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Turbine Serial Number	170X394
Generator Serial Number	180X394
Unit Out of Service	2/17/2012
Unit Release for Service	4/13/2012

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Summary 1.

The unit was removed from service for inspection of the Low Pressure "A" and "B" turbines, all of the turbine valves and the FPT valves. The generator collector end was disassembled for investigation of the stator water system that was leaking during service. The T-11 bearing (steady bearing) was check for preload to try and correct vibration issues.

The low pressure diaphragms repairs were performed by CMS along with NDE inspection after repairs were completed. The information for work performed see CMS report.

A complete alignment was performed on the LP turbines including a long tightwire to check the positions of the T-5, T-6, T-7 and T-8 bearings. The packing cases for the LP sections were check for roundness, The N-6 and N-7 were found in usable condition, The N-8 and N-9 were remove and a attempt was made to round the case to within accept limits. Detail of were perform is include in section #2 of this report. The mid-standard support plates were removed to investigate a standard sticking problem that has been occurring during previous startups. Section #4 has the details of what was found and what was done to correct the issues with the standard. The MSV's and RHTSV's were removed and inspected by RSO at plant site. The CV's and IV's were sent to CMS for inspection and repairs. The ventilator valves and the FPT valves were inspected by RSO at plant site. Details for all of these valves for inspection and repairs are included in Section 3 for the main turbine valves and Section 4 for the FPT valves. Details of work perform will be found in the report written by CMS.

The misc. work included cleaning the main turbine, stator water, hydrogen and FPT oil coolers. After cleaning was completed the heads stator water cooler was pressure tested and found to be in good condition. All cooler heads were installed with new gaskets and leak checked. The heads were removed from each of these coolers and contractor cleaned the cooler tubes. The stator water "Y" strainer was disassembled for inspection the strainer that had been in services was found damaged and was sent to CMS for new screen to be installed. The strainer that was used as backup was found to be very good condition and was moved to the running position. The strainer that was repaired by CMS was put in the backup position in the filter canister. The generator end 90° of crossover pipes that were remove for disassembly were sent to Pathway Inc. for replacement of the expansion joints. New support frames were manufactured to support the pipe during transportation. The pipes were returned to job site and installed with no issues present.

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LP A and B turbines 2.

2.1 Bearings and Oil Deflectors

The T-5, T-6, T-7 and T-8 low pressure turbine bearings were removed during the disassembly of the turbine. The bearings were cleaned and the bond was checked using U.T method. The bearings were bolted together and measurements were taken to compare to the spare rotor journals. All bearings were found to have acceptable clearance. The T-7 bearing was found with damage in the U/H and was sent to Cincinnati Babbitt for repairs. The T-5, T-6 and T-8 bearings required no other work other then hand cleaning and stoning of the joints before final installation.

The T-10 bearing was removed for access to the endwinding on the collector end of the generator. This bearing was inspected and found to be in good condition with no repairs required.

The T-4 bearing was removed during the alignment of the "B" coupling for a shim adjustment to correct the coupling alignment. The anti-rotation bolt for the lower center pad was found to be short by 1". A new bolt was taken from stock and installed. The bearing had been running in this condition since the 2005 outage. No damage was done to the bearing as the left and right pads had the correct anti-rotation bolt installed, these 2 pads keep the center pad in place and close to the proper position.

The T-2 and T-3 bearing were also removed to correct coupling alignments. These bearings were visually inspected with no problems found.

All of the oil deflectors were removed, cleaned and inspected. Several of the deflectors were found with more then 1 ¹/₂ times the design clearance or with damaged teeth that required repairs. All of the deflectors were repaired by Cincinnati Babbitt and returned to the plant. Before the installation of the oil deflectors they were measured to verify for desired clearance to the spare rotor.

The T-11 (steady bearing) was removed and inspected. The bearing was found in good condition with no repairs required. The oil deflectors were sent to CBI for replacement of the teeth and boring to correct clearance to the journals.

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The bearing was installed and deflector was checked and required a small, .004, adjustment to get the preload within design limits. This adjustment required an adjustment to the Alterrex to bring it into proper alignment. See coupling alignment section for details of alignment of the Alterrex.

2.2 Diaphragm and Packing Case Alignments

All of the diaphragm and shaft packing was replaced; new straight tooth packing was installed. Steam turbine Alterative Recourses (S.T.A.R.) furnished the packing and performed the installation including machining the butts for clearance.

The N-8 and N-9 packing case were removed after roundness was taken on all of the packing cases. The N-8 and N-9 were found with as much as .175 out of roundness. These packing cases were clamped around steel discs and placed in an oven for stress relieving. After the stress relieving was completed the N-8 was within acceptable limits. The N-9 did not react to the stress relieve as did the N-8. Three rings of packing were machined to match the out of roundness of the N-9 packing case and installed. Only minor scraping was required after packing was installed.

2.3 Diaphragm Alignments and Turbine Clearances

Opening clearances were taken on the running rotors, these rotors were removed and the spare rotors were installed for compatibility checks. The spare rotors were removed; all diaphragms were removed and sent to CMS for inspection and repairs. The 16th stage nozzles for LP A and B were left in for bench mark readings that were taken by CMS machinist; these readings were recorded along with the compatibility check readings and used to position machine the new nozzle for axial position. CMS machined the new nozzles per instructions from Jim Cable to hold the nozzles in the correct axial position to the desired axial position of the spare rotors.

After repairs were completed the diaphragms were aligned to desired elevations taken from the long tightwire readings taken. The desired readings

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were supplied by Jim Cable. All center pin and axial clearances were corrected during the alignment process. Final closing clearances were measured and recorded and are included in section 7 of this report. New coupling spacers were machined and installed during the assembly to hold the rotor in the correct axial position, details of the spacer thickness and axial positions are included in this section part 2.5.

2.4 NDE and Repairs to Shells

The inner shells were removed to clean the axial fits, no problems were had during the removal of lower half shells. The inner and outer shells were blast cleaned and NDE inspected. Only minor indications were found, with no work required.

The 20th stage diaphragm H/J bolts were replaces do to threads pulling out during the assembly of the turbine. The original thread was 1 ¼" X 6 thread socket head, the new bolts are 1 3/8" X 8 thread socket head bolts. During the next outage on this machine the joint bolts can be converted back to original design by inserting the diaphragm. This option was not available during this outage do to time constraints

2.5 Coupling Alignments and Radial Rotor Positions

At assembly of the turbines the A, B, C and D couplings were check and aligned with the exhaust hood off to within design limits. After the outer shells and exhaust hood were installed and tightened the coupling were check and required small moves on the T-4, T-7 and T-8 bearing to bring the coupling back into acceptable limits. Final radial rotor readings were taken at the oil deflectors and the packing cases. These readings are included in the data section of the report.

The new coupling spacers were installed and final axial trams were taken at the turbine end of the LP-A and the generator end of the LP-B rotor to the standards. With the rotor hard against the generator side of the thrust bearing the final axial tram were as follows; LP-A 21.060, LP-B 16.837. The spacers

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and couplings at were aligned to with in design differential runouts and the coupling bolts were stretched to the desired amount.

2.6 Crossover Pipe Expansion Joints

The generator end crossover pipe sections were removed and shipped to Pathway for replacement of the expansion joint bellows. The work was performed with the pipes being returned to the plant site where they were insulated and installed.

3. Valves

3.1 Main Stop Valves

The 4 main stop valves were removed and disassembled for cleaning and inspection. The insulation was removed from the valve bodies for a blast cleaning and NDE inspections on both the inside and outside, no indications were found. The #2 valve seat was found with crack indication in the satellite inlay of the seat. The lean ring bolts were removed by first drilling the heads of the bolts off then removing the lean ring. The remaining threaded part of the lean ring bolts were removed by drilling to tap drill size and picking the threads. The removal of the seal required cutting grooves thru the seat to relieve the fit to the valve body and using a hydraulic jack and puller rod. The new seat was machined with a clearance of .003 to the tightest place in the bore of the valve body.

The valve strainers were sent CMS for repairs to the fit areas for the head and the lean ring at the top and bottom of the strainers. Final sizes for these fits are included the data section of this report.

3.2 Control Valves

The 4 control valves were removed and sent to CMS for disassembly, cleaning and inspection. See CMS report for details of the inspection and repairs to the valves.

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The valve bodies were striped of insulation and blast cleaned for NDE inspections. The #3 valve seat was satellite inlay was from damaged and parts of the inlay missing. The seat was removed by RSO with tooling from CMS along with assistance from CMS machinist for the removal and installation of the seat pins. A drawing of the seat showing the final sizes is included in the data section.

The valves were installed and the stand studs were tightened using a torque value of 4000 ft lbs. The stand studs were measured using 2 different methods. The tool using the #196 dial test indicator work the best and showed that the 4000 ft. lb torque produced a stretch of .009 to .010 on the stand studs. Design required stretch was .008 to .010.

The reach rod from the actuator was set to acquire desired closed end overtravel and the tension rods were adjusted.

Final data sheets for these valves are included in section 7 of this report.

3.3 1st RHT Combine Valves

The 1st RHT combine valves were removed for cleaning and inspections. The intercept valves were shipped to CMS to perform these inspections, see CMS report for details of inspection performed. Data sheets for the intercept valves are included in data section of this report. The stop valves for the combine valves were disassembled, cleaned and inspected on site by the RSO personnel. The pressure seal head bushings required honing to bring the stem to bushing clearance within design limits. The stem to pressure seal head back seat on each of the valves was blue checked and lapped until a 100% contact was acquired. The pressure seal head to valve body gasket surface were lapped until acceptable contact was acquired. The valve were assembled and installed. During the installation the pressure seal head covered nuts were found bottoming on the end of the studs, an extra washer was added to each of the studs so that the nuts could be tightened to the required torque. Final data sheets for these valves are included in section #7 of this report.

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3.4 2nd RHT Combine Valves

The 2nd RHT combine valves were removed from the valve bodies for disassembly, cleaning and inspections. The intercept section of each of these valves was shipped to CMS for the cleaning and inspections. See CMS report for details for work perform on these valves during the CMS inspections. The stop valve section for these valves were disassembled, cleaned and inspected on site by the RSO turbine crews. Each of the 4 valves was disassembled and dirty stem to bushing measured. The stems were polished to bring them to design size. The pressure seal head bushings were honed until design clearance to the stems was acquired.

The stem to pressure seal head back seat for each of these valve was blue checked and lapped to acquire 100 % line contact. The gasket surface for the pressure seal head in the valve body was also lapped to acquire good contact between the pressure seal and the valve body gasket surface.

Data sheets for the final clearances acquired can be found in section #7 of this report. Extra ¹/4" thick washers were added to each of the pressure seal head stud so that the covered nuts would not bottom out during the tightening of the nuts to hold the pressure seal head in proper position.

3.5 Ventilator Valves

The 1st and 2nd ventilator valves were removed, disassembled and inspected. The stems to bushing clearances were measured. The stems and bushings were cleaned to acquire design clearance. The valve plug and seat were cleaned and NDE inspected with no indications found. The plug to seat was blue contact checked on each of these valves; the seats were lapped until good contact was acquired. The air cylinders were disassembled with no problems found. New gaskets were installed in the air cylinder. The valves were assembled and installed with the stand studs tightened to the design torque for the stud diameter size. Data sheet for the final stem to bushing clearance is included in section #7 of this report.

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4. "A" Coupling Standard and 2nd RHT Turbine

4.1 Standard Support Plates

The support plates were removed from under the mid-standard to investigate problems had during startups on this unit. The standard would have to be greased during each startup to get the standard to slide during growth of the turbine. The right side plates were found with shims; turbine end plates had .029 shims, the generator plates were found with .030 shims. The plates and shims were cleaned and reinstalled. The plates were measured and check for flatness before installing with no problems found. A master level, .0005 per foot calibration, was used to check the level position of the standard box. The standard box was found out of level front to back and left to right. The standard box was check for soft foot and the front right side was fount not loaded properly. The shims were adjusted under the right side to level the standard box and eliminate the soft foot condition that was found during the checks on the standard box. A drawing showing the dimensions of the support plates as they were found during the checks on the standard. Final shims installed under the right side of the standard box to keep the standard level and loaded properly were as follows; TE right side .045, GE right side .025, no shims were required under the left side of the standard box. The grease lines were cleaned and the grease path for the standard was changed so that new grease could pushed through the grease path and vented out so that the old grease would be pushed out and replaced with new each time the standard is greased.

4.2 "A" and "B" Coupling Alignments

The "A" and "B" coupling were broken down alignments were checked. The TE of the 2nd RHT was found high and the GE of this rotor had been found low during the checks made during the disassembly of the LP A. Adjustments were made to T-2, T-3 and T-4 bearings to bring the "A" and "B" coupling into acceptable limits. The final coupling alignment data sheets can be found in section #7 of this report.

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4.3 Radial Rotor Positions and 2nd RHT Shell Alignment

Radial rotor positions were measured and recorded before adjustments were make to the standard or bearing for alignment. The radial rotors were again check after couplings were aligned. The shell arm support keys and centerline gib keys were adjust at this time to bring the 2nd RHT shell back to the alignment as left from the 2005 ADSP outage. Final radial rotor positions checks are included in section #7 of this outage report.

5. Generator Inspection and Repairs

5.1 Repairs to the Stator Water Line to the #5 High Voltage Bushing

The UH bearing bracket, inner end shield and bushing box doors were removed to access the #5 high voltage bushing to make repairs. AGT was brought on site to locate and repairs the stator water leaks. A cooper elbow located on top of the #5 HVB was found to have a stress crack in it. AGT changed out the elbow and performed more leak inspections on the rest of the system inside the generator, only the elbow was found to be leaking

5.2 Steady Bearing Preload and Alterrx Alignment

The inspection of the T-11 bearing preload revealed excessive preload on bearing and the "E" coupling to be misaligned. The preload was adjusted to the proper setting. To obtain adjustment to the coupling alignment, the Alterex was shimmed to correct the elevation for proper alignment. During this process it was found that the Alterex had a soft issue which was corrected with elevation shims.

5.3 H2 Coolers

The left side cooler heads were removed and the coolers were cleaned by an outside contractor, the cooler heads were cleaned and inspected. Epoxy repairs were performed to the heads that some of the coating had worn off. The cooler heads were re-installed, cooling water system set to run, a leak check on RS and LS cooler heads was performed, some adjustments

6. Feed Pump Turbine

6.1 Thrust Bearing Replacement

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The Boiler Feed Pump Turbine thrust bearing changed per request of plant personnel.

Due to the running thrust bearing operating at a high temperature, a system spare was installed

6.2 Control Valves

Inspection of the valve rack assemblies was completed by RSO personnel and all grease fittings were flushed with new grease.

6.3 Stop Valve

The BFPT stop valve was disassembled and inspected, a new stem was installed in the assembly during inspections. The stop valve seat NDE tested and blue checked for contact, results were unacceptable on the blue contact check, a lapping block was manufactured and the lapping was completed with 100% contact.

6.4 Coupling Alignment

The BFPT-Boiler Feed Pump coupling was removed and NDE tested with no crack indications being found. The coupling was reassembled and a 16 point alignment was performed. Results of the alignment were unacceptable. A shim change was performed on the Feed Pump and another 16 point check was performed, with acceptable results.

6.5 Last Stage Blade Inspections

Scaffold was installed to reach the LSB on BFPT, CMS arrived on site and performed NDE testing on turbine last stage blades, and there were no crack indications found.

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7. **Data**

Sheets

Left

"A" Coupling Standard Support Plates

Mitchell Unit #2 Date 3/23/2012 Reading at Assembly

_					
	1				
	2.243	2.244	2.220 Plus .025 shim	2.220 Plus .025 shim	
					Right
	2,243	2,244	2,198	2.197	
			Plus .045 shim	Plus .045 shim	

Generator End

Turbine End

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"A" Coupling Standard Support Plates

Mitchell Unit #2 Date 3/16/2012 At disassembly

Generator End



Turbine End

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Diaphragm Clearance Record

LP B Final Closing

Date:		,4/10/20	012	-	Tur	bine Se	rial No.	170X39)4	Pr	epared	l by		RF Spe	encer	
OT A					ide C			r		Vlasal	A alves i a	-:				
STA NO		D(L)		narge S			es 7P	NII		vneei	Admis	sion			es	I 'D
	^	F(L)	F(K)	D										- 11		
ZIIE	A	4 975	4 075			0.304	0.265								1.208	1.203
		1.375	1.375			0.265	0.265								1.160	1.160
OOTE		0.700	0.700			0.039	0.001	4 4 0 0	4 4 0 0						0.020	0.023
201E	A	0.790	0.780			0.078	0.088	1.182	1.130						1.221	1.214
	E	0.812	0.812			0.080	0.080	1.140	1.140						1.170	1.170
LOTE	0	-0.022	-0.032			-0.002	0.008	0.042	-0.010						0.051	0.044
191E	A	0.775	0.780			0.081	0.086	1.027	1.004						1.237	1.229
	E	0.828	0.828			0.070	0.070	1.000	1.000						1.220	1.220
	D	-0.053	-0.048			0.011	0.016	0.027	0.004						0.017	0.009
181E	A	0.845	0.861			0.129	0.124	1.009	1.004						1.188	1.177
	E	0.822	0.822			0.070	0.070	1.000	1.000						1.220	1.220
	D	0.023	0.039			0.059	0.054	0.009	0.004						-0.032	-0.043
17TE	А	0.938	0.940			0.123	0.122	1.042	1.038						1.088	1.072
	E	0.896	0.896			0.060	0.060	1.000	1.000						1.080	1.080
	D	0.042	0.044			0.063	0.062	0.042	0.038						0.008	-0.008
16TE	А	0.620	0.640			0.075	0.089	1.224	1.219						0.993	0.990
	Е	0.862	0.862			0.060	0.060	1.190	1.190						1.000	1.000
	D	-0.242	-0.222			0.015	0.029	0.034	0.029						-0.007	-0.010
16GE	А	1.715	0.640			0.097	0.079	0.690	0.716						0.475	0.475
	Е	1.799	1.799			0.060	0.060	0.690	0.690						0.480	0.480
	D	-0.084	-1.159			0.037	0.019	0.000	0.026						-0.005	-0.005
17GE	А	1.782	1.765					0.490	0.505						0.530	0.540
	Е	1.708	1.708			0.060	0.060	0.480	0.480						0.560	0.560
	D	0.074	0.057					0.010	0.025						-0.030	-0.020
18GE	А	1.770	1.745			0.117	0.117	0.470	0.470						0.620	0.635
	Е	1.634	1.634			0.070	0.070	0.480	0.480						0.700	0.700
	D	0.136	0.111			0.047	0.047	-0.010	-0.010						-0.080	-0.065
19GE	А	1.765	1.770			0.092	0.079	0.485	0.495						0.595	0.610
	Е	1.766	1.766			0.070	0.070	0.480	0.480						0.700	0.700
	D	-0.001	0.004			0.022	0.009	0.005	0.015						-0.105	-0.090
20GE	Α	1.615	1.615			0.112	0.076	0.695	0.716						0.680	0.685
	Е	1.600	1.600			0.080	0.080	0.670	0.670						0.700	0.700
	D	0.015	0.015			0.032	-0.004	0.025	0.046						-0.020	-0.015
21GE	Α					0.281	0.260								0.710	0.710
	Е	2.000	2.000			0.265	0.265								0.730	0.730
	D					0.016	-0.005								-0.020	-0.020
	А		1								Î		Ì			
	Е												1			
	D															
Comm	hen	ts:		•									•	•		
Adjust	me	ents wer	e made	to whee	el cle	arance	and axia	al tram o	of 16.83	B to m	ove th	e rote	or .035	tward t	he turbi	ne end.
LPB n	ew	axial tra	am to be	e 16.80	3 at "	D" coup	ling left	side to	the star	ndard.						

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Date:(m/d/y) March 16, 2012 Turbine Serial No. 170X394 Prepared by Naz/Kenny В Ε Position B, E, F BEARING A PIN LEVER BEARINGS Position A, C, D BUSHING - PIN С ()LEFT RIGHT FIT F D Loft Eit Duching Dight Eit Docition ST00139

Position	Left Fit	Bushing	Right Fit
A - I.D.		3.999	
A Pin O.D.	3.996	3.996	3.996
Clearance		.003	

Position	Left Fit	Bearing	Right Fit
B - I.D.	3.998		3.998
B Pin O.D.	3.997		3.997
Clearance	.001		.001

Position	Left Fit	Bushing	Right Fit
C - I.D.	3.002		3.002
C Pin O.D.	3.000	3.995	2.999
Clearance	.002		.003

Position	Lett Fit	Busning	Right Fit
D - I.D.	3.003	4.000	3.002
D Pin O.D.	2.999	3.994	2.999
Clearance	.004	.006	.003

UPPER LEVEL										
Position	Left Fit	Bearing	Right Fit							
E - I.D.	2.252	2.250	2.251							
E Pin O.D.	2.248	2.2480	2.248							
Clearance	.004	.002	.003							

LEFT LOWER LEVEL

Position	Left Fit	Bearing	Right Fit
F - I.D.	1.502	1.501	1.501
F Pin O.D.	1.499	1.499	1.499
Clearance	.003	.002	.002

RIGHT LOWER LEVEL

Position	Left Fit	Bearing	Right Fit
F - I.D.	1.501	1.501	1.501
F Pin O.D.	1.499	1.499	1.500
Clearance	.002	.002	.001

Comments **CRV 1-1**

Combined Intercept Valve Linkage

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Main Stop Valve

Turbine Serial No. 170X394 Date(m/d/y) 02/26/12 Prepared by Stillwagoner / Reitter / Wright **INSPECTIONS & CHECKS** CODE Seat Inspection PT Backseat Contact Х Χ Work Carried Out Х PT Disc Inspection **Bypass Valve Inspection** Ν Not Done Х Х Seat Contact Check Lap PSH gasket fit NA Not Applicable PT Stem Inspection С See Comments PT Pressure Seal Head ۷ Visual Inspection Stud Inspection UT MP Mag. Particle V Nut Inspection UT Ultrasonic MP Penetrant **Body Inspection** PT V Strainer Inspection

Note: Stem and bushing diameters should be recorded both before andafter cleaning. Try bar diameters must be recorded.

Valve Clearance

		BEFORE CLEAN	AFTER CLEAN	BEFORE CLEAN	AFTER CLEAN	BEFORE CLEAN	AFTER CLEAN	BEFORE CLEAN	AFTER CLEAN	
		В	В	С	С	Е	Е	Н	Н	
VALVE	Bushing ID	2.800		3.755		3.757		2.745	2.753	$\left(\right)$
#1	Stem OD	2.728	2.728	3.736	3.737	3.736	2.736	2.728	2.727	
TRY BAR DIA.	Clearance	0.072		0.019		0.021		0.017	0.026	
VALVE	Bushing ID	2.799	2.797	3.755	3.755	3.758	3.758	2.749	2.749	
# 2	Stem OD	2.728	2.728	3.739	3.737	3.737	3.737	2.728	2.728	
TRY BAR DIA.	Clearance	0.071	0.069	0.016	0.018	0.021	0.021	0.021	0.021	

STEM RUNOUT

		Α	В	С	D	Ε	F
VALVE	#1	-0.001	0.000	0.000	0.000	0.000	0.000
VALVE	# 2	0.002	-0.001	0.000	0.000	0.000	-0.001
STEM LENG	iTH		IN.				

BYPASS VALVE

	LIFT	
VALVE NO.	#1	
VALVE NO.	# 2	.755 / .060 Z

Comments:	





Staff's First Set of Data Requests Item No. 33 Attachment 9 Page 20 of 76

Combined Valve

KPSC Case No. 2012-00578

Plant & Un <u>it</u>	Mitchell U2		Ρ	repared by	Ralbusky	/ Jackson /	Hill
Date(m/d/y 2/28/2012	As Found	/ Final Data	As Found	. Tu	Irbine S/N:	170X394	
	INSPECTIONS & C	HECKS				CODE	
Body Inspection	Reheat S	Stop Valve Di	SC		Х	Work Carr	ied Out
Head Inspection	Outer Di	sc Contact C	hk		N	Not Done	
Stem Inspection-Upper	Inner Dis	sc Contact Ch	nk		NA	Not Applic	able
Stem Inspection-Lower	Strainer	Inspection			C	See Comm	nents
Stud Inspection	Linkage	Inspection			V	Visual Insp	pection
Nut Inspection	Equalize	r Valve			MP	Mag. Parti	cle
Main Seat Inspection	Inspectio	Inspection of Equalizer			UT	Ultrasonic	
Intercept Valve Disc	Valve on	#2 CRV			PT	Penetrant	
Pressure Seal Head							
	^{—L} Valve Cl	earance					
				LEFT	(2-2)	RIGHT ((2-4)
				BEFORE	AFTER	BEFORE	AFTER
				CLEANING	CLEANING	CLEANING	CLEANING
	A L	Bushing I	D	5.758		5.760	
	TRY BAR	. Crosshead	d OD	5.737		5.737	
	₿ [₽] /	Clearance		0.021		0.023	
	В	Bushing I	D	3.256		3.257	
	—C TRY BAR	Stem OD		3.237		3.237	
	<u>D</u>	Clearance		0.019		0.020	
비미미		Bushing I	D	4.754		4.758	
╎└┙┍┙	—F D	Stem OD		4.740		4.738	
		Clearance		0.014		0.020	
	Н	Bushing I	D	5.120	5.130	5.131	5.131
	TRY BAR	Stem OD		5.114	5.112	5.115	5.112
	—G	Clearance		0.006	0.018	0.016	0.019
	—Н	Bushing I	D	5.130	5.130	5.128	5.130
	J	Stem OD		5.116	5.112	5.114	5.112
88	1	Clearance		0.014	0.018	0.014	0.018
	— J	Balance		28.256		28.257	
_1 P	Ě	Seal Ring	s OD	28.224		28.223	
	_	Clearance		0.032		0.034	
		Ring					
	-K Stom Bi						
	Stem RL			Г			V
		A	0.000	F	0.000	I 0.000	N

 LEFT
 0.000
 0.000
 0.001
 0.003
 0.000

 RIGHT
 0.000
 0.000
 0.003
 0.000
 0.000

 STEM LENGTH
 69.5
 IN.
 64.75

Comments

Try bar check good for both reheat stop valves

20

0.000

KPSC Case No. 2012-00578 Staff's First Set of Data Requests Item No. 33 Attachment 9 Page 21 of 76

Combined Valve

Plant & Un <u>it</u>	Mitchell U2		P	repared by	Ralbusky /	Jackson /	Hill
Date(m/d/y 2/28/2012	As Found	/ Final Data	As Found	Tu	Irbine S/N:	170X394	
	INSPECTIONS & C	HECKS				CODE	
Body Inspection	Reheat S	Stop Valve Di	SC		Х	Work Carr	ied Out
Head Inspection	Outer Di	sc Contact C	hk		Ν	Not Done	
Stem Inspection-Upper	Inner Dis	sc Contact Ch	nk		NA	Not Applic	able
Stem Inspection-Lower	Strainer	Inspection			С	See Comr	nents
Stud Inspection	Linkage	Inspection			V	Visual Insp	pection
Nut Inspection	Equalize	r Valve			MP	Mag. Parti	cle
Vain Seat Inspection	Inspectio	on of Equalize	er		UT	Ultrasonic	
Intercept Valve Disc Pressure Seal Head	Valve or	1 #2 CRV			PT	Penetrant	
	L Valve C	learance					
(0)				LEFT	(2-1)	RIGHT (2-3)
				BEFORE	AFTER	BEFORE	AFTER
	_	_		CLEANING	CLEANING	CLEANING	CLEANIN
	_A L	Bushing I	D	5.767		5.757	
		. Crosshead	d OD	5.736		5.736	
	_⋼_ッ	Clearance		0.031		0.021	
	B	Bushing I	D	3.260		5.257	
	C TRY BAF	Stem OD		3.237		5.237	
	—IJ ⊢E	Clearance		0.023		0.020	
	- -	Bushing I	D	4.756		4.758	
		Stem OD		4.739		4.742	
		Clearance		0.017	5 404	0.016	5 400
↓_m_↓	H	Bushing I		5.131	5.131	5.130	5.130
		Stem OD		5.114	5.114	5.112	5.112
4 A	U	Duching		0.017	0.017	0.010	0.018
		Busning I	U	5.129	5.130	5.128	5.130
	—I J	Stem OD		0.016	5.113 0.017	0.015	0.017
		Balance		0.010	0.017	0.015	0.017
	J	Soal Ding	200	20.241		20.200	
		Clearance	500	20.230		0.032	
		Ring		0.011		0.052	
	—K Stem Rı	unout					
		A	С	F	G	I	K
	LEFT	0.000	0.000	0.001	-0.002	0.000	0.00
	RIGHT	0.000	0.000	0.001	0.000	-0.001	0.00
	STEN	LENGTH	69.5	IN.	64.75		
Comments							
COMMENIA							

KPSC Case No. 2012-00578 Staff's First Set of Data Requests Item No. 33 Attachment 9 Page 22 of 76

Main Stop Valve

Date(m/d/y) 02/25/12	Turbine S	erial No. <u>170X394</u>	Prepared by		Ralbusky
	INSPECT	IONS & CHECKS			CODE
Seat Inspection	PT	Backseat Contact	Х	Х	Work Carried Out
Disc Inspection	PT	Bypass Valve Inspection	Х	Ν	Not Done
Seat Contact Check	Х	Lap PSH gasket fit	Х	NA	Not Applicable
Stem Inspection	PT			С	See Comments
Pressure Seal Head	PT			V	Visual Inspection
Stud Inspection	UT			MP	Mag. Particle
Nut Inspection	V	l		UT	Ultrasonic
Body Inspection	MP	1		PT	Penetrant
Strainer Inspection	V				

Note: Stem and bushing diameters should be recorded both before andafter cleaning. Try bar diameters must be recorded.

