

Work Order Details

SP85397: 4A FEED PUMP VOLUTE REPLACEMENT

4A FEED PUMP VOLUTE REPLACEMENT

Asset: SP1884 PUMP, BOILER FEED 4A UNIT 4 **Model:** 6HDX15A
Location: SP04.WA.FW.S Unit 04 Boiler Feedwater Pump Boiler Feed Pump 4A **Product Version:**
 004A

Sched Start:	8/29/2017	Business Unit:	SPUR-Spurlock Station	Job Plan:	
Sched Finish:	4/21/2018	Priority:	3 (Low - Routine)	Supervisor:	
Target Start:	8/29/2017	Work Type:	CD-Condition Directed	Lead:	
Target Finish:	8/29/2017	Status:	COMP	Vendor:	
Actual Start:	4/18/2018	Parent:		Reported by:	02289
Actual Finish:	4/20/2018	Failure Class:		Reported by:	Jody McCord
Report Date:	8/29/2017	Problem Code:		Defect Tag:	NO
Craft:	M3M4	PM Number:		Commodity:	
Unit:	4	GL Account:	512000~SP04~400~3000~03200~BASE~00~00000~00000	Comdty Grp:	
Outage:	Outage	UNID:		Classification:	

Tasks										
WO Task	Task ID	Craft	Description	Status	Sched Start	Sched Finish	Est Hours	Actual Start	Actual Finish	
SP85397-1	10	M3M4	Remove insulation blankets on 4A feed pump barrel heads & connection piping for volute replacement Remove insulation blankets on 4A feed pump barrel heads & connection piping for volute replacement	WCMP	8/29/17	8/29/17	1			
Instructions:										
SP85397-2	20	M3M4	Remove instrumentation equipment from 4A feed pump bearings & barrel heads for volute replacement Remove instrumentation equipment from 4A feed pump bearings & barrel heads for volute replacement	WCMP	8/29/17	3/24/18	1			
Instructions:										
SP85397-3	30	M3M4	Disassemble 4A feed pump & inspect Disassemble 4A feed pump & inspect	WCMP	8/29/17	8/29/17	1			
Instructions:										
SP85397-4	40	M3M4	Perform offsite modifications to 4A feed pump suction head	WCMP	8/29/17	8/29/17	1			

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Tasks										
WO Task	Task ID	Craft	Description	Status	Sched Start	Sched Finish	Est Hours	Actual Start	Actual Finish	
			Perform offsite modifications to 4A feed pump suction head							

Instructions:

SP85397-5	50	M3M4	Re-assemble 4A feed pump using rebuilt volute from 3B in 2015	WCMP	8/29/17	8/29/17	1			
			Re-assemble 4A feed pump using rebuilt volute from 3B in 2015							

Instructions:

SP85397-6	60	M3M4	Re-install instrumentation equipment from 4A feed pump bearings & barrel heads for volute replacement	WCMP	8/29/17	4/14/18	1			
			Re-install instrumentation equipment from 4A feed pump bearings & barrel heads for volute replacement							

Instructions:

SP85397-7	70	M3M4	Re-install insulation blankets on 4A feed pump barrel heads & connection piping for volute replacement	WCMP	8/29/17	8/29/17	1			
			Re-install insulation blankets on 4A feed pump barrel heads & connection piping for volute replacement							

Instructions:

SP85397-8	80	M3M4	4A FEED PUMP VOLUTE REPLACEMENT	WCMP	8/29/17	4/21/18	1			
			4A FEED PUMP VOLUTE REPLACEMENT							

Instructions:

Planned Labor										
Task ID	Craft	Skill Level	Labor	Vendor	Contract	Qty	Hours	Rate	Line Cost	
10	INSUL					1	03:00			
10	INSUL					1	03:00			
20	INS		02585			1	02:00			
20	INS		02043			1	02:00			
20	INS		03255			1	02:00			
20	INS		03255			1	02:00			
20	INS		02043			1	02:00			
30	M1M2		02292			1	20:00			

