



### Mechanical Seal Analysis (MSA)

<b>Date</b>	05/14/21	<b>Pump Position</b>	P-207E
<b>MSA #</b>	2021-021	<b>Seal Manufacturer</b>	FSI
<b>Inquiry #</b>	I-21-0055	<b>Seal Model</b>	1040SP
<b>Customer</b>	Anchor Seals	<b>Shaft Size</b>	2.9375"
<b>Customer Ref #</b>	2199033	<b>Drawing #</b>	-
<b>End User</b>	USS Clairton Works	<b>Seal Serial #</b>	MS1040SP003722XXJE
<b>Pump House</b>	TEC	<b>Inboard Rotary Material</b>	Tungsten Carbide
<b>Contact</b>	Jason DiBiase	<b>Inboard Stationary Material</b>	Tungsten Carbide
<b>Phone</b>	412-299-6900	<b>Outboard Rotary Material</b>	-
<b>Salesperson</b>	House	<b>Outboard Stationary Material</b>	-
		<b>Elastomers</b>	Chemraz505

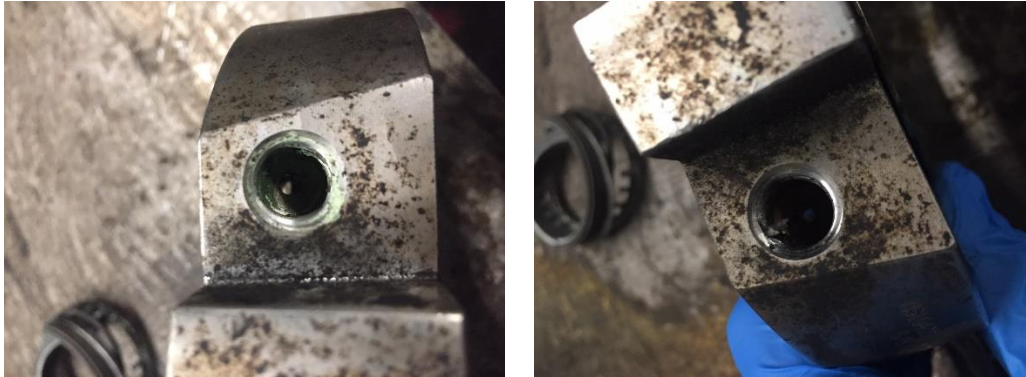
#### General Seal Condition

Seal was returned in pieces.



**Figure 1: Seal As Returned**

The Flush Ports were found to be clear.



**Figure 2: Flush Port**

The Quench Port was not in use due to the amount of material found in port.



**Figure 3: Quench Port**

The Drain Port was found to be same condition as quench.



**Figure 4: Drain Port**

### Seal Face Conditions

The tungsten carbide stationary face was damaged and in pieces upon arrival and potentially during disassembly.



**Figure 4: Stationary Face**

The tungsten carbide rotary face was chipped.



**Figure 5: Rotary Face**

## Metal Components, Springs, Pins

Some metal parts were in fair condition with the exception of the Seal Sleeve. Shaft sleeve showed signs of damage likely due to removing seal from seized pump shaft/casing.



**Figure 6: Seal Sleeve**

Springs flexed freely with some springs broken upon arrival.



**Figure 7: Springs**

## Failure Explanation/Recommendation

**Failure Explanation:** It was reported that the pump came in for repair due to the pump being locked up or seized. No seal leak was reported and the pump ran for 48

months. The damage sustained to the seal is likely due to a combination of the seal being removed from the pump and the initial attempted startup of a seized pump.

**Recommendation:** Repair this seal and return to service per manufacturers recommendations.

**Additional Note:**