



Mechanical Seal Analysis (MSA)

Date	11/16/21	Pump Position	801P1-B
MSA #	2021-052	Seal Manufacturer	FSI
Inquiry #	I-21-0121	Seal Model	MS1020MSP0038-2371
Customer	Anchor Seals	Shaft Size	2.375"
Customer Ref #	12216597	Drawing #	FSI-2371
End User	USS Clairton Works	Seal Serial #	01744-R01
Pump House	TEC	Inboard Rotary Material	Tungsten 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 removed assembled and covered in product.



Figure 1: Seal Assembly

The flush port was found clear of any obstructions.



Figure 2: Flush Port

Seal Face Conditions

The Tungsten Carbide stationary face showed heat checking and signs of excessive heat.



Figure 3 & 4: Stationary Face

The Tungsten Carbide rotary face was cracked at the anti-rotation pin.



Figure 5: Rotary Face

Elastomers

All Kalrez O-ring were fretted and show signs of excessive heat.



Figure 6 & 7: O-Rings

Metal Components, Springs, Pins

Most Metal Parts are in good working condition.



Figure 8: Metal Components

Failure Explanation/Recommendation

Failure Explanation: It appears this seal failed due to excessive heat due to a loss of lubrication across the seal faces. This is apparent throughout the report in both the heat checking of the Tungsten Carbide face as well as the condition of the O-rings.

Recommendation: Repair the seal and return it to service. Ensure that the seal is constantly supplied an adequate outside source flush at 10-15 psi above the stuffing box pressure.

Additional Note: