Dangerous Goods Significant Incident Report No. 01-18 and Petroleum Safety Significant Incident Report No. 01/2018

Gasket rupture at processing facility results in gas leak

Summary of incident

On 6 December 2016, an operator at a liquefied petroleum gas (LPG) processing facility heard a loud noise coming from an area of the plant during start-up, following major maintenance works. The operator identified that high pressure, flammable natural gas was being released to the atmosphere from a localised point beneath the insulation of process equipment.

The Department of Fire and Emergency Services (DFES) responded to the incident. No evacuation of personnel was required, although local traffic on adjacent roads was redirected as a precautionary measure.

Once the incident was contained, the area was secured and closely inspected for damage. The cause of the incident was identified as the sudden failure of a newly installed gasket within a bolted flange joint assembly. It is estimated that around 20,000 m^3 of gas was released to the atmosphere during the incident. There were no injuries or damage to the plant.

Direct factors

- Failure of a newly installed gasket within a bolted flange joint assembly.

Contributory factors

- Improper installation of the flange joint assembly.
- Inadequate detail provided in the procedural (quality) checks for workers to verify the bolted flange joint assembly was installed fit-for-service prior to plant start-up.

Actions required

The following actions are recommended to operators of major hazard facilities to reduce the potential for failure of safety critical plant components following maintenance work.

- Prepare clear and adequate work instructions prior to authorising work to commence within processing facilities.
- Develop or review manuals for critical parts of the plant and confirm they outline operational parameters and quality checks required for maintenance activities.
- Prior to commencing the maintenance operation, confirm that all members of the maintenance team fully understand the steps required, and any uncertainty or ambiguity is clarified before work commences.
- Undertake quality assurance inspections (e.g. “GO/NO GO”) throughout the maintenance operation to confirm the work is satisfactory and may continue.

Note: Reliance only on functional testing and job paperwork review, and post-completion quality inspections, to confirm that safety critical maintenance was completed correctly, may be insufficient.

- Undertake a thorough inspection and testing of works in critical areas of the plant prior to start-up following maintenance and shutdowns.

Further information

Visit www.dmirs.wa.gov.au/ResourcesSafety for information on dangerous goods and petroleum safety.

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