E.W. Brown

PM	Description	Frequency Units	Crew	PM Priority	Next Due Date
00041903	PM-YRLY AMMONIA PLANT SHUTDOWN & WINTERIZATION ^	YEARS	BRCTM	Compliance	9/15/2024
00045739	PM-WINTERIZE DIX HYDRO PLANT (SERC) (1) ^	YEARS	BRMMHY	Compliance	10/12/2024
BC053877	PM-ANNUAL WINTERIZE BRCT, FREEZE PROTECTION PREPERATION ^	YEARS	BRCTM	Compliance	10/20/2024
BR000200	PM-WINTERIZE COLD WEATHER PROCEDURES / OPERATIONS DEPT ^	YEARS	BRSTO	Compliance	10/1/2024
BR020501	PM-(1 YR) PRELIMINARY CHECK OF CAR THAWING SYS ^	YEARS	BREI	Compliance	9/1/2024
BR058065	PM-YEARLY - WINTERIZE (580 SUPER N BACKHOE) ^	YEARS	BRMER	Compliance	10/3/2024
BR058425	PM-NOVEMBER WINTERIZING SPRINKLER SYSTEM ^	YEARS	BRMMHY	Compliance	10/1/2024
BR058426	PM-APRIL DEWINTERING SPRINKLER SYSTEM ^	YEARS	BRMMHY	Compliance	3/15/2024
BR100057	PM-(1 YR) WINTERIZE INSTRUMENTATION (SERC) (1) ^	YEARS	BREI	Compliance	10/1/2024
BR100789	PM-YEARLY - WINTERIZE (580 SUPER L BACKHOE) ^	YEARS	BRMER	Compliance	10/3/2024

Job Plan Report

PM 00041903

15699 PM-AMMONIA PLANT SHUTDOWN & WINTERIZATION ^

10 STANDARD OPERATING PROCEDURE
20 STEP 1. OBTAIN APPROVAL FROM DISPATCH TO WINTERIZE SYSTEM
30 STEP 2. OBTAIN ICE PLANT STANDARD OPERATING PROCEDURE
40 LOCATED @ G:CTSITE/ICE PLANT/SOP ICE PLANT START UP
50 STEP 3. PERFORM "EXTENDED SYSTEM SHUTDOWN" PROCEDURE AND CHECK
60 OFF STEPS AS COMPLETED
70 STEP 4. FORWARD COMPLETED PROCEDURE TO CT CHIEF
80 MATERIALS NEEDED:
90 80 FOOT MANLIFT REQUIRED

Job Plan Report

PM 00045739

14974 WINTERIZE DIX HYDRO PLANT ^

10	SHUT OFF VENT FAN ON MAIN FLOOR
20	SHUT SHUTTERS ON VENT FAN (WILL NEED TO RUN CRANE TO EAST SIDE TO SHUT)
30	CLOSE ALL WINDOWS ON GENERATOR LEVEL
40	THERE ARE 3 THERMOSTATS, ONE FOR EACH UNIT AND SOME THAT ARE OPENED/CLOSED MANUALLY
50	CLOSE ALL COOLER DOORS ON TOOL ROOM LEVEL IN SWITCH GEAR ROOM
60	IF TEMP BELOW 50 DEGREE THEN CRACK OPEN COOLERS
70	OPEN ALL DOORS BETWEEN UNITS ON GENERATOR LEVEL
80	MAKE SURE ALL EXTERIOR DOORS ON MAIN FLOOR ARE SHUT
90	KEEP CONTROL ROOM DOOR SHUT

Job Plan Report

PM BC053877

14973 WINTERIZE BRCT, FREEZE PROTECTION PREPERATION ^

10 1. FOR THE MONTHS OF NOVEMBER, DECEMBER, JANUARY & FEBRUARY,
20 REMIND OPERATORS TO CHECK EACH HEAT TRACE SYSTEM WHILE DOING DAILY CHECKS
30 2. ADD A LOG SHEET TO OPERATOR'S WALK DOWN LISTS WHERE
40 OPERATORS WILL INITIAL THAT CHECKS ARE BEING COMPLETED WHILE WALKING DOWN THE UNITS
50 3. VERIFY DAMPERS AND VENT FANS ARE WORKING PROPERLY ON ALL UNITS
60 4. VERIFY HEATERS ARE WORKING PROPERLY IN ALL ENCLOSURES
70 5. DURING PERIODS OF EXTREME COLD CONDITIONS, CIRCULATE FLOW THROUGH FUEL OIL & NOX WATER SYSTI

Job Plan Report

PM BR000200

BROPCWR OPERATIONS COLD WEATHER PROCEDURES ^

10	UNIT 1 &2
20	SET UP WATER STRAINERS FOR WINTER OPERATION
30	CHECK ELECTRIC SPACE HEATERS AND STEAM SPACE HEATER FANS
40	SET UP HEATING SYSTEM CROSS CONNECTION
50	ENSURE THAT HEATER IS ON AT CONDENSATE MAKE UP PUMPS
60	CONFIRM THAT 7895 TANK HEATER BREAKER IS CLOSED
70	CONFIRM 7895 HEAT TRACE BREAKERS ARE CLOSED
80	CHECK TO SEE IF 7895 PUMP BUILDING HEATER IS WORKING
90	UNIT 3
100	MONITOR ECONOMIZER TEMPERATURES (KA3173 & KA3174)
110	NOTE : OUTSIDE SUCTION DAMPERS SHOULD BE CLOSED MANUALLY
120	TURN THE SWITCH OFF AND CRANK THE DAMPERS CLOSED
130	OPEN THE INSIDE DAMPERS COMPLETELY
140	IF THE ECONOMIZER TEMP SHOUD DROP TO 34 FH LIGHT BOILER OFF FOR 1/2 HR. IF MAINT BEING PERFORMED "ECONOMIZER ONLY" COULD BE DRAINED BY CLOSING THE ECONOMIZER RECIRCULATING VALVES AND OPENING THE ECONOMIZER DRAINS
150	MONITOR EHC FLUID TEMP- MIN 80 FH
160	SET UP HEATING SYSTEM CROSS CONNECTION FOR HOUSE STEAM AND GLYCOL SYSTEM
170	SET UP SERVICE WATER STRAINERS FOR WINTER OPERATION
180	CHECK HEATER AT CONDENSATE MAKE UP PUMPS
190	CHECK HEATER OPERATING ON OUTSIDE EQUIP (ID'S, ETC.)
200	DO NOT DRAIN COOLING TOWERS UNLESS NECESSARY
210	IF CIRCULATING WATER SYSTEM IS DRAINED OPEN DRAINS ON CIRCULATING WATER TO BFP'S
220	IF TOWERS ARE DRAINED, OPERATE SUCTION AND DISCHARGE MANUALLY TO CHECK FOR FREEZING BEFORE OP AUTOMATICALLY
230	ENSURE SBAC COOLING WATER PUMPS HEAT TRACES ARE WORKING
240	CRACK DRAINS ON BFP DRAINS IF COOLING TOWER REMAINS FULL WITH UNIT
250	CHECK THE LOW PRESSURE SERVICE WATER REG HEAT TRACE AND CHECK THE HEAT IN ROOM. WINTERIZE THIS PARTICUALLY THE DOOR LEADING OUTSIDE AND THE TRENCH IN WHICH THE BOTTOM ASH LINE RUNS
260	GET PORTABLE GAS HEATER IN EXTREMELY COLD WEATHER
270	ALL UNITS
280	WALK DOWN UNITS & ALL OUTLYING BUILDINGS TO VERIFY ALL DOORS AND WINDOWS ARE CLOSED
290	OPEN VENTS AND DRAINS
300	CAUTION CARD SUPPLY VALVES CLOSED DURING COLD WEATHER
310	PJFF
320	CHECK HEAT TRACE FOR SERVICE WATER LINES TO PAC & PJFF HOPPER ROOM
330	FGD
340	CHECK FOR OPERATION OF SW FLOW CONTROL VALVES HEAT TRACE
350	CHECK SW CROSS TIE DRAIN VALVE HEAT TRACE
360	CHECK SW PLATFORMS HEAT TRACE
370	CHECK HEAT TRACE FOR 8034 FEED LINE IN BERM
380	CLOSE THE SERVICE WATER SUPPLY TO THE LIMESTONE HANDLING BELTS AND OPEN THE DRAINS OR HOSE CONNECTIONS ALONG THIS LINE TO THE BULK UNLOADERS AND CAUTION CARD THEM
390	VERIFY HEATERS ARE WORKING IN FGD BUILDING
400	VERIFY HEATER IN LS PREP
410	VERIFY HEATERS WORKING IN MAINT DRAIN TANK PUMP HOUSE
420	VERIFY DRAIN IS OPEN ON SUCTION HEADER TO TRANSFER PUMPS IN MAINT DRAIN TANK PUMP HOUSE
430	VERIFY DRAIN IS OPEN ON MAINT DRAIN TANK FILL LINE IN MAINT DRAIN TANK PUMP HOUSE LOCATED

Job Plan Report

	OVERHEAD WEST SIDE OF 0-2 TRANSFER PUMP
440	CCRT
450	ENSURE BOTH CCRT HEAT TRACE PANELS ARE IN AUTO AND TEST CIRCUITS
460	ENSURE CCRT BUILDING AND SILO UNLOADER ROOM HEATERS ARE WORKING
470	ENSURE TDCPR HEAT TRACE PANEL IS IN AUTO AND TEST CIRCUITS
480	ENSURE AUX PWS HEAT TRACE PANEL IS IN AUTO AND TEST CIRCUITS
490	ENSURE THE HOSE AT THE END OF SEVICE WATER LINE FOR WATER TRUCK FILLING IS IN THE COLLECTION BOX AND HOSE STOP VALVE IS OPENED
500	VERIFY DRAIN IS OPENED ON THE BACKUP CCRT LP WATER SUPPLY TO PLANT LOCATED BY THE TRACKS AT RR CROSSING TO U3 OIL SEPERATOR
510	VERIFY DRAINBACK VALVE FOR COAL PILE RETENTION PUMPS IS OPEN
520	NOTIFY JAKE JUDE WITH ANY CHANGES THAT NEED MADE SO THE CHECKLIST IS ACCURATE NEXT YEAR

Job Plan Report

PM BR020501

11718 PRELIMINARY CHECK OF CAR THAWING SYSTEM ^

10	1. TURN ON ALL CAR THAWING SYSTEMS
20	2. CHECK FOR OPERATING PROPERLY (EACH ONE)
30	3. WRITE WORK ORDERS FOR REPAIRS
40	CHECK EAST SECTION CAR THAW - COAL YARD
50	CHECK WEST SECTION CAR THAW - COAL YARD
60	CREATE WORK ORDERS FOR NEEDED REPAIRS

Job Plan Report

PM BR058425

16236 NOVEMBER WINTERIZING SPRINKLER SYSTEM ^

10	1. TURN OFF MAIN WATER VALVE
20	2. CLOSE OFF ALL FOUR SPRINKLER ZONES
30	3. HOOK UP AIR LINE TO PORT NEAR MAIN VALVE
40	4. OPEN 1 SPRINKLER ZONE
50	5. APPLY 30 PSI AIR TO 1 SPRINKLER ZONE
60	6. REPEAT FOR OTHER 3 ZONES ONLY DOING 1 ZONE AT A TIME
70	7. LEAVE WATER OFF FOR WINTER
80	MATERIALS NEEDED:
90	AIR COMPRESSOR AND ADAPTER TO FIT PORT NEAR MAIN VALVE

Job Plan Report

PM - BR058426

26363 PM-APRIL DEWINTERING SPRINKLER SYSTEM ^

10 TURN ON WATER AND CHECK SYSTEM

Job Plan Report

PM BR100057

11357 WINTERIZE INSTRUMENTATION ^

10 1. CK. STRIP HTRS.ON U3 C.T. LEVEL TRANSMITTERS
20 2. CK. STRIP HTRS. ON U3 LPSW TRANS & REGULATOR
30 3. CK. STRIP HTRS. ON U3 CIRC. WATER FLOW TRANSMITTER
50 4. REPLACE FILTER ELEMENT IN AIR TO NEW DEMINERALIZER FILTER KU# 3004980
60 5. CHECK HEAT TRACE AT NOX FLOW TRANS & LINE TO CT SITE
70 6. CHECK HEAT TRACE AT U2 BOOSTER PUMP TO CT SITE
80 7. CHECK ALL HEAT TRACE AT FGD
90 8. CHECK ALL HEAT TRACES AT THE PJFF AND PAC SILOS
100 9. CHECK ALL HEAT TRACES AT THE CCRT
110 10. CHECK ALL HEAT TRACE AT LS PREP.
130 11. CHECK HEATING AT DIESEL FIRE PUMP HOUSE & MAKE SURE VENTS ARE CLOSED.
140 12. CHECK HEAT TRACE AT U2 ID FANS.
150 13. CHECK HEAT TRACE LPSW AT LS UNLOADING.
160 14. CHECK HEAT TRACE LPSW AT LS STORAGE CONVEYOR.
170 15. CHECK HEAT TRACE LPSW AT LS RECLAIM CONVEYORS.
180 16. CHECK HEAT TRACE AT U3 HPSW AT CLA-VAL.
190 17. CHECK HEAT TRACE LPSW AT U3 HPSW RELIEF VALVES.
200 18. CHECK HEAT TRACE AT U3 ID FAN LUBE OIL SKIDS.
210 19. CHECK PLANT SPACE HEATER MOTORS.
220 20. CHECK HTG STEAM REGULATOR FOR PROPER OPERATION.
230 21. CHECK HEAT TRACE FOR UK OFFICE TRAILER WATER SUPPLY.
240 22. CHECK HEAT TRACE FOR WATER TO CY DUST COLLECTOR.
250 23. THIS IS BY WALKOUT DOOR BY LAB (OLD U1 DEMIN AREA).
260 24. CHECK HEAT TRACE UP ON U3 SCR.
270 25. CHECK HEAT TRACE ON DOMESTIC WATER LINE COMING INTO PLANT.
280 THIS IS BEHIND TW FILTERS IN TW ROOM - BKR #11 UPSTAIRS.
290 31. IF REPAIRS ARE NEEDED, WRITE A WORK ORDER.
300 32. PRIOR TO SEVERE COLD WEATHER EVENT, CONDUCT AN INVENTORY
310 OF CALIBRATION GASES NEEDED TO KEEP THE PLANT OPERATIONAL.
320 29. CHECK NEW TANK OUTSIDE R.O. BUILDING
330 28. CHECK HEAT IN MAINT DRAIN TANK PUMP BUILDING
340 30. CHECK AMMONIA UNLOADING STATION
350 26. CHECK WATER TREATMENT BUILDING BEHIND CCRT
355 27. CHECK TD/CPR REACTION TANKS HEAT TRACE

BR 058065
BR100789

Job Plan Report

PM

11608 PM - YEARLY - WINTERIZE TRACTOR ^

10 TEST / REPLACE COOLANT
20 ANTI-FREEZE - 2 GAL KU-048172

Cane Run

Revised 9/21/2023

COLD WEATHER PREPARATION TASKS TO HAVE BEEN COMPLETED BY NOVEMBER 30TH

The following tasks regarding winterization and cold weather equipment preparation will have been completed by the beginning of the cold weather season.

CR FACILITIES MAINTENANCE

CVS All exterior doors and windows have been inspected and repaired if necessary

CVS All portable space heaters have been inspected and repaired if necessary

CVS Maintenance Work Order Backlog has been reviewed for Winterization related corrective work orders, and work has been scheduled for completion

Christopher V Smith 11/30/2023

Maintenance Coordinator Signature Certifying Completion Date

CR INSTRUMENTATION AND ELECTRICAL MAINTENANCE

All unit heaters mounted in out buildings have been inspected and repaired if necessary

All heat trace elements have been inspected and are in good working order

(Evaluating daily as problems occur)

All temperature sensitive electrical and instrument devices have been properly winterized (outdoor transmitters, CEMS equipment, Water Treatment outdoor enclosures, etc.)

Enough people have been trained in the operation of snow removal equipment

Plant vehicles have been winterized by SERCO

All snow removal equipment (plows, spreaders, bobcat, and trucks) have been inspected and are in good working order and parked in the Equipment Storage Building as designated

All other designated mobile equipment has been parked in the Equipment Storage Building

Sam Mudd 11/30/2023

Maintenance Supervisor Signature Certifying Completion Date

Business Use

Revised 9/21/2023

D. Supplemental Equipment

The following items will be in stock in sufficient quantity before the beginning of the cold weather season. Care should be taken to make sure quantities of these items remain in stock throughout the cold weather season (December through April).

PERSONAL PROTECTION /EXPOSURE PREVENTION EQUIPMENT

AP Rubber Boot Slip-Ons (All Sizes) – Min Qty: L – 12pr / XL – 12pr IIN #0929078 (10) IIN #0929086 (PO# 114330)

AP Walk by Yaktrax (Attachable grips for work boots) – Min Qty: S – 5pr / M – 8pr / L – 8pr / XL 8pr 5✓ 12✓ 8✓ 9✓

AP Jersey Gloves – Min Qty: 75pr (108)

AP Leather Gloves (All Sizes) – Min Qty: S – 25pr / M – 25pr / L – 75pr / XL 50pr 60✓ 120+38✓ 156+36✓ 48+24✓

AP Head Socks – Min Qty: 25ea (PO # 114305)

Extension Cords (100 Foot) (X 10)

FUEL AND ACCESSORIES

AP Diesel Fuel (All tanks full) – Min Qty: 250 gal (Filled 10/17)

AP Diesel Fuel Tanks (Anti-gel additives) – Min Qty: 6 cans (60)

AP 400 Gallon Tank of Kerosene - Filled (For portable heaters) – Min Qty: 300 gal

AP Starting Fluid (Aerosol Cans) – Min Qty: 12 cans

AP Fuel Cans (All sizes/types) – Min Qty: 2 Gal – 2 ea. / 5 Gal – 2 ea. 5✓ 5✓

SNOW REMOVAL/TRACTION MATERIALS

AP Sand – Min Qty: 20 bags (Riverport)

AP Ice-Melt – Min Qty: Concrete Safe – 40 bags / Regular – 120 bags 140✓ 140✓

MISCELLANEOUS ITEMS

AP De-Icer (for windshields) – Min Qty: 10 cans (24)

AP Plastic (used to contain heat) – Min Qty: Clear – 5 rolls / Reinforced – 5 rolls IIN # 0133201 ✓ IIN # 0133219

AP Extra Rolls of Heat Trace – Min Qty: 2 rolls

AP Heat Blankets – Min Qty: 6 ea. (10)

AP Heat Tape – Min Qty: 7 ea (8)

AP Duct Tape – Min Qty: 24 ea. (30)

AP Tie-Wire – Min Qty: 5 rolls (5)

Business Use

Revised 9/21/2023

AP IIN#0434719 IIN# 0255027 (1144339)
Heat Lamps/Bulbs – Min Qty: 18 lamps / 35 bulbs

AP Plywood – Min Qty: 12 sheets (4'x8') (12)

AP 2X4 Lumber – Min Qty: 12 ea. (13)

AP Galvanized 2 ½" Wood Screws – Min Qty: 1 box (2 boxes)

AP Spray Foam Sealant – Min Qty: 12 cans (PO# 1144305

AP Snow Shovels – Min Qty: 12 ea.

April Padgett 10/24/2023

Warehouse Supervisor Signature Certifying Completion Date

Business Use

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PPL companies

Cold Weather Preparation Guidelines

For The

Ghent Generating Station

a PPL company

Ghent Station Cold Weather Preparation Guideline
1/04/2016

Purpose:

This document was established as a guideline to aid in maintaining unit reliability during cold weather events at the Ghent Generating Station. It should be used as a framework in developing a cold weather readiness program for the station. The typical problem areas contained in this document are not meant to be all inclusive. This procedure falls under the corporate "Cold Weather Preparation Guidelines For Generating Stations".

Safety

Safety remains the top priority during cold weather events. Job safety briefings should be conducted during preparation for and in response to these events.

Management Roles and Expectations

Management plays an important role in maintaining an effective cold weather readiness program. The management roles and expectations below provide a high level overview of the core responsibilities related to cold weather preparation.

A) Set expectations for safety, reliability, and operational performance.
B) Develop a cold weather preparation procedure for the station and ensure that it is updated with best practices and lessons learned.
C) Ensure that the cold weather preparation procedure for the station includes processes, staffing plans, and timelines that direct all key activities before, during and after extreme cold weather events.
D) Ensure proper execution of the cold weather preparation procedure.
E) Conduct a plant readiness review at morning staff meetings prior to any anticipated extreme cold weather event.
F) Encourage plant staff to look for areas at risk due to cold weather conditions and identify opportunities to improve readiness and response.
G) Following each winter, evaluate the effectiveness of the cold weather preparation procedure and incorporate lessons learned.

Processes and Procedures

A cold weather preparation procedure including checklists will be developed and maintained at the Ghent Station for seasonal winter preparedness. A master document with appendices and written procedures will be kept in the Records Rooms, Third Floor, of the Ghent Station Administration Building.

The Cold Weather Preparation Procedures should be evaluated annually. After an extreme cold weather event, the procedure should be reviewed in the daily Staff Meeting to evaluate improvement opportunities and identify lessons learned.

Evaluation of Potential Problem Areas

A critical part of a cold weather readiness program is identifying and prioritizing components, systems and other areas of vulnerability which may experience freezing problems or other operational issues. Some of the major items to consider are;

A) Equipment or processes that could create safety related hazards.
B) Equipment that could initiate an automatic unit trip.
C) Equipment that could impact unit startup.
D) Anything that could potentially cause damage to the unit.
E) Equipment that could adversely affect environmental controls that could lead to derates or outages.
F) Equipment that could affect the delivery of fuel or water to the units.
G) Impaired field devices that could cause operational problems.

Communications

Clear and timely communication is essential to an effective Cold Weather Preparation program. Key points should include the following:

A. Before a severe cold weather event, Plant Management should communicate with the Vice President of Power Production that the site specific cold weather preparation procedure is in place.
B. Before and during a severe cold weather event, communicate with all station personnel about changing conditions and potential areas of concern to heighten awareness around safe and reliable operations.
C. Before and during a severe cold weather event, the Ghent Station will keep the Balancing Authority (Generation Dispatch) up to date on changes to unit availability, capacity, or other operating limitations.
D. After a generating unit trip, derate, or failure to start due to severe cold weather, Plant Management should conduct an analysis of the event and incorporate lessons learned into their Cold Weather Preparation Procedures.

Elements of a Cold Weather Preparation Procedure

Listed below are key elements of the Ghent Station Cold Weather Preparation Procedure:

A. Work Management System (Maximo)
   1) Review the work management system to ensure adequate annual preventive work orders (PM's) exist for cold weather preparation.
   2) Ensure that all cold weather preparation preventive work orders (PM's) are completed prior to December 1st of each year.
   3) Perform cold weather readiness system walkdowns to identify any deficiencies and issues that will need repair.
   4) Review the work management system for open corrective maintenance work orders that could affect plant operation and reliability in cold weather. Ensure that the work orders are prioritized correctly so that the work is completed prior to the winter season.

B. Preparation of Critical Instrumentation and Equipment
   1) Check that all critical site specific problem areas have adequate protection to ensure operability during a severe cold weather event. Emphasize the points in the plant where equipment freezing could cause a Unit trip, derate or failure to start. (Refer to Appendix A attached to this document)
   2) Use thermal sensor guns, when situations warrant during extreme cold conditions, to verify areas containing equipment that are in freeze protection enclosures and are critical to plant operations, are being maintained above freezing.

C. Insulation, Heat Trace and Other Freeze Protection
   1) Verify the integrity of the insulation on all critical equipment identified in the Cold Weather Preparation Procedure.
   2) Heat trace reliability and electrical continuity
      a. Perform an evaluation of all heat trace circuits, including power supplies to ensure they maintain their accuracy. (Refer to Appendix C attached to this document).
      b. The evaluation of heat trace and insulation on critical lines should be performed on new installations, during regular maintenance activities or if damaged.
      c. Ensure that any heat trace and insulation removed or disturbed during regular maintenance is replaced and integrity restored.
      d. Check heat tracing on all critical lines and piping during severe cold weather events to ensure that the circuits remain functional. Temperature guns can be used to check piping temperatures.
   3) Heaters, Heat Lamps and Space Heaters
      a. Test operation of all permanently mounted wall heaters. (Refer to Appendix B attached this Document)
      b. All portable space heaters should be tested, repaired and/or replaced as necessary. All portable space heaters are stored in the Ghent Warehouse and at the end of each cold weather season are to be cleaned and returned to the Ghent Warehouse.
      c. Ensure that all portable space heaters and heat lamps are secured in place to prevent unauthorized removal.
   4) Wind Breaks
      a. Install wind barriers as deemed appropriate to protect critical instruments, sensing lines, controllers and piping.
   5) Covers, Enclosures, and Buildings
      a. Install enclosures with heat lamps for identified transmitters.
      b. Missing covers should be installed on valve actuators, damper drives and electrical boxes to prevent from accumulating ice.
      c. Inspect all buildings to ensure windows, doors, fan louvers and any other penetrations are operating correctly and closed to prevent cold air from entering.
      d. Inspect and repair as needed all large overhead doors at the station.

D. Supplemental Equipment – Ensure that the Commercial Group, in October of each year, has an adequate inventory of equipment and other supplies needed to prepare and respond to a severe cold weather event. These items need to be readily available to the staff at the station. Examples of supplemental equipment might include:
   1) Portable Space Heaters and Heat Lamps and bulbs
   2) Extension Cords and GFI's
   3) Kerosene
   4) Propane and Rosebuds
   5) Plastic Rolls
   6) Lumber for building wind breaks and enclosures
   7) Wire Ties
   8) Portable Lighting
   9) Portable Generators
   10) Instrumentation Tubing
   11) Ice removal chemicals and equipment
   12) Blankets
   13) Cots
   14) Shovels for Snow Removal
   15) Cold Weather Personal Protective Equipment (PPE) – Boots, gloves, head socks
   16) MRE's
   17) Additional Heat Trace

E. Operational Supplies – Prior to a severe cold weather event, ensure that a full inventory of critical supplies needed to keep the plant operational are on site. Coordinate with the Commercial Group at the station to schedule deliveries based on the severity of the event and lead times of the individual items. Operational supplies that are critical to the plant cold weather include:
   1) Coal
   2) Oil for Igniters/Oil Guns
   3) Hydrogen
   4) CO2
   5) Anhydrous Ammonia
   6) Lime
   7) PAC or other Mercury Control Products
   8) Limestone – Clean Stone
   9) Caustic Soda
   10) Sulfuric Acid
   11) Diesel Fuel
   12) Gasoline

F. Staffing
   1) Consider enhanced staffing (24x7) during severe cold weather events.
   2) Arrange for on-site lodging and meals as needed.
   3) Arrange for transportation as needed.
   4) Rotate work crews exposed to severe cold weather conditions.
   5) Consider employing the "buddy system" during severe cold weather events to promote personnel safety.

G. Communications
   1) Review emergency communication protocols prior to annual cold weather season.

H. Special Operating Instructions (prior to or during severe cold weather events)
   1) Initiate additional Operations coverage during cold weather events to verify critical equipment is protected.
   2) Test run emergency generators prior per normal protocol.
   3) Place critical auxiliary equipment in service on Cooling Towers, Coal and Limestone conveyor systems and Service Water systems in the Screen House where freezing weather could adversely impact their operation.

References:

1) Reliability Guideline: Generating Unit Winter Weather Readiness – Current Industry Practices, dated August 2013, North American Electric Reliability Corporation (NERC).
2) Seasonal Readiness Guideline, dated December 2014, Electric Power Research Institute (EPRI).

Yearly Follow-up Recommendations

Listed below are items that should be considered prior to the cold weather season or after a cold weather event to ensure the Ghent Station's cold weather preparedness:

1) Consider holding a cold weather readiness meeting on an annual basis to highlight preparations and expectations for severe cold weather.
2) Operations personnel should review cold weather scenarios affecting instrumentation readings, alarms, and other indications on plant control systems.
3) Ensure appropriate NERC Generation Availability Data Systems (GADS) coding for unit derates or trips as a result of a severe cold weather event to promote lessons learned, knowledge retention, and consistency. Examples include NERC GADS code 9036 "Storms (ice, snow, etc.)" or code 9040 "Other Catastrophe."

COLD WEATHER PROBLEM AREAS FOR THE GHENT GENERATION STATION

Listed below are the areas around the Ghent Station that are considered areas of concern during a severe cold weather incident:

- Unit-1 FGD:
  - Unit-1 FGD Oxidation Air Blower Radiators – Construct tent and set salamander heaters in place to help control the 1-1/1-2 Oxidation Air Blower oil temperatures.
- Unit-1/2 Low Pressure Water Pier:
  - 1-1, 1-2, and 1-3 Traveling Water Screens Backwash Water to each screen
  - Traveling Water Screens Backwash Strainer and backwash piping
  - 1-1, 1-2, and 2-1 LPSW Pumps Vent Valves
  - 1-1, 1-2, and 2-1 LPSW Pumps Pre-Lube and Quenching Water Lines.
- Unit-1 Cooling Tower
  - 1-1 and 1-2 Circulating Water Pump Lube Water Lines
  - The space heaters inside U-1 Circulating Water Pump Lube Water Building
  - Diesel Fire Pump is winterized and Battery Charger operational
  - Unit-1 Cooling Tower Level Transmitters
- Unit-1 Diesel Generator
  - The Unit-1 Diesel Generator is winterized
  - Unit-1 Diesel Generator Battery Charger operational
  - Space Heaters in Unit-1 Diesel Generator Room functioning
- Unit-2 Cooling Tower
  - 2-1 and 2-2 Circulating Water Pumps Lube Water Lines
  - Unit-2 Cooling Tower Level Transmitters
- Unit-2 Diesel Generator
  - The Unit-2 Diesel Generator is winterized
  - Unit-2 Diesel Generator Battery Charger is operational
  - Space Heaters in the Unit-2 Diesel Generator Room functioning
- Unit-3/4 Low Pressure Water Pier
  - 3-1, 3-2, and 4-1 Traveling Water Screens Backwash Water to each screen
  - Traveling Water Screens Backwash Strainer and backwash piping
  - 3-1, 3-2, and 4-1 LPSW Pumps Vent Valves
  - 3-1, 3-2, and 4-1 LPSW Pumps Pre-Lube and Quenching Water Lines
  - Space Heaters in the Unit-3/4 LPSW Pump Lube Water Building
- Unit-3 Cooling Tower

- 3-1 and 3-2 Circulating Water Pump Lube Water Lines
- The space heaters inside U-3 Circulating Water Pump Lube Water Building
- Unit-3 Cooling Tower Level Transmitters

- Unit-3 Diesel Generator
  - The Unit-3 Diesel Generator is winterized
  - Unit-3 Diesel Generator Battery Charger operational
  - Space Heaters in Unit-3 Diesel Generator Room functioning
- Unit-4 Cooling Tower
  - 4-1 and 4-2 Circulating Water Pump Lube Water Lines
  - The space heaters inside U-4 Circulating Water Pump Lube Water Building
  - Unit-4 Cooling Tower Level Transmitters
- Unit-4 Diesel Generator
  - The Unit-4 Diesel Generator is winterized
  - Unit-4 Diesel Generator Battery Charger operational
  - Space Heaters in Unit-4 Diesel Generator Room functioning
- Unit-1, Unit-2, Unit-3, and Unit-4 FGDs
  - Limestone Slurry Supply Piping to each of the above Unit FGDs
- Gypsum Tank Farm
  - Enclosure around the Gypsum Transfer Pumps
- CCR
  - Gypsum Supply Pipe Line Sump area
- Coal Handling
  - Conveyor Belt Sprays are full and operational
- Main Buildings
  - All Rolling Door Operators are functioning correctly
  - All Window Operators where applicable are operational
  - Check all space heaters are operating correctly

a PPL company
Ghent Station

POP-01-32
Cold Weather Procedure Ghent Unit 1
Revision: 1/11/2021

General Precautions and Limitations:

1. Ensure all maintenance work is completed before operating any valves, positioners, actuators, or motors.
2. Ensure all appropriate HOLD CARDS are properly released and removed before operating valves, positioners, actuators, or motors.
3. Be aware of all possible hazards when performing duties associated with the Ghent 1 Cold Weather Procedure.
4. Ensure that the individual performing the task is trained and is confident to perform the task associated with the safe operation as described in the Original Manufacture's Manual.
5. Particular attention should be paid to normal operating conditions so that any variation from normal can be detected.
6. Report any abnormal conditions to supervision immediately.

COLD WEATHER PROCEDURE GHENT UNIT 1

L.P.S.W. PIER:

a) All heat traces observed to be on. (Breakers for heat trace at pier are in service water mcc1a) lighting cabinet is on right side, breakers are marked.

b) **CHECK** heat traces on pier driveway, chemical feed lines, lube water, fire protection, etc. Breaker location in transfer house at pier, RBC 35a on east wall in electric room.

c) **CRACK OPEN** the station airline valve north-east corner of pier. To prevent freezing.

d) **OPEN** Backwash supply valve to all L.P.S.W. traveling screens 2 turns. Check open each screen nozzle supply valve at screens.

e) All traveling screens will be run in the **SLOW** mode position when the temperature decreases to 20' or below.

f) L.P.S.W. screen wash strainer motor and backwash valve, switch should be placed in the winter position and motor observed to be running continuously. (Switch is located inside breaker, SWMCC at pier, follow directions on label).

g) L.P.S.W. screen wash strainer by-pass valve cracked open.

COOLING TOWER:

a) **CHECK** 1-1 & 1-2 C.W. pump motor heater breakers on (located in CTMCC 1A & 1B side of cabinet).

b) **CHECK** diesel fire pump house space heater operation and **OPEN** drain on fire header in NE corner of room for outside hose supply.

c) Observe for icing on cells when temperature is below 34* and notify unit operator of ice.

d) **OPEN** Both C.W.P. discharge valve by-pass valves and check heat trace observed on.

e) When unit is off. C.W. discharge and return lines should be drained, condenser inlet and outlet valves closed, and cooling tower blowdown opened to send water to the ash pond.

UNIT 1 & 2 BROMINE BUILDING:

a) **CHECK** space heater operation. (Switch to auto).

b) **CHECK** heat trace inside of building.

F.D. & I.D. FAN AREA:

a) All heat trace observed on.

b) **CHECK** fan intakes screens periodically for icing.

c) **OPEN** chemical clean valves 2+ turns beside blowdown tank to drain lines.

WELL WATER PUMP HOUSE:

A. **CHECK** 2-1 well water pump house space heater operation.

B. **SHUT OFF** vent fan and **CLOSE** dampers.

L.P.S.W. STRAINER BUILDING:

a) **CHECK** space heater operation. (Switch back to auto).

b) **SHUT OFF** vent fan and **CLOSE** dampers.

