Fluid Sealing International
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Mechanical Seal Analysis (MSA)

Date	3/22/22	**Pump Position**	P-620
MSA #	2022-015	**Seal Manufacturer**	FSI
Inquiry #	I-22-0034	**Seal Model**	MS104000342XSXJJ
Customer	Anchor Seals	**Shaft Size**	2.125″
Customer Ref #	12462293	**Drawing #**	FSI-2009-34
End User	USS Clairton	**Seal Serial #**	01703-R01
Pump House	TEC	**Inboard Rotary Material**	Silicon Carbide
Contact	Brandon Spithaler	**Inboard Stationary Material**	Tungsten Carbide
Phone	412-865-2101	**Outboard Rotary Material**	-
Salesperson	Brandon Spithaler	**Outboard Stationary Material**	-
		Elastomers	Kalrez 6375

General Seal Condition

The seal was returned assembled.

Figure 1: Seal Assembly

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The clockwise flush port was found to open. The

Figure 2 & 3: Flush Port

Seal Face Conditions

The Tungsten Carbide stationary face shows markings on the seal face that may have resulted from the vibration/ cavitation that the pump experienced due to the hole worn in the cut water of the pump.

Figure 4: Stationary Face

The Silicon Carbide rotary face showed a concentric wear pattern.

Figure 5: Rotary Face

Elastomers

The stationary seal face O-ring is fretted which coincides with the vibration the seal would have experienced with the issues found in the pump.

Figure 6 & 7: O-rings

Metal Components, Springs, Pins

Most metal parts are in good working order.

Figure 8: Metal Components

The gland bushing is shattered, this damage was more than likely caused when the pump seized up.

Figure 9: Carbon Gland Bushing

All springs flexed freely upon removal.

Figure 10: Springs

Failure Explanation/Recommandation

Failure Explanation: This pump was reported to have experienced a failure due to a hole worn in the cutwater of the pump that caused vibration that loosened the impeller and caused it to back loose then making contact with the pump casing and seizing the pump.

There was no word of a seal leak prior to the pump seizing.

Recommendation: Repair the seal and return it to service.

Additional Note: