



Mechanical Seal Analysis (MSA)

Work Order #	N/A	Failure Code	S-1005
Date	3/29/17	Pump Position	P-2031
MSA #	2017-053	Seal Manufacturer	FSI
Inquiry #	I-17-0104	Seal Model	1040/SP
Customer	Anchor Seals	Shaft Size	1.750"
Job #	2157653	Drawing #	2215
End User	USS Clairton	Seal Serial #	01558-R01
Pump House	Total Equipment Co.	Inboard Rotary Material	Silicon Carbide
Contact (TEC)	Ron Sipes	Inboard Stationary Material	Carbon
Phone	412-269-0999	Install Date	N/A
Salesperson	Jason DiBiase	Removal Date	N/A
		Days in Service	N/A

General Seal Condition

Information received from TEC that pump and seal has been at their shop for 3 years and has been used as parts.

Seal Face Conditions

Inboard

Stationary: Carbon – blistering, abrasive wear (Figure 1)

Rotary: Silicon Carbide – fractured into multiple pieces (Figure 2)



Figure 1



Figure 2

Elastomers

IB stationary Elastomers show signs of chemical degradation. (Figure 3)



Figure 3

Metal Components, Springs, Pins

Sleeve: OD rubbing

All other metal components in good condition.

Failure Explanation

The blistering on the carbon was caused by the heat generation due to lack of clean fluid between the seal faces. This heat generated caused a thermal shock to the silicon, which resulted in the damage in Figure 2.

Recommendation

Ensure all flush lines are free of debris to produce a clean fluid between the seal faces.