CONDENSATE STORAGE TANKS:

a) **CHECKED ON** Suction line heat trace.

b) **CLOSE** inside drain valve, **OPEN** outside drain valve on all tanks.

c) **CHECKED ON** Demineralizer lines to tanks heat trace.

OLD OIL SEPARATOR:

a) **CHECK** all heat traces on.

b) **OPEN** 1" drain on discharge line of sump pumps.

OUTSIDE FIRE HEADER:

a) **CHECK** heat trace on. (Inside south wall by turbine oil storage room).

ASH LINE FREEZE PROTECTION:

a) **OPEN** freeze protection 2 turns.

DIESEL GENERATORS:

a) **CHECK** motor block heater operation.

Listed below are the locations of all motor, bearing, and oil heaters. All motor heater breakers should always be in service since these are anti-moisture precautionary measures. The I.D. and F.D. fans bearing heaters should be in service only when the fans are off and then only for brief closely observed periods.

BREAKERS:	LOCATION:
1-1 I.D. FAN MOTOR HEATER	BRMCC 1A
1-1 F.D. FAN MOTOR HEATER	BRMCC 1A
1-1 F.D. FAN BEARING HEATER	BRMCC 1A
SERVICE BUILDING ENCLOSURE UNIT HEATER	BRMCC 1A
1-2 F.D. FAN BEARING HEATER	BRMCC 1B
1-2 F.D. FAN MOTOR HEATER	BRMCC 1B
1-1 I.D. FAN RESERVOIR HEATERS (1-1A & 1-1B)	BRMCC 1A
1-2 I.D. FAN RESERVOIR HEATERS (1-2A & 1-2B)	BRMCC 1D
1-2 I.D. FAN MOTOR HEATER	BRMCC 1D

Heat trace protection is fed from lighting cabinet panels located throughout the unit. All heat trace breakers are colored red.

When outside temperatures are 20 degrees F* or below, conveyors should be kept running at all times to help prevent freeze ups. If these belts are stopped for any reason during this time, the start time of outage, the reason for the outage, the name of person requesting outage, and the time of return to service should be logged in the control room logbook.

Kentucky Utilities Ghent Generating Station
Standards / Procedures

Cold Weather Ghent 1

Standard and Procedure
OP1-32

DATE: _____ **OPERATOR:** _____

Revision 10-19-15

STEP	DESCRIPTION	OK	Comments
01	**L.P.S.W. PIER** A. ALL HEAT TRACES OBSERVED TO BE ON. (BREAKERS FOR HEAT TRACE AT PIER ARE LOCATED IN SERVICE WATER MCC1A) LIGHTING CABINET IS ON RIGHT SIDE, BREAKERS ARE MARKED. B. CHECK HEAT TRACES ON PIER DRIVE WAY, CHEMICAL FEED LINES, LUBE WATER, FIRE PROTECTION, ETC. BREAKER LOCATION IN TRANSFER HOUSE AT PIER, RBC 35A ON EAST WALL IN ELECTRIC ROOM. C. CRACK OPEN THE STATION AIR LINE VALVE NORTH-EAST CORNER OF PIER. D. BACKWASH SUPPLY VALVES TO ALL L.P.S.W. TRAVELING SCREENS OPENED 2 TURNS. E. ALL TRAVELING SCREENS WILL BE RUN IN THE SLOW MODE POSITION WHEN THE TEMPERATURE DECREASES TO 20°F. F. L.P.S.W. SCREEN WASH STRAINER MOTOR AND BACKWASH VALVE, SWITCH SHOULD BE PLACED IN THE WINTER POSITION AND MOTOR OBSERVED TO BE RUNNING CONTINUOUSLY. (SWITCH IS LOCATED INSIDE BREAKER, SWMCC AT PIER, FOLLOW DIRECTIONS ON LABEL). G. L.P.S.W. SCREEN WASH STRAINER BY-PASS VALVE CRACKED		

02	**COOLING TOWER:** A. CHECK 1-1 & 1-2 C.W.PUMP MOTOR HEATER BREAKERS ON (LOCATED IN CTMCC 1A & 1B SIDE OF CABINET). B. CHECK DIESEL FIRE PUMP HOUSE SPACE HEATER OPERATION AND OPEN DRAIN ON FIRE HEADER IN NE CORNER OF ROOM FOR OUTSIDE HOSE SUPPLY. C. OBSERVE FOR ICING AND NOTIFY UNIT OPERATOR. D. BOTH C.W.P. DISCHARGE VALVE BY-PASS VALVES OPEN AND HEAT TRACE ON. E. WHEN UNIT IS OFF, C.W. DISCHARGES AND RETURN LINES DRAINED, CONDENSER INLET AND OUTLET VALVES CLOSED AND COOLING TOWER BLOWDOWN OPENED TO SEND WATER TO THE ASH POND.		
03	**UNIT 1 & 2 BROMINE BUILDING** A. CHECK SPACE HEATER OPERATION. (SWITCH TO AUTO). B. CHECK HEAT TRACE INSIDE OF BUILDING.		
04	**F.D. & I.D. FAN AREA** A. ALL HEAT TRACE OBSERVED ON. B. CHECK FAN INTAKES SCREENS PERIODICALLY FOR ICING. C. OPEN CHEMICAL CLEAN VALVES 2 TURNS BESIDE BLOWDOWN TANK.		
05	**WELL WATER PUMP HOUSE:** a. CHECK 2-1 WELL WATER PUMP HOUSE SPACE HEATER OPERATION. b. SHUT OFF VENT FAN AND CLOSE DAMPERS.		

06	**L.P.S.W. STRAINER BUILDING:** A. CHECK SPACE HEATER OPERATION. (SWITCH BACK TO AUTO). B. SHUT OFF VENT FAN AND CLOSE DAMPERS.		
07	**CONDENSATE STORAGE TANKS:** A. SUCTION LINE HEAT TRACE CHECKED ON. B. CLOSE INSIDE DRAIN VALVE, OPEN OUTSIDE DRAIN VALVE ON ALL TANKS. C. DEMINERALIZER LINES TO TANKS SHOULD HAVE HEAT TRACE CHECKED ON.		
08	**OLD OIL SEPARATOR:** A. CHECK ALL HEAT TRACES ON. B. OPEN 1" DRAIN ON DISCHARGE LINE OF SUMP PUMPS.		
09	**OUTSIDE FIRE HEADER:** A. CHECK HEAT TRACE ON. (INSIDE SOUTH WALL BY TURBINE OIL STORAGE ROOM).		
10	**ASH LINE FREEZE PROTECTION:** A. OPEN FREEZE PROTECTION 2 TURNS.		
11	**DIESEL GENERATOR ROOM** A. CHECK SPACE HEATER OPERATION.		
12	**LISTED BELOW ARE THE LOCATIONS OF ALL MOTOR, BEARING, AND OIL HEATERS. ALL MOTOR HEATER BREAKERS SHOULD BE IN SERVICE AT ALL TIMES SINCE THESE ARE ANTI-MOISTURE PRECAUTIONARY MEASURES. THE I.D. AND F.D. FANS BEARING HEATERS SHOULD BE IN SERVICE ONLY WHEN THE FANS ARE OFF AND THEN <u>ONLY</u> FOR BRIEF CLOSELY OBSERVED PERIODS.**		

BREAKERS	LOCATION
1-1A I.D. FAN MOTOR HEATER DISC	AQC PDC 1AP10141E
1-1B I.D. FAN MOTOR HEATER DISC	AQC PDC 1AP10142E
1-1 F.D. FAN MOTOR HEATER	BRMCC 1A
1-1 F.D. FAN BEARING HEATER	BRMCC 1A
SERVICE BUILDING ENCLOSURE UNIT HEATER	BRMCC 1A
1-2 F.D. FAN BEARING HEATER	BRMCC 1B
1-2 F.D. FAN MOTOR HEATER	BRMCC 1B
1-1A1 I.D. FAN L.O. RESERVOIR HEATER	AQC MCC 1A2 09FG
1-1B1 I.D. FAN L.O. RESERVOIR HEATER	AQC MCC 1A2 09FI
1-2A1 I.D. FAN L.O. RESERVOIR HEATER	AQC MCC 1A2 09FK
1-2B1 I.D. FAN L.O. RESERVOIR HEATER	AQC MCC 1A2 10FA
1-1A2 I.D. FAN L.O. RESERVOIR HEATER	AQC MCC 1B2 09FI
1-1B2 I.D. FAN L.O. RESERVOIR HEATER	AQC MCC 1B2 09FK
1-2A2 I.D. FAN L.O. RESERVOIR HEATER	AQC MCC 1B2 10FA
1-2B2 I.D. FAN L.O. RESERVOIR HEATER	AQC MCC 1B2 10FC
1-2A I.D. FAN MOTOR HEATER	AQC PDC 1AP10143E
1-2B I.D.FAN MOTOR HEATER	AQC PDC 1AP10144E

HEAT TRACE PROTECTION IS FED FROM LIGHTING CABINET PANELS LOCATED THROUGHOUT THE UNIT. ALL HEAT TRACE BREAKERS ARE COLORED RED.

WHEN OUTSIDE TEMPERATURES ARE 20 DEGREES F. OR BELOW, CONVEYORS A-J SHOULD BE KEPT RUNNING AT ALL TIMES TO HELP PREVENT FREEZE UPS. IF THESE BELTS ARE STOPPED FOR ANY REASON DURING THIS TIME, THE TIME OF OUTAGE, THE REASON FOR THE OUTAGE, THE NAME OF PERSON REQUESTING OUTAGE AND THE TIME OF RETURN TO SERVICE SHOULD BE LOGGED IN THE CONTROL ROOM LOG BOOK.....

13	**1-1 & 1-2 PJFF HOPPER ROOMS:** CHECK BLDG HEATERS FOR PROPER OPERATION. ADJUST VENT FAN & LOUVER THERMOSTATS TO 80 DEGREES. CHECK ALL VENT FANS OFF, LOUVERS & DOORS CLOSED		
14	**PAC BLOWER BLDG:** CHECK BLDG HEATERS FOR PROPER OPERATION AND ADJUST THERMOSTAT TO 75 DEGREES. ADJUST VENT FAN THERMOSTAT SETPOINT TO 80 DEGREES CHECK VENT FAN LOUVERS & DOORS CLOSED		
15	**PJFF FIRE PROTECTION BLDG:** CHECK HEATER BREAKER #1/3 ON CHECK BLDG HEATER FOR PROPER OPERATION & ADJUST THERMOSTAT TO 75 DEGREES. CHECK VENT FAN/LOUVER BREAKER #4 OFF. LOUVERS & DOOR CLOSED		
16	**PJFF AIR COMPRESSOR BLDG:** CHECK BLDG HEATERS FOR PROPER OPERATION TURN OFF VENT FANS WITH LOCAL ON/OFF SWITCHES MANUALLY CLOSE LOUVERS & CHECK ALL DOORS CLOSED		

Ghent Scrubber Operations Standards and Procedures
Unit 1 FGD
COLD WEATHER SET-UP

DATE: **OPERATOR:**_____
Revision 10/19/15

STEP	DESCRIPTION	O.K.	COMMENT
01	Check all space heaters for proper operation.		
02	Check vent fans to ensure they are in the stopped position. They can be started or stopped from their MCC breaker on the 2nd floor breaker room.		
03	Check to make sure the building louvers are closed on the 1st floor. These can be opened or closed from their MCC breaker on the 2nd floor breaker room.		
04	Check the transformer fire protection house to make sure bldg. heater is on, exhaust fan is in the off position, louvers & doors closed.		
05	Check the heat trace panel on the second floor breaker room wall to make sure there are no alarms and that the system is operating normal. Work order HT faults		
06	On the second floor there is a High Pressure Service Water line coming thru the floor between 1-3\1-4 recycles pumps that needs the manual stop valve closed. Then on the first floor open the drain to the same line located between 1-3\1-4 recycle pumps. Then on the same line on the 6th floor should be opened to ensure properly drain and vented.		
07	Make sure drainback valves on the absorber sump pumps are working correctly and are staying open after pump is shutoffs.		
08	On the 6th floor inspect the ME Wash valves insulation. Located on the South side of the tower.		
09	On the 5th floor inspect the Emergency Quench valves insulation and piping. Located on the Eastern side of the		

	tower		
10	On the 4th floor inspect the Humidification Valves insulation and piping. Located on the southeastern corner of the tower.		
11	On the 3rd floor south side inspect the Reclaim Water flush valves and piping insulation.		
12	On the 1st floor outside the building on the west side inspect the insulation on the Oxidation Air radiators Lube Oil piping.		
13	On the 1st floor west side of the tower outside check the insulation and piping for the level transmitter.		
14	Check the agitator flush water insulation all around the outside of the tower under the agitators.		
15	Starting on the 2nd floor east side of the absorber tower walk down the pipe rack and inspect the Low Pressure Service Water piping and insulation.		
16	Check space heaters are on, vent fans off, louvers & doors closed in the hydrocyclone feed pump building		
17	Check space heaters are on, vent fans off, louvers & doors closed in the U1 underflow feed pump building		
18	Check RAT 1C/RAT 2C fire protection bldg. heater breaker # 1/3 on & heater for proper operation. Check exhaust fan/louver breaker #4 off, louvers & door closed		

All outside conveyors should be started if the temperature is 20 degrees or lower. The Feeder Belt on the Stacker Reclaimer has a bypass on it so it can run while the other belts are running in the Stack position.

All mobile equipment should be started when the temperature drops below 25 degrees. If there is room in the Tractor Garage, some equipment can be put inside and shut down to save as a back-up in case other equipment will not run.
Do not leave coal in any of the Reclaim Hoppers. Visually check to make sure they are empty.

Check all heat traces to see if they are on, especially the Surge Silo feeder cones.

All Barge Unloader motor heaters should be turned on.

Stacker Reclaimer Swing Hoist Pump oil heater should be turned on.

Keep all windows and doors closed on all the buildings.

Glycol System at Reclaim Hopper #2 should be checked that it is on, Glycol level is in the operating range, pump is running, and all heaters are working.

Steam heaters in all the buildings should be on and running properly. Initiate job orders on those that are not working.

Belt Spray Systems on 3-G, 4-G, 7-G & 8-G, and 3-M & 4-M conveyors should be checked for proper operation and the tank levels have plenty of de-icer in them.

Water lines should be drained after being used.

Air dryers should be drained and checked for proper operation. All air systems should be routinely checked and drained of moisture.

Conveyor belts, pulleys, and belt wipers should be checked for coal or ice build-up at least once each shift.

Have enough hand sprayers available and check the de-icer tank in the Tractor

Garage has plenty of de-icer in it in order to spray belts that do not have automatic sprayers on them.

Check rope pull cables on outside belts to see if there is enough slack in them. Cables will contract in cold temperatures and pull the rope pull alarm causing the belt to trip. This should be done Monday and Friday day shift and Wednesday and Saturday night shift.

Make sure everyone is aware of the symptoms of frost bite and hypothermia and to watch each other for these signs when working outside.

Ensure that everyone, including the harbor boat crew, have enough warm clothing and safety equipment to work safely. If any of the equipment is not readily available, the Tool Room should have what is needed. If anything is needed overnight, the Tool Room key can be checked out at Guard Gate #2. Write down anything removed from the Tool Room so Tool Room personnel can keep track.

If snow accumulates overnight, contact the Evans grounds supervisor two hours before work time to clean off parking lots and roads.
Contact maintenance immediately if any piece of equipment fails.

Ghent Coal Yard Operations Standards and Procedures

Coal Yard POP-01

COLD WEATHER SET-UP

DATE: **OPERATOR:**_____

Revision 10/18/13

STEP	DESCRIPTION	O.K.	COMMENT
01	Check all space heaters for proper operation in all the buildings.		
02	All conveyors should be started if the temperature s 20 degrees or lower. The Feeder Belt on the Stacker Reclaimer has a bypass on it so it can run while the other belts are running in the Stack position		
03	All mobile equipment should be started when the temperature drops below 25 degrees. If there is room in the Tractor Garage, some equipment can be put inside and shut down to save as a back-up in case other equipment will not run.		
04	Check all heat traces to see if they are on, especially the Surge Silo feeder cones.		
05	All Barge Unloader motor heaters should be turned on.		
06	Stacker Reclaimer Swing Hoist Pump oil heater should be turned on.		
07	Close all windows and doors on all the CY area buildings.		
08	Glycol System at Reclaim Hopper #2 should be checked that it is on, Glycol level is in the operating range, pump is running, and all heaters are working.		
09	Belt Spray Systems on 3-G, 4-G, 7-G & 8-G, and		

	3-M & 4-M conveyors should be checked for proper operation and the tank levels have plenty of de-icer in them		
10	Water lines should be drained after being used		
11	Air dryers should be drained and checked for proper operation. All air systems should be routinely checked and drained of moisture.		
12	Conveyor belts, pulleys, and belt wipers should be checked for coal or ice build-up at least once each shift		
13	Have enough hand sprayers available and check the de-icer tank in the Tractor Garage, make sure it has plenty of de-icer in it in order to spray belts that do not have automatic sprayers on them		
14	Check rope pull cables on outside belts to see if there is enough slack in them. Cables will contract in cold temperatures and pull the rope pull alarm causing the belt to trip.		
15	Verify all reclaim hoppers and feeders are empty when finished coaling up		
16	Ensure that everyone, including the harbor boat crew, have enough warm clothing and safety equipment to work safely.		

Kentucky Utilities
Ghent Generating Station
Standards / Procedures

Description: **Standards / Procedures**

Cold Weather Operations# Op1-33

Outside on All Units

DATE: _____ **OPERATOR:**_____

rev.10/01/11

STEP	DESCRIPTION	O.K.	COMMENT
01	Coal Yard Settling Basin: A. Check all heat traces (3 are fed from the Tractor Garage).		
02	Secondary Settling Basin: A. Check heat trace (local breaker).		
03	Ash Filtration Buildings (North of Highway 42). A. Check filtration building neat traces on the North wall near the road. (LC 25A, switch #3 for West half, #7 for the East half). B. Filtration Building Switchgear Room Check space heaters and heater breakers. Also check heat trace on West wall.		
04	Secondary Ash Pond Building (South of Highway 42). A. Check space heater operation (fed from switchgear building). B. Check space heater operation in small by-pass house.		
05	Ash Tunnel Building (South of Highway 42). A. Check heat trace on ash lines. Breaker is located inside the ash tunnel entrance door.		
	Well Water Pump Houses:		

06	A. 1-1 Pump house space heater operation. B. 1-2 Pump house space heater operation and heat trace C. 3-1 Pump house space heater operation. D. 3-2 Pump house space heater operation.		
07	Unit 3 & 4 Bromine Building A. Check space heaters operation (return switches to auto). B. Check heat trace on the West wall. C. Check heat trace to sulfuric acid tank pit drains.		

a PPL company
Ghent Station

POP-02-60
Cold Weather Procedures Ghent Unit 2
Revision: 04/05/2021

General Precautions and Limitations:

1. Ensure all maintenance work is completed before operating any valves, positioners, actuators, or motors.
2. Ensure all appropriate HOLD CARDS are properly released and removed before operating valves, positioners, actuators, or motors.
3. Be aware of all possible hazards when performing duties associated with the Ghent Unit 2 Cold Weather Procedures.
4. Ensure that the individual performing the task is trained and confident to perform the task associated with the safe operation as described in the Original Manufacture's Manual.
5. Particular attention should be paid to normal operating conditions so that any variation from normal can be detected.
6. Report any abnormal conditions to supervision immediately.

COLD WEATHER PROCEDURES GHENT UNIT 2

COAL YARD SETTLING BASIN:

a) **CHECK** all heat traces (3 are fed from the Tractor Garage).

SECONDARY SETTLING BASIN:

b) **CHECK** heat trace (local breaker).

ASH FILTRATION BUILDING (NORTH OF HIGHWAY 42):

c) **CHECK** filtration building neat traces on the North wall near the road. (LC 25A, switch #3 for West half, #7 for the East half).

ASH FILTRATION BUILDING SWITCHGEAR ROOM:

d) **CHECK** space heaters and heater breakers. Also **CHECK** heat trace on West wall.

SECONDARY ASH POND BUILDING (SOUTH OF HIGHWAY 42):

e) **CHECK** space heater operation (fed from switchgear building).

f) **CHECK** space heater operation in small by-pass house.

ASH TUNNEL BUILDING (SOUTH OF HIGHWAY 42):

g) **CHECK** heat trace on ash lines. Breaker is located inside the ash tunnel south entrance door.

PLANT WELL WATER PUMP HOUSES:

h) **CHECK** 1-1 Pump house space heater operation. **SHUT OFF** vent fan and **CLOSE** dampers.

i) **CHECK** 1-2 Pump house space heater operation and heat trace. **SHUT OFF** vent fan and **CLOSE** dampers.

j) **CHECK** 2-1 Pump house space heater operation. **SHUT OFF** vent fan and **CLOSE** dampers.

k) **CHECK** 3-1 Pump house space heater operation. **SHUT OFF** vent fan and **CLOSE** dampers.

l) **CHECK** 3-2 Pump house space heater operation. **SHUT OFF** vent fan and **CLOSE** dampers.

UNIT 1 & 2 BROMINE BUILDING:

m) **CHECK** space heaters operation (return switches to auto).

n) **CHECK** heat traces on.

o) **CHECK** heat trace to sulfuric acid tank pit drains.

U2 F.D. & I.D. & P.A. FAN AREA:

p) **CHECK** all heat trace observed on.

q) **CHECK** fan intake screens periodically for icing.

U2 ASH LINE FREEZE PROTECTION:

r) **OPEN** freeze protection on wet ash discharge line 2 turns.

s) **CHECK** boiler room sump freeze protection locked open. (In sump pit on north).

U2 COOLING TOWER:

t) **CHECK** 2-1 & 2-2 C.W. Pump motor heater breakers on. (CTMCC 2A & 2B South of tower in building).

u) **CHECK** for icing and notify Unit Operators when temperature is below 34* (check at least every 2 hours.)

v) **CHECK** 2-1 & 2-2 C.W. Pump discharge valve by-pass valve open and heat trace is on.

w) **CHECK** Circulating Water return to river house heater for proper operation and doors closed.

- *NOTE: When unit is off, C.W. discharges and return lines drained, condenser inlet and outlet valves closed, and cooling tower blowdown opened to send water to ash pond.*

2-1 & 2-2 PJFF HOPPER ROOMS:

x) **CHECK** building heaters for proper operation. Adjust vent fan & louver thermostats to 80 degrees.

y) **CHECK** all vent fans off, louvers & doors closed.

U2 PAC BLOWER BLDG:

z) **CHECK** building heaters for proper operation. Adjust vent fan & louver thermostats to 75 degrees.

aa) **CHECK** all vent fans off, louvers & doors closed.

U2/3 PJFF AIR COMPRESSOR BLDG:

bb) **CHECK** building heaters for proper operation.

cc) **TURN OFF** vent fans with local on/off switches.

dd) **MANUALLY CLOSE** louvers and check all doors closed.

U2 PJFF FIRE PROTECTION:

ee) **CHECK** system low point drain to be dry and pressured up with air. Located north side of U2 elevator.

ff) **CHECK** system low point drain to be dry at U2 PJFF fire protection standpipe low point drain located 1st level north of PJFF elevator platform.

- ***NOTE:*** *this will need to be checked daily during cold weather to prevent from freezing and pipe separating.*

U1 & U2 DIESEL GENERATORS:

gg) **CHECK** all enclosure doors closed.

hh) **CHECK** motor heater to be operating

UNIT 1&2 FLY ASH BUILDING:

ii) **CHECK** Unit 1/2 Fly Ash Building heaters & heat trace panel for proper operation.
NOTE: Work order faulty circuits. (Heat Trace Panel located in the Unit 1/2 Fly Ash Building PDC room.)

jj) **CHECK** vent fans off, louvers & doors closed.

UNIT 2/3 INERT FINES BUILDING:

kk) **CHECK** Unit 2/3 Inert Fines Building heaters for proper operation.

ll) **CHECK** vent fans off, louvers & doors closed.

mm) **ISOLATE & DRAIN** LPSW wash header.

U2 SO3 MITIGATION HEAT TRACE SYSTEM

nn) CHECK U2 SO3 Mitigation heat trace breaker panel 2964 for breakers to be in the **ON** position

- BKR # 1/3 Potable water heat trace #1
- BKR # 6/8 Potable water heat trace #2
- BKR # 9/11 Wastewater heat trace
- BKR # 10/12 Service water heat trace
- BKR # 16/18 Wastewater sumps heat trace
  - ***NOTE:*** *Panel is located on the 2nd floor SO3 PDC room on the right after entering PDC room.*
  - ***NOTE (2):*** *Check heat trace panel 2965 bulbs to be ON below 35 degrees.*

U2 OUTSIDE CONDENSATE DRAINS

oo) CLOSE condensate supply to temporary chemical clean hook up inside SW corner of building and crack open drains below isolation valve.

pp) CHECK freeze protection is on outside of building on the same line described above.

Kentucky Utilities Co.
Ghent Generating Station
Standards/ Procedures

Description: Cold Weather Ghent 2 **Standards/Procedures**
#OP2-36

DATE: _____ **OPERATOR:** _____

rev.10/19/15

STEP	DESCRIPTION	O.K.	COMMENT
01	Ash line freeze protection; A. Open both freeze protection supply valves 3 turns. B. Check boiler room sump freeze protection locked open. (In sump pit on north).		
02	Check Circulating Water return to river house heater for proper operation		
03	Diesel Generator room. A. Check space heater operation		
04	Cooling Tower A. Check 2-1 & 2-2 C.W.P. motor heater breakers (CTMCC 2A & 2B South of tower in building). B. C.W.P. discharge valve by-pass valves open. C. Check all heat traces on. D. Check Cooling Tower for icing and notify Unit Operator.		
05	Outside Fan Area: A. F.D. & P.A. Fan intake screens should be checked periodically for icing. B. Listed below are the locations of all motor heater breakers. Also, when any 4160V breaker is racked out on Unit 2, the switch on the door must be put in the local position or the motor heater will not come on. Breakers — Location 2-2 F.D. Fan motor heater — BRMCC 2C 2-2 I.D. Fan motor heater — 2-2 VFD LP1 bkr#8 2-2 P.A. Fan motor heater — BRMCC 2C 2-3 P.A. Fan motor heater — BRMCC 2C		

Continued 05	2-1 F.D. Fan motor heater BRMCC 2D 2-1 I.D. Fan motor heater 2-1 VFD LP1 bkr#8 2-1 P.A. Fan motor heater BRMCC 2D		
06	Freeze protection heat trace breakers are located in the precipitator switch gear room 2B. The breakers are to be checked on and circuit amp readings taken. If the amp readings are considerably lower, a portion of the heat trace has failed and should be written up. If the reading is higher, it is due to the heating up or a portion of heat trace has been added. This does not require a write up unless it is extremely high. Circuit 1. Bearing water to fans 2. F.D. Fan 2-1 3. F.D. Fan 2-2 4. P.A. Fan 2-2 5. P.A. Fan 2-3 6. P.A. Fan 2-1 7. Bearing water supply to fans 8. Bearing water supply to fans 9.2-1 and 2-2 CWP lube wtr 4" line/2-1 CWP 10. 2-1 and 2-2 Strip htrs / 2-2 CWP 11. Bearing water from fans 12. Auxiliary sump area 13. Air blaster supply line 14.Sensing line transmitter hut 15. 2-1 / 2-2 CWP Cooling Tower level trans. 16. Well water for 2-2 VFD north of bldg 17. Hopper level transmitter 2-1 side 18. Spare	Amps	
07	Check Unit 1/2 Fly Ash Bldg heaters & heat trace panel for proper operation. Check vent fans off, louvers & doors closed. Work order faulty circuits.(HT Panel located in the Unit 1/2 Fly Ash Bldg PDC room.)		
08	Check PJFF Bldg heaters & heat trace panel for proper operation. Set vent fan & louver thermostats to 80 degrees. Check all doors closed. Work order faulty circuits.		
09	Check PAC Silo blower Bldg heaters & heat trace panel for proper operation. Check vent fan off, louvers & doors closed. Work order faulty circuits.		
10	Check Unit 2/3 PJFF Air Compressor Bldg heaters & heat trace panel for proper operation. Check vent fans off, manual louvers & doors closed. Work order faulty		

	circuits.		
11	Check Unit 2/3 Inert Fines Bldg heaters for proper operation. Check vent fans off, louvers & doors closed. Isolate & drain LPSW wash header.		
12	Check U2 SO3 Mitigation heat trace breaker panel 2964 for breakers to be in the ON position BKR # 1/3 Potable water heat trace #1 BKR # 6/8 Potable water heat trace #2 BKR # 9/11 Waste water heat trace BKR # 10/12 Service water heat trace BKR # 16/18 Waste water sumps heat trace Panel is located on the 2nd floor SO3 PDC room on the right after entering PDC room. Check heat trace panel 2965 bulbs to be ON below 35 degrees.		

Ghent Scrubber Operations
Standards and Procedures
UNIT 2 SCRUBBER & GYPSUM FARM

Description: COLD WEATHER SET-UP

DATE: **OPERATOR:**_____
Revision 10/19/15

STEP	DESCRIPTION	O.K.	COMMENT
01	UNIT 2 FGD BUILDING		
02	Check all space heaters for proper operation.		
03	Check vent fans and louvers for proper operation. Fans operate off thermostats located at south and north sides of building.		
04	Check heat trace on agitator seal water supply and drain lines.		
05	Check heat trace on underflow slurry transfer pumps suction valves flushing lines.		
06	Check additive feed heat trace panel located on the 4th floor between 2-2 & 2-3 towers. Test circuits by switching to manual. If all circuits are working place the switch in automatic.		
07	Check heat trace panel located outside on the 1st floor east side of 2-2 tower to make sure all circuits are working properly and switch to be left in automatic.		
08	Check 2-1, 2-2, 2-3 hydrocyclone pump bldg. heaters for proper operation & all doors closed		
09	Make sure the well water heat trace is working properly by visually inspecting the heat trace light located by the man door on unit by 2-3 PA fan.		
10	Inspect insulation and heat trace on the gland seal water to the agitators located 1st floor east side of the towers.		

	GYPSUM FARM BLDG		
11	Make sure all doors and louvers are shut and that space heaters are working properly. Work order deficiencies		
12	Check the heat trace panel located on the south wall of the Gypsum farm building breaker room. Switch to manual to test circuits and make sure switch is put back to automatic.		
13	Check the heat trace and insulation on the Gypsum transfer pumps flush water located east of the buildings at the transfer pumps.		
14	Make sure drainback valves are working correctly on the Gypsum Farm BLDG Sump. After a pump is shut off, the drainback valve should open to drain the line.		
15	Make sure drainback valves are working correctly on the Gypsum Farm Sump. After a pump is shutoff the drainback valve should open to drain line.		
16	Check vent fans and louvers for proper operation. Fans operate off thermostats located at east and west of the building		

Kentucky Utilities
Ghent Generating Station
Standards / Procedures

Description : Cold Weather Ghent 3

Standards / Procedures # Op3-43

DATE : _____

OPERATOR : _____

rev.05/13/03

STEP	DESCRIPTION	O.K.	COMMENT
01	**Ash system** Ash line freeze protection valve (3rd floor) opened 3 turns		
02	**Auxiliary sump area.** A. Check heat traces on both pumps & discharge lines. B. Check breakers on RLC#14A, breakers YY& AA (North of 3-2 Mill).		
03	**Unit 3 & 4 Service Building** A. Check heat traces area of acid & caustic unloading (inside door).Also on east side of building. B. Open service building sump pump freeze protectioni valve.		
04	**Unit 3 Precipitator rooms.** A. Precipitator 3-1, check RLC#19A, breakers RR & TT. B. Precipitator 3-1, check all fire protection and air blaster heat traces. C. Precipitator 3-2, check RLC#24A, breakers AA, CC, VV D. Precipitator 3-2, check all fire protection and air blaster heat traces.		

05	**L.P.S.W. Pump Pier.** A. All traveling screens will run in the slow mode when temperatures decrease to 20 degrees f. B. Check drains on traveling screens backwash supply. C. L.P.S.W. lube water strainer bypass open 3 turns D. Check all space heaters operating. (Return switch to auto). E. Check heat trace breakers. (RLC#6A in screen house). F. Check all heat traces on pumps. G. Check electric heater at chemical feed valve pit on south end of pier to be on.		
06	**Cooling Tower.** A. Check the following breakers: CTMCC 3A1- Instrument pit unit heater & 3-2 CWP Motor heater. CTMCC 3B1- U-3 CWP Lube Water Bldg. Unit Heater & 3-1 CWP Motor heater. RLC 20A - SS, TT, UU, VV, YY, ZZ, CC, DD, EE, FF, GG, HH, II. B. Check CT Switch Gear Room unit heaters operation (return switch to auto). Make sure vent fans are off. C. Check all heat traces in pump area and acid feed line to basin D. Open the bypass valve on the CWP discharge and CT Bypass valves. E. Check space heater in the Cooling Tower Transmitter pit.		
07	Air Heaters/Air Preheating Coils A. Check fire protection & A.H. wash line drains open (3rd floor). B. Check heat trace on 3-1 & 3-2 A.H guide bearings (5th floor). C. Check open Air Preheating Coil drain regulator instrument air line pit cock.		
08	**Well Water Tank** A. Open by-pass around inlet regulator to well water tank.		

09	**Outside fan area** A. F.D. & P.A. Fan intake screens should be checked periodically for icing. B. Check the following fan motor and lube oil heater breakers. Breakers — Location Deicer Trans. Pump Brks. — BRMCC 3A 3-3 P.A. Fan Mtr. heater — BRMCC 3A 3-1A IDF Motor Heater — U-3 PJFF PDC South Wall 3-1B IDF Motor Heater — U-3 PJFF PDC South Wall 3-1 F.D. Fan Mtr. heater — BRMCC 3B 3-1A1 IDF LO Heater — MCC AQC3A2 Bkr 09FG 3-1A2 IDF LO Heater — MCC AQC3B2 Bkr 09FI 3-1B1 IDF LO Heater — MCC AQC3A2 Bkr 09FI 3-1B2 IDF LO Heater — MCC AQC3B2 Bkr 09FK 3-2A1 IDF LO Heater — MCC AQC3A2 Bkr 09FK 3-2A2 IDF LO Heater — MCC AQC3B2 Bkr 10FA 3-2B1 IDF LO Heater — MCC AQC3A2 Bkr 10FA 3-2B2 IDF LO Heater — MCC AQC3B2 Bkr 10FC 3-1 P.A. Fan Motor heater — BRMCC 3B 3-2A IDF Motor Heater — U-3 PJFF PDC South Wall 3-2B IDF Motor Heater — U-3 PJFF PDC South Wall 3-2 F.D. Fan Motor heater — BRMCC 3C 3-2 P.A. Fan Motor heater — BRMCC 3C		
10	Freeze Protection Heat Trace breakers are located on the north wall in Unit 3 basement. The breakers are to be checked and the circuit amp reading taken. If the amp readings are considerably lower, a portion of the heat trace has failed and should be written up. If the readings are higher, it is due to heating up or a portion of heat trace has been added. This does not require a write up unless it is extremely high.		
	CKT — AMPS 1. 3-1 F.D. Fan — 8.1 2. 3-2 F.D. Fan — 9.1 3. 3-1 P.A. Fan — 6.8 4. 3-2 P.A. Fan — 7.1 5. 3-3 P.A. Fan — 5.4 6. Well Water Piping — .1 7. R.O. Storage Tank — 6.2 8. 3-1 Air Preheater Coils — 0 9. 3-2 Air Preheater Coils — 0		

09	**Outside fan area** A. F.D. & P.A. Fan intake screens should be checked periodically for icing. B. Check the following fan motor and lube oil heater breakers. Breakers — Location Deicer Trans. Pump Brks. — BRMCC 3A 3-3 P.A. Fan Mtr. heater — BRMCC 3A 3-1A IDF Motor Heater — U-3 PJFF PDC South Wall 3-1B IDF Motor Heater — U-3 PJFF PDC South Wall 3-1 F.D. Fan Mtr. heater — BRMCC 3B 3-1A1 IDF LO Heater — MCC AQC3A2 Bkr 09FG 3-1A2 IDF LO Heater — MCC AQC3B2 Bkr 09FI 3-1B1 IDF LO Heater — MCC AQC3A2 Bkr 09FI 3-1B2 IDF LO Heater — MCC AQC3B2 Bkr 09FK 3-2A1 IDF LO Heater — MCC AQC3A2 Bkr 09FK 3-2A2 IDF LO Heater — MCC AQC3B2 Bkr 10FA 3-2B1 IDF LO Heater — MCC AQC3A2 Bkr 10FA 3-2B2 IDF LO Heater — MCC AQC3B2 Bkr 10FC 3-1 P.A. Fan Motor heater — BRMCC 3B 3-2A IDF Motor Heater — U-3 PJFF PDC South Wall 3-2B IDF Motor Heater — U-3 PJFF PDC South Wall 3-2 F.D. Fan Motor heater — BRMCC 3C 3-2 P.A. Fan Motor heater — BRMCC 3C		
10	Freeze Protection Heat Trace breakers are located on the north wall in Unit 3 basement. The breakers are to be checked and the circuit amp reading taken. If the amp readings are considerably lower, a portion of the heat trace has failed and should be written up. If the readings are higher, it is due to heating up or a portion of heat trace has been added. This does not require a write up unless it is extremely high.		
	CKT — AMPS 1. 3-1 F.D. Fan — 8.1 2. 3-2 F.D. Fan — 9.1 3. 3-1 P.A. Fan — 6.8 4. 3-2 P.A. Fan — 7.1 5. 3-3 P.A. Fan — 5.4 6. Well Water Piping — .1 7. R.O. Storage Tank — 6.2 8. 3-1 Air Preheater Coils — 0 9. 3-2 Air Preheater Coils — 0		

Kentucky Utilities Co.
Ghent Generating Station
Standards/ Procedures

Description :

Cold Weather Operations

Outside on All Units

Standards / Procedures #

Op3-44

DATE : _____

OPERATOR:_____

rev.10/16/03

STEP	DESCRIPTION	O.K.	COMMENT
01	**Coal Yard Settling Basin:** A. Check all heat traces and room heaters (3 are fed from the Tractor Garage).		
02	**Secondary Settling Basin:** A. Check heat trace (local breaker).		
03	**Ash Filtration Buildings** (North of Highway 42). A. Check filtration structure heat traces on the North wall (1 outside air valve hut area and 2 inside air valve hut area). Also 1 heat trace on east side. (LC 25A, switch #3 for West half, #7 for the East half). Check space heater in air valve hut area. B. Filtration Building Switchgear Room Check space heaters and heater breakers.		
04	**Secondary Ash Pond Building** (South of Highway 42). A. Check space heater operation (fed from switchgear building). B. Check building vent fan off. C. Check space heater operation in small by-pass house.		

05	**Ash Tunnel Building** (South of Highway 42). A. Check heat trace on ash lines. Breaker is located inside the ash tunnel entrance door.		
06	**Well Water Pump Houses**: A. 1-1 pump house space heater operation. Shut off vent fan and close manual vent louvers B. 1-2 pump house space heater operation. Shut off vent fan and close manual vent louvers C. 3-1 pump house space heater operation. Shut off vent fan and close manual vent louvers D. 3-2 pump house space heater operation. Shut off vent fan and close manual vent louvers		
07	**Unit 3 & 4 Bromine Building** A. Check space heaters operation (return switches to auto). B. Check heat trace on the West wall. C. Check heat trace to sulfuric acid tank pit drains.		

Kentucky Utilities
Ghent Generating Station
Standards / Procedures

Description :Cold Weather Ghent 4 **Standards / Procedures #Op4-43**

DATE : _____ **OPERATOR:**_____

rev.12/31/2004 (10/26/98)

STEP	DESCRIPTION	O.K.	COMMENT
01	Ash line freeze protection valve (3rd floor) open 3 turns.		
02	**Precipitator rooms:** A. Prec. 4-1, check RLC 39A, breaker ADD. B. Prec. 4-1, check fire protection heat traces. C. Prec. 4-2, check RLC 44 A, breaker AAA. D. Prec. 4-2, check fire protection heat traces.		
03	**Cooling Tower:** A. Check the following breakers; CTMCC 4A-1, 4-2 C.W. Pump motor heater. CTMCC 4B-1, 4-1 C.W. Pump motor heater and C.W. Pump freeze protection unit heater 4-1/4-2. RLC 40A, breakers S, T, NN, SS, XX, BB, CC, DD, FF and II. B. Check Cooling Tower Switchgear Room unit heater operation (return switches to auto).Make sure vent fans are off. C. Check all heat traces in pump area and acid feed line to basin. D. Open the by-pass on the C.W. Pump discharge and the Cooling Tower By-pass valves. E. Check the space heater in the Cooling Tower transmitter pit.		
04	**Air Heater/Air Preheating Coils:** A. Check fire protection and Air Heater wash line drains open (3rd floor). B. Check the heat trace on 4-1 and 4-2 Air Heater Guide Bearings (5th floor). C. Crack open the Air Preheating Coil drain regulator (4-1 & 4-2) instrument airline pit cock. D. Check the heat trace on both air preheating coils.		

05	**Outside Fan Area:** A. F.D. and P.A. Fan intake screens should be checked periodically for icing. B. Check the following fan motor and lube oil heater breakers; Breakers — Location 4-3 P.A. Fan Motor heater — BRMCC 4A 4-1 P.A. Fan Motor heater — BRMCC 4B 4-1 F.D. Fan Motor heater — BRMCC 4B 4-1A IDF Motor heater — U-4 PJFF PDC NORTH WALL 4-1B IDF Motor heater — U-4 PJFF PDC NORTH WALL 4-1A1 IDF LO Heater — MCC AQC4A2 Bkr 09FG 4-1A2 IDF LO Heater — MCC AQC4B2 Bkr 09FK 4-1B1 IDF LO Heater — MCC AQC4A2 Bkr 09FI 4-1B2 IDF LO Heater — MCC AQC4B2 Bkr 09FK 4-2A1 IDF LO Heater — MCC AQC4A2 Bkr 09FK 4-2A2 IDF LO Heater — MCC AQC4B2 Bkr 10FA 4-2B1 IDF LO Heater — MCC AQC4A2 Bkr 10FA 4-2B2 IDF LO Heater — MCC AQC4B2 Bkr 10FC 4-2 P.A. Fan Motor heater — BRMCC 4C 4-2 F.D. Fan Motor heater — BRMCC 4C 4-2A IDF Motor heater — U-4 PJFF PDC NORTH WALL 4-2B IDF Motor heater — U-4 PJFF PDC NORTH WALL		
06	**Freeze protection heat trace breakers:** Breakers are located on the north wall in the Unit 4 basement. The breakers are to be checked (on) and the circuit amp readings taken. If the amp readings are considerably lower, a portion of the heat trace has failed and should be written up. If the reading is higher, it is due to the heating up or a portion of heat trace has been added. This does not require a write up unless it is extremely high. (Breakers are north of the economizer hopper) Circuit — Amps 1. 4-1 F.D. Fan — 9.5 2. 4-2 F.D. Fan — 9.5 3. 4-1 P.A. Fan — 6.0 4. 4-2 P.A. Fan — 6.0 5. 4-3 P.A. Fan — 7.8 6. Spare 7. Spare 8. 4-1 Air Heater — .1 9. 4-2 Air Htr. 4-1/4-2 Purge Coil lines — 4.6 10. No circuit.		

	11. 4-2 Air Pre. Coil Drain .1 12. 4-1 & 4-2 A.H. Guide Bearing supply 10.7 13. 4-1 & 4-2 A.H. Guide Bearing return 10.3 14. 4-1 & 4-2 Soot blower air htr. 1.5		

STEP	DESCRIPTION	O.K.	COMMENT
07	**Ammonia Farm and Selective Catalytic Reduction (SCR):** A) Insure that the ammonia lines are fully purged from the storage tanks to the SCR if NH3 system is to be shut down B) Check to see if the Cold Reheat valve is fully open. (In plant level 6.5) NOTE: Dilution air is to remain in service as long as the unit is on line. Maintain temperature at 300 deg. F. C) Check to make sure that the steam trap drain is fully open. (Ground level north of I.D. Fans) D) Place both dilution air heating coils in service E) Check all heat traces on showers and eyewash stations. NOTE: Push button to insure light is working. (These are temperature controlled). There are a total of 5 stations at the Ammonia Farm. 1. (1) at each unloading station 2. (1) at ammonia pump skid 3. (2) on the top level of the storage tanks. NOTE: Check breakers "on" located inside the ammonia building panel #NH#-RLP1 There are 2 stations located on the SCR, 3rd level. 1 on 4-1 side and 1 on 4-2 side E) Check all heat trace digital read out boxes for any alarms. Locations: 1) 1 located south of 4-2 PA Fan on I-beam 2) 2 located north of SCR, 4-2 side on ground level 3) 1 located at each unloading station (ammonia farm) 4) 1 located at ammonia pumps (ammonia farm) F) Check the ash tunnel North and South ends for heat trace on potable water lines. G) Check dilution air coil drain water trap on one that is out of service.		

08	**Unit 4 PJFF (Baghouse)** **4-1 PJFF Baghouse:** 1) Check all doors and building heaters for proper operation. 2) Set all vent fan controls to 80 degrees and check all vent fan louvers closed. 3) Adjust all building heater thermostats to maintain 75 degrees **4-2 PJFF Baghouse:** 1) Check all doors and building heaters for proper operation. 2) Set all vent fan controls to 80 degrees and check all vent fan louvers closed. 3) Adjust all building heater thermostats to maintain 75 degrees **PJFF Fire Protection Building:** 1) Check door & building heater for proper operation. 2) Turn off vent fan and check vent fan louvers closed. **PJFF Control Air Compressor Building:** 1) Check doors & building heaters for proper operation. 2) Turn off vent fans and check manual vent fan louvers closed. 3) Check heat trace panels for faults and work order deficiencies.		
09	**Unit 3 & 4 Fly Ash Building** 1) Check all doors and building heaters for proper operation. 2) Turn off vent fans and check vent fan louvers closed. 3) Check control air compressor, receiver, and filter drains for proper operation. Manual drains may need to be cracked in order to keep air headers fully drained. 4) Check heat trace panel for faults and work order deficiencies. a) Panel is located in the fly ash building PDC room.		
10	**Powder Activated Carbon (PAC) Blower Building** 1) Check all doors and building heaters for proper operation 2) Adjust building space heater thermostat to maintain 75 degrees. 3) Adjust vent fan thermostat set point to 80 degrees and check vent fan louvers closed.		

Ghent Scrubber Operations Standards and Procedures

Unit 3 FGD

COLD WEATHER SET-UP

DATE: **OPERATOR:**_____

Revision 10/29/13

STEP	DESCRIPTION	OK	COMMENT
01	Check all space heaters for proper operation(Switched on and running properly).		
02	Check vent fans to ensure they are in the off position. They can be started or stopped from their MCC breaker on the 2nd floor breaker room.		
03	Check to make sure the building louvers are closed on the 1st floor. These can be opened or closed from the vent fans MCC breakers on the 2nd floor breaker room. The following are MCC numbers where the breakers can be located. FGD3C1, FGD3C2, FGD3D1, FGD3D2. Press the stop button to close the louvers.		
04	Check the space heater in the hydro cyclone building to make sure the switch is in the on position. (4th floor)		
05	Check the heat trace panel on the second floor breaker room wall to make sure there are no alarms and that the system is operating normal.		
06	On the second floor there is a High Pressure Service Water line coming through the floor between 3-2 / 3-3 recycle pumps that needs the manual stop valve closed. On the first floor open the drain to the same line located between 3-2 / 3-3 recycle pumps. The same line on the 6th floor should be opened to ensure properly drained and vented.		
07	Make sure drainback valve on the absorber sump pumps is working correctly and is staying open after pump shuts off.		
08	On the 6th floor inspect the ME Wash valves insulation. Located on the north side of the tower.		

09	On the 5th floor inspect the Emergency Quench valves insulation and piping. Located on the South side of abs.		
10	On the 4th floor inspect the Humidification Valves insulation and piping. Located on the northeastern corner of the tower.		
11	On the 3rd floor north side inspect the Reclaim Water flush valves and piping insulation.		
12	Fire protection for 3A and 3B RAT's is located in the ME wash building in the northeast corner. Switch heater above the piping to the on position.		
13	On the ground floor east side of the tower outside check the insulation and piping for the absorber tower level transmitter.		
14	Check the agitator flush water insulation all around the outside of the tower under the agitators.		
15	Trace the low pressure service water line from the pipe rack to the FGD building. Check condition of heat trace and pipe insulation.		
16	In the Hydro cyclone feed pump building (ground floor south of abs tower) switch vent fan to the off position and switch the space heaters on.		

Ghent Scrubber Operations Standards and Procedures
Unit 4 FGD
COLD WEATHER SET-UP

DATE: **OPERATOR:**_____
Revision 10/29/13

STEP	DESCRIPTION	OK	COMMENT
01	Check all space heaters for proper operation (switch on and running properly).		
02	Check vent fans to ensure they are in the off position. They can be started or stopped from their MCC breaker on the 2nd floor breaker room.		
03	Check to make sure the building louvers are closed on the 1st floor. These can be opened or closed from the vent fans MCC breaker on the 2nd floor breaker room. The start button opens the louvers and the stop button closes them. The following are MCC numbers where these breakers are found. FGD4C2(for east wall and bleed pump room louvers), FGD4D1(for NW wall and 2cnd floor west), FGD4D2(NE corner), FGD4C1(for NW wall and oil room louvers).		
04	Fire protection for the FGD transformers is located at the bottom of the stair well in the southeast corner of the building (ground floor). Make sure the space heater switch is in the on position.		
05	Check the heat trace panel on the second floor breaker room wall to make sure there are no alarms and that the system is operating normal.		
06	On the second floor there is a High Pressure Service Water line coming through the floor between 4-3 / 4-4 recycle pumps that needs the manual stop valve closed. On the first floor open the drain to the same line located between 4-3\4-4 recycle pumps. Then on the same line on the 6th floor should be opened to ensure properly drained and vented.		
07	Make sure drainback valves on the absorber sump		

	pumps are working correctly and are staying open after pump shuts off.		
08	On the 6th floor inspect the ME Wash valves insulation. Located on the South side of the tower.		
09	On the 5th floor inspect the Emergency Quench water valves insulation and piping. Located on the Eastern side of the tower		
10	On the 4th floor inspect the Humidification Valves insulation and piping. Located on the southwestern side of the tower.		
11	On the 3rd floor south side inspect the Reclaim Water flush valves and piping insulation.		
12	Make sure roll up door and man door are closed on the hydro cyclone feed pump room. Also switch off vent fan, and switch on the space heater.		
13	On the 1st floor west side of the tower outside check the insulation and piping for the absorber tower level transmitter.		
14	Check the agitator flush water insulation all around the outside of the tower under the agitators.		
15	Trace the low pressure service water piping from the pipe rack into the FGD building. Check condition of the pipe insulation and heat trace.		
16	Make sure doors are closed and space heater is switched on in the hydro cyclone building. (4th floor)		
17	In the Underflow pump building, make sure vent fan switch is in the "off" position and the space heaters are switched on.		

PPL companies

Cold Weather Preparation Guidelines

For The

Mill Creek Generating Station

Operations

Revised 9-16-2021

Purpose:

This document was established as a guideline to aid in maintaining unit reliability during cold weather events at the Mill Creek Generating Station. It should be used as a framework in developing a cold weather readiness program for the station. The typical problem areas contained in this document are not meant to be all inclusive. This procedure falls under the corporate "Cold Weather Preparation Guidelines For Generating Stations".

Safety

Safety remains the top priority during cold weather events. Job safety briefings should be conducted during preparation for and in response to these events.

Management Roles and Expectations

Management plays an important role in maintaining an effective cold weather readiness program. The management roles and expectations below provide a high level overview of the core responsibilities related to cold weather preparation.

A) Set expectations for safety, reliability, and operational performance.
B) Develop a cold weather preparation procedure for the station and ensure that it is updated with best practices and lessons learned.
C) Ensure that the cold weather preparation procedure for the station includes processes, staffing plans, and timelines that direct all key activities before, during and after extreme cold weather events.
D) Ensure proper execution of the cold weather preparation procedure.
E) Conduct a plant readiness review at morning staff meetings prior to any anticipated extreme cold weather event.
F) Encourage plant staff to look for areas at risk due to cold weather conditions and identify opportunities to improve readiness and response.
G) Following each winter, evaluate the effectiveness of the cold weather preparation procedure and incorporate lessons learned.

Processes and Procedures

A cold weather preparation procedure including checklists will be developed and maintained at the Mill Creek Station for seasonal winter preparedness. A master document with appendices and written procedures will be kept in the Records Rooms, Third Floor, of the Mill Creek Station Administration Building.

The Cold Weather Preparation Procedures should be evaluated annually. After an extreme cold weather event, the procedure should be reviewed in the daily Staff Meeting to evaluate improvement opportunities and identify lessons learned.

Evaluation of Potential Problem Areas

A critical part of a cold weather readiness program is identifying and prioritizing components, systems and other areas of vulnerability which may experience freezing problems or other operational issues. Some of the major items to consider are;

A) Equipment or processes that could create safety related hazards.
B) Equipment that could initiate an automatic unit trip.
C) Equipment that could impact unit startup.
D) Anything that could potentially cause damage to the unit.
E) Equipment that could adversely affect environmental controls that could lead to derates or outages.
F) Equipment that could affect the delivery of fuel or water to the units.
G) Impaired field devices that could cause operational problems.

Communications

Clear and timely communication is essential to an effective Cold Weather Preparation program. Key points should include the following:

A. Before a severe cold weather event, Plant Management should communicate with the Vice President of Power Production that the site specific cold weather preparation procedure is in place.
B. Before and during a severe cold weather event, communicate with all station personnel about changing conditions and potential areas of concern to heighten awareness around safe and reliable operations.
C. Before and during a severe cold weather event, the Mill Creek Station will keep the Balancing Authority (Generation Dispatch) up to date on changes to unit availability, capacity, or other operating limitations.
D. After a generating unit trip, derate, or failure to start due to severe cold weather, Plant Management should conduct an analysis of the event and incorporate lessons learned into their Cold Weather Preparation Procedures.

Elements of a Cold Weather Preparation Procedure

Listed below are key elements of the Mill Creek Station Cold Weather Preparation Procedure:

A. Work Management System (Maximo)
    1) Review the work management system to ensure adequate annual preventive work orders (PM's) exist for cold weather preparation. These PM's for the Mill Creek Station are detailed in Appendix A.
    2) Ensure that all cold weather preparation preventive work orders (PM's) are completed prior to December 1st of each year.
    3) Perform cold weather readiness system walkdowns to identify any deficiencies and issues that will need repair.

4) Review the work management system for open corrective maintenance work orders that could affect plant operation and reliability in cold weather. Ensure that the work orders are prioritized correctly so that the work is completed prior to the winter season.

B. Preparation of Critical Instrumentation and Equipment
   1) Check that all critical site-specific problem areas have adequate protection to ensure operability during a severe cold weather event. Emphasize the points in the plant where equipment freezing could cause a Unit trip, derate or failure to start. (Refer to Appendix B attached to this document)
   2) Use thermal sensor guns, when situations warrant during extreme cold conditions, to verify areas containing equipment that are in freeze protection enclosures and are critical to plant operations, are being maintained above freezing.

C. Insulation, Heat Trace and Other Freeze Protection
   1) Verify the integrity of the insulation on all critical equipment identified in the Cold Weather Preparation Procedure.
   2) Heat trace reliability and electrical continuity
      a. Perform an evaluation of all heat trace circuits, including power supplies to ensure they maintain their accuracy. (Refer to Appendix C attached to this document).
      b. The evaluation of heat trace and insulation on critical lines should be performed on new installations, during regular maintenance activities or if damaged.
      c. Ensure that any heat trace and insulation removed or disturbed during regular maintenance is replaced and integrity restored.
      d. Check heat tracing on all critical lines and piping during severe cold weather events to ensure that the circuits remain functional. Temperature guns can be used to check piping temperatures.
   3) Heaters, Heat Lamps and Space Heaters
      a. Test operation of all permanently mounted Yard wall heaters and HVAC Units. (Refer to Appendix D attached this Document)
      b. All portable space heaters should be tested, repaired and/or replaced as necessary. All plant and FGD portable space heaters are stored in the Mill Creek Unit 2 Basement NE corner. Limestone heaters are stored in the Limestone building. At the end of each cold weather season all space heaters are to be cleaned and returned to their respective areas.
      c. Ensure that all portable space heaters and heat lamps are secured in place to prevent unauthorized removal.
   4) Wind Breaks
      a. Install wind barriers as deemed appropriate to protect critical instruments, sensing lines, controllers and piping.

   5) Covers, Enclosures, and Buildings
      a. Install enclosures with heat lamps for identified transmitters.
      b. Missing covers should be installed on valve actuators, damper drives and electrical boxes to prevent from accumulating ice.

c. Inspect all buildings to ensure windows, doors, fan louvers and any other penetrations are operating correctly and closed to prevent cold air from entering. (Refer to Appendix E attached to this Document).
d. Inspect and repair as needed all large overhead doors at the station.

D. Supplemental Equipment – Ensure that the Commercial Group, in October of each year, has an adequate inventory of equipment and other supplies needed to prepare and respond to a severe cold weather event. These items need to be readily available to the staff at the station. Examples of supplemental equipment might include:
   1) Portable Space Heaters and Heat Lamps and bulbs
   2) Extension Cords and GFI's
   3) Kerosene
   4) Propane and Rosebuds
   5) Plastic Rolls
   6) Lumber for building wind breaks and enclosures
   7) Wire Ties
   8) Portable Lighting
   9) Portable Generators
   10) Instrumentation Tubing
   11) Ice removal chemicals and equipment
   12) Blankets
   13) Cots
   14) Shovels for Snow Removal
   15) Cold Weather Personal Protective Equipment (PPE) – Boots, gloves, head socks
   16) MRE's
   17) Additional Heat Trace

E. Operational Supplies – Prior to a severe cold weather event, ensure that a full inventory of critical supplies needed to keep the plant operational are on site. Coordinate with the Commercial Group at the station to schedule deliveries based on the severity of the event and lead times of the individual items. Operational supplies that are critical to the plant cold weather include:
   1) Coal
   2) Hydrogen
   3) CO2
   4) Anhydrous Ammonia
   5) Lime
   6) PAC or other Mercury Control Products
   7) Limestone – Clean Stone
   8) Caustic Soda
   9) Sulfuric Acid
   10) Diesel Fuel
   11) Gasoline

F. Staffing
   1) Consider enhanced staffing (24x7) during severe cold weather events.
   2) Arrange for on-site lodging and meals as needed.

3) Arrange for transportation as needed.
4) Rotate work crews exposed to severe cold weather conditions.
5) Consider employing the "buddy system" during severe cold weather events to promote personnel safety.

G. Communications
1) Review emergency communication protocols prior to annual cold weather season.

H. Special Operating Instructions (prior to or during severe cold weather events)
1) Initiate additional Operations coverage during cold weather events to verify critical equipment is protected.
2) Test run emergency generators prior per normal protocol.
3) Place critical auxiliary equipment in service on Cooling Towers, Coal and Limestone conveyor systems and Service Water systems in the Screen House where freezing weather could adversely impact their operation.

References:

1) Reliability Guideline: Generating Unit Winter Weather Readiness – Current Industry Practices, dated August 2013, North American Electric Reliability Corporation (NERC).
2) Seasonal Readiness Guideline, dated December 2014, Electric Power Research Institute (EPRI).

Yearly Follow-up Recommendations

Listed below are items that should be considered prior to the cold weather season or after a cold weather event to ensure the Mill Creek Station's cold weather preparedness:

1) Consider holding a cold weather readiness meeting on an annual basis to highlight preparations and expectations for severe cold weather.
2) Operations personnel should review cold weather scenarios affecting instrumentation readings, alarms, and other indications on plant control systems.
3) Ensure appropriate NERC Generation Availability Data Systems (GADS) coding for unit derates or trips as a result of a severe cold weather event to promote lessons learned, knowledge retention, and consistency. Examples include NERC GADS code 9036 "Storms (ice, snow, etc.)" or code 9040 "Other Catastrophe."

Mill Creek – Operations Cold Weather Winterization – Checklist:

Perform Winterization Procedures below as necessary: **Initial**

Ensure all exterior doors are operational & secure ____

Place covers over all Hotwell openings on the main floor ____

Place covers over all stairwell openings on the main floor ____

Open the boiler heat release doors to circulate heated air ____

Open the boiler lower vestibule doors on each unit to introduce heated air to the mezz and basement areas ____

Instrument/Station Air:
Crack open low point drains & traps on Instrument & Station air piping systems (Ensure moisture is kept out of the systems) ____

Crack open Station air supply connections at the Cooling Towers and WFGD systems ____

Crack open air line drains on the Fly Ash Transfer system ____

Isolate & Drain Cooling Tower water supply line for water truck ____

Coal Feeders/Silos:
Ensure adequate supply of air hoses and lances are in place for Units 1 & 2 Coal Feeders ____

Ensure air vibrators associated with Units 3 & 4 Coal Silos are operational ____

Ash Lines/Sump Piping:
Ensure maintaining a flow of water through the Ash lines below 25°F ____

Consider maintaining a flow of water through Sump pump discharge piping if temperatures become extremely cold (below 15°F) ____

WFGD Storage Tank:
Isolate & Drain make-up supply line to Storage Tank, when not in use ____

Ensure at least 3 agitators are in service, if tank has adequate level ____

Dump Tanks:
Isolate & Drain make-up supply lines to Dump Tanks when not in use ____

Utilize Make-up pumps to recirculate the Dump Tanks below 30°F ____

Utilize Deaerator dump bypass to heat dump tanks as needed during extreme cold weather ____

Verify the Demineralization Tank Supply Pump is in service & recirculating the flow ____

Screen House:
Consider continuous operation of the Screen Wash Booster Pump & Traveling Water Screens ____

Revised 9-16-2021

Run air jumper line to the Screen house _____

Crack open moisture trap associated with Station Air to Screen house
(Crack open air connection in Screen house & drain along south side of Bridge Walkway) _____

SCR Systems:
Crack open the Steam Bypass valves on Unit 3 & 4 Steam Coils prior to the inlet header & crack open the three steam coil traps _____

Cooling Towers:
Ensure Unit 2 Cooling Tower Quenching Water Blowdown Line is isolated and drained _____

Ensure Units 2, 3 & 4 Cooling Tower pump motor stators are blown out with instrument air when the Cooling Tower pump is removed from service _____

Monitor the Cooling Towers for ice buildup, if necessary lower the Cooling Tower Fan speed output to decrease the air flow. Unit 2 Cooling Tower Fans have the capability of operating in reverse if necessary. _____

Maintain the Cooling Tower cold water temperature above 60°F, temps below this greatly increase the probability of tower icing _____

Fire System/City Water System:
Isolate City water to drinking fountains on boiler landings & drain supply lines
(Shutoff valve is on Landing 5) _____

Place any equipment that has the potential to freeze in the recirculation mode or left in service and that cannot be left in service or recirculated will be removed from service and drained _____

Maintain Fuel Oil inventory for Operations to use torpedo type space heaters to prevent equipment from freezing when the temperature inside the plant drops below freezing _____

Monitor outside air temperature and initiate, maintain winterization procedures (below 32°F) _____

Ensure availability of and maintain shovels and food _____

Ensure Units 1&2 Absorber Level Backup Service Water Line (12" Service Water Supply out of Unit 1) is isolated and drained when not in use during cold weather. Isolation is located behind Units 1&2 Plant Fly Ash Filter Separator and at the new WFGD where it intersects with the Clearwell Supply on the new pipe rack. _____

Cold Weather Winterization Efforts for 1-4 WFGD:

Maintenance to Perform Winterization Procedures Below as necessary:

Building Preparation: **Verify** installation of temporary structures (wind breaks) w/ heat lamps, ext. cords & GFI's.

1&2 WFDG Sample Sink area _____

4 WFGD Sample Sink area _____

Equipment: Availability of Rosebuds and propane tanks _____

Heat Trace:
Verify that all Heat Trace circuits have been checked by I&E to be operational _____

Extreme Weather Considerations:
In the event a Unit outage occurs during extreme cold weather conditions, operations should consider draining the following systems based on the length of downtime:

Initials

Boiler and Economizer (all drains) _____
NOTE: When a Unit is removed from service during cold weather, the boiler should be drained at 100 psi to ensure all boiler sections including the pendant and platen sections are drained or blown out.

Feedwater System (all drains) _____

Boiler Fill/Drain Piping _____

Condensate System (all drains) _____

Sealing Water Systems (Plant & Yard) _____

Deaerator Storage Tank _____

Boiler Feed Pump & Boiler Feed Pump Suction Header _____

Injection Water System _____

Water Coil Air Heater System (purge with air) _____

Hotwell _____

Ash Handling System (HP & LP) and Ash Hoppers & Piping _____

Circulating Water System (Coolers) _____

Service Water System _____

Stator Cooling Water System (purge with air) and Make-up line _____

Heater Shell Drain System _____

Mist Eliminator Wash System _____

Snow Removal

Material Handling will be responsible for snow removal and ordering sand & salt.

Material Handling contacts for Snow removal:

Don VanWinkle	Cell 639-9351	Home	812-738-8851
Derek Ferrell	Cell 438-7539	Work	933-6585

Fuel Oil

The Operations Support Supervisor is responsible for maintaining a safe #1 Fuel Oil tank level. The tank is located on the south side of the RO Building and is to be used as fuel for the space heaters.

Main Fuel Oil Supply Source – Southern Petroleum/Albert Oil Company 502-267-9181

For alternate Fuel Oil Supply Source, contact Warehouse Supervisor 502-933-6894

Emergency Supplies

- 4 Wheel Drive Vehicle (Office Vehicle)
- Rosebuds
- Cots, Blankets
- It is recommended that employees keep their essential items such as medication, clothing, food snacks etc. in their locker to cover emergency situations.
- All Company trucks will be inspected no later than November 15th for needed items which include fire extinguisher, jacks, and lug wrenches.
- Emergency items will be inventoried and replenished no later than November 15th.
- The Emergency Winterization Response Team Leaders or their designee will be responsible for inventorying emergency supplies.

Reporting

- The Manager of each area will be responsible to ensure adequate coverage in the event the Winterization Emergency Plan is initiated.

- The Managers will be responsible to furnish a list of personnel on site to the Emergency Winterization Response Team Leaders. They must also coordinate the transporting of personnel to and from the Station in the event roads are impassable. The Emergency Winterization Response Team will transport personnel as the Managers dictate.

- Reporting for Winer Emergency, see attached list of employees in the zip codes closest to the plant, 40216, 40258, and 40272.

Space Heater Usage During Cold Weather

- The Plant Space Heaters are stored on Unit 3 Main floor, east of #3 Passenger Elevator
- The Limestone Space Heaters are stored at the Limestone Prep building & are the responsibility of Limestone Operating personnel.
- Material Handling will store & determine the location of Space Heater coverage.
- The Operations personnel will check the space heaters for proper operation verify all repairs have been completed by the Service Shop by October 1st. The Service Shop will perform repairs during winter operations.
- There will be several spare Space Heaters available for replacement during repairs.

Listed below are the areas around the Mill Creek Station that are considered areas of concern during a severe cold weather incident and where space heaters are typically used:

- Screen House
  - Screen Wash Booster Pump
  - Station Air Supply Trap @ Main Floor
- Fire System
  - #1 Fire Pump/Booster Pump/Jockey Pump
  - #2 Fire Pump
  - #3 Fire Pump
  - City water header @ 2A ID fan NE Corner
  - Reserve Transformers Deluge Valves
- Instrument Air System
  - #1 & 2 Pall Air Dryers
  - #3 & 4 Pall Air Dryers
- Make up Pumps
  - Unit 1 Makeup Pumps
  - Unit 2 Makeup Pumps
  - Unit 3 Makeup Pumps
  - Unit 4 Makeup Pumps

A Utility Vehicle will be rented for the Fuel Oil hauling for operations.

The Warehouse arranges the rental.

A copy of the Mill Creek Station Space Heater Log Sheet is on the following page. This sheet will be used to track the Space Heater locations & mechanical repairs.

Mill Creek Station Plant Operations Space Heater Service & Availability Log Sheet

Heater Number	Service Drop Off Date	Returned After Service Date	In Service Date	Heater Location

Revised 9-16-2021

Mill Creek Door and Louver Cold Weather Guidelines for below 32°F

When temperatures are expected to approach freezing, 32° F or remain in lower 30° F area, Operations should consider initiating the following:

Buildings & Structures:

Secure all doors and openings. Included in the list is:	Initials
Screen House	_____
Cooling Tower Service Buildings	_____
Limestone Service Buildings	_____
WFGD Service Buildings	_____
GPP and Fly Ash Silos	_____
Reactant Prep Buildings	_____
Stack Base	_____
Fly Ash Transfer Service Buildings	_____

Plant Ventilation and Combustion Air Dampers Units 1 and 2

Utilize plant louvers as weather and temperature dictate. A complete list of Plant Louvers, fans, doors and their locations for each Unit is included in the following pages.

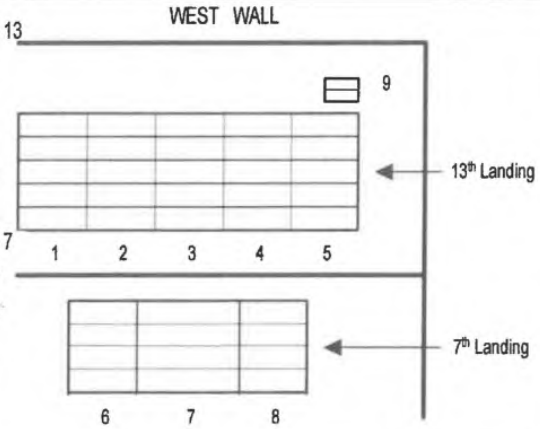
The Plant Ventilation Dampers on Units 1 & 2 were converted to manually-operated dampers to improve operability and decrease the use of instrument air. The dampers now have a 4" long bolt that is bolted to the center of each individual damper. Dampers have been freed up & easy to operate. A descriptive procedure on how to position the dampers for summer & winter operations is included in the following pages. Proper damper positioning prevents the plant from getting too cold and protects equipment coolers and cooling water lines which supply them.

PLANT VENTILATION & COMBUSTION AIR
MILL CREEK 1

UNIT 1 LOUVER LOCATIONS

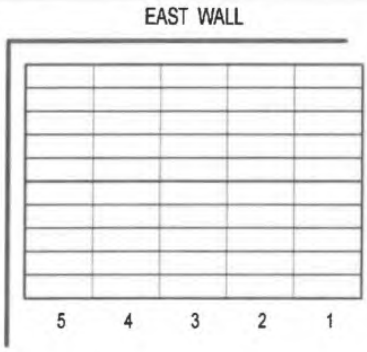
BOILER ROOM/CONYEYOR ROOM, WEST WALL

1. NORTH WEST OUTSIDE AIR LOUVER #1 LANDING 13
2. WEST OUTSIDE AIR LOUVER #2 LANDING 13
3. WEST OUTSIDE AIR LOUVER #3 LANDING 13
4. WEST OUTSIDE AIR LOUVER #4 LANDING 13
5. SOUTH WEST OUTSIDE AIR LOUVER #5 LANDING
6. NORTH WEST OUT AIR - BUNKER, LANDING 7
7. CENTER WEST OUTSIDE AIR - BUNKER, LANDING 7
8. SOUTH WEST OUTSIDE AIR - BUNKER, LANDING 7
9. ELEVATOR SERVICE ROOM LOUVER, LANDING 14
10. TURBINE ROOM WEST LOUVER, MAIN FLOOR



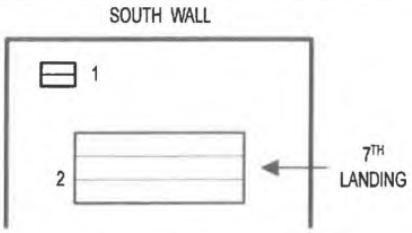
BOILER ROOM EAST WALL

1. 1A MAIN VENT FAN LOUVERS, TOP AND BOTTOM,LANDING 13
2. NORTH COMBUSTION AIR LOUVER #1, TOP & BOTTOM, LANDING 13
3. NORTH COMBUSTION AIR LOUVER #2, TOP & BOTTOM, LANDING 13
4. NORTH COMBUSTION AIR LOUVER #3, TOP & BOTTOM, LANDING 13
5. 1B MAIN VENT FAN LOUVERS, TOP & BOTTOM, LANDING 13



BOILER ROOM SOUTH WALL

1. FORMER #1 DRUM & FURNACE T.V. CAMERA ROOM
2. SOUTH OUTSIDE AIR LOUVER, LANDING 7

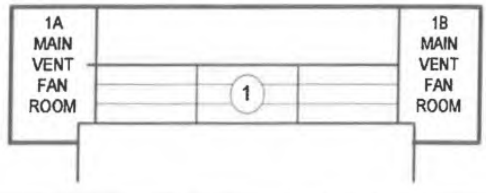


Revised 9-16-2021

PLANT VENTILATION & COMBUSTION AIR
MILL CREEK 1

TOP OF BOILER

1. PLANT COMBUSTION AIR LOUVER, LANDING 13



LOUVER/FAN PLACEMENT

1. 1A-1B MAIN VENT FAN LOUVERS
2. EAST WALL COMBUSTION AIR LOUVERS-TOP
   EAST WALL COMBUSTION AIR LOUVERS-BOTTOM
3. WEST WALL OUTSIDE AIR LOUVERS (1,2,3,4,5)
4. WEST WALL LOUVER BUNKER (6,7,8)
5. SOUTH OUTSIDE AIR LOUVER
6. PLANT COMBUSTION AIR LOUVER
7. TURBINE ROOF EXHAUST FANS
8. TURBINE ROOM VENT FAN

SEASONAL OPERATING POSITIONS

SUMMER	WINTER
OPEN	OPEN
CLOSED	OPEN
OPEN	OPEN
OPEN	CLOSED
OPEN	CLOSED
OPEN	CLOSED
OPEN	CLOSED
ON	OFF
ON	OFF

Unit 1 Fans and Louvers		**Landing Location**
1.	Turbine Room Roof Exhauster Fan & Dampers 1A1, 1A2, 1A3, 1A4, 1B1, 1B2, 1B3, 1B4	6
2.	Main Vent Fans - 1A1, 1A2, 1B1, 1B2	13
3.	1A Main Vent Fan Louvers	13
4.	Combustion Air North Top	13
5.	Combustion Air North Bottom	13
6.	Combustion Air Center Top	13
7.	Combustion Air Center Bottom	13
8.	Combustion Air South Top	13
9.	Combustion Air South Bottom	13

Revised 9-16-2021

Unit 1 Fans and Louvers		Landing Location
10.	1B Main Vent Fan Louvers	13
11.	Bunker Louver North	6
12.	Outside Air #1 West	13
13.	Outside Air #2 West	13
14.	Outside Air #3 West	13
15.	Bunker Louver Center	6
16.	Outside Air #7 South	7
17.	Outside Air #4 West	13
18.	Outside Air #5 West	13
19.	Bunker Louver South	6
20.	Turbine Room West Louvers	MF
21.	Precipitator Room South	3

Roll Up Doors

23.	Fan Room	MF
24.	Screenwell	MF

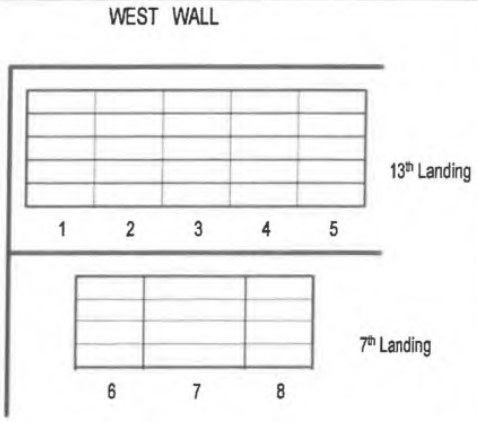
Revised 9-16-2021

PLANT VENTILATION & COMBUSTION AIR
MILL CREEK 2

UNIT 2 LOUVER LOCATIONS

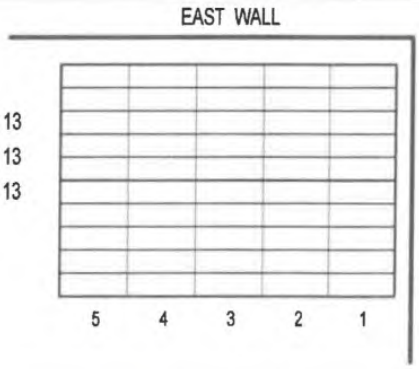
BOILER ROOM/CONYEYOR ROOM, WEST WALL

1. NORTH WEST OUTSIDE AIR LOUVER #1 LANDING 13
2. WEST OUTSIDE AIR LOUVER #2 LANDING 13
3. WEST OUTSIDE AIR LOUVER #3 LANDING 13
4. WEST OUTSIDE AIR LOUVER #4 LANDING 13
5. SOUTH WEST OUTSIDE AIR LOUVER #5 LANDING
6. NORTH WEST OUT AIR - BUNKER, LANDING 7
7. CENTER WEST OUTSIDE AIR - BUNKER, LANDING 7
8. SOUTH WEST OUTSIDE AIR - BUNKER, LANDING 7
9. TURBINE ROOM WEST LOUVER, MAIN FLOOR



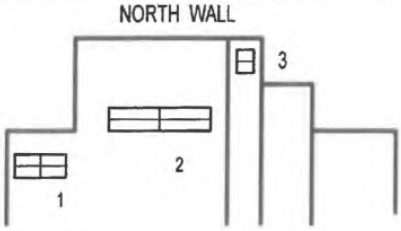
BOILER ROOM EAST WALL

1. 1A MAIN VENT FAN LOUVERS, TOP AND BOTTOM,LANDING 13
2. NORTH COMBUSTION AIR LOUVER #1, TOP & BOTTOM, LANDING 13
3. NORTH COMBUSTION AIR LOUVER #2, TOP & BOTTOM, LANDING 13
4. NORTH COMBUSTION AIR LOUVER #3, TOP & BOTTOM, LANDING 13
5. 1B MAIN VENT FAN LOUVERS, TOP & BOTTOM, LANDING 13



BOILER ROOM NORTH WALL

1. PRECIPITATOR ROOM NORTH LOUVER, LANDING 3
2. NORTH OUTSIDE AIR LOUVER, LANDING 7
3. ELEVATOR SERVICE ROOM LOUVER, LANDING 14



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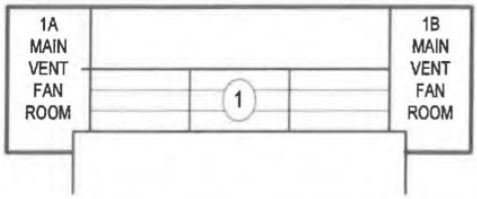
PLANT VENTILATION & COMBUSTION AIR
MILL CREEK 2

TOP OF BOILER

1. PLANT COMBUSTION AIR LOUVER, LANDING 13



LOUVER/FAN PLACEMENT

1. 1A-1B MAIN VENT FAN LOUVERS
2. EAST WALL COMBUSTION AIR LOUVERS-TOP
   EAST WALL COMBUSTION AIR LOUVERS-BOTTOM
3. WEST WALL OUTSIDE AIR LOUVERS (1,2,3,4,5)
4. WEST WALL LOUVER BUNKER (6,7,8)
5. SOUTH OUTSIDE AIR LOUVER
6. PLANT COMBUSTION AIR LOUVER
7. TURBINE ROOF EXHAUST FANS
8. TURBINE ROOM VENT FAN

SEASONAL OPERATING POSITIONS

SUMMER	WINTER
OPEN	OPEN
CLOSED	OPEN
OPEN	OPEN
OPEN	CLOSED
OPEN	CLOSED
OPEN	CLOSED
OPEN	CLOSED
ON	OFF
ON	OFF

Unit 2 Fans and Louvers		**Landing Location**
1.	Turbine Room Roof Exhauster Fan & Dampers 2A1, 2A2, 2A3, 2A4, 2B1, 2B2, 2B3, 2B4	6
2.	Main Vent Fans - 2A1, 2A2, 2B1, 2B2	13
3.	2A Main Vent Fan Louvers	13
4.	Combustion Air North Top	13
5.	Combustion Air North Bottom	13
6.	Combustion Air Center Top	13

Revised 9-16-2021

Unit 2 Fans and Louvers		**Landing Location**
7.	Combustion Air Center Bottom	13
8.	Combustion Air South Top	13
9.	Combustion Air South Bottom	13
10.	2B Main Vent Fan Louvers	13
11.	Bunker Louver North	6
12.	Outside Air #1 West	13
13.	Outside Air #2 West	13
14.	Outside Air #3 West	13
15.	Bunker Louver Center	6
16.	Outside Air #7 North	7
17.	Outside Air #4 West	13
18.	Outside Air #5 West	13
19.	Bunker Louver South	6
20.	Former Drum Camera Room	10
21.	Precipitator Room North	3

Roll Up Doors

22.	Fan Room	MF
23.	Turbine Room	MF

Revised 9-16-2021

Plant Ventilation and Combustion Air Dampers Units 3 and 4

The Plant Ventilation Dampers were converted to manually operated dampers to improve operability and decrease the use of instrument air.

The dampers operate in sections of 5 to 8 dampers per section and are relatively easy to operate. A pipe wrench is required to operate these dampers and a place is marked with orange paint where the pipe wrench should be applied. A write-up is included in the following pages on procedures for proper damper operations during summer & winter seasons. Proper damper positioning prevents the plant from getting too cold and protects equipment coolers and cooling water lines which supply them.

PLANT VENTILATION & COMBUSTION AIR
MILL CREEK 3

UNIT 3 LOUVER LOCATIONS

	CORRECT POSITION	
	SUMMER	WINTER
1. BOILER ROOM WEST WALL		
A. CONVEYOR ROOM, SIXTH LANDING. (LV-18)	OPEN	CLOSED
B. COMBUSTION AIR WEST, (A&B), TENTH LANDING. (LV-3A-3B-3C)	OPEN	CLOSED
C. A2-B2 MAIN VENT FAN ROOMS, SIXTH LANDING. (LV-1A-1C)	OPEN	OPEN
2. BOILER ROOM EAST WALL		
A. FAN/AIR HEATER ROOM, THIRD LANDING. (LV-2B)	OPEN	CLOSED
B. COMBUSTION AIR EAST, EIGHTH LANDING. (LV-4)	OPEN	CLOSED
C. A1-B1 MAIN VENT FAN ROOMS, THIRD LANDING (LV-2A-2C)	OPEN	OPEN
3. FORCED DRAFT FAN ROOM		
A. FAN PRE-HEATER ROOMS, A & B, MEZZ. (LV-9,10)	OPEN	CLOSED
4. TURBINE ROOM VENT FAN		
A. MAIN FLOOR, LOUVERS IN FAN ROOM. (LV-5)	OPEN	CLOSED
5. ELEVATOR SERVICE ROOM		
A. SIXTEENTH LANDING (LV-7)	OPEN	OPEN
B. SEVENTEENTH LANDING (LV-6)	OPEN	OPEN
C. BASEMENT (LV-8)	OPEN	OPEN
FANS IN SERVICE		
1. MAIN PLANT VENT FANS (A1-A2-B1-B2)	ON	OFF
2. TURBINE ROOM VENT FAN	ON	OFF
3. TURBINE ROOF EXHAUST FANS	ON	OFF
4. DEAERATOR ROOF EXHAUST FANS	ON	OFF
5. BOILER ROOF EXHAUST FANS	ON	OFF
FORCED DRAFT FAN SET UP		
1. OUTSIDE COMBUSTION AIR ROLL UP DOOR, THIRD LANDING	CLOSED	OPEN
2. PLANT COMBUSTION AIR ROLL UP DOOR, FIFTEENTH LANDING	OPEN	50% OPEN

SPRING / FALL TRANSITION: OPEN OR CLOSE LOUVERS AND OPERATE ROOF EXHAUST FANS AS NEEDED, WITH SUMMER POSITIONING BY MAY 1, AND WINTER POSITIONING BY DEC. 1, WEATHER PERMITTING.

AIR HEATER TEMPERATURE REGULATION IF THE "AVERAGE AIR IN-GAS OUT" LOW ALARM COMES IN AND ALL THE WATER COIL AIR HEATERS ARE IN SERVICE, THE PLANT COMBUSTION AIR ROLL UP DOOR SHOULD BE RE-OPENED 100% UNTIL COLD WEATHER PASSES OR THE ALARM CLEARS.

Revised 9-16-2021

Fans and Louvers		Landing Location
1.	Main Vent Fan and Louvers 3A1 & 3B1	3
2.	Main Vent Fan and Louvers 3A2 & 3B2	6
3.	3A1 Main Vent Fan Inlet Vane	3
4.	3B1 Main Vent Fan Inlet Vane	10
5.	Combustion Air West Louver A	10
6.	Conveyor Room Louvers	6
7.	Fan/A.H. Room Louvers	3
8.	Combustion Air West Louver B	10
9.	Combustion Air East Louver	8
10.	Fan Preheater Room Louver B	Mezz
11.	Fan Preheater Room Louver A	Mezz
12.	3A2 Main Vent Fan Inlet Vane	6
13.	3B2 Main Vent Fan Inlet Vane	6
14.	Boiler Room Roof Exhauster Fans 3A1, 3A2, 3A3	16
15.	Turbine Room Roof Exhauster Fans 3A1, 3A2, 3A3, 3A4	6
16.	Boiler Room Roof Exhauster Fans 3B1, 3B2, 3B3, 3B4	16
17.	Turbine Room Roof Exhauster Fans 3B1, 3B2, 3B3, 3B4	6
18.	Deaerator Room Roof Exhauster Fans 3C1, 3C2, 3C3	18
19.	Unit 3 Turbine Room Exhauster	MF

Revised 9-16-2021

Roll Up Doors

20.	Fan Room	MF
21.	Inside Combustion Air 3A1, 3B1	15
22.	Outside Combustion Air 3A1, 3B1	3

Revised 9-16-2021

PLANT VENTILATION & COMBUSTION AIR
MILL CREEK 4

UNIT 4 LOUVER LOCATIONS

	CORRECT POSITION	
	SUMMER	WINTER
1. BOILER ROOM SOUTH WALL		
A. COMBUSTION AIR SOUTH LOUVER, TENTH LANDING (LV-6)	OPEN	CLOSED
2. BOILER ROOM WEST WALL		
A. CONVEYOR ROOM, SIXTH LANDING. (LV-18)	OPEN	CLOSED
B. COMBUSTION AIR WEST, (A&B), TENTH LANDING. (LV-3A-3B-3C)	OPEN	CLOSED
C. A2-B2 MAIN VENT FAN ROOMS, SIXTH LANDING. (LV-1A-1C)	OPEN	OPEN
3. BOILER ROOM EAST WALL		
A. FAN/AIR HEATER ROOM, LOWER THIRD LANDING. (LV-2B)	OPEN	OPEN
B. FAN/AIR HEATER ROOM, UPPER SIXTH LANDING. (LV-2D)	OPEN	CLOSED
C. COMBUSTION AIR EAST, NINTH LANDING. (LV-4)	OPEN	CLOSED
D. A1-B1 MAIN VENT FAN ROOMS, THIRD LANDING (LV-1A-1C)	OPEN	OPEN
4. FORCED DRAFT FAN ROOM		
A. FAN PRE-HEATER ROOMS, A & B, MEZZ. (LV-6,7)	OPEN	CLOSED
5. TURBINE ROOM VENT FAN		
A. TRANSFORMER PAD, BEHIND UNIT. LOUVER SET IN FAN ROOM (LV-5)	ON	OFF
FANS IN SERVICE		
1. MAIN PLANT VENT FANS (A1-A2-B1-B2)	ON	OFF
2. TURBINE ROOM VENT FAN	ON	OFF
3. TURBINE ROOF EXHAUST FANS	ON	OFF
4. DEAERATOR ROOF EXHAUST FANS	ON	OFF
5. BOILER ROOF EXHAUST FANS	ON	OFF
FORCED DRAFT FAN SET UP		
1. OUTSIDE COMBUSTION AIR ROLL UP DOORS, THIRD LANDING	CLOSED	OPEN
2. PLANT COMBUSTION AIR ROLL UP DOOR, SIXTEENTH LANDING	OPEN	50% OPEN

SPRING / FALL TRANSITION: OPEN OR CLOSE LOUVERS AND OPERATE ROOF EXHAUST FANS AS NEEDED, WITH SUMMER POSITIONING BY MAY 1, AND WINTER POSITIONING BY DEC. 1, WEATHER PERMITTING.

AIR HEATER TEMPERATURE REGULATION: IF THE "AVERAGE AIR IN-GAS OUT" LOW ALARM COMES IN AND ALL THE WATER COIL AIR HEATERS ARE IN SERVICE, THE PLANT COMBUSTION AIR ROLL UP DOOR SHOULD BE RE-OPENED 100% UNTIL COLD WEATHER PASSES OR THE ALARM CLEARS.

Unit 4

Revised 9-16-2021

Fans and Louvers		Landing Location
1.	Main Vent Fan and Louvers 4A1, 4B1	3
2.	Main Vent Fan and Louvers 4A2, 4B2	6
3.	4A1 Main Vent Fan Inlet Vane	3
4.	4B1 Main Vent Fan Inlet Vane	6
5.	Conveyor Room Louvers	6
6.	Fan/A.H. Room Upper Louvers	3
7.	Fan/A.H. Room Lower Louvers	3
8.	Combustion Air West	10
9.	Combustion Air East	9
10.	Fan Preheater Louver	Mezz
11.	Fan Preheater Louver	Mezz
12.	Combustion Air South Louver	10
13.	4A2 Main Vent Fan Inlet Vane	6
14.	4B2 Main Vent Fan Inlet Vane	6
15.	Boiler Room Roof Exhauster Fans 4A1, 4A2, 4B1, 4B2	17
16.	Turbine Room Roof Exhauster Fans 4A1, 4A2, 4A3, 4A4, 4A5	6
17.	Boiler Room Roof Exhauster Fans 4C1, 4C2, 4C3, 4C4	17
18.	Turbine Room Roof Exhauster Fans 4B1, 4B2, 4B3, 4B4, 4B5	6
19.	Deaerator Room Roof Exhauster Fans 4D1, 4D2, 4D3	19
20.	Turbine Room Vent Fan	MF

Revised 9-16-2021

Roll Up Doors

21.	Conveyor Room South	7
22.	Fan Room	MF
23.	Turbine Room	MF
24.	Inside Combustion Air 4A1, 4B1	16
25.	Outside Combustion Air 4A1, 4B1	3

Revised 9-16-2021

Cold Weather Preparation Action Dates

Activity	Date Completed	Responsible Person
Winter Operation Review Meeting	October 1st	Tim Parcell
Space Heaters Serviced	October 1st	Tim Parcell
Replace Missing Insulation	October 1st	Alex Betz
Unit List with Winterization Work Orders	October 1st	Alex Betz
Service All Heat Trace	December 1st	Jim McGowan
Inventory and Order Sand & Salt	November 15th	Don VanWinkle
Inspect Company Vehicles for Emergency Items, Fire Extinguishers, Jacks & Lug Wrench, Fix-a –Flat	November 15th	Individual Departments
Cover Turbine Room Floor Openings	November 15th	Tim Parcell
Winterize Vulnerable Transmitters & Instrumentation Not Needed For Service	December 1st	Alex Betz
Update Emergency Phone List	December 1st	Senior Admin. Assist.
Winterize Roof Exhausters	December 1st	Alex Betz
Implement Snow Removal Plan	Inclement Weather	Don VanWinkle
Initiate Coal Freeze Treatment	Inclement Weather	Don VanWinkle

Food & Supply Coordinator List:

Mill Creek General Managers' Senior Administrative Assistant

NOTE: Coordinate planned food & supplies pickup with all areas to minimize trips outside of the plant.

Revised 9-16-2021

Appendix C

Plant Systems Heat Trace

MAIN FLOOR

UNIT 1 DRUM PRESSURE INDICATOR / SELF REGULATING HEAT TRACE
UNIT 1 BCP INJECTION WATER FLOW / SELF REGULATING HEAT TRACE
UNIT 1 BCP INJECTION STRAINER DIFF. / SELF REGULATING HEAT TRACE

UNIT 2 DRUM PRESSURE INDICATOR / SELF REGULATING HEAT TRACE
UNIT 2 BCP INJECTION WATER FLOW / SELF REGULATING HEAT TRACE UNIT 2 BCP INJECTION STRAINER DIFF. / SELF REGULATING HEAT TRACE

UNIT 3 DRUM PRESSURE INDICATOR / SELF REGULATING HEAT TRACE
UNIT 3A WCAH WATER FLOW / SELF REGULATING HEAT TRACE
UNIT 3B WCAH WATER FLOW / SELF REGULATING HEAT TRACE

UNIT 4 DRUM PRESSURE INDICATOR / SELF REGULATING HEAT TRACE
UNIT 4A WCAH WATER FLOW / SELF REGULATING HEAT TRACE
UNIT 4B WCAH WATER FLOW / SELF REGULATING HEAT TRACE

MEZZ

UNIT 3 FEED WATER FLOW TRANSMITTERS / SELF REGULATING HEAT TRACE
UNIT 3 TRANSMITTERS (EHC) SOUTH WALL / SELF REGULATING HEAT TRACE

UNIT 4 FEED WATER FLOW TRANSMITTERS / SELF REGULATING HEAT TRACE
UNIT 4 TRANSMITERS (EHC) NORTTH WALL / SELF REGULATING HEAT TRACE

LANDING 10

UNIT 1 DRUM LEVEL TRANSMITTERS / SELF REGULATING HEAT TRACE
UNIT 2 DRUM LEVEL TRANSMITTERS / SELF REGULATING HEAT TRACE

LANDING 12

UNIT 3 DRUM LEVEL TRANSMITTERS / SELF REGULATING HEAT TRACE

LANDING 15

UNIT 4 DRUM LEVEL TRANSMITTERS / SELF REGULATING HEAT TRACE

Reviewed Date: 9/15/2021

Appendix E

Mill Creek Door and Louver Cold Weather Guidelines for Weather below 32°F

When temperatures are expected to approach freezing 32° or remain in lower 30° area, Operations should consider initiating the following:

Buildings & Structures:

Secure all doors and openings. Included in the list is:

Screen House
Cooling Tower Service Buildings
Limestone Service Buildings
FGD Service Buildings
GPP and Flyash Silos
Reactant Prep Buildings
Stack Base
Flyash Transfer Service Buildings

Plant Ventilation and Combustion Air Dampers Units 1 and 2

Utilize plant louvers as weather and temperature dictate. A complete list of Plant Louvers, fans, doors and their locations for each Unit, begins on page 6.

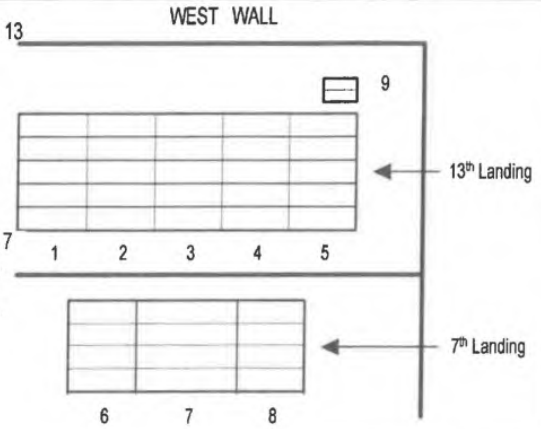
The Plant Ventilation Dampers on Units 1 and 2 were converted to manually operated dampers to improve operability and decrease the use of instrument air. The dampers now have a 4" long bolt that is bolted to the center of each individual damper. Dampers have been freed up and easy to operate A descriptive procedure on how to position the dampers for summer and winter operations is included in the following pages. Proper damper positioning prevents the plant from getting too cold and protects equipment coolers and cooling water lines which supply them.

PLANT VENTILATION & COMBUSTION AIR
MILL CREEK 1

UNIT 1 LOUVER LOCATIONS

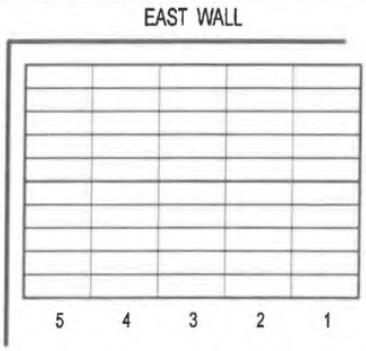
BOILER ROOM/CONYEYOR ROOM, WEST WALL

1. NORTH WEST OUTSIDE AIR LOUVER #1 LANDING 13
2. WEST OUTSIDE AIR LOUVER #2 LANDING 13
3. WEST OUTSIDE AIR LOUVER #3 LANDING 13
4. WEST OUTSIDE AIR LOUVER #4 LANDING 13
5. SOUTH WEST OUTSIDE AIR LOUVER #5 LANDING
6. NORTH WEST OUT AIR - BUNKER, LANDING 7
7. CENTER WEST OUTSIDE AIR - BUNKER, LANDING 7
8. SOUTH WEST OUTSIDE AIR - BUNKER, LANDING 7
9. ELEVATOR SERVICE ROOM LOUVER, LANDING 14
10. TURBINE ROOM WEST LOUVER, MAIN FLOOR



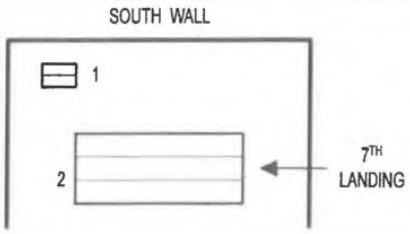
BOILER ROOM EAST WALL

1. 1A MAIN VENT FAN LOUVERS, TOP AND BOTTOM,LANDING 13
2. NORTH COMBUSTION AIR LOUVER #1, TOP & BOTTOM, LANDING 13
3. NORTH COMBUSTION AIR LOUVER #2, TOP & BOTTOM, LANDING 13
4. NORTH COMBUSTION AIR LOUVER #3, TOP & BOTTOM, LANDING 13
5. 1B MAIN VENT FAN LOUVERS, TOP & BOTTOM, LANDING 13



BOILER ROOM SOUTH WALL

1. FORMER #1 DRUM & FURNACE T.V. CAMERA ROOM
2. SOUTH OUTSIDE AIR LOUVER, LANDING 7

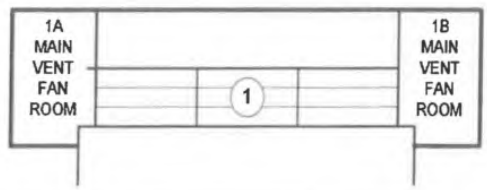


Reviewed 9-15-2021

PLANT VENTILATION & COMBUSTION AIR
MILL CREEK 1

TOP OF BOILER

1. PLANT COMBUSTION AIR LOUVER, LANDING 13



LOUVER/FAN PLACEMENT

1. 1A-1B MAIN VENT FAN LOUVERS
2. EAST WALL COMBUSTION AIR LOUVERS-TOP
   EAST WALL COMBUSTION AIR LOUVERS-BOTTOM
3. WEST WALL OUTSIDE AIR LOUVERS (1,2,3,4,5)
4. WEST WALL LOUVER BUNKER (6,7,8)
5. SOUTH OUTSIDE AIR LOUVER
6. PLANT COMBUSTION AIR LOUVER
7. TURBINE ROOF EXHAUST FANS
8. TURBINE ROOM VENT FAN

SEASONAL OPERATING POSITIONS

SUMMER	WINTER
OPEN	OPEN
CLOSED	OPEN
OPEN	OPEN
OPEN	CLOSED
OPEN	CLOSED
OPEN	CLOSED
OPEN	CLOSED
ON	OFF
ON	OFF

Unit 1 Fans and Louvers		**Landing Location**
1.	Turbine Room Roof Exhauster Fan & Dampers 1A1, 1A2, 1A3, 1A4, 1B1, 1B2, 1B3, 1B4	6
2.	Main Vent Fans - 1A1, 1A2, 1B1, 1B2	13
3.	1A Main Vent Fan Louvers	13
4.	Combustion Air North Top	13
5.	Combustion Air North Bottom	13
6.	Combustion Air Center Top	13
7.	Combustion Air Center Bottom	13
8.	Combustion Air South Top	13
9.	Combustion Air South Bottom	13
10.	1B Main Vent Fan Louvers	13
11.	Bunker Louver North	6

Reviewed 9-15-2021

Unit 1 Fans and Louvers	**Landing Location**
\12. Outside Air #1 West	13
13. Outside Air #2 West	13
14. Outside Air #3 West	13
15. Bunker Louver Center	6
16. Outside Air #7 South	7
17. Outside Air #4 West	13
18. Outside Air #5 West	13
19. Bunker Louver South	6
20. Turbine Room West Louvers	MF
21. Precipitator Room South	3
Roll Up Doors	
23. Fan Room	MF
24. Screenwell	MF

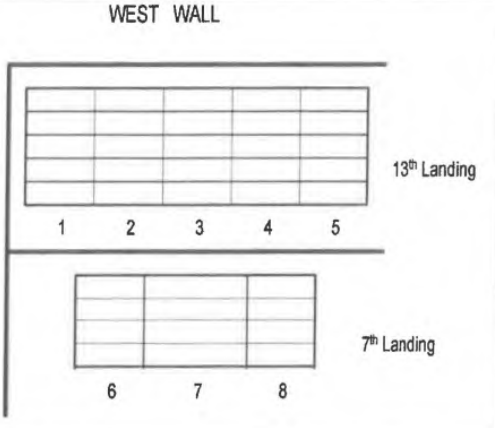
Reviewed 9-15-2021

PLANT VENTILATION & COMBUSTION AIR
MILL CREEK 2

UNIT 2 LOUVER LOCATIONS

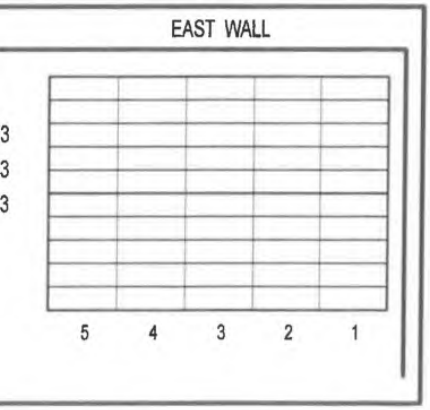
BOILER ROOM/CONYEYOR ROOM, WEST WALL

1. NORTH WEST OUTSIDE AIR LOUVER #1 LANDING 13
2. WEST OUTSIDE AIR LOUVER #2 LANDING 13
3. WEST OUTSIDE AIR LOUVER #3 LANDING 13
4. WEST OUTSIDE AIR LOUVER #4 LANDING 13
5. SOUTH WEST OUTSIDE AIR LOUVER #5 LANDING
6. NORTH WEST OUT AIR - BUNKER, LANDING 7
7. CENTER WEST OUTSIDE AIR - BUNKER, LANDING 7
8. SOUTH WEST OUTSIDE AIR - BUNKER, LANDING 7
9. TURBINE ROOM WEST LOUVER, MAIN FLOOR



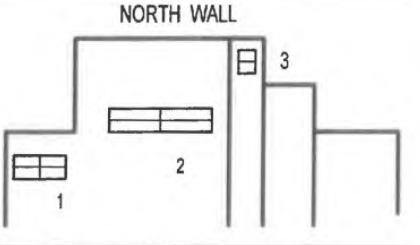
BOILER ROOM EAST WALL

1. 1A MAIN VENT FAN LOUVERS, TOP AND BOTTOM,LANDING 13
2. NORTH COMBUSTION AIR LOUVER #1, TOP & BOTTOM, LANDING 13
3. NORTH COMBUSTION AIR LOUVER #2, TOP & BOTTOM, LANDING 13
4. NORTH COMBUSTION AIR LOUVER #3, TOP & BOTTOM, LANDING 13
5. 1B MAIN VENT FAN LOUVERS, TOP & BOTTOM, LANDING 13



BOILER ROOM NORTH WALL

1. PRECIPITATOR ROOM NORTH LOUVER, LANDING 3
2. NORTH OUTSIDE AIR LOUVER, LANDING 7
3. ELEVATOR SERVICE ROOM LOUVER, LANDING 14

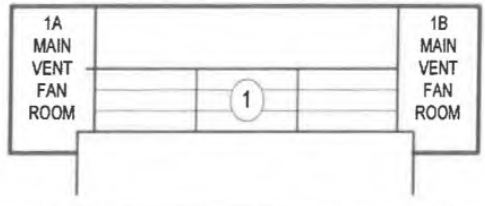


Reviewed 9-15-2021

PLANT VENTILATION & COMBUSTION AIR
MILL CREEK 2

TOP OF BOILER

1. PLANT COMBUSTION AIR LOUVER, LANDING 13



LOUVER/FAN PLACEMENT

1. 1A-1B MAIN VENT FAN LOUVERS
2. EAST WALL COMBUSTION AIR LOUVERS-TOP
   EAST WALL COMBUSTION AIR LOUVERS-BOTTOM
3. WEST WALL OUTSIDE AIR LOUVERS (1,2,3,4,5)
4. WEST WALL LOUVER BUNKER (6,7,8)
5. SOUTH OUTSIDE AIR LOUVER
6. PLANT COMBUSTION AIR LOUVER
7. TURBINE ROOF EXHAUST FANS
8. TURBINE ROOM VENT FAN

SEASONAL OPERATING POSITIONS

SUMMER	WINTER
OPEN	OPEN
CLOSED	OPEN
OPEN	OPEN
OPEN	CLOSED
OPEN	CLOSED
OPEN	CLOSED
OPEN	CLOSED
ON	OFF
ON	OFF

Unit 2 Fans and Louvers		**Landing Location**
1.	Turbine Room Roof Exhauster Fan & Dampers 2A1, 2A2, 2A3, 2A4, 2B1, 2B2, 2B3, 2B4	6
2.	Main Vent Fans - 2A1, 2A2, 2B1, 2B2	13
3.	2A Main Vent Fan Louvers	13
4.	Combustion Air North Top	13
5.	Combustion Air North Bottom	13
6.	Combustion Air Center Top	13
7.	Combustion Air Center Bottom	13

Reviewed 9-15-2021

Unit 2 Fans and Louvers		**Landing Location**
8.	Combustion Air South Top	13
9.	Combustion Air South Bottom	13
10.	2B Main Vent Fan Louvers	13
11.	Bunker Louver North	6
12.	Outside Air #1 West	13
13.	Outside Air #2 West	13
14.	Outside Air #3 West	13
15.	Bunker Louver Center	6
16.	Outside Air #7 North	7
17.	Outside Air #4 West	13
18.	Outside Air #5 West	13
19.	Bunker Louver South	6
20.	Former Drum Camera Room	10
21.	Precipitator Room North	3
Roll Up Doors		
22.	Fan Room	MF
23.	Turbine Room	MF

Plant Ventilation and Combustion Air Dampers Units 3 and 4

The Plant Ventilation Dampers were converted to manually operated dampers to improve operability and decrease the use of instrument air.

