maldonado, Francisco; Joyce, Jeff; Byrd, Larry
Subject: RE: 07292 - TC2 - Ashpit Insulation Support Plates

Steve,

LG&E greatly appreciates your quick response. As you well know (along with Ron Gratton and John Lee) that this reoccurring problem has been an issue from the very first time LG&E/Doosan had a chance to inspect this area after a period of run time. I believe that all parties knew after the first inspection that the Doosan supplied design just wasn't going to hold up in this environment. I have always stated to Doosan that the original design was poor but I never received a engineered solution up to now without having to ask. I think it would be fair to say that anyone could understand that if you placed a SS plate pointing vertically up into the boiler (and un-attached to the wall at the top of the plate) that slag falling into the SSC is going to rip it away from the walls. My earlier email to you was to get people involved in providing a solution to this this problem and just that. LG&E has no problem correcting the insulation/refractory issues in this area but we feel that Doosan still needs to install the new system. Let's work together on this and put this issue behind us. Let me know something soon.

Once again thanks,

Jim Craft

TC2 Warranty Manager

Trimble County Generating Station

1-502-627-6377 (Office)

1-502-552-5201 (Cell)

1-502-332-5092 (Pager)

jim.craft@lge-ku.com



From: Hammond, Steve [<mailto:steve.hammond@doosan.com>]

Sent: Thursday, February 20, 2014 4:02 PM

To: Craft, Jim

Cc: Joyce, Jeff; Maldonado, Francisco; Turner, Tyler; McCallum, Neil; Davidson, Gordon; Kerslake, Ian; Torkington, Ian R; Gratton, Ron; 06350 TRIMBLE COUNTY MAILBOX; Lee, John; Davis, Dez

Subject: RE: 07292 - TC2 - Ashpit Insulation Support Plates

Jim

Our assessment of the root cause is that the slag falling from the unit during operation and the load drops is falling against the insulation support plates and through attrition is causing them to disengage from the vertical plates making them susceptible to failures such as we have seen, plate to dipper plate welds failing and the plates appearing in the ash pit and plates tearing along the bottom fold which leaves the support of the insulation on plate but subjects the layer of refractory to water / steam which in the long run is not an ideal situation.

The attached drawing shows the suggested enhancements to the existing design that we believe will minimise the future risk of failure, the highlights are;

1. The lower vertical section of the zed plate has been reduced in length making the plate lighter and easier to support.
2. Using a 45 degree fold to minimise the face that could be in the path of falling slag.
3. The use of three gusset plates to support the zed plate, these gusset plates would be welded as shown on the drawing to maximise their load carrying ability and resistance to failure as a result of falling slag.
4. The mechanism to attach the zed plate to the vertical plate is changed to a welded pin, again to improve resistance to failure as a result of falling slag.

Our thoughts on an erection sequence are;

1. Grind away remaining welds and remove remains of zed plates.
2. Mark new bottom edge of vertical plate and cut (grind) away – thoughts are that the refractory / Calcium Silicate will provide a base to grind against.
3. Mark and drill holes in vertical plates - thoughts are that the refractory / Calcium Silicate will provide a base to grind against.
4. Break away refractory and Calcium Silicate such that access to the hole drilled in the vertical plate is achieved.
5. Position new gusset plates and weld in place – weld as per drawing.
6. Offer up new zed plates and pins and pack void with 'super wool' insulation.
7. Position zed plates onto gussets and weld in place with a ¼" fillet weld.
8. Weld pins to vertical plate.
9. Position washers over pins and weld in place.

If you have any questions regarding the drawing or erection sequence please let me know.

From your e-mail below we understand that this work will be carried out by LGE-KU, your confirmation would be appreciated.

Thanks and regards

Steve

Steve Hammond
Doosan Babcock
Email: steve.hammond@doosan.com
Tel: +1 502 255 5262

-----Original Message-----

From: Hammond, Steve
Sent: 11 February 2014 23:22
To: 'Craft, Jim'
Cc: Joyce, Jeff; Maldonado, Francisco; Turner, Tyler; McCallum, Neil; Davidson, Gordon; Kerslake, Ian; Torkington, Ian R; Gratton, Ron; 06350 TRIMBLE COUNTY MAILBOX; Lee, John; Davis, Dez
Subject: RE: 07292 - TC2 - Ashpit Insulation Support Plates

Jim

We are looking at this and following a discussion with Doosan's UK Engineering expect to have a design issued by the end of this week.

Regards

Steve

Steve Hammond
Doosan Babcock
Email: steve.hammond@doosan.com
Tel: +1 502 255 5262

-----Original Message-----

From: Craft, Jim [<mailto:Jim.Craft@lge-ku.com>]
Sent: 10 February 2014 13:13
To: Hammond, Steve
Cc: Joyce, Jeff; Maldonado, Francisco; Turner, Tyler
Subject: TC2 Ashpit Insulation support plates

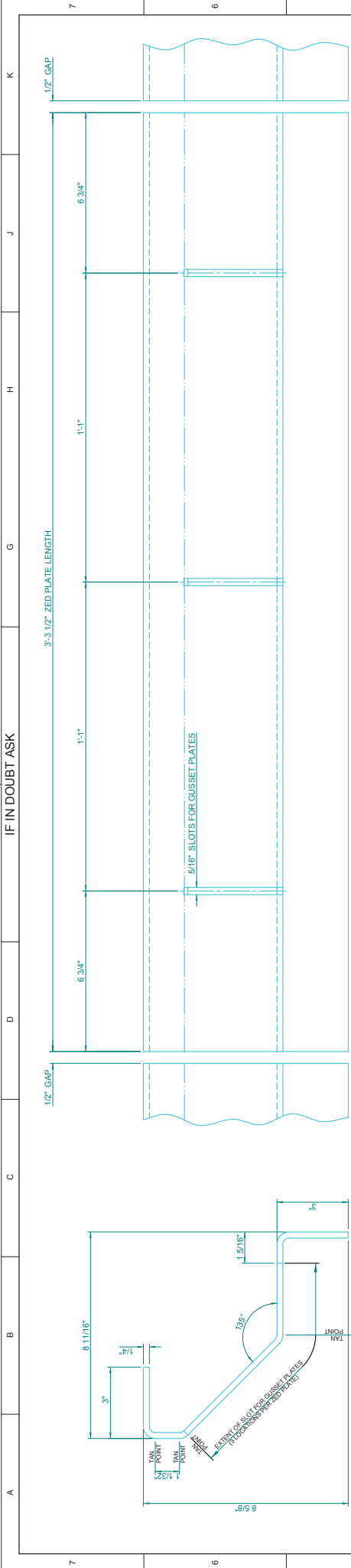
Steve,

Could you tell me the drawing number for the support plate in the attached drawing? There are several of these missing and many more that need replaced. I need dimensions and material type. Also, can Doosan supply LG&E with an alternative design that would not allow the slag to rip these away from the walls? I have expressed concern about the poor design of these from the first time we inspected them.

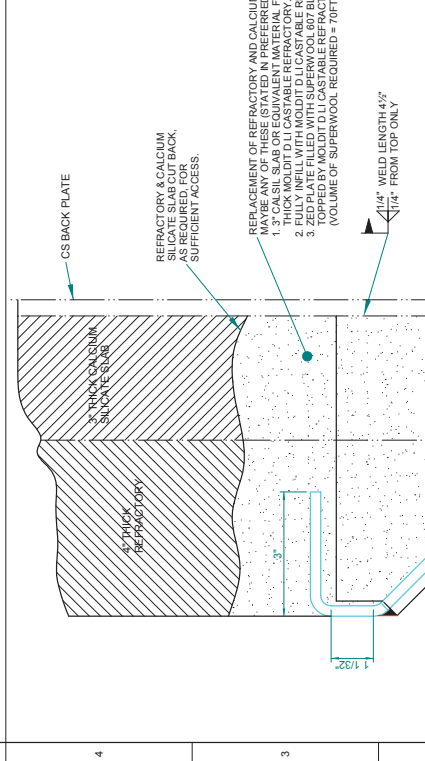
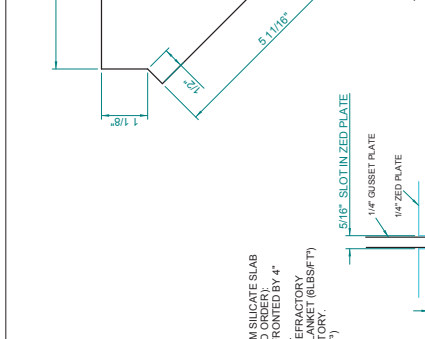
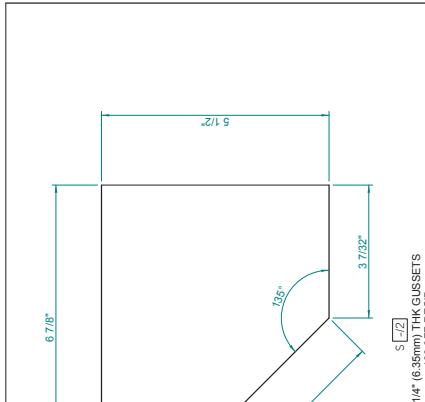
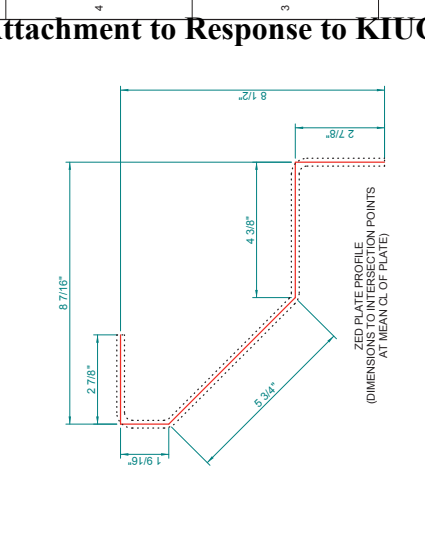
Thanks,

Jim Craft
TC2 Warranty Manager
Trimble County Generating Station
1-502-627-6377 (Office)
1-502-552-5201 (Cell)
1-502-332-5092 (Pager)
jim.craft@lge-ku.com

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S [1] [1]
NEW ZED (FOLDED) PLATE
60 OFF REOD X 3'-3 1/2" LONG
(1/4" INTERNAL BEND RADIUS)
MATL: ASTM A240 Gr. 304



BUYERS DOCUMENT No.:

L G & E ENERGY SERVICE COMPANY
TRIMBLE COUNTY GENERATING STATION - UNIT 2
1 X 750MW SUPERCRITICAL COAL FIRED STEAM GENERATOR
PURCHASE ORDER No. 25191-230-PON-MBPX-00001

DOOSAN
FURNACE HOPPER DIPPER PLATE
ZED PLATE MODIFICATION

PROJECT: 06350: TRIMBLE COUNTY UNIT 2
DRAWING NO. 06350/B250/DD/310/20/233

NOTES:
1. ALL WELDING TO AWS D1.1
2. ALL QUANTITIES STATED INCLUDES SPARES

REV	BY	DATE	DESCRIPTION
A	SJF	28.2.14	ISSUED FOR CONSTRUCTION

ORIGINAL ISSUE	DATE	DATE
DRAWN	SJF	09 DEC 13
VERIFIED	SDH	25/2/14
APPROVED	SJF	25/2/14

SCALE: DO NOT SCALE

REV	BY	DATE	DESCRIPTION
A	SJF	28.2.14	ISSUED FOR CONSTRUCTION

From: Anderson, Dave (Trimble County)(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=ANDERSOND)
To: Turner, Haley; Feider, Ryan; Henderson, Trent; Richardson, Stephen; Waller, Logan; Maldonado, Francisco; Mills, Ricky; Dorwart, Jordan; Phelps, Grant; Bullock, Sam; Hudson, Glen; Sedam, Dale; Payne, Nicholas
CC: Byrd, Larry; Cuzick, Fred; Ransdell, Charles
BCC:
Subject: Budget vs Estimates vs Actual.xlsx
Sent: 04/23/2014 07:36:20 AM -0400 (EDT)
Attachments: Budget vs Estimates vs Actual.xlsx;

All,

Please review current TC2 Spring Burner outage Budget & estimates and let me know of any corrections or additions by AM Friday, April 25th, 2014.

Thanks,

David W. Anderson

Trimble County Outage Coordinator
Tel. 502-627-6313
Fax 502-217-2199
email: dave.anderson@lge-ku.com

Produced as Native

Original File Name: Budget vs Estimates vs Actual.xlsx

Stored File Name: OpenText00417404.xlsx

From: GMEINDER Jessie(jessie.gmeinder@power.alstom.com)
To: Maldonado, Francisco
CC: Mohn, Laura; Byrd, Larry; PALUTA Mark; WILLIAMS Mark J; Joyce, Jeff; TRAVIS Kevin D.
BCC:
Subject: TC2 2014 Spring Outage Executive Summary.
Sent: 05/06/2014 09:55:27 AM -0400 (EDT)
Attachments: TC2 Spring 2014 Outage Executive Summary 05-05-14.pdf;

Cisco,

Attached is the executive summary from the spring outage on unit 2. Please let me know if you have any questions. As I mentioned prior, I am at Brown doing some testing this week. Then my next priority is getting the TC2 report complete pending any TC1 budgetary needs for the 2015 outage. I'll loop back with you next week on TC1.

Thank you,
Jessie Gmeinder
Field Service Engineer
ALSTOM Power Thermal Services
Boiler Area Center (BAC)

ALSTOM Power Inc
Midwest Service Center
Erlanger, KY 41018

Mobile: (513)800-3022
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The LG&E Trimble County 2 Spring 2014 outage was a fourteen (14) week outage. Alstom was on site for seven weeks. The major work being performed was on the firing system including changing out all 30 burners and the addition of two more over fire air ports to the front and rear walls as well as windbox and secondary air duct modifications. This work was overseen by Doosan. **Thompson**

The furnace cavity waterwalls were found to have measureable wastage from corrosion at elevations lower than the Amstar coated sections. A wastage rate of .040"-.050" annual loss was calculated given the UT survey results and using 8000 hours per year and 19000 operational hours for life of unit so far. Large areas of sidewalls especially the Right Sidewall were found to have lost up to 30% MWT. This is primarily in the zone lower than the existing Amstar coating which originally stopped at the centerline of the top burners on the sidewalls. Thus an additional 20' sidewall height partial width was Amstar coated extending downward from this lower boundary of the original coverage.

There was also work done on the ash hopper expansion joints, roof tubes, submerged scraper conveyor, seal skirt, and air heater which was not overseen by Alstom.

A backpass wash was not done prior to inspection which did not allow for a thorough inspection. Instead it was done mid-way through the outage to facilitate repairs. Most of the backpass was not re-inspected after the waterwash. There were on-going repairs at the bottom of the bottom SH bank and the bottom of the top RH bank so both those areas were given a second look in the IK lanes at the rear. This was IK-85/86 for the SH and IK 65/66 lane for the RH. Details on those repairs can be found in the subsequent sections of this summary.

Recommendations:

- 1) Plan for a waterwash at the beginning of the outage for a more thorough backpass inspection.

The following is a synopsis of what was found during the outage and recommendations for the future. Detailed punchlists can be found in the main body of the report. A layout of the unit can be found at the end of this summary for reference.

Superheat (SH) Pendant Platens – 18 Assemblies

The superheat pendant platens are situated at the top of the furnace cavity and can only be inspected from picks up to the steam cooled spacer (SCS), via spider basket or full furnace scaffolding. During this outage, all eighteen assemblies were inspected via both 27' pick and spider basket for a complete inspection of all tube tie elevations. This required the installation of an additional 89 penetrations in the roof to gain access. The steam cooled spacer (SCS) was found to be in good condition.

SH Pendant Platens have a wrap-around tube to help with alignment, which plant personnel have come to identify as paperclip circuit due to its shape. This circuit does not provide adequate alignment and is a place for mechanical abrasion to occur. Widespread minor to moderate abrasion was identified during this outage with worst cases notably having about .150" (moderate loss). This equates to 32% wall loss on inlet legs and 28% wall loss on outlet legs. Due to Unit 2 being a supercritical unit, a more conservative criterion was applied when evaluating severity of abrasion. Wall loss due to mechanical abrasion will continue to be a problem if this design is not improved upon due to the extent of circuit movement.

Furthermore due to the lack of adequate alignment devices, there is considerable misalignment of circuitry throughout the pendants. Besides the extensive abrasions issues identified, this misalignment increases risk for erosion from fly ash and sootblowers, as well exposes circuits to be more prone to wear ash corrosion. Misalignment can also result in interior tubes being exposed to higher than design gas temperatures. Furthermore slag bridging in larger voids between tubes (those misaligned) can become more an issue. Circuits that are misaligned create a space for slag to build up and lead to slags falls which can damage the waterwalls and other circuits lower in the furnace.

There was minor and moderate abrasion found at all three wrap-around tubes (paperclip tie tube) elevations. Approximately 1050 wear pads as well and several padwelds on the wrap-around tubes were installed to provide sacrificial material. Due to time and material constraints not all abrasion issues were addressed. Instead a criteria taking into account severity and difficulty of access was determined. There was general misalignment throughout all the assemblies. A long term solution to restrain and realign the circuitry should be explored for installation in 2016.

Recommendations:

- 1) Look into adding alignment devices throughout the assembly to help maintain alignment and increase tube reliability. As doing this can add stresses to the tubes, this needs to be investigated by qualified personnel.
- 2) Plan for scaffold access next outage to address abrasion issues and install alignment devices

Final Superheat – 34 Assemblies

The final superheat was inspected via scaffold through the middle of the pendants. This gave partial access to both the inlet and the outlet circuits. Similar to the SH Pendant Platens these have the wrap-around tie tubes (paperclip) to help with alignment. This does not provide adequate alignment and is a place for mechanical abrasion to occur. Wall loss due to mechanical abrasion also can occur more readily if this design is not improved upon due to extent of circuit movement. Minor abrasion and sootblower erosion were noted throughout the assemblies.

Recommendations:

- 1) Plan to erect a full scaffold the next outage for a more thorough inspection.
- 2) Plan to have wear pads on hand to address any abrasion issues found.
- 3) Consideration should be given for installing alignment devices based on the solution proposed on the SH pendant platens.
- 4) Consider adding a sootblower indexing kit to reduce the effect of sootblower erosion

Primary Superheat - 101 Assemblies in Top Bank and 202 Assemblies in Lower Two Banks

The primary superheat was fully inspected this outage. No water wash of the assemblies occurred prior to the inspection, so a detailed inspection down in the bank was not possible. All of the sootblower lanes were found to be shielded and overall the shields were in good condition.

Top of top bank

Along the front and rear sets of Economizer Sling (hanger) tubes, there were a total of 34 broken alignment straps. These were weld repaired.

Bottom of Bottom Bank

At the front of the rear hanger tubes in the IK-85/86 soot blower lane there is minor to moderate erosion channeling into the lowest tube of the bottom bank. There was severe erosion on the support brackets noted at 64 of 101 sling (hanger) tubes. These were shielded and the brackets were weld repaired.

Recommendations:

- 1) Continue to monitor alignment straps.
- 2) Continue to monitor tube shields for wear and proper alignment.
- 3) Continue to inspect baffle plates to make sure they are in proper position and not rubbing tubes.
- 4) Inspect around vertical alignment bands to see if the gas channeling has increased and caused damage to the tubing. If so, install a boot shield (or inverted tube shield) to help protect this area.

Economizer – Superheat Side – 62 Assemblies

The economizer on the superheat side is made up of two bare tube banks of assemblies with the headers being outside the sidewalls in enclosures. There was not a water wash or cleaning of the assemblies prior to the inspection, so a detailed inspection down in the bank was not possible. All of the sootblower lanes were found to be shielded and overall the shields were in good condition. All of the support structure appeared to be in good condition

Recommendations:

- 1) Continue to monitor tube shields for wear and proper alignment.
- 2) Provide access to bottom side of lower bank for inspection.

1st Stage Reheat – 202 Assemblies for all Banks

The first stage reheat was fully inspected this outage. There was not a water wash or cleaning of the assemblies prior to inspection, so a detailed inspection down in the bank was not possible. All of the sootblower lanes were found to be shielded and overall the shields were in good condition. The inlet header is located in the backpass and the nipples were inspected for erosion. No significant erosion was found.

Top of Top Bank

Along the front and rear sets of Economizer Sling (hanger) tubes, 141 broken alignment straps were weld repaired.

Between Top and Intermediate Bank

Along the rear set of Economizer Sling (hanger) tubes in the IK 65/66 lane, abrasion was found between the lower tube of the upper bank and the support. There are 101 Economizer Sling (Hanger) tubes. Two sling tubes have two supports. Thus a total of 103 shields were installed to protect the tubes from abrasion. Seven dutchmen (3' length) were installed at the bottom of the top assembly due to that circuit being bent up and contacting the tube above it. It is believed this occurred during original construction and was only able to be identified after the backpass wash occurred.

Recommendations:

- 1) Continue inspection of baffle plates and alignment bands for integrity.
- 2) Continue to monitor shields in sootblower lanes.
- 3) Continue to monitor erosion on RH inlet header nipples.

Economizer – Reheat Side – 62 Assemblies

The economizer on the reheat side is made up of a single bank of bare tube assemblies with the headers being outside the sidewalls in enclosures. There was not a water wash or cleaning of the assemblies prior to inspection, so a detailed inspection down in the bank was not possible. All of the sootblower lanes were found to be shielded and overall the shields were in good condition. All of the support structure appeared to be in good condition.

Recommendations:

- 1) Continue to monitor tube shields for wear and proper alignment.
- 2) Provide access to bottom side of lower bank for inspection.

Final Reheat Pendants – 34 Assemblies

The final reheat pendants are situated between the hanger tubes and screen tubes. The pendants appeared to be in good condition with no significant signs of corrosion. There was minor sootblower erosion noted on all assemblies. There is a T-bar that laterally connects four adjacent assemblies and is located on the front side of both the front and rear anti-vibration straps. These have become deformed creating misalignment between assemblies.

As noted in 2012, the largest area of concern is that the assemblies are starting to “cup.” There is an anti-vibration strap that is about 7’ from the bottom of the assembly. The strap has maintained tube-to-tube spacing, but the front to rear intra-assembly alignment has in some cases been found to be as large as 18”. With this alignment issue, it gives tubes in the middle of the assembly more exposure and greater risk to fly ash and sootblower erosion, as they are no longer as protected by the neighboring tubes. The cupping of the assemblies has also led to uneven (left to right) spacing between the assemblies. Fourteen (14) assemblies were noted as being less one tube diameter of one another as compared to the normal assembly spacing. This can lead to channeled convection pass gas flow and erosion as well as channeled erosion from sootblowers. Assembly to assembly contact abrasion could also occur.

Recommendations:

- 1) Look into adding alignment devices (both intra- and inter- assembly) throughout the assembly to help maintain alignment and increase tube reliability. As doing this can add stresses to the tubes, this needs to be investigated by qualified personnel.
- 2) Continue to monitor for sootblower erosion on front loop and interior of assemblies.
- 3) Consider adding a sootblower indexing kit to reduce the effect of sootblower erosion

Upper Dead Air Space and Penthouse

The upper dead air space (UDAS) and penthouse were inspected for integrity of structures, casing and insulation. There were no significant problems noted in either area.

The interface of the rear wall and upper arch was cracked and overheated allowing for a gap into the UDAS which could lead to flyash infiltration. A refractory repair to seal gap to rear wall was completed from the UDAS. This repair was not overseen by Alstom.

Recommendations:

- 1) Continue inspections to monitor integrity of structures, casing and insulation

Roof Tubes

Both B and C weld lines were inspected for cracks. These weld lines are directly to the front and rear of the SH Platens. Four membrane cracks were found and repaired this outage. There were also repairs on D weld line, where the hanger tubes penetrate the roof. 204 roof tubes were replaced approximately 16" long. The material consisted of T23 swaged pieces that served as a transition from T23 roof tubes to T12 stubs stemming from the cage inlet header. Several screen tubes were also cut out to gain access to the roof tube welds and were replaced once the roof tube work was completed. These repairs were not overseen by Alstom.

Recommendations:

- 1) Continue to inspect monitor for cracks in future outages

Hanger Tubes, Screen Tubes and Refractory Pier

The screen tubes and hanger tubes were inspected from the arch during this outage. The hanger tubes were found to have no significant problems. The only issue is there is not a large opening for access to the final superheat pendants. This restricts access for personnel as well as scaffolding and equipment.

The screen tubes were found to be in good condition. The refractory pier has degraded in several places across the boiler and large pieces have fallen into the 1st Stage RH.

Recommendations:

- 1) Plan for repairs to the refractory pier in the next outage
- 2) Look into installing a bent tube in the hanger tubes to gain better access to the final superheat.
- 3) Check screen tubes and refractory pier/tube shield interface for areas exposed to possible erosion.
- 4) Continue to monitor shields in sootblower lanes.

Waterwalls

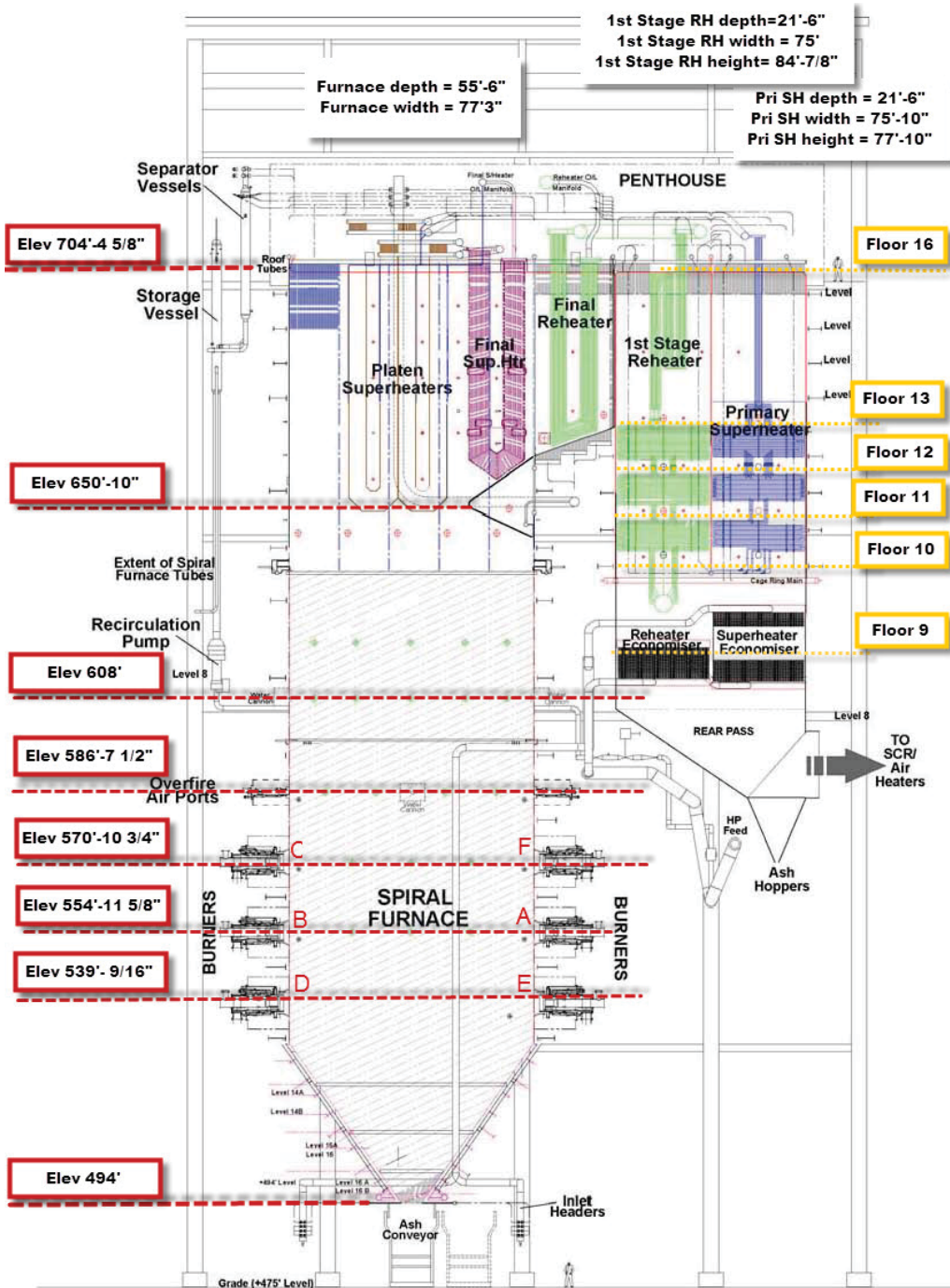
All four walls were inspected during this outage. There was limited access due to the boiler scaffold construction from the cutout slope up to the overfire air ports (OFA) at approximate elevation 586'. At elevation 590' a perimeter scaffold was erected allowing for good access as well as a landing deck for picks. Picks were used to inspect all four walls above that elevation. The cutout slope was not accessible and thus not inspected.

Five elevations of UT readings on both side walls and four elevations on the front and rear wall were taken. There is existing Amstar coating on all four walls and thickness was measured at two locations on the sidewall and three locations on the front and rear walls. The Amstar product coating had been previously applied between elevations 570'-10" - 605' on the sidewalls and 570'-10"- 598' on front and rear walls. The coating was shop applied to original panels and thus the upper boundary elevations are approximate based on construction. Due to significant identified wastage, additional Amstar coating was applied this outage to the sidewalls from elevation 570'-10" to 550'-10". The coating covered 14' on either side of centerline

for a total area of 28' wide by 20' tall. This was to address wastage issues identified in the UT survey in previously unprotected zones. Due to time constraints not all areas of concern for wastage were addressed this outage. These should be addressed in the next outage.

Recommendations:

- 1) Plan for possible panel replacements in 2016 based on UT survey findings.
- 2) Plan to sandblast all four walls to clearly define upper Amstar boundary.
- 3) Plan for additional application of AMSTAR coating in 2016 to address wastage concerns based on UT findings and Doosan model predictions due to firing system modification.
- 4) Perform another UT survey to continue to monitor waterwall wastage.
- 5) Inspect around the water cannons to make sure they are not damaging the walls.



TC2 : Boiler Layout
Page 6 of 6

From: Anderson, Dave (Trimble County)/(O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=ANDERSOND)
To: Cuzick, Fred
CC: Byrd, Larry
BCC:
Subject: Budget vs Estimates vs Actual.xlsx
Sent: 05/19/2014 11:01:03 AM -0400 (EDT)
Attachments: Budget vs Estimates vs Actual.xlsx;

Fred,

I entered the invoice amount of the Deslag Sam just received- \$34,000.

David W. Anderson

Trimble County Outage Coordinator
Tel. 502-627-6313
Fax 502-217-2199
email: dave.anderson@lge-ku.com

Produced as Native

Original File Name: Budget vs Estimates vs Actual.xlsx

Stored File Name: OpenText00419167.xlsx

From: Anderson, Dave (Trimble County)(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=ANDERSON)
To: Cuzick, Fred
CC: Byrd, Larry; Joyce, Jeff
BCC:
Subject: tc outage_bud_act_var (3).xls
Sent: 05/27/2014 01:29:40 PM -0400 (EDT)
Attachments: tc outage_bud_act_var (3).xls;

Fred,

I ran this Crystal Report today on expenses that have been incurred on the TC2S14 outage ID. The total was approx. \$3,019,000 and I wanted to see how this compares with your report. I know budget was \$3.7 million and we estimated to spend that amount. I'm sure there are still expenses that have not been invoiced at this point?

David W. Anderson

Trimble County Outage Coordinator
Tel. 502-627-6313
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email: dave.anderson@lge-ku.com

Produced as Native

Original File Name: tc outage_bud_act_var (3).xls

Stored File Name: OpenText00419845.xls

From: Maldonado, Francisco(/O=LGE/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=MALDONADO, NOVOA00D)
To: Sanders, Matt; Hill, Ben
CC: Mohn, Laura; Byrd, Larry; Anderson, Dave (Trimble County)
BCC:
Subject: TC2 Outage Repor
Sent: 06/25/2014 11:19:05 AM -0400 (EDT)
Attachments: TC2 Spring 2014 Outage Executive Summary 05-05-14.pdf; TC2 2014 Spring Outage Report.docx;

Matt/Ben,

Attached is the TC2 outage report along with the Alstom inspection executive summary. Please let me know if you have any questions.

Thanks,

Francisco Maldonado

Mechanical Engineer

Trimble County Station, LG&E

487 Corn Creek Road

Bedford, KY 40006

Phone: (502) 627-6218

Mobile: (502) 662-2880

TC2 2014 Spring Outage Report: Boiler Work

The TC2 Spring 2014 outage was a fourteen week outage. The outage mainly revolved around the replacement of thirty burners. The burner replacement consisted of a full throat replacement which included water wall work. Along with burner work some of the other major projects included but were not limited to the installation of 14 observation doors, an additional 1300 square feet of Amstar 888 water wall coating, inspections and punchlist repairs and the replacement of 204 transition tubes at the "D" weld line on the roof.

The pressure part replacement and punchlist work was mainly performed by Early Construction (formerly known as Southeast Boiler and Rigging) and the inspections were performed by Alstom (Jessie Gmeinder). Francisco Maldonado was the main project proponent for the boiler work during the outage and Sam Bullock had a key role with material acquisitions.

Pressure Part Replacement:

- Fourteen inspection doors were installed to allow for inspection of furnace both for burners and slag. There are three doors installed on each of the side walls starting at the middle burner elevation and working up to the over fire air elevation. There are also four doors installed on the front and rear walls each. The doors on the front wall are located at approximately elevation 620' (8th landing) and the doors on the rear wall are located at approximately elevation 629' (9th landing). The doors include four bent tubes and a seal box with a refractory plug style door. The welds made on the doors were x-rayed and the seal box was filled with refractory. The doors were installed by Early Construction and the refractory was installed by Integrity Refractory.
- Two hundred and four transition roof tubes were removed and new ones were reinstalled at the "D" field weld line. The purpose for this project was to replace tubes that on previous inspections were found to have high hardness values which made them susceptible to cold cracking. The existing tubes were made of T23 material and were "thermally" swaged to serve as transition pieces connecting the T23 roof tube material and T12 stub material. The new tubes are also T23 and are mechanically swaged and serve the same purpose. In order to access the welds on some of the roof tubes, screen tubes also had to be cut out and replaced. All welds were x-rayed and passed by Mistras.
- A leak located on the southwest corner near the balancing header that was identified prior to the unit coming down was also repaired during this outage. In addition an MT survey of similar welds at the header was also completed and no other indications were found.

Inspections and Punchlist Repairs

See attached Alstom Executive Summary. Further detail can be provided as needed.

The LG&E Trimble County 2 Spring 2014 outage was a fourteen (14) week outage. Alstom was on site for seven weeks. The major work being performed was on the firing system including changing out all 30 burners and the addition of two more over fire air ports to the front and rear walls as well as windbox and secondary air duct modifications. This work was overseen by Doosan. **Thompson**

The furnace cavity waterwalls were found to have measureable wastage from corrosion at elevations lower than the Amstar coated sections. A wastage rate of .040"-.050" annual loss was calculated given the UT survey results and using 8000 hours per year and 19000 operational hours for life of unit so far. Large areas of sidewalls especially the Right Sidewall were found to have lost up to 30% MWT. This is primarily in the zone lower than the existing Amstar coating which originally stopped at the centerline of the top burners on the sidewalls. Thus an additional 20' sidewall height partial width was Amstar coated extending downward from this lower boundary of the original coverage.

There was also work done on the ash hopper expansion joints, roof tubes, submerged scraper conveyor, seal skirt, and air heater which was not overseen by Alstom.

A backpass wash was not done prior to inspection which did not allow for a thorough inspection. Instead it was done mid-way through the outage to facilitate repairs. Most of the backpass was not re-inspected after the waterwash. There were on-going repairs at the bottom of the bottom SH bank and the bottom of the top RH bank so both those areas were given a second look in the IK lanes at the rear. This was IK-85/86 for the SH and IK 65/66 lane for the RH. Details on those repairs can be found in the subsequent sections of this summary.

Recommendations:

- 1) Plan for a waterwash at the beginning of the outage for a more thorough backpass inspection.

The following is a synopsis of what was found during the outage and recommendations for the future. Detailed punchlists can be found in the main body of the report. A layout of the unit can be found at the end of this summary for reference.

Superheat (SH) Pendant Platens – 18 Assemblies

The superheat pendant platens are situated at the top of the furnace cavity and can only be inspected from picks up to the steam cooled spacer (SCS), via spider basket or full furnace scaffolding. During this outage, all eighteen assemblies were inspected via both 27' pick and spider basket for a complete inspection of all tube tie elevations. This required the installation of an additional 89 penetrations in the roof to gain access. The steam cooled spacer (SCS) was found to be in good condition.

SH Pendant Platens have a wrap-around tube to help with alignment, which plant personnel have come to identify as paperclip circuit due to its shape. This circuit does not provide adequate alignment and is a place for mechanical abrasion to occur. Widespread minor to moderate abrasion was identified during this outage with worst cases notably having about .150" (moderate loss). This equates to 32% wall loss on inlet legs and 28% wall loss on outlet legs. Due to Unit 2 being a supercritical unit, a more conservative criterion was applied when evaluating severity of abrasion. Wall loss due to mechanical abrasion will continue to be a problem if this design is not improved upon due to the extent of circuit movement.

Furthermore due to the lack of adequate alignment devices, there is considerable misalignment of circuitry throughout the pendants. Besides the extensive abrasions issues identified, this misalignment increases risk for erosion from fly ash and sootblowers, as well exposes circuits to be more prone to wear ash corrosion. Misalignment can also result in interior tubes being exposed to higher than design gas temperatures. Furthermore slag bridging in larger voids between tubes (those misaligned) can become more an issue. Circuits that are misaligned create a space for slag to build up and lead to slags falls which can damage the waterwalls and other circuits lower in the furnace.

There was minor and moderate abrasion found at all three wrap-around tubes (paperclip tie tube) elevations. Approximately 1050 wear pads as well and several padwelds on the wrap-around tubes were installed to provide sacrificial material. Due to time and material constraints not all abrasion issues were addressed. Instead a criteria taking into account severity and difficulty of access was determined. There was general misalignment throughout all the assemblies. A long term solution to restrain and realign the circuitry should be explored for installation in 2016.

Recommendations:

- 1) Look into adding alignment devices throughout the assembly to help maintain alignment and increase tube reliability. As doing this can add stresses to the tubes, this needs to be investigated by qualified personnel.
- 2) Plan for scaffold access next outage to address abrasion issues and install alignment devices

Final Superheat – 34 Assemblies

The final superheat was inspected via scaffold through the middle of the pendants. This gave partial access to both the inlet and the outlet circuits. Similar to the SH Pendant Platens these have the wrap-around tie tubes (paperclip) to help with alignment. This does not provide adequate alignment and is a place for mechanical abrasion to occur. Wall loss due to mechanical abrasion also can occur more readily if this design is not improved upon due to extent of circuit movement. Minor abrasion and sootblower erosion were noted throughout the assemblies.

Recommendations:

- 1) Plan to erect a full scaffold the next outage for a more thorough inspection.
- 2) Plan to have wear pads on hand to address any abrasion issues found.
- 3) Consideration should be given for installing alignment devices based on the solution proposed on the SH pendant platens.
- 4) Consider adding a sootblower indexing kit to reduce the effect of sootblower erosion

Primary Superheat - 101 Assemblies in Top Bank and 202 Assemblies in Lower Two Banks

The primary superheat was fully inspected this outage. No water wash of the assemblies occurred prior to the inspection, so a detailed inspection down in the bank was not possible. All of the sootblower lanes were found to be shielded and overall the shields were in good condition.

Top of top bank

Along the front and rear sets of Economizer Sling (hanger) tubes, there were a total of 34 broken alignment straps. These were weld repaired.

Bottom of Bottom Bank

At the front of the rear hanger tubes in the IK-85/86 soot blower lane there is minor to moderate erosion channeling into the lowest tube of the bottom bank. There was severe erosion on the support brackets noted at 64 of 101 sling (hanger) tubes. These were shielded and the brackets were weld repaired.

Recommendations:

- 1) Continue to monitor alignment straps.
- 2) Continue to monitor tube shields for wear and proper alignment.
- 3) Continue to inspect baffle plates to make sure they are in proper position and not rubbing tubes.
- 4) Inspect around vertical alignment bands to see if the gas channeling has increased and caused damage to the tubing. If so, install a boot shield (or inverted tube shield) to help protect this area.

Economizer – Superheat Side – 62 Assemblies

The economizer on the superheat side is made up of two bare tube banks of assemblies with the headers being outside the sidewalls in enclosures. There was not a water wash or cleaning of the assemblies prior to the inspection, so a detailed inspection down in the bank was not possible. All of the sootblower lanes were found to be shielded and overall the shields were in good condition. All of the support structure appeared to be in good condition

Recommendations:

- 1) Continue to monitor tube shields for wear and proper alignment.
- 2) Provide access to bottom side of lower bank for inspection.

1st Stage Reheat – 202 Assemblies for all Banks

The first stage reheat was fully inspected this outage. There was not a water wash or cleaning of the assemblies prior to inspection, so a detailed inspection down in the bank was not possible. All of the sootblower lanes were found to be shielded and overall the shields were in good condition. The inlet header is located in the backpass and the nipples were inspected for erosion. No significant erosion was found.

Top of Top Bank

Along the front and rear sets of Economizer Sling (hanger) tubes, 141 broken alignment straps were weld repaired.

Between Top and Intermediate Bank

Along the rear set of Economizer Sling (hanger) tubes in the IK 65/66 lane, abrasion was found between the lower tube of the upper bank and the support. There are 101 Economizer Sling (Hanger) tubes. Two sling tubes have two supports. Thus a total of 103 shields were installed to protect the tubes from abrasion. Seven dutchmen (3' length) were installed at the bottom of the top assembly due to that circuit being bent up and contacting the tube above it. It is believed this occurred during original construction and was only able to be identified after the backpass wash occurred.