Valve Clearance

		BEFORE CLEAN	AFTER CLEAN	BEFORE CLEAN	AFTER CLEAN	BEFORE CLEAN	AFTER CLEAN	BEFORE CLEAN	AFTER CLEAN	
		В	В	С	С	E	Е	Н	Н	
VALVE	Bushing ID	2.806	2.820	3.758	3.757	3.758	3.757	2.752	2.750	(
# 3	Stem OD	2.729	2.728	3.738	3.738	3.738	3.737	2.730	2.729	\backslash
TRY BAR DIA.	Clearance	0.077	0.092	0.020	0.019	0.020	0.020	0.022	0.021	
VALVE	Bushing ID	2.808		3.758		3.757		2.754	2.750	
# 4	Stem OD	2.727	2.727	3.737	3.737	3.735	3.738	2.728	2.728	
TRY BAR DIA.	Clearance	0.081		0.021		0.022		0.026	0.022	
# 4 TRY BAR DIA.	Stem OD Clearance	2.727 0.081	2.727	3.737 0.021	3.737	3.735 0.022	3.738	2.728 0.026		2.728 0.022

STEM RUNOUT

		Α	В	С	D	E	F
VALVE	#3	-0.003	0.000	0.000	0.000	0.000	-0.002
VALVE	# 4	0.004	0.000	0.000	0.000	0.000	0.004
STEM LENG	iTH		IN.				

BYPASS VALVE

		LIFT
VALVE NO.	#3	.745 / .054 "Z"
VALVE NO.	# 4	

Comments:	





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Bolt Extension Report For Use With Extensiometer

			FINAL									
Date (m/d/y)	4/16/12	1	Furbine Sei	rial No.	170X394	Pr	epared by		Eric Naz		
Comp	onent *	MSV1					Comp	onent *	MSV 2			
		Dial Re	ading			I [Dial Re	eading		
Location	Extension Required (In Mils)	Before Tightening	After Tightening	Extension Obtained (In Mils)	Rod No.		Location	Extension Required (In Mils)	Before Tightening	After Tightening	Extension Obtained (In Mils)	Rod No.
1	.012015	765	753	12		i T	1	.012015	880	867	13	
2	.012015	759	746	13			2	.012015	758	746	12	
3	.012015	692	679	13			3	.012015	661	649	12	
4	.012015	620	607	13			4	.012015	772	759	13	
5	.012015	765	753	12			5	.012015	773	761	12	
6	.012015	765	752	13			6	.012015	758	746	12	
7	.012015	636	624	12			7	.012015	895	882	13	
8	.012015	472	459	13			8	.012015	697	684	13	
9	.012015	812	798	14			9	.012015	547	534	13	
10	.012015	759	746	13			10	.012015	748	735	13	
11	.012015	618	606	12			11	.012015	576	563	13	
12	.012015	590	577	13			12	.012015	781	769	12	
13	.012015	614	601	13			13	.012015	764	751	13	
14	.012015	919	906	13			14	.012015	793	780	13	
15	.012015	622	610	12			15	.012015	765	753	12	
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Indicate Valve, Shell, or Flange Identification.

KPSC Case No. 2012-00578 Staff's First Set of Data Requests Item No. 33 Attachment 9 Page 24 of 76

Control Valves



STUDORS

VALVE				
VALVE NO.	1	2	3	4
SLEEVE ID	6.941	6.518	6.515	6.517
VALVE OD	6.925	6.503	6.498	6.502
CLEARANCE	.016	.015	.017	.015
SLEEVE ID	6.944	6.522	6.516	6.519
VALVE OD	6.925	6.501	6.497	6.500
CLEARANCE	.019	.021	.019	.019
LIFT				

KPSC Case No. 2012-00578 Staff's First Set of Data Requests Mitchell Unit #2 spring 2012 Turbine/Generator Outage Attachment 9 Page 25 of 76

Control Valves

	DIRTY REA	DINGS				Ste	ms and Bushings
Date (m/d/y)	Feb 25, '12	Turbine	Serial No.		Pre	pared by	HERMAN MCCALLISTER
	I	NSPECTION	S & CHECK	(S			CODES
Disc Inspection Stem Inspection Bushing Inspec Stud Inspection Nut Inspection Body Inspection	n tion 1			-		X NA C V MP UT PT	Work Carried Out Not Done Not Applicable See Comments Visual Inspection Mag. Particle Ultrasonic Penetrant
<u>NOTE</u> : Stem an cleaning VALVE CLEAF	d brushing diam . Try bar diame RANCES	neters should b eters must be r	e recorded bo ecorded.	oth before and	after		A
		BEFORE	AFTER	BEFORE	AFTER		
		CLEAN	CLEAN	CLEAN	CLEAN		
		В	В	E	Е		
Valve	Bushing ID	2.628"		2.630"]	
#1	Stem OD	2.613"		2.616"			
	Clearance	15 Mils		14 Mils			
Valve	Bushing ID	2.634"		2.628"			
# 2	Stem OD	2.611"		2.612"			
	Clearance	23 Mils		16 Mils		1	 −− D
Valve	Bushing ID	2.627"		2.635"			
#3	Stem OD	2.616"		2.616"			
	Clearance	11 Mils		19 Mils			┍┘║╴│┪┥┱╴╴╴╒
		2 630"		2 626"			
Valve	Bushing ID	2.000		2.020			
Valve # 4	Stem OD	2.630		2.612"			
Valve # 4	Stem OD Clearance	2.612" 18 Mils		2.612" 14 Mils		-	
Valve # 4 Try Bar D	Stem OD Clearance Diameter	2.612" 18 Mils		2.612" 14 Mils			
Valve # 4 Try Bar D STEM RUNOU	Bushing ID Stem OD Clearance Diameter T (Mils)	2.612" 18 Mils		2.612" 14 Mils			
Valve # 4 Try Bar I STEM RUNOU Valve	Bushing ID Stem OD Clearance Diameter T (Mils)	2.612" 18 Mils	D	2.612" 2.612" 14 Mils	Max	Bowed	?
Valve # 4 Try Bar I STEM RUNOU Valve # 1	Bushing ID Stem OD Clearance Diameter T (Mils) A 0.0020	2.612" 2.612" 18 Mils C 0.0020	D 0.0010	2.612" 2.612" 14 Mils F 0.0020	Max 0.0010	Bowed	?
Valve # 4 <u>Try Bar D</u> STEM RUNOU Valve # 1 # 2	Bushing ID Stem OD Clearance Diameter T (Mils) A 0.0020 0.0060	2.612" 2.612" 18 Mils 0.0020 0.0020	D 0.0010 0.0050	2.612" 2.612" 14 Mils F 0.0020 0.0040	Max 0.0010 0.0020	Bowed OK OK	?
Valve # 4 Try Bar D STEM RUNOU Valve # 1 # 2 # 3	Bushing ID Stem OD Clearance Diameter T (Mils) A 0.0020 0.0060 0.0040	2.612" 2.612" 18 Mils 0.0020 0.0050 0.0010	D 0.0010 0.0050 0.0020	2.020 2.612" 14 Mils F 0.0020 0.0040 0.0030	Max 0.0010 0.0020 0.0030	Bowed OK OK	? - F
Valve # 4 Try Bar D STEM RUNOU Valve # 1 # 2 # 3 # 4	Bushing ID Stem OD Clearance Diameter T (Mils) A 0.0020 0.0060 0.0040 0.0010	2.612" 2.612" 18 Mils 0.0020 0.0050 0.0010 0.0020	D 0.0010 0.0050 0.0020 0.0010	2.020 2.612" 14 Mils F 0.0020 0.0040 0.0030 0.0010	Max 0.0010 0.0020 0.0030 0.0010	Bowed OK OK OK	? - F
Valve # 4 Try Bar D STEM RUNOU Valve # 1 # 2 # 3 # 4 Stem Length	Bushing ID Stem OD Clearance Diameter T (Mils) A 0.0020 0.0060 0.0040 0.0010 62	2.612" 2.612" 18 Mils 0.0020 0.0050 0.0050 0.0010 0.0020 Inches	D 0.0010 0.0050 0.0020 0.0010 Ma	2.612" 2.612" 14 Mils F 0.0020 0.0040 0.0040 0.0010 ax Allowable	Max 0.0010 0.0020 0.0030 0.0010 0.002	Bowed OK OK OK K	? F 50095

Comments

#3 stem has a crack in the seat/pin area near the spline (needs replaced).

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Control Valve Runouts



Valve #	Lift
1	
2	
3	
4	

(All measurements in mils, Torque in ft-lbs.)

Valve No.	Guide Bushing Dia.	Guide Dia.	Clear.	Stem Bushing Dia.	Stem Dia.	Clear.	Runout Position 1	Runout Position 2	Runout Position 3	Runout Position 4	Stem To X-Head Torque
1	8.002	7.985	0.017	2.481	2.478	0.003	0.04				
2	8.002	7.988	0.014	2.476	2.471	0.005	0.016				
3	8.002	7.989	0.013	2.480	2.476	0.004	N/A- S	TEM BRC	KEN		
4	8.004	7.990	0.014	2.484	2.479	0.005	0.017				

Comments	
#3 Stem has	a cracked area in the seat /pin area needs replaced

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Bolt Extension Report For Use With Extensiometer

	FINAL											
Date (m/d/y)	4/16/12	. 1	Furbine Se	rial No.	170X394	Pr	epared by		Eric Naz		
Comp	onent *	MSV 3					Comp	onent *	MSV 4			
		Dial Re	ading			I F		r r	Dial Re	ading		
		Diarrie	ading					L	Diarre	Juding		
Location	Extension Required (In Mils)	Before Tightening	After Tightening	Extension Obtained (In Mils)	Rod No.		Location	Extension Required (In Mils)	Before Tightening	After Tightening	Extension Obtained (In Mils)	Rod No.
1	.012015	632	619	13			1	.012015	879	866	13	
2	.012015	755	742	13			2	.012015	627	614	13	
3	.012015	784	771	13			3	.012015	781	766	15	
4	.012015	565	553	12			4	.012015	794	782	12	
5	.012015	604	590	14			5	.012015	573	560	13	
6	.012015	621	608	13			6	.012015	588	576	12	
7	.012015	581	566	15			7	.012015	421	408	13	
8	.012015	623	611	12			8	.012015	425	413	12	
9	.012015	723	711	12			9	.012015	704	691	13	
10	.012015	709	696	13			10	.012015	866	852	14	
11	.012015	614	601	13			11	.012015	601	588	13	
12	.012015	691	678	13			12	.012015	802	788	14	
13	.012015	612	600	12			13	.012015	744	732	12	
14	.012015	775	761	14			14	.012015	921	908	13	
15	.012015						15	.012015	790	777	13	
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Indicate Valve, Shell, or Flange Identification.

Mitchell Unit #2 spring 2012 Turbine/Generator Outage

Plant & Unit Mitchell Unit 2 Prepared by McDade/McKown/Naz Date(m/d/y) 3/3/2012 As Found / Final Data As Found Turbine S/N: 170X394 **INSPECTIONS & CHECKS** CODE X Casing Inspection Piston & Ring Inspection Work Carried Out Stud Inspection Piston Rod Inspection NA Not Applicable **Piston Gasket Inspection** See Comments Nut Inspection С Stem Inspection Link. & Spring Inspection ۷ Visual Inspection Main Seat Inspection MP Mag. Particle Internal Seat Inspection UT Ultrasonic Main Disc Inspection PT Penetrant Internal Disc Inspection 10.001 CYL. DIA. STROKE ĥ E \otimes 1.473 ы BUSH. DIA. STEM DIA. 1.463 CLEAR. 0.010 GAP GAP 1.005 BUSH. DIA. STEM DIA 0.990 CLEAR. 0.015 1.002 BUSH. DIA. Œ ₩ъ STROKE 0.991 STEM DIA CLEAR. 0.011 h BALANCE ļ 3.384 CHAM-DIA. DISK DIA. 3.364 LIFT 0.128 0.020 CLEAR. ψ Comments:

Ventilator Valve #1

KPSC Case No. 2012-00578

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Ventilator Valve Prepared by Stillwagner/Wright Plant & Unit Mitchell Unit #2 As Found / Final Data As Found Turbine S/N: 170X394 Date(m/d/y) 3/53/2012 **INSPECTIONS & CHECKS** CODE Casing Inspection Piston & Ring Inspection Χ Work Carried Out Head Inspection Air Cylinder Inspection Not Done Ν Stud Inspection Piston Rod Inspection NA Not Applicable Nut Inspection Piston Gasket Inspection С See Comments Stem Inspection Link. & Spring Inspection ۷ Visual Inspection Main Seat Inspection MP Mag. Particle Internal Seat Inspection UT Ultrasonic Main Disc Inspection PT Penetrant Internal Disc Inspection CYL. DIA. 10.002 STROKE 2.187 E 60 BUSH. DIA. 1.497 STEM DIA. 1.493 F 0.004 CLEAR. 0.446 GAP GAP BUSH. DIA. 1.002 STEM DIA 0.989 CLEAR. 0.013 œ BUSH. DIA. 0.999 **#:⊳** œÊ STROKE STEM DIA. 0.989 H CLEAR. 0.010 k BALANCE 1 5.310 CHAM-DIA. 5.277 DISK DIA. LIFT CLEAR. 0.033 4 Comments:

Valve #2

KPSC Case No. 2012-00578

Date:(m/d/y) March 16, 2012 Turbine Serial No. 170X394 Prepared by Naz/Kenny В Ε Position B, E, F BEARING A PIN LEVER BEARINGS Position A, C, D BUSHING - PIN С LEFT RIGHT FIT F D ST00139

Left Fit	Bushing	Right Fit
4.000	4.000	4.002
3.996	3.996	3.996
.004	.004	.006
	Left Fit 4.000 3.996 .004	Left Fit Bushing 4.000 4.000 3.996 3.996 .004 .004

Position	Left Fit	Bearing	Right Fit
B - I.D.	3.999		3.998
B Pin O.D.	3.997		3.997
Clearance	.002		.001

Position	Left Fit	Bushing	Right Fit
C - I.D.	3.000	3.998	3.000
C Pin O.D.	2.999	3.994	2.998
Clearance	.001	.004	.002

Position	Left Fit	Bushing	Right Fit
D - I.D.	3.002	3.999	3.002
D Pin O.D.	2.999	3.994	3.000
Clearance	.003	.005	.002

UPPER LEVEL

Position	Left Fit	Bearing	Right Fit
E - I.D.	2.252	2.250	2.252
E Pin O.D.	2.247	2.2470	2.247
Clearance	.005	.003	.005

LEFT LOWER LEVEL

Position	Left Fit	Bearing	Right Fit
F - I.D.	1.501	1.500	1.501
F Pin O.D.	1.500	1.499	1.498
Clearance	.001	.001	.003

RIGHT LOWER LEVEL

Position	Left Fit	Bearing	Right Fit
F - I.D.	1.502	1.500	1.502
F Pin O.D.	1.499	1.499	1.500
Clearance	.003	.001	.002

Comments **CRV 1-2**

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Staff's First Set of Data Requests Mitchell Unit #2 spring 2012 Turbine/Generator Outage Item No. 33 Attachment 9 Page 32 of 76

Diaphragm Clearance Record

LP-A Final Closing Clearances

KPSC Case No. 2012-00578

Readings After Adjusting.026 toward the GE to correct axial positions.

FINAL

Date:		4	/9/2012		Tu	rbine Se	erial No.	170X394	1	Prepared	d by	RF Spe	ncer	
STA		Whe	el Disch	arge Si	ide (es		Wł	heel Admiss	sion Side	Clearar	ces	
NO.		P(L)	P(R)	D		ZL	ZR	NL	NR			Н	L'L	L'R
21TE	А	1.360	1.365			0.325	0.275						0.611	0.611
	Е	1.375	1.375			0.265	0.265						0.660	0.660
	D	-0.015	-0.010			0.060	0.010						-0.049	-0.049
20TE	А	0.793	0.774			0.090	0.094	0.620	0.611				0.669	0.638
	Е	0.812	0.812			0.080	0.080	0.620	0.620				0.650	0.650
	D	-0.019	-0.038			0.010	0.014	0.000	-0.009				0.019	-0.012
19TE	А	0.797	0.812			0.102	0.092	0.444	0.400				0.559	0.580
	Е	0.828	0.828			0.070	0.070	0.440	0.440				0.660	0.660
	D	-0.031	-0.016			0.032	0.022	0.004	-0.040				-0.101	-0.080
18TE	А	0.909	0.968			0.080	0.086	0.413	0.426				0.575	0.590
	Е	0.822	0.822			0.070	0.070	0.440	0.440				0.660	0.660
	D	0.087	0.146			0.010	0.016	-0.027	-0.014				-0.085	-0.070
17TE	А	0.883	0.847			0.091	0.076	0.435	0.437				0.487	0.499
	Е	0.896	0.896			0.060	0.060	0.440	0.440				0.520	0.520
	D	-0.013	-0.049			0.031	0.016	-0.005	-0.003				-0.033	-0.021
16TE	А	0.830	0.831			0.110	0.075	0.601	0.607			Î	0.410	0.406
	Е	0.862	0.862			0.060	0.060	0.630	0.630				0.440	0.440
	D	-0.032	-0.031			0.050	0.015	-0.029	-0.023				-0.030	-0.034
16GE	А	1.038	1.033			0.095	0.100	0.729	0.740			Î	0.482	0.499
	Е	1.111	1.111			0.060	0.060	0.690	0.690				0.500	0.500
	D	-0.073	-0.078			0.035	0.040	0.039	0.050				-0.018	-0.001
17GE	А	1.106	1.060			0.075	0.081	0.559	0.575				0.626	0.629
	Е	1.020	1.020			0.060	0.060	0.500	0.500				0.580	0.580
	D	0.086	0.040			0.015	0.021	0.059	0.075				0.046	0.049
18GE	А	1.041	1.056			0.095	0.077	0.554	0.519				0.747	0.725
	Е	1.009	1.009			0.070	0.070	0.500	0.500				0.720	0.720
	D	0.032	0.047			0.025	0.007	0.054	0.019				0.027	0.005
19GE	А	1.056	1.089			0.095	0.093	0.548	0.550				0.711	0.708
	Е	1.078	1.078			0.070	0.070	0.500	0.500				0.720	0.720
	D	-0.022	0.011			0.025	0.023	0.048	0.050				-0.009	-0.012
20GE	А	1.079	1.054			0.086	0.087	0.781	0.789				0.783	0.762
	Е	1.000	1.000			0.080	0.080	0.710	0.710				0.740	0.740
	D	0.079	0.054			0.006	0.007	0.071	0.079				0.043	0.022
21GE	А	2.033	2.028			0.295	0.308						0.790	0.819
	Е	2.000	2.000			0.265	0.265						0.780	0.780
	D	0.033	0.028			0.030	0.043						0.010	0.039
	А													
	Е													
	D													
Comm	en	ts:												

"B" Coupling Gap - L=

Right=

LPA axial tram L/S of "B" coupling = 21.070

8.

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Alignment

	FI	NAL	Couplings
Date	,4/12/2012	Turbine Serial No.	Prepared by
Coupling	"A"	Sweep Diameter	Indicator Mounted on

Alignment Readings

Position	Тор	Left	Bottom	Right	Тор	
Rim (Mils)	0 mils	-4 mils	-2 mils	2 mils	0 mils	0 mils
Face 0º	1.523"	1.525"	1.526"	1.523"		
Face 90º	1.525"	1.526"	1.526"	1.525"		0 mils
Face 180º	1.526"	1.524"	1.527"	1.525"		
Face 270º	1.526"	1.529"	1.530"	1.526"	-5 mils	1 mils 0 mils 2 mils
Average	1.525"	1.526"	1.527"	1.525"		
Relative	0 mils	1 mils	2 mils	0 mils		2 mils
Check		Face	Rim		-	
Top + Bottom=		2 mils	-2 mils			-2 mils
Right + Left =		1 mils	-2 mils			
Difference=		1 mils	0 mils			

Rim Recheck (If Necessary)

Position	Тор	Left	Bottom	Right	Тор
Rim (Mils)					

Comments:	

Mitchell Unit #2 spring 2012 Turbine/Generator Outage Item No. 33 Attachment 9 Page 34 of 76

LP A Final

LP "A"

Tightwire Readings

Date 4/9/2012 Turbine Serial No. 170X394

Prepared by _____

LOCATION	Distance from TE	Sag Mils	Read	Raw Data lings In Ir	n Nches	Rel (Sag C	ative Posi	ition in mils)	True Position Elev Horz		
	22	5.1	0.000		0.003	0		3	-11	-2	
T-5 Oil Bore Set Point				-0.015			-10				
	32	7.0	0.300		0.300	0		0	20	0	
N-6 GRV 1				0.313			20				
	43	9.0	0.300		0.307	0		7	14	-4	
N-7 GRV 3				0.308			17				
	67	12.5	0.399		0.406	0		7	31	-4	
21 TE				0.421			35				
	83	14.3	0.460		0.464	0		4	5	-2	
20 TE				0.453			7	-	-	_	
	97.5	15 /	0 366		0.360	6		0	-17	3	
19 TE	57.5	10.4	0.000	0.331	0.000	0	-14		17		
	107	15.0	0.242		0.242	0		0	10	0	
18 TF	107	15.9	0.342	0.345	0.342	0	19	0	19	0	
	445	40.0	0.040	0.010	0.050	•			40	1 4	
17 TE	115	16.3	0.349	0.354	0.356	0	21	1	18	-4	
				0.334			21				
	123	16.5	0.517	0.544	0.501	16	00	0	18	8	
16 IE				0.511			26				
	138	16.5	0.511		0.513	0		2	13	-1	
16 GE				0.509			14				
	145	16.4	0.349		0.357	0		8	12	-4	
17 GE				0.349			16				
	154.5	16.0	0.354		0.357	0		3	9	-2	
18 GE				0.348			10				
	164.25	15.5	0.355		0.359	0		4	-1	-2	
19 GE				0.340			1				
	179	14.4	0 451		0 451	0		0	16	0	
20 GE			0.101	0.453	0.101		16		10		
	105.5	12.7	0.351		0 351	0		0	1		
21 GE	130.5	12.7	0.001	0.339	0.001	0	1	0		0	
	225 5	6.4	0.446		0.450	0		1	2	1 2	
N-7 GRV 1	230.0	0.4	0.440	0 439	0.450	U	-1	4	-3	-2	
	246 E	11	0.449	0.100	0.452	0		E	- <u>)</u>	1 2	
N-7 GRV 3	240.0	4.1	0.440	0.449	0.455	0	5	<u>р</u>	3	-3	
	255.5	21	0.007		0.000	7		0	19	4	
T-6 Oil Bore Set Point	200.0	2.1	0.007	0.020	0.000		22		13		
										1	
Distance, roller to roller	264	0.0									
in inches	207	0.0									
				L		-				<u>.</u>	

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Mitchell Unit #2 spring 2012 Turbine/Generator Outage Attachment 9

Alignment,	Internal
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Relative & True Position Final Date: (m/d/y) 4/24/2012 Turbine Serial No. 170X394 Ruckman / Stillwagner Prepared by Set Final Comment Sag Raw Data **Relative (Sag Corrected) True Position** LOCATION Mils **Readings in inches** Position in Mils Elev Horz 11.060 T-3 Oil Bore 11.050 10 0 -18 5 11.037 -13 é Ç 13.047 13.040 T-4 Oil Bore 7 0 -62 4 12.982 -58 é Ç T-5 Oil Bore 10.002 10.006 0 4 -10 -2 9.994 -8 é è T-6 Oil Bore 10.087 10.067 20 0 23 10 10.100 33 ê ç T-7 Oil Bore 10.002 9.997 5 0 6 3 10.006 9 ê Ç T-8 Oil Bore 10.009 9.996 13 0 -25 6 9.978 -18 é Ç N3 G5 0.000 -0.021 21 0 -30 11 -0.040 -19 é ç N4 GR 1 0.000 0.003 0 3 -2 6 0.007 ê è 7 N5 GR 5 0.000 0.001 0 2 -1 1 0.002 ê è 2

Mitchell Unit #2 spring 2012 Turbine/Generator Outage Item No. 33 Attachment 9 Page 36 of 76

Final Tightwire

LP "B"

Tightwire Readings

Date	4/5

5/2012 Turbine Serial No. <u>170X394</u>

Prepared by _____

LOCATION	Distance from TE	Sag Mils	Read	Raw Data lings In Ir	i Iches	Rela (Sag C	ative Posi	ition in mils)	True Position Elev Horz	
	21	4.8	0.000		0.008	0		8	12	-4
T-7 Oil Bore Set Point				0.011			16			
	30	6.5								
N-8 GRV 1										
	41	85								
N-8 GRV 3	- 11	0.0								
	<u>CE</u>	40.0	0.400		0.402	0		0	4	0
21 TE	60	12.0	0.406	0 396	0.403	3	5	0	4	2
				0.000		-		-		_
	81.5	13.8	0.446	0.457	0.449	0	05	3	23	-2
20 TE				0.457			20			
	96.5	15.0	0.355		0.354	1		0	7	1
19 TE				0.347			8			
	103.5	15.4	0.348		0.352	0		4	11	-2
18 TE				0.346			13			
	111	15.7	0.301		0.297	4		0	6	2
17 TE				0.289			8			
	119	15.9	0.496		0.503	0		7	17	-4
16 TE				0.501		•	21	-		-
	140	15.0	0.501		0.504	0		2	1/	-2
16 GE	140	10.9	0.001	0.501	0.304	0	16	5	17	-2
	4.40	45.7	0.050		0.054	0		0	F	4
17 GE	148	15.7	0.353	0 341	0.351	2	6	0	S	I
				0.041				-		
10.05	154	15.5	0.347	0.054	0.350	0	10	3	18	-2
18 GE				0.351			19			
	163	15.0	0.358		0.358	0	_	0	7	0
19 GE				0.350			7			
	178	13.8	0.449		0.449	0		0	17	0
20 GE				0.452			17			
	194.5	12.1	0.404		0.408	0		4	0	-2
21 GE				0.394			2			
	218	8.7								
N-9 GRV 1										
	229	6.7								
N-9 GRV 3										
	235	5.6	0.008		0.000	8		0	-7	4
T-8 Oil Bore Set Point				-0.009			-3			
Distence roller to roller	260	0.0								
in inches										
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Rotor Journal Condition

Date: ,2/15/12 Turbine Serial No. 170X394 Prepared by Stillwagoner/Ralbusky

Journal Number T-5

Note: Mark on sketch to show grooving, discoloration, carbon inclusions, or irregularities in the journal surface.



Diameters						
90°	Round					
	90º					

Comments:	

Journal Sizes

Maximum Minimum Difference Average **0**°

90°

All

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Rotor Journal Condition



Staff's First Set of Data Requests Item No. 33 Attachment 9 Page 39 of 76

Coupling Assembly Checks Without Integral Rabbets Final Date(m/d/y) ,4/22/12 Turbine S/N: 170X394 Prepared by Barnette/Hill NOTES: (1) For radial runout set indicator to read 0 Coupling A "0" at the number 1 position. (2) Mark positions 1-8 to agree with factory stamped degree marks on rotor as Data Final (as found/final) shown on Fig. 1. Left Side Turb end Gen End Ε B C D 0° 17 Rotation ·90° +270 3-Brg Brg 180° Fig. 2. Fig. 1. **Coupling Runouts** (Readings are in Mils) **Position Number**

		3	5	7	9	11	13	2	14	12	10	8	6	4	1	3
Area Indicated																
TE Journal	Α	0.0	0.0	-0.5	-0.5	0.0	0.0	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TE Cplg. Periphery	E B	0.0	-1.0	-1.0	-0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Spacer	C	1.5	1.0	1.0	0.0	-0.5	-1.5	-1.5	-0.5	-1.5	-1.0	0.0	1.0	1.0	1.0	0.0
GE Cplg. Periphery	[D	1.0	1.0	1.0	1.0	1.0	0.5	1.0	0.0	0.0	0.0	0.0	1.0	1.0	1.0	0.0
GE Journal	E	0.0	0.5	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	1.0	0.0
Differential Runouts																
Journals	A-E	0.0	0.5	0.5	1.0	0.0	0.0	0.5	0.5	0.0	0.0	0.0	1.0	0.0	1.0	0.0
Cplg. Periphery	B-D	1.0	2.0	2.0	1.5	1.0	0.5	1.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0
Spacer to Cplg	C-B	1.5	2.0	2.0	0.5	0.5	1.5	1.5	0.5	1.5	1.0	0.0	0.0	1.0	1.0	0.0
Spacer to Cplg	C-D	0.5	0.0	0.0	1.0	1.5	2.0	2.5	0.5	1.5	1.0	0.0	0.0	0.0	0.0	0.0

Maximum Runouts

Area Indicated	Data Check	TIR Runout	TIR Check	
TE Journal	A	OK	1.0	OK
TE Cplg. Periphery E	В	OK	1.0	OK
Spacer	C	Check	3.0	OK
GE Cplg. Periphery [D	OK	1.0	OK
GE Journal	Ε	OK	0.5	OK

Maximum Differential Runouts

		Max. Diff.	Diff. Check
Journals	A-E	1.0	OK
Cplg. Periphery	B-D	2.0	Check
Spacer to Cplg	C-B	2.0	OK
Spacer to Cplg	C-D	2.5	OK

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Bolt Extension Report

(For Use With Extensioneter)

				FINAL										
Date (r	m/d/y))	04/29/12	#2 extensiometer Standard .480 29/12 Turbine Serial No 170X394 Prepared by										
Compo	onent	*		"B" Coupling Component *										
			Dial Re	Dial Reading							Dial Re	ading		
Location	5 Extension	E (In Mils)	Before Tightening	After Tightening	Extension Obtained (In Mils)	Rod No.		Location	5 Extension	In Mils)	Before Tightening	After Tightening	Extension Obtained (In Mils)	Rod No.
1	28	30	919	889	30		1		28	30				
2	28	30	914	885	29		1		28	30				
3	28	30	561	533	28		1		28	30				
4	28	30	503	473	30				28	30				
5	28	30	467	438	29				28	30				
6	28	30	449	420	29				28	30				
7	28	30	467	439	28				28	30				
8	28	30	441	413	28				28	30				
9	28	30	921	893	28		1		28	30				
10	28	30	909	881	28				28	30				
11	28	30	505	477	28				28	30				
12	28	30	500	472	28				28	30				
13	28	30	567	537	30		1		28	30				
14	28	30	487	458	29				28	30				
15	28	30	420	391	29				28	30				
16	28	30	551	523	28				28	30				
					_									
							1							
							1							
							1							
							1							
							1							
							1							
							1							
							1							
		Ļ		L			J							

Indicate Valve, Shell, or Flange Identification.

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Coupling Bolt Assembly Data

FINAL

Date: 5/7/2012

Turbine Serial No. 170X394

Prepared by K. Rawlings

COUPLING "A"

STUD	COUI	PLING HOLE DIAM	ETER	STUD DIA	METER	CLEARANCE		
HOLE	TB. SIDE	GEAR/SPACER	GEN. SIDE	TB. SIDE	GEN. SIDE	TB. SIDE	GEAR/SPACER	GEN. SIDE
1 (M)	2.813 "		2.751 "	2.729 "	2.730 "	0.084 "		0.021 "
2	2.812 "		2.751 "	2.731 "	2.730 "	0.081 "		0.021 "
3	2.874 "		2.875 "	2.872 "	2.872 "	0.002 "		0.003 "
4	2.813 "		2.751 "	2.728 "	2.728 "	0.085 "		0.023 "
5	2.813 "		2.749 "	2.731 "	2.729 "	0.082 "		0.020 "
6	2.879 "		2.879 "	2.878 "	2.878 "	0.001 "		0.001 "
7	2.813 "		2.751 "	2.730 "	2.728 "	0.083 "		0.023 "
8	2.813 "		2.751 "	2.730 "	2.730 "	0.083 "		0.021 "
9	2.813 "		2.752 "	2.729 "	2.730 "	0.084 "		0.022 "
10	2.813 "		2.751 "	2.729 "	2.729 "	0.084 "		0.022 "
11	2.895 "		2.894 "	2.893 "	2.893 "	0.002 "		0.001 "
12	2.813 "		2.751 "	2.729 "	2.728 "	0.084 "		0.023 "
13	2.813 "		2.751 "	2.730 "	2.730 "	0.083 "		0.021 "
14	2.873 "		2.873 "	2.871 "	2.871 "	0.002 "		0.002 "

Comments:

Numbers in bold are fitted bolts

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Mitchell Unit #2 spring 2012 Turbine/Generator Outage Item No. 33 Attachment 9 Page 42 of 76

Date (m/d/y)

.4/22/201

Turbine Serial No 170X394

Component *

"A" Coupling

Prepared by Barnette

Component *

]		Dial Re	ading		
Location	5 Extension Required (In Mils)		Before Tightening	After Tightening	Extension Obtained (In Mils)	Rod No.
4	Lo	Hi	500	500	00	
1	20	22	520	200	20	
2	20	22	017 625	490	22	
3	20	22	533	512	20	
4	20	22	522	512	21	
0	20	22	00Z	502	21	
7	20	22	518	106	22	
/ 0	20	22	5/7	490 525	22	
0	20 20	22	5/12	520	22	
9	20	22	540	510	20	
10	20	22	618	508	20	
10	20	22	472	150	20	
12	20	22	473	40Z	21	
13	20	22	039	519	20	
14	20	22	610	292	20	

			Dial Re	ading		
ocation	Extension	(In Mils)	lefore ightening	ufter ightening	xtension)btained In Mils)	tod No.
	Lo	Hi	ш⊢	ΚΗ	ШОЭ	œ
	20	22				
	20	22				
	20	22				
	20	22				
	20	22				
	20	22				
	20	22				
	20	22				
	20	22				
	20	22				
	20	22				
	20	22				
	20	22				
	20	22				

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Alignment



Alignment Readings

Position	Тор	Left	Bottom	Right	Тор	
Rim (Mils)	0 mils	-17 mils	-31 mils	-12 mils	0 mils	0 mils
Face 0º	1.565"	1.564"	1.564"	1.565"		
Face 90°	1.558"	1.560"	1.562"	1.561"		0 mils
Face 180°	1.538"	1.539"	1.541"	1.540"		
Face 270°	1.549"	1.549"	1.550"	1.551"	-17 mils	0 mils 2 mils -12 mils
Average	1.553"	1.553"	1.554"	1.554"		
Relative	0 mils	0 mils	2 mils	2 mils		2 mils
Check		Face	Rim		-	
Top + Botto	om=	2 mils	-31 mils			-31 mils
Right + Lef	t =	2 mils	-29 mils			
Difference=	;	0 mils	-2 mils			

Rim Recheck (If Necessary)

Position	Тор	Left	Bottom	Right	Тор
Rim (Mils)					

Comments:	

 Staff's First Set of Data Requests

 Mitchell Unit #2 spring 2012 Turbine/Generator Outage

 Item No. 33

 Attachment 9

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Final

Coupling Bolt Assembly Data

KPSC Case No. 2012-00578

Date:

5/7/2012 Turbine Serial No. 170X394

Prepared by K. Rawlings

COUPLING "B"

STUD	COU	LING HOLE DIAN	IETER	STUD DIA	METER		CLEARANCE		
HOLE	TB. SIDE	GEAR/SPACER	GEN. SIDE	TB. SIDE	GEN. SIDE	TB. SIDE	GEAR/SPACER	GEN. SIDE	Bolt Weight
1 (M)	3.694 "		3.694 "	3.691 "	3.691 "	0.003 "			0.003 "
2	3.651 "		3.651 "	3.648 "	3.648 "	0.003 "			0.003 "
3	3.510 "		3.615 "	3.500 "	3.497 "	0.010 "			0.118 "
4	3.519 "		3.564 "	3.500 "	3.498 "	0.019 "			0.066 "
5	3.511 "		3.563 "	3.500 "	3.501 "	0.011 "			0.062 "
6	3.515 "		3.562 "	3.505 "	3.499 "	0.010 "			0.063 "
7	3.514 "		3.563 "	3.497 "	3.497 "	0.017 "			0.066 "
8	3.512 "		3.660 "	3.499 "	3.496 "	0.013 "			0.164 "
9	3.678 "		3.678 "	3.675 "	3.675 "	0.003 "			0.003 "
10	3.670 "		3.670 "	3.667 "	3.667 "	0.003 "			0.003 "
11	3.513 "		3.660 "	3.499 "	3.501 "	0.014 "			0.159 "
12	3.514 "		3.562 "	3.501 "	3.498 "	0.013 "			0.064 "
13	3.513 "		3.565 "	3.503 "	3.497 "	0.010 "			0.068 "
14	3.515 "		3.564 "	3.500 "	3.501 "	0.015 "			0.063 "
15	3.511 "		3.563 "	3.499 "	3.501 "	0.012 "			0.062 "
16	3.515 "		3.655 "	3.500 "	3.499 "	0.015 "			0.156 "

Comments:

Mark location of "H" to closed bolt hole Numbers in bold are fitted bolts.

5th check 4-28 Days	Final	Coup	ling Assem Without Int	bly Checks egral Rabbets
Date(m/d/y) 04/28/12 Days	Turbine S/N:	170X394	Prepared by	Hamlton/Hill
Coupling C		NOTE: (1) Fc "(S: or radial runout set indica)" at the number 1 positio	ator to read
Data (as found/final)		(2) M si sl	ark positions 1-8 to agree tamped degree marks on hown on Fig. 1.	e with factory a rotor as
	Turb end	Left Side	Gen End	
$ \begin{array}{r} 0^{\circ} \\ 1 \\ 270^{\circ} + 7 \\ 6 \\ 4 \\ $	A Brg	B C D ↓ ↓ ↓ Fig. 2	E Brg	

Coupling Runouts

(Readings are in Mils)

		Coupling Bolt #														
Bolt Hole No.																
Area Indicated	1	3	5	7	9	11	13	15	2	16	14	12	10	8	6	4
TE Journal A	0.0	-0.5	-0.5	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TE Cplg. Periphery E B	0.0	0.0	0.0	0.0	0.0	-1.0	-1.0	-0.5	-0.5	0.0	0.0	0.0	0.0	0.5	0.5	0.5
Spacer C	0.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.5	0.0	0.0	1.0	1.0	1.5	1.5	0.0
GE Cplg. Periphery [D	-1.0	-0.5	0.0	0.0	1.0	0.0	1.0	1.0	0.5	0.0	0.0	-0.5	-0.5	0.0	0.0	1.0
GE Journal E	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Differential Runouts

Journals	A-E	0.0	0.5	0.5	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cplg. Periphery	B-D	1.0	0.5	0.0	0.0	1.0	1.0	2.0	1.5	1.0	0.0	0.0	0.5	0.5	0.5	0.5	0.5
Spacer to Cplg	C-B	0.0	1.0	1.0	1.0	1.0	0.0	0.0	0.5	1.0	0.0	0.0	1.0	1.0	1.0	1.0	0.5
Spacer to Cplg	C-D	1.0	0.5	1.0	1.0	2.0	1.0	2.0	2.0	2.0	0.0	0.0	1.5	1.5	1.5	1.5	1.0

Maximum Runouts

		Data	TIR	TIR
Area Indicated		Chk	Runout	Chk
TE Journal	Α	OK	1.0	OK
TE Cplg. Periphery E	В	Check	1.5	OK
Spacer	С	Check	3.0	OK
GE Cplg. Periphery [D	OK	2.0	OK
CE lournal	C	OK	1.0	OK

Maximum Differential Runouts

	Max. Diff.	Diff. Check
Journals A-E	0.5	OK
Cplg. Periph B-D	2.0	Check
Spacer to Cp C-B	1.0	OK
Spacer to Cp C-D	2.0	OK

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Coupling Bolt Assembly Data

Date:

Turbine Serial No. 170X394

Prepared by K. Rawlings

COUPLING "C"

5/7/2012

STUD	COU	PLING HOLE DIAN	IETER	STUD DIA	METER		CLEARANCE		
HOLE	TB. SIDE	GEAR/SPACER	GEN. SIDE	TB. SIDE	GEN. SIDE	TB. SIDE	GEAR/SPACER	GEN. SIDE	Bolt Weight
1 (M)	3.565 "		3.568 "	3.523 "	3.523 "	0.042 "			0.045 "
2	3.563 "		3.570 "	3.523 "	3.522 "	0.040 "			0.048 "
3	3.564 "		3.569 "	3.525 "	3.526 "	0.039 "			0.043 "
4	3.590 "		3.590 "	3.587 "	3.587 "	0.003 "			0.003 "
5	3.563 "		3.570 "	3.539 "	3.536 "	0.024 "			0.034 "
6	3.564 "		3.569 "	3.541 "	3.539 "	0.023 "			0.030 "
7	3.590 "		3.590 "	3.587 "	3.587 "	0.003 "			0.003 "
8	3.564 "		3.568 "	3.529 "	3.528 "	0.035 "			0.040 "
9	3.563 "		3.569 "	3.544 "	3.544 "	0.019 "			0.025 "
10	3.561 "		3.570 "	3.544 "	3.545 "	0.017 "			0.025 "
11	3.563 "		3.570 "	3.529 "	3.528 "	0.034 "			0.042 "
12	3.590 "		3.590 "	3.587 "	3.587 "	0.003 "			0.003 "
13	3.563 "		3.570 "	3.528 "	3.528 "	0.035 "			0.042 "
14	3.562 "		3.569 "	3.529 "	3.529 "	0.033 "			0.040 "
15	3.590 "		3.590 "	3.587 "	3.587 "	0.003 "			0.003 "
16	3.563 "		3.568 "	3.527 "	3.529 "	0.036 "			0.039 "
							↓ ↓		
		1 1					↓ ↓		
		1 1					↓ ↓		

Comments:

Mark location of "H" to closed bolt hole Numbers in bold are fitted bolts

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Packing Head

Joints Tight After Heat treating Out of Roundness





Location and Row	P	acking Casir	ng	Out of Round		H	lorizontal I	Reading
	A-Dia	B-Dia	C-Dia	(V-H)	Tightwire Adju	ustment	Unbolt	ed
	;						U/H	L/H
			<u> </u>					
			<u> </u>				<u> </u>	
			<u> </u>				L	
N-8 GRV-1	27.472	27.477	27.520	0.046	set low by	0.023		
N-8 GRV-3	27.474	27.472	27.529	0.056	set low by	0.028		
	07.444	07.444	07.500	0.400	4 a b	2.000		
N-9 GRV-1	27.441	27.444	27.562	0.120	Set low by	0.060		Ļ
N-9 GRV-3	27.452	27.448	27.559	0.109	set low by	0.054	<u> </u>	
							ļ	
		i •	Ĺ					
		i 1						

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Packing Alignment



Packing Ring			POSITIC	ON (Mils)			CL	EARAN	CE	IDEAL POSITION			
Location	1	2	3	4	5	6	Median	Min.	Max	Тор	Bottom	Sides	
N8G1	21	9	19	13	50	24	20	9	50	39	20	19	
N8G2	25	16	22	13	50	19	20.5	13.0	50.0	44.0	22.0	19.8	
N8G3	26	11	24	7	58	13	18.5	7.0	58.0	46.0	23.0	17.5	
N9G1	25	23	25	20	37	20	24.0	20.0	37.0	40.0	20.0	22.5	
N9G2	25	23	32	20	37	20	24.0	20.0	37.0	40.0	20.0	24.3	
N9G3	30	27	25	20	37	20	26.0	20.0	37.0	42.7	21.3	23.8	