The dampers operate in sections of 5 to 8 dampers per section are relatively easy to operate. A pipe wrench is required to operate these dampers and a placed marked by fluorescent orange paint where the pipe wrench should be applied. A write up is included in the following pages on procedures for proper damper operations during summer and winter seasons. Proper damper positioning prevents the plant from getting too cold and protects equipment coolers and cooling water lines which supply them.

PLANT VENTILATION & COMBUSTION AIR
MILL CREEK 3

UNIT 3 LOUVER LOCATIONS

	CORRECT POSITION	
	SUMMER	WINTER
1. BOILER ROOM WEST WALL		
A. CONVEYOR ROOM, SIXTH LANDING. (LV-18)	OPEN	CLOSED
B. COMBUSTION AIR WEST, (A&B), TENTH LANDING. (LV-3A-3B-3C)	OPEN	CLOSED
C. A2-B2 MAIN VENT FAN ROOMS, SIXTH LANDING. (LV-1A-1C)	OPEN	OPEN
2. BOILER ROOM EAST WALL		
A. FAN/AIR HEATER ROOM, THIRD LANDING. (LV-2B)	OPEN	CLOSED
B. COMBUSTION AIR EAST, EIGHTH LANDING. (LV-4)	OPEN	CLOSED
C. A1-B1 MAIN VENT FAN ROOMS, THIRD LANDING (LV-2A-2C)	OPEN	OPEN
3. FORCED DRAFT FAN ROOM		
A. FAN PRE-HEATER ROOMS, A & B, MEZZ. (LV-9,10)	OPEN	CLOSED
4. TURBINE ROOM VENT FAN		
A. MAIN FLOOR, LOUVERS IN FAN ROOM. (LV-5)	OPEN	CLOSED
5. ELEVATOR SERVICE ROOM		
A. SIXTEENTH LANDING (LV-7)	OPEN	OPEN
B. SEVENTEENTH LANDING (LV-6)	OPEN	OPEN
C. BASEMENT (LV-8)	OPEN	OPEN
FANS IN SERVICE		
1. MAIN PLANT VENT FANS (A1-A2-B1-B2)	ON	OFF
2. TURBINE ROOM VENT FAN	ON	OFF
3. TURBINE ROOF EXHAUST FANS	ON	OFF
4. DEAERATOR ROOF EXHAUST FANS	ON	OFF
5. BOILER ROOF EXHAUST FANS	ON	OFF
FORCED DRAFT FAN SET UP		
1. OUTSIDE COMBUSTION AIR ROLL UP DOOR, THIRD LANDING	CLOSED	OPEN
2. PLANT COMBUSTION AIR ROLL UP DOOR, FIFTEENTH LANDING	OPEN	50% OPEN

SPRING / FALL TRANSITION: OPEN OR CLOSE LOUVERS AND OPERATE ROOF EXHAUST FANS AS NEEDED, WITH SUMMER POSITIONING BY MAY 1, AND WINTER POSITIONING BY DEC. 1, WEATHER PERMITTING.

AIR HEATER TEMPERATURE REGULATION IF THE "AVERAGE AIR IN-GAS OUT" LOW ALARM COMES IN AND ALL THE WATER COIL AIR HEATERS ARE IN SERVICE, THE PLANT COMBUSTION AIR ROLL UP DOOR SHOULD BE RE-OPENED 100% UNTIL COLD WEATHER PASSES OR THE ALARM CLEARS.

Reviewed 9-15-2021

Unit 3 Fans and Louvers		**Landing Location**
1.	Main Vent Fan and Louvers 3A1 & 3B1	3
2.	Main Vent Fan and Louvers 3A2 & 3B2	6
3.	3A1 Main Vent Fan Inlet Vane	3
4.	3B1 Main Vent Fan Inlet Vane	10
5.	Combustion Air West Louver A	10
6.	Conveyor Room Louvers	6
7.	Fan/A.H. Room Louvers	3
8.	Combustion Air West Louver B	10
9.	Combustion Air East Louver	8
10.	Fan Preheater Room Louver B	Mezz
11.	Fan Preheater Room Louver A	Mezz
12.	3A2 Main Vent Fan Inlet Vane	6
13.	3B2 Main Vent Fan Inlet Vane	6
14.	Boiler Room Roof Exhauster Fans 3A1, 3A2, 3A3	16
15.	Turbine Room Roof Exhauster Fans 3A1, 3A2, 3A3, 3A4	6
16.	Boiler Room Roof Exhauster Fans 3B1, 3B2, 3B3, 3B4	16
17.	Turbine Room Roof Exhauster Fans 3B1, 3B2, 3B3, 3B4	6
18.	Deaerator Room Roof Exhauster Fans 3C1, 3C2, 3C3	18
19.	Unit 3 Turbine Room Exhauster	MF

Roll Up Doors		
20.	Fan Room	MF
21.	Inside Combustion Air 3A1, 3B1	15
22.	Outside Combustion Air 3A1, 3B1	3

Reviewed 9-15-2021

PLANT VENTILATION & COMBUSTION AIR
MILL CREEK 4

UNIT 4 LOUVER LOCATIONS

	CORRECT POSITION	
	SUMMER	WINTER
1. BOILER ROOM SOUTH WALL		
A. COMBUSTION AIR SOUTH LOUVER, TENTH LANDING (LV-6)	OPEN	CLOSED
2. BOILER ROOM WEST WALL		
A. CONVEYOR ROOM, SIXTH LANDING. (LV-18)	OPEN	CLOSED
B. COMBUSTION AIR WEST, (A&B), TENTH LANDING. (LV-3A-3B-3C)	OPEN	CLOSED
C. A2-B2 MAIN VENT FAN ROOMS, SIXTH LANDING. (LV-1A-1C)	OPEN	OPEN
3. BOILER ROOM EAST WALL		
A. FAN/AIR HEATER ROOM, LOWER THIRD LANDING. (LV-2B)	OPEN	OPEN
B. FAN/AIR HEATER ROOM, UPPER SIXTH LANDING. (LV-2D)	OPEN	CLOSED
C. COMBUSTION AIR EAST, NINTH LANDING. (LV-4)	OPEN	CLOSED
D. A1-B1 MAIN VENT FAN ROOMS, THIRD LANDING (LV-1A-1C)	OPEN	OPEN
4. FORCED DRAFT FAN ROOM		
A. FAN PRE-HEATER ROOMS, A & B, MEZZ. (LV-6,7)	OPEN	CLOSED
5. TURBINE ROOM VENT FAN		
A. TRANSFORMER PAD, BEHIND UNIT. LOUVER SET IN FAN ROOM (LV-5)	ON	OFF
FANS IN SERVICE		
1. MAIN PLANT VENT FANS (A1-A2-B1-B2)	ON	OFF
2. TURBINE ROOM VENT FAN	ON	OFF
3. TURBINE ROOF EXHAUST FANS	ON	OFF
4. DEAERATOR ROOF EXHAUST FANS	ON	OFF
5. BOILER ROOF EXHAUST FANS	ON	OFF
FORCED DRAFT FAN SET UP		
1. OUTSIDE COMBUSTION AIR ROLL UP DOORS, THIRD LANDING	CLOSED	OPEN
2. PLANT COMBUSTION AIR ROLL UP DOOR, SIXTEENTH LANDING	OPEN	50% OPEN

SPRING / FALL TRANSITION: OPEN OR CLOSE LOUVERS AND OPERATE ROOF EXHAUST FANS AS NEEDED, WITH SUMMER POSITIONING BY MAY 1, AND WINTER POSITIONING BY DEC. 1, WEATHER PERMITTING.

AIR HEATER TEMPERATURE REGULATION: IF THE "AVERAGE AIR IN-GAS OUT" LOW ALARM COMES IN AND ALL THE WATER COIL AIR HEATERS ARE IN SERVICE, THE PLANT COMBUSTION AIR ROLL UP DOOR SHOULD BE RE-OPENED 100% UNTIL COLD WEATHER PASSES OR THE ALARM CLEARS.

Reviewed 9-15-2021

Unit 4 Fans and Louvers		**Landing Location**
1.	Main Vent Fan and Louvers 4A1, 4B1	3
2.	Main Vent Fan and Louvers 4A2, 4B2	6
3.	4A1 Main Vent Fan Inlet Vane	3
4.	4B1 Main Vent Fan Inlet Vane	6
5.	Conveyor Room Louvers	6
6.	Fan/A.H. Room Upper Louvers	3
7.	Fan/A.H. Room Lower Louvers	3
8.	Combustion Air West	10
9.	Combustion Air East	9
10.	Fan Preheater Louver	Mezz
11.	Fan Preheater Louver	Mezz
12.	Combustion Air South Louver	10
13.	4A2 Main Vent Fan Inlet Vane	6
14.	4B2 Main Vent Fan Inlet Vane	6
15.	Boiler Room Roof Exhauster Fans 4A1, 4A2, 4B1, 4B2	17
16.	Turbine Room Roof Exhauster Fans 4A1, 4A2, 4A3, 4A4, 4A5	6
17.	Boiler Room Roof Exhauster Fans 4C1, 4C2, 4C3, 4C4	17
18.	Turbine Room Roof Exhauster Fans 4B1, 4B2, 4B3, 4B4, 4B5	6
19.	Deaerator Room Roof Exhauster Fans 4D1, 4D2, 4D3	19
20.	Turbine Room Vent Fan	MF
Roll Up Doors		
21.	Conveyor Room South	7
22.	Fan Room	MF
23.	Turbine Room	MF
24.	Inside Combustion Air 4A1, 4B1	16
25.	Outside Combustion Air 4A1, 4B1	3

Reviewed 9-15-2021

Mill Creek Process Water System (PWS) Winterization Checklist

Supplies Checklist Complete by October 1st annually	Initial
Salt Bins are full and placed at main entry ways	_____
Know where Liquid Heat Tote in SPP is	_____
1 pump sprayer for Liquid Heat stored in PWS building	_____
1 Torpedo Heaters (in working order and fueled)	_____
Winter PPE stocked in Control Room	_____
(Ice Cleats, Insulated Work Gloves, Face Socks, Balaclavas, etc)	_____
2 Shovels	_____
1 stored in PWS warehouse	_____
1 stored in PWS process area	_____
Antifreeze stored in Air Compressor Room	_____
If unit is off line, ensure all drain valves are opened and lines drained	_____
Check eye-wash and safety showers	_____

Work Order Checklist	Due Date	Initial
Building Heater and Heat Trace PM#00057538 has been completed by I&E	15-Oct	_____
Check Exterior doors are operational and secure	15-Oct	_____
Ranger doors have been installed and fluids checked	15-Nov	_____

Operational Procedures if Temps/Wind Chill falls below XXX

Apply Liquid Heat to exterior steps and bridges
Crack open low point drains and traps on Instrument & Station air systems
Close ALL exterior doors and louvers
Check exterior valves periodically

Revised 9-15-2021

Appendix C-2

Mill Creek Units AQCS Heat Trace

Units 1 and 2:

PANEL LOCATION:	U1 FIRE WATER TANK HEAT TRACE PANEL	PROJECT NUMBER:	008782	PROJECT TITLE:	MILL CREEK
PANEL ID:	1AP65J-A1	MOUNTING:	SURFACE	MAIN FEEDER SIZE:	3/C #2 W/GND
VOLTAGE (VAC):	208	BUS:	COPPER	MAIN FEEDER CKT:	1AP65J-PDP-P1
PHASE (S):	THREE	BUS RATING:	100A	FED FROM:	1AT65E-A1 (30kVA) REF 1
FREQUENCY (HZ):	60	INTERRUPTING CAPACITY	22,000A	MAIN BREAKER SIZE:	100A
NO. OF POLES:	12	NEUTRAL BUS:	YES	MAIN BKR LOCATION:	BOTTOM
NO. OF WIRES:	4 WIRE	NEUTRAL SIZE:	100%	CABLE ENTRY:	TOP & BOTTOM
NEMA RATING:	NEMA 4X - INDOOR/OUTDOOR, CORROSION	GROUND BUS:	NO		

REF	REV	CIRCUIT NUMBER	SERVICE	BKR SIZE	LOAD (VOLT AMPS) A	B	C	BKR NO.	PHASE			BKR NO.	LOAD (VOLT AMPS) A	B	C	BKR SIZE	SERVICE	CIRCUIT NUMBER	REV	REF
4,7	A	1FPS19S-HTR-P1	HEAT TRACE HTR #119 (POTABLE WATER)	30	732			1	A			2	600			30	HEAT TRACE HTR #109 & 110 (FIRE WATER)	1FPS09S-HTR-P1	A	4,7
4,7	A	1FPS08S-HTR-P1	HEAT TRACE HTR #108 (FIRE WATER)	30		756		3		B		4		312		30	HEAT TRACE HTR #114 (FIRE WATER)	1FPS14S-HTR-P1	A	4,7
-	A		SPARE	30				5			C	6				30	SPARE			
-	A		SPARE	30				7	A			8				30	SPARE			
-	A		SPARE	30				9		B		10				30	SPARE			
-	A		SPARE	30				11			C	12				30	SPARE			

	A	B	C
VOLT AMPS/PHASE	1332	1068	0
AMPS/PHASE	11.1	8.9	0.0

TOTAL 3 PHASE LOAD IN AMPS 6.7

DISTRIBUTION PANELBOARD
1AP65J-A1

Reviewed Date: 9/15/2021

PANEL LOCATION:	U2 PJFF HEAT TRACE PANEL	PROJECT NUMBER:	008782	PROJECT TITLE:	MILL CREEK
PANEL ID:	2AP65J-B4	MOUNTING:	SURFACE	MAIN FEEDER SIZE:	3/C #2 W/GND
VOLTAGE (VAC):	208	BUS:	COPPER	MAIN FEEDER CKT:	2AP65J-PDP-P1
PHASE (S):	THREE	BUS RATING:	100A	FED FROM:	2AT65E-B4 (30KVA) REF 2
FREQUENCY (HZ):	60	INTERRUPTING CAPACITY:	22,000A	MAIN BREAKER SIZE:	100A
NO. OF POLES:	12	NEUTRAL BUS:	YES	MAIN BKR LOCATION:	BOTTOM
NO. OF WIRES:	4 WIRE	NEUTRAL SIZE:	100%	CABLE ENTRY:	TOP & BOTTOM
NEMA RATING:	NEMA 4X - INDOOR/OUTDOOR, CORROSION	GROUND BUS:	NO		

REF	REV	CIRCUIT NUMBER	SERVICE	BKR SIZE	LOAD (VOLT AMPS) A	B	C	BKR NO.	PHASE			BKR NO.	LOAD (VOLT AMPS) A	B	C	BKR SIZE	SERVICE	CIRCUIT NUMBER	REV	REF
6,7	A	1FPS11S-HTR-P1	HEAT TRACE HTR #111 (EQUIP DRAINS)	30	240			1	A			2				30	SPARE			
			SPARE	30				3		B		4				30	SPARE			
6,7	A	1FPS26S-HTR-P1	HEAT TRACE HTR #126 (CLEARWELL WATER)	30			1608	5			C	6			1572	30	HEAT TRACE HTR #127 (CLEARWELL WATER)	1FPS29S-HTR-P1	A	6,7
6,7	A	1FPS28S-HTR-P1	HEAT TRACE HTR #128 (CLEARWELL WATER)	30	1584			7	A			8				30	SPARE			
6,7	A	1FPS68S-HTR-P1	HEAT TRACE LUBE OIL/ID FANS UNIT 1 (2)	30		1032		9		B		10		1032		30	HEAT TRACE LUBE OIL/ID FANS UNIT 2 (2)	1FPS31S-HTR-P1	A	6,7
6,7	A	1FPS68S-HTR-P1	HEAT TRACE FIRE WATER ABOVE GROUND	30			1122	11			C	12				30	SPARE			

	A	B	C
VOLT AMPS/PHASE	1824	2064	4302
AMPS/PHASE	15.2	17.2	35.8

TOTAL 3 PHASE LOAD IN AMPS 22.7

DISTRIBUTION PANELBOARD

2AP65J-B4

Reviewed Date: 9/15/2021

PANEL LOCATION:	U1 WFGD HEAT TRACE PANEL	PROJECT NUMBER:	008782	PROJECT TITLE:	MILL CREEK
PANEL ID:	1AP86J-A4	MOUNTING:	SURFACE	MAIN FEEDER SIZE:	3-1/C #1/0 W/ #2 GND
VOLTAGE (VAC):	208	BUS:	COPPER	MAIN FEEDER CKT:	1AP66J-PDP-P1
PHASE (S):	THREE	BUS RATING.	150A	FED FROM:	1AT66E-A4 (45kVA) REF 3
FREQUENCY (HZ):	60	INTERRUPTING CAPACITY:	22,000A	MAIN BREAKER SIZE:	150A
NO. OF POLES:	24	NEUTRAL BUS:	YES	MAIN BKR LOCATION:	BOTTOM
NO. OF WIRES:	4 WIRE	NEUTRAL SIZE:	100%	CABLE ENTRY:	TOP & BOTTOM
NEMA RATING:	NEMA 4X - INDOOR/OUTDOOR, CORROSION	GROUND BUS:	NO		

REF	REV	CIRCUIT NUMBER	SERVICE	BKR SIZE	LOAD (VOLT AMPS) A	B	C	BKR NO.	PHASE			BKR NO	LOAD (VOLT AMPS) A	B	C	BKR SIZE	SERVICE	CIRCUIT NUMBER	REV	REF
5,7	A	1FPS01S-HTR-P1	HEAT TRACE HTR #101,102,105, 117, 122 (CWW, DRAIN, SF WAT)	30	680			1	A			2	600			30	HEAT TRACE HTR #103, 106 (CLEARWELL WATER)	1FPS01S-HTR-P1	A	5,7
5,7	A	1FPS04S-HTR-P1	HEAT TRACE HTR #104 (CLEARWELL WATER)	30		960		3		B		4		468		30	HEAT TRACE HTR #107 (POTABLE WATER)	1FPS04S-HTR-P1	A	5,7
5,7	A	1FPS29S-HTR-P1	HEAT TRACE HTR #129 (ME WATER)	30			1812	5			C	6			1600	30	HEAT TRACE HTR #130 (ME WATER)	1FPS29S-HTR-P1	A	5,7
5,7	A	1FPS18S-HTR-P1	HEAT TRACE HTR #118 (FIRE PROTECTION WATER)	30	948			7	A			8	1284			30	HEAT TRACE HTR #120 (RECLAIM WATER)	1FPS18S-HTR-P1	A	5,7
5,7	A	1FPS31S-HTR-P1	HEAT TRACE HTR #131 (ME WATER)	30		1548		9		B		10		1452		30	HEAT TRACE HTR #132 (ME WATER)	1FPS31S-HTR-P1	A	5,7
5,7	A	1FPS33S-HTR-P1	HEAT TRACE HTR #133 144 (ME WATER)	30			468	11			C	12			1320	30	HEAT TRACE HTR #135	1FPS33S-HTR-P1	A	5,7
5,7	A	1FPS36S-HTR-P1	HEAT TRACE HTR #136, 137	30	775			13	A			14	1350			30	HEAT TRACE HTR #138	1FPS36S-HTR-P1	A	5,7
5,7	A	1FPS39S-HTR-P1	HEAT TRACE HTR #139, 140, 141	30		815		15		B		16		460		30	HEAT TRACE HTR #142	1FPS39S-HTR-P1	A	5,7
-	A	SPARE		30				17			C	18				30		SPARE	A	-
-	A	SPARE		30				19	A			20				30		SPARE	A	-
-	A	SPARE		30				21		B		22				30		SPARE	A	-
-	A	SPARE		30				23			C	24				30		SPARE	A	-

	A	B	C
VOLT AMPS/PHASE	5617	5703	5200
AMPS/PHASE	46.8	47.5	43.3

TOTAL 3 PHASE LOAD IN AMPS 45.9

DISTRIBUTION PANELBOARD

1AP86J-A4

Reviewed Date: 9/15/2021

PANEL LOCATION:	UNIT 1 & 2 DUCT ACCESS PLATFORMS	PROJECT NUMBER:	006782	PROJECT TITLE	MILL CREEK
PANEL ID.	1AP15J-B3	MOUNTING:	SURFACE	MAIN FEEDER SIZE.	600V-8-03C-W/GND
VOLTAGE (VAC).	208	BUS:	COPPER	MAIN FEEDER CKT.	1AP15J3-P3,P4,P5 CU3 10F (REF 2)
PHASE (S):	THREE	BUS RATING:	125A	FED FROM	1AT15E-B3
FREQUENCY (HZ).	60	INTERRUPTING CAPACITY:	22,000A	MAIN BREAKER SIZE.	100A
NO. OF POLES.	42	NEUTRAL BUS:	YES	MAIN BKR LOCATION.	BOTTOM
NO. OF WIRES:	5 WIRE	NEUTRAL SIZE:	100%	CABLE ENTRY	TOP & BOTTOM
NEMA RATING.	NEMA 4X - INDOOR/OUTDOOR	GROUND BUS:	YES		

REF	REV	CIRCUIT NUMBER	SERVICE	BKR SIZE	LOAD (VOLT AMPS) A	B	C	BKR NO.	PHASE			BKR NO.	LOAD (VOLT AMPS) A	B	C	BKR SIZE	SERVICE	CIRCUIT NUMBER	REV	REF
-	-	1AP15J-B3-P3	UNIT 1&2 DUCT ACCESS NORTHEAST STAIR TOWER AND ESP PLATFORM (18)	3P 30	372			1	A			2	558			3P 30	UNIT 1&2 DUCT ACCESS PLATFORM NORTHWEST STAIR TOWER (12)	1AP15J-B3-P4	-	-
						372		3		B		4		558						
							372	5			C	6			558					
-	-	1AP15J-B3-P5	UNIT 1&2 DUCT ACCESS AND ESP PLATFORM (21)	3P 30	651			7	A			8	744			3P 30	UNIT 1&2 ESP PLATFORM (23)	1AP15J-B3-P6	-	-
						651		9		B		10		696						
							651	11			C	12			696					
-	-	RECEPTACLE	UNIT 1&2 DUCT ACCESS & ESP PLATFORM RECEPT (5)	20	900			13	A			14	0			3P 20	SPARE	-	-	-
-	-	1AP15J-B3-P1	UNIT 1&2 DUCT & ESP PLATFORM PHOTOCELL (1)	20		120		15		B		16		0						
-	-	1FPS23S-HTR-P1	HEAT TRACE HEATER #123	30			1608	17			C	18			0					
-	-	1FPS24S-HTR-P1	HEAT TRACE HEATER #124	30	1620			19	A			20	0			3P 30	SPARE	-	-	-
-	-	1FPS25S-HTR-P1	HEAT TRACE HEATER #125	30		1608		21		B		22		0						
-	-	-	SPARE	20			0	23			C	24			0					
			SPACE					25	A			26					SPACE			
			SPACE					27		B		28					SPACE			
			SPACE					29			C	30					SPACE			
			SPACE					31	A			32					SPACE			
			SPACE					33		B		34					SPACE			
			SPACE					35			C	36					SPACE			
			SPACE					37	A			38					SPACE			
			SPACE					39		B		40					SPACE			
			SPACE					41			C	42					SPACE			

	A	B	C
VOLT AMPS/PHASE	4845	4007	3887
AMPS/PHASE	40.3	33.4	32.4

TOTAL 3 PHASE LOAD IN AMPS 35.4

DISTRIBUTION PANELBOARD

1AP15J-B3

Reviewed Date: 9/15/2021

Mill Creek Unit #3 AQCS heat Trace

PANEL LOCATION:	UNIT 3 AQCS HEAT TRACE PANEL 1	PROJECT NUMBER:	008782	PROJECT TITLE:	MILL CREEK		
PANEL ID:	3AP65J-A1	MOUNTING:	SURFACE	MAIN FEEDER SIZE:	3/C #2 W / GND	PANELBOARD MANUFACTURER:	
VOLTAGE (VAC):	208	BUS:	COPPER	MAIN FEEDER CKT:	3AP65J-PDP-P1	CATALOG NO. OR STYLE / TYPE:	
PHASE (S):	THREE	BUS RATING:	100A	FED FROM:	3AT65E-A1 (30kVA) REF 1	MAIN BREAKER TYPE:	
FREQUENCY (HZ):	60	INTERRUPTING CAPACITY:	22,000A	MAIN BREAKER SIZE:	100A	CIRCUIT BREAKER TYPE:	
NO. OF POLES:	18	NEUTRAL BUS:	YES	MAIN BKR LOCATION:	BOTTOM		
NO. OF WIRES:	4 WIRE	NEUTRAL SIZE:	100%	CABLE ENTRY:	TOP & BOTTOM		
NEMA RATING:	NEMA 4X - INDR, OUTDR, CORROSION	GROUND BUS:	NO				

REF	REV	CIRCUIT NUMBER	SERVICE	BKR SIZE	LOAD (VOLT AMPS) A	B	C	BKR NO.	PHASE			BKR NO.	LOAD (VOLT AMPS) A	B	C	BKR SIZE	SERVICE	CIRCUIT NUMBER	REV	REF
4,7	A	3FPS11S-HTR-P1	HEAT TRACE HTR #211 - FIRE WATER	30	1848			1	A			2	1332			30	HEAT TRACE HTR #212 - FIRE WATER	3FPS12S-HTR-P1	A	4,7
4,7	A	3FPS25S-HTR-P1	HEAT TRACE HTR #225 - FIRE WATER	30		1728		3		B		4		1464		30	HEAT TRACE HTR #214 - FIRE WATER	3FPS14S-HTR-P1	A	4,7
4,7	A	3FPS10S-HTR-P1	HEAT TRACE HTR #210 - FIRE WATER	30			1656	5			C	6			1648	30	HEAT TRACE HTR #213 - FIRE WATER	3FPS13S-HTR-P1	A	4,7
4,7	A	3FPS21S-HTR-P1	HT TRACE HTR #221 - EQIP DRAIN/SUMPS	30	1104			7	A			8	500			30	HEAT TRACE HTR #258 - ID FAN L.O	3FPS58S-HTR-P1	B	-
4,7	A	4FPS20S-HTR-P1	HT TRACE HTR #220 - EQIP DRAIN/SUMPS	30		888		9		B		10		500		30	HEAT TRACE HTR #259 - ID FAN L.O.	3FPS59S-HTR-P1	B	-
4,7	A	4FPS19S-HTR-P1	HT TRACE HTR #219 - EQIP DRAIN/SUMPS	30			804	11			C	12			384	30	HEAT TRACE HTR #203 - FIRE WATER	3FPS03S-HTR-P1	A	4,7
			SPACE					13	A			14					SPACE			
			SPACE					15		B		16					SPACE			
			SPACE					17			C	18					SPACE			

	A	B	C
VOLT AMPS/PHASE	4784	4580	4392
AMPS/PHASE	39.8	38.1	36.6

TOTAL 3 PHASE LOAD IN AMPS 38.2

DISTRIBUTION PANELBOARD

3AP65J-A1

Reviewed Date: 9/15/2021

PANEL LOCATION:	UNIT 3 WFGD HEAT TRACE PANEL 2	PROJECT NUMBER:	008782	PROJECT TITLE:	MILL CREEK
PANEL ID:	3AP66J-B3	MOUNTING:	SURFACE	MAIN FEEDER SIZE:	3/C #2 W / GND
VOLTAGE (VAC):	208	BUS:	COPPER	MAIN FEEDER CKT:	3AP66J-PDP-P1
PHASE (S):	THREE	BUS RATING:	100A	FED FROM:	3AT68E-B3 (30kVA) REF 2
FREQUENCY (HZ):	60	INTERRUPTING CAPACITY:	22,000A	MAIN BREAKER SIZE:	100A
NO. OF POLES:	18	NEUTRAL BUS:	YES	MAIN BKR LOCATION:	BOTTOM
NO. OF WIRES:	4 WIRE	NEUTRAL SIZE:	100%	CABLE ENTRY:	TOP & BOTTOM
NEMA RATING:	NEMA 4X - INDR, OUTDR, CORROSION	GROUND BUS:	NO		

PANELBOARD MANUFACTURER:	
CATALOG NO. OR STYLE / TYPE:	
MAIN BREAKER TYPE:	
CIRCUIT BREAKER TYPE:	

REF	REV	CIRCUIT NUMBER	SERVICE	BKR SIZE	LOAD (VOLT AMPS) A	B	C	BKR NO.	PHASE			BKR NO.	LOAD (VOLT AMPS) A	B	C	BKR SIZE	SERVICE	CIRCUIT NUMBER	REV	REF
5,7	A	3FPS22S-HTR-P1	HT TRACE HTR #232 - ME FIRE WTR	30	1932			1	A			2	660			30	HT TRACE HTR #237 - ME POT WTR	3FPS37S-HTR-P1	B	5,7
5,7	A	3FPS33S-HTR-P1	HT TRACE HTR #233 - ME FIRE WTR	30		1824		3		B		4		1488		30	HT TRACE HTR #204 - CLEARWELL WTR	3FPS04S-HTR-P1	A	5,7
5,7	A	3FPS02S-HTR-P1	HT TRACE HTR #202 - CLEARWELL WTR	30			548	5			C	6			2110	30	HT TRACE HTR #231 & 257 - ME WASH WTR	3FPS31S-HTR-P1	A	5,7
5,7	A	3FPS34S-HTR-P1	HT TRACE HTR #234 - ME WASH WTR	30	792			7	A			8	768			30	HT TRACE HTR #201 - CLEARWELL WTR	3FPS01S-HTR-P1	A	5,7
5,7	B	3FPS54S-HTR-P1	HT TRACE HTR #254,255,256 - CLEARWELL WTR	30		828		9		B		10		216		30	HT TRACE HTR #205 & 207 - CLEARWELL WTR	3FPS05S-HTR-P1	A	5,7
5,7	A	3FPS35S-HTR-P1	HT TRACE HTR #235 - ME WASH WTR	30			944	11			C	12			396	30	HT TRACE HTR #245 & 246 - MERCURY RED	3FPS45S-HTR-P1	B	
			SPACE					13	A			14					SPACE			
			SPACE					15		B		16					SPACE			
			SPACE					17			C	18					SPACE			

	A	B	C
VOLT AMPS/PHASE	4152	4356	5038
AMPS/PHASE	34.6	36.3	42.0

TOTAL 3 PHASE LOAD IN AMPS 37.6

DISTRIBUTION PANELBOARD

3AP66J-B3

Reviewed Date: 9/15/2021

PANEL LOCATION:	U3 WFGD HEAT TRACE PANEL 3	PROJECT NUMBER:	008782	PROJECT TITLE:	MILL CREEK
PANEL ID:	3AP67J-A3	MOUNTING:	SURFACE	MAIN FEEDER SIZE:	1-3/C #2 W / #4 GND
VOLTAGE (VAC):	208	BUS:	COPPER	MAIN FEEDER CKT:	3AP67J-PDP-P1
PHASE (S):	THREE	BUS RATING:	150A	FED FROM:	3AT67E-A3 (45kVA) REF 3
FREQUENCY (HZ):	60	INTERRUPTING CAPACITY:	22,000A	MAIN BREAKER SIZE:	150A
NO. OF POLES:	30	NEUTRAL BUS:	YES	MAIN BKR LOCATION:	BOTTOM
NO. OF WIRES:	4 WIRE	NEUTRAL SIZE:	100%	CABLE ENTRY:	TOP & BOTTOM
NEMA RATING:	NEMA 4X - INDR, OUTDR, CORROSION	GROUND BUS:	NO		

PANELBOARD MANUFACTURER:																					
CATALOG NO. OR STYLE / TYPE:																					
MAIN BREAKER TYPE:																					
CIRCUIT BREAKER TYPE:																					

REF	REV	CIRCUIT NUMBER	SERVICE	BKR SIZE	LOAD (VOLT AMPS) A	B	C	BKR NO.	PHASE			BKR NO.	LOAD (VOLT AMPS) A	B	C	BKR SIZE	SERVICE	CIRCUIT NUMBER	REV	REF
6,7	A	3FPS26S-HTR-P1	HEAT TRACE HTR #226 - FIRE WATER	30	1860			1	A			2	1692			30	HT TRACE HTR #222 & 223 - RECLAIM WTR	3FPS22S-HTR-P1	A	6,7
6,7	A	3FPS09S-HTR-P1	HEAT TRACE HTR #209 - FIRE WATER	30		1872		3		B		4		1800		30	HEAT TRACE HTR #208 - FIRE WATER	3FPS08S-HTR-P1	A	6,7
6,7	A	3FPS28S-HTR-P1	HEAT TRACE HTR #228 - FIRE WATER	30			1908	5			C	6			1824	30	HEAT TRACE HTR #227 - FIRE WATER	3FPS27S-HTR-P1	A	6,7
-	B		SPARE	30	1056			7	A			8	1713			30	HT TRACE HTR #243 & 244 - MERC RED.	3FPS43S-HTR-P1	B	6,7
6,7	A	3FPS16S-HTR-P1	HT TRACE HTR #216 & 218- SEAL FLUSH WTR	30		1164		9		B		10		571		30	HT TRACE HTR #206,217,239,253 - CR WTR/SEAL F	3FPS06S-HTR-P1	A	6,7
6,7	B	3FPS47S-HTR-P1	HT TRACE HTR #247 & 248 - POT WTR	30			2705	11			C	12			396	30	HT TRACE HTR #215 & 240 - POT WTR/LUBE OIL	3FPS15S-HTR-P1	A	6,7
6,7	B	3FPS49S-HTR-P1	HT TRACE HTR #249 & 250 - POT WTR	30	2508			13	A			14				30	SPARE		B	-
6,7	B	3FPS41S-HTR-P1	HT TRACE HTR #241 & 242 - MERC. RED.	30		574		15		B		16		990		30	HT TRACE HTR #251 - ABSORBER AGIT FLS LNE	3FPS51S-HTR-P1	B	6,7
-	A		SPARE	30				17			C	18				30	SPARE		B	-
-	A		SPARE	30				19	A			20				30	SPARE		A	-
-	A		SPARE	30				21		B		22				30	SPARE		A	-
-	A		SPARE	30				23			C	24				30	SPARE		A	-
			SPACE					25	A			26					SPACE			
			SPACE					27		B		28					SPACE			
			SPACE					29			C	30					SPACE			

	A	B	C
VOLT AMPS/PHASE	7773	6971	6833
AMPS/PHASE	64.7	58.0	56.9

TOTAL 3 PHASE LOAD IN AMPS 59.9

DISTRIBUTION PANELBOARD

3AP67J-A3

Reviewed Date: 9/15/2021

Mill Creek Unit 4 AQCS heat Trace

PANEL LOCATION:	UNIT 4 WFGD HEAT TRACE PANEL # 1	PROJECT NUMBER:	008782	PROJECT TITLE:	MILL CREEK
PANEL ID:	4AP50J-A4	MOUNTING:	SURFACE	MAIN FEEDER SIZE:	3-1/C 1/0 W/#2 GND
VOLTAGE (VAC):	208	BUS:	COPPER	MAIN FEEDER CKT:	4AP50J-PDP-P1
PHASE (S):	THREE	BUS RATING	150A	FED FROM:	4AT50E-A4 (45kVA)
FREQUENCY (HZ):	60	INTERRUPTING CAPACITY:	22,000A	MAIN BREAKER SIZE:	150A
NO. OF POLES:	24	NEUTRAL BUS:	YES	MAIN BKR LOCATION:	BOTTOM
NO. OF WIRES:	4 WIRE	NEUTRAL SIZE:	100%	CABLE ENTRY:	TOP & BOTTOM
NEMA RATING:	NEMA 4X - INDOOR/OUTDOOR, CORROSION	GROUND BUS	NO		

EF	REV	CIRCUIT NUMBER	SERVICE	BKR SIZE	LOAD (VOLT AMPS) A	B	C	BKR NO.	PHASE			BKR NO.	LOAD (VOLT AMPS) A	B	C	BKR SIZE	SERVICE	CIRCUIT NUMBER	REV	REF
1	A	4FPS03S-HTR-P1	HEAT TRACE HEATER CIRCUIT # 003, 028, 029	30	1224			1	A			2	1272			30	HEAT TRACE HEATER CIRCUIT # 026	4FPS26S-HTR-P1	A	1
1	A	4FPS18S-HTR-P1	HEAT TRACE HEATER CIRCUIT # 018	30		1080		3		B		4		1140		30	HEAT TRACE HEATER CIRCUIT # 021	4FPS21S-HTR-P1	A	1
1	B	4FPS04S-HTR-P1	HEAT TRACE HEATER CIRCUIT # 007	30			468	5			C	6			1032	30	HEAT TRACE HEATER CIRCUIT # 023	4FPS23S-HTR-P1	A	1
1	B	4BA013J-P1	INST ENCL HTRS 4PIT-BA013A/B/C, 016,17,18	30	1200			7	A			8	1200			30	UNIT 4 BABCOCK INST HTRS	4BA211J-P1	B	1
1	A	4FPS06S-HTR-P1	HEAT TRACE HEATER CIRCUIT # 006	30		720		9		B		10		1236		30	HEAT TRACE HEATER CIRCUIT #027	4FPS27S-HTR-P1	A	1
1	B	4FPS30S-HTR-P1	HEAT TRACE HEATER CIRCUIT # 008,009,010	30			1140	11			C	12			1200	30	INST ENCL HTRS 4PIT-BA003A/B/C, 4PIT-BA006/7/8	4BA003J-P1	B	1
1	A	4FPS01S-HTR-P1	HEAT TRACE HEATER CIRCUIT # 001	30	372			13	A			14	396			30	HEAT TRACE HEATER CIRCUIT # 016, 017	4FPS16S-HTR-P1	A	1
1	B	4WN541J-P1	INST ENCL HTR PWR 4LIT-WN541 SENSOR & XMTR	30		400		15		B		16		480		30	HEAT TRACE CIRUIT 014,015,54, FIRE WATER	4FPS14S-HTR-P1	B	1
-	-	-	SPARE	30				17			C	18			132	30	HEAT TRACE HEATER CIRCUIT # 002	4FPS02S-HTR-P1	A	1
-	B	-	HEAT TRACE ID FAN A	30	600			19	A			20				30	SPARE	-	-	-
-	B	-	HEAT TRACE HEATER CIRCUIT ID FAN B	30		600		21		B		22				30	SPARE	-	-	-
-	-	-	SPARE	30				23			C	24				30	SPARE	-	-	-

VOLT AMPS/PHASE	6264	5656	3972
AMPS/PHASE	52.2	47.1	33.1

TOTAL 3 PHASE LOAD IN AMPS 44.1

A

B

DISTRIBUTION PANELBOARD

4AP50J-A4

Reviewed Date: 9/15/2021

PANEL LOCATION:	UNIT 4 AOCS HEAT TRACE PANEL # 2	PROJECT NUMBER:	008782	PROJECT TITLE:	MILL CREEK
PANEL ID:	4AP51J-A1	MOUNTING:	SURFACE	MAIN FEEDER SIZE:	3/C/#2 W/GND
VOLTAGE (VAC):	208	BUS:	COPPER	MAIN FEEDER CKT:	4AP51J-PDP-P1
PHASE (S):	THREE	BUS RATING:	100A	FED FROM:	4AT51E-A1 (30kVA)
FREQUENCY (HZ):	60	INTERRUPTING CAPACITY:	22,000A	MAIN BREAKER SIZE:	100A
NO. OF POLES:	24	NEUTRAL BUS:	YES	MAIN BKR LOCATION:	BOTTOM
NO. OF WIRES:	4 WIRE	NEUTRAL SIZE:	100%	CABLE ENTRY:	TOP & BOTTOM
NEMA RATING	NEMA 4X - INDOOR/OUTDOOR, CORROSION	GROUND BUS:	NO		

REF	REV	CIRCUIT NUMBER	SERVICE	BKR SIZE	LOAD (VOLT AMPS) A	B	C	BKR NO.	PHASE			BKR NO.	LOAD (VOLT AMPS) A	B	C	BKR SIZE	SERVICE	CIRCUIT NUMBER	REV	REF
2	A	4FPS22S-HTR-P1	HEAT TRACE HEATER CIRCUIT # 022	30	1272			1	A			2	200			30	INST ENCL HTR 4PIT-BA001	4BA001J-P1	B	2
2	A	4FPS24S-HTR-P1	HEAT TRACE HEATER CIRCUIT # 024	30		1272		3		B		4				30	SPARE	-	A	2
2	A	4FPS25S-HTR-P1	HEAT TRACE HEATER CIRCUIT # 025	30			1272	5			C	6				30	SPARE	-	A	2
2	A		SPARE	30				7	A			8				30	SPARE	-	A	2
2	A	-	SPARE	30				9		B		10				30	SPARE	-	A	2
2	A	-	SPARE	30				11			C	12				30	SPARE	-	A	2
-	-	-	ONLY 12 SPACE PANEL	-				13	A			14				30	ONLY 12 SPACE PANEL	-	-	-
-	-	-	ONLY 12 SPACE PANEL	-				15		B		16				30	ONLY 12 SPACE PANEL	-	-	-
-	-	-	ONLY 12 SPACE PANEL	-				17			C	18				30	ONLY 12 SPACE PANEL	-	-	-
-	-	-	ONLY 12 SPACE PANEL	-				19	A			20				30	ONLY 12 SPACE PANEL	-	-	-
-	-	-	ONLY 12 SPACE PANEL	-				21		B		22				30	ONLY 12 SPACE PANEL	-	-	-
		-	ONLY 12 SPACE PANEL	-				23			C	24				30	ONLY 12 SPACE PANEL	-	-	-

VOLT AMPS/PHASE	1472	1272	1272
AMPS/PHASE	12.3	10.6	10.6

TOTAL 3 PHASE LOAD IN AMPS 11.1

DISTRIBUTION PANELBOARD

4AP51J-A1

Reviewed Date: 9/15/2021

PANEL LOCATION:	UNIT 4 WFGD HEAT TRACE PANEL # 3	PROJECT NUMBER:	008782	PROJECT TITLE:	MILL CREEK
PANEL ID:	4AP52J-B4	MOUNTING	SURFACE	MAIN FEEDER SIZE:	3/C #2 W/GND
VOLTAGE (VAC):	208	BUS:	COPPER	MAIN FEEDER CKT:	4AP52J-PDP-P1
PHASE (S):	THREE	BUS RATING	100A	FED FROM:	4AT52E-B4 (30kVA)
FREQUENCY (HZ):	60	INTERRUPTING CAPACITY:	22,000A	MAIN BREAKER SIZE:	100A
NO. OF POLES:	24	NEUTRAL BUS:	YES	MAIN BKR LOCATION:	BOTTOM
NO. OF WIRES:	4 WIRE	NEUTRAL SIZE:	100%	CABLE ENTRY:	TOP & BOTTOM
NEMA RATING:	NEMA 4X - INDOOR/OUTDOOR, CORROSION	GROUND BUS:	NO		

EF	REV	CIRCUIT NUMBER	SERVICE	BKR SIZE	LOAD (VOLT AMPS) A	B	C	BKR NO.	PHASE			BKR NO.	LOAD (VOLT AMPS) A	B	C	BKR SIZE	SERVICE	CIRCUIT NUMBER	REV	REF
3	A	4FPS32S-HTR-P1	HEAT TRACE HEATER CIRCUIT # 032, 033, 034	30	1164			1	A			2	468			30	HEAT TRACE HEATER CIRCUIT # 044, 045	4FPS44S-HTR-P1	A	3
3	A	4FPS41S-HTR-P1	HEAT TRACE HEATER CIRCUIT # 041, 042, 043	30		780		3		B		4		1548		30	HEAT TRACE HEATER CIRCUIT # 035, 036, 037	4FPS35S-HTR-P1	A	3
3	A	4FPS46S-HTR-P1	HEAT TRACE HEATER CIRCUIT # 046, 047, 048	30			1308	5			C	6			1620	30	HEAT TRACE HEATER CIRCUIT # 049	4FPS49S-HTR-P1	A	3
3	A	4FPS38S-HTR-P1	HEAT TRACE HEATER CIRCUIT # 038, 039, 040	30	747			7	A			8	852			30	HEAT TRACE HEATER CIRCUIT # 050, 051	4FPS50S-HTR-P1	A	3
3	A	-	SPARE	30				9		B		10		804		30	HEAT TRACE HEATER CIRCUIT # 052, 053	4FPS52S-HTR-P1	A	3
3	A	-	SPARE	30				11			C	12				30	SPARE	-	A	3
-	-	-	ONLY 12 SPACE PANEL	-				13	A			14				30	ONLY 12 SPACE PANEL	-	-	-
-	-	-	ONLY 12 SPACE PANEL	-				15		B		16				30	ONLY 12 SPACE PANEL	-	-	-
-	-	-	ONLY 12 SPACE PANEL	-				17			C	18				30	ONLY 12 SPACE PANEL	-	-	-
-	-	-	ONLY 12 SPACE PANEL	-				19	A			20				30	ONLY 12 SPACE PANEL	-	-	-
-	-	-	ONLY 12 SPACE PANEL	-				21		B		22				30	ONLY 12 SPACE PANEL	-	-	-
-	-	-	ONLY 12 SPACE PANEL	-				23			C	24				30	ONLY 12 SPACE PANEL	-	-	-

VOLT AMPS/PHASE	3231	3132	2928
AMPS/PHASE	26.9	26.1	24.4

TOTAL 3 PHASE LOAD IN AMPS 25.8

DISTRIBUTION PANELBOARD

4AP52J-B4

Reviewed Date: 9/15/2021

Mill Creek – Operations Cold Weather Winterization – Checklist:

Perform Winterization Procedures below as necessary:	**Initial**
Ensure all exterior doors are operational & secure	____
Place covers over all Hotwell openings on the main floor	____
Place covers over all stairwell openings on the main floor	____
Open the boiler heat release doors to circulate heated air	____
Open the boiler lower vestibule doors on each unit to introduce heated air to the mezz and basement areas	____
Instrument/Station Air:	
Crack open low point drains & traps on Instrument & Station air piping systems (Ensure moisture is kept out of the systems)	____
Crack open Station air supply connections at the Cooling Towers and WFGD systems	____
Crack open air line drains on the Fly Ash Transfer system	____
Isolate & Drain Cooling Tower water supply line for water truck	____
Coal Feeders/Silos:	
Ensure adequate supply of air hoses and lances are in place for Units 1 & 2 Coal Feeders	____
Ensure air vibrators associated with Units 3 & 4 Coal Silos are operational	____
Ash Lines/Sump Piping:	
Ensure maintaining a flow of water through the Ash lines below 25°F	____
Consider maintaining a flow of water through Sump pump discharge piping if temperatures become extremely cold (below 15°F)	____
WFGD Storage Tank:	
Isolate & Drain make-up supply line to Storage Tank, when not in use	____
Ensure at least 3 agitators are in service, if tank has adequate level	____
Dump Tanks:	
Isolate & Drain make-up supply lines to Dump Tanks when not in use	____
Utilize Make-up pumps to recirculate the Dump Tanks below 30°F	____
Utilize Deaerator dump bypass to heat dump tanks as needed during extreme cold weather	____
Verify the Demineralization Tank Supply Pump is in service & recirculating the flow	____

Screen House:

Consider continuous operation of the Screen Wash Booster Pump & the Traveling Water Screens_____

Run air jumper line to the Screen house _____

Crack open moisture trap associated with Station Air to Screen house
(Crack open air connection in Screen house & drain along south side of Bridge Walkway) _____

SCR Systems:

Crack open the Steam Bypass valves on Unit 3 & 4 Steam Coils prior to the inlet header & crack open the three steam coil traps _____

Cooling Towers:

Ensure Unit 2 Cooling Tower Quenching Water Blowdown Line is isolated and drained _____

Ensure Units 2, 3 & 4 Cooling Tower pump motor stators are blown out with instrument air when the Cooling Tower pump is removed from service _____

Monitor the Cooling Towers for ice buildup, if necessary lower the Cooling Tower Fan speed output to decrease the air flow _____

Maintain the Cooling Tower cold water temperature above 60°F, temps below this greatly increase the probability of tower icing _____

Fire System/City Water System:

Isolate City water to drinking fountains on boiler landings & drain supply lines
(Shutoff valve is on Landing 5) _____

Place any equipment that has the potential to freeze in the recirculation mode or left in service and that cannot be left in service or recirculated will be removed from service and drained _____

Maintain Fuel Oil inventory for Operations to use torpedo type space heaters to prevent equipment from freezing when the temperature inside the plant drops below freezing _____

Monitor outside air temperature and initiate, maintain winterization procedures (below 32°F) _____

Ensure availability of and maintain shovels and food _____

Ensure Units 1&2 Absorber Level Backup Service Water Line (12" Service Water Supply out of Unit 1) is isolated and drained when not in use during cold weather. Isolation is located behind Units 1&2 Plant Fly Ash Filter Separator and at the new WFGD where it intersects with the Clearwell Supply on the new pipe rack. _____

Cold Weather Winterization Efforts for 1-4 WFGD:

Maintenance to Perform Winterization Procedures Below as necessary:

Building Preparation: **Verify** Installation of temporary structures (wind breaks) w/ heat lamps, ext. cords & GFI's.

1&2 WFDG Sample Sink area _____

4 WFGD Sample Sink area ____

Equipment: Rosebuds and propane tanks ____

Heat Trace:
Verify that all Heat Trace circuits have been checked by I&E to be operational ____

In the event a Unit outage occurs during extreme cold weather conditions, operations should consider draining the following systems based on the length of downtime:

Boiler and Economizer (all drains) ____

NOTE: When a Unit is removed from service during cold weather, the boiler should be drained at 50 psi to ensure all boiler sections including the pendant and platen sections are drained or blown out.

Feedwater System (all drains) ____

Boiler Fill/Drain Piping ____

Condensate System (all drains) ____

Sealing Water Systems (Plant & Yard) ____

Deaerator Storage Tank ____

Boiler Feed Pump & Boiler Feed Pump Suction Header ____

Injection Water System ____

Water Coil Air Heater System (purge with air) ____

Hotwell ____

Ash Handling System, Ash Hoppers & Piping ____

Circulating Water System (Coolers) ____

Service Water System ____

Stator Cooling Water System (purge with air) and Make-up line ____

Heater Shell Drain System ____

Mist Eliminator Wash System ____

Snow Removal

Material Handling will be responsible for snow removal and ordering salt.

Material Handling contacts for Snow removal:

Don VanWinkle	Cell 639-9351	Home	812-738-8851
Derek Ferrell	Cell 438-7539	Work	933-6585

Fuel Oil

The Operations Support Supervisor is responsible for maintaining a safe #1 Fuel Oil tank level. The tank is located on the south side of the RO Building and is to be used as fuel for the space heaters.

Main Fuel Oil Supply Source – Southern Petroleum/Albert Oil Company 502-267-9181

- For alternate Fuel Oil Supply Source, contact Warehouse Supervisor 933-6894

Emergency Supplies

- 4 Wheel Drive Vehicle (Office Vehicle)
- Rosebuds
- Cots, Blankets
- It is recommended that employees keep their essential items such as medication, clothing, food snacks etc. in their locker to cover emergency situations.
- All Company trucks will be inspected no later than November 15th for needed items which include fire extinguisher, jacks, and lug wrenches.
- Emergency items will be inventoried and replenished no later than November 15th.
- The Emergency Winterization Response Team Leaders, or their designee, will be responsible for inventorying emergency supplies.

Reporting

- The Manager of each area will be responsible to ensure adequate coverage in the event the Winterization Emergency Plan is initiated.
- The Managers will be responsible to furnish a list of personnel on site to the Emergency Winterization Response Team Leaders. They must also coordinate the transporting of personnel to and from the Station in the event roads are impassable. The Emergency Winterization Response Team will transport personnel as the Managers dictate.
- Reporting for Winter Emergency, see attached list of employees in the zip codes closest to the plant, 40216, 40258, and 40272.

Cold Weather Preparation Action Dates

Activity	Date Completed	Responsible Person
Winter Operation Review Meeting	October 1st	Tim Parcell
Fuel Oil Heaters Serviced	October 1st	Tim Parcell
Replace Missing Insulation	October 1st	Rob Meadway
Unit List with Winterization Work Orders	October 1st	Jim McGowan
Service All Heat Trace	November 15th	Jim McGowan
Inventory and Order Sand & Salt	November 15th	Don VanWinkle
Inspect Company Vehicles for Emergency Items, Fire Extinguishers, Jacks & Lug Wrench, Fix-a –Flat	November 15th	Department Supervisors
Cover Turbine Room Floor Openings	November 15th	Tim Parcell
Winterize Vulnerable Transmitters & Instrumentation Not Needed For Service	November 15th	Jim McGowan
Update Emergency Phone List	December 1st	Senior Admin. Assist.
Winterize Roof Exhausters	December 1st	Jim McGowan
Implement Snow Removal Plan	Inclement Weather	Don VanWinkle
Initiate Coal Freeze Treatment	Inclement Weather	Don VanWinkle

Food & Supply Coordinator List:

Mill Creek General Managers' Senior Administrative Assistant

NOTE: Coordinate planned food & supplies pickup with all areas to minimize trips outside of the plant.

Mill Creek - Material Handling Winterization Checklist

Perform Supply Inventory Checklist by October 1st annually. **Initial**

Ensure adequate Salt Supply in bays at Coal Handling Maintenance Shop _____
*(Minimum of two full bays, reorder if necessary. Contact Mill Creek Commercial Operations 6526/6538 to reorder)

Ensure adequate supply of Liquid Heat (stored in Dozer Shed) _____
*(Minimum of 1 full tote, reorder if necessary. Contact Mill Creek Commercial Operations 6526/6538 to reorder)

Ensure adequate supply of Oil Dry (stored in Dozer Shed) _____
*(Minimum of ½ Pallet, reorder if necessary. Contact Mill Creek Commercial Operations 6526/6538 to reorder)

Ensure Torpedo Heaters for Rail Unloading are in working order. _____
*(Contact Lennie Heath for repairs 6987)

Ensure Sullair Portable Air Compressor is in working order. _____
*(Contact Lennie Heath for repairs 6987)

Ensure adequate supply of hand tools are available (stored in Coal Handling Maintenance Shop). See List below: _____

Reviewed 9-15-2021

Tool	Quantity Needed	Quantity in Cage
Shovels	8	
Picks	5	
Hoes	5	
Scrapers	5	
Spades	3	
Sledgehammers	5	
Pump Sprayers (2 gallon)	5	
Rolls of Reinforced Plastic	2	
Rose Buds	2	
Propane Tank	2	
Extension Cords (50 ft)	2	

*(Contact Mill Creek Commercial Operations 6526/6538 to order)

Ensure all ceiling mounted heaters are in working order. (#1 Control House, #2 Control House, #3 Control House, Barge Sample House, As Received Sample House, Dozer Shed, C.H. Maintenance Building, Fire System Valve House (by B House), Fire System Valve House (by I House), Barge Unloader Electrical Room. Issue Maximo Work orders for any that are not operating. _____

Ensure adequate supply of winter PPE (stored in Material Handling Office) _____

Reviewed 9-15-2021

(ice cleats, insulated work gloves, face socks, balaclavas, etc.)

Ensure Snow Removal Truck is operational (vehicle in running condition and blade is operating and functional) _____

- (Contact Lennie Heath 6987)

Reviewed 9-15-2021

- PREVENTIVE MAINTENANCE - JOB PLAN -

Job Plan PM Number 00057538

Job Plan Requirements

Fill out all of the information listed on this form, including your name and employee number, and send to the PM Coordinator.

PM-Annual – Cold Weather Winterization for PWS

Follow Equipment Lubrication Instructions Below

Perform a thorough inspection of all the areas below on all Heaters, Heat Trace and Insulation to make sure they are working properly. Write work orders for any insulation that needs to be repaired.

"SAFETY FIRST - JOB BRIEFING"

- GPP Heaters & Heat Trace Checklist -

No.	PWS Building Space Heaters	✓	No.	PWS EQ Transfer Pump House Heaters	✓
1	PWS Store Rm A Elect Heater 0PWS38SA		1	EQ Pump House 0PWS27SA	
2	PWS Store Rm B Elect Heater 0PWS38SB		2	EQ Pump House 0PWS27SB	
3	PWS Store Rm C Elect Heater 0PWS38SC				
4	PWS Store Rm D Elect Heater 0PWS38SD		**No.**	**PWS Chem Feed Building Heaters**	
5	PWS Bld E Electric Unit Heater 0PWS38SE		1	PWS Chem Feed Building 0PWS30SA	
6	PWS Bld F Electric Unit Heater 0PWS38SF		2	PWS Chem Feed Building 0PWS30SB	
7	PWS Bld G Electric Unit Heater 0PWS38SG				
8	PWS Bld H Electric Unit Heater 0PWS38SH		**No.**	**Underflow Drains tank Building Heaters**	
9	PWS Bld I Electric Unit Heater 0PWS38SI		1	Underflow Drains Tank Building 0AQ13SA	
10	PWS Bld J Electric Unit Heater 0PWS38SJ		2	Underflow Drains Tank Building 0AQ13SB	
11	PWS Bld K Electric Unit Heater 0PWS38SK				
12	PWS Bld L Electric Unit Heater 0PWS38SL		**No.**	**PWS Lime Silo Heaters**	
13	PWS Bld M Electric Unit Heater 0PWS38SM		1	A Hydrated Lime Silo 0HL02SA	
14	PWS Bld N Electric Unit Heater 0PWS38SN		2	B Hydrated Lime Silo 0HL02SB	
15	PWS Bld O Electric Unit Heater 0PWS38SO				
16	PWS Bld P Electric Unit Heater 0PWS38SP		**No.**	**Heat Trace Panels**	
17	PWS Bld Q Electric Unit Heater 0PWS38SQ		1	Heat Trace Panel #5 0AP99J-A	
18	PWS Bld R Electric Unit Heater 0PWS38SR		2	Heat Trace Panel #4 0AP116J-B	
19	PWS Bld S Electric Unit Heater 0PWS38SS				
20	PWS Bld T Electric Unit Heater 0PWS38ST		**No.**	**Motor Space Heaters**	
			1	Power Panel 0AP101J-B Ckts 1,3,5,7,9,11	
No.	**WFGD Storage Tank Building Heaters**				
1	WFGD Storage tank Building 0AQ10SA				
2	WFGD Storage tank Building 0AQ10SB				

"Are any changes necessary to improve this Job Plan? If so, please contact the plant MAXIMO representative. " Comments or suggestions to improve this Job Plan will be appreciated. Thank you.

Name _____ Emp. Number _____ Date _____

Revised 9-15-2021

Appendix B

COLD WEATHER PROBLEM AREAS FOR THE MILL CREEK GENERATION STATION

Listed below are the areas around the Mill Creek Station that are considered areas of concern during a severe cold weather incident and where space heaters are typically used:

- Screen House
  - Screen Wash Booster Pump
  - Station Air Supply Trap @ Main Floor
- Fire System
  - #1 Fire Pump/Booster Pump/Jockey Pump
  - #2 Fire Pump
  - #3 Fire Pump
  - City water header @ NE Corner of Unit 1 Main Floor
  - Reserve Transformers Deluge Valves
- Instrument Air System
  - #1 & 2 Pall Air Dryers
  - #3 & 4 Pall Air Dryers
- Make up Pumps
  - Unit 1 Makeup Pumps
  - Unit 2 Makeup Pumps
  - Unit 3 Makeup Pumps
  - Unit 4 Makeup Pumps

Reviewed Date: 9/15/2021

Mill Creek Exterior Doors and Openings

Main Floor: *** = H/C required**

✓	Door/Opening Description - Location	Clearance #
	1. Unit 2 boiler room exterior door – located on north wall, northeast corner of unit 2, north of old 2A ID fan.	
	2. Unit 2 boiler room roll-up door – located on north wall, northeast corner of unit 2, north of old 2A ID fan.	*
	3. Unit 2 boiler room exterior door – Located on east wall of unit 2, east of unit 2 make-up pumps.	
	4. Unit 1&2 boiler room exterior door – located on east wall, between old 1A ID fan and 1,2, & 3 fly ash blower.	
	5. Unit 1 boiler room exterior door – located on east wall of unit 1, east of #1 fire pump and unit 1 make-up pumps.	
	6. Unit 1 boiler room roll-up door - located on south wall of unit 1, southeast corner of unit 1.	
	7. Unit 2 turbine room exterior door - located on north wall of unit 2, northwest corner of unit 2 turbine room.	
	8. Unit 2 turbine room roll-up door - located on north wall of unit 2, northwest corner of unit 2 turbine room.	*
	9. Unit 2 Main Aux. Trans. access door - located on west wall of unit 2, west of unit 2 generator.	
	10. Unit 2 Main Trans. access door - located on west wall of unit 2, west of unit 2 turbine.	
	11. Unit 1 Main Trans. access door - located on west wall of unit 1, west of unit 1 turbine.	
	12. Unit 1 Main Aux. Trans./ Screen House access door- located on west wall of unit 1, west of unit 1 generator.	
	13. Screen house bridge door roll-up - located on west wall between unit 1 and unit 3.	*
	14. Unit 3 Main Aux. Trans. access door- located on west wall of unit 3, northwest of unit 3 generator.	
	15. Unit 3 Main Trans. 'A' access door- located on west wall of unit 3, west of unit 3 generator.	
	16. Unit 3 Main Trans 'C' access door – located on west wall of unit 3, west of unit 3 turbine.	
	17. Unit 4 Black Start Generator/ Main Trans. access door – located on west wall of unit 4, west of unit 4 turbine.	
	18. Unit 4 Main Aux. Trans. access door – located on west wall of unit 4, west of unit 4 exciter.	
	19. Unit 4 turbine room roll-up door – located on south wall of unit 4, southwest corner of turbine room.	*

	20. Unit 4 turbine room exterior door – located on south wall of unit 4, southwest corner of turbine room.	
	21. Unit 4 turbine room exterior door – located on south wall of unit 4, south of unit 4 coal feeders.	
	22. Unit 4 boiler room exterior door – located on south wall of unit 4, southeast of 480V MCC	
	23. Unit 4 boiler room exterior door – located on east wall of unit 4, southeast of 4B water coil air heater.	
	24. Unit 4 precipitator hopper room door – located on east wall of unit 4, between the 4A & 4B water coil air heaters.	
	25. Unit 4 boiler room exterior door – located on east wall of unit 4, northeast of 4A water coil air heater.	
	26. Unit 4 boiler room roll-up door – located on east wall of unit 4, northeast of 4A water coil air heater.	*
	27. Unit 3 boiler room exterior door – located on east wall of unit 3, southeast of 3B water coil air heater.	
	28. Unit 3 boiler room roll-up door – located on east wall of unit 3, northeast of 3A water coil air heater.	*
	29. Unit 3 boiler room exterior door – located on north wall of unit 3, northwest of 3A water coil air heater.	

Screen House:

✓	**Door/Opening Description - Location**	**Clearance #**
	1. Screen House exterior door from bridge – located on east wall of screen house in southeast corner.	
	2. Screen House roll-up door from bridge – located in southeast corner of screen house.	*
	3. Windows on east wall – 2 windows located east of booster pumps and 2 windows located east of long shaft service water pump strainers.	
	4. Roof hatch door – located at the very top of stairs in northeast corner.	
	5. Exterior door – located on north wall north of #4 LSSWP.	
	6. Windows on north wall – 2 windows located north of stairway leading to bottom of screen house and 2 windows located in northwest corner of screen house.	
	7. Windows on west wall – 10 windows located on western most exterior wall of screen house.	
	8. Roll-up doors – 2 roll-up doors west of traveling water screens above intake.	*
	9. Windows on south wall – 2 windows in southwest corner and 2 windows in bromination room.	

5th Landing – Unit 1 & 2:

✓	Door/Opening Description - Location	Clearance #
	1. Unit 1 roof access door – located on east wall of unit 1, southeast corner of unit 1, north of AC room.	
	2. Unit 1 roof access door – located on east wall of unit 1, northeast of boiler.	
	3. Unit 2 roof access door – located on east wall of unit 2, southeast of boiler.	
	4. Unit 2 roof access door – located on east wall of unit 2, northeast corner of unit 2, east of precipitator room.	

6th/7th Landing – Unit 1 & 2:

✓	Door/Opening Description - Location	Clearance #
	1. Unit 2 louvers – located on north wall of unit 2.	
	2. Unit 2 roof access door – located on west wall of unit 2, northwest of unit 2 boiler.	
	3. Unit 2 louvers – located on west wall of unit 2.	
	4. Unit 2 roof access door – located on west wall, between unit 1 & 2.	
	5. Unit 1 louvers – located on west wall of unit 1.	
	6. Unit 1 roof access door – located on south wall of unit 1, southwest of unit 1 passenger elevator.	
	7. Unit 1 louvers – located on south wall of unit 1.	

Tripper Room:

✓	Door/Opening Description - Location	Clearance #
	1. 8th landing tripper room windows – located on 8th landing, 12 windows located on west wall between unit 1 & unit 3.	
	2. Tripper room roll-up door – located on south wall of tripper room, south of coal conveyors.	*
	3. 12th landing tripper room windows – located on 12th landing, 12 windows located on west wall between unit 1 & unit 3.	
	4. All windows down ramp on north and south side of F-belt.	

8th Landing – Unit 1 & 2:

✓	Door/Opening Description - Location	Clearance #
	1. Unit 1 precipitator access door – located on east wall of unit 1, northeast of unit 1 boiler.	

	2. Unit 1 precipitator access door – located on east wall of unit 1, southeast of unit 1 boiler.	
	3. Unit 2 precipitator access door – located on east wall of unit 2, northeast of unit 2 boiler.	
	4. Unit 2 precipitator access door – located on east wall of unit 2, southeast of unit 2 boiler.	

10th Landing – Unit 1 & 2:

✓	Door/Opening Description - Location	Clearance #
	1. Unit 1 roof access door – located on west wall of unit 1, southeast of boiler, across from unit 1 passenger elevator.	
	2. Unit 1 roof access door to bottom ash piping – located on unit 1 west wall, northwest of unit 1 boiler.	
	3. Unit 2 roof access door – located on west wall of unit 2, northwest of unit 2 boiler, by unit 2 passenger elevator.	

12th Landing – Unit 1 & 2:

✓	Door/Opening Description - Location	Clearance #
	1. Unit 1 exterior door to tripper room – located on west wall of unit 1, across from unit 1 passenger elevator.	

13th Landing – Unit 1 & 2:

✓	Door/Opening Description - Location	Clearance #
	1. Unit 1 exterior door to unit 3 – located on south wall of unit 1, southwest of unit 1 boiler, across from unit 1 passenger elevator.	
	2. Unit 1 & 2 louvers – West wall of unit 1 & 2.	
	3. 2A1 & 2A2 louvers in main vent fan room – located on east wall of 2A1 & 2A2 main vent fan room.	
	4. Unit 2 louvers – located on east wall of unit 2, east of unit 2 boiler.	
	5. 2B1 & 2B2 louvers in main vent fan room – located on east wall of 2B1 & 2B2 main vent fan room.	
	6. 1B1 & 1B2 louvers in main vent fan room – located on east wall of 1B1 & 1B2 main vent fan room.	
	7. Unit 1 louvers – located on east wall of unit 1, east of unit 1 boiler.	
	8. 1A1 & 1A2 louvers in main vent fan room – located on east wall of 1A1 & 1A2 main vent fan room.	
	9. Unit 1 boiler room roof access door – located up southwest stairway, door is on east wall.	