Recommendations:

- 1) Continue inspection of baffle plates and alignment bands for integrity.
- 2) Continue to monitor shields in sootblower lanes.
- 3) Continue to monitor erosion on RH inlet header nipples.

Economizer – Reheat Side – 62 Assemblies

The economizer on the reheat side is made up of a single bank of bare tube assemblies with the headers being outside the sidewalls in enclosures. There was not a water wash or cleaning of the assemblies prior to inspection, so a detailed inspection down in the bank was not possible. All of the sootblower lanes were found to be shielded and overall the shields were in good condition. All of the support structure appeared to be in good condition.

Recommendations:

- 1) Continue to monitor tube shields for wear and proper alignment.
- 2) Provide access to bottom side of lower bank for inspection.

Final Reheat Pendants – 34 Assemblies

The final reheat pendants are situated between the hanger tubes and screen tubes. The pendants appeared to be in good condition with no significant signs of corrosion. There was minor sootblower erosion noted on all assemblies. There is a T-bar that laterally connects four adjacent assemblies and is located on the front side of both the front and rear anti-vibration straps. These have become deformed creating misalignment between assemblies.

As noted in 2012, the largest area of concern is that the assemblies are starting to “cup.” There is an anti-vibration strap that is about 7’ from the bottom of the assembly. The strap has maintained tube-to-tube spacing, but the front to rear intra-assembly alignment has in some cases been found to be as large as 18”. With this alignment issue, it gives tubes in the middle of the assembly more exposure and greater risk to fly ash and sootblower erosion, as they are no longer as protected by the neighboring tubes. The cupping of the assemblies has also led to uneven (left to right) spacing between the assemblies. Fourteen (14) assemblies were noted as being less one tube diameter of one another as compared to the normal assembly spacing. This can lead to channeled convection pass gas flow and erosion as well as channeled erosion from sootblowers. Assembly to assembly contact abrasion could also occur.

Recommendations:

- 1) Look into adding alignment devices (both intra- and inter- assembly) throughout the assembly to help maintain alignment and increase tube reliability. As doing this can add stresses to the tubes, this needs to be investigated by qualified personnel.
- 2) Continue to monitor for sootblower erosion on front loop and interior of assemblies.
- 3) Consider adding a sootblower indexing kit to reduce the effect of sootblower erosion

Upper Dead Air Space and Penthouse

The upper dead air space (UDAS) and penthouse were inspected for integrity of structures, casing and insulation. There were no significant problems noted in either area.

The interface of the rear wall and upper arch was cracked and overheated allowing for a gap into the UDAS which could lead to flyash infiltration. A refractory repair to seal gap to rear wall was completed from the UDAS. This repair was not overseen by Alstom.

Recommendations:

- 1) Continue inspections to monitor integrity of structures, casing and insulation

Roof Tubes

Both B and C weld lines were inspected for cracks. These weld lines are directly to the front and rear of the SH Platens. Four membrane cracks were found and repaired this outage. There were also repairs on D weld line, where the hanger tubes penetrate the roof. 204 roof tubes were replaced approximately 16" long. The material consisted of T23 swaged pieces that served as a transition from T23 roof tubes to T12 stubs stemming from the cage inlet header. Several screen tubes were also cut out to gain access to the roof tube welds and were replaced once the roof tube work was completed. These repairs were not overseen by Alstom.

Recommendations:

- 1) Continue to inspect monitor for cracks in future outages

Hanger Tubes, Screen Tubes and Refractory Pier

The screen tubes and hanger tubes were inspected from the arch during this outage. The hanger tubes were found to have no significant problems. The only issue is there is not a large opening for access to the final superheat pendants. This restricts access for personnel as well as scaffolding and equipment.

The screen tubes were found to be in good condition. The refractory pier has degraded in several places across the boiler and large pieces have fallen into the 1st Stage RH.

Recommendations:

- 1) Plan for repairs to the refractory pier in the next outage
- 2) Look into installing a bent tube in the hanger tubes to gain better access to the final superheat.
- 3) Check screen tubes and refractory pier/tube shield interface for areas exposed to possible erosion.
- 4) Continue to monitor shields in sootblower lanes.

Waterwalls

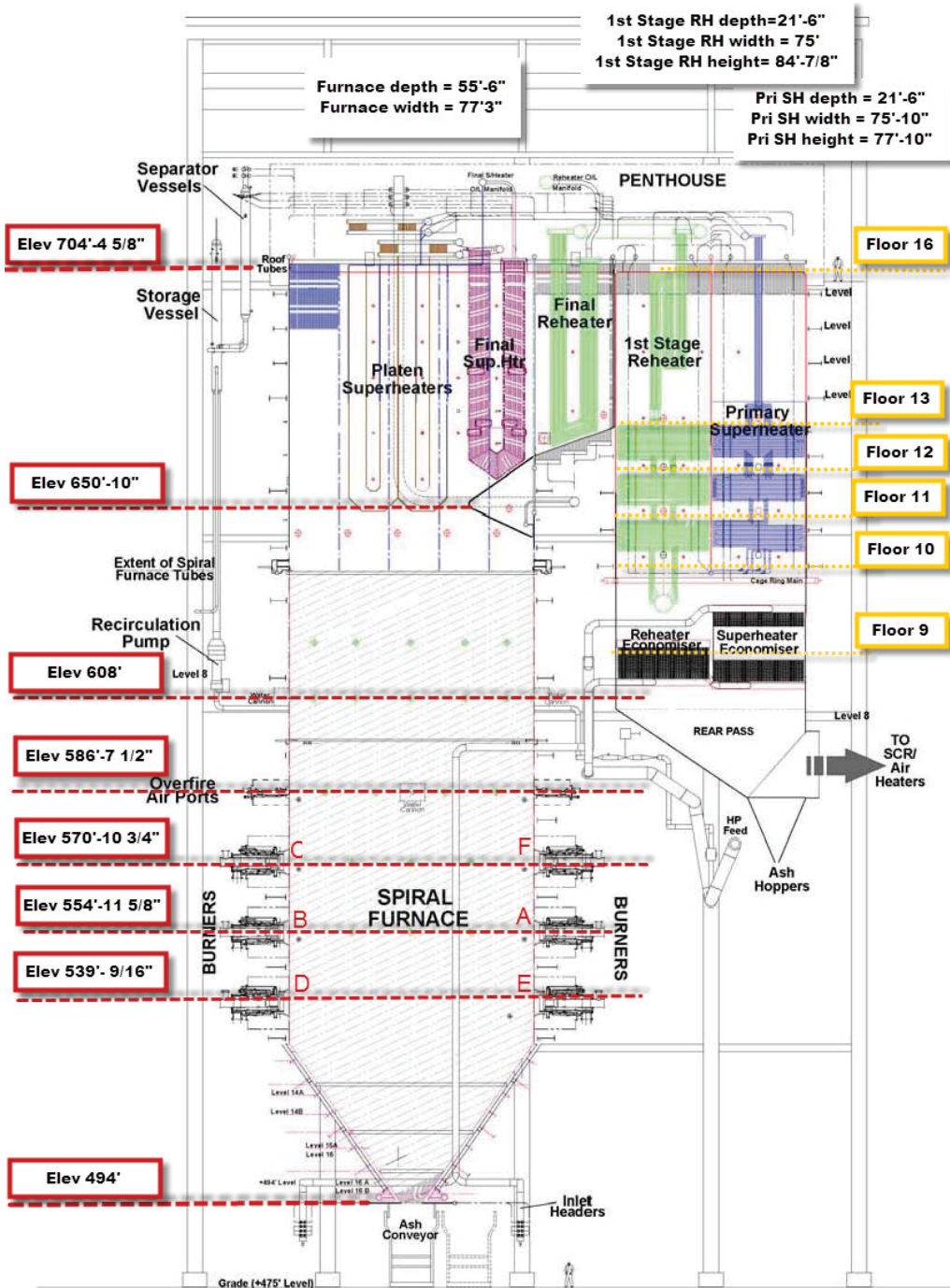
All four walls were inspected during this outage. There was limited access due to the boiler scaffold construction from the cutout slope up to the overfire air ports (OFA) at approximate elevation 586'. At elevation 590' a perimeter scaffold was erected allowing for good access as well as a landing deck for picks. Picks were used to inspect all four walls above that elevation. The cutout slope was not accessible and thus not inspected.

Five elevations of UT readings on both side walls and four elevations on the front and rear wall were taken. There is existing Amstar coating on all four walls and thickness was measured at two locations on the sidewall and three locations on the front and rear walls. The Amstar product coating had been previously applied between elevations 570'-10" - 605' on the sidewalls and 570'-10"- 598' on front and rear walls. The coating was shop applied to original panels and thus the upper boundary elevations are approximate based on construction. Due to significant identified wastage, additional Amstar coating was applied this outage to the sidewalls from elevation 570'-10" to 550'-10". The coating covered 14' on either side of centerline

for a total area of 28' wide by 20' tall. This was to address wastage issues identified in the UT survey in previously unprotected zones. Due to time constraints not all areas of concern for wastage were addressed this outage. These should be addressed in the next outage.

Recommendations:

- 1) Plan for possible panel replacements in 2016 based on UT survey findings.
- 2) Plan to sandblast all four walls to clearly define upper Amstar boundary.
- 3) Plan for additional application of AMSTAR coating in 2016 to address wastage concerns based on UT findings and Doosan model predictions due to firing system modification.
- 4) Perform another UT survey to continue to monitor waterwall wastage.
- 5) Inspect around the water cannons to make sure they are not damaging the walls.



TC2 : Boiler Layout

From: Maldonado, Francisco(/O=LGE/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=MALDONADO, NOVOA00D)
To: Byrd, Larry
CC: Mohn, Laura
BCC:
Subject: TC2 Outage Report
Sent: 06/24/2014 09:44:41 AM -0400 (EDT)
Attachments: TC2 Spring 2014 Outage Executive Summary 05-05-14.pdf; TC2 2014 Spring Outage Report.docx;

Larry,

Attached are the two documents I intend on sending to Generation Engineering for the TC2 outage report. Let me know if you are ok with is or if I need to change/add something. As discussed, I will be sending this out tomorrow if I don't get a response from you today.

Thanks,

Francisco Maldonado

Mechanical Engineer

Trimble County Station, LG&E

487 Corn Creek Road

Bedford, KY 40006

Phone: (502) 627-6218

Mobile: (502) 662-2880

TC2 2014 Spring Outage Report: Boiler Work

The TC2 Sprig 2014 outage was a fourteen week outage. The outage mainly revolved around the replacement of thirty burners. The burner replacement consisted of a full throat replacement which included water wall work. Along with burner work some of the other major projects included but were not limited to the installation of 14 observation doors, Amstar 888 water wall coating, inspections and punchlist repairs and the replacement of 204 transition tubes at the "D" weld line on the roof.

The pressure part replacement and punchlist work was mainly performed by Early Construction (Formerly known as southeast Boiler and Rigging) and the inspections were performed by Alstom (Jessie Gmeinder). Francisco Maldonado was the main project proponent for the boiler work during the outage and Sam Bullock had a key role with material acquisitions.

Pressure Part Replacement:

- Fourteen inspection doors were installed to allow for inspection of furnace both for burners and slag. There are three doors installed on each of the side walls starting at the middle burner elevation and working up to the over fire air elevation. There are also four doors installed on the front and rear walls each. The doors located on the front wall are at approximately elevation 620' (8th landing) and doors located on the rear wall are at approximately elevation 629' (9th landing). The doors include four bent tubes and a seal box with a refractory plug style door. The welds made on the doors were x-rayed and the seal box was filled with refractory. The doors were installed by Early Construction and the refractory was installed by Integrity Refractory.
- Two hundred and four transition roof tubes were removed and new ones were reinstalled at the "D" field weld line. The purpose for this project was to replace tubes that on previous inspections were found to have high hardness values which made them susceptible to cold cracking. The existing tubes were made of T23 material and were "thermally" swaged to serve as transition pieces connecting the T23 roof tube material and T12 stub material. The new tubes are also T23 and are mechanically swaged and serve the same purpose. In order to access the welds on some of the roof tubes screen tubes had to be cut out and replaced. All welds were x-rayed and passed by Mistras.
- There was a leak located on the southwest corner at the balancing header that was located prior to the unit coming down that was repaired. Along with the repair a MT survey was done of similar welds at the header and no other indications were found.

Inspections and Punchlist Repairs

See attached Alstom Executive Summary. Further detail can be provided as needed.

The LG&E Trimble County 2 Spring 2014 outage was a fourteen (14) week outage. Alstom was on site for seven weeks. The major work being performed was on the firing system including changing out all 30 burners and the addition of two more over fire air ports to the front and rear walls as well as windbox and secondary air duct modifications. This work was overseen by Doosan.

The furnace cavity waterwalls were found to have measureable wastage from corrosion at elevations lower than the Amstar coated sections. A wastage rate of .040"-.050" annual loss was calculated given the UT survey results and using 8000 hours per year and 19000 operational hours for life of unit so far. Large areas of sidewalls especially the Right Sidewall were found to have lost up to 30% MWT. This is primarily in the zone lower than the existing Amstar coating which originally stopped at the centerline of the top burners on the sidewalls. Thus an additional 20' sidewall height partial width was Amstar coated extending downward from this lower boundary of the original coverage.

There was also work done on the ash hopper expansion joints, roof tubes, submerged scraper conveyor, seal skirt, and air heater which was not overseen by Alstom.

A backpass wash was not done prior to inspection which did not allow for a thorough inspection. Instead it was done mid-way through the outage to facilitate repairs. Most of the backpass was not re-inspected after the waterwash. There were on-going repairs at the bottom of the bottom SH bank and the bottom of the top RH bank so both those areas were given a second look in the IK lanes at the rear. This was IK-85/86 for the SH and IK 65/66 lane for the RH. Details on those repairs can be found in the subsequent sections of this summary.

Recommendations:

- 1) Plan for a waterwash at the beginning of the outage for a more thorough backpass inspection.

The following is a synopsis of what was found during the outage and recommendations for the future. Detailed punchlists can be found in the main body of the report. A layout of the unit can be found at the end of this summary for reference.

Superheat (SH) Pendant Platens – 18 Assemblies

The superheat pendant platens are situated at the top of the furnace cavity and can only be inspected from picks up to the steam cooled spacer (SCS), via spider basket or full furnace scaffolding. During this outage, all eighteen assemblies were inspected via both 27' pick and spider basket for a complete inspection of all tube tie elevations. This required the installation of an additional 89 penetrations in the roof to gain access. The steam cooled spacer (SCS) was found to be in good condition.

SH Pendant Platens have a wrap-around tube to help with alignment, which plant personnel have come to identify as paperclip circuit due to its shape. This circuit does not provide adequate alignment and is a place for mechanical abrasion to occur. Widespread minor to moderate abrasion was identified during this outage with worst cases notably having about .150" (moderate loss). This equates to 32% wall loss on inlet legs and 28% wall loss on outlet legs. Due to Unit 2 being a supercritical unit, a more conservative criterion was applied when evaluating severity of abrasion. Wall loss due to mechanical abrasion will continue to be a problem if this design is not improved upon due to the extent of circuit movement.

Furthermore due to the lack of adequate alignment devices, there is considerable misalignment of circuitry throughout the pendants. Besides the extensive abrasions issues identified, this misalignment increases risk for erosion from fly ash and sootblowers, as well exposes circuits to be more prone to wear ash corrosion. Misalignment can also result in interior tubes being exposed to higher than design gas temperatures. Furthermore slag bridging in larger voids between tubes (those misaligned) can become more an issue. Circuits that are misaligned create a space for slag to build up and lead to slags falls which can damage the waterwalls and other circuits lower in the furnace.

There was minor and moderate abrasion found at all three wrap-around tubes (paperclip tie tube) elevations. Approximately 1050 wear pads as well and several padwelds on the wrap-around tubes were installed to provide sacrificial material. Due to time and material constraints not all abrasion issues were addressed. Instead a criteria taking into account severity and difficulty of access was determined. There was general misalignment throughout all the assemblies. A long term solution to restrain and realign the circuitry should be explored for installation in 2016.

Recommendations:

- 1) Look into adding alignment devices throughout the assembly to help maintain alignment and increase tube reliability. As doing this can add stresses to the tubes, this needs to be investigated by qualified personnel.
- 2) Plan for scaffold access next outage to address abrasion issues and install alignment devices

Final Superheat – 34 Assemblies

The final superheat was inspected via scaffold through the middle of the pendants. This gave partial access to both the inlet and the outlet circuits. Similar to the SH Pendant Platens these have the wrap-around tie tubes (paperclip) to help with alignment. This does not provide adequate alignment and is a place for mechanical abrasion to occur. Wall loss due to mechanical abrasion also can occur more readily if this design is not improved upon due to extent of circuit movement. Minor abrasion and sootblower erosion were noted throughout the assemblies.

Recommendations:

- 1) Plan to erect a full scaffold the next outage for a more thorough inspection.
- 2) Plan to have wear pads on hand to address any abrasion issues found.
- 3) Consideration should be given for installing alignment devices based on the solution proposed on the SH pendant platens.
- 4) Consider adding a sootblower indexing kit to reduce the effect of sootblower erosion

Primary Superheat - 101 Assemblies in Top Bank and 202 Assemblies in Lower Two Banks

The primary superheat was fully inspected this outage. No water wash of the assemblies occurred prior to the inspection, so a detailed inspection down in the bank was not possible. All of the sootblower lanes were found to be shielded and overall the shields were in good condition.

Top of top bank

Along the front and rear sets of Economizer Sling (hanger) tubes, there were a total of 34 broken alignment straps. These were weld repaired.

Bottom of Bottom Bank

At the front of the rear hanger tubes in the IK-85/86 soot blower lane there is minor to moderate erosion channeling into the lowest tube of the bottom bank. There was severe erosion on the support brackets noted at 64 of 101 sling (hanger) tubes. These were shielded and the brackets were weld repaired.

Recommendations:

- 1) Continue to monitor alignment straps.
- 2) Continue to monitor tube shields for wear and proper alignment.
- 3) Continue to inspect baffle plates to make sure they are in proper position and not rubbing tubes.
- 4) Inspect around vertical alignment bands to see if the gas channeling has increased and caused damage to the tubing. If so, install a boot shield (or inverted tube shield) to help protect this area.

Economizer – Superheat Side – 62 Assemblies

The economizer on the superheat side is made up of two bare tube banks of assemblies with the headers being outside the sidewalls in enclosures. There was not a water wash or cleaning of the assemblies prior to the inspection, so a detailed inspection down in the bank was not possible. All of the sootblower lanes were found to be shielded and overall the shields were in good condition. All of the support structure appeared to be in good condition

Recommendations:

- 1) Continue to monitor tube shields for wear and proper alignment.
- 2) Provide access to bottom side of lower bank for inspection.

1st Stage Reheat – 202 Assemblies for all Banks

The first stage reheat was fully inspected this outage. There was not a water wash or cleaning of the assemblies prior to inspection, so a detailed inspection down in the bank was not possible. All of the sootblower lanes were found to be shielded and overall the shields were in good condition. The inlet header is located in the backpass and the nipples were inspected for erosion. No significant erosion was found.

Top of Top Bank

Along the front and rear sets of Economizer Sling (hanger) tubes, 141 broken alignment straps were weld repaired.

Between Top and Intermediate Bank

Along the rear set of Economizer Sling (hanger) tubes in the IK 65/66 lane, abrasion was found between the lower tube of the upper bank and the support. There are 101 Economizer Sling (Hanger) tubes. Two sling tubes have two supports. Thus a total of 103 shields were installed to protect the tubes from abrasion. Seven dutchmen (3' length) were installed at the bottom of the top assembly due to that circuit being bent up and contacting the tube above it. It is believed this occurred during original construction and was only able to be identified after the backpass wash occurred.

Recommendations:

- 1) Continue inspection of baffle plates and alignment bands for integrity.
- 2) Continue to monitor shields in sootblower lanes.
- 3) Continue to monitor erosion on RH inlet header nipples.

Economizer – Reheat Side – 62 Assemblies

The economizer on the reheat side is made up of a single bank of bare tube assemblies with the headers being outside the sidewalls in enclosures. There was not a water wash or cleaning of the assemblies prior to inspection, so a detailed inspection down in the bank was not possible. All of the sootblower lanes were found to be shielded and overall the shields were in good condition. All of the support structure appeared to be in good condition.

Recommendations:

- 1) Continue to monitor tube shields for wear and proper alignment.
- 2) Provide access to bottom side of lower bank for inspection.

Final Reheat Pendants – 34 Assemblies

The final reheat pendants are situated between the hanger tubes and screen tubes. The pendants appeared to be in good condition with no significant signs of corrosion. There was minor sootblower erosion noted on all assemblies. There is a T-bar that laterally connects four adjacent assemblies and is located on the front side of both the front and rear anti-vibration straps. These have become deformed creating misalignment between assemblies.

As noted in 2012, the largest area of concern is that the assemblies are starting to “cup.” There is an anti-vibration strap that is about 7’ from the bottom of the assembly. The strap has maintained tube-to-tube spacing, but the front to rear intra-assembly alignment has in some cases been found to be as large as 18”. With this alignment issue, it gives tubes in the middle of the assembly more exposure and greater risk to fly ash and sootblower erosion, as they are no longer as protected by the neighboring tubes. The cupping of the assemblies has also led to uneven (left to right) spacing between the assemblies. Fourteen (14) assemblies were noted as being less one tube diameter of one another as compared to the normal assembly spacing. This can lead to channeled convection pass gas flow and erosion as well as channeled erosion from sootblowers. Assembly to assembly contact abrasion could also occur.

Recommendations:

- 1) Look into adding alignment devices (both intra- and inter- assembly) throughout the assembly to help maintain alignment and increase tube reliability. As doing this can add stresses to the tubes, this needs to be investigated by qualified personnel.
- 2) Continue to monitor for sootblower erosion on front loop and interior of assemblies.
- 3) Consider adding a sootblower indexing kit to reduce the effect of sootblower erosion

Upper Dead Air Space and Penthouse

The upper dead air space (UDAS) and penthouse were inspected for integrity of structures, casing and insulation. There were no significant problems noted in either area.

The interface of the rear wall and upper arch was cracked and overheated allowing for a gap into the UDAS which could lead to flyash infiltration. A refractory repair to seal gap to rear wall was completed from the UDAS. This repair was not overseen by Alstom.

Recommendations:

- 1) Continue inspections to monitor integrity of structures, casing and insulation

Roof Tubes

Both B and C weld lines were inspected for cracks. These weld lines are directly to the front and rear of the SH Platens. Four membrane cracks were found and repaired this outage. There were also repairs on D weld line, where the hanger tubes penetrate the roof. 204 roof tubes were replaced approximately 16" long. The material consisted of T23 swaged pieces that served as a transition from T23 roof tubes to T12 stubs stemming from the cage inlet header. Several screen tubes were also cut out to gain access to the roof tube welds and were replaced once the roof tube work was completed. These repairs were not overseen by Alstom.

Recommendations:

- 1) Continue to inspect monitor for cracks in future outages

Hanger Tubes, Screen Tubes and Refractory Pier

The screen tubes and hanger tubes were inspected from the arch during this outage. The hanger tubes were found to have no significant problems. The only issue is there is not a large opening for access to the final superheat pendants. This restricts access for personnel as well as scaffolding and equipment.

The screen tubes were found to be in good condition. The refractory pier has degraded in several places across the boiler and large pieces have fallen into the 1st Stage RH.

Recommendations:

- 1) Plan for repairs to the refractory pier in the next outage
- 2) Look into installing a bent tube in the hanger tubes to gain better access to the final superheat.
- 3) Check screen tubes and refractory pier/tube shield interface for areas exposed to possible erosion.
- 4) Continue to monitor shields in sootblower lanes.

Waterwalls

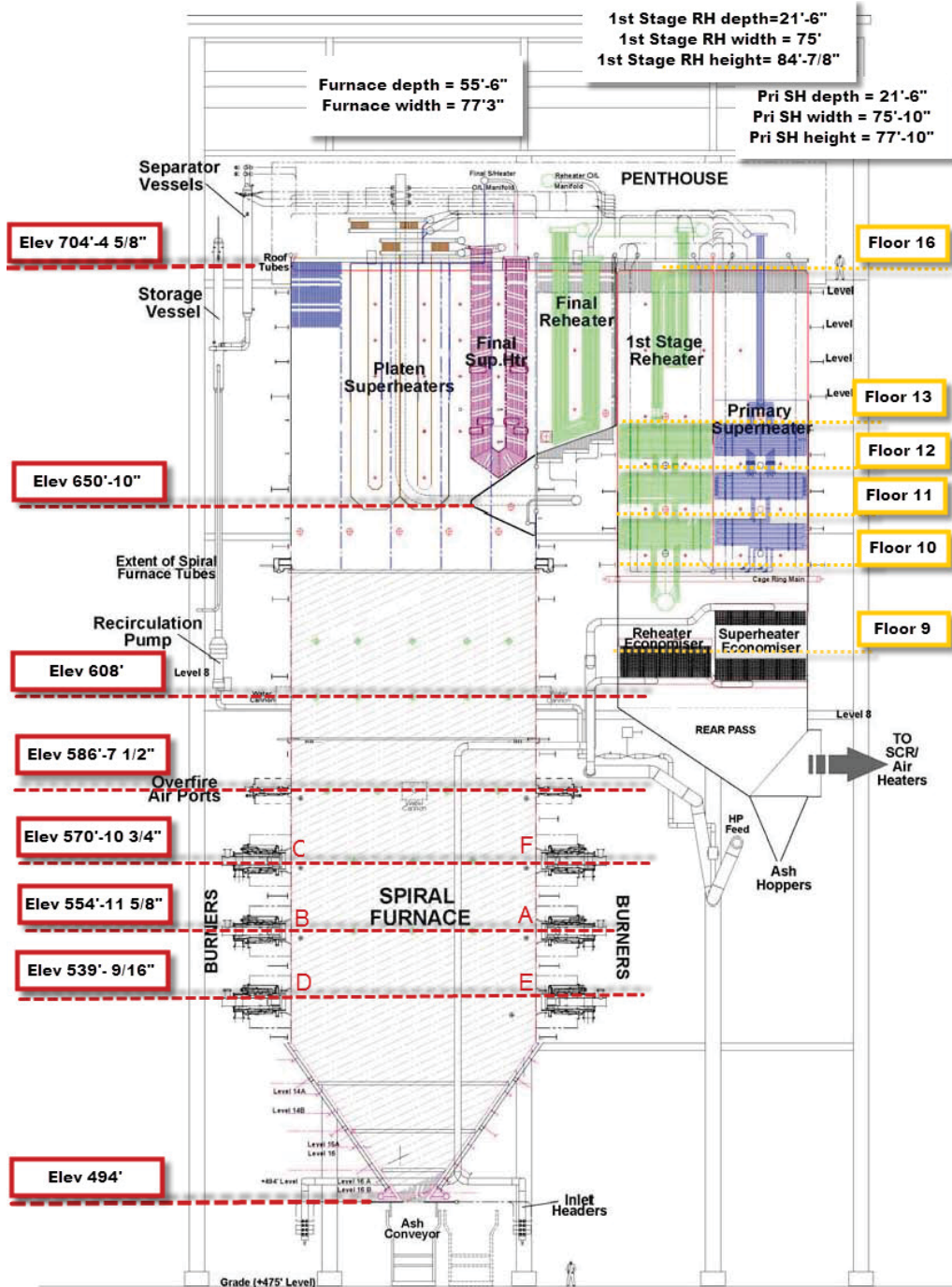
All four walls were inspected during this outage. There was limited access due to the boiler scaffold construction from the cutout slope up to the overfire air ports (OFA) at approximate elevation 586'. At elevation 590' a perimeter scaffold was erected allowing for good access as well as a landing deck for picks. Picks were used to inspect all four walls above that elevation. The cutout slope was not accessible and thus not inspected.

Five elevations of UT readings on both side walls and four elevations on the front and rear wall were taken. There is existing Amstar coating on all four walls and thickness was measured at two locations on the sidewall and three locations on the front and rear walls. The Amstar product coating had been previously applied between elevations 570'-10" - 605' on the sidewalls and 570'-10" - 598' on front and rear walls. The coating was shop applied to original panels and thus the upper boundary elevations are approximate based on construction. Due to significant identified wastage, additional Amstar coating was applied this outage to the sidewalls from elevation 570'-10" to 550'-10". The coating covered 14' on either side of centerline

for a total area of 28' wide by 20' tall. This was to address wastage issues identified in the UT survey in previously unprotected zones. Due to time constraints not all areas of concern for wastage were addressed this outage. These should be addressed in the next outage.

Recommendations:

- 1) Plan for possible panel replacements in 2016 based on UT survey findings.
- 2) Plan to sandblast all four walls to clearly define upper Amstar boundary.
- 3) Plan for additional application of AMSTAR coating in 2016 to address wastage concerns based on UT findings and Doosan model predictions due to firing system modification.
- 4) Perform another UT survey to continue to monitor waterwall wastage.
- 5) Inspect around the water cannons to make sure they are not damaging the walls.



TC2 : Boiler Layout
Page 6 of 6

From: Anderson, Dave (Trimble County)(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=ANDERSOND)
To: Byrd, Larry
CC:
BCC:
Subject: TC2 EHC Maintenance Summary.docx
Sent: 07/14/2014 03:22:39 PM -0400 (EDT)
Attachments: TC2 EHC Maintenance Summary.docx;

Larry,

Take a look at this high level summary from TC2 EHC outage attached and see if I left anything out. I am putting together a power point which includes all other maintenance activities as well.

I know Laura is working on a more detailed RCF analysis document on EHC system with more detail.

David W. Anderson

Trimble County Outage Coordinator
Tel. 502-627-6313
Fax 502-217-2199
email: dave.anderson@lge-ku.com

TC2 was scheduled offline to replace "A" MSV fast acting solenoid. Turbine valves did not function correctly causing turbine overspeed. Unit will remain off to complete EHC flush and other activities.

The following is a list of action items personnel directing activities:

EHC System/ Turbine Trip

- EHC system flush- Hydralube (Gary Williams). **Tyler Turner** is LG&E contact for these activities. Hydrolube mobilizing and due on site late Monday, June 30th.
- Verifying servo valves, dump valves, Master Trip solenoids and filters available as well as refurbishing contaminated valves- **Trent Henderson/ Ricky Powell**.
- Replacing 2B EHC pump- **Dale Sedam**
- Checking EHC coolers for leaks- **Dale Sedam**
- Checking EHC hoses and isolation valve arrangements- **Dale Sedam**
- Obtaining EHC Fluid and Cleaning agent as well as other materials needed by Hydralube- **Marci Park/ Ron Bethany**
- Turbine Overspeed data analysis- **Emmett Moore/ MDA (Larry Anderson)**
- EHC System Repairs & Turbine Valve Functional Tests
- EHC System Flush- Hydralube
 - Drain System
 - Remove Valve Servos, trip manifold, accumulators & filters.
 - Disconnect system pumps
 - Install "jumpers" where components are removed
 - Blow-down Lines & Clean Reservoir
 - Attach "high pressure flushing unit"
 - Refill system and add 55 gal. of cleaning agent
 - Flush system & periodically sample
 - Drain system and purge with air
 - Clean reservoir
 - Refill system and Rinse Flush
 - Drain system and purge with air
 - Restore system- install new or refurbished Valve Servos, trip manifold, accumulators & filters
 - Temporary coolers connected to system. Original coolers removed and sent out to check for leaks.
- Functionally Test EHC skid
- Functionally Test Valves
- Dates:
 - 6/29- Offline- EHC problems/ turbine overspeed
 - 6/29- Hydralube contacted to mobilize to Trimble for EHC flush
 - 6/30- Hydralube Travel
 - 7/1- Hydralube on site

- 7/1- Installing Hydralube flushing equipment
- 7/1- New 1" vent installed on top of reservoir, Coolers pressure tested with Nitrogen & 110 psi condensate (no leaks identified), connecting temporary cooler to system, OEM coolers pulled to send out for testing, Trip manifold pulled, Replacing "B" EHC pump
- 7/2- EHC system Hydralube charged and leak check @ 14:20 hrs.
- 7/2- Stroking Valves (Flushing) Start @ 18:00 hrs.
- 7/5- EHC rinse completed @ 02:00 hrs.
- 7/5- Restoring system
- 7/6- EHC piping restored
- 7/6- Valves stroked to remove air
- 7/6- 7/11 Functional Testing- residual system contamination- trip block not functioning properly
- 7/12- Mark VI software issues

Other Items:

1. Separator Balancing Line Leak (Remove Fermanite box and Cap)- **Dale Sedam/ Southeast Boiler**
2. 2D recycle pump mechanical seal- **Dale Sedam**
3. Boiler Leak Repair

From: Byrd, Larry(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=E011284)
To: Byrd, Larry
CC:
BCC:
Subject: FW: RCFA TC-2 on 6-29-14.xlsx
Sent: 07/24/2014 05:13:46 PM -0400 (EDT)
Attachments: RCFA TC-2 on 6-29-14.xlsx;

From: Rabe, Phil
Sent: Thursday, July 17, 2014 8:16 AM
To: Byrd, Larry
Cc: Buckner, Mike
Subject: RCFA TC-2 on 6-29-14.xlsx

Larry,

Here is a start on the RCFA for the TC2 EHC event. Mitch also noticed while reviewing data the HP and LP Turbine bypass valves may need the logic for their operation reviewed. We will work with the DCS folks to look into this further.

Thanks,
Phil

Produced as Native

Original File Name: RCFA TC-2 on 6-29-14.xlsx

Stored File Name: OpenText00423958.xlsx

From: Anderson, Dave (Trimble County)/(O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=ANDERSOND)
To: Joyce, Jeff
CC: Byrd, Larry
BCC:
Subject: Emailing: TC2S14 Spring Outage Plan.xlsm
Sent: 08/12/2014 08:52:42 AM -0400 (EDT)
Attachments: TC2S14 Spring Outage Plan.xlsm;

Jeff,

FYI....As requested.

David W. Anderson
Trimble County Outage Coordinator
Tel. 502-627-6313
Fax 502-217-2199
email: dave.anderson@lge-ku.com

Your message is ready to be sent with the following file or link attachments:

TC2S14 Spring Outage Plan.xlsm

Note: To protect against computer viruses, e-mail programs may prevent sending or receiving certain types of file attachments. Check your e-mail security settings to determine how attachments are handled.

From: Byrd, Larry(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=E011284)
To: Anderson, Dave (Trimble County)
CC: Maldonado, Francisco
BCC:
Subject: FW: TC2 2014 Spring Outage Executive Summary.
Sent: 05/07/2014 02:59:55 PM -0400 (EDT)
Attachments: TC2 Spring 2014 Outage Executive Summary 05-05-14.pdf;

Dave,

Do we have the issues mentioned covered in our ten-year outage O&M plan? Please check with Cisco tomorrow morning, and if not, then please add them (unless Cisco thinks that they're capital)..

Larry

From: GMEINDER Jessie [mailto:jessie.gmeinder@power.alstom.com]
Sent: Tuesday, May 06, 2014 9:55 AM
To: Maldonado, Francisco
Cc: Mohn, Laura; Byrd, Larry; PALUTA Mark; WILLIAMS Mark J; Joyce, Jeff; TRAVIS Kevin D.
Subject: TC2 2014 Spring Outage Executive Summary.

Cisco,

Attached is the executive summary from the spring outage on unit 2. Please let me know if you have any questions. As I mentioned prior, I am at Brown doing some testing this week. Then my next priority is getting the TC2 report complete pending any TC1 budgetary needs for the 2015 outage. I'll loop back with you next week on TC1.

Thank you,
Jessie Gmeinder
Field Service Engineer
ALSTOM Power Thermal Services
Boiler Area Center (BAC)

ALSTOM Power Inc
Midwest Service Center
Erlanger, KY 41018

Mobile: (513)800-3022
Fax: (513)297-9021
jessie.gmeinder@power.alstom.com
<http://www.alstom.com/power>

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The LG&E Trimble County 2 Spring 2014 outage was a fourteen (14) week outage. Alstom was on site for seven weeks. The major work being performed was on the firing system including changing out all 30 burners and the addition of two more over fire air ports to the front and rear walls as well as windbox and secondary air duct modifications. This work was overseen by Doosan. **Thompson**

The furnace cavity waterwalls were found to have measureable wastage from corrosion at elevations lower than the Amstar coated sections. A wastage rate of .040"-.050" annual loss was calculated given the UT survey results and using 8000 hours per year and 19000 operational hours for life of unit so far. Large areas of sidewalls especially the Right Sidewall were found to have lost up to 30% MWT. This is primarily in the zone lower than the existing Amstar coating which originally stopped at the centerline of the top burners on the sidewalls. Thus an additional 20' sidewall height partial width was Amstar coated extending downward from this lower boundary of the original coverage.

There was also work done on the ash hopper expansion joints, roof tubes, submerged scraper conveyor, seal skirt, and air heater which was not overseen by Alstom.

A backpass wash was not done prior to inspection which did not allow for a thorough inspection. Instead it was done mid-way through the outage to facilitate repairs. Most of the backpass was not re-inspected after the waterwash. There were on-going repairs at the bottom of the bottom SH bank and the bottom of the top RH bank so both those areas were given a second look in the IK lanes at the rear. This was IK-85/86 for the SH and IK 65/66 lane for the RH. Details on those repairs can be found in the subsequent sections of this summary.

Recommendations:

- 1) Plan for a waterwash at the beginning of the outage for a more thorough backpass inspection.

The following is a synopsis of what was found during the outage and recommendations for the future. Detailed punchlists can be found in the main body of the report. A layout of the unit can be found at the end of this summary for reference.

Superheat (SH) Pendant Platens – 18 Assemblies

The superheat pendant platens are situated at the top of the furnace cavity and can only be inspected from picks up to the steam cooled spacer (SCS), via spider basket or full furnace scaffolding. During this outage, all eighteen assemblies were inspected via both 27' pick and spider basket for a complete inspection of all tube tie elevations. This required the installation of an additional 89 penetrations in the roof to gain access. The steam cooled spacer (SCS) was found to be in good condition.

SH Pendant Platens have a wrap-around tube to help with alignment, which plant personnel have come to identify as paperclip circuit due to its shape. This circuit does not provide adequate alignment and is a place for mechanical abrasion to occur. Widespread minor to moderate abrasion was identified during this outage with worst cases notably having about .150" (moderate loss). This equates to 32% wall loss on inlet legs and 28% wall loss on outlet legs. Due to Unit 2 being a supercritical unit, a more conservative criterion was applied when evaluating severity of abrasion. Wall loss due to mechanical abrasion will continue to be a problem if this design is not improved upon due to the extent of circuit movement.

Furthermore due to the lack of adequate alignment devices, there is considerable misalignment of circuitry throughout the pendants. Besides the extensive abrasions issues identified, this misalignment increases risk for erosion from fly ash and sootblowers, as well exposes circuits to be more prone to wear ash corrosion. Misalignment can also result in interior tubes being exposed to higher than design gas temperatures. Furthermore slag bridging in larger voids between tubes (those misaligned) can become more an issue. Circuits that are misaligned create a space for slag to build up and lead to slags falls which can damage the waterwalls and other circuits lower in the furnace.

There was minor and moderate abrasion found at all three wrap-around tubes (paperclip tie tube) elevations. Approximately 1050 wear pads as well and several padwelds on the wrap-around tubes were installed to provide sacrificial material. Due to time and material constraints not all abrasion issues were addressed. Instead a criteria taking into account severity and difficulty of access was determined. There was general misalignment throughout all the assemblies. A long term solution to restrain and realign the circuitry should be explored for installation in 2016.

Recommendations:

- 1) Look into adding alignment devices throughout the assembly to help maintain alignment and increase tube reliability. As doing this can add stresses to the tubes, this needs to be investigated by qualified personnel.
- 2) Plan for scaffold access next outage to address abrasion issues and install alignment devices

Final Superheat – 34 Assemblies

The final superheat was inspected via scaffold through the middle of the pendants. This gave partial access to both the inlet and the outlet circuits. Similar to the SH Pendant Platens these have the wrap-around tie tubes (paperclip) to help with alignment. This does not provide adequate alignment and is a place for mechanical abrasion to occur. Wall loss due to mechanical abrasion also can occur more readily if this design is not improved upon due to extent of circuit movement. Minor abrasion and sootblower erosion were noted throughout the assemblies.

Recommendations:

- 1) Plan to erect a full scaffold the next outage for a more thorough inspection.
- 2) Plan to have wear pads on hand to address any abrasion issues found.
- 3) Consideration should be given for installing alignment devices based on the solution proposed on the SH pendant platens.
- 4) Consider adding a sootblower indexing kit to reduce the effect of sootblower erosion

Primary Superheat - 101 Assemblies in Top Bank and 202 Assemblies in Lower Two Banks

The primary superheat was fully inspected this outage. No water wash of the assemblies occurred prior to the inspection, so a detailed inspection down in the bank was not possible. All of the sootblower lanes were found to be shielded and overall the shields were in good condition.

Top of top bank

Along the front and rear sets of Economizer Sling (hanger) tubes, there were a total of 34 broken alignment straps. These were weld repaired.

Bottom of Bottom Bank

At the front of the rear hanger tubes in the IK-85/86 soot blower lane there is minor to moderate erosion channeling into the lowest tube of the bottom bank. There was severe erosion on the support brackets noted at 64 of 101 sling (hanger) tubes. These were shielded and the brackets were weld repaired.

Recommendations:

- 1) Continue to monitor alignment straps.
- 2) Continue to monitor tube shields for wear and proper alignment.
- 3) Continue to inspect baffle plates to make sure they are in proper position and not rubbing tubes.
- 4) Inspect around vertical alignment bands to see if the gas channeling has increased and caused damage to the tubing. If so, install a boot shield (or inverted tube shield) to help protect this area.

Economizer – Superheat Side – 62 Assemblies

The economizer on the superheat side is made up of two bare tube banks of assemblies with the headers being outside the sidewalls in enclosures. There was not a water wash or cleaning of the assemblies prior to the inspection, so a detailed inspection down in the bank was not possible. All of the sootblower lanes were found to be shielded and overall the shields were in good condition. All of the support structure appeared to be in good condition

Recommendations:

- 1) Continue to monitor tube shields for wear and proper alignment.
- 2) Provide access to bottom side of lower bank for inspection.

1st Stage Reheat – 202 Assemblies for all Banks

The first stage reheat was fully inspected this outage. There was not a water wash or cleaning of the assemblies prior to inspection, so a detailed inspection down in the bank was not possible. All of the sootblower lanes were found to be shielded and overall the shields were in good condition. The inlet header is located in the backpass and the nipples were inspected for erosion. No significant erosion was found.

Top of Top Bank

Along the front and rear sets of Economizer Sling (hanger) tubes, 141 broken alignment straps were weld repaired.

Between Top and Intermediate Bank

Along the rear set of Economizer Sling (hanger) tubes in the IK 65/66 lane, abrasion was found between the lower tube of the upper bank and the support. There are 101 Economizer Sling (Hanger) tubes. Two sling tubes have two supports. Thus a total of 103 shields were installed to protect the tubes from abrasion. Seven dutchmen (3' length) were installed at the bottom of the top assembly due to that circuit being bent up and contacting the tube above it. It is believed this occurred during original construction and was only able to be identified after the backpass wash occurred.

Recommendations:

- 1) Continue inspection of baffle plates and alignment bands for integrity.
- 2) Continue to monitor shields in sootblower lanes.
- 3) Continue to monitor erosion on RH inlet header nipples.

Economizer – Reheat Side – 62 Assemblies

The economizer on the reheat side is made up of a single bank of bare tube assemblies with the headers being outside the sidewalls in enclosures. There was not a water wash or cleaning of the assemblies prior to inspection, so a detailed inspection down in the bank was not possible. All of the sootblower lanes were found to be shielded and overall the shields were in good condition. All of the support structure appeared to be in good condition.

Recommendations:

- 1) Continue to monitor tube shields for wear and proper alignment.
- 2) Provide access to bottom side of lower bank for inspection.

Final Reheat Pendants – 34 Assemblies

The final reheat pendants are situated between the hanger tubes and screen tubes. The pendants appeared to be in good condition with no significant signs of corrosion. There was minor sootblower erosion noted on all assemblies. There is a T-bar that laterally connects four adjacent assemblies and is located on the front side of both the front and rear anti-vibration straps. These have become deformed creating misalignment between assemblies.

As noted in 2012, the largest area of concern is that the assemblies are starting to “cup.” There is an anti-vibration strap that is about 7’ from the bottom of the assembly. The strap has maintained tube-to-tube spacing, but the front to rear intra-assembly alignment has in some cases been found to be as large as 18”. With this alignment issue, it gives tubes in the middle of the assembly more exposure and greater risk to fly ash and sootblower erosion, as they are no longer as protected by the neighboring tubes. The cupping of the assemblies has also led to uneven (left to right) spacing between the assemblies. Fourteen (14) assemblies were noted as being less one tube diameter of one another as compared to the normal assembly spacing. This can lead to channeled convection pass gas flow and erosion as well as channeled erosion from sootblowers. Assembly to assembly contact abrasion could also occur.

Recommendations:

- 1) Look into adding alignment devices (both intra- and inter- assembly) throughout the assembly to help maintain alignment and increase tube reliability. As doing this can add stresses to the tubes, this needs to be investigated by qualified personnel.
- 2) Continue to monitor for sootblower erosion on front loop and interior of assemblies.
- 3) Consider adding a sootblower indexing kit to reduce the effect of sootblower erosion

Upper Dead Air Space and Penthouse

The upper dead air space (UDAS) and penthouse were inspected for integrity of structures, casing and insulation. There were no significant problems noted in either area.

The interface of the rear wall and upper arch was cracked and overheated allowing for a gap into the UDAS which could lead to flyash infiltration. A refractory repair to seal gap to rear wall was completed from the UDAS. This repair was not overseen by Alstom.

Recommendations:

- 1) Continue inspections to monitor integrity of structures, casing and insulation

Roof Tubes

Both B and C weld lines were inspected for cracks. These weld lines are directly to the front and rear of the SH Platens. Four membrane cracks were found and repaired this outage. There were also repairs on D weld line, where the hanger tubes penetrate the roof. 204 roof tubes were replaced approximately 16" long. The material consisted of T23 swaged pieces that served as a transition from T23 roof tubes to T12 stubs stemming from the cage inlet header. Several screen tubes were also cut out to gain access to the roof tube welds and were replaced once the roof tube work was completed. These repairs were not overseen by Alstom.

Recommendations:

- 1) Continue to inspect monitor for cracks in future outages

Hanger Tubes, Screen Tubes and Refractory Pier

The screen tubes and hanger tubes were inspected from the arch during this outage. The hanger tubes were found to have no significant problems. The only issue is there is not a large opening for access to the final superheat pendants. This restricts access for personnel as well as scaffolding and equipment.

The screen tubes were found to be in good condition. The refractory pier has degraded in several places across the boiler and large pieces have fallen into the 1st Stage RH.

Recommendations:

- 1) Plan for repairs to the refractory pier in the next outage
- 2) Look into installing a bent tube in the hanger tubes to gain better access to the final superheat.
- 3) Check screen tubes and refractory pier/tube shield interface for areas exposed to possible erosion.
- 4) Continue to monitor shields in sootblower lanes.

Waterwalls

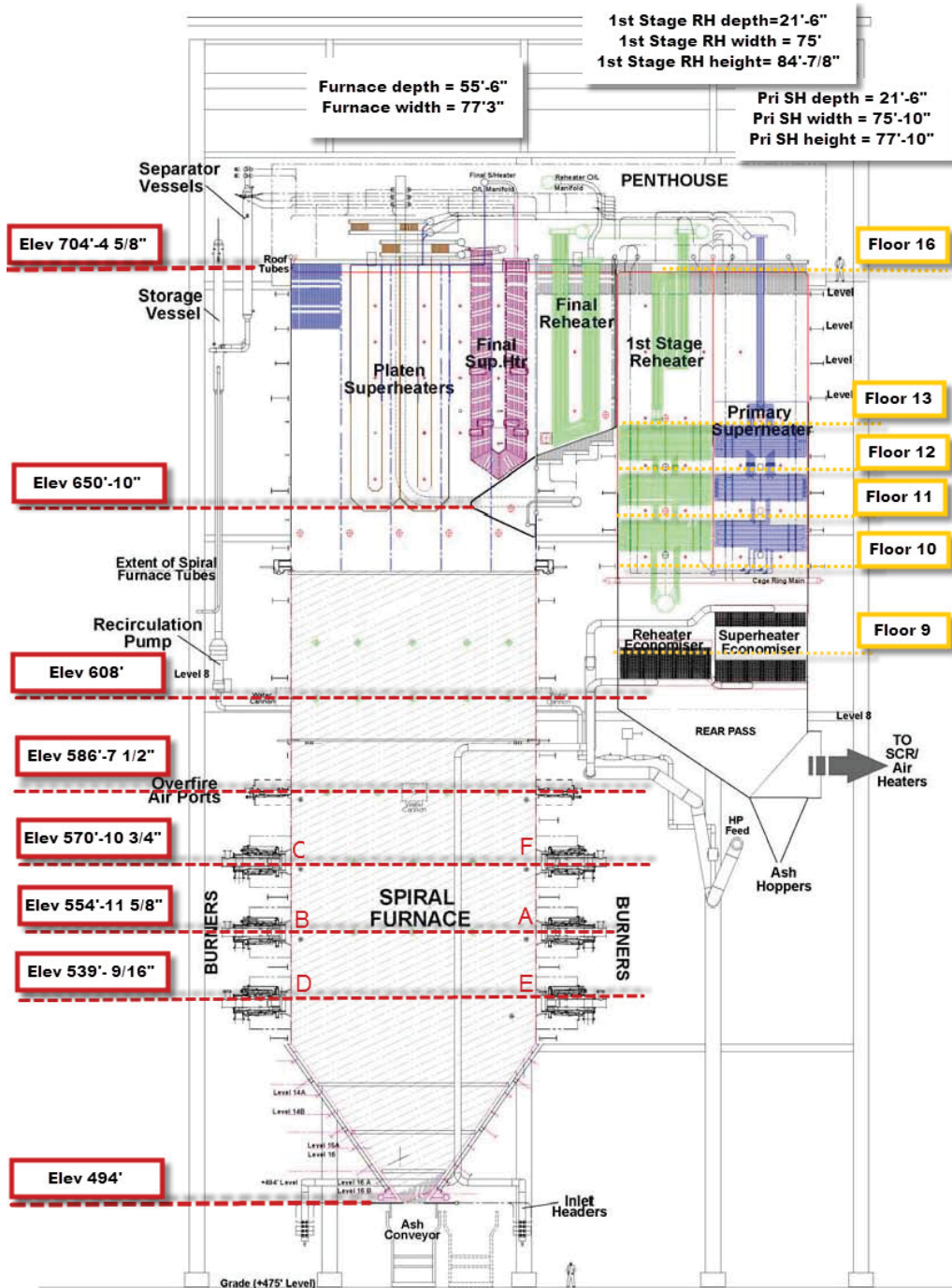
All four walls were inspected during this outage. There was limited access due to the boiler scaffold construction from the cutout slope up to the overfire air ports (OFA) at approximate elevation 586'. At elevation 590' a perimeter scaffold was erected allowing for good access as well as a landing deck for picks. Picks were used to inspect all four walls above that elevation. The cutout slope was not accessible and thus not inspected.

Five elevations of UT readings on both side walls and four elevations on the front and rear wall were taken. There is existing Amstar coating on all four walls and thickness was measured at two locations on the sidewall and three locations on the front and rear walls. The Amstar product coating had been previously applied between elevations 570'-10" - 605' on the sidewalls and 570'-10"- 598' on front and rear walls. The coating was shop applied to original panels and thus the upper boundary elevations are approximate based on construction. Due to significant identified wastage, additional Amstar coating was applied this outage to the sidewalls from elevation 570'-10" to 550'-10". The coating covered 14' on either side of centerline

for a total area of 28' wide by 20' tall. This was to address wastage issues identified in the UT survey in previously unprotected zones. Due to time constraints not all areas of concern for wastage were addressed this outage. These should be addressed in the next outage.

Recommendations:

- 1) Plan for possible panel replacements in 2016 based on UT survey findings.
- 2) Plan to sandblast all four walls to clearly define upper Amstar boundary.
- 3) Plan for additional application of AMSTAR coating in 2016 to address wastage concerns based on UT findings and Doosan model predictions due to firing system modification.
- 4) Perform another UT survey to continue to monitor waterwall wastage.
- 5) Inspect around the water cannons to make sure they are not damaging the walls.



TC2 : Boiler Layout

From: Byrd, Larry(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=E011284)
To: Craft, Jim; Joyce, Jeff; Mohn, Laura
CC:
BCC:
Subject: RE: Warranty and PL Items to be Resolved
Sent: 04/23/2014 05:31:05 PM -0400 (EDT)
Attachments:

The coal mill area (item 3 below) has some structural design issues, too (aside from undersized hoists), that I think will also need to be addressed. I looked at that with Dale Sedam, and quite a bit of structural steel that currently would have to be removed before we could remove and replace mill rolls. That could result in some lengthy unit derates, if we don't do something before the rolls start to wear out.

From: Craft, Jim
Sent: Wednesday, April 23, 2014 1:40 PM
To: Byrd, Larry
Cc: Joyce, Jeff
Subject: Warranty and PL Items to be Resolved

Larry,

The following concerns will not be addressed through the Warranty/Punch List process.

1. The Recycle Pump cranes monorail festoons (TC2-WN-0260) were NEVER installed correctly. Cost-- **38K**
2. The APH support bearing removal hoists (PL#30228) were installed on the wrong end of each APH to facilitate removal of this bearing assembly. Bechtel was made aware of the defect during construction and still installed in the wrong places. Cost-- **30K**.
3. The mill area hoists (TC2-WN-0442) are undersized and need to be upgraded to a rating of 20 Tons. I do not have a cost estimate on this as we would have to have a structural engineer determine if the support steel can handle the extra load.
4. The FGD landing hoists (PL#30228) are basically useless because they provide insufficient headroom to pick up anything. The hoists should have been cable hoists and not chain hoists. The chain baskets mounted to the hoists deter picking up anything of size. There is one landing on the East side of the WESP that has piping located in such a way that prohibits the movement of a WESP transformer from the landing zone coming out of the WESP gear room over to the FGD landing hoists. I have no cost estimate for this work.
5. The building vacuum (TC2-WN-0460) needs to be resolved through at least the use of sliding access doors like on Unit 1.
6. All boiler feed pumps suffer from rotor and casing magnetization (TC2-WN-0399). These pumps need to be de-magnetized during their first overhaul. Maintaining the grounding brushes should eliminate the pumps having to be worked on prematurely. Cost— **12K per year** for the brushes. Pump overhaul if the brushes don't do their job— **200K each**.
7. The main turbine coupling bolts (TC2-WN-0468E) are slated to be changed to a hydraulic bolt configuration due to the twisting and deformation of the bolts while running. Cost-- **1.3M**
8. All six recycle pumps will need flush water piping ran to each seal during their next seal change-out. There is currently water going to the impeller side of the seal but the new water supply will actually flush out the seal internals themselves. Siemens will have run most of the piping by the end of this outage but a little work remains. Cost--<**10K**

I hope this helps,

Jim

From: Byrd, Larry(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=E011284)
To: Payne, Nicholas
CC:
BCC:
Subject: FW: Operator update on Turbine/Generator work during TC2 spring outage
Sent: 06/13/2014 11:52:52 AM -0400 (EDT)
Attachments:

FYI—could this have any bearing on the brush issue you're looking at today?

From: Anderson, Dave (Trimble County)
Sent: Friday, June 13, 2014 11:35 AM
To: Byrd, Larry
Subject: FW: Operator update on Turbine/Generator work during TC2 spring outage

FYI.....

David W. Anderson

Trimble County Outage Coordinator

Tel. 502-627-6313

Fax 502-217-2199

email: dave.anderson@lge-ku.com

From: Payne, Nicholas
Sent: Tuesday, May 22, 2012 4:24 PM
To: Anderson, Dave (Trimble County); Coghill, Joe; Rabe, Phil; Smith, Timothy (Trimble); Craft, Jim; Braun, Allen; Moore, Emmett; Henderson, Trent; Powell, Richard
Subject: Operator update on Turbine/Generator work during TC2 spring outage

Turbine outage work for TC2 Spring 2012 outage.

The original scheduled work for the TC2 Turbine generators were to investigate known warrantee problems, outage inspections, and preventative maintenance. Those items included:

1. There was an oil leak around the shaft of the turning gear. This leak caused the shaft ground brush to get dirty and spark. The turbine oil vacuum was increased to over 2 inches to prevent the oil leak. The turning gear oil deflector clearances were adjust to prevent this leakage. When the unit returns to service the turbine oil vacuum can be returned to normal levels.
2. Rotor inspections for negative sequence damage. None were found.
3. Lead box inspections.
4. Stator cooling pressure decay and vacuum decay tests (hit skid).k Baseline information was collected.
5. Generator electrical tests. Baseline information was collected.
6. Bearing #8 thermocouple repairs. Thermocouples wires were found broken and repaired.
7. Repair flux probe. Flux probe wiring was incorrect. Corrected wiring issue.
8. Roll generator bearing out for inspection due to ground brush sparking.

Attachment to Response to KIUC-1 Question No. 30(f)

Production 2

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Thompson

The inspections discovered that bearings 5, 6, 7, 8, 9, and 10 had scored journals and other bearing wear. The damaged bearings were repaired according to Hitachi recommendations. All bearings (1-11) were checked. The inspections also discovered rust in the generator including on rotor wedges, locking rings, belly bands, and the stator core. This rust was likely due to condensation during storage. There are pictures showing severe condensation taken by project engineering during startup of TC2. There were rust indications on the locking ring which warranted further inspection of the generator rotor. The rotor was pulled, wedges removed and cleaned, retaining rings and other components NDE, and the electrical testing usually performed in an 8 year major outage was performed. Since the rotor was pulled there will be MDA balance technicians here during startup to correct balance issues.

Thanks

Nick Payne

From: "Byrd, Larry" <

Production 2

To: =?utf-8?Q?Maldonado

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[Francisco?=<Francisco.Maldonado@lge-ku.com>](mailto:Francisco.Maldonado@lge-ku.com)

Thompson

Date: 6/25/2014 6:59:52 AM

Subject: TC2 2014 Spring Outage Report.docx

Attachments: TC2 2014 Spring Outage Report.docx

Cisco,

I corrected a few typos and made a few other minor "wordsmithing" revisions to the attached TC2 2014 spring outage report. Take a minute to reread it, and if it makes sense to you, go ahead and forward it to Matt Sanders, Dave Anderson, and others as needed.

Thanks,

Larry

TC2 2014 Spring Outage Report: Boiler Work

The TC2 spring 2014 outage was a fourteen week outage. The outage mainly revolved around the replacement of thirty burners. The burner replacement consisted of a full throat replacement which included water wall work. Along with burner work some of the other major projects included but were not limited to the installation of 14 observation doors, an additional XXX square feet of Amstar 888 water wall coating, inspections and punchlist repairs and the replacement of 204 transition tubes at the "D" weld line on the roof.

The pressure part replacement and punch list work was mainly performed by Early Construction (formerly known as Southeast Boiler and Rigging) and the inspections were performed by Alstom (Jessie Gmeinder). Francisco Maldonado was the main project proponent for the boiler work during the outage and Sam Bullock had a key role with material acquisitions.

Pressure Part Replacement:

- Fourteen inspection doors were installed to allow for inspection of furnace both for burners and slag. There are three doors installed on each of the side walls starting at the middle burner elevation and working up to the over fire air elevation. There are also four doors installed on the front and rear walls each. The doors on the front wall are located at approximately elevation 620' (8th landing) and the doors on the rear wall are located at approximately elevation 629' (9th landing). The doors include four bent tubes and a seal box with a refractory plug style door. The welds made on the doors were x-rayed and the seal box was filled with refractory. The doors were installed by Early Construction and the refractory was installed by Integrity Refractory.
- Two hundred and four transition roof tubes were removed and new ones were reinstalled at the "D" field weld line. The purpose for this project was to replace tubes that on previous inspections were found to have high hardness values which made them susceptible to cold cracking. The existing tubes were made of T23 material and were "thermally" swaged to serve as transition pieces connecting the T23 roof tube material and T12 stub material. The new tubes are also T23 and are mechanically swaged and serve the same purpose. In order to access the welds on some of the roof tubes, screen tubes also had to be cut out and replaced. All welds were x-rayed and passed by Mistras.
- A leak located on the southwest corner near the balancing header that was identified prior to the unit coming down was also repaired during this outage. In addition, a MT survey of similar welds at the balancing header was also completed and no other indications were found.

Inspections and Punchlist Repairs

See attached Alstom Executive Summary. Further detail can be provided as needed.

From: Byrd, Larry(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=E011284)
To: Sedam, Dale; Henderson, Trent
CC: Joyce, Jeff; Turner, Tyler; Anderson, Dave (Trimble County); Mohn, Laura
BCC:
Subject: FW: TC U2 EHC flush Rough Draft
Sent: 07/05/2014 06:30:53 AM -0400 (EDT)
Attachments: TC U2 EHC Flush Jul 2014.docx;

Dale, will you verify that we have blown out the drain lines on all four of the MSSVs and RHSVs on TC2? The attached draft report from MD&A's Mike Kurn states that: *"A source of water into the EHC system could be during start up when the Main Stop and Re-Heat Stop Valve stems are not back seated. These drain line from the stem bushings below the valves should be ensured free of obstructions to prevent water from backing up on top of the actuators. Observe this and ensure lines are clear and no stand water is on top of these actuators during the next start up."* I inspected both MSSVs and both RHSVs this morning and verified that the water collection grooves on all four valves have been cleaned out, but I was unable to tell if the drain lines had been blown out. The drain openings for the drain lines on the two MSSVs were clean, but I couldn't see the drain openings on the RHSVs.

Trent, please create an outage PM to inspect the water collection grooves and blow out the drain lines during every planned outage. There was quite a bit of debris in the grooves before they were cleaned, and the drain lines are only maybe 1/2 inch dia. I've got photos I'll send that I would like electronically attached to the PM. We need to see if the TC1 valves are similarly constructed, and if so, do the same for TC1.

Thanks,

Larry

-----Original Message-----

From: Kurn, Mike [<mailto:mkurn@MDATURBINES.com>]
Sent: Thursday, July 03, 2014 3:52 PM
To: Mohn, Laura; Byrd, Larry
Cc: Phillips, Greg D.; McSpadden, Marcus G.; Anderson, Larry
Subject: TC U2 EHC flush Rough Draft

Laura,

Here is a rough draft condensed summary of issue as found, actions taken and recommendations. Please advise if you request more.

Thank you for the opportunity,

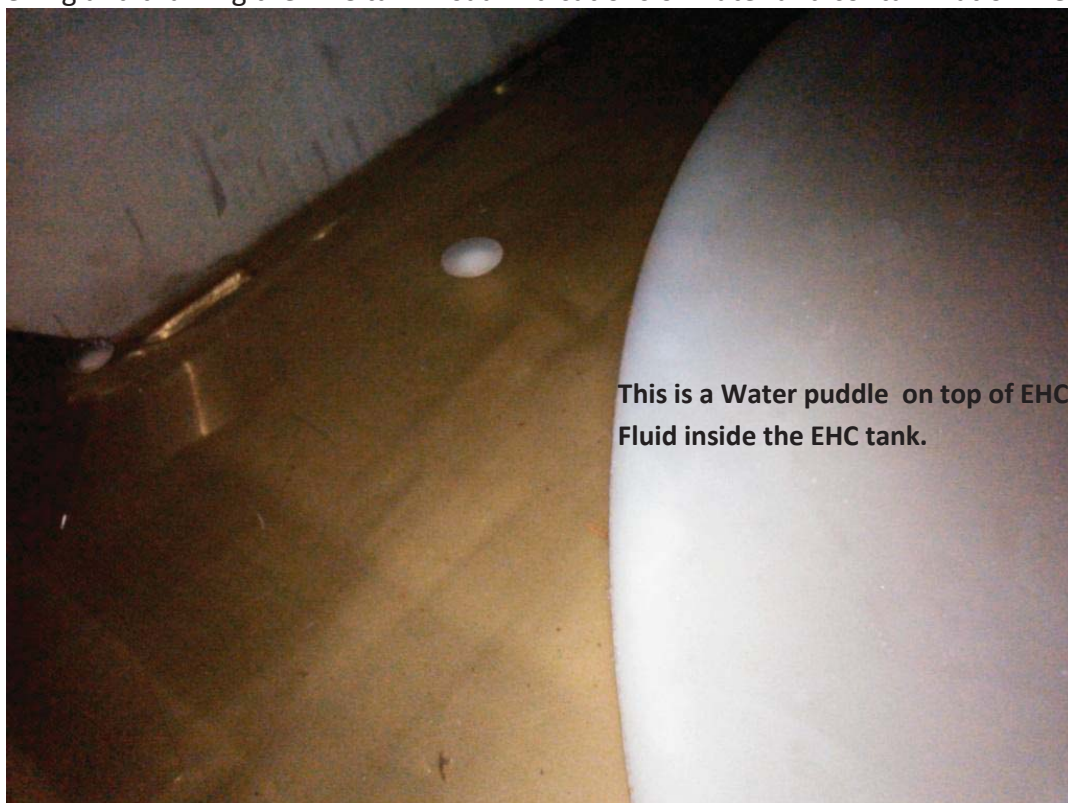
Mike Kurn MD&A

Cell (518)369-2954 <<TC U2 EHC Flush Jul 2014.docx>>

The "A" MSV was closed during a planned valve closure test and failed to re-open. Unit load was reduced and an auto shutdown was executed once the unit load reached 80 MW, the turbine tripped on reverse current and the "B" CV and both ICVs closed. The "B" MSV and the "A" CV remained open. The turbine speed increased to a peak speed of 3969 once the Hot Reheat (HRH) Bypass Valves opened following the line breaker being opened, a flow path was established through the turbine without load being generated (line breaker open). This flow path, coupled with the "B" MSV's inability to close, resulted in the turbine over speed condition. The "B" MSV was manually closed when the fast acting solenoid spool was punched. The "B" MSV decreased from 99% to 5%, with a rate of roughly 9.5 %/sec over a ten second period. The Manual trip handles on Master trip solenoid valve equipped on Hydraulic fluid tank were operated, but nothing happened.

Fyrquel representative made an onsite visit and stated water in the EHC fluid can act as a solvent breaking up and releasing contaminants. Trimble County Unit #2 EHC fluid sample date June 04, 2014 Water Content- WT% 0.43. ~ Water percentages of this magnitude typically are representative of a cooler leak. Suspect some of the contamination may be residual from unit storage/layup prior to instillation and start up.

Upon opening and draining the EHC tank visual indications of water and contamination were found.





Trip Block assembly was removed from the EHC skid and shipped to Rexroth in Pennsylvania. Rexroth disassembled cleaned and is inspected the Emergency Trip Device/Master trip Solenoid Block. Photos below provided by Rexroth show water, varnish and oxidation. Some components were found in a stuck or sluggish condition. The trip valves were reported to not be functioning at all. Rexroth recommended removal of valve actuators for inspection.



Spool and trip valve showing oxidation as well as varnishing.



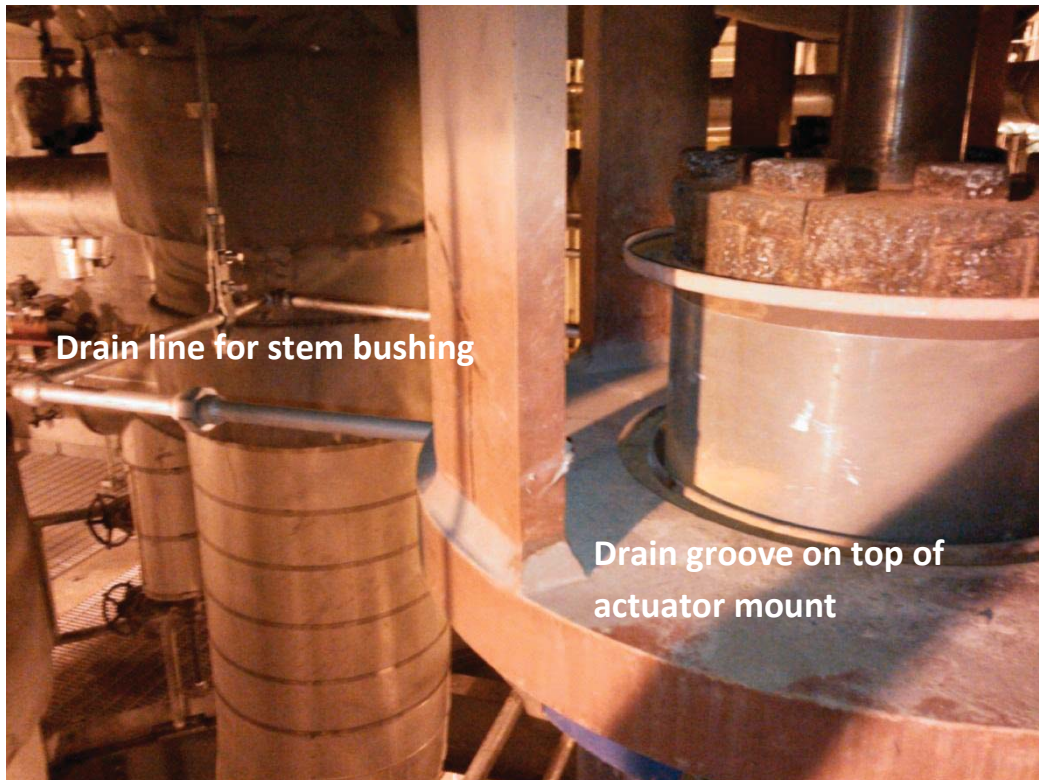
HydraLube provided EHC flushing services. EHC tank was cleaned between flushing steps. Flushing was conducted with a cleaning agent additive in new Fyrquel EHC fluid. All valves were stroked during flushing and the Emergency Trip System EHC fluid was dumped enabling valves to trip during the flushing process. DCS trends were observed to inspect for valve actuator sticking issues. Due to pressure limitations of the flushing pump only 2 valves were able to trip simultaneously and the DCS trends illustrated these pairs of valves closed closely together, (Mk VI should be observed for more accurate timing). Valve actuators were not disassembled and inspected at this time. It is recommended at the next Maintenance interval of the unit when enough time is allotted to remove All the EHC actuators and ship these to a qualified facility for disassembling and inspection.

All Accumulators were disassembled cleaned and inspected by Hydralube. Accumulators were valved out during the flushing process. All as found pre-charges on the accumulators were found within recommended pressures.

All new Servos and Solenoids were installed.

Both EHC Coolers were pressure tested at 80 psig of air for 1 hour with no noticeable depreciation of pressure observed. Again these coolers were later pressurized to 120 psig of water at the bottom-(u tubes were not evacuated of gas at the top of the coolers). Reportedly 1 cooler held pressure for approximately 12 hours and the other for approximately 6 hours. As the EHC fluid tested positive for the closed cooling water corrosion inhibitor the decision was made to replace the EHC coolers. Temporary coolers were provided by Hydralube until LG&E procures and installs new replacement coolers.

A source of water into the EHC system could be during start up when the Main Stop and Re-Heat Stop Valve stems are not back seated. These drain line from the stem bushings below the valves should be ensured free of obstructions to prevent water from backing up on top of the actuators. Observe this and ensure lines are clear and no stand water is on top of these actuators during the next start up.



From: "Byrd, Larry" <>

Production 2

To: [=?utf-8?Q?Mohn](#)

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[Laura?=<Laura.Mohn@lge-ku.com>](#)

Thompson

Date: 7/16/2014 10:34:07 AM

Subject: FW: Turbine Valve Actuator Info.xlsx

Attachments: quote 608027.pdf

We've got a conference call set up to discuss the TC2 actuators with Jeff and Kenny Noonan and others next Wednesday, and can talk and decide then who we think can competently do this work beside Rexroth/Hydrotech.

Thanks,

Larry

From: David A. Tengler [mailto:Dtengler@hydrotech.com]

Sent: Wednesday, July 16, 2014 11:55 AM

To: Mohn, Laura; Godiska Nathan (DCUS/SET11)

Cc: Anderson, Dave (Trimble County); Byrd, Larry; Ransdell, Charles; Henderson, Trent; Turner, Tyler; Payne, Nicholas; Vyhonsky Frank (DCUS/SVE2); Jeff Smith

Subject: RE: Turbine Valve Actuator Info.xlsx

Good morning Laura,

Please find the requested quote attached. Please don't hesitate to contact me with any questions or concerns you may have.

Thanks,

Dave Tengler

[Hydrotech Inc.](#)

Service and Repair

Customer Service Manager

Phone - 513-881-7000

Fax - 513-682-7890

From: Mohn, Laura [mailto:Laura.Mohn@lge-ku.com]

Sent: Tuesday, July 15, 2014 5:29 PM

To: Godiska Nathan (DCUS/SET11)

Cc: Anderson, Dave (Trimble County); Byrd, Larry; Ransdell, Charles; Henderson, Trent; Turner, Tyler; Payne, Nicholas; Vyhonsky Frank (DCUS/SVE2); David A. Tengler

Subject: Re: Turbine Valve Actuator Info.xlsx

Our contact at Hydrotech is Dave Tengler. His contact information is below.

Dave Tengler

Hydrotech Inc.

Service and Repair

Customer Service Manager

Phone - [513-881-7000](tel:513-881-7000)

Fax - [513-682-7890](tel:513-682-7890)

Dtengler@hydrotech.com

-Laura

On Jul 15, 2014, at 4:27 PM, "Godiska Nathan (DCUS/SET11)" <Nathan.Godiska@boschrexroth-us.com> wrote:

Hi Dave,

We will quote through Hydrotech. Could you please give me your contact, so we can submit to that person?

Sincerely,
Nathan Godiska
Bosch Rexroth Corporation
Sales Manager Energy Technology (DCUS/SET11)

Tel: +1 (610) 694-8512

From: Anderson, Dave (Trimble County) [<mailto:Dave.Anderson@lge-ku.com>]
Sent: Tuesday, July 15, 2014 11:47 AM
To: Godiska Nathan (DCUS/SET11)
Cc: Byrd, Larry; Ransdell, Charles; Mohn, Laura; Henderson, Trent; Turner, Tyler; Payne, Nicholas
Subject: Turbine Valve Actuator Info.xlsx

Nathan,

We would like a quote proposal to disassemble and inspect the actuators on our turbine valves in lieu of the EHC water & Varnish issues we dealt with the last couple weeks.

Please include costs for disassembly and inspection 2 ways- regular turnaround as well as expedited. Include durations for both turnarounds.

Does your manpower allow work on all 8 actuators at same time?

For now, we will figure on removing actuators internally and shipping to you unless you can do all the work on site?

Thanks,

David W. Anderson
Trimble County Outage Coordinator
Tel. 502-627-6313
Fax 502-217-2199
email: dave.anderson@lge-ku.com

----- The information contained in this transmission is intended only for the person or entity to which it is directly addressed or copied. It may contain material of confidential and/or private nature. Any review, retransmission, dissemination or other use of, or taking of any action in reliance upon, this information by persons or entities other than the intended recipient is not allowed. If you received this message and the information contained therein by error, please contact the sender and delete the material from your/any storage medium.

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FROM: HYDROTECH, INC
 10088 COMMERCE PARK DRIVE
 CINCINNATI OH 45246
 PHONE: 513-881-7000

TO: LOUISVILLE GAS & ELECTRIC
 P.O. BOX 32010
 LOUISVILLE KY 40232

ATTN:
 C.C.

FOLD

PLEASE REFER TO ABOVE WHEN ORDERING
 REPLY TO YOUR INQUIRY:

WHEN REPLYING, CONTACT:

DAVE TENGLER

LINE NO.	QUANTITY	DESCRIPTION	UNIT PRICE	UNITS
		LOUISVILLE GAS AND ELECTRIC - TRIMBLE COUNTY ** PER REXROTH, A PURCHASE ORDER WILL BE NEEDED 2-3 MONTHS IN ADVANCE OF OUTAGE TO SECURE PARTS NECESSARY TO COMPLETE THE REPAIRS. ** ***** ESTIMATED SHIPMENT OF REPAIRED UNITS WILL BE ONE ACTUATOR PER DAY. *****		
10	1	(R)D901317 ACTUATOR	16153.85	EA
20	1	(R)D901318 ACTUATOR	16153.85	EA
30	2	(R)D901319 ACTUATOR	16153.85	EA
40	2	(R)D901320 ACTUATOR	16153.85	EA
50	2	(R)D901321 ACTUATOR	16153.85	EA
		***** Use mobile hydraulic products? Contact 513- 881-7000 for info on how we can help. ***** *Thank you for this opportunity to quote! *Your business is appreciated. * Hydrotech is ISO9001:2008 certified *Certificate No. 4297 (Eagle Registr.) * Visit us on the web: www.hydrotech.com *General e-mail: info@hydrotech.com *****		
*** TOTALS *** EXTENDED AMOUNT			129230.80	

F.O.B. SP,FNA,PP,ADD

PAYMENT TERMS NET 30 DAYS

BY _____ AUTHORIZED SIGNATURE

ORIG EMAIL QUOTE

GENERAL

The following terms and conditions, including those on the front side of this document, shall constitute the entire Agreement for the purchase and sale of Hydrotech's Products. Any acceptance contained herein in addition to the Purchaser's purchase order or request for quotations, Such assent shall be deemed to occur upon the failure of the Purchaser to object in writing specifically to such term or terms within 14 days from the receipt hereof. Any terms and conditions contained in the Purchaser's purchase order or request for quotation which are different from, in addition to, or vary Hydrotech's terms and conditions shall not be binding upon Hydrotech's, and Hydrotech hereby objects thereto.

CHANGES

Prior to the date of delivery of any product or products hereunder, the Purchaser shall have the right to make changes in its order provided that Hydrotech receives written notice of the desired changes and accepts the same and provided further that the Purchaser accepts the additional charge therefor as determined by Hydrotech. Changes which interfere with or alter Hydrotech's production schedules will not be acceptable unless the time for performance is extended for such period as deemed necessary by Hydrotech. Failure of Hydrotech to accept a Purchaser's request to change its purchase order shall not be cause for Purchaser's cancellation of its order except upon payment of a cancellation charge to be determined by Hydrotech.

CANCELLATION

(a) Hydrotech shall have the absolute right to cancel this Agreement upon breach thereof by the Purchaser, failure by the Purchaser to make any payment required by this Agreement, or the insolvency or bankruptcy of the Purchaser.

(b) A purchase order or any part thereof which is hereby accepted by Hydrotech may not be cancelled unless and until Hydrotech receives written notice of the cancellation, has determined the additional charge to be made and the same has been accepted and paid by the purchaser. Upon receipt of a notice of cancellation, Hydrotech shall be entitled to take whatever action it deems necessary and advisable to minimize cancellation charges.

WARRANTY

(a) Hydrotech warrants, except as hereinafter provided, each product sold hereunder which is assembled by it to be free from defects in assembly under normal use and service for a period of one year after shipment thereof to the original purchaser.

(b) HYDROTECH'S WARRANTY EXTENDS ONLY TO PRODUCTS ASSEMBLED BY IT AND IS, TO THE EXTENT PERMITTED BY LAW, IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE AND ANY PRIOR WRITTEN OR ORAL REPRESENTATIONS REGARDING SUCH PRODUCTS MADE BY HYDROTECH, ITS EMPLOYEES, AGENTS OR REPRESENTATIVES.

(c) PRODUCTS, OR COMPONENTS THEREOF, SUPPLIED BY ANY OTHER PARTY TO HYDROTECH WHICH ARE NOT ASSEMBLED BY HYDROTECH ARE COVERED ONLY BY THE INDIVIDUAL WARRANTY OF SUCH OTHER PARTY AND COPIES OF SUCH WARRANTIES WILL BE FURNISHED UPON REQUEST.

(d) Hydrotech reserves the right to inspect products claimed defective under warranty either at the Purchaser's location or at Cincinnati, Ohio. A defective product is not to be returned to Hydrotech's plant unless authorized by Hydrotech. Products so returned shall be returned to Hydrotech's plant, freight prepaid. Any product proving defective due to faulty assembly within 1 year from date of shipment will be replaced or repaired free of charge, F.O.B. Hydrotech's plant, Cincinnati, Ohio. Hydrotech assumes no liability for labor charges incidental to the adjustment service, repairing, removal or replacement of the product or other costs, or for the expense of repairs made outside of its factory except when made pursuant to Hydrotech prior written consent. Hydrotech at its option, may ship a replacement or replacements immediately under standard billing and make warranty adjustment after inspection of the defective product by means of credit memorandum.

DELAYS

Hydrotech shall not be liable for damages for delays in performance due to circumstances beyond its reasonable control, including without limiting the generality of the foregoing, any priority system established by any agency of the United States Government, fires, floods, storms, and other acts of God, accidents, strikes, insurrections, war, shortage of materials, lack of transportation and failure of performance of subcontractors and/or suppliers for similar reasons. Failure of Hydrotech to perform for these reasons aforesaid shall not be grounds for Purchaser's cancellation of its order but the delivery date shall be extended accordingly.

LIMITATION OF LIABILITY

No claim made hereunder by the Purchaser, whether as to goods delivered or for non-delivery shall be greater than the purchase price of the goods in respect of which such claim is made, and Hydrotech shall under no circumstances be liable for consequential damages.

MISCELLANEOUS

(a) This Agreement may not be assigned or otherwise transferred by Purchaser without the prior written consent of Hydrotech, and any such assignment or transfer without such prior written consent shall be null and void and of no force or effect whatsoever.

(b) Hydrotech's failure to insist, in one or more instances, upon the performance of any term or terms of this Agreement shall not be construed as a waiver or relinquishment of its right to such performance or the future performance of such terms or terms and Purchaser's obligation with respect thereto shall continue in full force and effect.

(c) Any notice or other communication required or permitted hereunder shall be sufficiently given if sent in writing by registered or certified mail, postage prepaid, to the other party thereto at its respective address first above written. Any such notice, if so mailed, shall be deemed to have been received on the third business day following such mailing. Either party hereto may change its address for notice purposes by written notice to the other party.

(d) The paragraph headings in this Agreement are used for convenience only. They form no part of this Agreement and are in no way intended to alter or affect the meaning of this Agreement.

(e) This Agreement may be amended at any time by mutual agreement of the parties hereto by an endorsement to this Agreement signed by each of them.

(f) The invalidity, in whole or in part, of any provision of this Agreement shall not affect the validity or enforceability of any other of its provisions.

(g) This Agreement shall be governed by and construed in accordance with the laws of the State of Ohio.

(h) We hereby certify that these goods were produced in compliance with all applicable requirements of Sections 6, 7 and 12 of the Fair Labor Standard Act, as amended and of regulations and orders of the United States Department of Labor issued under Section 14 thereof.

TAXES

All applicable federal, state or local sales, use, or excise taxes are the responsibility of the Purchaser and shall be in addition to the price or prices stated on the front side of this document unless otherwise specifically stated. Hydrotech shall have the right to invoice separately any such tax as may be imposed at a later time. Applicable tax exemption certificates must accompany any order to which the same applies.

PAYMENT TERMS

(a) CASH PAYMENT: Net 30 days, upon credit approval. A service charge of 1-1/2% per month 18% annual rate will be charged on balances which are over 60 days.

(b) F.O.B. - Shipping Point unless otherwise stated.

From: Byrd, Larry(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=E011284)
To: Mohn, Laura
CC: Anderson, Dave (Trimble County); Henderson, Trent; Payne, Nicholas; Turner, Tyler
BCC:
Subject: FW: RCFA TC-2 on 6-29-14.xlsx
Sent: 07/28/2014 11:35:44 AM -0400 (EDT)
Attachments: RCFA TC-2 on 6-29-14.xlsx;

Laura,

As mentioned earlier today, I'd like for us to finish up the final report on the TC2 Turbine Valve - EHC System Flush outage by the end of this week, so that it can be submitted as part of the attached RCFA. Please schedule a meeting with others so that we can pull together all of our notes and try to get that done as soon as practical.

Thanks,

Larry

From: Byrd, Larry
Sent: Thursday, July 24, 2014 5:14 PM
To: Byrd, Larry
Subject: FW: RCFA TC-2 on 6-29-14.xlsx

From: Rabe, Phil
Sent: Thursday, July 17, 2014 8:16 AM
To: Byrd, Larry
Cc: Buckner, Mike
Subject: RCFA TC-2 on 6-29-14.xlsx

Larry,

Here is a start on the RCFA for the TC2 EHC event. Mitch also noticed while reviewing data the HP and LP Turbine bypass valves may need the logic for their operation reviewed. We will work with the DCS folks to look into this further.

Thanks,

Produced as Native

Original File Name: RCFA TC-2 on 6-29-14.xlsx

Stored File Name: OpenText00434242.xlsx

From: Byrd, Larry(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=E011284)
To: Mohn, Laura
CC: Anderson, Dave (Trimble County); Payne, Nicholas; Turner, Tyler; Henderson, Trent
BCC:
Subject: TC2 EHC Outage_Summary Document.docx
Sent: 09/18/2014 01:33:16 PM -0400 (EDT)
Attachments: TC2 EHC Outage_Summary Document.docx;

Laura, Thanks for assembling this information for all of us. I've reviewed the attached document and marked it up in redline format to make it easier to see my revisions. I'd like to review with Tyler, Nick, Trent and others tomorrow or early next week, make any final changes, and finish it up.

Tyler, please review my comments, especially towards the bottom of the document, and if you see anything that isn't correct let's discuss tomorrow.

Trent, if there's any relevant information in the comments section of the work order(s) associated with the TC2 EHC fluid water issue, the EHC system flush, or Nick's guys work on the EHC controls, we should probably add the work order numbers to this document, too. (I didn't see that information, but I may have missed it.) We probably should add the outage id number, too.

Thanks,

Larry

The TC2 "A" main steam stop valve (MSV) was closed during a planned valve closure test on Friday, June 27th, 2014, but failed to re-open. On Saturday night, June 28th, 2014, the unit load was reduced in preparation to come offline in order to replace the A MSV fast acting solenoid. An auto shutdown was executed once the unit load reached 80 MW, the turbine tripped on reverse current and the "B" CV and both ICVs closed. The "B" MSV and the "A" CV remained open. The turbine speed increased to a peak speed of 3969 once the Hot Reheat (HRH) Bypass Valves opened following the line breaker being opened, a flow path was established through the turbine without load being generated (line breaker open). This flow path, coupled with the "B" MSV's inability to close, resulted in a turbine over speed condition. Manual intervention was required with a hammer and punch to operate the spool on the fast acting solenoid valve for the "B" MSV to close. The turbine speed decayed after this, and the "A" CV closed, but the reheat valves had to be manually closed as well. The Manual trip handles on the master trip solenoid valves equipped on the hydraulic fluid tank were operated, but nothing happened.

Leading up to this event, there was a known issue with water contamination in the EHC system that had first become apparent to plant personnel on Friday, June 20th. A vacuum dehydrator was brought in on Saturday, June 21st, and removed approximately 2.5 gallons of water over the course of several days. Although the water was removed from the system, the components throughout the system had been contaminated, so the decision was made to conduct a complete flush on the EHC system.

EHC fluid analysis from January 6th, 2014 indicates that the fluid was in good condition with a water content of 0.08% (800 ppm) before coming off-line for the 15+ week burner outage in February, 2014. However, the first sample taken after the outage on June 17th indicated that there was 0.45% (4500 ppm) of water in the fluid.

The potential sources of water were investigated to determine the root cause of the water contamination. A leak in the coolers seemed to be the most likely source of water of this magnitude, so they were pressure tested on-site with nitrogen and water. Both EHC Coolers were pressure tested at 80 psig of air for 1 hour with no noticeable depreciation of pressure observed. Again, these coolers were later pressurized to 120 psig of water. One cooler held pressure for approximately 12 hours and the other for approximately 6 hours. However, to avoid the risk, the decision was made to replace the EHC coolers with temporary coolers until a new heating/cooling system is in place.

After the outage, the coolers were sent out and tested by National Heat Exchange Cleaning Corporation in Youngstown, Ohio. Both coolers passed hydro tests on both the shell and tube side at the OEM's test pressures indicating no leaks in either cooler.

According to MD&A, another source of water into the EHC system could be during start up when the Main Stop and Re-Heat Stop Valve stems are not back seated. These drain lines and pans were inspected and cleaned, and the stem bushings below the valves were verified to be free of obstructions to prevent water from backing up on top of the actuators. During the start-up, the drain lines were blown out and debris was removed from the collection channel at each valve to confirm that all drain lines were clear to prevent standing water from collecting on top of the valve actuators.

During the planned 2014 spring TC2 outage, the EHC tank was drained and that the EHC fluid was stored in plastic totes for several weeks. When the TC2 outage was near completion, the EHC tank was refilled with some of the EHC fluid that had been stored in the totes. While refilling the EHC tank with the used EHC fluid, the mechanics noticed that there was a visible quantity water floating on top of the fluid in the tote. Assuming that the fluid below the visible water would be sufficiently water-free to reuse it, an unknown quantity of the used EHC fluid was pumped from the bottom of the tote back into the EHC tank, and then the mechanics used new fluid to finish topping off the EHC tank. Although the used EHC fluid that was stored in the totes was not sampled and tested before it was put back in the EHC tank, it is assumed now that the fluid was contaminated with water while fluid was stored in the totes, and that this is the most likely source of the EHC fluid water contamination problem that was revealed after the unit was put back online.

Since the TC2 EHC system flush was completed and the unit returned to service in early July, an experiment has been underway to determine how much moisture EHC fluid can absorb from the air. New EHC fluid was put into a small jug, with the cap installed on the jug in a loose, non-air tight manner, similar to a tote. The jug was placed near the location where the totes of fluid were stored during the TC2 outage, and over the past XX weeks, the water content of the fluid increased by ___ ppm. (Tyler to provide input here.)

Follow-up Actions:

- All personnel at the plant have been tailgated about the proper handling and storage of EHC fluid.
 - The mechanics have received training on EHC handling procedures and the proper way to add or remove EHC fluid from the tanks and drums.
 - Used EHC fluid is no longer reused and only clean, new containers are used to hold or transport EHC fluid.
 - Only fluid in unopened EHC drums is used to fill EHC tanks. Once a drum of EHC fluid is opened, any unused fluid remaining in the drum is discarded.
 - The pump used to transfer new EHC fluid into the EHC tanks is clearly labeled to be used for EHC fluid only, and is stored in a secure location that is only accessible by personnel who are trained to handle EHC fluid, the EHC pumps, and associated equipment.
- More training is being planned as well.
- Maintenance PMs have been created to inspect each turbine valve actuator's condensation collection channel, remove any debris from the channel, and blow out the drain lines to ensure that it is clear so that no standing water collects on top of the valve actuators.

From: Spaulding, Jeffrey(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=SPAULDIJ)
To: Hudson, Rusty
CC:
BCC:
Subject: RE: T2
Sent: 07/09/2014 11:10:24 AM -0400 (EDT)
Attachments:

Rusty, I'll take a look and run the numbers, but I don't believe we have had to buy much, if any. We have been running some gas in lieu of purchase power but should be a minimal impact on FAC. I'll send you some data shortly.

Jeff

From: Hudson, Rusty
Sent: Wednesday, July 09, 2014 11:05 AM
To: Spaulding, Jeffrey
Subject: FW: T2

Jeff, have you had to buy much power since TC2 went out? That would be our only exposure for forced outage that I can think of. Rusty

From: Thompson, Paul
Sent: Wednesday, July 09, 2014 11:02 AM
To: Joyce, Jeff; Bowling, Ralph; Hudson, Rusty; Sinclair, David
Subject: RE: T2

Let's hope that is the issue.... Thanks and good luck.

Rusty, any calculation on Purchased Power cost impact to us based upon the forced outage?

Thanks,
Paul

From: Joyce, Jeff
Sent: Wednesday, July 09, 2014 10:44 AM
To: Bowling, Ralph; Thompson, Paul
Subject: T2

Paul / Ralph

We have found an *apparent smoking gun in the T2 turbine EHC* controls that has prevented the unit from functioning as intended.

The 2 new shuttle / pilot valves that are in the tripping circuits we installed as a part of the clean-up of the system were found to be different from 2 shuttle pilot valves that we had re-conditioned. They all have the same part numbers, but the spool is different. (These shuttle / pilot valves are items 301 and 305 in the clip from the drawing I've shown below)

We installed the reconditioned valves and did preliminary testing this morning. *It appears we have the system functioning as intended but,* additional verification is needed.

Our path forward today is:

- Clean the sensing lines to the pressure transmitters.
- Restore the system to a normal condition.
- Functionally test the trip system with everything normal.
- Take various EHC fluid samples at various locations before and after the functional test.

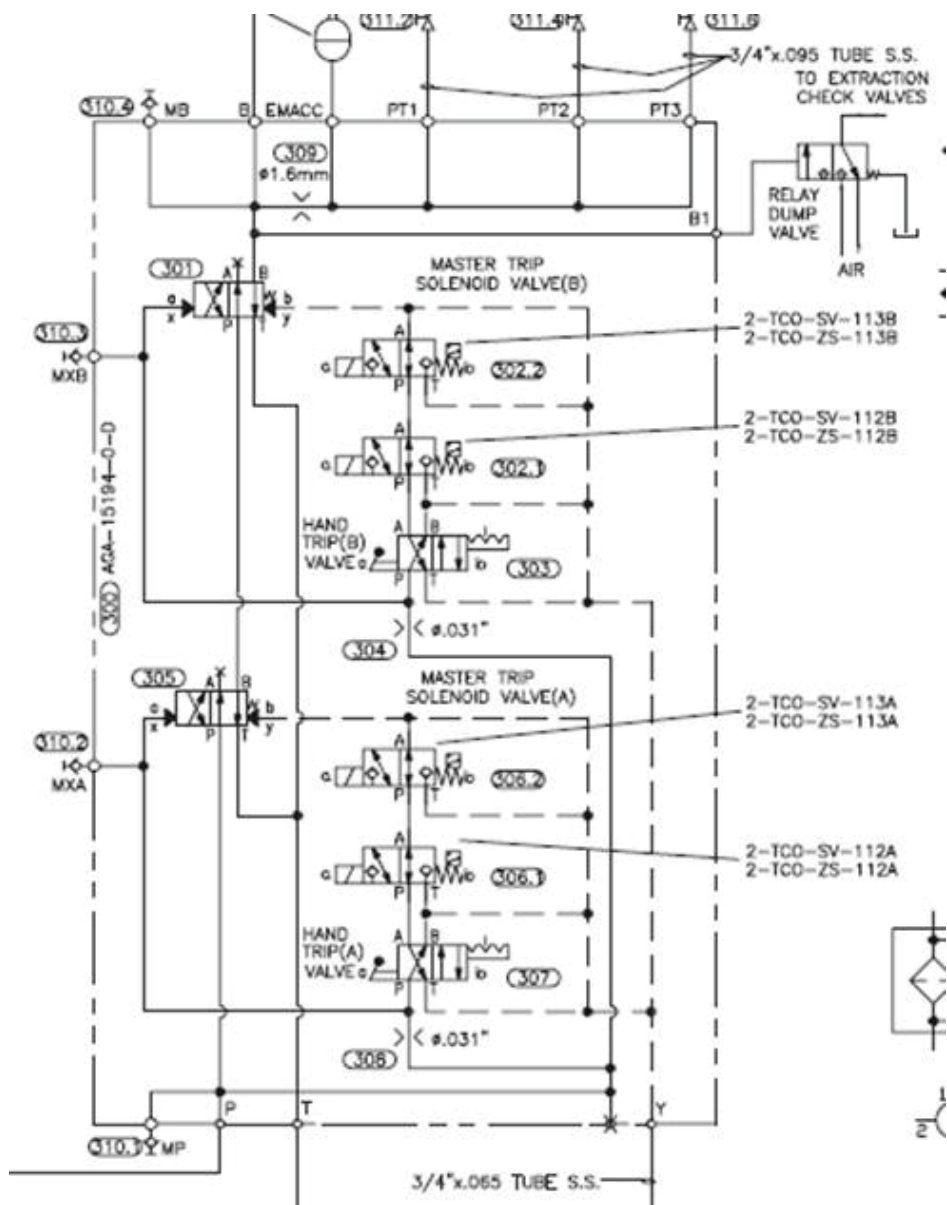
We are working toward being ready for the testing around 2 pm.

Any malfunction will result in additional flushing of the system and review of the system.

With successful completion, we will begin preparing the water for restarting the unit.

We'll give an afternoon update

Jeff J



From: Spaulding, Jeffrey(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=SPAULDIJ)
To: Hudson, Rusty
CC:
BCC:
Subject: RE: T2
Sent: 07/09/2014 11:23:36 AM -0400 (EDT)
Attachments:

Rusty, there have not been any market purchases so far in July. Cooler weather over the holidays and running CT's when needed have resulted in not buying from the market. We did have one hour in June the day TC2 went off (6/29) were we bought 20 mw's but that's insignificant. I'll let you know if anything changes.

Jeff

From: Hudson, Rusty
Sent: Wednesday, July 09, 2014 11:17 AM
To: Spaulding, Jeffrey
Subject: RE: T2

Thanks Jeff.

From: Spaulding, Jeffrey
Sent: Wednesday, July 09, 2014 11:10 AM
To: Hudson, Rusty
Subject: RE: T2

Rusty, I'll take a look and run the numbers, but I don't believe we have had to buy much, if any. We have been running some gas in lieu of purchase power but should be a minimal impact on FAC. I'll send you some data shortly.

Jeff

From: Hudson, Rusty
Sent: Wednesday, July 09, 2014 11:05 AM
To: Spaulding, Jeffrey
Subject: FW: T2

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From: Thompson, Paul
Sent: Wednesday, July 09, 2014 11:02 AM
To: Joyce, Jeff; Bowling, Ralph; Hudson, Rusty; Sinclair, David
Subject: RE: T2

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Sent: Wednesday, July 09, 2014 10:44 AM
To: Bowling, Ralph; Thompson, Paul

Subject: T2

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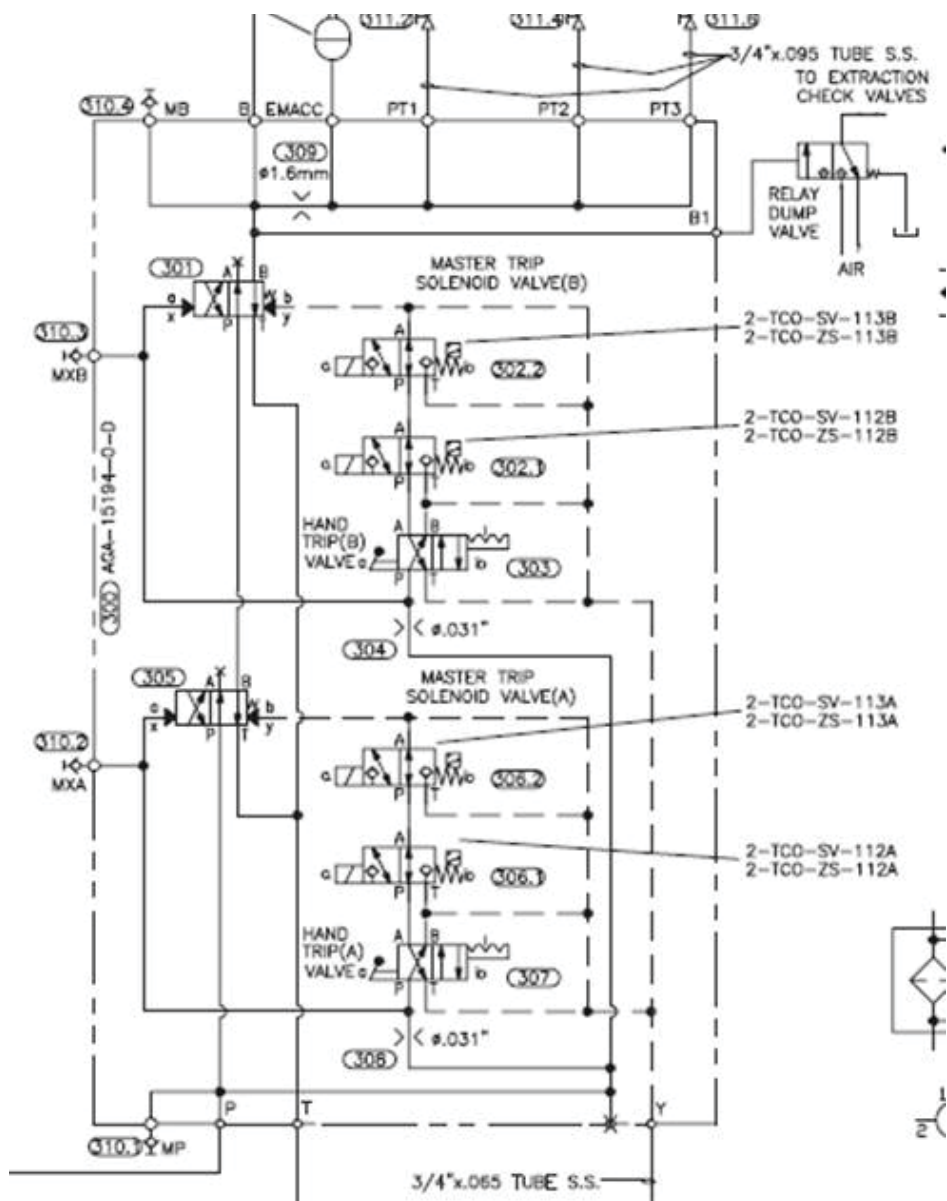
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We'll give an afternoon update

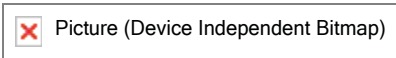
Jeff J



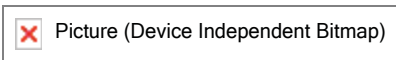
From: Carter, Bud(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=WEB/CN=BUDCARTER)
To: Hudson, Rusty; Mazza, Frank; Saunders, Eileen; Wilson, Stuart; Leitner, George; Finnegan, Michael; Cetken, Laura; Barnes, Joe
CC: Revenue Accounting
BCC:
Subject: Native Load Purchases ... Allocated To ... JULY's _ Fuel Clause _ Forced Outage(s).
Sent: 08/05/2014 08:31:03 AM -0400 (EDT)
Attachments:

The table below allocates **JULY's** ... Fuel Adjustment Clause (FAC) forced outage (FO) ... native load power purchases amongst ...

... **KU's nine (9)** ...

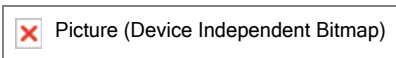


... and **LGE's ten (10)** ...



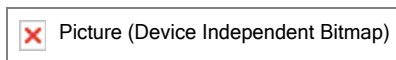
... **Fuel Adjustment Clause (FAC) forced outages.**

JULY's fuel clause ... native load power purchase allocations ... by company ... by forced out unit ... are ...



Note:

1. If ... KU's and LG&E's **JULY** 2014 Fuel Clause (FAC) disallowance to forced outage (FO) purchase power cost ratios do not change from **2013's** ratios (*0.2902 and 0.3430 respectively*) ... and we estimate **JULY's** Fuel Clause (FAC) disallowance totals solely on the basis of the purchases listed above ... July's disallowance would be ...



2. However, TC 2 has very low production costs ... therefore as we saw last month substitute generation expense can also be a significant source of TC 2 disallowance expense. If we assume that's still the case ... that June's disallowance calculations still apply to TC 2's ongoing June 29th through July 12th outage (minimal purchases and minimal CT operation), TC 2's disallowance (based on June's calculations) for this ongoing outage will be \$691,000 for the 312 additional hours of outage in July.

Bud Carter

Generation System Planning
7th Floor

LG&E Center
LG&E and KU Energy LLC

502-627-2707

bud.carter@lge-ku.com

<u>Unit Name</u>	<u>Hour Begin</u>	<u>Hour End</u>	<u>Outage Type</u>	<u>Event Number</u>	<u>Event Duration</u>	<u>Event Cause</u>
TC2	6/29/14 0:45	7/12/14 4:30	U1	41	315.75	Turbine Valve and EHC System Contamination
BR1	7/7/14 23:40	7/8/14 18:19	U1	48	18.65	Turbine Control Valves
GR4	7/9/14 12:41	7/12/14 10:48	U1	54	70.12	Furnace Wall Tube Leaks
GR3	7/10/14 5:21	7/12/14 5:14	U1	34	47.88	Second Superheater Tube Leaks
TC2	7/12/14 4:30	7/12/14 17:37	SF	42	13.12	Turbine Temperature Control Issues
GR4	7/12/14 10:48	7/13/14 15:46	SF	55	28.97	Induced Draft Fan Motors and Drives
TC2	7/12/14 17:37	7/13/14 7:12	SF	43	13.58	Turbine Valve Control Problems
BR3	7/17/14 13:11	7/22/14 15:50	U1	53	122.65	Other Cooling Tower Problems
TC2	7/23/14 12:22	7/25/14 13:39	U1	49	49.28	12-15kv Circuit Breaker Failure

<u>Unit Name</u>	<u>Hour Begin</u>	<u>Hour End</u>	<u>Outage Type</u>	<u>Event Number</u>	<u>Event Duration</u>	<u>Event Cause</u>
TC2	6/29/14 0:45	7/12/14 4:30	U1	41	315.75	Turbine Valve and EHC System Contamination
MC3	7/2/14 18:54	7/3/14 8:30	U1	99	13.60	Other Boiler Control and Instrumentation Problems
CR5	7/8/14 11:15	7/9/14 2:23	U1	44	15.13	Other Induced Draft Fan Problems
TC2	7/12/14 4:30	7/12/14 17:37	SF	42	13.12	Turbine Temperature Control Issues
TC2	7/12/14 17:37	7/13/14 7:12	SF	43	13.58	Turbine Valve Control Problems
CR6	7/13/14 23:01	7/17/14 8:10	U2	59	81.15	Furnace Wall Leaks
CR4	7/14/14 13:46	7/15/14 16:26	U2	40	26.67	Condenser Tube Leaks
TC2	7/23/14 12:22	7/25/14 13:39	U1	49	49.28	12-15kv Circuit Breaker Failure
MC4	7/25/14 1:43	7/27/14 17:10	U1	175	63.45	Furnace Wall Leaks
MC4	7/29/14 2:24	7/31/14 9:57	U1	184	55.55	First Reheater Leaks

<u>Year</u>	<u>Month</u>	<u>Company</u>	<u>Unit Name</u>	<u>Sum Of Purch Allocated \$</u>	<u>Sum Of Purch Allocated MW</u>	<u>\$/MWh</u>
2014	7	KU	BR1	\$ 195.52	4.62	\$ 42.32
2014	7	KU	BR3	\$ 1,328.21	45.00	\$ 29.52
2014	7	KU	GR3	\$ 16.14	8.64	\$ 1.87
2014	7	KU	GR4	\$ 639.73	32.37	\$ 19.76
2014	7	KU	TC2	\$ 29,505.15	545.37	\$ 54.10
		KU		\$ 31,684.75	636.00	\$ 49.82
2014	7	LGE	CR4	\$ 87.62	3.14	\$ 27.90
2014	7	LGE	CR6	\$ 669.56	22.86	\$ 29.29
2014	7	LGE	MC4	\$ 817.96	29.00	\$ 28.21
2014	7	LGE	TC2	\$ 276.47	119.00	\$ 2.32
		LGE		\$ 1,851.61	174.00	\$ 10.64
		KU-LGE		\$ 33,536.36	810.00	\$ 41.40

<u>Company</u>	<u>Sum Of Purch Allocation \$</u>	<u>'2013's Avg. Purchase Disallowance</u>	<u>JULY's Disallowance Projection</u>
KU	\$ 31,684.75	29.02%	\$ 9,194.91
LGE	\$ 1,851.61	34.30%	\$ 635.10
LGE-KU	\$ 33,536.36		\$ 9,830.02

Unit	Hour	Hour	Outage	Event	Event	Event
Name	Begin	End	Type	Number	Duration	Cause
TC2	6/29/14 0:45	7/12/14 4:30	U1	41	315.75	Turbine Valve and EHC System Contamination
BR1	7/7/14 23:40	7/8/14 18:19	U1	48	18.65	Turbine Control Valves
GR4	7/9/14 12:41	7/12/14 10:48	U1	54	70.12	Furnace Wall Tube Leaks
GR3	7/10/14 5:21	7/12/14 5:14	U1	34	47.88	Second Superheater Tube Leaks
TC2	7/12/14 4:30	7/12/14 17:37	SF	42	13.12	Turbine Temperature Control Issues
GR4	7/12/14 10:48	7/13/14 15:46	SF	55	28.97	Induced Draft Fan Motors and Drives
TC2	7/12/14 17:37	7/13/14 7:12	SF	43	13.58	Turbine Valve Control Problems
BR3	7/17/14 13:11	7/22/14 15:50	U1	53	122.65	Other Cooling Tower Problems
TC2	7/23/14 12:22	7/25/14 13:39	U1	49	49.28	12-15kv Circuit Breaker Failure

<u>Unit</u>	<u>Hour</u>	<u>Hour</u>	<u>Outage</u>	<u>Event</u>	<u>Event</u>	<u>Event</u>
<u>Name</u>	<u>Begin</u>	<u>End</u>	<u>Type</u>	<u>Number</u>	<u>Duration</u>	<u>Cause</u>
TC2	6/29/14 0:45	7/12/14 4:30	U1	41	315.75	Turbine Valve and EHC System Contamination
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CR5	7/8/14 11:15	7/9/14 2:23	U1	44	15.13	Other Induced Draft Fan Problems
TC2	7/12/14 4:30	7/12/14 17:37	SF	42	13.12	Turbine Temperature Control Issues
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CR6	7/13/14 23:01	7/17/14 8:10	U2	59	81.15	Furnace Wall Leaks
CR4	7/14/14 13:46	7/15/14 16:26	U2	40	26.67	Condenser Tube Leaks
TC2	7/23/14 12:22	7/25/14 13:39	U1	49	49.28	12-15kv Circuit Breaker Failure
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2014	7	KU	BR3	\$ 1,328.21	45.00	\$ 29.52
2014	7	KU	GR3	\$ 16.14	8.64	\$ 1.87
2014	7	KU	GR4	\$ 639.73	32.37	\$ 19.76
<u>2014</u>	<u>7</u>	<u>KU</u>	<u>TC2</u>	<u>\$ 29,505.15</u>	<u>545.37</u>	<u>\$ 54.10</u>
		KU		\$ 31,684.75	636.00	\$ 49.82
2014	7	LGE	CR4	\$ 87.62	3.14	\$ 27.90
2014	7	LGE	CR6	\$ 669.56	22.86	\$ 29.29
2014	7	LGE	MC4	\$ 817.96	29.00	\$ 28.21
<u>2014</u>	<u>7</u>	<u>LGE</u>	<u>TC2</u>	<u>\$ 276.47</u>	<u>119.00</u>	<u>\$ 2.32</u>
		LGE		\$ 1,851.61	174.00	\$ 10.64
		KU-LGE		\$ 33,536.36	810.00	\$ 41.40

		'2013's Avg.	JULY's
	Sum Of Purch	Purchase	Disallowance
<u>Company</u>	<u>Allocation \$</u>	<u>Disallowance</u>	<u>Projection</u>
KU	\$ 31,684.75	29.02%	\$ 9,194.91
LGE	\$ 1,851.61	34.30%	\$ 635.10
LGE-KU	\$ 33,536.36		\$ 9,830.02

From: Hudson, Rusty(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=ADMINISTRATIVE/CN=HUDSONR)
To: Spaulding, Jeffrey
CC:
BCC:
Subject: RE: T2
Sent: 07/09/2014 11:25:53 AM -0400 (EDT)
Attachments:

Thanks Jeff.

From: Spaulding, Jeffrey
Sent: Wednesday, July 09, 2014 11:24 AM
To: Hudson, Rusty
Subject: RE: T2

Rusty, there have not been any market purchases so far in July. Cooler weather over the holidays and running CT's when needed have resulted in not buying from the market. We did have one hour in June the day TC2 went off (6/29) were we bought 20 mw's but that's insignificant. I'll let you know if anything changes.

Jeff

From: Hudson, Rusty
Sent: Wednesday, July 09, 2014 11:17 AM
To: Spaulding, Jeffrey
Subject: RE: T2

Thanks Jeff.

From: Spaulding, Jeffrey
Sent: Wednesday, July 09, 2014 11:10 AM
To: Hudson, Rusty
Subject: RE: T2

Rusty, I'll take a look and run the numbers, but I don't believe we have had to buy much, if any. We have been running some gas in lieu of purchase power but should be a minimal impact on FAC. I'll send you some data shortly.

Jeff

From: Hudson, Rusty
Sent: Wednesday, July 09, 2014 11:05 AM
To: Spaulding, Jeffrey
Subject: FW: T2

Jeff, have you had to buy much power since TC2 went out? That would be our only exposure for forced outage that I can think of. Rusty

From: Thompson, Paul
Sent: Wednesday, July 09, 2014 11:02 AM
To: Joyce, Jeff; Bowling, Ralph; Hudson, Rusty; Sinclair, David
Subject: RE: T2

Let's hope that is the issue.... Thanks and good luck.

Rusty, any calculation on Purchased Power cost impact to us based upon the forced outage?

Thanks,
Paul

From: Joyce, Jeff
Sent: Wednesday, July 09, 2014 10:44 AM
To: Bowling, Ralph; Thompson, Paul
Subject: T2

Paul / Ralph

We have found an *apparent smoking gun in the T2 turbine EHC controls* that has prevented the unit from functioning as intended.

The 2 new shuttle / pilot valves that are in the tripping circuits we installed as a part of the clean-up of the system were found to be different from 2 shuttle pilot valves that we had re-conditioned. They all have the same part numbers, but the spool is different. (These shuttle / pilot valves are items 301 and 305 in the clip from the drawing I've shown below)

We installed the reconditioned valves and did preliminary testing this morning. *It appears we have the system functioning as intended but,* additional verification is needed.

Our path forward today is:

- Clean the sensing lines to the pressure transmitters.
- Restore the system to a normal condition.
- Functionally test the trip system with everything normal.
- Take various EHC fluid samples at various locations before and after the functional test.

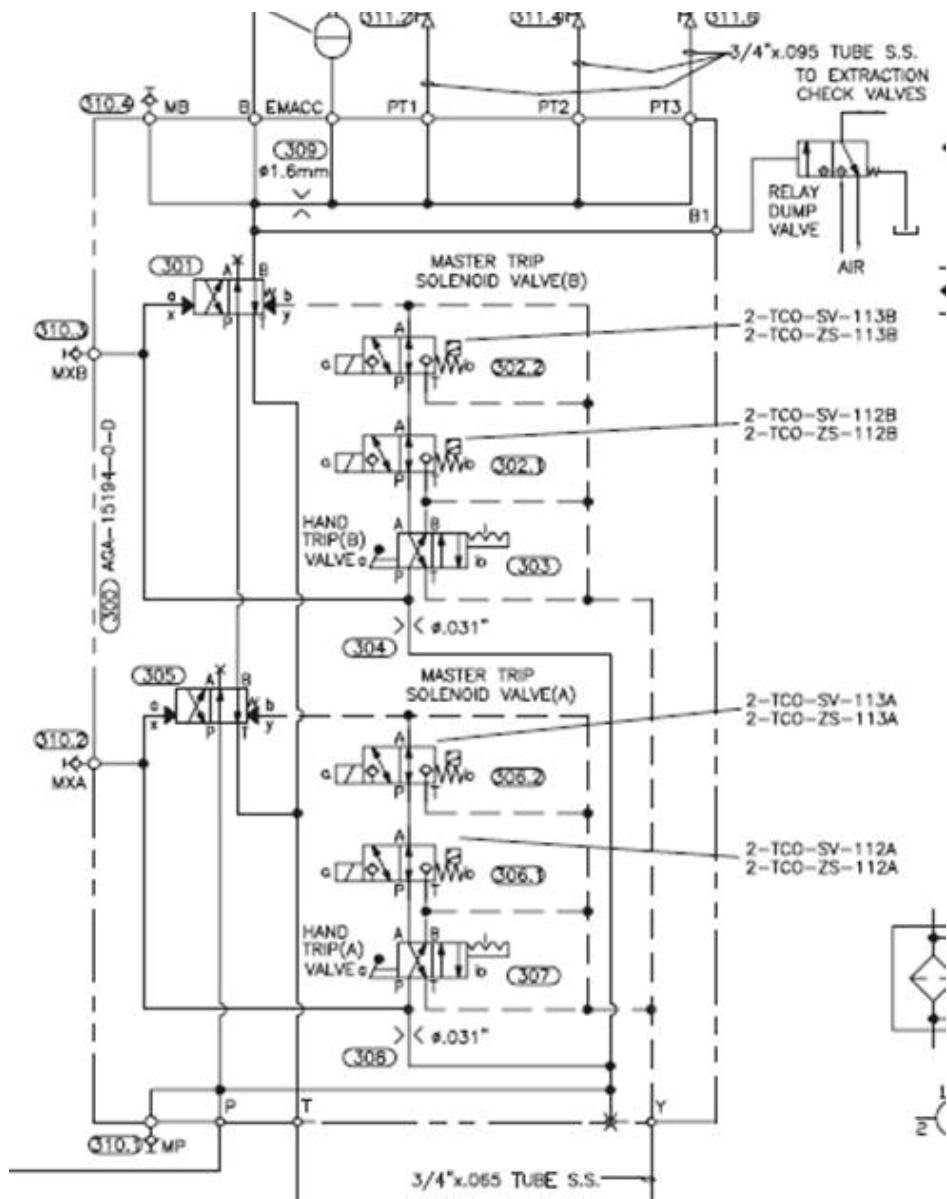
We are working toward being ready for the testing around 2 pm.

Any malfunction will result in additional flushing of the system and review of the system.

With successful completion, we will begin preparing the water for restarting the unit.

We'll give an afternoon update

Jeff J



Produced as Native

Original File Name: Outage Exp (Nonlabor) as of 9-18-2014.xlsx

Stored File Name: OpenText00450389.xlsx

Produced as Native

Original File Name: TC 2014 GROSS STEAM MONTHLY SUMMARY 8 + 4.xlsx

Stored File Name: OpenText00451309.xlsx

Produced as Native

Original File Name: TC STEAM MONTHLY SUMMARY 12 + 0.xlsx

Stored File Name: OpenText00451410.xlsx

Produced as Native

Original File Name: Do Nothing Case - TC2 PJFF Bags - CEM.xlsm

Stored File Name: OpenText00456176.xlsm

Produced as Native

Original File Name: Investment Case - TC2 PJFF Bags - CEM.xlsm

Stored File Name: OpenText00456177.xlsm

Investment Proposal for Investment Committee Meeting on: September 26, 2013

Project Name: TC2 PJFF Bag Replacement

Total Expenditures: \$1,326k (Net IMEA/IMPA Reimbursement), Including 10% Contingency

Project Number(s): 137671LGE

Business Unit/Line of Business: Power Generation

Prepared/Presented By: Jeff Joyce/Haley Turner

Executive Summary

The scope of this project includes the purchase and installation of the filter bags required to replace all the bags in the TC2 pulse jet fabric filter (PJFF). The scope includes the removal of the existing bags and installation of the new bags. The purchase of two compartments of spare filter bags is included to replace damaged bags in future outages. Cages fit tightly down into the filter bags and can damage the bags if they have broken or bent wires. Damaged cages will be replaced as needed; therefore, the project includes purchasing approximately 2,200 cages. Leak-testing to ensure proper installation and pre-coating is also included.

The particulate emissions on TC2 have increased in the last year due to the increasing amount of broken bags in the PJFF. The particulate limit on TC2 is 0.015 lb/MBTU in a 24 hour day. This limit is extremely low, and does not allow for a significant number of broken bags. If the bags are not changed out in the next outage maintaining compliance will become more difficult, the unit will need to be load limited and additional outages will be required. The option to change the bags in one compartment at a time would decrease the bag life of the new bags due to the majority of the air flow going through these new, more permeable bags. .

It is recommended this project be approved in order to meet the TC2 particulate limits. A total of \$1,929k net IMEA/IMPA reimbursement was included in the 2014 BP (\$2,572k gross). The total requested project funding is \$1,326k net (\$1,768k gross). The bag order and labor contract will be awarded in the fourth quarter of 2013, and bags will be received in January/February, 2014.

Background

The TC2 coal-fired unit at the Trimble County Generating Station began generating power in May 2010 and entered into commercial operation on January 22, 2011. The unit has a pulse jet fabric filter (PJFF) which contains 13,000 filter bags across twelve compartments. The bags are 5" diameter and 26' long. The filter bags were originally expected to last 4 years.

During original construction, Siemens installed 16 oz/yd Acid Resistant Fiberglass bags with a PTFE membrane. Five compartments of bags were replaced in September, 2011 due to ash bridging issues which overheated the bags. The new bags installed were 22 oz/yd Acid Resistant Fiberglass bags, which Siemens recommended for long-term strength.

Approximately 100 bags were replaced in the fall of 2012 due to failure and another 300 were found in the spring of 2013. One thousand bags, in total, were replaced in the spring of 2013, including broken bags and the perimeter bags around those failures.

Sample bags have been sent out for testing during each outage, and the permeability and strength monitored over time. Due to the tests results showing degradation and the increasing amount of broken bags found during outages, it is necessary to replace the bags very soon in order to ensure the continued reliability of the unit. The bags have only been in service for 2 ½ years.

The pressure drop across the fabric filter has been and is higher than originally expected for TC2. It is believed this high differential pressure is the result of higher than original design gas flows through the filter and the particulate loads. The high differential pressure has required more frequent pulse cleaning of the bags. This increased pulsing has caused the bags to fail prematurely.

• Other Alternatives Considered

• Recommendation

Replace all the bags in the PJFF as explained in the project scope. This alternative has the least risk to the unit generation and maintains particulate emissions compliance..

• Do Nothing

Do not replace the filter bags and continue to run until particulate emission limits force the unit offline. This would be expected to occur in about one year or less. This alternative would put the plant's reliability at risk. Therefore, it is not considered practical.

• Next Best Alternative

Replace one compartment of bags at a time on line. This alternative would cause a decrease in bag life due to increased flow through the new bags as they are installed. (The ash would take the path of least resistance, through the compartment with the newest bags.) This alternative also carries a significantly higher safety risk, since the bags would be replaced while the unit remains online, The added risk and potential additional costs could easily surpass any cost savings or other benefits.

Project Description

- **Project Scope and Timeline**

The scope of this project includes the purchase and installation of the filter bags required to replace all 13,000 bags in the TC2 pulse jet fabric filter (PJFF). The scope includes the removal of the existing bags and installation of the new bags. Damaged cages will be replaced as needed, and the project includes sufficient funds to replace approximately 2,200 cages. Leak-testing to ensure proper installation and pre-coating is also included in the project.

September, 2013 - Investment Committee meeting and approval

October, 2013 - Issue purchase order for bags/cages

October, 2013 - Secure installation contractor

January, 2014 - Receive bags/cages

February, 2014 - Replace all bags and cages as needed, during planned TC2 2014 outage

March, 2014 - Receive leak test and pre-coat material

April, 2014 - Conduct leak test and pre-coat before coming on-line

- **Project Cost**

The project cost for this project including materials and labor is \$1,326k net IMEA/IMPA reimbursement (\$1,768k gross). A contingency of 10% is included in the project costs. The contingency is based on the degree of difference in the bids and the estimated values for precoat, leak testing and cages. All materials and labor bids are lump sum.

Economic Analysis and Risks

- **Bid Summary**

Below is a summary of the bids the plant has received for bags and installation. GE Air Filtration was eliminated due to poor quality of submitted bag sample. US Air Filtration was also eliminated due to submitting a bid for bags that does not meet the coating specification nor the mullen burst strength requirement. In addition, US Air Filtration does not provide labor to install bags and therefore their bags would have to be purchased through a labor contractor (PSG) who would actually install them.

The four remaining bidders have been asked to add costs for cages, leak testing, precoating and a 3 year warranty so that they can be further evaluated. The current estimate for these items is \$300k. BWF is the preferred bidder at this time due to lower costs, higher bag quality, included warranty, and being located in Hebron, KY. They were also the only bidder to include options for leak testing, precoating, and a 3 year warranty in their initial bid.

	BWF (\$)	FLSmith (\$)	Menardi (\$)	Midwesco (\$)	GE AF (\$)	PSG/ USAF (\$)
Supply 15k bags	1,032,950	1,079,432	1,003,580	1,047,146	1,022,660	840,923
Install new bags	124,720	275,463	396,537	164,790	289,350	205,000
Cages, warranty	150,000	300,000	300,000	300,000	300,000	300,000
Total	1,307,670	1,654,895	1,700,000	1,511,936	1,612,010	1,345,923

- Budget Comparison and Financial Summary (net IMEA/IMPA 25% Reimbursement)**

Financial Detail by Year (\$000s)	2014	2015	2016	Post 2016	Total
1. Capital Investment Proposed	1,326	-	-	-	1,326
2. Cost of Removal Proposed					-
3. Total Capital and Removal Proposed (1+2)	1,326	-	-	-	1,326
4. Capital Investment 2014 BP	1,929				1,929
5. Cost of Removal 2014 BP					-
6. Total Capital and Removal 2014 BP (4+5)	1,929	-	-	-	1,929
7. Capital Investment variance to BP (4-1)	603	-	-	-	603
8. Cost of Removal variance to BP (5-2)	-	-	-	-	-
9. Total Capital and Removal variance to BP (6-3)	603	-	-	-	603
10. Project O&M Proposed					-
11. Total Project Proposed (3+10)	1,326	-	-	-	1,326

Financial Summary (\$000s):

Discount Rate:	6.5%
Capital Breakdown:	
Labor:	\$0
Contract Labor:	\$200
Materials:	\$1,305
Local Engineering:	\$30
Burdens:	\$72
Contingency (10%):	\$161
Reimbursements:	(\$442)
Net Capital Expenditure:	\$1,326

Project Presented:

Financial Analysis - Project Summary (\$000)	Total Project	Do Nothing Case
NPVRR	1719k	2316k
NPV Cash Flows	34	0
ROE - 2014	13.6%	0.0%
ROE - 2015	10.3%	0.0%
ROE - 2016	10.3%	0.0%
ROE - 2017	10.3%	0.0%
ROE - 2018	10.3%	0.0%
ROE - Life of Project	10.4%	0.0%

-
-
-
-

Assumptions

This project assumes that the unit's generating output would be derated by 5% if the bags were not replaced in 2014 as planned, and that the existing bags could only stay in service for one additional year. All of the existing bags would then require replacement sometime in 2015, in order for TC2 to remain in compliance with all particulate emission limits..