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Planned Labor									
Task ID	Craft	Skill Level	Labor	Vendor	Contract	Qty	Hours	Rate	Line Cost
30	M1M2		02301			1	10:00		
30	M3M4		02271			1	30:00		
30	M3M4		02290			1	30:00		
30	M3M4		03396			1	30:00		
40	M-CONTRACTOR					1	20:00		
40	M-CONTRACTOR					1	20:00		
50	OPERATIONS		03377			1	20:00		
50	M1M2		02719			1	10:00		
50	M3M4		02271			1	40:00		
50	M3M4		02290			1	40:00		
50	M3M4		03396			1	40:00		
50	M1M2		02301			1	40:00		
60	INS		02043			1	02:00		
60	M1M2		02292			1	08:00		
60	INS		03255			1	02:00		
60	INS		02585			1	04:00		
60	INS		02268			1	04:00		
60	INS		02043			1	06:00		
70	INSUL					1	04:00		
70	INSUL					1	04:00		
80	INS		03255			1	02:00		
80	INS		02043			1	02:00		
80	INS		03255			1	02:00		
80	INS		02585			1	02:00		
80	INS		02268			1	02:00		
80	INS		02264			1	02:00		

Total Planned Labor:

Planned Materials						
Task ID	Item	Description	Storeroom	Qty	Unit Cost	Line Cost
30	000000000000034847	Lubricant, Jack Bolt	SWHSA	0	0.00	0.00
30	000000000000035775	O-Ring, Volute to Barrel, 1/4"Thk	SWHSA	0	0.00	0.00
30	000000000000037453	Ring, Back-Up, Teflon	SWHSA	0	0.00	0.00
30	000000000000037452	Gasket, Volute To Barrel	SWHSA	0	0.00	0.00
30	000000000000037451	Gasket, Discharge Cover to Barrel, 24.688 X 26.062 X .175, 3	SWHSA	0	0.00	0.00

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Planned Materials						
Task ID	Item	Description	Storeroom	Qty	Unit Cost	Line Cost
30	000000000000035788	Gasket, Line Bleed Off, 1-7/8"ID x 2-1/2"OD	SWHSA	0	0.00	0.00
30	000000000000035786	O-Ring, Stuffing Box, 1/4"Thk	SWHSA	0	0.00	0.00
30	000000000000035785	O-Ring, Deflector, 1/8"Thk	SWHSA	0	0.00	0.00
30	000000000000035783	O-Ring, Stuffing Box, Inside, 1/4"Thk	SWHSA	0	0.00	0.00
30	000000000000035781	O-Ring, Cover to Volute, 1/4"Thk	SWHSA	0	0.00	0.00
30	000000000000035779	O-Ring, Bushing Flange, Stuffing Box, 1/4"Thk	SWHSA	0	0.00	0.00
30	000000000000035777	O-Ring, Take Off Tube, 1/8"Thk	SWHSA	0	0.00	0.00
50	000000000000030935	Plate, Upper Leveling	SWHSA	0	0.00	0.00
50	000000000191303006	Gasket, Spiralwound, 316SS, Flexicarb, 900-1500#, 2" (W/Flan	SWHSA	0	0.00	0.00
50	000000000191301505	Gasket, Spiralwound, 316SS, Flexicarb, 1", 300-600#	SWHSA	0	0.00	0.00
50	000000000191301504	Gasket, Spiralwound, 316SS, Flexicarb, 1", 150#	SWHSA	0	0.00	0.00
50	000000000189010012	Washer, Lock, Bearing, 2-3/16"ID	SWHSA	0	0.00	0.00
50	000000000191303504	Gasket, Spiralwound, 316SS, Flexicarb, 2-1/2", 150# (W/Flang	SWHSA	0	0.00	0.00
50	000000000000037463	Gasket, Suction Cover to Barrel, 24.062 X 25.438 X 175, 604-	SWHSA	0	0.00	0.00
50	000000000000035792	Bearing Assy, Thrust	ALM	0	0.00	0.00
50	000000000000035790	Bearing, Sleeve	SWHSA	0	0.00	0.00
50	000000000000035788	Gasket, Line Bleed Off, 1-7/8"ID x 2-1/2"OD	SWHSA	0	0.00	0.00
50	000000000000030936	Plate, Lower Leveling	SWHSA	0	0.00	0.00
50	000000000000050690	Volute	SWHSA	0	0.00	0.00
Total Planned Materials:						0.00

