

Process Safety Near – Miss

Platformer Unit

**Loss of Pressure control during Stabiliser
inventorisation**

23 June 2023

Description of Incident

- During the inventorisation of the stabiliser (E14003), on the Platformer post the May 2023 T&I, there was a loss of pressure control on E14003, resulting in the lifting of its pressure relief valve, SV14012, to flare. The relief valve and flare functioned as intended.

Cause Analysis

Underlying Causes:

- UC1 - J14012 was not commissioned
- UC2 - Operator failed to respond to alarms
- UC3 – New alarms displace older alarms irrespective of priority.

Root Causes:

- RC1 – SOP was not followed and the startup checklist not followed
- RC2 – An alarm flood condition (Alarms/hr/operator >> 6/hr) developed.
- RC3 – The Yokogawa DCS does not have the functionality to retain critical alarms as static until acknowledged due to the risk perceived with the practice.

Cause Analysis contd.

Non-causal concern:

- NC1 – FI14228 was not on the list of instrumentation to be checked during the shutdown despite pre-shutdown defect.

Human Factors Analysis

Individual Factors

- IF1 – The panel operator may have been distracted by personal concerns related to a tragic incident involving a family member

Workplace Factors

- WF1 – High workload caused by start-up conditions – There were multiple problems on startup, resulting in an alarm flooded condition and multiple tasks to be executed
- WF2 – Inadequate staffing – The shift functioned with too few people relative to the workload up to 23h00 when additional shift-cover arrived.

Human Factors Analysis contd.

- WF3 – Foreman relative inexperience– The foreman lacked experience as he was appointed less than 2 months before. As a result, he did not effectively manage the risks or his team.
- WF4 - Prolonged duration of the shutdown – This could have contributed to resource planning.
- WF5 – Communication failures – Inadequate communication and collaboration failures occurred between panel operators, between the Foreman and his operators, between the 2 Foremen on site and the shifty.
- WF6 - Defective equipment – level and pressure instrumentation failures and 2 leaks on equipment during the shift contributed to the increase in workload.

Human Factors Analysis contd.

- WF8 –Role definition: The role of the Shift Superintendent was not clear and authority not clearly communicated. The differentiation between the roles of the Operations Area Manager and the Process Engineer were not clearly defined.

Organisational Factors

- OF1 – Shutdown and Start-up conditions – While unavoidable, shutdowns and startups are often high-risk periods, as it causes abnormal and unfamiliar conditions.
- OF2 – T&I Scheduling increased demand on personnel - Shutting down the DU and Platformer together increased the demands on the same team.

Key learning and control improvement recommendations

- 1. Appointment of critical positions before a high intensity activity such as a shutdown without providing sufficient time for the individual to adjust to role before demands are placed on the individual, pose a risk to decision making.
- 2. T&I planning must consider the impact of the shutting down of multiple plants to coincide with each other, on the operations personnel resource loading.
- 3. A clear differentiation of roles and responsibilities between Operations (viz. Area Manager) and Technical (Process Engineer) is required during plant startup..

Key learning and control improvement recommendations

- 4. The selection of the commissioning team for start-up post T&I should be reviewed to ensure that the most capable team is available for the start-up. The selection process must consider the state of emotional well-being of the commissioning team.
- 5. Startup philosophies of the different plant areas within the Natref complex must be reviewed for the adoption of best practices, hence standardisation where possible.
- 6. Adoption of learnings from the post shutdown reviews conducted is required to improve the planning process

Key learning and control improvement recommendations

- 7. Develop solutions to ensure that critical alarms remain static and visible until acknowledged to address the absence of this functionality on the Yokogawa DCS.

Identification of standard or good practice related to the incident

- 1. SASOL SPECIFICATION GUIDELINE SP-70-52 ALARM MANAGEMENT

Questions