	10. Unit 2 boiler room roof access door – located up northwest stairway, door is on east wall.	

3rd Landing – Unit 3 & 4:

✓	Door/Opening Description - Location	Clearance #
	1. 3A1 main vent fan louvers – located on east wall of unit 3, northeast of unit 3 boiler.	
	2. Unit 3 louvers – located on east wall of unit 3, east of unit 3 air heater.	
	3. 3B1 main vent fan louvers – located on east wall of unit 3, southeast of unit 3 boiler.	
	4. 4A1 main vent fan louvers – located on east wall of unit 4, northeast of unit 4 boiler.	
	5. Unit 4 louvers – located on east wall of unit 4, east of unit 4 air heater.	
	6. 4B1 main vent fan louvers – located on east wall of unit 4, southeast of unit 4 boiler.	

6th Landing – Unit 3 & 4:

✓	Door/Opening Description - Location	Clearance #
	1. Unit 3 boiler room exterior door – located on north wall of unit 3, northwest of unit 3 boiler.	
	2. 3A2 main vent fan louvers – located 0n west wall of unit 3, northwest of unit 3 boiler.	
	3. Unit 3 turbine room roof access – located on west wall of unit 3, west of 3A coal silo.	
	4. Unit 3 louvers – located on west wall of unit 3, behind coal silos.	
	5. Unit 3 turbine room roof access door – located on west wall of unit 3, west of 3D coal silo.	
	6. 3B2 main vent fan louvers – located on west wall of unit 3, southwest of unit 3 boiler.	
	7. Unit 3B precipitator access door – located on east wall of unit 3, southeast of unit 3 boiler.	
	8. Unit 3A precipitator access door – located on east wall of unit 3, northeast of unit 3 boiler.	
	9. 4A2 main vent fan louvers – located on west of unit 4, northwest of unit 4 boiler.	
	10. Unit 4 turbine room roof access door – located on west wall of unit 4, west of 4A coal silo.	
	11. Unit 4 louvers – located on west wall of unit 4, west of coal silos.	
	12. Unit 4 turbine room roof access door – located on west wall of unit 4, southwest of unit 4 boiler.	

	13. 4B2 main vent fan louvers – located on west wall of unit 4, southwest of unit 4 boiler.	
	14. Unit 4A precipitator access door – located on east wall of unit 4, northeast of unit 4 boiler.	
	15. Unit 4B precipitator access door – located on east wall of unit 4, southeast of unit 4 boiler.	

7th Landing – Unit 3 & 4:

✓	Door/Opening Description - Location	Clearance #
	1. Unit 3B SCR access door – located on east wall of unit 3, southeast of unit 3 boiler.	
	2. Unit 3 louvers – located on east wall of unit 3, east of unit 3 boiler.	
	3. Unit 3A SCR access door – located on east wall of unit 3, northeast of unit 3 boiler.	

8th Landing – Unit 3 & 4:

✓	Door/Opening Description - Location	Clearance #
	1. Unit 4A SCR access door – located on east wall of unit 4, northeast of unit 4 boiler.	
	2. Unit 4 louvers – located on east wall of unit 4, east of unit 4 boiler.	
	3. Unit 4B SCR access door – located on east wall of unit 4, southeast of unit 4 boiler.	

10th Landing – Unit 3 & 4:

✓	Door/Opening Description - Location	Clearance #
	1. Unit 3 roof access door – located on west wall of unit 3, northwest of unit 3 boiler.	
	2. Unit 3 louvers – located on west wall of unit 3, west of unit 3 boiler.	
	3. Unit 3 roof access door – located on west wall of unit 3, west of unit 3 passenger elevator.	
	4. Unit 4 roof access door – located on west wall of unit 4, northwest of unit 4 boiler.	
	5. Unit 4 louvers – located on west wall of unit 4, west of unit 4 boiler.	
	6. Unit 4 roof access door – located on west wall of unit 4, southwest of unit 4 boiler.	
	7. Unit 4 louvers – located on south wall of unit 4.	
	8. Unit 4 louvers – located on east wall of unit 4.	

11th Landing – Unit 3 & 4:

✓	Door/Opening Description - Location	Clearance #
	1. Unit 4 SCR access door – located on east wall of unit 4, northeast of unit 4 boiler.	

16th Landing – Unit 3 & 4:

✓	Door/Opening Description - Location	Clearance #
	1. Unit 3 boiler roof access door – located on east wall of unit 3, south of unit 3 passenger elevator.	
	2. Unit 3 boiler roof access door – located on east wall of unit 3, northeast corner.	

17th Landing – Unit 3 & 4:

✓	Door/Opening Description - Location	Clearance #
	1. Unit 3 deaerator roof access door – up stairway, southwest of unit 3 deaerator.	
	2. Unit 4 boiler roof access door – located on east wall of unit 4, northeast of unit 4 deaerator.	
	3. Unit 4 boiler roof access door – located on east wall of unit 4, southeast of unit 4 deaerator.	
	4. Unit 4 deaerator roof access door – located on top of stairway, northwest of unit 4 deaerator.	

Mill Creek Gypsum Processing Plant (GPP) Winterization Checklist

This Plan includes the GPP building and SPP building, Gypsum Barge Loading, Transfer Towers and Fly Ash Silos

Supplies Checklist Complete by October 1st annually	Initial
Salt Bins are full and placed at main entry ways and trucks scales	
1 full tote of Liquid Heat stored in SPP building	
2 pump sprayers for Liquid Heat stored in SPP building	
2 Torpedo Heaters (in working order and fueled)	
1 stored in SPP building Maintenance Shop	
1 stored in GPP building Conex Box	
Winter PPE stocked in Control Room	
(Ice Cleats, Insulated Work Gloves, Face Socks, Balaclavas, etc)	
2 Shovels	
1 stored in SPP building Maintenance Shop	
1 stored in GPP building Conex Box	
Antifreeze stored in Air Compressor Room	
Meals stocked in GPP Control Room	

Contact LG&E Supervisor or Mill Creek Commercial Operations 6526/6538 to order supplies

Work Order Checklist	Due Date	Initial
Building Heater and Heat Trace PM#00057538 has been completed by I&E	15-Oct	
Gate 3 Truck Wash has been winterized by Charah and carded	31-Oct	
Check Exterior doors are operational and secure	15-Oct	
Ranger doors have been installed and fluids checked	15-Nov	

Operational Procedures if Temps/Wind Chill falls below XXX

Consider continuous operation of Conveyor Belts
Apply Liquid Heat to Conveyor Belts as needed to reduce material build-up on rollers
Crack open low point drains and traps on Instrument & Station air systems
Close ALL exterior doors and louvers
Check Seal water drains for potential freezing/plugging

Revised 9-12-2022

Business Use

Mill Creek Process Water System (PWS) Winterization Checklist

Supplies Checklist Complete by October 1st annually	Initial
Salt Bins are full and placed at main entry ways	
Know where Liquid Heat Tote in SPP is	
1 pump sprayer for Liquid Heat stored in PWS building	
1 Torpedo Heaters (in working order and fueled)	
Winter PPE stocked in Control Room	
(Ice Cleats, Insulated Work Gloves, Face Socks, Balaclavas, etc)	
2 Shovels	
1 stored in PWS warehouse	
1 stored in PWS process area	
Antifreeze stored in Air Compressor Room	
If unit is off line, ensure all drain valves are opened and lines drained	
Check eye-wash and safety showers	

Work Order Checklist	Due Date	Initial
Building Heater and Heat Trace PM#00057538 has been completed by I&E	15-Oct	
Check Exterior doors are operational and secure	15-Oct	
Ranger doors have been installed and fluids checked	15-Nov	

Operational Procedures if Temps/Wind Chill falls below XXX

Apply Liquid Heat to exterior steps and bridges
Crack open low point drains and traps on Instrument & Station air systems
Close ALL exterior doors and louvers
Check exterior valves periodically

Revised 9-12-2022

Mill Creek-Material Handling Winterization Checklist

Perform Supply Inventory Checklist by October 1st annually. **Initial**

Ensure adequate Salt Supply in bays at Coal Handling Maintenance Shop _____
*(Minimum of two full bays, reorder if necessary. Contact D. Ferrell 6585 to reorder)

Ensure adequate supply of Liquid Heat (stored in Dozer Shed) _____
*(Minimum of 1 full tote, reorder if necessary. Contact D. Ferrell 6585 to reorder)

Ensure adequate supply of Oil Dry (stored in Dozer Shed) _____
*(Minimum of ½ Pallet, reorder if necessary. Contact D. Ferrell 6585 to reorder)

Ensure Torpedo Heaters for Rail Unloading are in working order. _____
*(Contact Lennie Heath for repairs 6987)

Ensure Portable Air Compressor is in working order. _____
*(Contact D. Ferrell for repairs 6585)

Ensure adequate supply of hand tools are available (stored in Coal Handling Maintenance Shop). See List below: _____

Tool	Quantity Needed	Quantity in Cage
Shovels	8	
Picks	5	
Hoes	5	
Scrapers	5	
Spades	3	
Sledgehammers	5	
Pump Sprayers (2 gallon)	5	
Rolls of Reinforced Plastic	2	
Rose Buds	2	
Propane Tank	2	
Extension Cords (50 ft)	2	
Air Brake Line Antifreeze	8	

*(Contact D. Ferrell 6585 to order)

Ensure all ceiling mounted heaters are in working order. (#1 Control House, #2 Control House, #3 Control House, Barge Sample House, As Received Sample House, Dozer Shed, C.H. Maintenance Building, Fire System Valve House (by B House), Fire System Valve House (by I House), Barge Unloader Electrical Room. Issue Maximo Work orders for any that are not operating. _____

Ensure adequate supply of winter PPE (stored in Material Handling Office) _____
(ice cleats, insulated work gloves, face socks, balaclavas, etc.)

Ensure Snow Removal Truck is operational (vehicle in running condition _____
and blade is operating and functional)

- (Contact Lennie Heath 6987)

Ensure Tripper Room Roll up Door is closed and locked. Check that all windows _____
are closed. Issue Maximo work orders for repairs. (By Nov. 1)

Mill Creek-Material Handling Cold Weather Operations

Perform Winterization Procedures below when temperatures are forecast to be below 32 degrees as necessary: **Initial**

Conveyor Washdown Systems

Isolate supply and open low point drains on the water supplies to the Conveyor Wash Down Systems. Locations below:

Wash Down Supply House: Isolation valve inside of building, low point drain on east exterior wall. _____

R Conveyor: Isolation valve outside C House (east) under conveyor, low point drain in tunnel at bottom of conveyor. _____

B House: Isolation valve in building west wall (supplies JA, JB, Barge Unloader) Low point drains in B House, outside JA Transfer House under conveyor, bottom of I house (east wall), and at Coal Barge Unloader. _____

Limestone Unloading: Isolation valve is located in tunnel (west wall) low point drains located under LB Conveyor and on Limestone Unloading Barge. _____

Conveyor Systems

When temperatures are below 35 degrees frost may develop on Conveyor Systems throughout Material Handling, causing slide backs and "Zero Speed" Alarms in #1 Control House. The following operations should be performed on **ALL** exposed Conveyor Systems when frost is visible:

Apply Liquid Heat using Pump Sprayers, on the belt section past the Tail Pulley every 4 hours. Oil Dry may also be needed to give traction to Head and Tail Pullies and should be applied as needed. _____

*(At temperatures below 15 degrees, Conveyor Systems (I, JA, JB, K, C, R, D1/2, E1/2 F1/2, LA & LB) should be left in continuous operation-regardless of coal/limestone being transported through the systems.)

Frozen Coal Operations on Conveyor Systems	**Initials**
Frozen coal presents additional issues for Operations. Due to the varying moisture content of the coal, any visible of evidence of frozen coal should be treated as a worst case scenario and the following guidelines should be followed:	
Dozers should work the Coal Pile more frequently to ensure coal is acceptable size for the Conveying Systems.	_____
Conveying Systems should be walked down routinely inspecting rollers, scrapers, pullies, and belt condition.	_____
Chute Crew may need to be implemented to inspect, clean, manually break frozen chunks and/or treat chutes with Liquid Heat on routine basis.	_____
Gratings on the Coal Barge Unloader, Reclaim Hopper, and Rail Hoppers should be kept clean of frozen coal.	_____
Stacker/Reclaimer Load Chute should be cleaned, and Boom raised. Load Chute Oil Pump should be placed, and remain, in service.	_____

#1 Control House Operations

During winter operation, the Operator shall not place any Conveyor System in service until **ALL** Conveyor System chutes have been inspected and the Chute Crew has verified they are clear from the area. _____

The Operator needs to be aware of drastic changes in scale readings, this could be an indication of a chute plugging or belt slippage.

Compressed Air System (supply from Plant) **Initial**

There are multiple low point drains on the Compressed Air System supplied from the Station Air System inside the Plant. The following areas listed should be blown down and/or left cracked open when temperatures are below freezing. The locations are:

F House- hose connection on west wall by E2 Magnetic Separator _____

Crusher House- series of filters/drains on Crusher Landing corner of east wall _____

E1/E2 Coal Conveyor Tunnel- 1 drain, bottom of tunnel east wall _____

D1/D2 Coal Conveyor Tunnel- 1 drain located bottom of tunnel, west of D2 _____

C House- hose connection, inside doorway, west side of C Conveyor _____

B House- hose connection, inside doorway, west of C Conveyor _____

JA Transfer, I House, Barge Unloader- (supplied by portable Sullair Compressor) _____

Material Handling Air Compressors

Should Station Air Supply from Plant become inadequate, Operations may need to use the portable **Sullair Compressor** (located in Dozer Shed) to tie into Station Air Supply piping via hose connections throughout the system. _____

There is also a **Dozer Shed Air Compressor** that supplies compressed air to the **Shaker House** for **Rail Unloading**, low point/hose connection should be blown down during winter operations. Operators may need to add Air Brake Line Antifreeze (located in yellow cabinet in Dozer Shed) to hose connection on the compressor in extreme temperatures. _____

Rail Unloading **Initial**

Ensure adequate supply of hand tools available for breaking frozen coal chunks from rail cars (picks, scrapers, shovels) _____

Ensure Rail Car Shakers are in working order prior to unloading rail cars. _____

Heavy Equipment Winter Operations

*If temperatures are below freezing, all Heavy Equipment not in use should be stored in the Dozer Shed or Coal Handling Maintenance Building until needed.

All Heavy Equipment shall be given a minimum 15-minute warm up time before use.

Locomotives- Operators should **never** shut down a locomotive. In the event a locomotive shuts down, contact P&L Railroad (1-800-444-2580, Ext. 4300) _____

854G/854K Dozers- Temperature below 32 degrees- warm up time is 15 minutes at low idle. Temperature below 0 degrees- warm up time of 30 minutes. _____

D6 Dozer- Temperature below 32 degrees- warm up time is 15 minutes at low idle. Temperature below 0 degrees- warm up time of 30 minutes. _____

WA 500 Front Loader- Temperature below 32 degrees- warm up time is 15 minutes at low idle. Temperature below 0 degrees- warm up time of 30 minutes. _____

420 Backhoe- Temperature below 32 degrees- warm up time is 15 minutes at low idle. Temperature below 0 degrees- warm up time of 30 minutes. _____

236D Skid Steer- Temperature below 32 degrees- warm up time is 15 minutes at low idle. Temperature below 0 degrees- warm up time of 30 minutes. _____

S70 Bobcat- Temperature below 32 degrees- warm up time is 15 minutes at low idle. Temperature below 0 degrees- warm up time of 30 minutes. _____

Mill Creek – Operations Cold Weather Winterization – Checklist:

Perform Winterization Procedures below as necessary:	**Initial**
Ensure all exterior doors are operational & secure	_____
Place covers over all Hotwell openings on the main floor	_____
Place covers over all stairwell openings on the main floor	_____
Open the boiler heat release doors to circulate heated air	_____
Open the boiler lower vestibule doors on each unit to introduce heated air to the mezz and basement areas	_____
Instrument/Station Air:	
Crack open low point drains & traps on Instrument & Station air piping systems (Ensure moisture is kept out of the systems)	_____
Crack open Station air supply connections at the Cooling Towers and WFGD systems	_____
Crack open air line drains on the Fly Ash Transfer system	_____
Isolate & Drain Cooling Tower water supply line for water truck	_____
Coal Feeders/Silos:	
Ensure adequate supply of air hoses and lances are in place for Units 1 & 2 Coal Feeders	_____
Ensure air vibrators associated with Units 3 & 4 Coal Silos are operational	_____
Ash Lines/Sump Piping:	
Ensure maintaining a flow of water through the Ash lines below 25°F	_____
Consider maintaining a flow of water through Sump pump discharge piping if temperatures become extremely cold (below 15°F)	_____
WFGD Storage Tank:	
Isolate & Drain make-up supply line to Storage Tank, when not in use	_____
Ensure at least 3 agitators are in service, if tank has adequate level	_____
Dump Tanks:	
Isolate & Drain make-up supply lines to Dump Tanks when not in use	_____
Utilize Make-up pumps to recirculate the Dump Tanks below 30°F	_____
Utilize Deaerator dump bypass to heat dump tanks as needed during extreme cold weather	_____
Verify the Demineralization Tank Supply Pump is in service & recirculating the flow	_____

Revised 9-15-2021

Screen House:

Consider continuous operation of the Screen Wash Booster Pump & the Traveling Water Screens_____

Run air jumper line to the Screen house _____

Crack open moisture trap associated with Station Air to Screen house
(Crack open air connection in Screen house & drain along south side of Bridge Walkway) _____

SCR Systems:

Crack open the Steam Bypass valves on Unit 3 & 4 Steam Coils prior to the inlet header & crack open the three steam coil traps _____

Cooling Towers:

Ensure Unit 2 Cooling Tower Quenching Water Blowdown Line is isolated and drained _____

Ensure Units 2, 3 & 4 Cooling Tower pump motor stators are blown out with instrument air when the Cooling Tower pump is removed from service _____

Monitor the Cooling Towers for ice buildup, if necessary lower the Cooling Tower Fan speed output to decrease the air flow _____

Maintain the Cooling Tower cold water temperature above 60°F, temps below this greatly increase the probability of tower icing _____

Fire System/City Water System:

Isolate City water to drinking fountains on boiler landings & drain supply lines
(Shutoff valve is on Landing 5) _____

Place any equipment that has the potential to freeze in the recirculation mode or left in service and that cannot be left in service or recirculated will be removed from service and drained _____

Maintain Fuel Oil inventory for Operations to use torpedo type space heaters to prevent equipment from freezing when the temperature inside the plant drops below freezing _____

Monitor outside air temperature and initiate, maintain winterization procedures (below 32°F) _____

Ensure availability of and maintain shovels and food _____

Ensure Units 1&2 Absorber Level Backup Service Water Line (12" Service Water Supply out of Unit 1) is isolated and drained when not in use during cold weather. Isolation is located behind Units 1&2 Plant Fly Ash Filter Separator and at the new WFGD where it intersects with the Clearwell Supply on the new pipe rack. _____

Cold Weather Winterization Efforts for 1-4 WFGD:

Maintenance to Perform Winterization Procedures Below as necessary:

Building Preparation: **Verify** Installation of temporary structures (wind breaks) w/ heat lamps, ext. cords & GFI's.

1&2 WFDG Sample Sink area _____

Mill Creek Gypsum Processing Plant (GPP) Winterization Checklist

This Plan includes the GPP building and SPP building, Gypsum Barge Loading, Transfer Towers and Fly Ash Silos

Supplies Checklist Complete by October 1st annually	Initial
Salt Bins are full and placed at main entry ways and trucks scales	_____
1 full tote of Liquid Heat stored in SPP building	_____
2 pump sprayers for Liquid Heat stored in SPP building	_____
2 Torpedo Heaters (in working order and fueled)	_____
1 stored in SPP building Maintenance Shop	_____
1 stored in GPP building Conex Box	_____
Winter PPE stocked in Control Room	_____
(Ice Cleats, Insulated Work Gloves, Face Socks, Balaclavas, etc)	_____
2 Shovels	_____
1 stored in SPP building Maintenance Shop	_____
1 stored in GPP building Conex Box	_____
Antifreeze stored in Air Compressor Room	_____
Meals stocked in GPP Control Room	_____

Contact LG&E Supervisor or Mill Creek Commercial Operations 6526/6538 to order supplies

Work Order Checklist	Due Date	Initial
Building Heater and Heat Trace PM#00057538 has been completed by I&E	15-Oct	_____
Gate 3 Truck Wash has been winterized by Charah and carded	31-Oct	_____
Check Exterior doors are operational and secure	15-Oct	_____
Ranger doors have been installed and fluids checked	15-Nov	_____

Operational Procedures if Temps/Wind Chill falls below XXX

Consider continuous operation of Conveyor Belts
Apply Liquid Heat to Conveyor Belts as needed to reduce material build-up on rollers
Crack open low point drains and traps on Instrument & Station air systems
Close ALL exterior doors and louvers
Check Seal water drains for potential freezing/plugging

SUBMERGED FLIGHT CONVEYOR OPERATION

THE PYRITE STORAGE TANKS WILL BE TRANSFERRED FROM EACH UNIT, TO THE SFC AS PART OF THE WEEKLY ROUTINES, EACH SATURDAY DAY SHIFT

SFC **NORMAL** WARM WEATHER OPERATION

- OPERATE THE SFC IN "START" SO THAT IT RUNS DAILY ON ITS DWELL TIMER (2HR RUN - 22HR DWELL)
- 1 HOUR BEFORE SENDING THE 1st PYRITE STORAGE TANK, HAVE GAUGE BOARD OPERATOR SELECT "CONTINUOUS" ON THE SFC SCREEN
  - SFC SPEED "NORMAL"
- TRANSFER 1 PYRITE STORAGE TANK AT A TIME TO THE SFC
- AFTER SENDING THE LAST UNIT TO THE SFC, ALLOW SFC TO RUN 2 HOURS TO CLEAN OUT MATERIAL IN IT.
- PLACE SFC IN "START" SO THAT IT WILL RUN ON ITS DWELL TIMER (2HR RUN - 22HR DWELL)

MANAGEMENT WILL DECIDE EACH WINTER IF THE SUBMERGED FLIGHT CONVEYOR WILL REMAIN IN SERVICE

SFC **IN** SERVICE DURING COLD WEATHER MONTHS

NOVEMBER 15TH – MARCH 15TH

- RUN THE SFC IN "CONTINUOUS" MODE
  - OPERATE SFC SPEED IN "NORMAL"
- OPEN THE COLD WEATHER BY-PASSES IN EACH BASEMENT, IF AMBIENT TEMPERATURES DROP BELOW 25 deg f.
- ONCE PER WEEK, SHUT DOWN COLD WEATHER BY-PASSES AND TRANSFER 1 PYRITE STORAGE TANK AT A TIME
- OPEN THE COLD WEATHER BY-PASSES, IF NECESSARY, AFTER PULLING THE STORAGE TANKS

SFC **OUT** OF SERVICE DURING COLD WEATHER MONTHS

NOVEMBER 15TH – MARCH 15TH

- RUN THE SFC IN "CONTINUOUS" MODE WHILE DRAINING WATER TO TRENCH ON NORTH/EAST SIDE OF SFC
  - AFTER WATER IS DRAINED, FLUSH SFC UNTIL CLEAN
  - SHUT DOWN, DRAIN AND HOLD CARD
- SET-UP THE PYRITE STORAGE TANK DISCHARGE LINES TO BY-PASS THE SFC, GOING DIRECTLY TO THE BUNKER
- DO NOT OPEN THE COLD WEATHER BY-PASSES IN EACH BASEMENT
  - OPERATING ALL THE BY-PASSES AT THE SAME TIME WILL OVERFLOW THE BUNKER AND FLOOD THE AREA
- ISOLATE EACH STORAGE TANK WATER SUPPLY, OPEN DRAIN IN BASEMENT AND NEAR SFC. CREATE 1 CLEARANCE FOR EACH UNIT
- EACH SATURDAY DAY SHIFT, UNCARD AND TRANSFER 1 UNIT AT A TIME
  - OPERATING MORE THAN 1 STORAGE TANK AT THE SAME TIME WILL OVERFLOW THE BUNKER AND FLOOD THE AREA
- ISOLATE EACH STORAGE TANK WATER SUPPLY, OPEN DRAIN IN BASEMENT AND NEAR SFC
  - CREATE 1 CLEARANCE FOR EACH UNIT

Revised 9-15-2021

Appendix B

COLD WEATHER PROBLEM AREAS FOR THE MILL CREEK GENERATION STATION

Listed below are the areas around the Mill Creek Station that are considered areas of concern during a severe cold weather incident and where space heaters are typically used:

- Screen House
  - Screen Wash Booster Pump
  - Station Air Supply Trap @ Main Floor
- Fire System
  - #1 Fire Pump/Booster Pump/Jockey Pump
  - #2 Fire Pump
  - #3 Fire Pump
  - City water header @ NE Corner of Unit 1 Main Floor
  - Reserve Transformers Deluge Valves
- Instrument Air System
  - #1 & 2 Pall Air Dryers
  - #3 & 4 Pall Air Dryers
- Make up Pumps
  - Unit 1 Makeup Pumps
  - Unit 2 Makeup Pumps
  - Unit 3 Makeup Pumps
  - Unit 4 Makeup Pumps

Reviewed Date: 9/15/2021

Appendix D-1

PREVENTIVE MAINTENANCE - JOB PLAN -

Job Plan PM Number 00057538

Job Plan Requirements

Fill out all of the information listed on this form, including your name and employee number, and send to the PM Coordinator.

PM-Annual – Cold Weather Winterization for GPP

Follow Equipment Lubrication Instructions Below

Perform a thorough inspection of all the areas below on all Heaters, Heat Trace and Insulation to make sure they are working properly. Write work orders for any insulation that needs to be repaired.

"SAFETY FIRST - JOB BRIEFING"

- GPP Heaters & Heat Trace Checklist -

No.	GPP Building Unit Heaters	✓	No.	A & B Silo Pug Mill Rooms	✓
1	Outside the Rest Room		1	Have heaters but are not labeled	
2	Over the B1 Conveyor Head Pulley		2	Heat trace main panel is in the 480V Switchgear	
3	South wall of "D" Drum			Room (has circuits only labeled with letters and	
4	South wall by the Maintenance Shop			numbers. No physical description of what circuit	
5	West wall a B1 tail pulley end			goes where)	
6	West wall at B1 Tail Pulley end				
7	West wall at A Vacuum Pump		No.	**C Silo Heaters in Ash Mixer Rooms (15 KW)**	
8	North wall behind A Vacuum Pump		1	OHV24S	
9	Over the Filtrate Sump area		2	OHV23S	
10	Behind the D Vacuum Pump		3	OHV25S	
11	Next to Booster Pump Room				
12	By the Oil Room		No.	**D Silo Heaters in Ash Mixer Room (15KW)**	
13	East end of GPP		1	OHV21S	
			2	OHV20S	
No.	**Rest Room Heaters**		3	OHV22S	
1	SPP PDP-1 Breaker 5 & 7				
			No.	**Clearwell Water Supply Lines for Fly Ash Mixers**	
No.	**Secondary Filter Feed Pump Room**		1	There is heat trace but nothing labeled in the	
1	Unit Heater 0-0A-UH-01			building. There is a lot of circuits unlabeled in the	
2	Unit Heater 0-0A-UH-02			C and D Silo Service Building	
No.	**GPP 480 Switchgear Room**				
1	Heater HB-112 (West wall)				
2	Heater HB-113 (North wall)				

"Are any changes necessary to improve this Job Plan? If so, please contact the plant MAXIMO representative." Comments or suggestions to improve this Job Plan will be appreciated. Thank you.

Name _____ Emp. Number _____ Date _____

Reviewed 9-15-2021

Mill Creek - Limestone Winterization Checklist

This Plan includes the Limestone Building, Limestone Tunnel, LST's and Reactant Feed Pump Buildings

Supplies Checklist Complete by October 1st annually	Initial
Salt Bins are full and placed at main entry ways	_____
1 full tote of Liquid Heat stored in Maintenance Area	_____
2 pump sprayers for Liquid Heat stored in Maintenance Area	_____
1 Torpedo Heater (in working condition and fueled) in Maintenance Area	_____
Winter PPE stocked in Control Room	_____
(Ice Cleats, Insulated Work Gloves, Face Socks, Balaclavas, etc)	_____
2 Shovels stored in Maintenance Area	_____
Meals stocked in Limestone Control Room	_____
Air Lances and hose are stocked by LC1/LC2	_____

Contact LG&E Supervisor or Mill Creek Commercial Operations 6526/6538 to order supplies

Work Order Checklist	Due Date	Initial
Building Heater and Heat Trace PM to be completed by I&E	15-Oct	_____
Check Exterior doors are operational and secure	15-Oct	_____
Limestone Pile Grates to be cleaned by Coal Handling	31-Oct	_____

Operational Procedures if Temps/Wind Chill falls below 32°F

Consider continuous operation of Conveyor Belts
Apply Liquid Heat to Conveyor Belts as needed to reduce material build-up on rollers
Crack open low point drains and traps on Instrument & Station air systems
Close ALL exterior doors and louvers
Check Seal water drains for potential freezing/plugging

Revised 9-15-2021

Trimble County Generating Station

Cold Weather

OPERATING PROCEDURE

Revision History

REV.	DATE	PREPARED BY	REVIEWED BY	APPROVED BY
3	3/30/2017	Joe Coghill	R. Falk	
4	10/30/2019	Treavor Smith	Eric Oberhausen	
5	11/9/2022	Eric Oberhausen		
6	3/8/2023	Treavor Smith		

Table of Contents

Title **Page**

1.0 PURPOSE 1
COLD WEATHER PRE–CHECKS 1
2.0 UNIT 1 COLD WEATHER OPERATING PROCEDURES 2
2.1 UNIT 1 COLD WEATHER SETUP BY LANDING 2
Deaerator Room 2
Boiler Room Roof 2
Landing 21 2
Landing 19 2
Landing 17 3
Landing 15 3
Landing 14 3
Landing 13 3
Landing 11 3
Landing 6 4
Landing 5 4
Mezzanine 5
Landing 2 (Secondary Drag Conveyor) 5
Ground Floor 5
SDRS 6
Unit out of service 6
2.2 OUTLYING COMMON STATION AREAS 7
Fuel Oil Building 7
Reactant Preparation Building 7
Limestone Active Pile Enclosure (LAPE) 7
Auxiliary Boiler Building 7
FGD Transfer Pump House 8
Back Up Generator 8
Diesel Fire Pump house 8
Screenhouse 8
“C” Warehouse 8
2.3 COOLING TOWER WINTER OPERATION OFF LINE 9
2.4 UNIT 1 / COMMON AREA HEAT TRACE CHECKLIST 10
3.0 UNIT 2 COLD WEATHER OPERATING PROCEDURES 11
3.1 UNIT 2 COLD WEATHER SETUP BY LANDING 11
Boiler Room Roof 11
Landing 16 11
Landing 14 11
Landing 13 11
Landing 12 11
Landing 11 11
Landing 6 11
Landing 5 12
Landing 4 12
Landing 2 12
Ground Floor 12

Dry Electrostatic Precipitator (DESP) 13
Pulse Jet Fabric Filter (PJFF) 13
Fluidized Gas Desulphurization (FGD) 13
Oxidation Air Room 13
SUPPLY AND VENT FANS TO BE CARDED AND ISOLATED 13
4.0 COMBUSTION TURBINE SITE COLD WEATHER OPERATING PROCEDURES 15
4.1 COMBUSTION TURBINE SITE COLD WEATHER PREPARATION (common equipment) 15
Inlet Filter House and Evaporative Cooler 15
Water Wash Skid 15
4.2 CT's 5 thru 10 15
Generator Step–Up Transformers 15
Generator Collector Compartment 16
Gas Turbine Compartment 16
Accessory Module, Lube Oil Area 17
Accessory Module, Gas Valve Compartment 18
5.0 MATERIAL HANDLING COLD WEATHER OPERATING PROCEDURES 19
5.1 MATERIAL HANDLING SITE COLD WEATHER SETUP BY AREA 19
5.2 DOOR INSPECTIONS (COAL YARD) 19
Coal Barge Unloader Area 19
B to C Transfer 19
Sample House 19
D to E Transfer 20
Stacker Reclaimer 20
Crusher House 20
"F" Gallery 20
"F" to "G" Transfer 21
Tripper Room 21
"R" Tunnel 21
Blending Tunnel 21
Fuel Blending Breaker Room 21
5.3 DOOR INSPECTIONS (LIMESTONE) 21
Limestone Unloader 22
"A" to "B" Limestone Transfer doors 22
"B" Limestone Conveyor 22
"C" Limestone Conveyor 22
5.4 SCRAPER INSPECTION (Primary and Secondary) 22
Coal Conveyors and Feeders 22
Limestone Conveyors and Feeders 23
5.5 HEAT IN PUMP ROOMS AND CABINETS 23
Coal Yard System Heaters 23
Limestone System Heaters 24
5.6 MATERIAL HANDLING HEAT TRACE CHECKLIST 24
5.7 MATERIAL HANDLING MISCELLANEOUS ITEMS 25
6.0 LABORATORY COLD WEATHER OPERATING PROCEDURES 25
6.1 LABORATORY SITE COLD WEATHER SETUP 25
7.0 CCRT/PWT COLD WEATHER OPERATING PROCEDURES 26
7.1 CCRT/PWT site Cold weather setup 26

Additions

Item	Issue	Page
1.	FGD Storage Tank	8
2.	Back-up Generators	8
3.	Process Pond Sumps Heat Trace Panels	10
4.	TC1 Secondary Drag Conveyor	12
5.	CCRT/PWT	26
6.	Unit Heating System Startup Procedure	29
7.	Unit 1 Unit Offline additions	6
8.	Lessons learned from December 2022 Freeze	

1.0 PURPOSE

The Cold Weather procedure provides information for winter operation and setup in all areas of the plant. The following information when executed will maintain above freezing temperatures plant wide which will protect equipment. Maintain the air heater, air inlet temperature above 60 degrees and plant vacuum above .25. (These values are not absolute. Weather and equipment conditions may require changes.)