- **Environmental**

New Source Review Evaluation, questions 1-6 (as applicable) must be completed on all investment proposals.		
1	Does the project include any new equipment or component with emissions, result in emissions not previously emitted or cause the unit to exceed any emission limit? If yes, Environmental Affairs is required to review this project. If no, go to Question #2.	No
2	Question 2: Is the change a like-kind or functionally equivalent replacement under \$500K? If yes, the project is not subject to NSR and no further evaluation is required. If no, go to Question #3.	No
3	Question 3: Does the equipment change increase the emissions unit's maximum hourly heat input? If yes, Environmental Affairs is required to review this project. If no, go to Question #4.	No
4	Question 4: Does the equipment change increase the emissions unit's electrical output? If yes, Environmental Affairs is required to review this project. If no, go to Question #5.	No
5	Question 5: Has the equipment being repaired/replaced been repaired or replaced in the past at this unit or other units in the fleet? If no, Environmental Affairs is required to review this project. If yes, list any known projects and go to Question #6.	Yes (Project "TC2WARNTY")
6	Question 6: Have there been forced outages or unit de-rates in the past 5 years due to this component? If no, the project is not subject to NSR and no further evaluation is required; if the answer is yes, Environmental Affairs needs to review this project.	Yes

Note: Environmental Affairs has not reviewed this project, yet, but has been contacted.

- **Risks**

The risks of not completing the project include:

- Failure to meet particulate emissions limit: TC2 is subject to a particulate emission limit of 0.015 lb/MBTU per day. If the filter bags are not replaced the particulate emissions will continue to increase, risk to the unit's reliability ..
- Unplanned unit derates: If the bags are not replaced the particulate emissions will continue to increase and the unit's load will have to be decreased sufficiently to stay in regulatory compliance.
- Changing bags online: The bags could be changed one compartment at a time while the unit remains online, however, the life expectancy of the new bags would be greatly affected due to air flow taking the path of least resistance through the new, clean bags. Also changing the bags online has a higher safety risk..

Conclusions and Recommendation

In order to ensure compliance with all TC2 particulate emission limits, it is recommended that the Investment Committee approve the TC2 PJFF Bag Replacement project for \$1,326 net IMEA/IMPA reimbursement.

KENTUCKY UTILITIES COMPANY

CASE NO. 2014-00371

**Supplemental Response to First Set of Data Requests of
Kentucky Industrial Utility Customers, Inc.
Dated January 8, 2015**

Question No. 40

Responding Witness: David S. Sinclair / Counsel

Q.1-40. Please provide all internal emails in the possession of any of the witnesses in this case which discuss the expected level of off-system sales margins for the base year and the test year.

A.1-40. **ORIGINAL RESPONSE**

The Company objected to this question on January 19, 2015, because it requires the Company to reveal the contents of communications with counsel and the mental impressions of counsel, which information is protected from disclosure by the attorney-client privilege and the work product doctrine. Without waiver of these objections, see the attached documents that have been identified within the time permitted for this response. Counsel for the Company is continuing to undertake a reasonable and diligent search for other such documents and will reasonably supplement this response through a rolling production of documents.

SUPPLEMENTAL RESPONSE

The Company incorporates by reference the objections stated above. Without waiver of these objections, see the additional attached documents that have been identified.

Please note that certain of the documents being produced contain confidential information and are being provided under seal pursuant to a petition for confidential protection being filed herewith.

The Company is also filing contemporaneously herewith a privilege log describing the responsive documents the Company is not producing on the ground of attorney-client or work product privilege.

Attachment in Excel

The attachment(s)
provided in separate
file(s) in Excel format.

Attachment Confidential

The entire attachment is
Confidential and
provided separately
under seal.

Produced as Native

Original File Name: OSS and Native Load Report November 2014.xlsx

Stored File Name: Exchange00003220.xlsx

Produced as Native

Original File Name: OSS and Native Load Report November 2014.xlsx

Stored File Name: Exchange00003318.xlsx

Produced as Native

Original File Name: OSS and Native Load Report November 2014.xlsx

Stored File Name: Exchange00003411.xlsx

Produced as Native

Original File Name: OSS and Native Load Report October 2014.xlsx

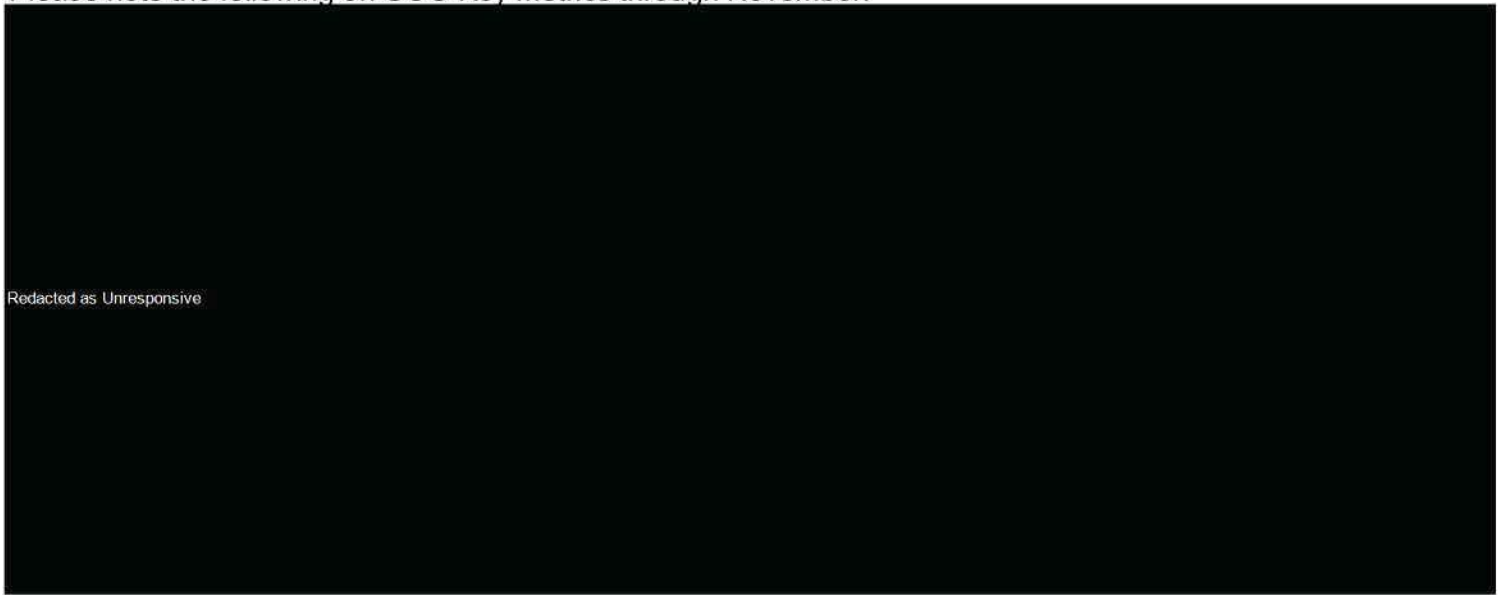
Stored File Name: Exchange00006102.xlsx

From: Blake, Kent(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=E008318)
To: Cermack, Stacy; Elzy, Tammy
CC:
BCC:
Subject: FW: COO Key Metrics through November
Sent: 01/09/2015 01:23:17 PM -0500 (EST)
Attachments: COOKeyMetrics1114.ppt;

Rusty's montly operations report might also be another source for pix for the performance metrics slide.

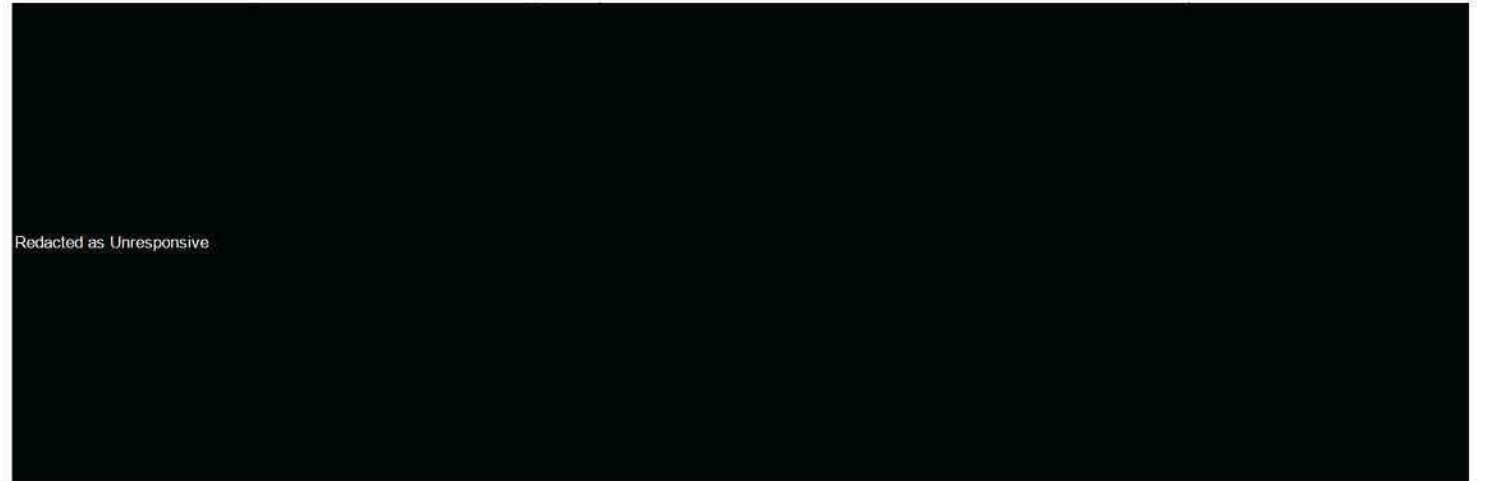
From: Hudson, Rusty
Sent: Wednesday, December 17, 2014 9:49 AM
To: Allen, Lisa; Ambrosino, Carolyn; Balmer, Chris; Barnett, Bob; Bellar, Lonnie; Blake, Kent; Bowling, Ralph; Bruner, Cheryl; Byrd, Larry; Carr, Sam; Carter, Doris; Cermack, Stacy; Chin, Doug; Clements, Joe; Cockerill, Butch; Cosby, David; Faulkner, Danny; Garrett, Chris; Gilbert, Jeffery; Hincker, Loren; Hudson, Rusty; Huff, David; Jefferson, Tangila; Jessee, Tom; Johnson, Sharon (Dir. HR); Keemer, Gabriela; Kremer, Dan; Malloy, John; Maynard, Nelson; McFarland, Beth; McGonnell, Robert; Miller, Jon; Mulvihill, Jennifer; Murphy, Clay; Neal, Susan; O'brien, Dorothy (Dot); O'Brien, Rob; Phillips, Steven; Pienaar, Lesley; Revlett, Gary; Rieth, Tom; Ritchey, Stacy; Rohrer, Kathi; Schmitt, Mark; Schram, Chuck; Sebourn, Michael; Sheridan, Kenneth; Simon, Denise; Steinmetz, Keith; Thomas, Greg; Thompson, Paul; Thompson-Long, Esther; Voyles, John; Walker, Barry; Whelan, Chris; Winkler, Michael; Wolfe, John; Woodworth, Steve
Subject: COO Key Metrics through November

Please note the following on COO Key Metrics through November:



Redacted as Unresponsive

- Off-System margins are \$8.9m above budget, with volumes 85% above budget, and 5X16 effective sales price 69% above budget.



Redacted as Unresponsive



LKE Operations Key Metrics Review Presented in December 2014; With Results Through November 2014



PPL companies

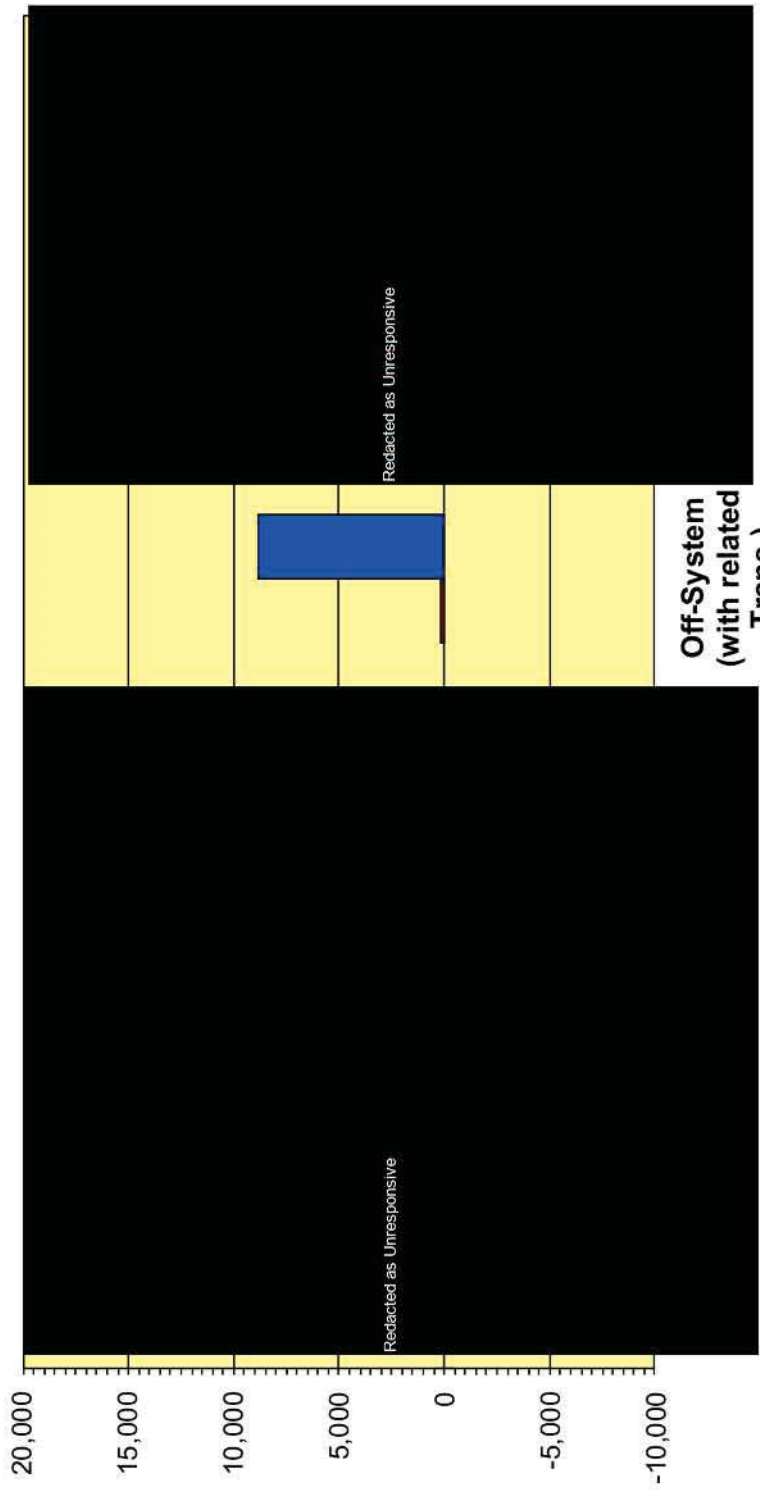
Utility Gross Margin

November 2014

Electric Gross Margin Variance to Budget (\$000's)

Question No. 40 - Production 2

Internal Reporting



Fav.

UnFav.

Percent Variances For Contributing Factors

	Current Month	Year-To-Date
OSS Volumes	+871%	+85%
OSS Effective Sales Price (5x16)	+8%	+69%





Off-system Sales 2014 November Actual vs. Budget KPI Summary

<u>LG&E/KU</u>	<u>Actual</u>	<u>Budget</u>	<u>Variance</u>
Volume Sales (GWh)			
5x16	12	0	12
7x8	4	2	2
2x16	7	0	7
Effective Sales Price			
5x16	\$40.13	\$37.02	\$3.11
7x8	\$54.71	\$32.51	\$22.20
2x16	\$40.43	\$32.51	\$7.92
Cost of Supply			
5x16	\$34.32	\$29.55	(\$4.77)
7x8	\$39.64	\$28.12	(\$11.52)
2x16	\$32.20	\$29.26	(\$2.94)

Effective Sales Price = Revenue – Transmission Exp. – RTO Exp. / Volume
 Cost of Supply = Cost of Gen. + Outage Purchases + Consumable Exp. / Volume



Slide 1 : *

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Slide 3 : *

Slide 4 : *

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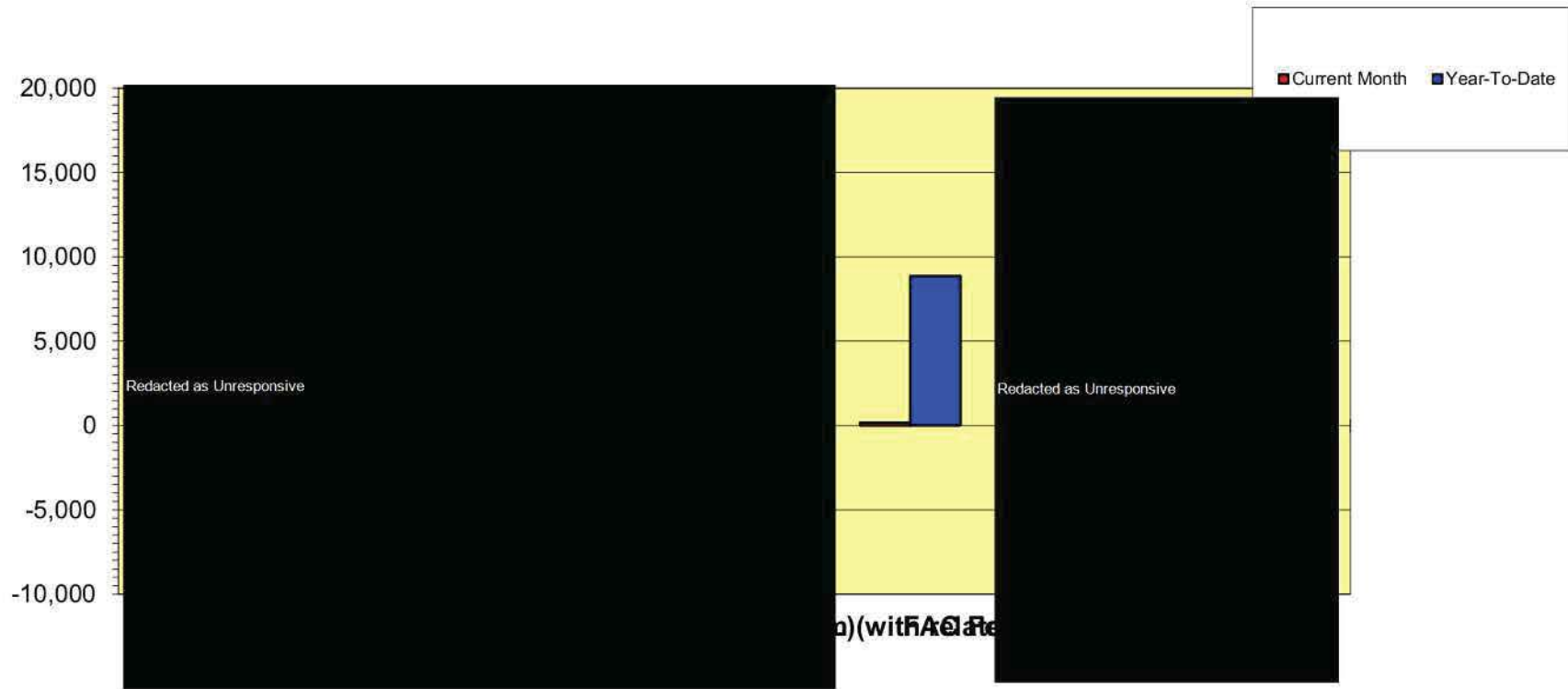
Slide 17 : *

Slide 20 : *

Slide 28 : *

Slide 34 : *

Electric Gross Margin Variance to Budget (\$000's)



	F	
1	Off-System (with related Trans.)	
2		178
3		8,865

Redacted as Unresponsive

Produced as Native

Original File Name: 15-Worksheet.xls

Stored File Name: Exchange00022045.xls

Sinclair

From: Sinclair, David(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=TRADERS/CN=SINCLAIRD)
To: Spaulding, Jeffrey; Brunner, Bob; Martin, Charlie; Schrader, Duane; Schram, Chuck; Sebourn, Michael; Wilson, Stuart
CC:
BCC:
Subject: RE: November OSS Forecast
Sent: 11/13/2014 10:29:11 AM -0500 (EST)
Attachments:

That' fine. [Let's stick with the 2015 BP and cancel the meeting.](#)

From: Spaulding, Jeffrey
Sent: Thursday, November 13, 2014 7:13 AM
To: Brunner, Bob; Martin, Charlie; Schrader, Duane; Schram, Chuck; Sebourn, Michael; Sinclair, David; Wilson, Stuart
Subject: November OSS Forecast

There is little full year difference using either December market prices or December's 2015 Plan, with both forecast views at ~\$11.4 million. We have a forecast meeting scheduled for 11/19, however if everyone is comfortable with the data we can cancel November's review and reconvene in December to begin the 2015 sessions. Please let me know if the November review is needed.

Thanks,
Jeff

Produced as Native

Original File Name: OSS and Native Load Report July 2014.xlsx

Stored File Name: OpenText00033514.xlsx



LKE Operations Key Metrics Review Presented in August 2014; With Results Through July 2014



PPL companies

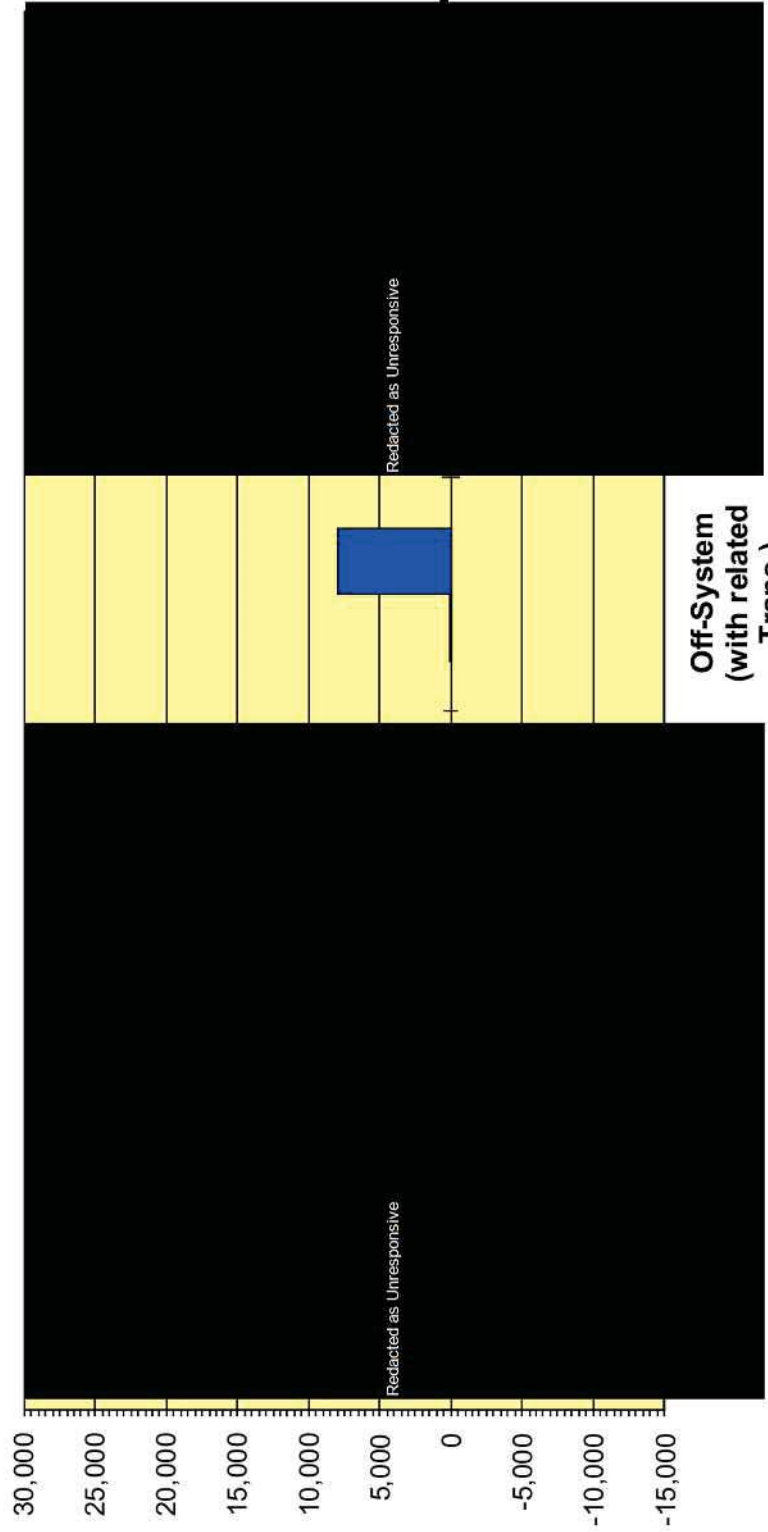
Utility Gross Margin

July 2014

Electric Gross Margin Variance to Budget (\$000's)

Question No. 40 - Production 2

Internal Reporting



Fav.

UnFav.

Off-System (with related Trans.)

Percent Variances For Contributing Factors

	Current Month	Year-To-Date
OSS Volumes	+11%	+55%
OSS Effective Sales Price (5x16)	+8%	+94%

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Off-system Sales 2014 July Actual vs. Budget KPI Summary

<u>LG&E/KU</u>	<u>Actual</u>	<u>Budget</u>	<u>Variance</u>
Volume Sales (GWh)			
5x16	9	6	4
7x8	1	0	0
2x16	5	8	(2)
Effective Sales Price			
5x16	\$42.94	\$39.81	\$3.13
7x8	\$30.21	\$35.17	(\$4.96)
2x16	\$44.25	\$38.18	\$6.07
Cost of Supply			
5x16	\$34.82	\$30.27	(\$4.55)
7x8	\$31.04	\$33.54	\$2.50
2x16	\$33.33	\$29.95	(\$3.38)

Effective Sales Price = Revenue – Transmission Exp. – RTO Exp. / Volume
 Cost of Supply = Cost of Gen. + Outage Purchases + Consumable Exp. / Volume



Slide 1 : *

Slide 2 : *

Slide 3 : *

Slide 4 : *

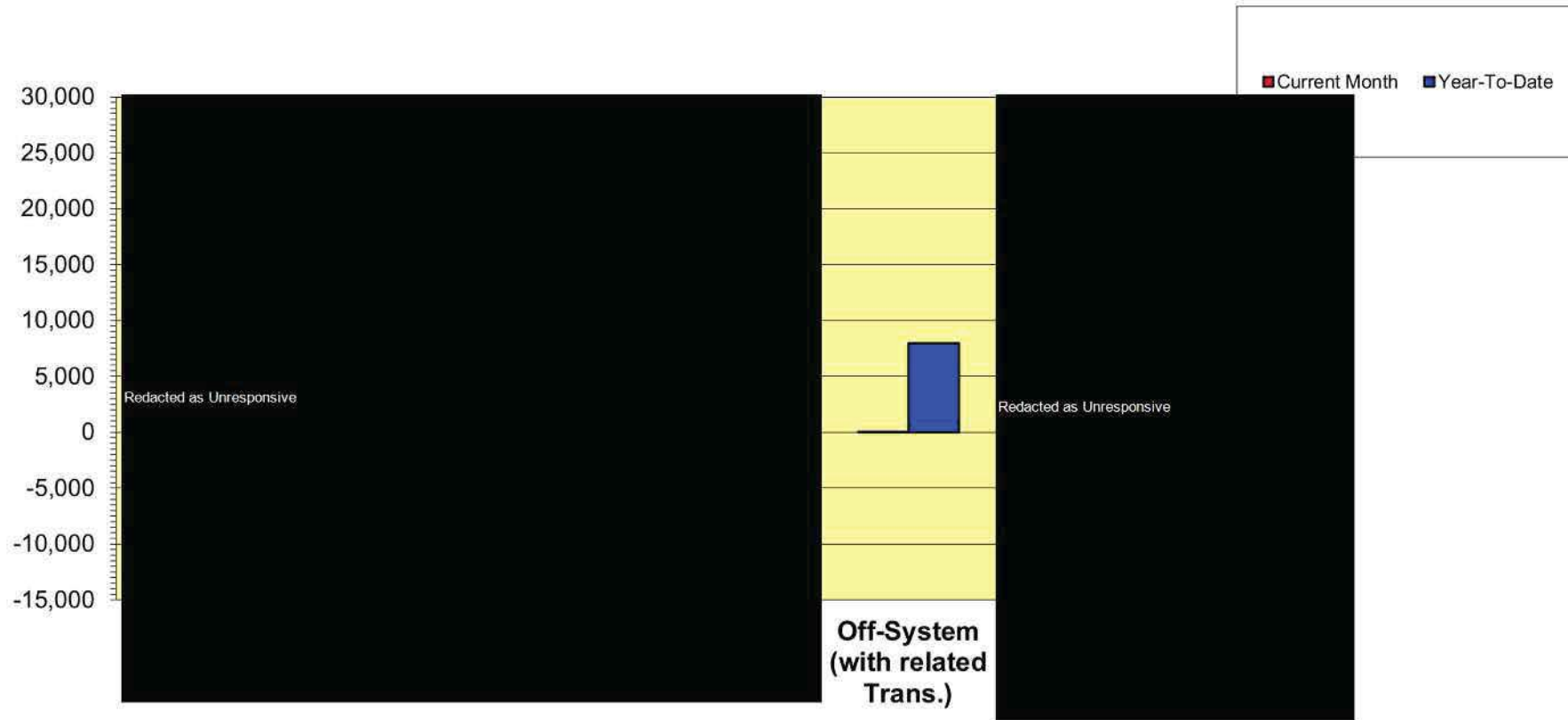
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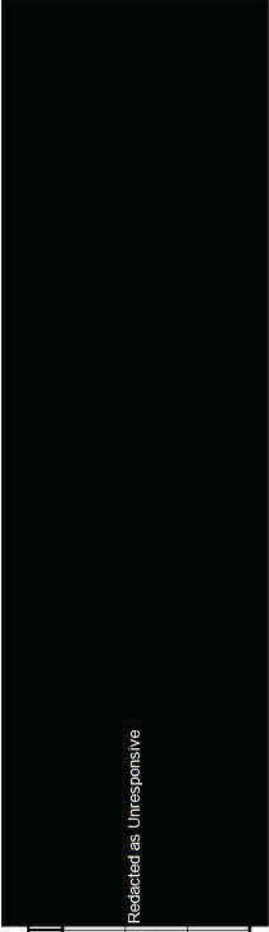
Redacted as Unresponsive

Slide 27 : *

Slide 29 : *

Electric Gross Margin Variance to Budget (\$000's)





	F	
1	Off-System (with related Trans.)	
2		15
3		7,951

Produced as Native

Original File Name: 14-Worksheet.xls

Stored File Name: OpenText00033854.xls



LKE Operations Key Metrics Review Presented in May 2014; With Results Through April 2014



PPL companies

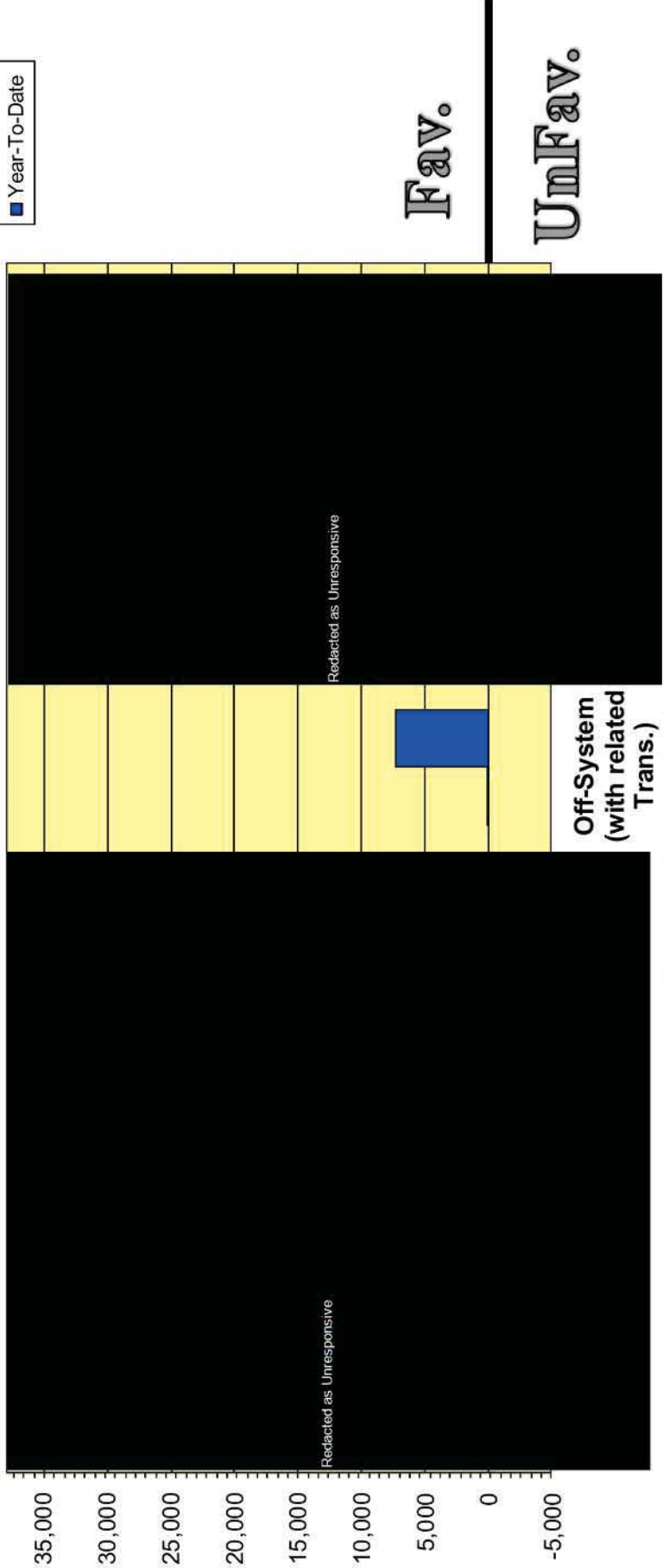
Utility Gross Margin

April 2014

Electric Gross Margin Variance to Budget (\$000's)

Question No. 40 - Production 2

Internal Reporting



Percent Variances For Contributing Factors

	Current Month	Year-To-Date
OSS Volumes	N/A	+103%
OSS Effective Sales Price (5x16)	N/A	+146%

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Slide 1 : *

Slide 3 : *

Slide 4 : *

Slide 5 : *

Redacted as Unresponsive

Redacted as Unresponsive

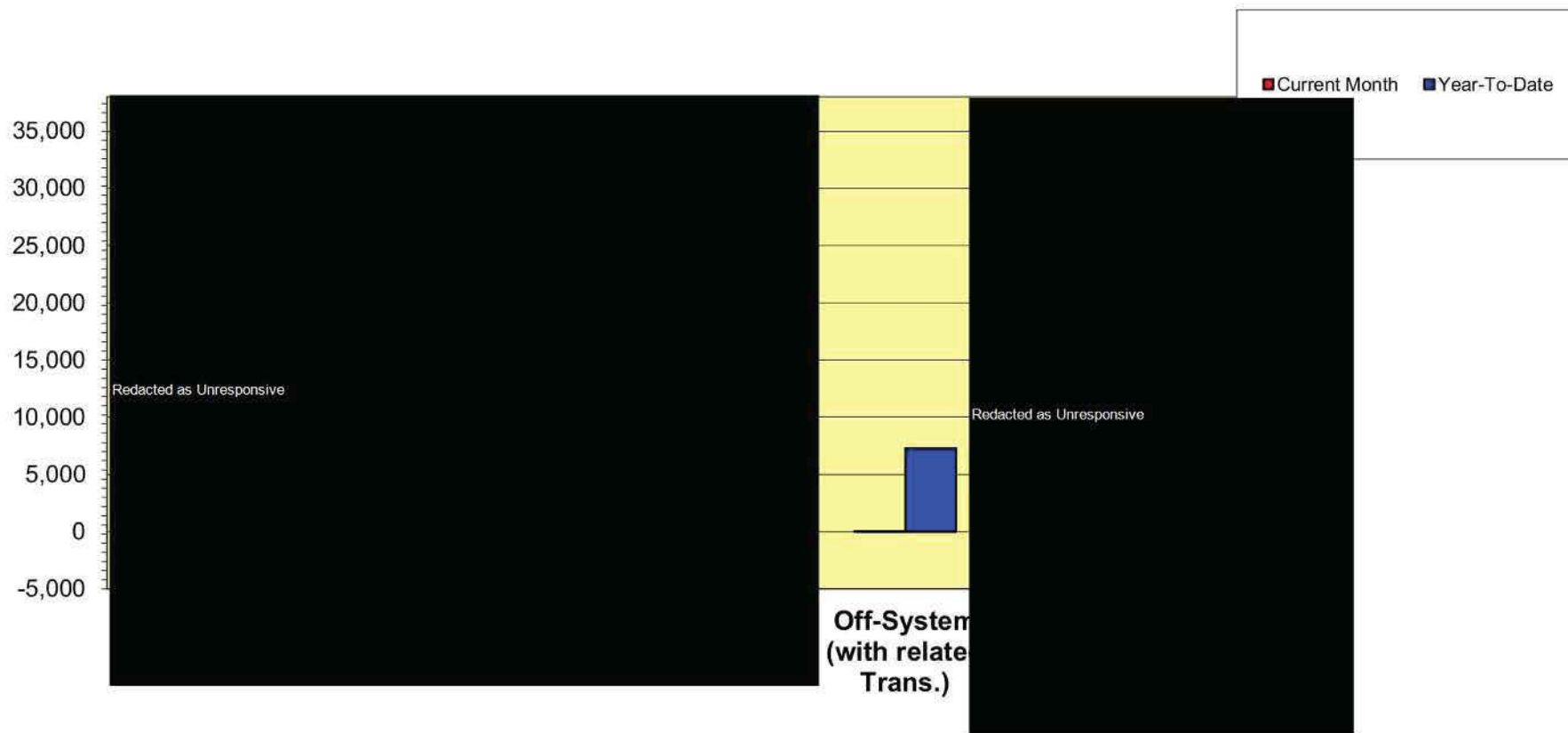
Redacted as Unresponsive

Slide 21 : *

Slide 29 : *

Slide 40 : *

Electric Gross Margin Variance to Budget (\$000's)



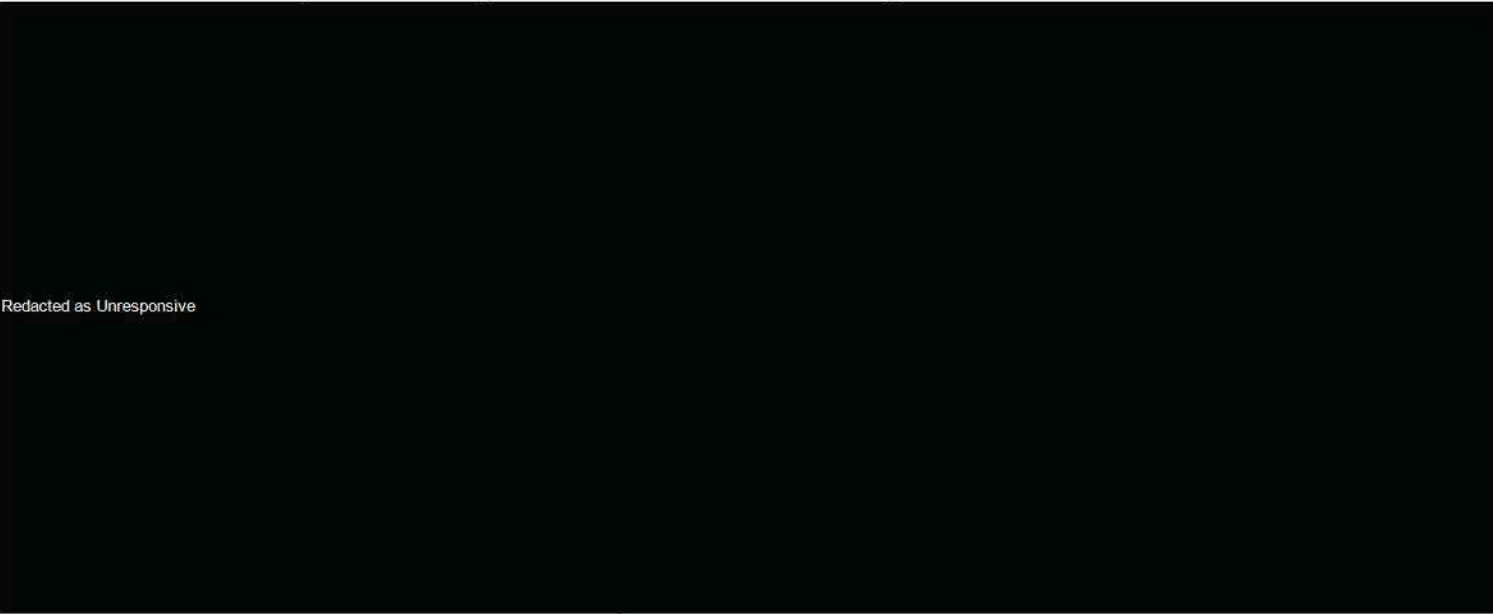
	F	
1	Off-System (with related Trans.)	
2		3
3		7,276

Redacted as Unresponsive

Sinclair

From: Hudson, Rusty(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=ADMINISTRATIVE/CN=HUDSONR)
To: Allen, Lisa; Ambrosino, Carolyn; Balmer, Chris; Barnett, Bob; Bellar, Lonnie; Blake, Kent; Bowling, Ralph; Bruner, Cheryl; Byrd, Larry; Carr, Sam; Cermack, Stacy; Chin, Doug; Clements, Joe; Cockerill, Butch; Cosby, David; Faulkner, Danny; Garrett, Chris; Hincker, Loren; Hudson, Rusty; Huff, David; Hurst, Brian; Jefferson, Tangila; Jessee, Tom; Johnson, Sharon (Dir. HR); Keemer, Gabriela; Kremer, Dan; Malloy, John; Maynard, Nelson; McFarland, Beth; McGonnell, Robert; Miller, Jon; Mulvihill, Jennifer; Murphy, Clay; Neal, Susan; O'brien, Dorothy (Dot); O'Brien, Rob; Phillips, Steven; Pienaar, Lesley; Revlett, Gary; Rieth, Tom; Ritchey, Stacy; Rohrer, Kathi; Schmitt, Mark; Schram, Chuck; Sebourn, Michael; Sheridan, Kenneth; Simon, Denise; Steinmetz, Keith; Thomas, Greg; Thompson, Paul; Thompson-Long, Esther; Voyles, John; Walker, Barry; Whelan, Chris; Winkler, Michael; Wolfe, John; Woodworth, Steve
CC:
BCC:
Subject: COO Key Metrics through March, 2014
Sent: 04/23/2014 01:52:49 PM -0400 (EDT)
Attachments: COOKeyMetrics0314.ppt;

Attached are the COO key metrics through March. Please note the following:



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- OSS volumes are 102% above budget.
- The average OSS price per Mwh of \$88.06 is above the average ultimate consumer price of \$82.79, driven by the extremely high OSS prices early in the year.



