



FUELS INDUSTRY
Association of South Africa

LEARNING FROM PUMP SEAL FAILURE INCIDENT

2024



INCIDENT DESCRIPTION

The pump was removed for repairs, there were some challenges regarding the fitness of the impellers to the volute casing which was done rotating department and plant maintenance department. The pump was assembled and installed successfully without any issues and production commissioned the pump as per procedure. Pump was running on circulation a period of 3 days.

Early in the morning at the delayed coking unit, a fire was noticed from the feed pump immediately after that the feed flow started drop to zero m³/h. Two weeks before the incident heavy rains flooded the feed pump pit a day before the incident while the pump was online.



PHOTOS

Wrong Port for Oil Feeder



Damaged Mechanical Seal



Damaged Shaft





INCIDENT ROOT CAUSE

Root cause:

Inadequate bearing lubrication result in the failure of the bearings with resultant mechanical seal failure.

- It was found that bearing failed catastrophically with a severe impeller damage.
- Drain nipple was installed on the top oil supply port whereas the constant oil feeder was installed at the bottom port for drain purpose.
- Then plant maintenance personnel assumed that the nipple was installed correctly.
- This means that the bearing didn't have sufficient oil for lubrication.



INCIDENT LEARNINGS

- Ensure that QCP is available before assembly and installation of pumps.
- Oil feeder to be verified and installed in correct location.
- No plugging to be done on oil feeder port.
- No swapping of impellers to be occurred on different volute casing.
- All impeller assemblies to be balanced before installation.
- Inadequate rotating equipment skills for some mechanical artisans regarding pump lubricating system on single stage pumps



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Thank You

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