Comments

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Packing Clearance Record

Date(m/d/y) <u>4/9/2012</u> Turbine			Turbine S	Serial No.	170X39	4	Р	repared by	VanDyke/	Clark
			€ TUF	<u>RBINE</u> ND	GEI	IERATOR END	→			
		X STEAM JOINT			×			EAM INT		
Packin	g Box or	Casing No.	[N-6	Diaphra	agms			<u> </u>	
Ring	A	xial	Radi	al	Ring	Stage	Ах	ial	Radi	al
No.	X	Y	Left	Right	No.	No.	Х	Y	Left	Right
1			0.019	0.018	21TE				0.024	0.027
2			0.017	0.019	20TE				0.031	0.038
3			0.019	0.021	19TE				0.046	0.034
					18TE				0.024	0.025
					17TE				0.026	0.029
					16TE				0.100	0.086
					16 CT				0.025	0.028
		1 1			16GE				0.092	0 094
Packin	a Box or	Casing No.	ſ	N-7	17GE				0.027	0.032
Ring	Δ.	vial	Radi	al	18GE				0.029	0.028
No.	x x	Ι Y	Left	Right	19GE				0.020	0.020
1		-	0.025	0.025	20GE				0.038	0.031
2			0.020	0.020	200E				0.032	0.001
2			0.029	0.021	210L				0.032	0.020
3			0.029	0.021					+ +	
		_							┥───┤	
Comme	ents									

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Packing Head



В

А

				С						
Location and Row	P	acking Casi	ng	Out of Round	Horizontal Reading					
	A-Dia	B-Dia	C-Dia	(V-H)	Tightwire Ac	djustment	Unbol	ted		
							U/H	L/H		
N-6 GRV-1	27.483	27.487	27.518	0.033	set low by	0.017				
N-6 GRV-3	27.481	27.473	27.528	0.051	set low by	0.025				
N-7 GRV-1	27 487	27 489	27 520	0.032	set low by	0.016		<u> </u>		
N-7 GRV-3	27.499	27.493	27.506	0.010	set low by	0.005				
N-8 GRV-1	27 416	27 468	27 567	0 125	set low by	0.063				
N-8 GRV-3	27.396	27.430	27.584	0.171	set low by	0.085				
N-9 GRV-1	27.438	27.462	27.554	0.104	set low by	0.052				
N-9 GRV-3	27.456	27.479	27.532	0.064	set low by	0.032				
								+		
								-		

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FINAL

Coupling Bolt Assembly Data

Date:

5/7/2012 Turbine Serial No. 170X394

Prepared by K. Rawlings

COUPLING "D"

STUD	COUF	LING HOLE DIAN	IETER	STUD DIA	METER		CLEARANCE		
HOLE	TB. SIDE	GEAR/SPACER	GEN. SIDE	TB. SIDE	GEN. SIDE	TB. SIDE	GEAR/SPACER	GEN. SIDE	Bolt Weight
1 (M)	3.648 "		3.648 "	3.645 "	3.645 "	0.003 "			0.003 "
2	3.646 "		3.646 "	3.643 "	3.643 "	0.003 "			0.003 "
3	3.593 "		3.599 "	3.555 "	3.558 "	0.038 "			0.041 "
4	3.623 "		3.591 "	3.567 "	3.567 "	0.056 "			0.024 "
5	3.593 "		3.596 "	3.559 "	3.561 "	0.034 "			0.035 "
6	3.593 "		3.601 "	3.556 "	3.558 "	0.037 "			0.043 "
7	3.582 "		3.595 "	3.567 "	3.567 "	0.015 "			0.028 "
8	3.592 "		3.602 "	3.554 "	3.556 "	0.038 "			0.046 "
9	3.641 "		3.641 "	3.638 "	3.638 "	0.003 "			0.003 "
10	3.641 "		3.641 "	3.638 "	3.638 "	0.003 "			0.003 "
11	3.594 "		3.649 "	3.554 "	3.554 "	0.040 "			0.095 "
12	3.601 "		3.591 "	3.567 "	3.567 "	0.034 "			0.024 "
13	3.597 "		3.592 "	3.557 "	3.558 "	0.040 "			0.034 "
14	3.601 "		3.592 "	3.557 "	3.559 "	0.044 "			0.033 "
15	3.615 "		3.593 "	3.567 "	3.567 "	0.048 "			0.026 "
16	3.592 "		3.622 "	3.556 "	3.555 "	0.036 "			0.067 "

Comments:

Mark location of "H" to closed bolt hole Numbers in bold are fitted bolts

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Bolt Extension Report

(For Use With Extensiometer)

* Indicate Valve, Shell, or Flange Identification.

FINAL

Page

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T-11 Bearing Alignment

	FINAL				Relative & True Position					
Date: (m/d/y) 4/23/2012	Turbine	Serial No. 170X394			Prepared byE			Edens /Ham		
Set		Comment								
	Sag		Raw Data	a	Relativ	ve (Sag Co	rrected)	True P	osition	
	MIIS		aings in in I		PC	DSITION IN N		Elev	HOFZ	
BEARING OUT		0.040	8.831	0.931	0	-9	91	-55 é	-43 è	
T-11 TE		8.841		8.929	0		88	-25	-44	
BEARING IN			8.860		-	19		é	è	
							AVS	-29	1	
							AIO	 UP	RIGHT	
								FINAL	FINAL	
T-11 GE		4.486		4.544	0		58	-56	-29	
BEARING OUT			4.459			-27		é	è	
		1 188		1 5 1 2	0		54	-22	-27	
BEARING IN		4.400	4 493	4.342	0	5	54	-22 é	-21 è	
			4.400			l v		Ŭ	<u>i c</u>	
				AFTER 1	IST MOV	E SIDEW	AYS	-34	-2	
								UP	RIGHT	
				1				FINAL	FINAL	
									<u> </u>	
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Steam Turbine Rotors

Hydrogen Seal Casing Dimensional Checks



	1-4	2-5	3-6	Avg
TE Casing ("B")				
TE Casing ("C")				
CE Casing ("B")				
CE Casing ("C")				

Comments:	
	5 /

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		4/30/12 Days 12:22 PM	Final		
Date	4/30/12	Turbine Serial No		Prepared by _	
Coupling	<u> </u>	Sweep Diameter	21.3 "		Indicator Moun

Alignment Readings

Position	Тор	Left	Bottom	Right	Тор	
Rim (Mils)	0 mils	0 mils	-1 mils	-1 mils	0 mils	- O mile
Face 0º	1.701"	1.703"	1.702"	1.701"		
Face 90°	1.697"	1.700"	1.697"	1.695"		
Face 180 ⁰	1.672"	1.675"	1.673"	1.672"		
Face 270º	1.689"	1.691"	1.690"	1.688"	0 mils	3 mils 0 mils
Average	1.690"	1.692"	1.691"	1.689"		
Relative	0 mils	2 mils	1 mils	-1 mils		1 mils
Check		Face	Rim		-	
Top + Bot	tom=	1 mils	-1 mils			-1 mils
Right + Le	eft =	1 mils	-1 mils			
Difference)=	0 mils	0 mils			

Rim Recheck (If Necessary)

Position	Тор	Left	Bottom	Right	Тор
Rim (Mils)					

Comments:

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Alignment Couplings **FINAL** Date ,4/10/2012 Turbine Serial No. Prepared by McDade FPT to Pump Coupling Sweep Diameter Indicator Mounted on Turbine **Alignment Readings** Position Left Bottom Right Тор Тор Rim (Mils) 40 mils 22 mils 0 mils 0 mils 20 mils 0 mils Face 0° 0.125" 0.126" 0.128" 0.126" 0 mils Face 90° 0.124" 0.125" 0.128" 0.126" Face 180° 0.128" 0.128" 0.124" 0.126" 22 mils 2 mils Face 270° 0.125" 0.125" 0.127" 0.126" 20 mils 1 mils 0.125" 0.126" 0.128" 0.127" Average Relative 0 mils 1 mils 3 mils 2 mils 3 mils Check Rim Face Top + Bottom= 3 mils 40 mils 40 mils Right + Left = 3 mils 42 mils Difference= 0 mils -2 mils

Rim Recheck (If Necessary)

Position	Тор	Left	Bottom	Right	Тор
Rim (Mils)					

Comments:	

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						Alignment
		4/30/12 Da	ays 12:22 F	PM	Final	Couplings
Date	4/30/12		Turbine	Serial No.		Prepared by
Coupling	E		Sweep	Diameter	21.3 "	Indicator Mounted on
Alignment	Readings					1
Position	Тор	Left	Bottom	Right	Тор	
Rim (Mils)	0 mils	0 mils	-1 mils	-1 mils	0 mils	0 mils
Face 0º	1.701"	1.703"	1.702"	1.701"		
Face 90°	1.697"	1.700"	1.697"	1.695"		1 mils
Face 180°	1.672"	1.675"	1.673"	1.672"		
Face 270º	1.689"	1.691"	1.690"	1.688"	0 mils	3 mils 0 mils -1 mils
Average	1.690"	1.692"	1.691"	1.689"		
Relative	0 mils	2 mils	1 mils	-1 mils		1 mils
Check		Face	Rim			
Top + Bott	om=	1 mils	-1 mils			-1 mils
Right + Le	ít =	2 mils	-1 mils			
Difference	-	-1 mils	0 mils			

Rim Recheck (If Necessary)

Position	Тор	Left	Bottom	Right	Тор
Rim (Mils)					

Comments:

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Oil Deflector Clearances





Location		Oil Deflector	ſ	Journal		Clearance		Condition
Number	A-Dia	B-Dia	C-Dia	Dia	Average	Min.	Max.	Comment
T-3	18.937	18.937	18.950	18.911	0.030	0.026	0.039	OK
T-4	19.974	19.966	19.963	19.920	0.048	0.043	0.054	OK
T-5	22.014	22.019	22.016	21.975	0.041	0.039	0.044	OK
T-6 TE	21.863	21.859	21.859	21.824	0.036	0.035	0.039	OK
T-6 GE	22.039	22.038	22.034	21.999	0.038	0.035	0.040	OK
T-7 TE	22.040	22.040	22.042	21.997	0.044	0.043	0.045	OK
T-7 GE	22.036	22.034	22.036	21.993	0.042	0.041	0.043	OK
T-8 TE	22.038	22.037	22.035	21.995	0.042	0.040	0.043	OK
T-8 GE	22.047	22.044	22.044	21.995	0.050	0.049	0.052	OK
T/G TE	22.039	22.038	22.040	21.997	0.042	0.041	0.043	OK
T/G GE	22.040	22.040	22.042	21.998	0.043	0.042	0.044	OK
T-10 Inner	22.034	22.033	22.035	21.998	0.036	0.035	0.037	OK
T-10 outer	25.292	25.291	25.291	25.247	0.044	0.044	0.045	OK
T-11 TE	8.522	8.519	8.521	8.500	0.021	0.019	0.022	OK
T-11 GE	8.521	8.523	8.523	8.500	0.022	0.021	0.023	OK

Comments:

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Bearing To Journal Alignment For Bearings With Ball Seats



NOTE:

- 1. On most generator bearings, the end leakage groove is on the outboard end.
- 2. On hood bearings, the outboard end is set low to compensate for vacuum deflection.

TILT								
Brg	Section	on Reading in Inches		Reading	in Mils	Limits	Actual	Tolerance
#		IV	ov	IT	ОТ	0.0 To	(Mils)	Check
T-5		19.022"	19.023"	26.0 Mils	26.0 Mils	1.9 Mils	1.0 Mils	\checkmark
T-6		21.011"	21.010"	34 Mils	31 Mils	2.1 Mils	2.0 Mils	✓
T-7		19.017"	19.017"	27 Mils	25 Mils	1.9 Mils	2.0 Mils	×
T-8		21.029"	21.027"	39 Mils	37 Mils	2.1 Mils	0.0 Mils	✓
T-10	Gen	19.933"	19.933"	22.0 Mils	22.0 Mils	2.0 Mils	0.0 Mils	~

TWIST

Brg			Readings in Mils					
#	Section	IL	OL	IR	OR	Limits	Actual	Check
T-5		23.0 Mils	25.0 Mils	23.0 Mils	21.0 Mils	±5.7 Mils	2.0 Mils	✓
T-6		27.0 Mils	30.0 Mils	28.0 Mils	22.0 Mils	±6.3 Mils	4.5 Mils	~
T-7		22.0 Mils	22.0 Mils	22.0 Mils	21.0 Mils	±5.7 Mils	0.5 Mils	✓
T-8		32.0 Mils	33.0 Mils	24.0 Mils	27.0 Mils	±6.3 Mils	-1.0 Mils	~
T-10	Gen	27.0 Mils	26.0 Mils	27.0 Mils	22.0 Mils	±6.0 Mils	2.0 Mils	\checkmark

Comments

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Journal Bearings

Closing

Date	3/13/12		Turbine Serial No. <u>170X394</u> Pr		repared by	RF Spence	er			
		IN	SPECTION	IS & CHEC	CKS				CODE	
Ball Conta Ball Pinch Ball Torqu Twist & Ti Journal Ins Babbit Ins Screens & T/C Calib	ict Check Check le Check It Check spection pection Orifices							X NA C V MP UT PT	Work Carr Not Done Not Applic See Comn Visual Insp Mag. Parti Ultrasonic Penetrant	ied Out able nents pection cle
Bearing	Bearing	Forward	d or Turbine	e End	Aft or	Generator	r End	Journal	Vertical C	Clearance
No.	Туре	A-Dia	B-Dia	C-Dia	A-Dia	B-Dia	C-Dia	Dia.	Mils	Mils/In
T-5	Elip	19.037	19.034	19.023	19.040	19.039	19.022	18.991	31	1.6
T-6	Elip	21.026	21.035	21.010	21.026	21.037	21.011	20.973	37	1.8
T-7	Elip	19.041	19.041	19.017	19.041	19.041	19.017	18.992	26	1.3
T-8	Elip	21.046	21.045	21.029	21.044	21.046	21.027	20.989	38	1.8
T-10	Elip	19.956	19.956	19.933	19.956	19.956	19.933	19.905	28	1.4
		С			Shim		Ball Seat	Pinch Fits	5	
	Δ			B	Leadwire		Bearing Number T-5	Pinch* Mils	Bearing Number	Pinch*
				0			1-6 T 7			
	1	\sim					II T 7			



Dali Seal Filicit Filis							
	Bearing Number	Pinch* Mils	Bearing Number	Pir			
	T-5						
	T-6						
	T-7						
	T-8						
	T-10						

* Pinch equals wire thickness minus shim

Comments: T-7 damage in U/H overshot area.

Staff's First Set of Data Requests Item No. 33 Attachment 9 Page 62 of 76

8. Misc. Work Performed

8.1 Main Turbine Oil Coolers

The upper and lower cooler heads were removed, tube bundles were cleaned by an outside contractor and a complete inspection was performed on the oil cooler units with minor issues found. The cooler heads were reinstalled with new gaskets in place, the system energized and checked for leaks

8.2 Stator Water Coolers

Stator Water cooler heads were removed and inspected with no issues found. The cooler tubes were cleaned by an outside contractor and vacuum checked for leaks. The cooler heads were reinstalled, the system energized and checked for leaks with no issues found.

8.3 Stator Water Twin Strainer

The "Y" strainer was disassembled for inspection. The running strainer was removed and inspected, about 60% of the fine mesh screen had eroded away. The strainer was sent to Central Machine Shop for installation of new fine mesh screen. The spare "Y" strainer was placed in service and the repaired strainer placed stand by canister.

KPSC Case No. 2012-00578

MAGNETIC PARTICLE AND VISUA	L INSPECTION REPORT KPSC Case No. 2012-00578
AMERICAN ELECTRIC Central Machine S 3100 MacCorkle Avenue, South Charleston, West V	C POWER Page Attachment 9 Shop Page 63 of 76 Building 309 In Shop Griginia 25303
BNTIFICATION	
CMS Number: Date: 3/27/12	W/O #:
Facility/Unit: <u>MITCHELL</u> Desc	cription: 1/4 OUTER SHELL WELDS
S/N:	A+ B L. P.
TECHNIQUE:	FOUR MENT.
Dry Powder 🛛 Wet Fluorescent 🖓 Non Fluorescent	Coil Prods D Yoke Clamps
CURRENT TYPE: AC DC AMP TURNS: 3050	>
INSPECTION PROCEDURE: <u>$111-1-5-2-3$</u>	
INSPECTION SPECIFICATIONS: MI-1-5-2.3	
Stage 1 • MAG Results = • Visual Results = • Note: For each indication list the type (Crack, Linear Surface, Linear subsurface, Underce) · B'' ELOS OLLY 3 Carcos Tel	weld Admission Side OF
2074 STAGE GEN END	
CENTER SELTION - OK	
- A ENDS & CENTER SECTION	- OK
VISUAL: "B" "H ENDS + CENTER	SETTION - OK
- HB CUBS NEAR CAUTER	A FEMALE FIT BOTH SIDES
THE FIT TOKO END OF	NLY DE P IN
(Continued on back of s	heet)
INSPECTION PERFORMED BY: (AEP Level II MT Inspector)	
nature CoBR	_ DATE _ 3/2-1/12
APPROVED BY: (NDE Supervisor)	•
Signature	DATE

ULTRASONIC TEST REPORT AMERICAN ELECTRIC POWER **CENTRAL MACHINE SHOP** 3100 MacCorkle Avenue, Building 309 South Charleston, WV 25303

KPSC Case No. 2012-00578 Staff's First Set of Data Requests Item No. 33 Attachment 9 Page 64 of 76

WORK ORDER NO	- DATE 3/27/12
1. IDENTIFICATION: Facility <u>HITUHELL</u> PC/SN UNIT 7	Item BFP SHAFT
2. TECHNIQUE:	
Straight Beam Angle Beam Search Angle - 90° 45° 60°	☐ Frequency - ☐ 1 MH ☐ 2.25 MH 5 MH ☑ Single Transducer ☐ Duai Transducer
Type of Couplant	Test Unit $K_{-}R$
3. CALIBRATION - REFLECTOR TYPE: □ Drilled Hole 4. INSPECTION PROCEDURE:	V. Notch □ IIW Block □ Other
5. INSPECTION SPECIFICATIONS: MI - 1-	5-24
6. TYPE OF INDICATION: 1. Crack 2. Lamination 3. Corrosion 7. SKETCH/DESCRIPTION: THE SHAFT JHE SHAFT JSPLACE NO CLACK WEN	N/Erosion [4. Internal Voids] 5. Linear IJAS INSPECTED NE FOUND
	sportor)

Signature ____

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MAGNETI	IC PARTICLE AND VISUAL INSPECTION	KPSC Case No. 2012-00578 REPORTS First Set of Data Requests Item No. 33
	AMERICAN ELECTRIC POWER	Attachment 9 Page Page 65 odf 76
(Central Machine Shop 3100 MacCorkle Avenue, Building 309	in Shop
IDENTIFICATION	South Charleston, West Virginia 25303	in Plant
CMS Number:	Date: 3/27/12 W/O #:	
Facility/Unit: MITCHELL	2 Description: $\frac{\# L, P}{2}$	A+ B PACKING
S/N:	CASES	
TECHNIQUE:	EQUIPMEN	IT:
Dry Powder Z Wet Fluoresce	nt 🖸 Non Fluorescent 🛛 🗹 Coll 🕻	Prods 🖸 Yoke 🖸 Clamps
CURRENT TYPE: ZAC DC	AMP TURNS: <u>3000</u>	······
INSPECTION PROCEDURE:	MI-1-5-2-3	
INSPECTION SPECIFICATIONS:	N1I-1-5-2-3	
INSPECTION RESULTS / DETAILS: L `xample: <u>Stage 1</u> • MAG Results = • Visual Results = Note: For each indication list the type (Crack, Lin	ist according to components section per example below	: :
THE PA	2.156 CASES VERSENTING	Set Erm
AFTER BUA	ET CLEADING	
No Crack	is WERE TOUS	······································
· · · · · · · · · · · · · · · · · · ·	(Continued on back of sheet)	
INSPECTION PERFORMED BY: (AEP	Level II MT Inspector)	
jnature Co	<u>33</u> DATE _3	27/12
APPROVED BY: (NDE Supervisor)		
Signature	DATE	

LIQUID PEN	ETRANT AND VISUAL INS	KPS SPECTION REPORT ^{® FI}	C Case No. 2012-00578 rst Set of Data Requests
	AMERICAN ELECTRIC POV	VER	Attachment 9 Page Page 660 f 76
	Central Machine Shop 3100 MacCorkle Avenue, Buildi	ng 309	In Shop
IDENTIFICATION	South Charleston, West Virginia	125303	L in Plant
CMS Number:	Date: 3/27/12	W/O #:	
Facility/Unit: MITCHELL	2 Description	H.P+ 1ST RHT	ByPass
S/N:		VALLE SEATS	
TECHNIQUE:		MATERIAL:	
💆 Visible Dye 📮 Water Washable	Fluorescent	G Ferrous 🗹 Nonferro	ous
	5-1-5-2-2		
		······································	
INSPECTION SPECIFICATION: $\underline{}$	I-1-5-22	·····	
TYPE OF INDICATION: Crack INSPECTION RESULTS / DETAILS: List ad 'xample: Stage 1 • P / T Results = • Visual Results = Note: For each indication list the type (Crack, Linear S Decade BLARS Local Note: Stage Decade Indication Ist the type (Crack, Linear S) Decade Decade Note: For each indication Ist the type (Crack, Linear S) Decade Decade	Linear Inline Porosity I coording to components section per examp Surface, Linear subsurface, Undercut, Non エムレンビルニ エルシア エム・レンビ	Rounded Other:	
	(Continued on back of sheet)		
INSPECTION PERFORMED BY: (AEP Lev	vel II MT Inspector)	4	
gnature <u> </u>		DATE 3/2-1/12	
APPROVED BY: (NDE Supervisor)			
Signature	D	ATE	9093-90

ULTRASONIC TEST REPORT AMERICAN ELECTRIC POWER CENTRAL MACHINE SHOP 3100 MacCorkle Avenue, Building 309 South Charleston, WV 25303

KPSC Case No. 2012-00578 Staff's First Set of Data Requests Item No. 33 Attachment 9 Page 67 of 76

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WORK ORDER NO. DATE $\frac{2}{2}$ 1. IDENTIFICATION: Item Costude Rout Polisiv User 2. TECHNIQUE: #Straight Beam \square Straight Beam Angle Beam \square Straight Beam Angle Beam \square Straight Beam \square Straight Transducer \square Straight Beam \square Straight Transducer \square INSPECTION PROCEDURE: $M \square \square$		
1. IDENTIFICATION: Iter Castude Bours Facility User Z 2. TECHNIQUE: Straight Beam \square Straight Beam Iter Angle Data \square Ouplant Iter Angle Data \square Ouplant Iter Angle Data \square INSPECTION PROCEDURE: $MI = 1 - 5 - 2 - 4$ S. INSPECTION SPECIFICATIONS: $MI = 1 - 5 - 2 - 4$ S. TYPE OF INDICATION: \square Cosplaint \square Internal Voids \square 5. Linear B + D Cosplaint Gase \square Internal Voids \square 5. Linear B + D Cosplaint Gase \square Straight Gase \square Straight Gase No Cracu WEAC Tosing No </th <th>WORK ORDER NO.</th> <th>- DATE 3/2-7/12</th>	WORK ORDER NO.	- DATE 3/2-7/12
2. TECHNIQUE: Straight Beam Angle Beam Frequency - 1 MH 225 MH 2 5 MH Search Angle 00 45 60 Single Transducer Dual Transducer Type of Couplant ULTAAGGL Test Unit K.P 3. CALIBRATION - REFLECTOR TYPE: Dilled Hole V. Notch IIW Block Other 4. INSPECTION PROCEDURE: MIL (-5-2-4 5. INSPECTION SPECIFICATIONS: MIL (-5-2-4 5. INSPECTION PERFORMED BY: (AEP Lovel II UT Inspector) No Cracce WERK Foo M2 INSPECTION PERFORMED BY: (AEP Lovel II UT Inspector) nature MIL (OBS) 3/2/12 DATE	1. IDENTIFICATION: FacilityMITCHELL PC/SNUNIT Z	_ Item Carris Bouts
B Straight Beam Angle Beam Fraquency- 1 MH 2.25 MH	2. TECHNIQUE:	
Type of Couplent ULTAAGEL Test Unit K.B 3. CALIBRATION - REFLECTOR TYPE: Dilled Hole U.Noteh INV Block Other 4. INSPECTION PROCEDURE: $MI_{-1} - S - 2 - 4$ 5. INSPECTION SPECIFICATIONS: $MI_{-1} - S - 2 - 4$ 6. TYPE OF INDICATION: $MI_{-1} - S - 2 - 4$ 7. SKETCH/DESCRIPTION: $MI_{-1} - S - 2 - 4$ 8. TYPE OF INDICATION: $MI_{-1} - S - 2 - 4$ 9. TYPE OF INDICATION: $MI_{-1} - S - 2 - 4$ 9. TYPE OF INDICATION: $MI_{-1} - S - 2 - 4$ 9. TYPE OF INDICATION: $MI_{-1} - S - 2 - 4$ 9. Type of Constant Proceedings $MI_{-1} - S - 2 - 4$ 8. TYPE OF INDICATION: $MI_{-1} - S - 2 - 4$ 9. Type of Constant Proceedings $MI_{-1} - S - 2 - 4$ 8. TYPE OF INDICATION: $MI_{-1} - S - 2 - 4$ 9. SKETCH/DESCRIPTION: $B_{-1} - S - 2 - 4$ B+ D Costland Boards $B_{-1} - S - 2 - 4$ No $Cascla Boards B_{-1} - S - 2 - 4 No Cascla Boards B_{-1} - S - 2 - 4 No Cascla Boards B_{-1} - S - 2 - 4 No Cascla Boards B_{-1} - S - 2 - 4<$	Straight Beam □ Angle Beam □ Search Angle - □ 90° □ 45° □ 60°	☐ Frequency - ☐ 1 MH ☐ 2.25 MH Ø 5 MH Ø Single Transducer ☐ Dual Transducer
3. CALIBRATION - REFLECTOR TYPE: Diffied Hole U. Notch UW Block Other 4. INSPECTION PROCEDURE: $MT - 1 - 5 - 2 - 4$ 5. INSPECTION SPECIFICATIONS: $MT - 1 - 5 - 2 - 4$ 5. INSPECTION SPECIFICATIONS: $MT - 1 - 5 - 2 - 4$ 6. TYPE OF INDICATION: U. 1. Crack 2. Lamination 3. Corrosion/Erosion 4. Internel Voids 5. Linear 7. SKETCH/DESCRIPTION: B + D Cosplande Bourds C = #'s 5, 6, 7, 8, 11, 13, 15 + 16 No Cracus WERE Foods No Cracus WERE Foods INSPECTION PERFORMED BY: (AEP Level II UT Inspector) nature CBS0	Type of Couplant	Test UnitK.B
 INSPECTION SPECIFICATIONS: <u>MIL-1-5-2.4</u> TYPE OF INDICATION: □ 1. Crack □ 2. Lamination □ 3. Corroston/Eroston □ 4. Internal Voids □ 5. Linear SKETCH/DESCRIPTION: B+D CosPLING Bourds C #'S 5,6,7,8,11,13,15416 No Cracce WERE Forway INSPECTION PERFORMED BY: (AEP Level II UT Inspector) nature	3. CALIBRATION - REFLECTOR TYPE: □ Drilled Hole 4. INSPECTION PROCEDURE:	□ V. Notch □ IIW Block □ Other
6. TYPE OF INDICATION: 1. Crack 2. Lamination 3. Corroston/Eroston 4. Internal Voids 5. Linear 7. SKETCH/DESCRIPTION: B+D COSPLING BENTS C #'S 5,6,7,8,11,13,15+16 No Cracce WERE Forms No Cracce WERE Forms No Cracce MERE Forms No Coss APPROVED BY: (NDE Supervisor) 1. Crace Mere 2. Linear APPROVED BY: (NDE Supervisor)	5. INSPECTION SPECIFICATIONS: MII-1-	5-2.4
1. Crack □ 2. Lamination □ 3. Corroston/Erosion □ 4. Internal Voids □ 5. Linear 5. SKETCH/DESCRIPTION: B+D Cosplice Bourds Bourds C #'S 5.6.7.8.11,13,15*16 No Cracue WERE Foows No Cracue WERE Foows INSPECTION PERFORMED BY: (AEP Level II UT Inspector) nature	6. TYPE OF INDICATION:	
B+D COSPLING BOUTS C #'S 5,6,7,8,11,13,15+16 No CRALL WERE FOUND INSPECTION PERFORMED BY: (AEP Level II UT Inspector) nature Coso 3/22/12 APPROVED BY: (NDE Supervisor)	1. Crack 2. Lamination 3. Corrosion/ SKETCH/DESCRIPTION:	/Erosion
C #'S 5,6,7,8,11,13,15+16 No Crace WERE Forms INSPECTION PERFORMED BY: (AEP Level II UT Inspector) nature (OBS APPROVED BY: (NDE Supervisor) Tature	B+D COSPLING	BOLTS
No CRACE WERE FOUND INSPECTION PERFORMED BY: (AEP Level II UT Inspector) nature	C #'s 5,6,7,8	5, 11, 13, 15+ 16
INSPECTION PERFORMED BY: (AEP Level II UT Inspector) nature	No Crace WERE	Teu NO
INSPECTION PERFORMED BY: (AEP Level II UT Inspector) nature		
INSPECTION PERFORMED BY: (AEP Level II UT Inspector) nature		
INSPECTION PERFORMED BY: (AEP Level II UT Inspector) nature		
nature CoBB 3/27/12 APPROVED BY: (NDE Supervisor) DATE	INSPECTION PERFORMED BY: (AEP Level II UT Insp	ector)
APPROVED BY: (NDE Supervisor)	inature Coso	
nature	APPROVED BY: (NDE Supervisor)	
	jnature	

