



ENGINEERED PUMP SERVICES, INC.

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CLOSING REPORT

CUSTOMER : East Kentucky Power Cooperative **REPORT DATE** : 12/27/2017
PLANT NAME : Cooper Power Plant **REPORT NO.** : 55798-CR1
CITY/STATE : Somerset, Kentucky **CUST. ORDER** : EKPC-0000114342

EQUIPMENT : 6" HL-11 stage **COPY** : Eddie Hudson
SERVICE : Boiler Feed Pump Inner Element
MANF. : Pacific Pump Co. **FILE** : 55798
SERIAL NO. : Unit #2 **Page** : 1 of 2

The pump element referenced above was repaired per EPS repair specification 55798-RS1; approval of this specification was received on 10/10/17. The as-achieved fits and clearances, and general assembly data are included in the following report.

The rotor was completely assembled and dynamic balanced to ISO G1.0; total indicated runout for the sleeves and impellers was under .0020" at every location. The rotor was then disassembled to the 11th stage, and the pump was completely assembled in the vertical orientation. The final axial rotor float was .352". The best operating rotor location is .115" from the coupling end limiter ± .020". The element was moved to the horizontal position and the lifts were checked at both 0° and 90°. The results are in the table below:

End	Lift at 0°	Lift at 90°
Suction	.019"	.019"
Discharge	.023"	.022"

The critical as-achieved fits and clearances are in the tables below:

FITS AND CLEARANCES (Inches)

ROTATING COMPONENTS							
Impellers	Fit Bore	3.6305	3.6310	Spacer Sleeves	Fit Bore	3.6305	3.6315
Shaft	Fit Turn	3.6295	3.6300	Shaft	Fit Turn	3.6295	3.6300
Resulting Fit		0.0005	0.0015	Resulting Fit		0.0005	0.0020
Design Fit		0.001	0.003	Design Fit		0.001	0.003
Pressure Reducing Slv	Fit Bore	3.6240	3.6245	Sleeve Nut	Fit Bore	3.6310	3.6320
Shaft	Fit Turn	3.6245	3.6250	Shaft	Fit Turn	3.6295	3.6300
Resulting Fit		-0.0010	-0.0000	Resulting Fit		0.0010	0.0025
Design Fit		-0.001	-0.001	Design Fit		0.001	0.003

BY: *Aaron Stull*

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Please note that the main shaft and impeller diameters are .005" above the standard value. If the impeller to shaft fit clearance needs attention at the next repair interval, consideration should be given to restoring the design fit turn through minimum grinding of the shaft body.

ROTATING COMPONENTS W.R.T. STATIONARY							
1st Stage Case Ring	Clr. Bore	8.468	8.469	Series Case Rings	Clr. Bore	7.343	7.344
1st Stage Impeller Ring	Clr. Turn	8.453	8.454	Series Impeller Ring	Clr. Turn	7.328	7.329
Resulting Clr.		0.014	0.016	Resulting Clr.		0.014	0.016
Design Clearance		0.014	0.016	Design Clearance		0.014	0.016
Interstage Bushings	Clr. Bore	4.266	4.267	Pressure Reducing Bsh	Clr. Bore	6.891	6.892
Shaft Sleeve	Clr. Turn	4.251	4.252	Pressure Reducing Slv	Clr. Turn	6.876	6.877
Resulting Clr.		0.014	0.016	Resulting Clr.		0.014	0.016
Design Clearance		0.014	0.016	Design Clearance		0.014	0.016

STATIONARY COMPONENTS							
Suction Cover	Fit Bore	17.368	17.369	Intermediate Cover	Fit Bore	17.368	17.369
Intermediate Cover	Fit Turn	17.370	17.371	Intermediate Cover	Fit Turn	17.370	17.371
Resulting Fit		-0.003	-0.001	Resulting Fit		-0.003	-0.001
Design Fit		-0.002	0.000	Design Fit		-0.002	0.000
Discharge Cover	Fit Bore	17.368	17.369	Discharge Spacer	Fit Bore	17.250	17.251
Discharge Spacer	Fit Turn	17.370	17.371	Discharge Diffuser	Fit Turn	17.248	17.249
Resulting Fit		-0.003	-0.001	Resulting Fit		0.001	0.003
Design Fit		-0.002	0.000	Design Fit		0.001	0.003

The element was shipped back on 01/15/17 and was delivered to Cooper on 01/18/17.

(*) One item of note: The cover and spacer seal face to seal face stage lengths are still very close to the original design specifications. At the next repair interval of this pump, it should not be necessary to restore any seal lengths by adding material through overlay welding.