COLD WEATHER PRE–CHECKS

1. Inventory all #2 fuel oil supplies and ensure adequate supply.
2. Test run all portable heaters and ensure they are in good working order. Generate work request and ensure repairs are made as needed.
3. Inspect cooling towers for fill damage and valve operations.
4. Inspect entry doors on all structures and ensure they will close properly.
5. Check thermometer locations and ensure all thermometers are operable and in place.
6. Place Service building heating system in service using both Unit 1 steam supply and the Auxiliary Boiler. If there are any problems address through work request and ensure corrections are made.
7. Check Glycol in Cooling systems and LCI cooling systems on all units at Combustion Turbine site.
8. Ensure all evaporative cooling systems including sumps are drained and secured on all units at Combustion Turbine site.
9. Place mobile fuel oil tank in bed of field truck and fill.
10. Stage mobile fuel drums in unit 2 Ground floor area at the Northwest rollup door, place fuel drum on unit 2 SDRS landing 3 and ensure all components are in good condition.
11. Verify all louvers are closed
12. Verify all bird deterrent is in place and working.

2.0 UNIT 1 COLD WEATHER OPERATING PROCEDURES

This section contains the operating procedures for the components associated with the unit 1 cold weather operating procedures.

2.1 UNIT 1 COLD WEATHER SETUP BY LANDING

Deaerator Room

_____ a. Remove Deaerator roof exhausters from service

_____ b. Close the access door to the deaerator room roof.

_____ c. Close the access doors to the deaerator room (North and South).

Boiler Room Roof

_____ a. Verify all boiler room roof exhausters are out of service and their suction louvers are closed.

Landing 21

_____ a. Verify that A1, A2, B1, B2 Plant Air rolling Steel Doors are 100% open. Remove the power from these door motor drives.

_____ b. After the four Outside Air Rolling Steel doors are 100% open, return the power to the four Plant Air Rolling Steel doors.

_____ c. Use the Plant Rolling Steel doors to control the Air heater inlet temperature and Plant vacuum. Closing the Door to 25% will reduce Plant vacuum while lowering Air heater inlet temperature.

Landing 19

_____ a. Close the two outside doors on the east wall.

Landing 17

_____ a. Close bunker room doors.

Landing 15

_____ a. Close door to SCR West wall North door.

Landing 14

_____ a. Close SCR doors, West wall South door.

Landing 13

_____ a. Open all four rolling steel doors to the A and B Boiler Vent Fan Rooms, (2 doors per room).

_____ b. Close SCR doors on South wall.

_____ c. Close SCR doors West wall North and South doors.

Landing 11

_____ a. Close SCR doors on South wall.

_____b. Place all removable louver panels over the east wall. (Fixed louver panels in the A & B Boiler Vent Fan Rooms, secure with 3/8 nuts. This requires 7/16 wrench.)

_____c. Place A and B Boiler Vent Fans in service with each fan's suction vanes open 50%.

_____d. Close all of the louvers on the east wall behind the coal silos

_____e Close the two outside doors on the east wall behind the silos.

_____f. Close all of the access doors to the Boiler Vent Fan Rooms.

_____g Remove all turbine room roof exhausters from service, and verify that all exhauster suction louvers are closed.

_____h. Close SCR doors West wall North.

_____i. 1A / 1B Boiler room heating pumps isolated and drained.

_____j. Remove Turbine Room Vent fans from service

Landing 6

_____ a. Close the outside door on the South wall.

_____ b. Close SCR doors on South wall.

_____ c. Close SCR doors on West wall, North and South doors.

_____ d. All louvers need to be closed

Landing 5

_____ a. Close both doors on the west wall.

_____ b. Close all Louvers on the west wall.

_____ c. Close all Louvers on east wall

_____ d. Verify that the Turbine Room Vent Fan louvers on the east wall are closed. Close the isolation valve on the instrument air line to the louvers and depressurize the instrument air line downstream of the instrument air isolation valve.

_____ e. Place the Turbine Room Vent Fan in service.

_____ f. Set all thermostats on space heaters located in the south end of the turbine room at 40°F.

NOTE: *Open more louvers if needed but Do not open louvers 4, 5, 6, 34 and 35. They are located near standpipes.*

Mezzanine

_____ a. Close the two outside doors on the west wall.

_____ b. Close the five doors on the south wall.

_____ c. Close the two outside doors on the east wall.

_____ d. Enclose south end of Secondary Chain Conveyor

_____ e. Place plant heating system in service maintain outlet temperature between 220F-240F

Landing 2 (Secondary Drag Conveyor)

_____ a. Verify heater is running and maintaining temperature in the outdoor section of the drag conveyor

_____ b. Monitor temperature at the Secondary Conveyor fire system on the south wall.

_____ c. Ensure all drag conveyor and secondary drag conveyor lids are in place verify heaters are working.

Ground Floor

_____ a. Close the Service Building Rolling Steel Door East.

_____ b. Close the Service Building Rolling Steel Door South.

_____ c. Close the two outside doors on the south wall (one is located in the truck aisle and the other is located in the station air compressor room.) Also close entrance door to the station air compressor room.

_____ d. Close both outside doors on the west wall.

_____ e. Close the outside doors on the east wall.

_____ f. Verify that the Forced Draft Fan Rooms A and B Rolling steel doors are closed.

_____ g. Verify that the access doors to the A and B Forced Draft Fan Rooms are closed.

_____ h. SDRS area, Close rolling steel doors and entry doors North, South, West wall (3) doors and Oxidation air room.

_____ i. 1A / 1B PJFF Close North and South rollup doors and East and West entry doors.

_____ j. Verify all service building doors are closed.

_____ k. Place a kerosene heater on condenser vacuum pump (build hut as needed)

_____ l. Place a kerosene heater on the A & B FD fan lube oil skids (build huts as needed)

SDRS

_____ a. Remove all wall and roof exhausters from service

Unit Out of Service

_____ a. Close combustion air doors

_____ b. Place heaters and enclosures around Stator Cooling, EHC, Closed Cooling/Aux Cooling header

_____ c. Drain demister wash piping

_____ d. Drain seal water piping in SDRS

_____ e. Enclose FD fan lube oil skids and place heater on

_____ f. Place a heater on the Unit 1 Jockey fire pump

_____ g. Place plastic over bottom ash crusher to prevent a draft being pulled in

2.2 OUTLYING COMMON STATION AREAS

Fuel Oil Building

_____ a. Close Rolling Steel Door East.

_____ b. Close entry Doors North and West.

Reactant Preparation Building

_____ a. Close Rolling Steel Door.

_____ b. Close entry Doors North, East and South.

_____ c. Close louvers.

Limestone Active Pile Enclosure (LAPE)

_____ a. Close Rolling Steel Doors (2) North and (1) South.

_____ b. Close entry doors.

Auxiliary Boiler Building

_____ a. Close Rolling Steel Door.

_____ b. Close entry doors East and West.

FGD Transfer Pump House

_____ a. Close the Rolling Steel Doors

_____ b. Verify heat trace is working

Back Up Generator

_____ a. Close the Rolling Steel Doors North and South sides.

Diesel Fire Pump house

_____ a. Close entry Doors East and West.

_____ b. Place a kerosene heater near the jockey pump

Screenhouse

_____ a. Close Rolling Steel Door.

_____ b. Close entry Door and intake bay access doors.

_____ c. Turn off roof exhauster.

"C" Warehouse

_____ c. Close the Rolling Steel Doors North and South sides.

_____ d. Close entry Doors North, South and East sides.

2.3 COOLING TOWER WINTER OPERATION OFF LINE

The following steps should be performed:

1) When the cooling tower basin temperature (condenser inlet) reaches 50 degrees.
2) If two pumps are in service remove one.
3) Open the cooling tower bypass sluice gate.
4) Ensure all cooling tower fans have been removed from service.
5) This operation will stop all flow up to the cooling tower fill, to prevent any icing damage to the cooling tower fill.

2.4 UNIT 1 / COMMON AREA HEAT TRACE CHECKLIST

1) Although PM# 55838 addresses initial problems with the following heat traces these items should be checked initially during cold weather setup and periodically during scheduled rounds.
2) Check for alarms on DCS (Graphic 1020). Note any alarms prior to making rounds.
3) Check each panel for tripped breakers and alarms. Perform visual for missing insulation and address any issues.
4) Reset any tripped breakers. If breaker will not reset address promptly.

PANEL	AREA
Screen house Heat Trace Panel 6 ocab-554	**Top of screen house**
Ash Pond Heat Trace panel #11 ocab-555	Common
Bottom Ash Line Heat Trace-AP	Common
Common Flyash Heat Trace OFAEB1	Flyash Elec. room
WTB Heat Trace Panel 5 OCAB-553	Water Treatment in ELEC. Room
CBU Dust Supp Heat Trace	Coal Handling at CBU
Coal Blending Heat Trace	Coal Handling Blending ELEC. Room
CCHSE Dust Supp Heat Trace	Coal Handling behind crusher house
CCHSE Washdown PMP Heat Trace	Coal Handling Crusher House ELEC. Room
Tripper Room Fire SYS. Heat Trace 1BPRA1 CKT #31	1BPRA1 ckt #31
Process Pond Sump Pumps Heat Trace Panel HTP-12	Across from Ammonia Tanks
Reactant Prep Sump Pumps Heat Trace Panel HTP 13	North of Reactant Prep Building
Coal Pile Ground Water and Run Off Sump Pump Heat Trace Panel HTP -14	Northwest of Unit 2 Cooling Tower
Process Ponds HTP-12	West of Ammonia Tanks
Reactant Prep Sump Pumps HTP-13	North West of Reactant Prep

3.0 UNIT 2 COLD WEATHER OPERATING PROCEDURES

3.1 UNIT 2 COLD WEATHER SETUP BY LANDING

Boiler Room Roof

_____ a. There are (17) Boiler Building Exhaust Fans, start by removing 5 of these from service and check building vacuum. You may be able to remove more.

Note: Be careful not to leave too many in service as this will pull much of the hot air from Unit 1 Boiler building.

Landing 16

_____ a. Close East doors.

Landing 14

_____ a. Close East door.

Landing 13

_____ a. Close West doors.

_____ b. Turn off 4 of the 8 roof exhausters, Keep roof exhauster 18 above the NH3 skid in service.

Landing 12

_____ a. There are 3 roof exhausters above Deaerator heater, turn all off except the center exhauster

Landing 11

_____ a. 6 louvers (2) electrically operated and 4 Manually operated. Close every other one of the manual louvers leaving 2 open.

Landing 6

_____ a. Close East door.

Landing 5

_____ a. Close West door

_____ b. There are 8 louvers on North wall which are operated from 2nd landing. Every other one should be open for a total of 5.

Landing 4

_____ a. Turn off Turbine Building Exhaust Fans.

Landing 2

_____ a. 8 louvers on North wall open every other one.

_____ b. Close all 4 Louvers by 2A FD Fan duct North wall, West end.

_____ c. On the West wall North end there are 8 louvers on top which are electrically operated and 8 Louvers on bottom which are manually operated. Check closed louvers on top and Manually close all louvers on bottom.

_____ d. West Wall center there are 4 Louvers. Manually close all 4 of them.

_____ e. West wall South end there are 15 Louvers 7 on top and 8 on bottom. Close all 15 Louvers.

_____ f. On the East wall there are 8 louvers on bottom which are electrically operated and 8 Louvers on top which are manually operated. Check closed louvers on bottom and Manually Open all louvers on top

_____ g. Ensure Boiler Ventilation Blowers for burner decks remain in service.

Ground Floor

_____ a. Close the (1) North, (1) East and (2) West rolling steel doors.

_____ b. Close entry doors to all 4 Stair towers and ensure Heaters in each tower are working.

_____ c. Close Submerged Chain Conveyor door North.

_____ d. Close entry doors (3) North, (2) West and (2) South.

_____ e. TC2 Reserve Aux Trans. (RAT) Fire Protection Building. Ensure Heater is working and vents are closed.

_____ f. TC2 Main Aux Trans. (MAT) Fire Protection Building. Ensure Heater is working, and vents are closed.

Dry Electrostatic Precipitator (DESP)

_____ a. Close Rolling steel and entry door on East wall on the north and south buildings (1 of each)

Pulse Jet Fabric Filter (PJFF)

_____ a. Close Rolling steel and entry door on East wall on the north and south buildings (1 on each)

_____ b. Verify heaters in the fire protection buildings are working and maintaining temperature

Fluidized Gas Desulphurization (FGD)

_____ a. Close Rolling steel and entry doors on East and West walls.

_____ b. Close all FGD Louvers and turn thermostats up on exhaust fans.

Oxidation Air Room

_____ a. Close Rolling steel and entry doors on South wall.

_____ b. Close all but 3 louvers, leave 3 louvers Open.

SUPPLY AND VENT FANS TO BE CARDED AND ISOLATED

Power down and place Hold cards on the following Vent/Supply fans. This is done in preparation to allow the intakes /exhausts to be covered to prevent cold air from entering the powerhouse.

VENT AND SUPPLY FANS

Component Name	Component Location	Breaker Location
2 Turbine Bldg Ground Floor Vent Fan #061	Ground Floor East	MCC-2TGMCA1 (Ground Floor North Wall)
2 Turbine Bldg Ground Floor Vent Fan #060	Ground Floor East	MCC-2TGMCA1 (Ground Floor North Wall)
2 Turbine Bldg Mezz Supply Fan #063	Mezz East	MCC-2TGMCB1 (Ground Floor Southeast)

2 Turbine Bldg Mezz Flr Supply Fan #064	Mezz East	MCC- 2TGMCB1 (Ground Floor Southeast)
2 Turbine Bldg Oper Flr Vent Fan #068	Mezz N/E	MCC-2TOMCA1 (Exciter Room)
2 Turbine Bldg Mezz Vent Fan #067	Ground Floor N/E	MCC-2TOMCA1 (Exciter Room)
2 Boiler Bldg Mezz Supply Fan #001	Ground Floor N/W	MCC-2BGMCA1 (Ground Floor North Wall)
2 Boiler Bldg Mezz Supply Fan #002	Ground Floor S/W	MCC-2BGMCB1 (Ground Floor 14KV Switchgear Room)
2 Turbine Bldg Ground Floor Vent Fan #066	Ground Floor North	MCC-2TGMCA1 (Ground Floor North Wall)
2 Turbine Bldg Mezz Supply Fan #069	Mezz East	MCC-2TOMCA1 (Exciter Room)
2 Turbine Bldg Mezz Supply Fan #070	Mezz East	MCC-2TOMCB1 (SE Corner Main Floor, Turbine Electrical Room)
2 Turbine Bldg Ground Floor Vent Fan #062	½ Landing up from Ground Floor N/E	MCC-2TGMCA1 Ground Floor N/E

STAIRWELL VENT FANS

Component Name	Component Location	Breaker Location
2 Boiler NW Stairwell Vent Fan #115	N/W Stairwell	MCC-2BGMCB1 (Ground Floor 14KV Switchgear Room)
2 Boiler NW Stairwell Vent Fan #114	N/W Stairwell	MCC-2BGMCB1 (Ground Floor 14KV Switchgear Room)
2 Boiler Rm NE Stairwell Vent Fan #090	North Stairwell	MCC-2BPMCA1 (6TH Landing, Overfire Damper Landing)
2 Boiler Rm NE Stairwell Vent Fan #091	North Stairwell	MCC-2BPMCB1 (8TH Landing N/W Corner)
2 Boiler Rm South Stairwell Vent Fan #092	South Stairwell	MCC-2BPMCA1 (6TH Landing Overfire Damper Landing)
2 Boiler Rm South Stairwell Vent Fan #093	South Stairwell	MCC-2BPMCB1 (8TH Landing N/W corner)
2A Turb Room Stairwell Vent Fan #095	East Stairwell	MCC-2TOMCA1 (Exciter Room)

2B Turb Room Stairwell Vent Fan #094	East Stairwell	MCC-2TOMCB1 (SE Corner Main Floor, Turbine Electrical Room)

4.0 COMBUSTION TURBINE SITE COLD WEATHER OPERATING PROCEDURES

4.1 COMBUSTION TURBINE SITE COLD WEATHER PREPARATION (COMMON EQUIPMENT)

Inlet Filter House and Evaporative Cooler

_____ c. Empty evaporative cooling water tanks during week of October 1st of every year

_____ d. Drain evaporative cooling water sumps in the filter house

_____ e. Drain evaporative cooling water headers

Water Wash Skid

_____ a. TC5 & 6 Skid – Verify Tank and room heaters are working, If not working Drain main water tank (located south end CT6)

_____ b. TC5 & 6 Skid – Verify water wash compartment heater 23WS-1 is working

_____ c. TC7, 8, 9, & 10 Skid – Verify Tank and room heaters are working, If not working Drain main water tank (located south end CT7)

_____ d. TC7, 8, 9, & 10 Skid – Verify water wash compartment heater 23WS-1 is working

4.2 CT'S 5 THRU 10

Generator Step–Up Transformers

_____ a. TC5 GSU Transformer fire protection valve compartment, verify space heater is operating

_____ b. TC6 GSU Transformer fire protection valve compartment, verify space heater is operating

_____ c. TC7 GSU Transformer fire protection valve compartment, verify space heater is operating

_____ d. TC8 GSU Transformer fire protection valve compartment, verify space heater is operating

_____ e. TC9 GSU Transformer fire protection valve compartment, verify space heater is operating

_____ f. TC10 GSU Transformer fire protection valve compartment, verify space heater is operating

Generator Collector Compartment

_____ a. TC5 Collector Compartment space heater 23HG-1, verify if operating properly

_____ b. TC6 Collector Compartment space heater 23HG-1, verify if operating properly

_____ c. TC7 Collector Generator Compartment space heater 23HG-2, verify if operating properly

_____ d. TC8 Collector Generator Compartment space heater 23HG-1A, 23HG-1B and 23HG-2 verify if operating properly

_____ e. TC9 Collector Generator Compartment space heater 23HG-1A, 23HG-1B and 23HG-2 verify if operating properly

_____ f. TC10 Collector Generator Compartment space heater 23HG-1A, 23HG-1B and 23HG-2 verify if operating properly

Gas Turbine Compartment

_____ a. TC5 – Verify turbine compartment heater 23HT-1A and 1B are working (big heaters)

_____ b. TC5 – Verify turbine compartment heater 23HT-3A and 3B are working (small heaters)

_____ c. TC6 – Verify turbine compartment heater 23HT-1A and 1B are working (big heaters)

_____ d. TC6 – Verify turbine compartment heater 23HT-3A and 3B are working (small heaters)

_____ e. TC7 – Verify turbine compartment heater 23HT-1A and 1B are working (big heaters)

_____ f. TC7 – Verify turbine compartment heater 23HT-3A and 3B are working (small heaters)

_____ g. TC8 – Verify turbine compartment heater 23HT-1A and 1B are working (big heaters)

_____ h. TC8 – Verify turbine compartment heater 23HT-3A and 3B are working (small heaters)

_____ i. TC9 – Verify turbine compartment heater 23HT-1A and 1B are working (big heaters)

_____ j. TC9 – Verify turbine compartment heater 23HT-3A and 3B are working (small heaters)

_____ k. TC10 – Verify turbine compartment heater 23HT-1A and 1B are working (big heaters)

_____ l. TC10 – Verify turbine compartment heater 23HT-3A and 3B are working (small heaters)

Accessory Module, Lube Oil Area

_____ a. TC5 – Verify accessory compartment Lube Oil heater 23HL-1 is working (big heaters)

_____ b. TC5 – Verify accessory compartment Lube Oil heater 23HL-3 is working (small heaters)

_____ c. TC6 – Verify accessory compartment Lube Oil heater 23HL-1A and 1B are working (big heaters)

_____ d. TC6 – Verify accessory compartment Lube Oil heater 23HL-3A and 3B are working (small heaters)

_____ e. TC7 – Verify accessory compartment Lube Oil heater 23HL-1A and 1B are working (big heaters)

_____ f. TC7 – Verify accessory compartment Lube Oil heater 23HL-3A and 3B are working (small heaters)

_____ g. TC8 – Verify accessory compartment Lube Oil heater 23HL-1A and 1B are working (big heaters)

_____ h. TC8 – Verify accessory compartment Lube Oil heater 23HL-3A and 3B are working (small heaters)

_____ i. TC9 – Verify accessory compartment Lube Oil heater 23HL-1A and 1B are working (big heaters)

_____ j. TC9 – Verify accessory compartment Lube Oil heater 23HL-3A and 3B are working (small heaters)

_____ k. TC10 – Verify accessory compartment Lube Oil heater 23HL-1A and 1B are working (big heaters)

_____ l. TC10 – Verify accessory compartment Lube Oil heater 23HL-3A and 3B are working (small heaters)

Accessory Module, Gas Valve Compartment

_____ a. TC5 – Verify Gas Valve compartment heater 23VS-1 is working (big heaters)

_____ b. TC5 – Verify Gas Valve compartment Humid. heater 23VS-3 is working (small heaters)

_____ c. TC6 – Verify Gas Valve compartment heater 23VS-1 is working (big heaters)

_____ d. TC6 – Verify Gas Valve compartment Humid. heater 23VS-3 is working (small heaters)

_____ e. TC7 – Verify Gas Valve compartment heater 23VS-1 is working (big heaters)

_____ f. TC7 – Verify Gas Valve compartment Humid. heater 23VS-3 is working (small heaters)

_____ g. TC8 – Verify Gas Valve compartment heater 23VS-1 is working (big heaters)

_____ h. TC8 – Verify Gas Valve compartment Humid. heater 23VS-3 is working (small heaters)

_____ i. TC9 – Verify Gas Valve compartment heater 23VS-1 is working (big heaters)

_____ j. TC9 – Verify Gas Valve compartment Humid. heater 23VS-3 is working (small heaters)

_____ k. TC10 – Verify Gas Valve compartment heater 23VS-1 is working (big heaters)

_____ l. TC10 – Verify Gas Valve compartment Humid. heater 23VS-3 is working (small heaters)

5.0 MATERIAL HANDLING COLD WEATHER OPERATING PROCEDURES

5.1 MATERIAL HANDLING SITE COLD WEATHER SETUP BY AREA

5.2 DOOR INSPECTIONS (COAL YARD)

Coal Barge Unloader Area

_____ e. Dust Suppression.

_____ f. Suppression Breaker Room.

_____ g. Operators Cab.

_____ h. CBU Breaker Room 2 doors.

B to C Transfer

Sample House

_____ a. North ground floor.

_____ b. South Ground floor.

_____ c. Breaker room and Fire Protection room.

_____ d. East ground floor.

_____ e. “D” floor louvers.

_____ f. Top floor East.

_____ g. Top floor West.

_____ h. Top floor louvers.

D to E Transfer

Stacker Reclaimer

_____ a. Operators cab.

_____ b. Electrical room (2 doors).

Crusher House

_____ a. East doors.

_____ b. West doors.

_____ c. North door.

_____ d. Wash down pump room (South and West doors and Heater).

_____ e. Take-Up area doors “E” & “R”.

_____ f. Top floor doors West “E” & “R”.

_____ g. Check all louvers Closed or covered.

_____ h. Crusher House breaker room all doors and sufficient heat.

“F” Gallery

_____ a. East doors.

_____ b. West doors.

_____ c. Fire Wall doors (all 3 sections).

“F” to “G” Transfer

_____ a. “F1 & “F2 Take-Up area door.

_____ b. 14th floor (all doors).

_____ c. Doors at Tripper Room.

_____ d. All louvers.

Tripper Room

_____ a. East door to Unit 2.

_____ b. West doors to U1 and U2.

“R” Tunnel

_____ a. South door.

_____ b. East conveyor door.

Blending Tunnel

_____ a. East doors (2).

_____ b. Tunnel escape door (West).

Fuel Blending Breaker Room

_____ a. South doors (3).

_____ b. North door.

5.3 DOOR INSPECTIONS (LIMESTONE)

Limestone Unloader

_____ a. Electrical room North and South.

_____ b. Winch room South door.

_____ c. Winch room Crane doors.

_____ d. Top level sheave access door.

"A" to "B" Limestone Transfer doors

"B" Limestone Conveyor

_____ a. Limestone Active Pile Entrainment (LAPE) building North and South doors.

"C" Limestone Conveyor

_____ a. Tunnel Escape door.

_____ b. "C" Limestone Conveyor at (LAPE) Building.

_____ c. Overhead doors at (LAPE) Building (3).

_____ d. "C" Conveyor top of belt at Reactant Preparation Building.

5.4 SCRAPER INSPECTION (PRIMARY AND SECONDARY)

Coal Conveyors and Feeders

_____ a. "A" Conveyor.

_____ b. "B" Conveyor.

_____ c. "C" Conveyor.

_____ d. "D" Conveyor.

_____ e. “D” Feeders 1 thru 4.

_____ f. “E” Conveyor.

_____ g. “S” Conveyor.

_____ h. “R” Conveyor.

_____ i. “R” Feeder.

_____ j. “F1” & “F2” Feeders.

_____ k. “F1” & “F2” Conveyors.

_____ l. “G1” & “G2” Conveyors/Trippers.

_____ m. A thru E Blending feeders.

_____ n. “E2” Conveyor.

_____ o. “E3” Conveyor.

Limestone Conveyors and Feeders

_____ a. “A” Feeder.

_____ b. “A” Conveyor.

_____ c. “B” Feeder.

_____ d. “B” Conveyor.

_____ e. “B” Tripper.

_____ f. “C” Feeder.

_____ g. “C” Conveyor.

5.5 HEAT IN PUMP ROOMS AND CABINETS

Coal Yard System Heaters

_____ a. Coal Barge Unloader (CBU) Cab.

_____ b. (CBU) Dust suppression pump room and breaker room.

_____ c. (CBU) NALCO building.

_____ d. (CDES) building fire protection room.

_____ e. (CDES) breaker room and control room.

_____ f. Stacker / Reclaimer Cab.

_____ g. Sample House Wash-Down pump Fire Protection room.

_____ h. Sample House breaker room.

_____ i. Sample House Wet Dust Extractor Cabinet.

_____ j. Crusher House Wash-down Pump/Fire Protection Room.

_____ k. Crusher House Breaker Room.

_____ l. Crusher House Wet Dust Extractor Cabinet.

_____ m. Crusher House Dust Suppression Pump Building.

_____ n. Fuel Blending Breaker Room.

_____ o. Fuel Blending Service Water Booster Room.

_____ p. Fuel Blending Fire Protection Room.

_____ q. Fuel Blending Tunnel Wet Dust Extractor Cabinet's "A" & "B".

Limestone System Heaters

_____ a. Limestone Barge Unloader (LBU) Dust Suppression Pump Building.

_____ b. (LBU) Cab.

_____ c. (LBU) Electrical Room.

_____ d. Limestone Active Pile Entrainment (LAPE) building Breaker Room.

5.6 MATERIAL HANDLING HEAT TRACE CHECKLIST

PANEL	AREA
CBU Dust Suppression Heat Trace	Coal Handling at CBU
Coal Blending Heat Trace	Coal Handling Blending ELEC. Room

CCHSE Dust Suppression Heat Trace	Coal Handling behind crusher house
CCHSE Wash down PMP Heat Trace	Coal Handling Crusher House ELEC. Room
Tripper Room Fire SYS. Heat Trace 1BPRA1 CKT #31	1BPRA1 ckt #31
Sample House Wet Dust Extractor	
Fuel Blending Wet Dust Extractor "A" & "B"	
Crusher House Wet Dust Extractor	
Crusher House Dust Suppression	
LBU Dust Suppression	
L/S "A" to "B" Transfer Service Water	

5.7 MATERIAL HANDLING MISCELLANEOUS ITEMS

_____ r. Confirm I&E has Completed Zero Speed Function Check PM's.

_____ s. Confirm I&E has Completed Gear Box Heater PM's.

_____ t. Test Vibrators on L/S Unloader Hopper.

_____ u. Move Portable Eyewash/Shower to Tractor Garage (Leave Full of Water).

_____ v. Confirm With Lube Department Oil Viscosity in Gear Boxes.

6.0 LABORATORY COLD WEATHER OPERATING PROCEDURES

6.1 LABORATORY SITE COLD WEATHER SETUP

1) Check area heaters is U1 Cooling Tower chemical feed buildings.
2) Check area heaters is U2 Cooling Tower chemical feed buildings.
3) Check area heaters in Water Treatment.
4) Have Heat Tracing checked at Condensate Polisher and NDCT & MDCT chemical feed buildings.

7.0 CCRT/PWT COLD WEATHER OPERATING PROCEDURES

7.1 CCRT/PWT SITE COLD WEATHER SETUP

CCRT Gypsum Storage Enclosure

_____ a. Close Rolling Steel doors on East and South walls and all entry doors.

_____ b. Turn thermostats up on exhaust fans. May need to run some exhaust fans to keep moisture down in GSE during gypsum production.

_____c. Check closed all fan louvers, report any that are not working.

Transfer Tower 2

_____ a. Close all entry doors.

_____ b. Turn thermostats up on exhaust fans. May need to run some exhaust fans to keep moisture down in GSE during gypsum production.

_____c. Check closed all fan louvers, report any that are not working.

Transfer Tower 3

_____ a. Close all entry doors.

_____ b. Turn thermostats up on exhaust fans.

_____c. Check closed all fan louvers, report any that are not working.

Transfer Tower 4

_____ a. Close all entry doors.

_____ b. Turn thermostats up on exhaust fans.

_____c. Check closed all fan louvers, report any that are not working.

CCRT Fly Ash Silos

_____ a. Close double doors and entry doors on Ash Conditioner landings

_____ b. Close curtains around 0A1, 0A2, 0B1, 0B2 CCRT Fly Ash Shuttle Conveyors

_____c. Test space heaters on Ash Conditioner landings and Shuttle Conveyor landings. Report any that are not working.

_____ d. Turn thermostats up on exhaust fans for the Ash Conditioner landings and Shuttle Conveyor landings

_____ e. Check closed all fan louvers

_____ f. Ensure exhaust fans are not running when space heaters are running.

_____ g. Check CCRT FAS Ash Conditioner Water Header Drain Valves (0-FA-CV-2410A1, A2, B1, B2) are open when not conditioning ash.

_____ h. Check heat trace panels ensuring; in auto, lights work and there are no faults

Report any problems found

_____ i. Check heat trace beacons (when lights are on the circuit is energized)

CCRT Maintenance Building

_____ a. Close Rolling Steel doors and entry doors.

_____ b. Test space heaters, report any that are not working.

_____ c. Turn thermostats up on exhaust fans

_____ d. Check closed all fan louvers, report any that are not working.

_____ e. Ensure exhaust fans are not running when space heaters are running.

CCRT Gypsum Dewatering Building

_____ a. Close Rolling Steel doors and entry doors.

_____ b. Test space heaters, report any that are not working.

_____ c. Turn thermostats up on exhaust fans

_____ d. Check closed all fan louvers, report any that are not working.

_____ e. Ensure exhaust fans are not running when space heaters are running.

_____ f. Check heat trace panels ensuring; in auto, lights work and there are no faults Report any problems found

_____ g. Check heat trace beacons (when lights are on the circuit is energized)

Transfer Tower 5 / CCRT Landfill Electrical and Conference Enclosure / CCRT Landfill Control Room

_____ a. Test space heaters, report any that are not working.

_____ b. Close Rolling Steel doors and entry doors._

____ c. Turn thermostats up on exhaust fans. May need to run some exhaust fans on product runs.

_____d. Check closed all fan louvers, report any that are not working.

_____e. Check heat trace panels ensuring; in auto, lights work and there are no faults. Report any problems found

_____ f. Check heat trace beacons (when lights are on the circuit is energized)

Transfer Tower 6

_____ a. Close Rolling Steel doors and entry doors.

_____ b. Turn thermostats up on exhaust fans.

_____c. Check closed all fan louvers, report any that are not working.

Process Water Treatment

_____a. Close Rolling Steel doors and entry doors.

_____b. Test space heaters, report any that are not working.

_____c. Turn thermostats up on exhaust fans

_____d. Ensure PWT makeup air units are set for winter operations and thermostats are set to 60 degrees

_____d. Check closed all fan louvers, report any that are not working.

_____e. Ensure exhaust fans are not running when space heaters are running.

_____f. Check heat trace panels ensuring; in auto, lights work and there are no faults. Report any problems found

_____g. Check heat trace beacons (when lights are on the circuit is energized)

_____f. Monitor standby reaction tanks temperatures when the temperature drops below 32 degrees.

_____1. Flow enough water through train to increase temperature

_____2. Drain connecting piping between reaction tanks. This option is for extended train outages

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8.0 PROCEDURES

8.1 UNIT 1 HEATING SYSTEM

For Complete procedures see HVAC Unit 1 Operating Procedures

8.2 UNIT 1 HEATING OPERATIONS OVERVIEW

8.3 SYSTEM STARTUP PREREQUISITES

1. All Lockouts/Tagouts have been cleared in respect to the safe operation of the Unit Heating System.
2. All maintenance work on system components has been completed; and the system has been inspected for removal of foreign materials.
3. All valves are properly lined up in accordance with approved checklists.
4. Electrical power is available for motors and other electrical equipment.
5. Instrument air must be available to supply control air to the pneumatically operated valves.
6. Review status of plant equipment AND review the DCS alarm log.
7. System is filled and vented, with level established in the expansion tank.

8.4 NORMAL SYSTEM STARTUP

_____ a. Place Normal System Fill in operation in accordance with section **Error! Reference source not found.**.

NOTE: The Unit Heat Converter must be lined up to provide a flow path for the Primary Heating Pumps. Prolonged operation of a Primary Heating Pump without a flow path may cause damage to the pump.

_____ b. Line Up Unit Heat Converter for Operations

1. Verify water outlet line vent valve closed.
2. Verify water inlet line drain valve closed.
3. Open water inlet isolation.
4. Cycle open and close the water outlet line vent valve to expel air from the heater.
5. Cycle open and close the channel side vent on the heat converter to expel air from the heater.
6. Open water outlet isolation.

NOTE: Once two Primary Heating Pumps are operating and the heater is vented, steam can be admitted to the heat converter.

c. Start two Primary Heating Pumps and all Secondary Heating Pumps in accordance with section **Error! Reference source not found.**.

d. Cycle open and close system vents at the following locations to expel air from the system:

- Turbine Room Heating Coils
- 1A Boiler Room Heating Coils
- 1B Boiler Room Heating Coils
- Unit Heat Converter

8.5 NORMAL SYSTEM OPERATIONS

_____ a. Locally, check the following items associated with the operating pumps:

- Discharge pressure
- Pump suction and discharge valves properly positioned
- Pump and motor vibration
- Motor temperature
- Pump packing glands for excessive leakage

_____ b. Weekly, equalize wear on pumps by alternating pumps in accordance with section **Error! Reference source not found.**.

_____ c. Locally, check the following items associated with the Expansion Tank:

- Leaks (physical integrity)
- Water make-up valves for proper alignment
- Expansion Tank water level

_____ d. Periodically inspect system piping and components for leaks (physical integrity) and lagging condition.

_____ e. Locally, check the following items associated with the Unit Heat Converter:

- Water outlet temperature
- Shell and channel relief valves seated/closed (150 psig)
- Shell side vent valve closed
- Shell side drain valve closed
- Channel side vent valve closed
- Channel side drain valve closed
- Shell water level (less than 2/3)