LIQUID PEI	NETRANT AND VISUAL	INSPECTION REPORT	KPSC Case No. 2012-00578 ff's First Set of Data Requests
	AMERICAN ELECTRIC	POWER	Page Attachment 9 Page 68 of 76
	3100 MacCorkle Avenue, I	nop Building 309	in Shop
	South Charleston, West Vil	rginia 25303	in Plant
IDENTIFICATION		an a	an a
CMS Number:	Date: <u>5-(3-(~</u>	W/O #:	•
Facility/Unit: <u>NITCHELL</u>	Descr	ription: $M.S. \leftarrow CV$	SEATS
S/N:			
TECHNIQUE:		MATERIAL	
Visible Dye 🔲 Water Washable	🛄 Fluorescent	Ferrous 🖉 Nor	nferrous
	T-1-5-2-0		
	the second se		
N	4 2	<u>^</u>	
INSPECTION SPECIFICATION:	17-1-2-6-		
	Harts lansamment and ministration		
TYPE OF INDICATION: D Crack	Linear 📮 Inline Porosity	Rounded D Other:	
INSPECTION RESULTS / DETAILS: List	according to components section per	example below	
Example: <u>Stage 1</u>	0		
• P / T Results =			
VIsual Results = Note: For each indication list the type (Crack Linear	r Surface Tinear subsurface Underci	ut Non-Relevant)	
THE SE	Ears WERE	LUCELTED	AFTEN
Bing Cu	Ze li la		
	<u>ARVINE</u>		
NA (7 7	2" RAQUE	COALL N-	
M.J. G			2:00
C 11 # 2	<u> </u>	KA	
<u>C.v r 5</u>	JELL HE	FIUSING	
	(Continued on back of sl	heet)	
INSPECTION PERFORMED BY: (AEP Le	evel II MT Inspector)		
Signature <u>Coßs</u>	·	_ DATE <u>3-13-</u>	12
APPROVED BY: (NDE Supervisor)			
Signature		DATE	
ų			66162A1210

MAGNETIC PARTICLE AND V	ISUAL INSPECTION REPORT	PSC Case No. 2012-00578 First Set of Data Requests Item No. 33
AMERICAN ELE	CTRIC POWER	Page Attachment 9 Page 69 of 76
3100 MacCorkle Av	venue, Building 309	in Shop
South Charleston, V	West Virginia 25303	in Plant
		and a second
CMS Number: Date:	<u>\$112</u> W/O#:	
Facility/Unit: <u>FILTCHELL</u>	Description: $l^2 - 2^{-1}$	CHT VALUES
S/N:		
TECHNIQUE	FOUR	
Dry Powder Z Wet Fluorescent Non Fluorescen	t Coil Prods	🖌 Yoke 🗔 Clamps
	• ••••••••••••••••••••••••••••••••••••	· · · · · · · · · · · · · · · · · · ·
CURRENT TYPE: AC L DC AMP TURNS:	· · · · · · · · · · · · · · · · · · ·	
INSPECTION PROCEDURE: 115-1-5-2-	3	
	· · · · · · · · · · · · · · · · · · ·	
INSPECTION SPECIFICATIONS: MIL-1-5-2	3	
Example: Stage 1 • MAG Results = • Visual Results = Note: For each indication list the type (Crack, Linear Surface, Linear subsurface) THE SEAS	, Undercut, Non-Relevant) EAM DAM ANEAS	WERE
BLAST CLEANED Y	MON TO INSPE	icrial
No CRACKS WERE	Found	
(Continued on ba	ack of sheet)	
INSPECTION PERFORMED BY: (AEP Level II MT Inspector)	,	
	DATE 3/12/12	
	DATE	
APPROVED BY: (NDE Supervisor)		
Signature	DATE	

LIQUID PEN	ETRANT AND VISUA	LINSPECTION REPORT	- KPSC Case No. 2012-00578 Iff's First Set of Data Requests
	AMERICAN ELECTRI	C POWER	Page <u>Attachro</u> ∉nt 9 Page 70 of 76
	3100 MacCorkle Avenue,	Building 309	in Shop
IDENTIFICATION	South Chaneston, west v	irginia 25303	in Plant
CMS Number:	Date: 3-13-12	— W/O #:	
Facility/Unit: MITCHELL	Des	cription: VAUSE ST	EM SEAT AREA
S/N:		•	
TECHNIQUE			
Visible Dye Water Washable	Fluorescent	Ferrous D No.	nferrous
	12-1-5-2-5)	
		Second	
	MI-1-5-2	- 2	· · · ·
	**********		·····
TYPE OF INDICATION: 🖵 Crack	Linear 🛄 Inline Porosity	Rounded D Other:	
INSPECTION RESULTS / DETAILS: List	r	r overnle below	
Example: <u>Stage 1</u>	ecoroling to components section pe	a example below	
 P / T Results = Visual Results = 			
Note: For each indication list the type (Crack, Linear	Surface, Linear subsurface, Under	cut, Non-Relevant)	
THE STE	MS LISTED	WERE INS	PELTED
′			
M.S.	1-4		
ITT ZHT	142		
210 RHT	1-4		
······································			·
No CRA	us Wenz	FOUND	
			•••
	(Continued on back of	sneet)	
	vermari inspector)		
Signature COSS		_ DATE <u>>-(s-(</u>	
APPROVED BY: (NDE Supervisor)			
Signature		DATE	CEADA&010

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	HON REPORTS First Set of Data Requests
AMERICAN ELECTRIC POWER Central Machine Shop	Page Attachment 9 Page 71 of 76
3100 MacCorkle Avenue, Building 309 South Charleston, West Virginia 25303	in Shop
IDENTIFICATION	
CMS Number: Date: 3-13-12 W/O	#:
Facility/Unit: MITCHELL 2 Description: MS	: PRESSURE SEAL HEAD
S/N: ALSO 1=	14 2 40 SHI
TECHNIQUE: EQUI	PMENT:
🖵 Dry Powder 💋 Wet Fluorescent 🛄 Non Fluorescent 🔲 Co	oil 🗔 Prods 🗹 Yoke 🗔 Clamps
INSPECTION PROCEDURE: MIC-1-S-2-3	
INSPECTION SPECIFICATIONS: MIT -1-5-2-3	
INSPECTION RESULTS / DETAILS: List according to components section per example below Example: Stage 1	
MAG Results =	
Visual Results = Note: For each indication list the type (Crack Linear Surface Linear subsurface Linear subsurface)	a
THE GASKET ALEA WAS	BLAIT CLEANED
PRION TO INSPECTION	
· ·	
#1,3+4 CAPUKED IN R.	49131
<u>+20K</u>	
VIENNE ISTIDUE PILT D	Λ
No CRACES LADIS	AREA
(Continued on back of sheet)	
NSPECTION PERFORMED BY: (AEP Level II MT Inspector)	,
ignature Ceßs DATE _	3-13-12
APPROVED BY: (NDE Supervisor)	

MAGNETIC PARTICLE AND VISU	AL INSPECTION REPORT	(PSC Case No. 2012-00578 S First Set of Data Requests
AMERICAN ELECTR	IC POWER	Page Attachment 9
Central Machine 3100 MacCorkle Avenue	→ Shop ∋, Building 309	in Shop
South Charleston, West	Virginia 25303	🔏 in Plant
	ann a far ann an an ann an ann an ann an ann an	ali anna agus a tha ann an a
CMS Number: Date: 3(13(13)	W/O #:	
Facility/Unit: <u>FIITCHELL</u> De	scription: $MS \neq CV \in E$	SOLES
S/N:		
TECHNIOLIE	FOUR	
Dry Powder Wet Fluorescent Non Fluorescent		
	CENTRAL C	Landourer
CURRENT TYPE: AC Z DC AMP TURNS: 300	<u> </u>	
INSPECTION PROCEDURE:MII-1-5-2-3	، ت	
INSPECTION SPECIFICATIONS: MT-1-5-2	_ ?	
	· · · · · · · · · · · · · · · · · · ·	
INSPECTION RESULTS / DETAILS: List according to components section p Example: Stage 1 MAG Results = Visual Results = Note: For each indication list the type (Crack, Linear Surface, Linear subsurface, Under THE BODIES MENT PALON TO INSPECT	er example below rcut, Non-Relevant) ΣΔ5τ CLE	A.JES
STEAM PAR IN MI	5 1+3 CAA	unes Ar
BOTTOM TN WELD		
No DELEN CRACUS F	>	
(Continued on book of		
	SHEEL)	
	—	
Jignature <u>COSS</u>	DATE <u></u>	- 9999
APPROVED BY: (NDE Supervisor)		
Signature	DATE	
		6615681210

66156A1210

ULTRASONIC TEST REPORT AMERICAN ELECTRIC POWER **CENTRAL MACHINE SHOP** 3100 MacCorkle Avenue, Building 309 South Charleston, WV 25303

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(• • • •	ORK ORDER NO	DATE 3	-13-12			
1.	IDENTIFICATION: FacilityMITCHELL PC/SNUNT 2	Item CLESSONE	SEAL HEAD BOLTS			
2.	TECHNIQUE: \square Straight Beam \square Search Angle - \square 90° \square 45° \square 60° Type of Couplent $()$ ($\neg R \land G \in \Box$	□ Frequency - □ 1 MH □ ☑ Single Transducer □] 2.25 MH 🗹 5 MH] Dual Transducer			
3						
4.	INSPECTION PROCEDURE: MI -1-5-2		Otner			
5.	INSPECTION SPECIFICATIONS: MT -1-5-2-4					
6.	TYPE OF INDICATION:					
	□ 1. Crack □ 2. Lamination □ 3. Corrosion/Erosion □ 4. Internal Voids □ 5. Linear					
7. SKETCH/DESCRIPTION: THE FOLLOWING PRESSURE SEAL HEAD BOTS WERE INSPECTED						
	15- RHT - 1-2					
	210 RHT - 1-4					
	No Cracks For	0				
			N.			
8.	INSPECTION PERFORMED BY: (AEP Level II UT Inspe	ctor)				
Signa	ture SB		2-12-17			
	APPROVED BY: (NDE Supervisor)		DATE			
Signat	ture					
			DATE 65371A0402			

ULTRASONIC TEST REPORT AMERICAN ELECTRIC POWER CENTRAL MACHINE SHOP 3100 MacCorkle Avenue, Building 309 South Charleston, WV 25303

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KPSC Case No. 2012-00578 Staff's First Set of Data Requests Item No. 33 Attachment 9 Page 74 of 76

(W	ORK ORDER NO	DATE 3-13-12					
1.	IDENTIFICATION: FacilityMITCHELL PC/SNUUT Z	Item VALUE BOLTS					
2.	TECHNIQUE: Straight Beam Straight Angle - 90° 45° 60°	□ Frequency - □ 1 MH □ 2.25 MH ☑ 5 MH ☑ Single Transducer □ Dual Transducer					
	Type of Couplant ULTRA GEL	_ Test UnitK-B					
3. 4.		□ V. Notch □ IIW Block □ Other 2 - ↓					
5.	5. INSPECTION SPECIFICATIONS: MI-1-5-2-4						
6.	6. TYPE OF INDICATION: □ 1. Crack □ 2. Lamination □ 3. Corrosion/Erosion □ 4. Internal Voids □ 5. Linear						
7.	7. SKETCH/DESCRIPTION: THE BOLTS LISTED WERE INSPECTED						
	MAIN STOP - 1-4 CONTROL - 1-4						
	15T RHT - 1+2						
	2ND 2HT - 1-4						
	H.P. + 1ST RHT BYPASS						
	No CRACKED BOLTS	WELE Found					
8.		ector)					
Signa	ture <u>c) (033</u>	3-13-12					
<u> </u>	APPROVED BY: (NDE Supervisor)	DATE					
Signat	ure	DATE					

ULTRASONIC TEST REPORT AMERICAN ELECTRIC POWER CENTRAL MACHINE SHOP 3100 MacCorkle Avenue, Building 309 South Charleston, WV 25303

KPSC Case No. 2012-00578 Staff's First Set of Data Requests Item No. 33 Attachment 9 Page 75 of 76

WORK ORDER NO	- DATE <u>3-13-12</u>				
1. IDENTIFICATION: Facility <u>MITCHELL</u> PC/SN () WIT 2	Item BEAR, JGS				
2. TECHNIQUE: ☐ Straight Beam ☐ Angle Beam ☐ Search Angle - ☐ 90° ☐ 45° ☐ 60°	└── Frequency - □ 1 MH □ 2.25 MH ☑ 5 MH ☑ 5 MH ☑ 5 MH				
Type of Couplant ULTRA GEL 3. CALIBRATION - REFLECTOR TYPE: □ Drilled Hole 4. INSPECTION PROCEDURE: MII-1-5-1	Test Unit K-B □ V. Notch □ IIW Block □ Other 2- 4				
5. INSPECTION SPECIFICATIONS: MI-1-5	5-2-4				
6. TYPE OF INDICATION: 1. Crack 2. Lamination 3. Corrosion/Erosion 4. Internal Voids 5. Linear 7. SKETCH/DESCRIPTION: THE BEARINGS LISTED BELOW WERE INSTELTED FOR BADIT BOND T-5, T-6, T-7, T-8, T-10 + T-11 ALL WERE 10070 BONDED					
8. INSPECTION PERFORMED BY: (AEP Level II UT Insp	pector)				
Signature 633	3-13-12				

(APPROVED BY: (NDE Supervisor)

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DATE

MAGNE	ETIC PARTICLE AND VISUA	AL INSPECTION REPOR	KPSC Case No. 2012-00578 ff's First Set of Data Requests				
	AMERICAN ELECTRI Central Machine 3100 MacCorkle Avenue South Charleston, West	C POWER Shop , Building 309 /irginia 25303	Page <u>Attachment 9</u> Page <u>Page</u> 9 of 76 in Shop in Plant				
	Data: 2/22/						
Eacility/Unit: MITCHE	Date	$L = 0 B_{AD}$	DOJ BEPT				
s/N:							
TECHNIQUE:	scent	EQUIPMENT:	Yoke 🖵 Clamps				
CURRENT TYPE: 🛄 AC	DC AMP TURNS:		· · · · · · · · · · · · · · · · · · ·				
INSPECTION PROCEDURE: MII-1-5-2-3							
INSPECTION SPECIFICATIONS: MI-1-5-2-3							
INSPECTION RESULTS / DETAILS: List according to components section per example below ample: Stage 1 • MAG Results = • Visual Results = Note: For each indication list the type (Crack, Linear Surface, Linear subsurface, Undercut, Non-Relevant) STAGES WITH THE ROTON TARACE							
No	CRACKS WEN	E FOUD					
VUUDL :	ALL LOOK G	000 BUT DI.	577				
			-				
	(Continued on back of	f sheet)	1				
INSPECTION PERFORMED BY: (ALP Level II MT Inspector)						
jnature		DATE2_2.	12				
APPROVED BY: (NDE Supervisor) .						
Signature	· · ·	DATE	66156A1210				