Planned Services						
Task ID	Service Item	Description	Vendor	Qty	Unit Cost	Line Cost
10		LABOR FOR REP/TECH DURING 4A F	0000014125	25675	1.00	0.00
10		LABOR FOR PUMP SUCTION HEAD MO	0000014125	2500	1.00	0.00
10		COS - LABOR TO REPAIR VOLUTE P	0000014125	54210	1.00	0.00
10		LABOR TO DISMANTLE, CLEAN, INS	0000014125	3625	1.00	0.00
10		PARTS FOR PUMP SUCTION HEAD MO	0000014125	2605	1.00	0.00
Total Planned Services:						0.00

Actual Labor							
Task ID	Craft	Skill Level	Labor	Vendor	Contract Num	Regular Hours	Premium Hours
20	INS		03255			04:00	00:00
20	INS		02585			02:00	00:00
20	INS		02043			04:00	00:00
30	M1M2		02271			60:00	00:00

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Actual Labor									
Task ID	Craft	Skill Level	Labor	Vendor	Contract Num	Regular Hours	Premium Hours		
30	M3M4		03396			18:00	00:00		
30	M1M2		02292			20:00	00:00		
30	M1M2		02301			10:00	00:00		
30	M3M4		02290			65:00	00:00		
50	M1M2		02719			10:00	00:00		
50	M1M2		02301			40:00	00:00		
50	OPERATIONS		03377			20:00	00:00		
50	M1M2		02271			19:00	00:00		
50	M3M4		02290			20:00	00:00		
50	M3M4		03396			16:00	00:00		
60	INS		02585			04:00	00:00		
60	INS		03255			02:00	00:00		
60	M1M2		02292			08:00	00:00		
60	INS		02268			04:00	00:00		
60	INS		02043			08:00	00:00		
80	INS		02043			02:00	00:00		
80	INS		03255			06:00	00:00		
80	INS		02264			02:00	00:00		
80	INS		02585			02:00	00:00		

Actual Materials									
Task ID	Item Description	Binnum	Qty	Unit Cost	Line Cost				
30	0000000000000: Lubricant, Jack Bolt	00E-E01-004	1	0.00	0.00				
30	0000000000000: Ring, Back-Up, Teflon	GW-00-02	1	0.00	0.00				
30	0000000000000: O-Ring, Volute to Barrel, 1/4"Thk	00D-D04-003	1	0.00	0.00				
30	0000000000000: O-Ring, Take Off Tube, 1/8"Thk	00D-D04-003	1	0.00	0.00				
30	0000000000000: O-Ring, Bushing Flange, Stuffing Box, 1/4"Thk	00D-D03-004	3	0.00	0.00				
30	0000000000000: O-Ring, Cover to Volute, 1/4"Thk	00D-D03-004	1	0.00	0.00				
30	0000000000000: O-Ring, Stuffing Box, Inside, 1/4"Thk	00D-D04-001	3	0.00	0.00				
30	0000000000000: O-Ring, Deflector, 1/8"Thk	00D-D03-007	3	0.00	0.00				
30	0000000000000: O-Ring, Stuffing Box, 1/4"Thk	00D-D04-001	3	0.00	0.00				
30	0000000000000: Gasket, Line Bleed Off, 1-7/8"ID x 2-1/2"OD	00D-D02-006	1	0.00	0.00				
30	0000000000000: Gasket, Discharge Cover to Barrel, 24.688 X 26.062 X .175, 3	GW-00-03	1	0.00	0.00				
30	0000000000000: Gasket, Volute To Barrel	GW-00-04	1	0.00	0.00				
50	0000000000000: Bearing Assy, Thrust	'--	1	0.00	0.00				

