

Learning Event



OPERATING PROCESS EQUIPMENT

HAZARD
Chemical
(Explosive)



CONSEQUENCES
Actual: No harm to persons
Potential: This could have caused a fatality

WHAT ARE YOU DOING TO PREVENT LOSS OF CONTAINMENT DURING COMMISSIONING ACTIVITIES?



Watch the Video



What Happened?

A newly constructed gas gathering network was filled with inert nitrogen gas. During commissioning, methane was introduced at low pressure from the live network to displace the nitrogen gas. This forces the nitrogen gas to vent towards the atmosphere at vents installed throughout the network. A worker was walking towards the Low Pressure Header (LPH) to measure the concentration of methane, when a fire ignited at a riser valve on the LPH. The worker was within 2 metres of the riser valve pit at the time of ignition. Away from the site of the fire, the field team isolated the main valve and second valve half way down to limit gas volumes. The fire was managed by Fire Emergency Services until it burned out. It reached approximately 15 metres in height, burning for 2 hours, severely damaging adjacent infrastructure and equipment. Nobody was hurt during this incident.

Why did it Happen?

Pressure and flow rate:

Flow rate of methane was higher than planned, due to a bypass being left open. The bypass did not appear on Piping & Instrument Diagrams (P&IDs) and commissioning procedures. This contributed to both the leak and static ignition.

Flange management and methane gas leak:

A stub flange connecting the assembly to a metal sample spool was over-torqued, likely deforming the face of the flange and allowing gas to escape. Correct torque values had not been communicated to the Commissioning and Start-Up (CSU) field team.

Static:

Given the nature of the site, there were multiple static ignition sources present in the vent assembly and valve pit, including an unearthed metal spool, a HDPE pipe and the pit liner itself. Static charge built up at the Low Pressure Header service connection valve, arced to the plastic liner and ignited the methane gas.

Process Safety Fundamentals

- ✓ We improve our understanding of process safety hazards at our location and our roles in controlling them.
- ✓ We are vigilant about the potential impacts of uncontrolled process safety hazards.
- ✓ We discuss process safety hazards before starting a task.
- ✓ We bring forward process safety hazards to be included in activity risk assessments.
- ✓ We use operating and maintenance procedures, even if we are familiar with the task.
- ✓ We pause before key steps and check readiness to progress.
- ✓ We stop, inform supervision and avoid workarounds if procedures are missing, unclear, unsafe, or cannot be followed.
- ✓ We take time to become familiar with, and practice, emergency procedures
- ✓ We use up-to-date documentation (e.g., P&IDs) that accurately reflect installed systems and equipment.
- ✓ We physically confirm the system is ready for the intended activity (e.g., valve positions, line up of relief devices, etc.).
- ✓ We alert supervision to identified documentation and readiness issues before operation.

What did they Learn?

Procedural updates:

- Improve procedure documents to ensure they are clear, task-specific and fit-for-purpose for work teams.
- Engage work teams in the development and review of procedures.

Training:

- Confirm work teams are trained in the use of equipment and procedures.

Engineering design review:

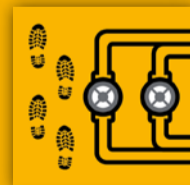
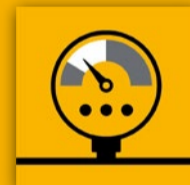
- Complete a design review of equipment and tools.
- Confirm management of change processes are followed.

Schedule planning:

- Ensure schedule reflects realistic timeframes to safely execute work.
- Engage work teams in schedule development.

Leadership:

- Require leaders to spend time in the field to understand challenges.
- Ensure leaders understand the site conditions prior to decisions about the project.
- Embed culture of curiosity in leaders about risks and challenges.
- Improve communication and active listening skills.



Ask Yourself or your Crew

- Are written procedures for commissioning activities at your workplace fit-for-purpose for the work teams that are required to use them? Are the people that do the work routinely consulted and actively involved in developing, reviewing and updating these procedures and P&IDs? Do you 'walk the line' to ensure P&IDs match 'as built'?
- Are work teams at your workplace consulted during the development of their work schedules, including when schedule changes occur? When schedule changes occur at your workplace, how do you ensure that safety is not compromised to accommodate the changes? Do you ever feel under schedule pressure at your workplace?
- How often do senior leaders in your organisation spend time in the field?

Further Information:

- [Safer Together Safety Leadership Visits](#)
- [Safer Together Safety Culture Toolkit](#)
- [Safer Together Process Safety Awareness Video: We All Have a Part to Play](#)

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