

FUEL OIL INCIDENT

What happened?

- Fuel oil was transferring from tank farm to the plant fuel oil tanks. The transfer was started during night shift and continued into morning shift. Fuel oil transfer occurs only when fuel oil tanks levels are low. During morning shift the high-level alarm was activated at 80% level. The panel artisan notified the outside PC that the tank level was high, and the common tank inlet valve had to be closed. Tank farm was informed to stop the fuel oil transfer. The outside PC reported that both the fuel oil tanks are overflowing. The outside PC could not close the common inlet valve because access to the area is controlled, and he did not have the key at the time. Both tanks are fitted with high-high level switches which activate the ESD valve to close at 90% level. The level switches worked successfully in the past. After the incident, it was discovered that the calibration of both level switches was out (higher than a trip point) and was corrected.

Causes

- Level switches calibration strategies are less than adequate, calibration is only checked during tank statutory inspections.
- The review process for the operating procedure was less than adequate. The current operating level as per procedure is above the alarm set point. The tanks are normally filled up to a level of 90%, while the level switch alarm is set at 80%.
- Fuel oil tanks are fenced and locked (access control) due to the tank area being electrically classified. As a result, the outside process controller could not close the isolation valves timeously to limit the quantity of the oil released.

Learnings

- When reviewing operating procedures ensure alignment between the operating and design intent. Review whether alarm and trip set points specified in the procedures are accurate and a true reflection of what is indicated in design or control philosophy.
- Improve and maintain independent layers of overfill protection. Relying solely on one layer, for both process and safety functions, should be avoided where practical. Review where applicable, the use of trip functions to achieve operating intent.
- Review access control philosophy to ensure required emergency response actions can be executed without delays. The fuel oil tanks are fenced and locked. The outside process controller could not close isolation valves timeously to limit quantity of the oil released.

Questions