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**LKE Operations
Key Metrics Review
Presented in April 2014;
With Results Through March 2014**



PPL companies

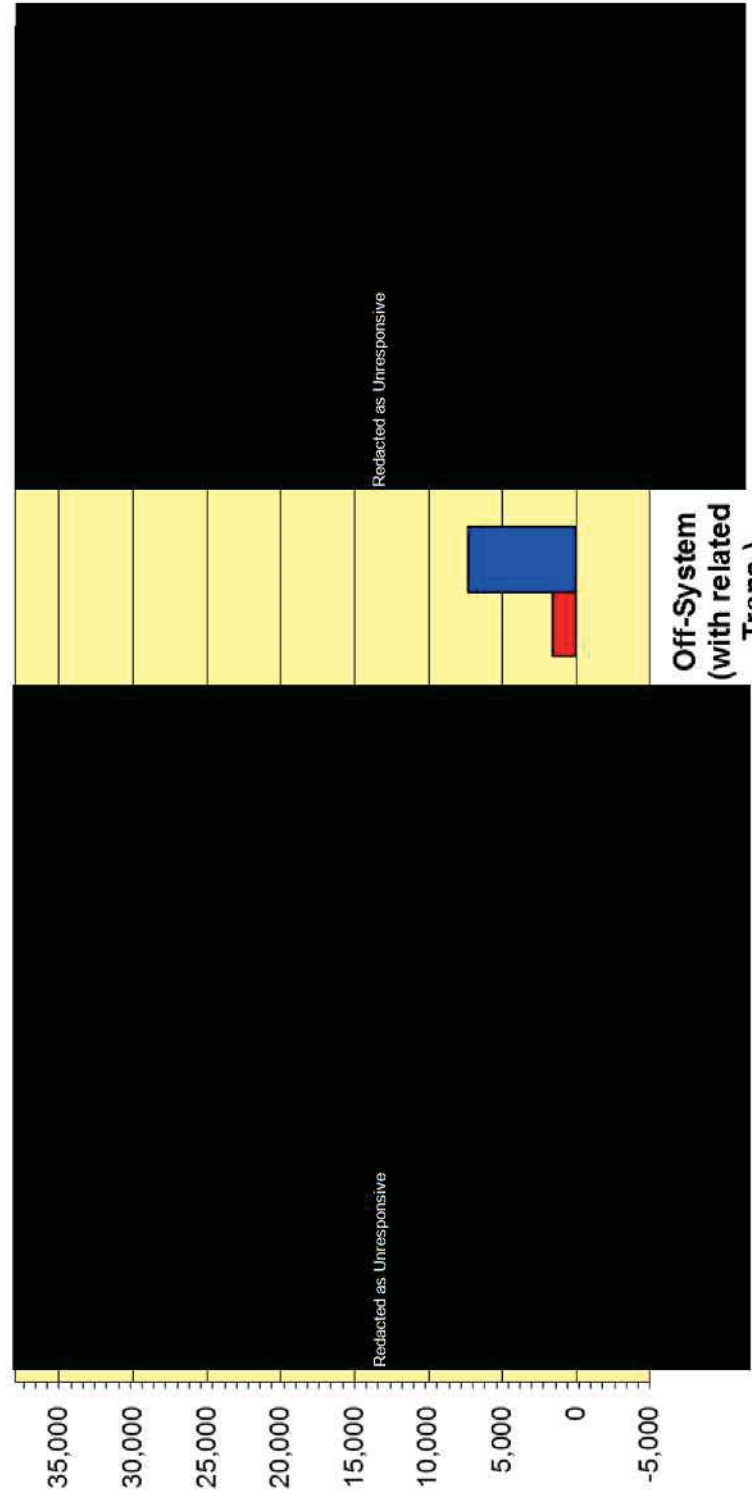
Utility Gross Margin

March 2014

Electric Gross Margin Variance to Budget (\$000's)

Question No. 40 - Production 2

Internal Reporting



Fav.

UnFav.

Percent Variances For Contributing Factors

	Current Month	Year-To-Date
OSS Volumes	+3752%	+102%
OSS Effective Sales Price (5x16)	+106%	+147%

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PPL companies

Off-system Sales 2014 March Actual vs. Budget KPI Summary

<u>LG&E/KU</u>	<u>Actual</u>	<u>Budget</u>	<u>Variance</u>
Volume Sales (GWh)			
5x16	32	1	31
7x8	10	0	9
2x16	12	1	12
Effective Sales Price			
5x16	\$83.70	\$40.56	\$43.14
7x8	\$60.34	\$32.36	\$27.98
2x16	\$42.08	\$36.15	\$5.93
Cost of Supply			
5x16	\$45.06	\$32.52	(\$12.54)
7x8	\$42.24	\$32.01	(\$10.23)
2x16	\$29.92	\$33.12	\$3.20

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Slide 3 : *

Slide 4 : *

Slide 5 : *

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Redacted as Unresponsive

Redacted as Unresponsive

Slide 18 : *

Slide 21 : *

Slide 29 : *

Slide 34 : *

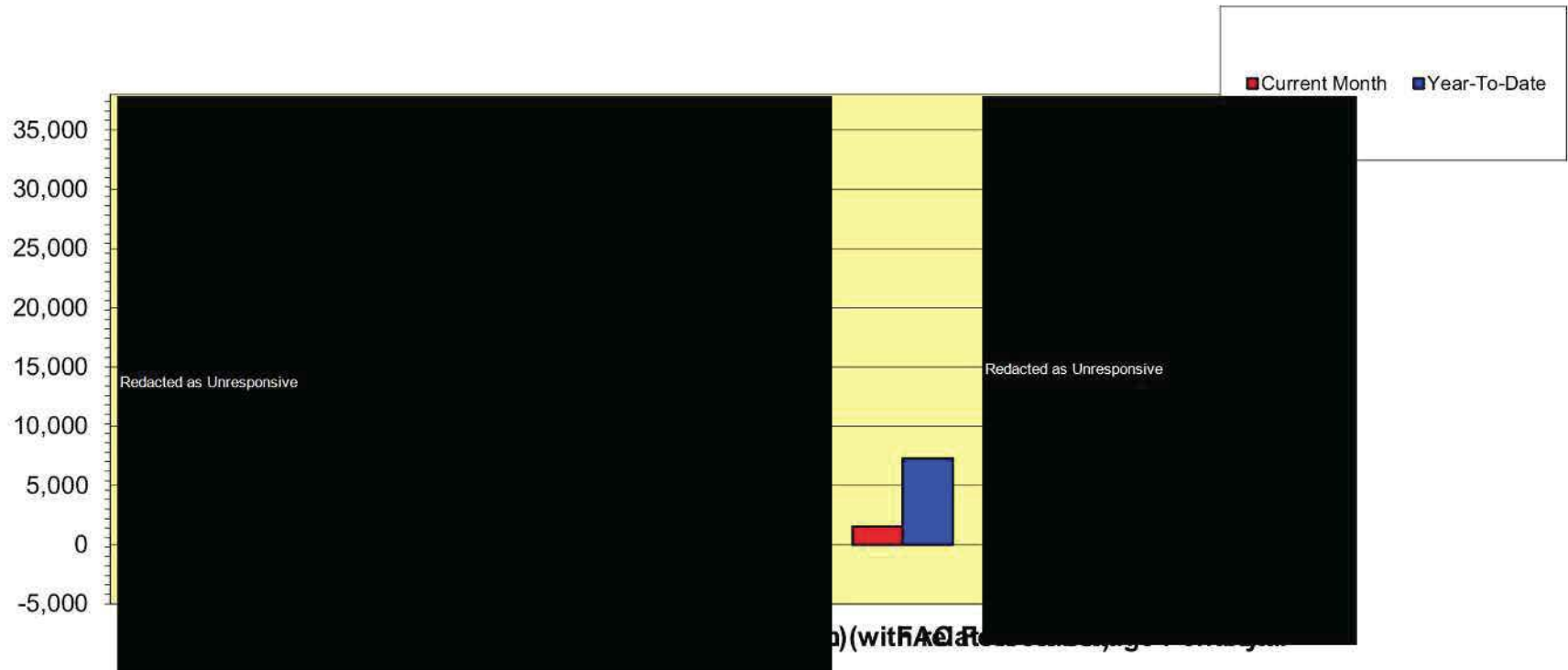
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Slide 42 : *

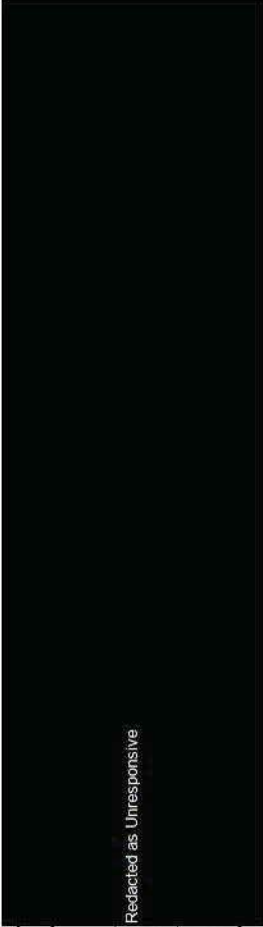
Slide 43 : *

Slide 44 : *

Electric Gross Margin Variance to Budget (\$000's)



F	
1	Off-System (with related Trans.)
2	1,539
3	7,273

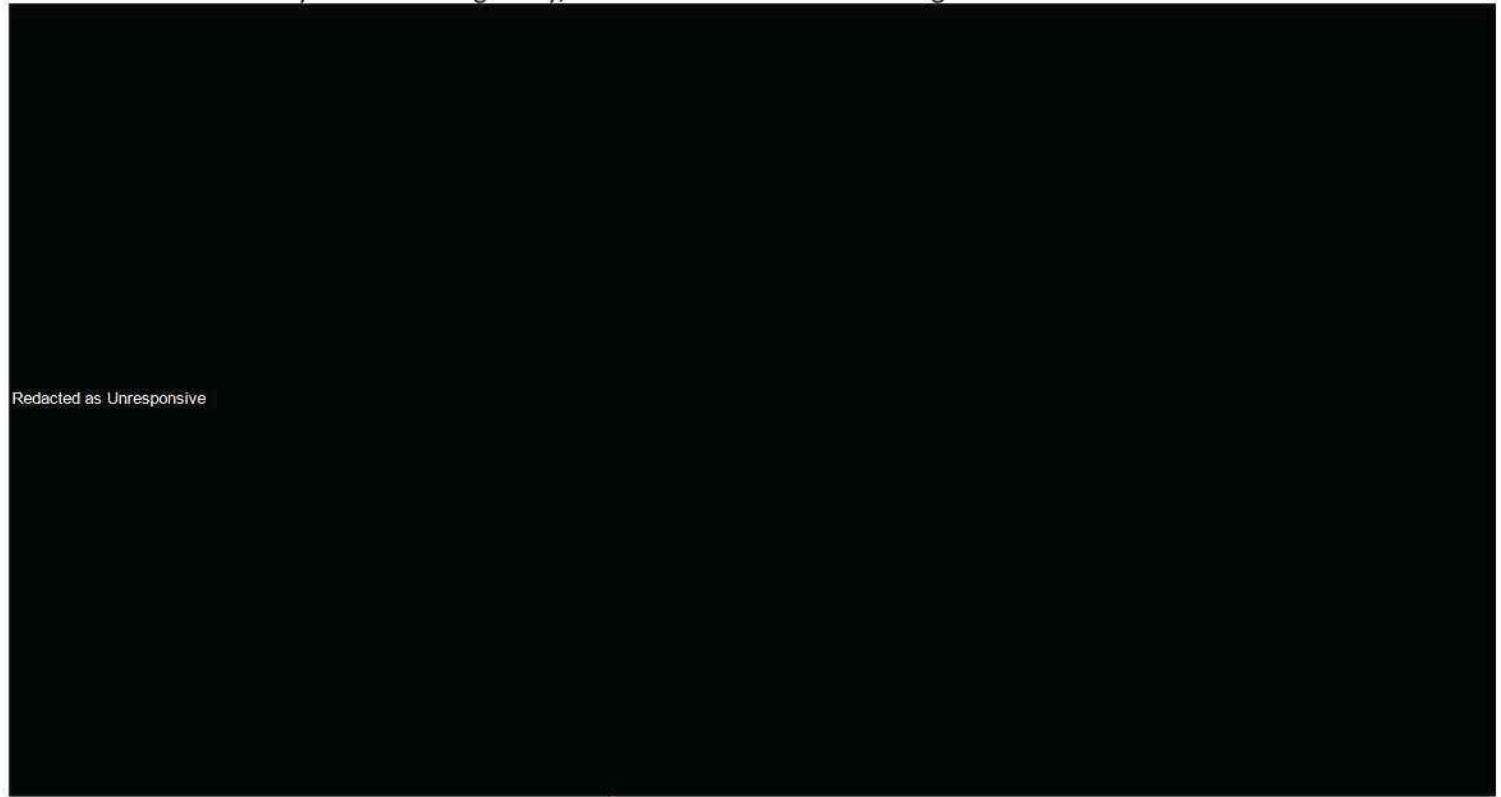


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Sinclair

From: Hudson, Rusty(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=ADMINISTRATIVE/CN=HUDSONR)
To: Allen, Lisa; Ambrosino, Carolyn; Balmer, Chris; Barnett, Bob; Bellar, Lonnie; Blake, Kent; Bowling, Ralph; Bruner, Cheryl; Byrd, Larry; Carr, Sam; Carter, Doris; Cermack, Stacy; Chin, Doug; Clements, Joe; Cockerill, Butch; Cosby, David; Faulkner, Danny; Garrett, Chris; Gilbert, Jeffery; Hincker, Loren; Hudson, Rusty; Huff, David; Jefferson, Tangila; Jessee, Tom; Johnson, Sharon (Dir. HR); Keemer, Gabriela; Kremer, Dan; Malloy, John; Maynard, Nelson; McFarland, Beth; McGonnell, Robert; Miller, Jon; Mulvihill, Jennifer; Murphy, Clay; Neal, Susan; O'Brien, Dorothy (Dot); O'Brien, Rob; Phillips, Steven; Pienaar, Lesley; Revlett, Gary; Rieth, Tom; Ritchey, Stacy; Rohrer, Kathi; Schmitt, Mark; Schram, Chuck; Sebourn, Michael; Sheridan, Kenneth; Simon, Denise; Steinmetz, Keith; Thomas, Greg; Thompson, Paul; Thompson-Long, Esther; Voyles, John; Walker, Barry; Whelan, Chris; Winkler, Michael; Wolfe, John; Woodworth, Steve
CC:
BCC:
Subject: COO Key Metrics - May, 2014
Sent: 06/23/2014 08:36:06 AM -0400 (EDT)
Attachments: COOKeyMetrics0514.ppt;

Attached are the COO key metrics through May, 2014. Please note the following:

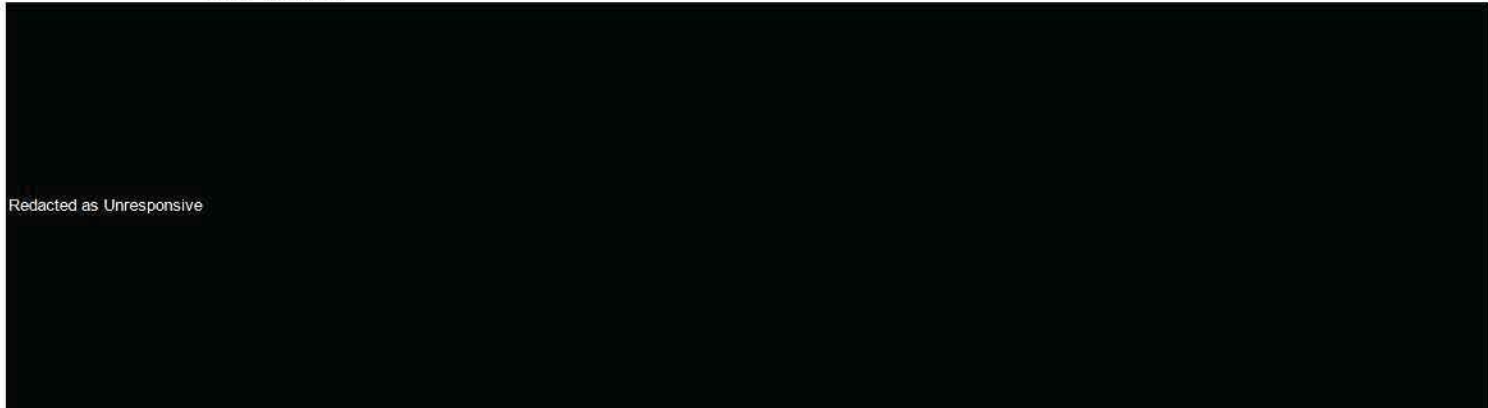


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- Electric gross margin YTD is above budget by \$41.1m.

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- OSS margin is up by \$7.5m
 - Volumes are up 52%, and effective sales price up by 113% for the 5X16 hour period and 129% for the 7X8 hour period.



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LKE Operations Key Metrics Review Presented in June 2014; With Results Through May 2014



PPL companies

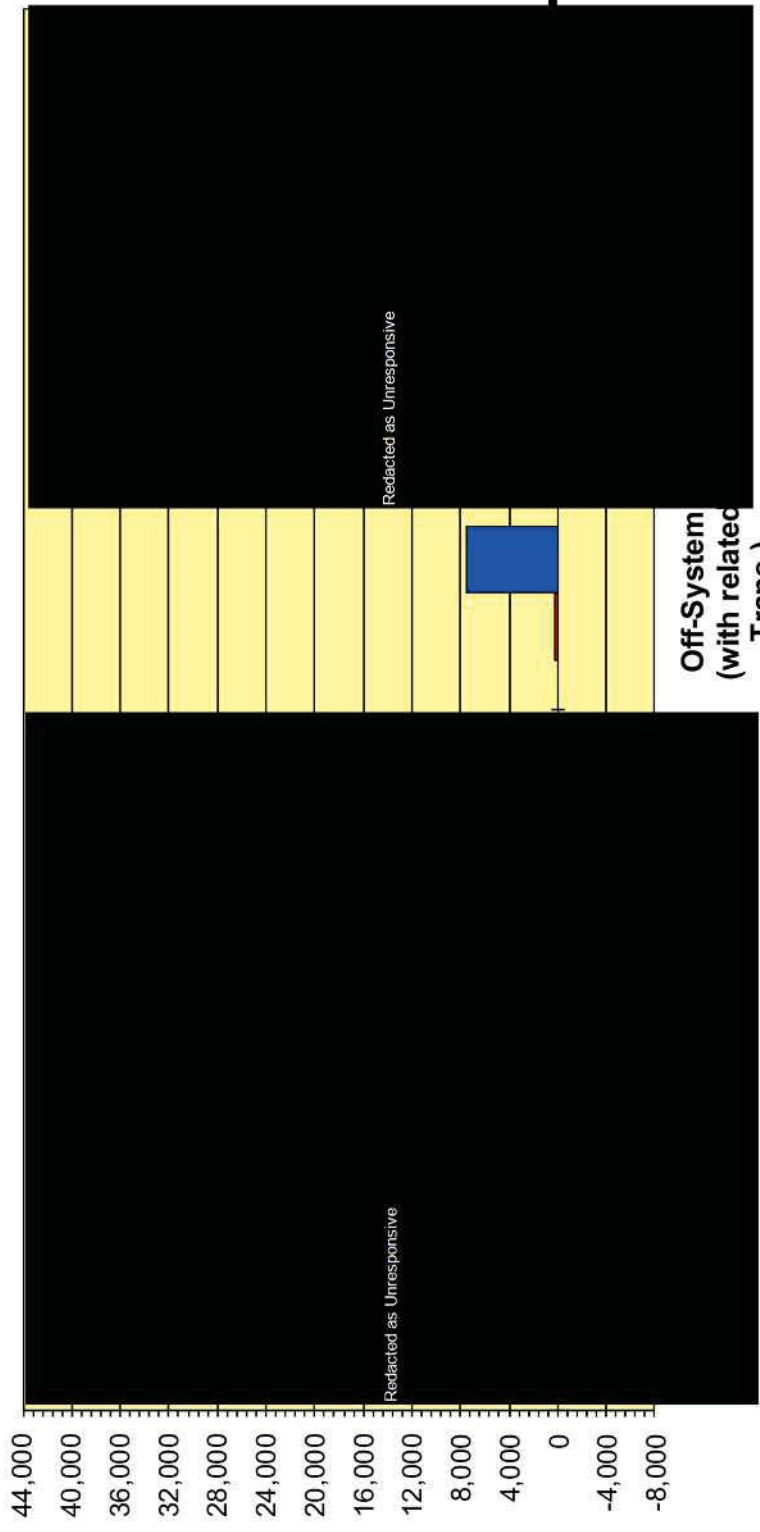
Utility Gross Margin

May 2014

Electric Gross Margin Variance to Budget (\$000's)

Question No. 40 - Production 2

Internal Reporting



Fav.

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Percent Variances For Contributing Factors

	Current Month	Year-To-Date
OSS Volumes	-33%	+52%
OSS Effective Sales Price (5x16)	+44%	+113%



Off-system Sales 2014 May Actual vs. Budget KPI Summary

<u>LG&E/KU</u>	<u>Actual</u>	<u>Budget</u>	<u>Variance</u>
Volume Sales (GWh)			
5x16	38	36	2
7x8	1	3	(2)
2x16	5	27	(22)
Effective Sales Price			
5x16	\$61.29	\$42.47	\$18.82
7x8	\$37.08	\$31.22	\$5.86
2x16	\$36.60	\$36.69	(\$0.09)
Cost of Supply			
5x16	\$36.99	\$29.31	(\$7.68)
7x8	\$31.76	\$28.05	(\$3.71)
2x16	\$30.19	\$28.14	(\$2.05)

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Slide 3 : *

Slide 4 : *

Slide 5 : *

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Slide 18 : *

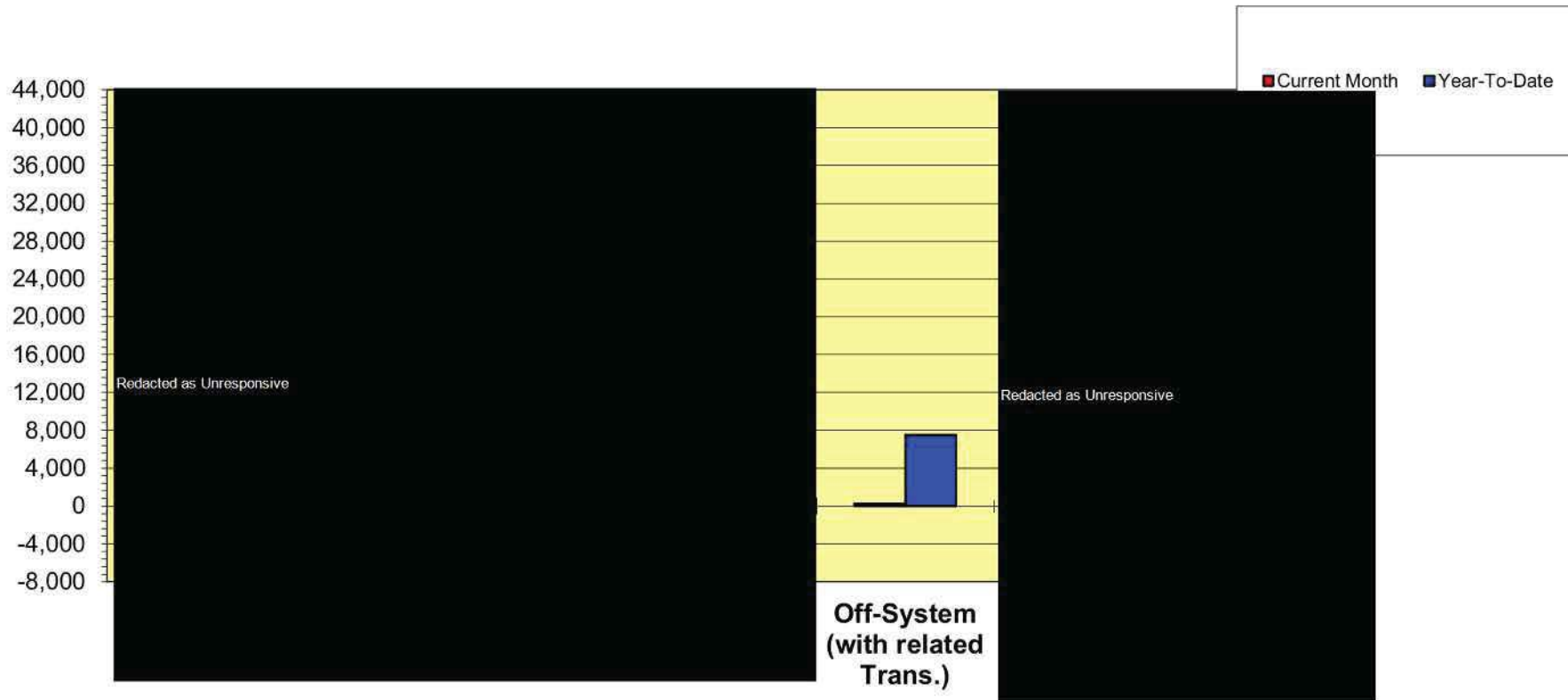
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Slide 22 : *

Slide 30 : *

Slide 40 : *

Electric Gross Margin Variance to Budget (\$000's)



	F	
1	Off-System (with related Trans.)	
2		244
3		7,520

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Produced as Native

Original File Name: 15-Worksheet.xls

Stored File Name: OpenText00036005.xls

Sinclair

From: Hudson, Rusty(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=ADMINISTRATIVE/CN=HUDSONR)
To: Allen, Lisa; Ambrosino, Carolyn; Balmer, Chris; Barnett, Bob; Bellar, Lonnie; Blake, Kent; Bowling, Ralph; Bruner, Cheryl; Byrd, Larry; Carr, Sam; Carter, Doris; Cermack, Stacy; Chin, Doug; Clements, Joe; Cockerill, Butch; Cosby, David; Faulkner, Danny; Garrett, Chris; Gilbert, Jeffery; Hincker, Loren; Hudson, Rusty; Huff, David; Jefferson, Tangila; Jessee, Tom; Johnson, Sharon (Dir. HR); Keemer, Gabriela; Kremer, Dan; Malloy, John; Maynard, Nelson; McFarland, Beth; McGonnell, Robert; Miller, Jon; Mulvihill, Jennifer; Murphy, Clay; Neal, Susan; O'brien, Dorothy (Dot); O'Brien, Rob; Phillips, Steven; Pienaar, Lesley; Revlett, Gary; Rieth, Tom; Ritchey, Stacy; Rohrer, Kathi; Schmitt, Mark; Schram, Chuck; Sebourn, Michael; Sheridan, Kenneth; Simon, Denise; Steinmetz, Keith; Thomas, Greg; Thompson, Paul; Thompson-Long, Esther; Voyles, John; Walker, Barry; Whelan, Chris; Winkler, Michael; Wolfe, John; Woodworth, Steve
CC:
BCC:
Subject: June, 2014 COO Key Metrics
Sent: 07/23/2014 10:35:43 AM -0400 (EDT)
Attachments: COOKeyMetrics0614.pptx;

Attached are the COO key metrics through June, 2014. Please note the following:



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Sinclair

- o OSS margins are up by \$7.9m, with volumes above budget by 58% and 5X16 effective sales price higher than budget by 98%.

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**LKE Operations
Key Metrics Review
Presented in July 2014;
With Results Through June 2014**



PPL companies

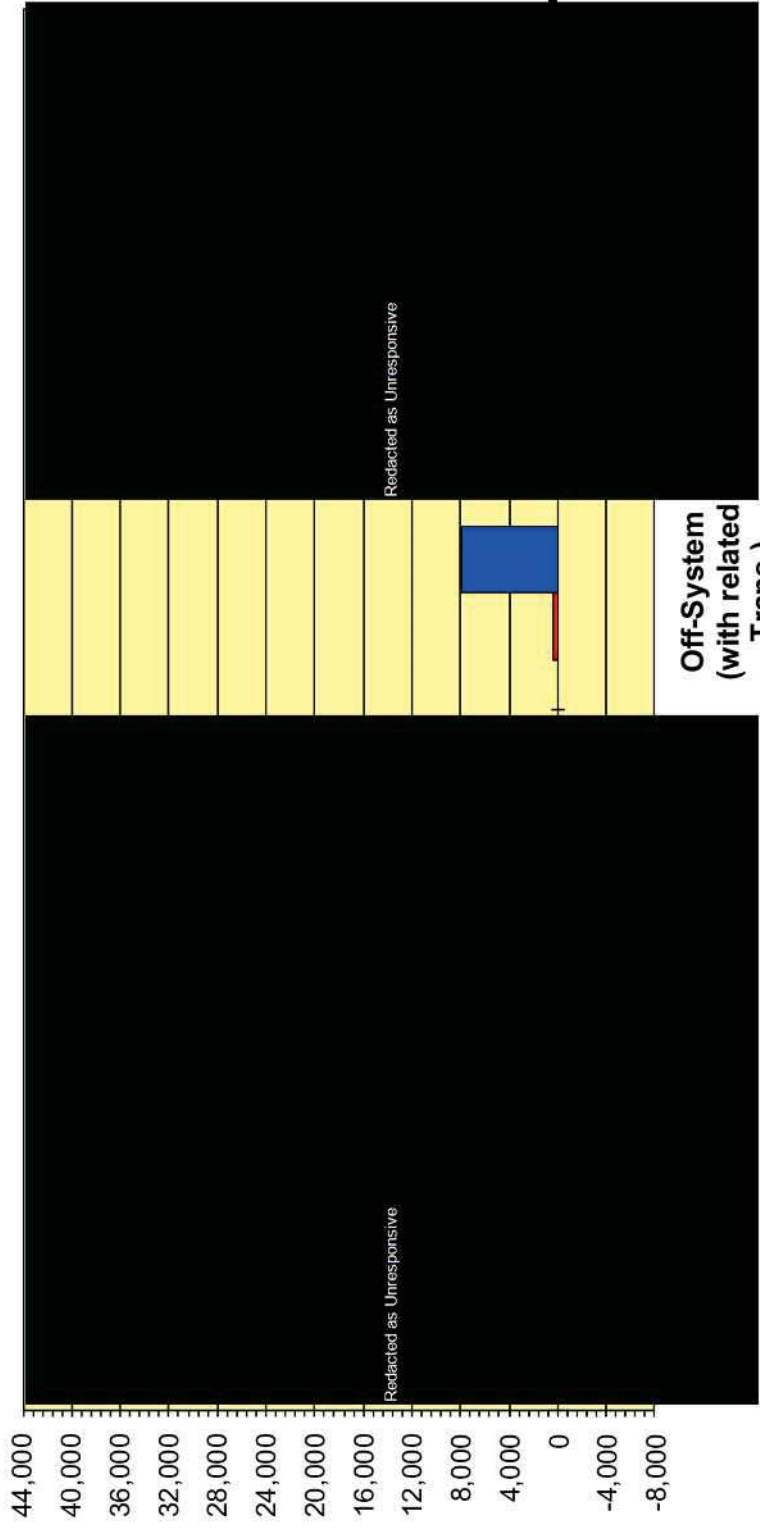
Utility Gross Margin

June 2014

Electric Gross Margin Variance to Budget (\$000's)

Question No. 40 - Production 2

Internal Reporting



Fav.

UnFav.

Percent Variances For Contributing Factors

	Current Month	Year-To-Date
OSS Volumes	+108%	+58%
OSS Effective Sales Price (5x16)	+29%	+98%

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PPL companies

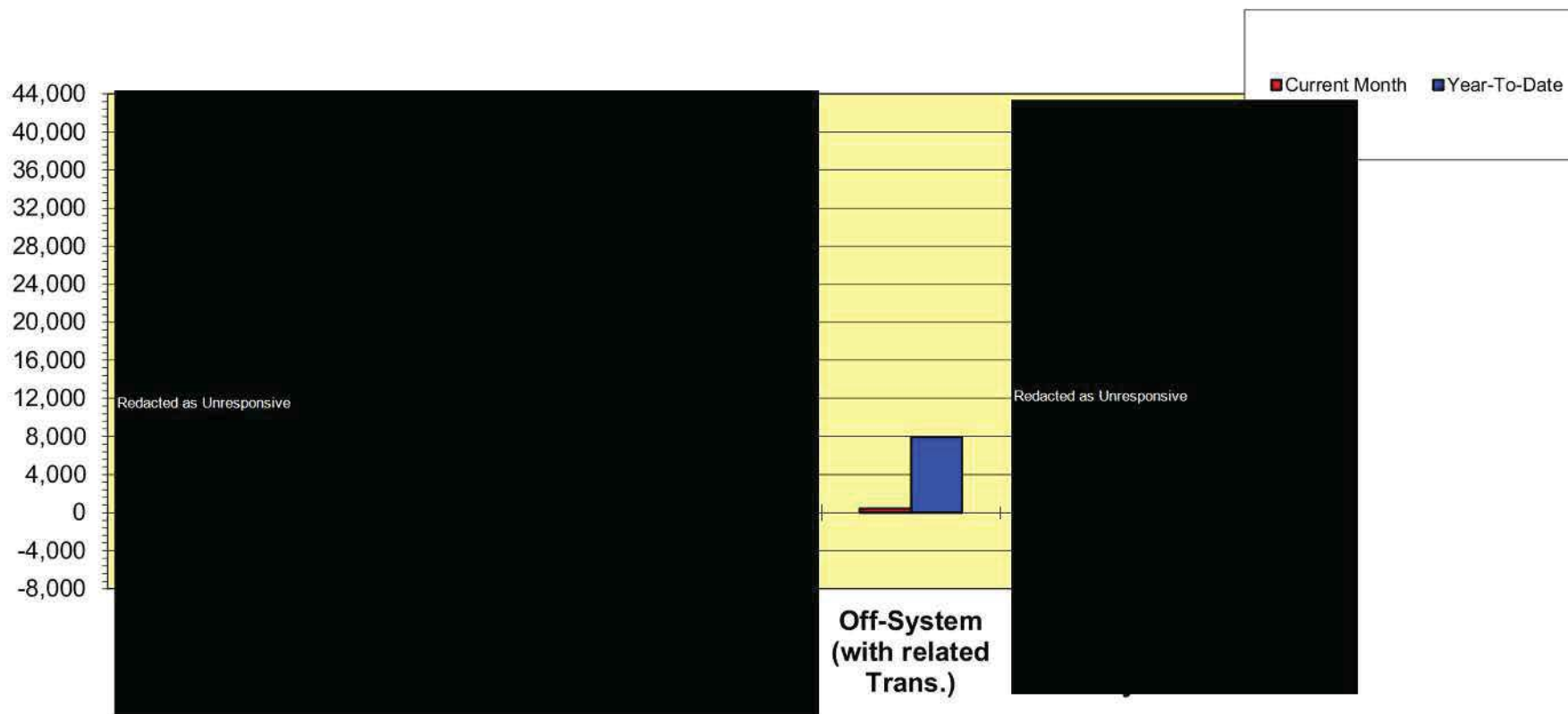
Off-system Sales 2014 June Actual vs. Budget KPI Summary

<u>LG&E/KU</u>	<u>Actual</u>	<u>Budget</u>	<u>Variance</u>
Volume Sales (GWh)			
5x16	36	6	30
7x8	1	1	0
2x16	8	15	(7)
Effective Sales Price			
5x16	\$49.10	\$37.99	\$11.11
7x8	\$42.82	\$33.00	\$9.82
2x16	\$43.23	\$36.55	\$6.68
Cost of Supply			
5x16	\$36.23	\$30.23	(\$6.00)
7x8	\$32.29	\$30.33	(\$1.96)
2x16	\$30.60	\$28.77	(\$1.83)



Effective Sales Price = Revenue – Transmission Exp. – RTO Exp. / Volume
 Cost of Supply = Cost of Gen. + Outage Purchases + Consumable Exp. / Volume

Electric Gross Margin Variance to Budget (\$000's)



	F	
1	Off-System (with related Trans.)	
2		416
3		7,936

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Produced as Native

Original File Name: Microsoft_Excel_97-2003_Worksheet19.xls

Stored File Name: OpenText00036112.xls

Produced as Native

Original File Name: Copy of 2014 BP Growth Non Fuel Base Rev.xlsx

Stored File Name: OpenText00036193.xlsx

Produced as Native

Original File Name: Copy of OSS and Native Load Report July 2014 FC TEST.xlsx

Stored File Name: OpenText00037908.xlsx

Sinclair

From: Blake, Kent(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=E008318)
To: Staffieri, Vic; Farr, Paul [PPL]
CC: Rives, Brad
BCC:
Subject: Re: Weekly Report on LKE Activities
Sent: 03/08/2014 12:51:09 PM -0500 (EST)
Attachments:

Paul,

Redacted as Unresponsive

OSS was \$1.5 million better. We're a little limited now on excess capacity with TC2 on a 15 week outage to replace the burners, but we had to pull the trigger on that to make sure we had the unit ready for the summer.

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Kent

Redacted as Unresponsive

Redacted as Unresponsive

Redacted as Unresponsive

From: Blake, Kent(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=E008318)
To: Conroy, Robert
CC:
BCC:
Subject: Weather Normalization
Sent: 06/23/2014 08:53:13 AM -0400 (EDT)
Attachments:

Robert, is the adjustment only being calculated for native load? What about OSS? As you know, we're over \$9MM YTD for OSS margins where the full year 2014 budget was only \$2MM.

Kent

Sinclair

From: Sinclair, David(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=TRADERS/CN=SINCLAIRD)
To: Spaulding, Jeffrey
CC: Brunner, Bob; Schrader, Duane; Schram, Chuck; Sebourn, Michael; Wilson, Stuart
BCC:
Subject: RE: March OSS forecast
Sent: 03/20/2014 09:37:34 PM -0400 (EDT)
Attachments:

Ok

From: Spaulding, Jeffrey
Sent: Thursday, March 20, 2014 4:24 PM
To: Sinclair, David
Cc: Brunner, Bob; Schrader, Duane; Schram, Chuck; Sebourn, Michael; Wilson, Stuart
Subject: March OSS forecast

David,

At our OSS forecast meeting we reviewed the material and have a recommendation on what to provide to the finance folks:

Other than May keep all forward months at plan

- May is the exception with one known outage (TC2) and additional planned outages possible
 - Using market prices May is ~\$0.2 million below plan, with additional risk if prices decline
- June thru December at plan
 - Current market prices could add \$0.3 million of additional margin

The full year forecast would be \$9.2 million, and additional risk in May due to prices and outages. Are you okay providing this detail to finance? They would like our data by tomorrow.

Thanks.

Sinclair

From: Sinclair, David(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=TRADERS/CN=SINCLAIRD)
To: Spaulding, Jeffrey; Brunner, Bob; Martin, Charlie; Schrader, Duane; Schram, Chuck; Sebourn, Michael; Wilson, Stuart
CC:
BCC:
Subject: RE: June 2014 OSS Forecast
Sent: 06/16/2014 01:32:37 PM -0400 (EDT)
Attachments:

I have to be out of town on Wednesday so I will not be able to attend. I'm inclined to leave the balance of the year at plan rather than increase it by \$400,000. If others feel strongly, let me know.

Thanks

From: Spaulding, Jeffrey
Sent: Monday, June 16, 2014 9:06 AM
To: Brunner, Bob; Martin, Charlie; Schrader, Duane; Schram, Chuck; Sebourn, Michael; Sinclair, David; Wilson, Stuart
Subject: June 2014 OSS Forecast

The attachment has June's balance of the year forecast; we have a forecast review scheduled for Wednesday morning at 10:00. Looking at July thru December little has changed from last month with market prices remaining above plan with a favorable variance of ~\$0.4 million using budgeted sales volume. Looking back both May and June results are better than expected, primarily due to higher market prices allowing unplanned sales from CT's.

If there are any questions prior to Wednesday's review please let me know.

Thanks,
Jeff

Sinclair

From: Hudson, Rusty(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=ADMINISTRATIVE/CN=HUDSONR)
To: Barnett, Bob; Billiter, Delbert; Brunner, Bob; Byrd, Larry; Carr, Sam; Crutcher, Tom; Faulkner, Danny; Fraley, Jeffrey; Freibert, Charlie; Harrison, Timothy; Hudson, Rusty; Joyce, Jeff; Kirkland, Mike; Kremer, Dan; Mulvihill, Jennifer; Pfeiffer, Caryl; Phillips, Steven; Schetzzel, Doug; Sinclair, David; Straight, Scott; Troost, Tom; Tummonds, David; Turner, Steven
CC:
BCC:
Subject: COO Key Metrics through August (without transmission)
Sent: 09/24/2014 12:08:51 PM -0400 (EDT)
Attachments: COOKeyMetrics0814.ppt;



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LKE Operations Key Metrics Review Presented in September 2014; With Results Through August 2014



PPL companies

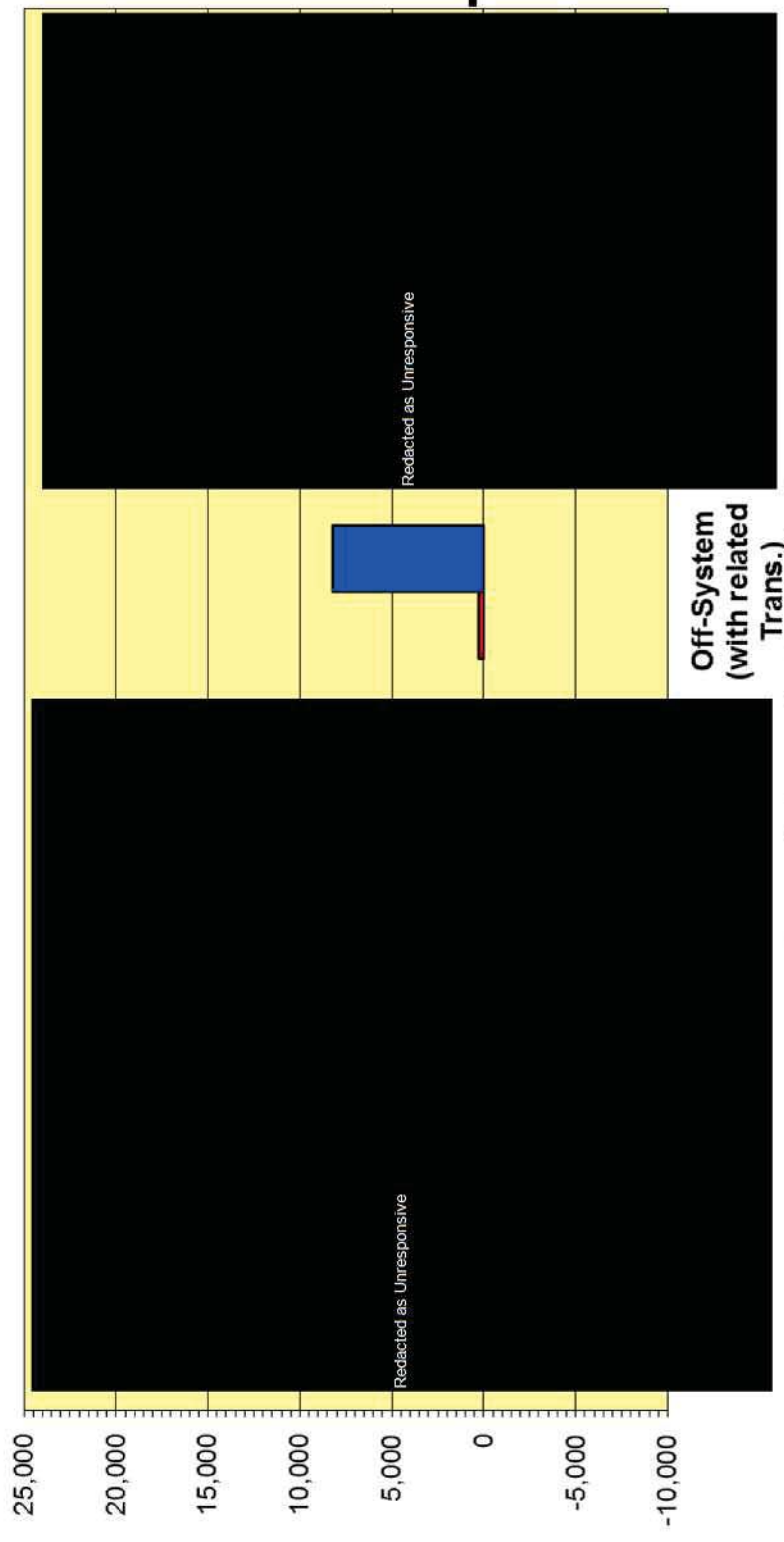
Utility Gross Margin

August 2014

Electric Gross Margin Variance to Budget (\$000's)

Question No. 40 - Production 2

Internal Reporting



Fav.

UnFav.

Percent Variances For Contributing Factors

	Current Month	Year-To-Date
OSS Volumes	+394%	+68%
OSS Effective Sales Price (5x16)	+9%	+87%

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PPL companies

Off-system Sales 2014 August Actual vs. Budget KPI Summary

<u>LG&E/KU</u>	<u>Actual</u>	<u>Budget</u>	<u>Variance</u>
Volume Sales (GWh)	19	2	17
5x16			
7x8	1	0	1
2x16	20	6	14
Effective Sales Price			
5x16	\$40.00	\$36.76	\$3.24
7x8	\$55.14	\$33.83	\$21.31
2x16	\$39.18	\$36.35	\$2.83
Cost of Supply			
5x16	\$34.29	\$31.72	(\$2.57)
7x8	\$30.11	\$33.42	\$3.31
2x16	\$28.60	\$30.31	\$1.71

Effective Sales Price = Revenue – Transmission Exp. – RTO Exp. / Volume
 Cost of Supply = Cost of Gen. + Outage Purchases + Consumable Exp. / Volume



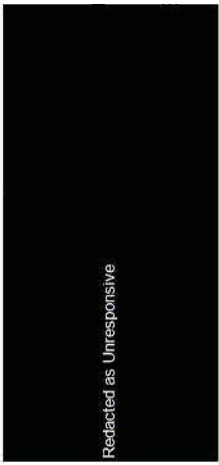
Slide 1 : *

Slide 2 : *

Slide 3 : *

Slide 4 : *

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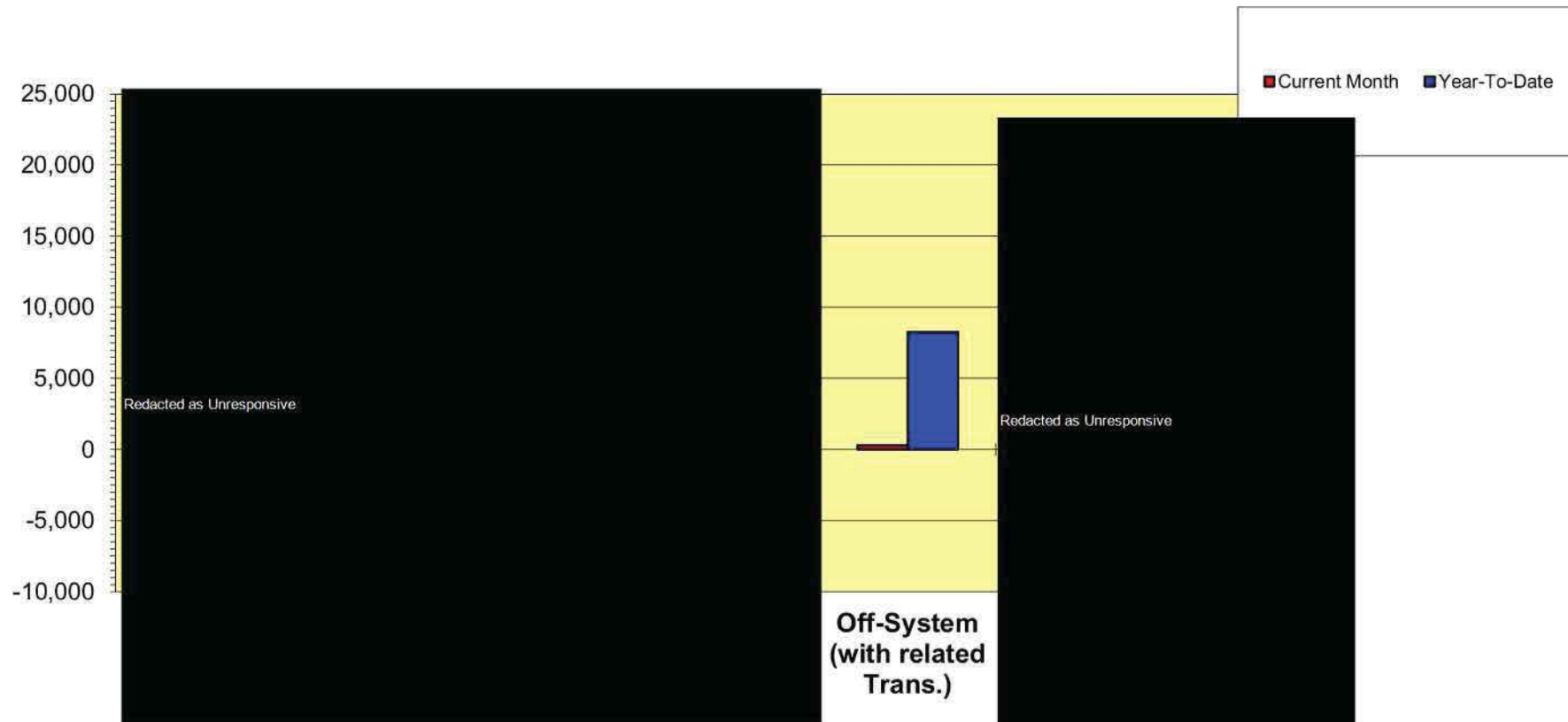
Redacted as Unresponsive

Slide 19 : *

Slide 27 : *

Slide 29 : *

Electric Gross Margin Variance to Budget (\$000's)



	F	
1	Off-System (with related Trans.)	
2		296
3		8,247



Produced as Native

Original File Name: 14-Worksheet.xls

Stored File Name: OpenText00063837.xls

Sinclair

From: Hudson, Rusty(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=ADMINISTRATIVE/CN=HUDSONR)
To: Barnett, Bob; Billiter, Delbert; Brunner, Bob; Byrd, Larry; Carr, Sam; Crutcher, Tom; Faulkner, Danny; Fraley, Jeffrey; Freibert, Charlie; Harrison, Timothy; Hudson, Rusty; Joyce, Jeff; Kirkland, Mike; Kremer, Dan; Mulvihill, Jennifer; Pfeiffer, Caryl; Phillips, Steven; Schetzel, Doug; Sinclair, David; Straight, Scott; Troost, Tom; Tummonds, David; Turner, Steven
CC:
BCC:
Subject: June, 2014 COO Key Metrics
Sent: 07/23/2014 10:37:41 AM -0400 (EDT)
Attachments: COOKeyMetrics0614.pptx;

Attached are the COO key metrics through June, 2014. Please note the following:



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- o OSS margins are up by \$7.9m, with volumes above budget by 58% and 5X16 effective sales price higher than budget by 98%.



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Redacted as Unresponsive



**LKE Operations
Key Metrics Review
Presented in July 2014;
With Results Through June 2014**



PPL companies

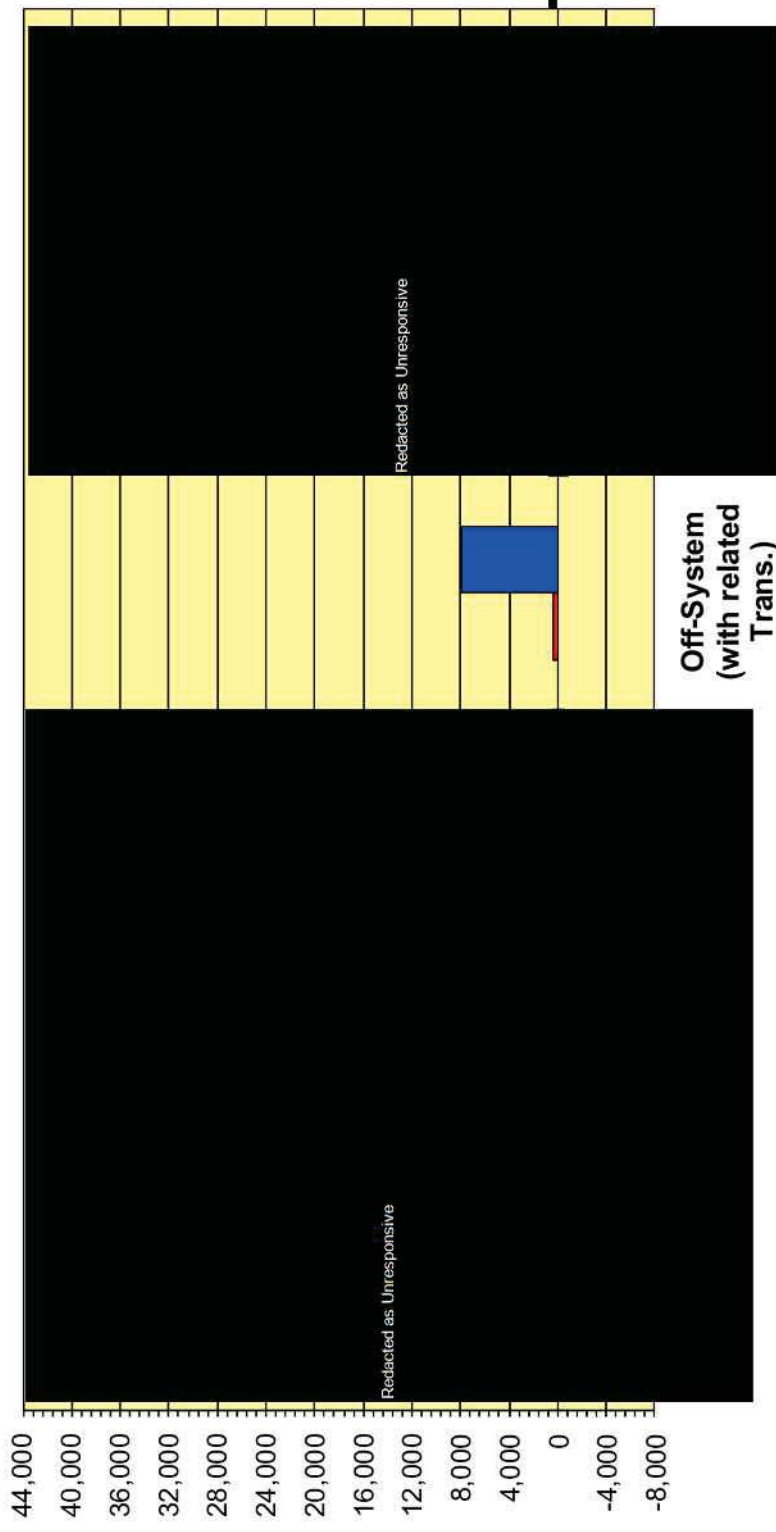
Utility Gross Margin

June 2014

Electric Gross Margin Variance to Budget (\$000's)

Question No. 40 - Production 2

Internal Reporting



Fav.
UnFav.

Percent Variances For Contributing Factors

	Current Month	Year-To-Date
OSS Volumes	+108%	+58%
OSS Effective Sales Price (5x16)	+29%	+98%

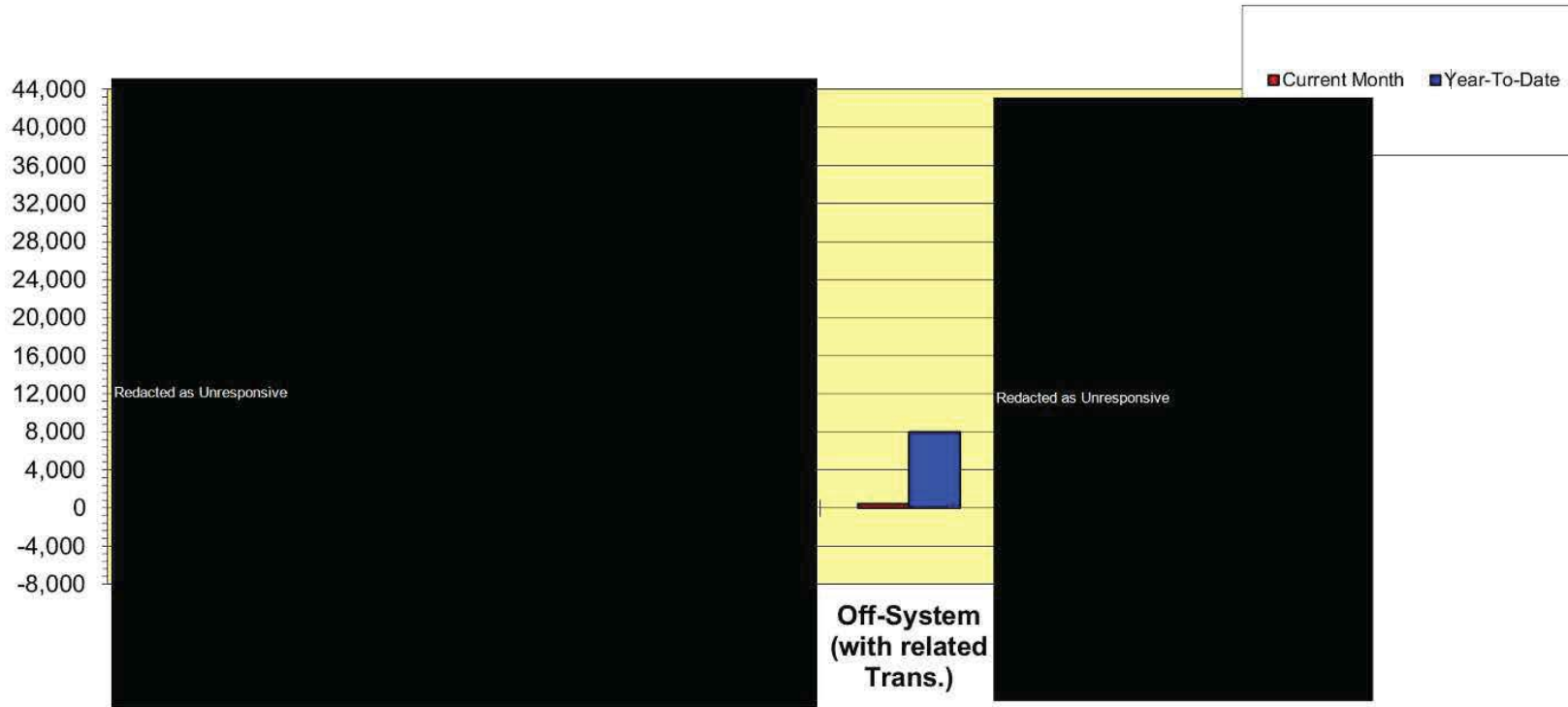
Redacted as Unresponsive



Off-system Sales 2014 June Actual vs. Budget KPI Summary

<u>LG&E/KU</u>	<u>Actual</u>	<u>Budget</u>	<u>Variance</u>
Volume Sales (GWh)			
5x16	36	6	30
7x8	1	1	0
2x16	8	15	(7)
Effective Sales Price			
5x16	\$49.10	\$37.99	\$11.11
7x8	\$42.82	\$33.00	\$9.82
2x16	\$43.23	\$36.55	\$6.68
Cost of Supply			
5x16	\$36.23	\$30.23	(\$6.00)
7x8	\$32.29	\$30.33	(\$1.96)
2x16	\$30.60	\$28.77	(\$1.83)

Electric Gross Margin Variance to Budget (\$000's)



F	
1	Off-System (with related Trans.)
2	416
3	7,936

Redacted as Unresponsive

Produced as Native

Original File Name: Microsoft_Excel_97-2003_Worksheet19.xls

Stored File Name: OpenText00084914.xls

Sinclair

From: Stickler, Samantha(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=E026127)
To: Leichty, Doug
CC: Mazza, Frank; Fackler, Andrea; Garrett, Chris
BCC:
Subject: RE: OSS Margin Test Year
Sent: 07/28/2014 01:32:33 PM -0400 (EDT)
Attachments: 12ME June 2014 OSS Gross Margins.xlsx;

Doug,

The data you requested is attached. The format is different than how it was provided in the past as the process has changed. Let me know if you need anything else.

Thanks,
Sam

From: Leichty, Doug
Sent: Friday, June 27, 2014 10:25 AM
To: Stickler, Samantha
Cc: Mazza, Frank
Subject: OSS Margin Test Year

Sam,

In preparation for the rate case, I will need the OSS margins for the twelve months ended June 30, 2014 by July 28, 2014.

Thanks,
Doug

From: Stickler, Samantha
Sent: Monday, November 26, 2012 11:01 AM
To: Leichty, Doug
Subject: RE: OSS Margin Test Year (2).xlsx

The attached has been updated.

Produced as Native

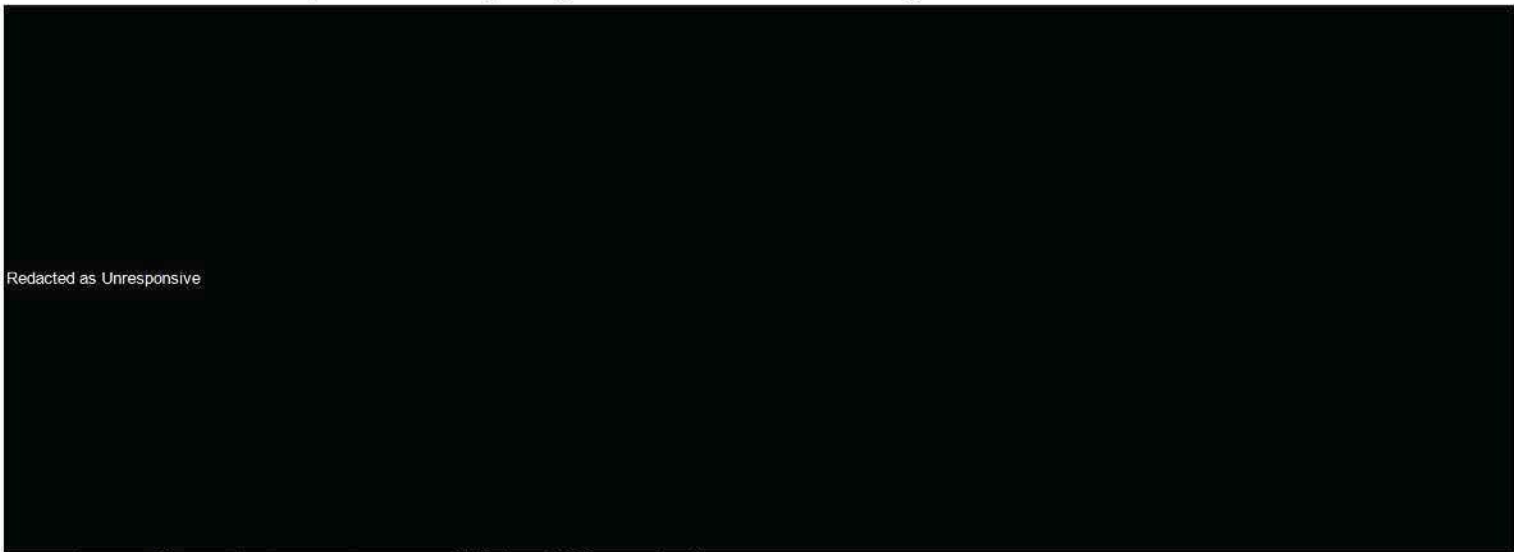
Original File Name: 12ME June 2014 OSS Gross Margins.xlsx

Stored File Name: OpenText00224827.xlsx

Sinclair

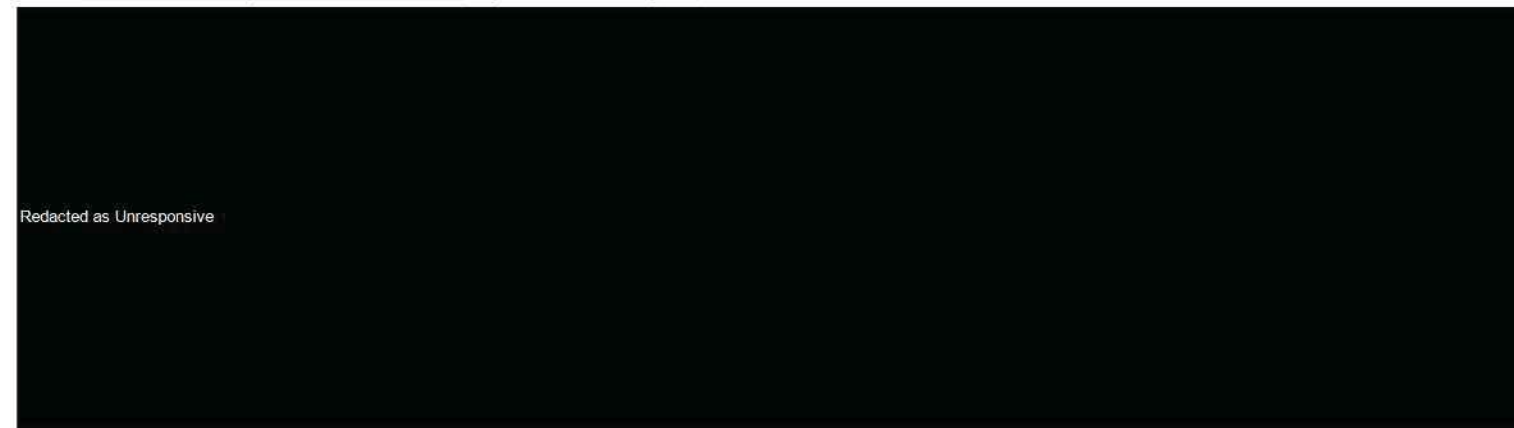
From: Hudson, Rusty(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=ADMINISTRATIVE/CN=HUDSONR)
To: Allen, Lisa; Ambrosino, Carolyn; Balmer, Chris; Barnett, Bob; Bellar, Lonnie; Blake, Kent; Bowling, Ralph; Bruner, Cheryl; Byrd, Larry; Carr, Sam; Carter, Doris; Cermack, Stacy; Chin, Doug; Clements, Joe; Cockerill, Butch; Cosby, David; Faulkner, Danny; Garrett, Chris; Gilbert, Jeffery; Hincker, Loren; Hudson, Rusty; Huff, David; Jefferson, Tangila; Jessee, Tom; Johnson, Sharon (Dir. HR); Keemer, Gabriela; Kremer, Dan; Malloy, John; Maynard, Nelson; McFarland, Beth; McGonnell, Robert; Miller, Jon; Mulvihill, Jennifer; Murphy, Clay; Neal, Susan; O'Brien, Dorothy (Dot); O'Brien, Rob; Phillips, Steven; Pienaar, Lesley; Revlett, Gary; Rieth, Tom; Ritchey, Stacy; Rohrer, Kathi; Schmitt, Mark; Schram, Chuck; Sebourn, Michael; Sheridan, Kenneth; Simon, Denise; Steinmetz, Keith; Thomas, Greg; Thompson, Paul; Thompson-Long, Esther; Voyles, John; Walker, Barry; Whelan, Chris; Winkler, Michael; Wolfe, John; Woodworth, Steve
CC:
BCC:
Subject: COO Key Metrics through August
Sent: 09/24/2014 12:04:03 PM -0400 (EDT)
Attachments: COOKeyMetrics0814.ppt;

Attached are the COO Key Metrics through August. Please note the following:



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Redacted as Unresponsive higher OSS margins).



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LKE Operations Key Metrics Review Presented in September 2014; With Results Through August 2014



PPL companies

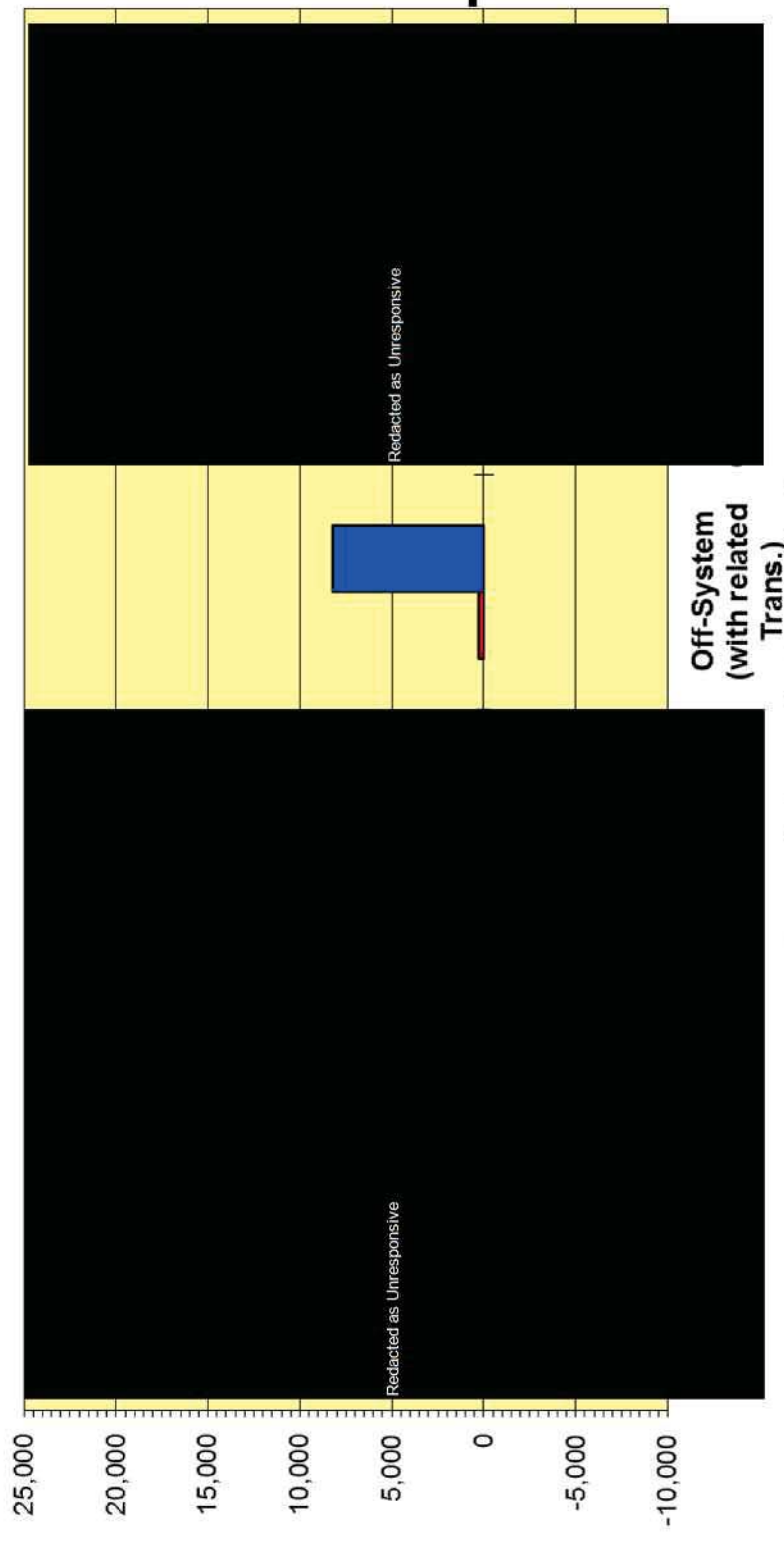
Utility Gross Margin

August 2014

Electric Gross Margin Variance to Budget (\$000's)

Question No. 40 - Production 2

Internal Reporting



Fav.

UnFav.

Percent Variances For Contributing Factors

	Current Month	Year-To-Date
OSS Volumes	+394%	+68%
OSS Effective Sales Price (5x16)	+9%	+87%

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Redacted as Unresponsive





PPL companies

Off-system Sales 2014 August Actual vs. Budget KPI Summary

<u>LG&E/KU</u>	<u>Actual</u>	<u>Budget</u>	<u>Variance</u>
Volume Sales (GWh)	19	2	17
5x16			
7x8	1	0	1
2x16	20	6	14
Effective Sales Price			
5x16	\$40.00	\$36.76	\$3.24
7x8	\$55.14	\$33.83	\$21.31
2x16	\$39.18	\$36.35	\$2.83
Cost of Supply			
5x16	\$34.29	\$31.72	(\$2.57)
7x8	\$30.11	\$33.42	\$3.31
2x16	\$28.60	\$30.31	\$1.71

Effective Sales Price = Revenue – Transmission Exp. – RTO Exp. / Volume
 Cost of Supply = Cost of Gen. + Outage Purchases + Consumable Exp. / Volume



Slide 1 : *

Slide 2 : *

Slide 3 : *

Slide 4 : *

Redacted as Unresponsive

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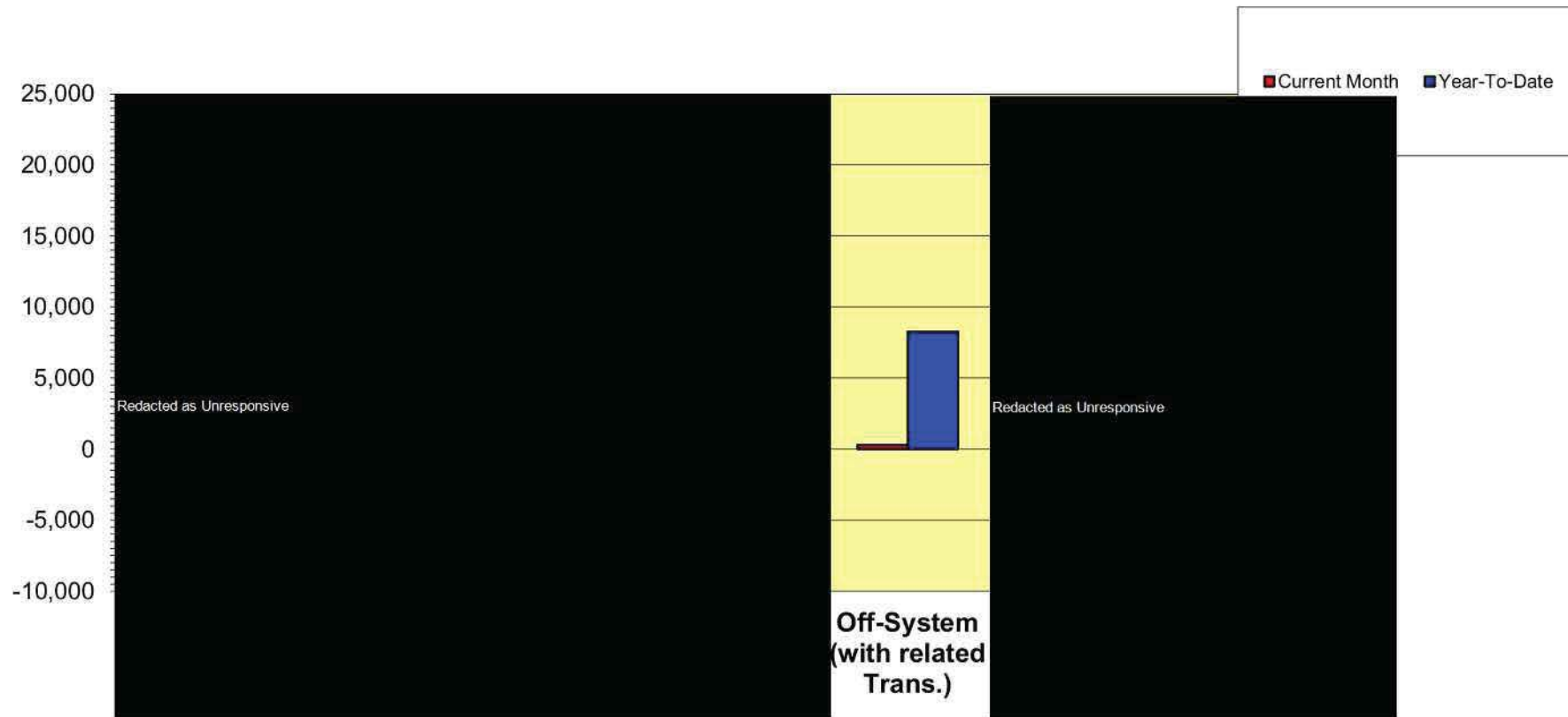
Slide 16 : *

Slide 27 : *

Slide 29 : *

Slide 37 : *

Electric Gross Margin Variance to Budget (\$000's)





	F	
1	Off-System (with related Trans.)	
2		296
3		8,247

Produced as Native

Original File Name: 14-Worksheet.xls

Stored File Name: OpenText00234482.xls

Produced as Native

Original File Name: Microsoft_Excel_97-2003_Worksheet1.xls

Stored File Name: OpenText00270032.xls

Sinclair

From: Wang, Chung-Hsiao(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=E009499)
To: Sinclair, David
CC: Wilson, Stuart; Schram, Chuck
BCC:
Subject: Generation and OSS Margin (Forecast vs. Base)
Sent: 10/10/2014 04:40:20 PM -0400 (EDT)
Attachments: 20141010_RateCase_Generation_ForecastvsBase.xlsx; 20141010_VarianceExplanations.docx;

David,

The attached Excel file shows generation volume and OSS margin for base year (3/1/2014 – 2/28/2015) and forecast year (7/1/2015 – 6/30/2016). The attached Word file has explanations for major differences between base year and forecast year.

The Excel file may contain more data than what you need for your testimony. Our purpose is to provide you a complete reference for our generation composition.

Please let me know if you have any questions. Thanks.

Wang

Produced as Native

Original File Name: 20141010_RateCase_Generation_ForecastvsBase.xlsx

Stored File Name: OpenText00270590.xlsx

1. Forecasts for Brown station generation are lower than the Base.
 - a. For Brown coal generation, lower forecast is mainly due to the impact of CR7 commissioning, TC2 availability, and maintenance for Brown 2&3 in April 2016.
 - b. For Brown SCCT generation, lower forecast is due to LS Power PPA (starting from 5/1/2015) because the PPA is dispatched ahead of Brown SCCTs.
2. Forecasts for Cane Run coal generation are zero because Cane Run coal units are retired on 5/1/2015.
3. Forecasts for Ghent station generation are slightly lower than the Base. The difference is driven by "1-2, 9-12" forecast. Specifically,
 - a. Ghent 2&3 generation in "1-2, 9-12" forecast is lower than in "1-2, 9-12" base due to maintenance in Oct.-Nov. 2015.
 - b. Ghent 4 generation in "1-2, 9-12" forecast is higher than in "1-2, 9-12" base due to no maintenance in fall 2015.

On the other hand, Ghent 3 generation in "3-8" forecast is higher than in "3-8" base due to baghouse installation in March-May 2014 in "3-8" base. The difference is offset by lower generation from Ghent 4 due to maintenance in March-April 2016.

4. Forecast for Green River station generation is lower than the Base. The difference is driven by "3-8" forecast. This is due to the loss of 2.5 months of operations resulting from Green River retirement on 4/16/2016.
5. Forecasts for Mill Creek generation are very similar to the Base. Mill Creek generation is slightly lower in "3-8" forecast, which is offset by slightly higher generation in "3-8" forecast. Specifically,
 - a. Mill Creek 3 generation in "3-8" forecast is lower than in "3-8" base due to maintenance in April-June 2016.
 - b. Mill Creek 4 generation in "1-2, 9-12" forecast is higher than in "1-2, 9-12" base due to much less maintenance in fall 2015.
6. Forecasts for Paddys Run generation are higher than the Base. This is driven by "1-2, 9-12" forecast due to winter availability starting from 1/1/2016.
7. Forecasts for Trimble station generation are higher than the Base. This is driven by "3-8" forecast primarily due to TC2 extended outage in Feb.-May 2014 in the Base. In addition, Trimble SCCT generation in "3-8" forecast is higher than "in 3-8" base due to Cane Run 4-6 and Green River 3-4 retirements. On the other hand, Trimble generation in "1-2, 9-12" forecast is slightly lower than "1-2, 9-12" base mainly due to Trimble 1's maintenance in Oct.-Nov. 2015.
8. Forecasts for OSS margin are lower than the Base. This is driven by lower "3-8" forecast primarily due to major OSS margin in March 2014 in "3-8" base and the concentration of OSS margin in Jan/Feb. in "3-8" forecast.

Sinclair

From: Spaulding, Jeffrey(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=SPAULDIJ)
To: Sinclair, David
CC:
BCC:
Subject: 2014 OSS 7+5 OSS volume by source
Sent: 09/11/2014 02:17:37 PM -0400 (EDT)
Attachments: Book6.xlsx;

David, the attachment has January thru July OSS by source type (coal, gas or purchase) and the budget/forecast volume for the balance of 2014. The most noteworthy variance to plan:

- 44% of off system sales through July were sourced by gas (we budget sales from coal only).
- Of the 44% of sales from gas, 70% occurred during cold weather periods of January through March.
- 2015 planned OSS volume of 311 GWh is greater than the 2014 forecast for sales from coal.

Let me know if you need any additional information.

