

Incident Learning: Desalter LOPC

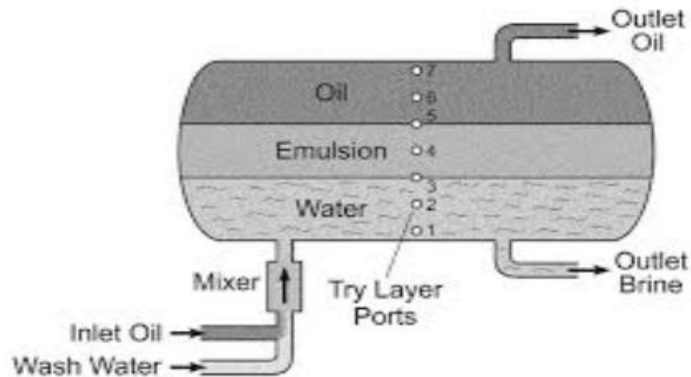
What went wrong:

- The crude distiller desalter effluent was reported to be dark. 3 days later, oil was picked up in the refinery effluent system. The release was quantified to be approximately 660 tons of Oil ex the crude distiller desalter which is classified as an API Tier 1 event.
- A month later, dark effluent and oil in the refinery effluent system was picked up again. The release was quantified to be approximately 90 tons of Oil ex the crude distiller desalter which is also classified as an API Tier 1 event.

What caused it to go wrong:

- For both incidents, excessive amounts of water and solids in Crude led to a breakthrough from the Desalter and overloaded the crude distiller effluent system which subsequently resulted in oil carry over into the storm water canal and Mixing Tank.

What are the learnings for implementation?



Crude has salts, water and particles which is removed by the desalter.

- Normalisation of sludge in crude tanks (Solids in crude feed is expected).
- Normalisation of poor effluent quality and desalter upset.
- Operational response to desalter upsets was not captured in a procedure.
 - Emulsion breaker and citric acid dosing was not ideal.
- CPI operation (Maintenance and Operational monitoring is not adequate)
 - Lack of response of CPI condition i.e. poor monitoring (focus on desalter only)

What are the findings and recommendations?

Investigation findings

- Desalter upset is technically understood.
- Human behaviour caused the incident to escalate.
- Normalisation of sludge in Crude tanks for >7years.
- Escalation process to be clarified.
- Communication barriers between Production zone and lack of understanding beyond battery limits – Working in silos.
- Operational monitoring of the Crude Distiller CPI vs Desalter – currently dependent on process chemical vendor.

Recommendations

- Develop a response plan to oil in Crude Distiller CPI vs Crude Distiller Effluent system.
- Develop a procedure for the entire process i.e. Crude feed → desalter → effluent.
- STOP WORK authority of shift teams – needs re-enforcement.
- Continue to desludge Crude tanks and re-instate mixers.
- Develop an understanding of the use of vacuum trucks (what is normal or abnormal?).
- Continue to investigate the causes of solid accumulation in crude tanks (i.e. crude compatibility, wax etc.)
- Operator training of desalter operation and reason for limits in order to remove the reliance on vendors.
- Operations to build visual monitoring around CPI.