



FUELS INDUSTRY
Association of South Africa

LEARNING FROM SUMP INCIDENT

2024

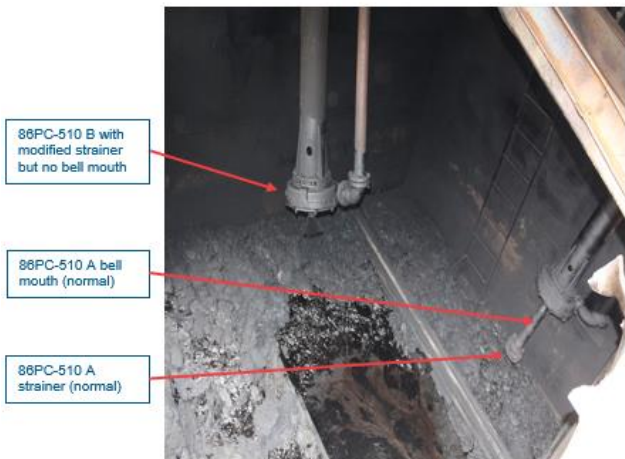


INCIDENT DESCRIPTION

- The sump pump was removed for maintenance purposes, to do this the nitrogen to the sump was blocked in.
- The opening in the sump roof was covered with a piece of conveyer belt.
- During this time confined space entry was required into the sump and the nitrogen was blanked off.
- The plant was commissioned, the sump pump was still out for maintenance and the blank in the nitrogen line was left in.
- The pump was returned and commissioned.
- During the operation of the repaired pump a fire occurred in the sump, resulting in an overpressure, causing damage to sump auxiliary equipment, cabling, and instrumentation.



PHOTOS



86PC-510 A and B while still inside CB-502 sump after the incident



86PC-510 B after the pump was removed from CB-502 sump

Throttle bush – the throttle bush was measure for eccentricity and was acceptable. From visual inspections slight signs of wear can be noticed on the inner walls of the bush



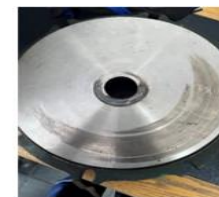
Shaft sleeve – the shaft sleeve shows signs of mechanical wear.



Impeller – All six vanes of the impeller show signs of mechanical wear, specifically rub marks. Furthermore, severe signs of cavitation can be observed across the surface of the impeller



Suction liner plate – the suction liner plate showed signs of localized rubbing.



Pump shaft – a run out was performed on the shaft and it was proven to be eccentric.



INCIDENT ROOT CAUSE

- Oversight during HAZOP process to consider the correct minimum operating levels in the sump relative to pump minimum operating level .
- MOC process failed on updating the QCPs and data sheets for the sump pump.
- There is no specific sump commissioning checklist including nitrogen commissioning with pump .



INCIDENT LEARNINGS

Nitrogen inerting system (safety critical system) – Nitrogen inert blanket to the sump should not be isolated during vacuuming cleaning or maintenance on the sump auxiliaries. The risk of asphyxiation was greater than the process safety risk.

Sump level calibration – The operational range and trip limits of the level for the sump pump must be confirmed whenever modifications are made to the length of the pump. During the HAZOP review for pump testing, the correct minimum operating level in the sump relative to pump minimum operating level was not considered

MOC process – Diligent and disciplined execution of MOC next steps must be to be completed for any changes made to equipment. The MOC process failed on updating the QCP's and data sheets.

HAZOP team composition – The HAZOP team selection and attendance of personnel to comprise of relevant experienced disciplines. The HAZOP team for the RTO project conducted without representation from the operations teams.



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Thank You

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