



Mechanical Seal Analysis (MSA)

Work Order	N/A	Failure Code	P1000
Pump House	Total Equipment Co.	Pump Position	339
Date	2017-01-25	Seal Model	1040/SP
MSA #	2017-009	Shaft Size	2.000"
Inquiry #	I-17-0007	Drawing #	2357
Customer	Anchor Seals	Seal Serial #	02053
Tag #	N/A	Inboard Rotary Material	Silicon Carbide
End User	USS Clairton	Inboard Stationary Material	Antimony Carbon
Contact	Jason DiBiase	Install Date	Not Given
Phone	412-327-5375	Removal Date	Not Given
		Days in Service	Not Given

General Seal Condition

Rubbing heat damage on sleeve ID. Clips were not returned, ports were clear of obstructions. Carbon box bushing returned with seal was damaged. Shaft sleeve o-ring was cut (info received from TEC).

Seal Face Conditions

Stationary: Antimony Carbon – Blistering/pullouts

Rotary: Silicon Carbide – Fractured in multiple places

Elastomers

Bushing o-ring was degraded (Figure 1). Shaft sleeve o-ring was cut in half (info from TEC).

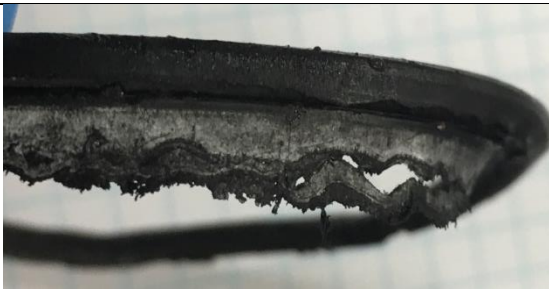


Figure 1

Metal Components, Springs, Pins

Sleeve: rubbing on OD, heat damage (Figure 2)

Gland: rubbing on ID, heat damage (Figure 3)

Springs: fatigued, heat damage

Carbon box bushing: rubbing damage



Figure 2



Figure 3

Failure Explanation

It would suggest the seal failure was attributed from the pump run-out. This is shown by:

1. The rubbing on the sleeve OD
2. The rubbing on the gland ID
3. The fatigued springs from heat damage.

Recommendations / Inquires

It is recommended to check pumps for run out. This will allow seals to be repairable. Check pump manufacturer's specifications and ensure they are "in spec" before installing new seal.