Jeff

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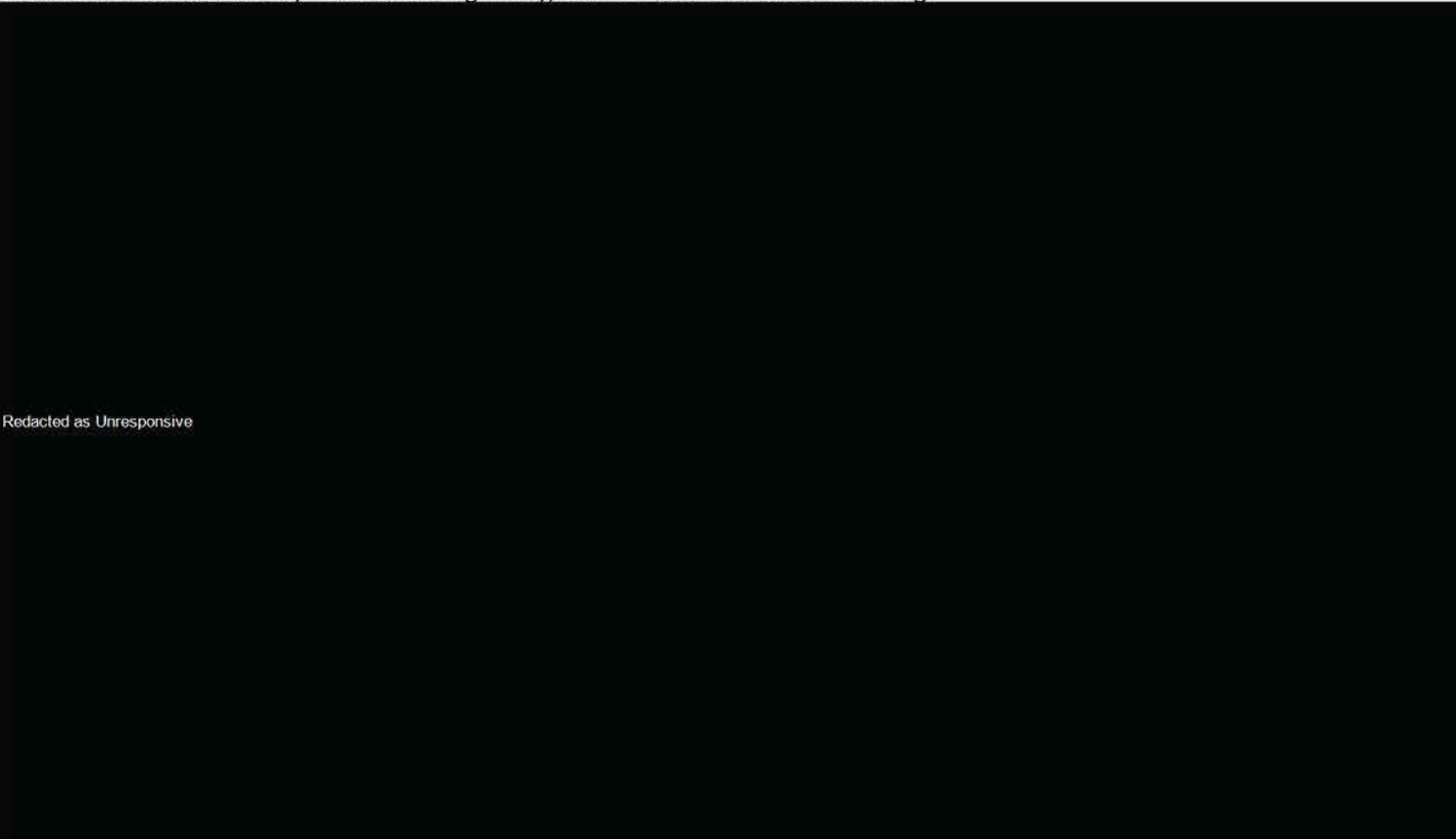
Original File Name: Book6.xlsx

Stored File Name: OpenText00271605.xlsx

Sinclair

From: Hudson, Rusty(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=ADMINISTRATIVE/CN=HUDSONR)
To: Allen, Lisa; Bivens, Stacia; Brown, Roxane; Cuzick, Fred; Dowd, Deborah; Dunlap, Carroll; Emery, Susan; Harder, Tim; Hargrove, Jerry; Haycox, Michael; Hudson, Rusty; Jones, Rebecca; King, Chelsey; Laster, Sandra; Madison, Clyde; McDonald, Pam; McRae, Callie; Miller, Jon; Mooney, Mike (BOC 3); Moss, Marisa; Neal, Susan; O'Brien, Rob; Pence, Mark; Raque, Gary; Reeves, Stephen; Shultz, Jennifer; Singleton, Janna; Welsh, Elaine; Yeary, William
CC:
BCC:
Subject: COO Key Metrics - May, 2014
Sent: 06/23/2014 08:40:31 AM -0400 (EDT)
Attachments: COOKeyMetrics0514.ppt;

Attached are the COO key metrics through May, 2014. Please note the following:



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- OSS margin is up by \$7.5m
 - Volumes are up 52%, and effective sales price up by 113% for the 5X16 hour period and 129% for the 7X8 hour period.



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LKE Operations Key Metrics Review Presented in June 2014; With Results Through May 2014



PPL companies

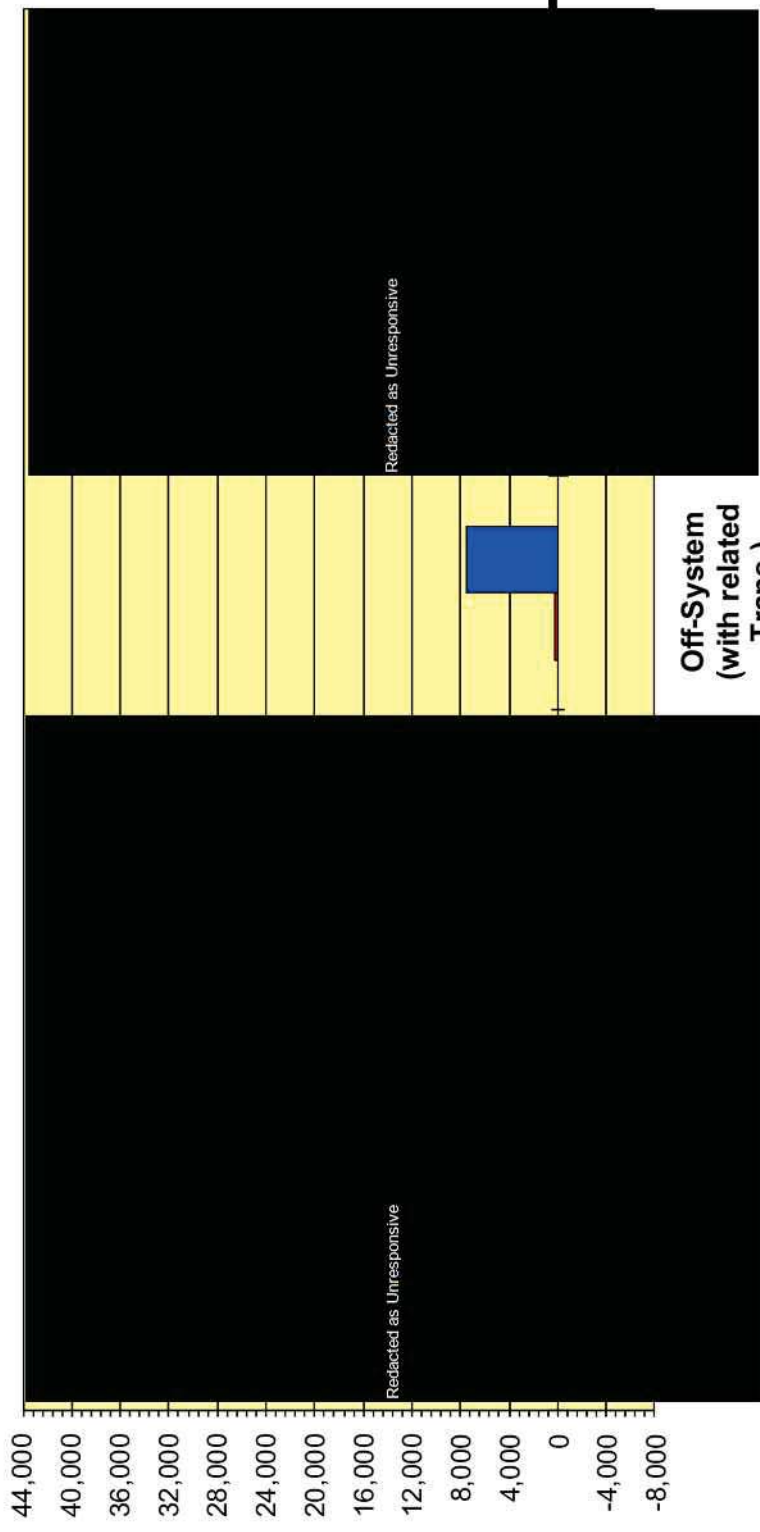
Utility Gross Margin

May 2014

Electric Gross Margin Variance to Budget (\$000's)

Question No. 40 - Production 2

Internal Reporting



Fav.
UnFav.

Percent Variances For Contributing Factors

	Current Month	Year-To-Date
OSS Volumes	-33%	+52%
OSS Effective Sales Price (5x16)	+44%	+113%

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C



Off-system Sales 2014 May Actual vs. Budget KPI Summary

<u>LG&E/KU</u>	<u>Actual</u>	<u>Budget</u>	<u>Variance</u>
Volume Sales (GWh)			
5x16	38	36	2
7x8	1	3	(2)
2x16	5	27	(22)
Effective Sales Price			
5x16	\$61.29	\$42.47	\$18.82
7x8	\$37.08	\$31.22	\$5.86
2x16	\$36.60	\$36.69	(\$0.09)
Cost of Supply			
5x16	\$36.99	\$29.31	(\$7.68)
7x8	\$31.76	\$28.05	(\$3.71)
2x16	\$30.19	\$28.14	(\$2.05)

Slide 1 : *

Slide 3 : *

Slide 4 : *

Slide 5 : *

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Redacted as Unresponsive

Redacted as Unresponsive

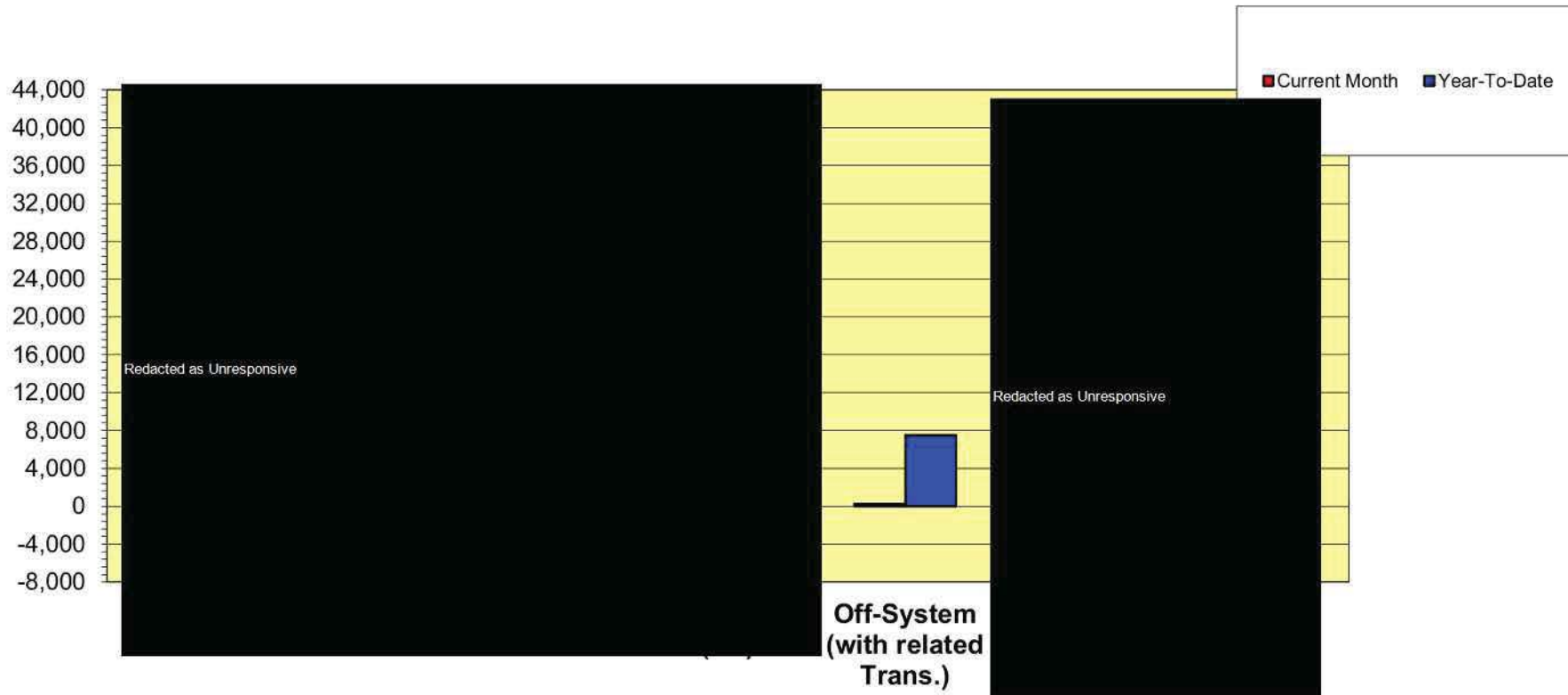
Slide 20 : *

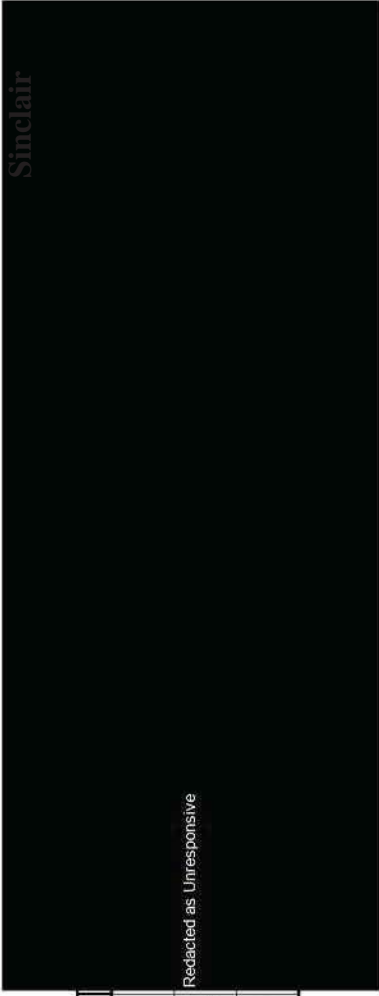
Slide 22 : *

Slide 30 : *

Slide 40 : *

Electric Gross Margin Variance to Budget (\$000's)





	F	
1	Off-System (with related Trans.)	
2		244
3		7,520

Produced as Native

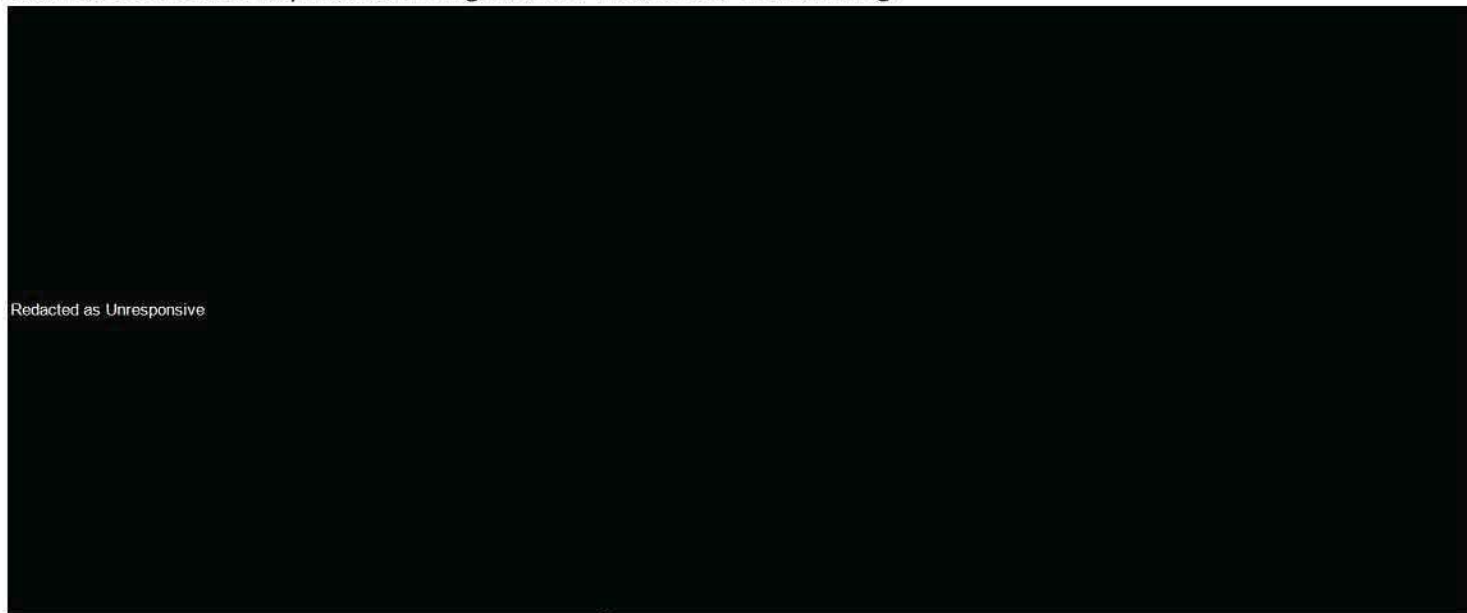
Original File Name: 15-Worksheet.xls

Stored File Name: OpenText00447800.xls

Sinclair

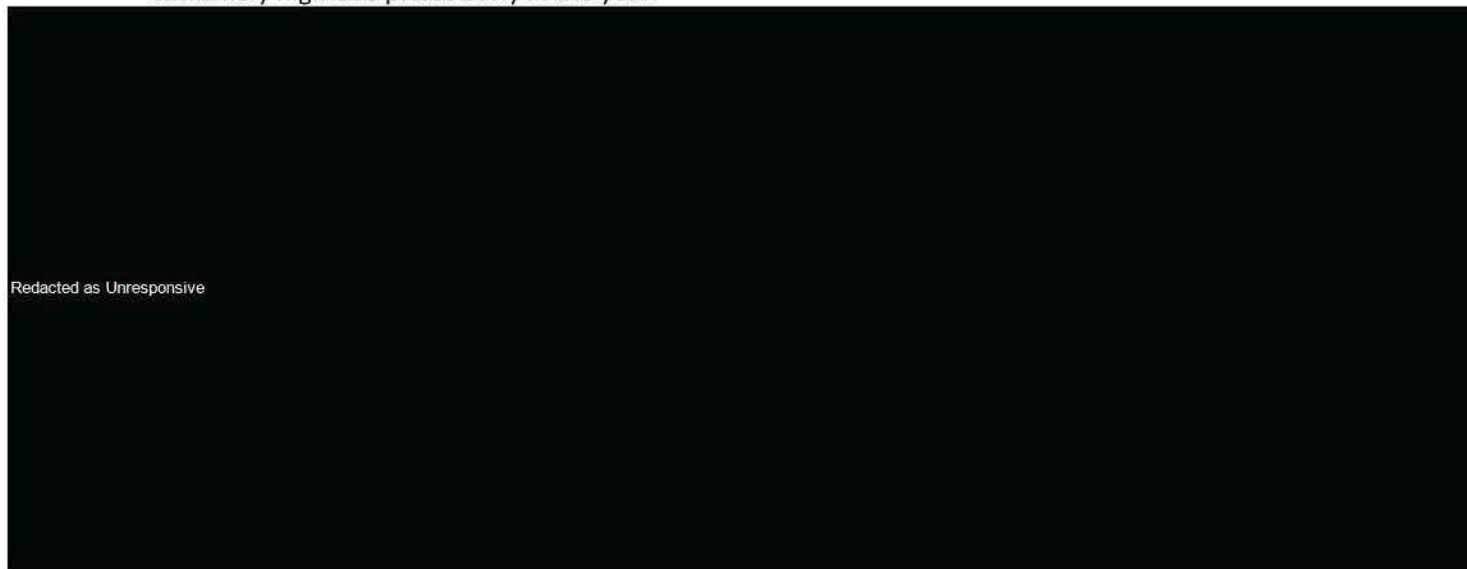
From: Hudson, Rusty(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=ADMINISTRATIVE/CN=HUDSONR)
To: Allen, Lisa; Bivens, Stacia; Brown, Roxane; Cuzick, Fred; Dowd, Deborah; Dunlap, Carroll; Emery, Susan; Harder, Tim; Hargrove, Jerry; Haycox, Michael; Hudson, Rusty; Jones, Rebecca; King, Chelsey; Laster, Sandra; Madison, Clyde; McDonald, Pam; McRae, Callie; Miller, Jon; Mooney, Mike (BOC 3); Moss, Marisa; Neal, Susan; O'Brien, Rob; Pence, Mark; Raque, Gary; Reeves, Stephen; Shultz, Jennifer; Singleton, Janna; Welsh, Elaine; Wright, Sharon; Yeary, William
CC:
BCC:
Subject: COO Key Metrics through March, 2014
Sent: 04/23/2014 01:56:58 PM -0400 (EDT)
Attachments: COOKeyMetrics0314.ppt;

Attached are the COO key metrics through March. Please note the following:



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- OSS volumes are 102% above budget.
- The average OSS price per Mwh of \$88.06 is above the average ultimate consumer price of \$82.79, driven by the extremely high OSS prices early in the year.



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**LKE Operations
Key Metrics Review
Presented in April 2014;
With Results Through March 2014**



PPL companies

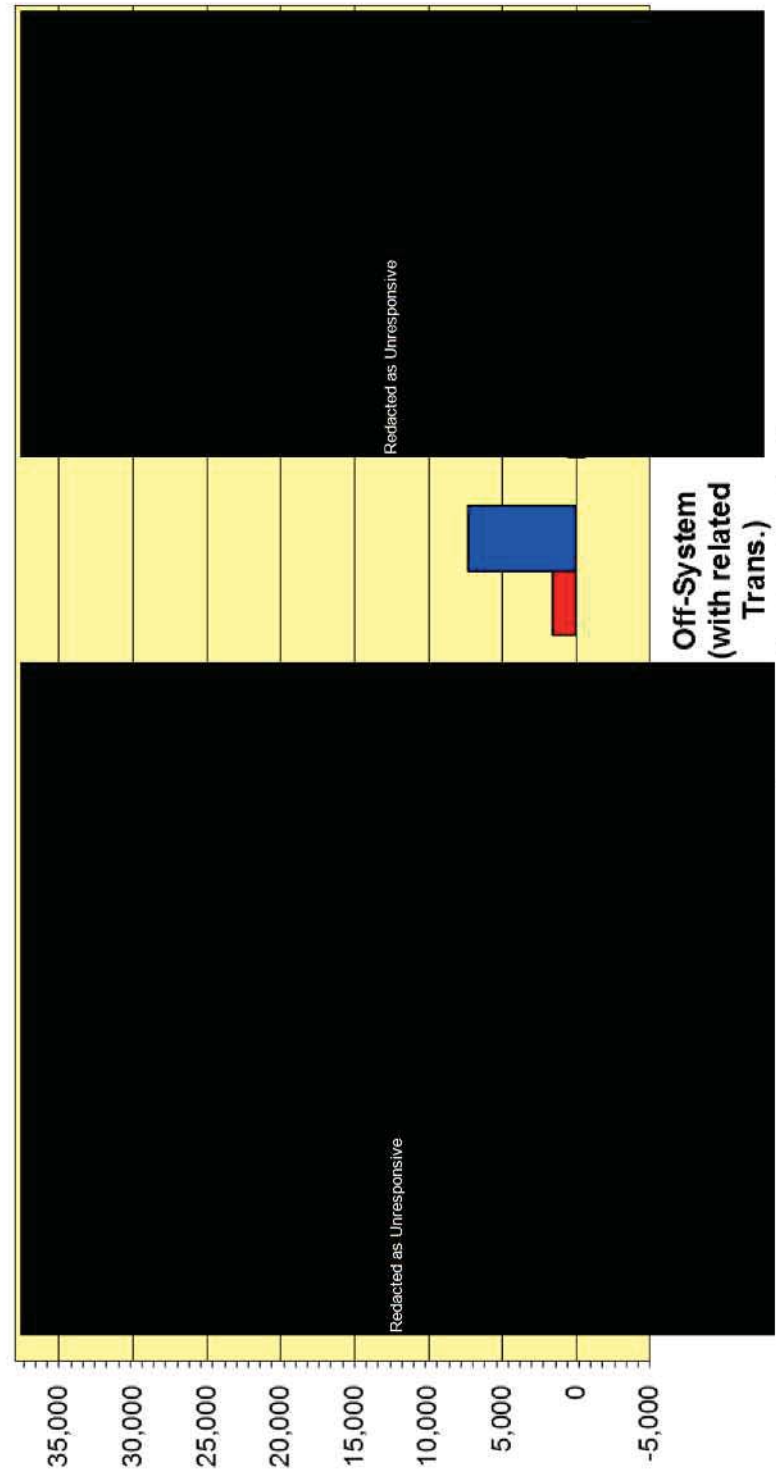
Utility Gross Margin

March 2014

Electric Gross Margin Variance to Budget (\$000's)

Question No. 40 - Production 2

Internal Reporting



Fav.

UnFav.

Percent Variances For Contributing Factors

	<u>Current Month</u>	<u>Year-To-Date</u>
OSS Volumes	+3752%	+102%
OSS Effective Sales Price (5x16)	+106%	+147%

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OSS Volumes **+3752%** **+102%**

OSS Effective Sales Price (5x16) **+106%** **+147%**

Redacted as Unresponsive



PPL companies

Off-system Sales 2014 March Actual vs. Budget KPI Summary

<u>LG&E/KU</u>	<u>Actual</u>	<u>Budget</u>	<u>Variance</u>
Volume Sales (GWh)			
5x16	32	1	31
7x8	10	0	9
2x16	12	1	12
Effective Sales Price			
5x16	\$83.70	\$40.56	\$43.14
7x8	\$60.34	\$32.36	\$27.98
2x16	\$42.08	\$36.15	\$5.93
Cost of Supply			
5x16	\$45.06	\$32.52	(\$12.54)
7x8	\$42.24	\$32.01	(\$10.23)
2x16	\$29.92	\$33.12	\$3.20

Slide 1 : *

Slide 3 : *

Slide 4 : *

Slide 5 : *

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Redacted as Unresponsive

Redacted as Unresponsive

Slide 18 : *

Slide 21 : *

Slide 29 : *

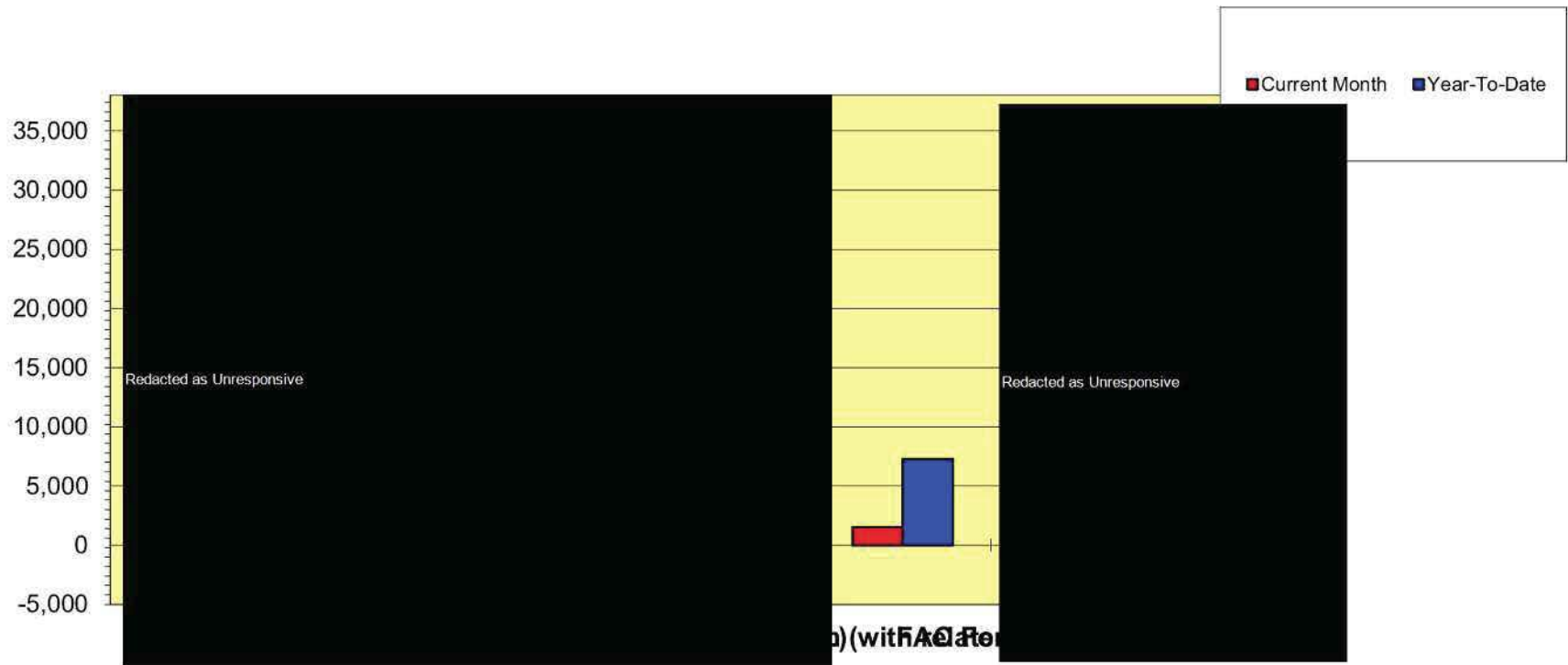
Slide 34 : *

Slide 42 : *

Slide 43 : *

Slide 44 : *

Electric Gross Margin Variance to Budget (\$000's)



Sinclair

	F	
1	Off-System (with related Trans.)	
2		1,539
3		7,273

Redacted as Unresponsive

Produced as Native

Original File Name: 15-Worksheet.xls

Stored File Name: OpenText00452797.xls

KENTUCKY UTILITIES COMPANY

CASE NO. 2014-00371

**Supplemental Response to First Set of Data Requests of
Kentucky Industrial Utility Customers, Inc.
Dated January 8, 2015**

Question No. 56

Responding Witness: David S. Sinclair / Robert M. Conroy / Counsel

Q.1-56. Please provide all emails in the possession of any of the witnesses in this case that address or discuss the decision of LGE/KU to modify its CSR tariff to change the curtailment limitation criterion from “only during system reliability events” to “none.”

A.1-56. **ORIGINAL RESPONSE**

The Company objected to this question on January 19, 2015, because it requires the Company to reveal the contents of communications with counsel and the mental impressions of counsel, which information is protected from disclosure by the attorney-client privilege and the work product doctrine. Without waiver of these objections, see the attached documents that have been identified within the time permitted for this response. Counsel for the Company is continuing to undertake a reasonable and diligent search for other such documents and will reasonably supplement this response through a rolling production of documents.

SUPPLEMENTAL RESPONSE

The Company incorporates by reference the objections stated above. Without waiver of these objections, see the additional attached documents that have been identified.

The Company is also filing contemporaneously herewith a privilege log describing the responsive documents the Company is not producing on the ground of attorney-client or work product privilege.

From: Oelker, Linn(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=E009358)
To: Freibert, Charlie
CC: Brunner, Bob; Martin, Charlie
BCC:
Subject: CSR10andCSR30 Pages from KU Tariff PSC No. 16 - Eff 6-30-14.docx
Sent: 07/14/2014 01:01:35 PM -0400 (EDT)
Attachments: CSR10andCSR30 Pages from KU Tariff PSC No. 16 - Eff 6-30-14.docx;

From: Marty Blake(marty.blake.prime@gmail.com)
To: Riggs, Kendrick R.; Conroy, Robert
CC: Larry (work) Feltner
BCC:
Subject: CSR Insert
Sent: 07/18/2014 09:52:01 AM -0400 (EDT)
Attachments: CSR testimony insert.docx;

Attached is testimony regarding CSR based on what we discussed earlier this week. Any comments or suggested changes? I am also working on the weather normalization portion of the testimony and will send you that portion after I have it prepared. As we address rate case issues, I plan to write testimony addressing those issues while the discussion is still fresh in my mind.

Marty Blake
The Prime Group LLC
502-425-7882

From: Marty Blake(marty.blake.prime@gmail.com)
To: Riggs, Kendrick R.; Conroy, Robert
CC: Larry (work) Feltner
BCC:
Subject: Revised CSR testimony
Sent: 07/18/2014 10:21:49 AM -0400 (EDT)
Attachments: CSR testimony insert.docx;

I revised the CSR testimony to include examples of PJM and MISO prices when generation resources are tight to help illustrate the point that customers would be subject to substantial financial risk if curtailable load is loaded only after any available power is purchased.

CURTAILABLE SERVICE RIDER

Q. Please summarize the proposed changes to the Company's curtailable service riders.

A. The Company currently has two curtailable service riders – CSR10 and CSR30. CSR10 provides for a ten minute notice provision with up to 100 hours of curtailment with no buy-through provision and 275 hours of curtailment with a buy-through provision. CSR30 provides for a thirty minute notice provision with up to 100 hours of curtailment with no buy-through provision and 250 hours of curtailment with a buy-through provision. Because of the longer required notice provision in CSR30, the curtailable credits provided under CSR30 are lower than the credits provided under CRS10. The two curtailable service riders were the result of negotiated settlements in prior rate cases.

In this proceeding, LG&E is proposing to: 1) leave the curtailable credits the same in CSR10 and CSR30; 2) change the contract options in both CSR10 and CSR 30 so that they match the assumptions used to calculate these credits; and 3) change the criteria for qualifying for the CSR rates from not less than 1,000 kW individually to not less than 5,000 kVa individually to make the criteria consistent with the billing units in the applicable tariffs and to reduce the potential administrative burden.

Q. Identify and explain the contract options that need to be changed in order to match the assumptions used to calculate the credits with the contract options specified in the CSR tariffs.

A. Currently, CSR10 and CSR30 contain the following language regarding Contract Option:

For the purposes of this rider, a system reliability event is any condition or occurrence: 1) that impairs KU and LG&E's ability to maintain service to contractually committed system load; 2) where KU and LG&E's ability to meet their compliance obligations with NERC reliability standards cannot otherwise be achieved; or 3) that KU and LG&E reasonably anticipate will last more than six hours and could require KU and LG&E to call upon automatic reserve sharing

(“ARS”) at some point during the event. Company may also request at its sole discretion up to 250 hours of curtailment per year with a buy-through option, whereby Customer may, at its option, choose either to curtail service in accordance with this Rider or to continue to purchase its curtailable requirements by paying the Automatic Buy-Through Price, as set forth below, for all kilowatt hours of curtailable requirements.

This Contract Option language needs to be changed to:

For the purposes of this rider, a system reliability event is any condition or occurrence that impairs KU and LG&E’s ability to maintain service to contractually committed system load. Company may also request up to 250 hours of curtailment per year with a buy-through option to reduce the average hourly production cost to its native load customers. The Customer may, at its option, choose either to curtail service in accordance with this Rider or to continue to purchase its curtailable requirements by paying the Automatic Buy-Through Price, as set forth below, for all kVa of curtailable requirements.

The second and third criteria were eliminated from the current tariff language in order to match the tariff language with the assumptions used to calculate the CSR credits. The current language restricts the Company to curtailing only after it has pursued all options, including buying high priced emergency power. By eliminating the second and third criteria the Company can curtail before it purchases high priced emergency power. The key issue here is where does curtailment under the CSR tariffs fall in the dispatch stack, before any available emergency power is purchased or after emergency power is purchased. Because the curtailable credits are priced based on the avoided cost of a new natural gas fired combustion turbine, these curtailments must perform the same functions as a new combustion turbine in the dispatch stack. A new combustion turbine would be loaded before any attempt to purchase high priced emergency power, not after purchasing emergency power. The CSR10 and CSR30 tariffs need to provide native load customers who are paying the curtailable credits the same protection against emergency energy purchases that a combustion turbine would provide. To provide this protection, it is

necessary to load curtailable load in the dispatch stack before emergency power purchases are made, not after emergency power purchases are made as criteria 2 and 3 in the current Contract Option language require. For example, on January 7, 2014, the day that PJM and the Midcontinent ISO experienced peaks, real time power prices reached a high of \$1,841 per MWh in PJM and \$1,966 per MWh in MISO. Because of the high prices that occur when generation resources are tight and utilities are near or at their peaks, buying emergency power before curtailing load would typically amount to purchasing power at prices well over \$1,000 per MWh (real time energy prices when resources are tight) and selling it at \$26 per MWh (the energy price in the applicable rates). If curtailable load is curtailed only after any available power is purchased regardless of price, the native load customers who pay the curtailable credits would bear these costs and would be subject to substantial risk, which is unfair because they are not receiving the benefits for which they are paying. The substantial difference between the price of emergency power when generation resources are tight and the retail rate significantly erodes the value of curtailable load to the Company if curtailable power is loaded only after any available power is purchased and would require a significant reduction in the curtailable credits paid to customers taking service under the CSR rider.

Additional language was added regarding the 250 hours of curtailment per year with a buy-through option that would allow the Company to use curtailment to reduce the average hourly production cost to its native load customers. Buy-through power would be indexed to the cost of natural gas, which is the primary fuel used in LG&E's combustion turbine units. This would benefit the native load customer who are paying the curtailable credit by reducing average hourly production cost when the opportunity to do

this using curtailments with buy through is available. The 250 hours of curtailment with buy through would not be used to curtail customers and sell the freed up power into the wholesale power market. It would only be used to reduce LG&E's average hourly production cost when this would be a benefit to native load customers.

With these changes, the Company is proposing to refine the provisions of the proposed CSR riders so that they correspond more closely to the operational characteristics the Company would actually enjoy if it were to install combustion turbine capacity. In other words, the Company wants the provisions of CSR to mirror as much as possible the benefits that the customers who pay the curtailable credits would receive if the Company installed a combustion turbine.

Q. Are there any other changes being proposed to CSR?

A. Yes. The criteria for qualifying for the CSR rates would be changed from not less than 1,000 kW individually to not less than 5,000 kVa individually. The change to measuring the qualification criteria in kVa makes the criteria consistent with the billing units in the tariffs to which the CSR rider would apply. Raising the qualification criteria to 5,000 would reduce the potential administrative burden of signing up and calling for curtailments from relatively small loads. Raising the qualification criteria to 5,000 kVa would not affect any LG&E customers currently taking service under the CSR riders.

From: Kallam, Karen(/O=LGE/OU=LOUISVILLE/CN=RECIPIENTS/CN=E006057)
To: Hornung, Mike; Keels, Lisa; Myers, Jeff
CC: Huff, David
BCC:
Subject: FW: Proposed Tariff Changes
Sent: 04/07/2014 04:12:28 PM -0400 (EDT)
Attachments: Customer Service Rate Case Pre-Planning Team - Proposed Tariff Revisions--DE....docx;

David asks that you take a look at the attached document. Do you have any concerns or additions? Please let him know.

Thanks,

Karen Kallam

Customer Energy Efficiency

LG&E and KU Energy Services

(502) 627-3730

From: Kallam, Karen On Behalf Of Huff, David
Sent: Monday, April 07, 2014 4:11 PM
To: Woodworth, Steve; Malloy, John; Bruner, Cheryl
Cc: Huff, David
Subject: RE: Proposed Tariff Changes

All: David's comments on Steve's document...

<<Customer Service Rate Case Pre-Planning Team - Proposed Tariff Revisions--DEH-04-07-14.docx>>

Karen Kallam

Customer Energy Efficiency

LG&E and KU Energy Services

(502) 627-3730

From: Woodworth, Steve
Sent: Friday, April 04, 2014 10:25 AM
To: Malloy, John; Bruner, Cheryl; Huff, David
Subject: RE: Proposed Tariff Changes

Attached is the final list of proposed tariff changes. Please let me know your thoughts by Wednesday, 4/9, so I can consolidate and send to Robert. Thanks

<< File: Customer Service Rate Case Pre-Planning Team - Proposed Tariff Revisions.docx >>

From: Malloy, John
Sent: Thursday, April 03, 2014 2:18 PM
To: Woodworth, Steve
Cc: Bruner, Cheryl; Huff, David
Subject: RE: Proposed Tariff Changes

Steve,

Do we have a final list that we are moving forward?

thanks

John P. Malloy
LGE - KU Energy LLC
VP Energy Delivery - Retail
220 West Main Street
Louisville, KY 40202
T 1.502.627.4836
F 1.502.217.2162
M 1.502.445.6776
john.malloy@LGE-KU.com

<< OLE Object: Picture (Device Independent Bitmap) >>

From: Woodworth, Steve
Sent: Tuesday, March 04, 2014 9:50 AM
To: Malloy, John
Cc: Bruner, Cheryl; Huff, David
Subject: RE: Proposed Tariff Changes

<< File: Customer Service Rate Case Pre-Planning Team - Proposed Tariff Revisions.docx >>

Yes

From: Malloy, John
Sent: Tuesday, March 04, 2014 9:21 AM
To: Woodworth, Steve
Cc: Bruner, Cheryl; Huff, David
Subject: RE: Proposed Tariff Changes

Access denied!

Should we meet as a team and discuss the "WHY's"?

From: Woodworth, Steve
Sent: Tuesday, March 04, 2014 9:02 AM
To: Malloy, John
Cc: Bruner, Cheryl; Huff, David
Subject: Proposed Tariff Changes

John,

Please take a look at the potential items we want to address in the upcoming rate case. I would like to send this to Robert Conroy for his review after your feedback.

Thanks,

-Steve

<http://home/projects/pprc/Shared%20Documents/Customer%20Service%20Rate%20Case%20Pre-Planning%20Team%20-%20Proposed%20Tariff%20Revisions.docx>

Redacted as Unresponsive

Item	LOB	Tariff Description and Sheet No.	Proposed Revision	Volume / Customer Impact	Sponsor
Redacted as Unresponsive					
4	E	LG&E / KU- CSR10 & CSR30 = Sheet # 50 and #51 - Curtailable Service Rider	Under the CSR rider, a customer is provided a monthly credit for allowing LGE/KU to curtail their load. In some months the credit a customer receives does not allow LGE/KU to recover the cost to serve. Discount does not reflect the intrinsic value and should be adjusted and more closely align with <u>"call option" valuation.</u>	KU CSR10 – 3 KU CSR30 – 2 LGE CSR10 – 1 LGE CSR30 - 1	Conroy