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Actual Materials					
Task ID	Item Description	Binnum	Qty	Unit Cost	Line Cost
50 0000000000000	Plate, Upper Leveling	00E-E04-008	1	0.00	0.00
50 0000000000000	Plate, Lower Leveling	00E-E04-007	1	0.00	0.00
50 0000000000000	Gasket, Suction Cover to Barrel, 24.062 X 25.438 X 175, 604-	GW-00-03	1	0.00	0.00
50 0000000000000	Gasket, Line Bleed Off, 1-7/8"ID x 2-1/2"OD	00D-D02-006	4	0.00	0.00
50 0000000000000	Bearing, Sleeve	00D-D01-004	1	0.00	0.00
50 000000001913	Gasket, Spiralwound, 316SS, Flexicarb, 1", 150#	FGC-00A-001	2	0.00	0.00
50 000000001913	Gasket, Spiralwound, 316SS, Flexicarb, 2-1/2", 150# (W/Flang	FGC-00A-001	4	0.00	0.00
50 000000001913	Gasket, Spiralwound, 316SS, Flexicarb, 900-1500#, 2" (W/Flan	FGC-00B-002	1	0.00	0.00
50 000000001890	Washer, Lock, Bearing, 2-3/16"ID	00C-C34-004	1	0.00	0.00
50 000000001913	Gasket, Spiralwound, 316SS, Flexicarb, 1", 300-600#	FGC-00A-002	4	0.00	0.00
Total Actual Materials:					0.00

Log			
Date	Class	Created By	Description
04/16/2018 01:36:09 PM	WORKORDER	02661 Jansen Germann	4A volute replacement

Replaced 4A volute. During this replacement there was no indication of any damage or problem areas. The suction head was sent to EPS for the pick up tube to be machined for the new one. The original date that it was supposed to be back onsite was delayed 5 days. This put the job behind but they were able to still finish the job before the end of the scheduled outage. Completed by Sizemore, Reese, Dicken, EPS

Report EK_woprint.rptdesign



ENGINEERED PUMP SERVICES, INC.
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 (262) 363-9002 · (800) 657-0845 · fax (262) 363-9013
www.epspumps.com · email: eps@epspumps.com

CLOSING REPORT

CUSTOMER :	East Kentucky Power Cooperative	REPORT DATE :	10/17/18
PLANT NAME :	Spurlock Generating Station	REPORT NO. :	55913-CR1
CITY/STATE :	Maysville, Kentucky	CUST. ORDER :	EKPC- 0000119184
EQUIPMENT :	8 X 10 X 14 HDB-11 Stage	COPY :	Jody McCord
SERVICE :	Boiler Feed	FILE :	55913
MANF. :	Byron-Jackson	PAGE :	1 of 2
SERIAL NO. :	Spare Element from Unit 4A		

I. SUMMARY OF REPAIRS AND ASSEMBLY

The subject pump arrived at EPS on 04/19/18 and was completely disassembled, cleaned, and inspected; a detailed inspection report, recommended repair specification, and price quotation were submitted on 05/15/18. Approval to proceed with the recommended repairs was received with an official purchase order on 05/24/18.

The pump was completely repaired and rebuilt in accordance with EPS specification 55298-RS1; the total indicated runout of the rotating element was under .003", and all floats and lifts measured to acceptable values. Overall, there were no issues with the pump repair or assembly apart from the need to remake one of the heat treated case rings at final assembly. The completed pump element was ready for shipment on 10/01/18 and was returned to Spurlock on 10/04/18.

Please see the following page of this report for a dimensional summary of all critical fits and clearances. It should be noted that the stationary fits (volute casing and wear rings) as received were consistently .002" over the nominal design diameter. Since the volute was otherwise in excellent condition, the corresponding wear rings and stage pieces were all appropriately sized to restore the design fit clearance. The groove widths were also marginally over the expected design width, and the widths on the stationary rings were all dimensioned to restore design axial clearance.

BY: *Aaron Stull*
 Aaron Stull

CLOSING REPORT

CUSTOMER : EKPC - Spurlock
REPORT NO. : 55913-CR1

REPORT DATE : 10/17/18
PAGE : 2 of 2

II. SUMMARY OF FITS AND CLEARANCES							
IMPELLER / SHAFT FITS AND ASSEMBLY				STATIONARY FITS AND RUNNING CLEARANCES			
Impeller, 1 st Stage	Fit Bore	4.7540	4.7545	Casing	Fit Bore	8.377	8.378
Shaft	Fit Turn	4.7565	4.7570	Series Case Ring	Fit Turn	8.375	8.376
Resulting Fit		-0.0030	-0.0020	Resulting Fit		0.001	0.002
Design Fit		-0.0030	-0.0020	Design Fit		0.001	0.003
1-2 and Balance Sleeve	Fit Bore	4.9900	4.9910	Casing	Fit Bore	8.377	8.378
Shaft	Fit Turn	4.9920	4.9930	Stage Piece - All	Fit Turn	8.375	8.376
Resulting Fit		-0.0030	-0.0010	Resulting Fit		0.001	0.002
Design Fit		-0.0030	-0.0020	Design Fit		0.001	0.003
Impeller, 2 nd & 7 th Stg.	Fit Bore	4.9950	4.9955	Casing	Fit Bore	9.002	9.003
Shaft	Fit Turn	4.9970	4.9975	Case Rings, 1 st Stg.	Fit Turn	9.000	9.001
Resulting Fit		-0.0025	-0.0015	Resulting Fit		0.001	0.002
Design Fit		-0.0030	-0.0020	Design Fit		0.001	0.003
Impeller, 3 rd & 8 th Stg.	Fit Bore	4.9995	5.0000	1 st Stage Case Ring, TE	Clr. Bore	8.478	8.479
Shaft	Fit Turn	5.0020	5.0025	1 st Stage Impeller, TE	Clr. Turn	8.463	8.464
Resulting Clr.		-0.0030	-0.0020	Resulting Clr.		0.014	0.016
Design Clearance		-0.0030	-0.0020	Design Clr.		0.014	0.016
Impeller, 4 th & 9 th Stg.	Fit Bore	5.0050	5.0055	1 st Stage Case Ring, CE	Clr. Bore	8.224	8.225
Shaft	Fit Turn	5.0075	5.0080	1 st Stage Impeller, CE	Clr. Turn	8.209	8.210
Resulting Clr.		-0.0030	-0.0015	Resulting Clr.		0.014	0.016
Design Clearance		-0.0030	-0.0020	Design Clr.		0.014	0.016
Impeller, 5 th & 10 th Stg.	Fit Bore	5.0100	5.0105	Series Case Ring	Clr. Bore	7.834	7.835
Shaft	Fit Turn	5.0125	5.0130	Series Impeller	Clr. Turn	7.819	7.820
Resulting Clr.		-0.0030	-0.0015	Resulting Clr.		0.014	0.016
Design Clearance		-0.0030	-0.0020	Design Clr.		0.014	0.016
Impeller, 6 th & 11 th Stg.	Fit Bore	5.0145	5.0150	Series Stage Piece	Clr. Bore	6.210	6.211
Shaft	Fit Turn	5.0175	5.0180	Series Impeller	Clr. Turn	6.195	6.196
Resulting Clr.		-0.0035	-0.0025	Resulting Clr.		0.014	0.016
Design Clearance		-0.0030	-0.0020	Design Clr.		0.014	0.016
TOTAL FLOAT			.314	Center Stage Piece	Clr. Bore	6.047	6.048
CE LIFT (0°, 90°)		.018	.018	Impeller, 6 th & 11 th Stg.	Clr. Turn	6.032	6.033
TE LIFT (0°, 90°)		.018	.018	Resulting Clr.		0.014	0.016
PARALLEL LIFTS		.007	.008	Design Clr.		0.014	0.016