



Safety Alert 04

Incidents – Start Up and Commissioning

What happened?

Two recent incidents during start up and commissioning activities have demonstrated the importance of correct material/parts selection:

1. **Gasket failure** – A process shutdown lead to a transient pressure surge in the pipework which resulted in the failure of two gaskets, and a subsequent leak of hydrocarbons. The release activated the facility fire and gas system, resulting in an emergency shutdown. Deluge was manually activated until the system had bled down and the release was confirmed to have ceased. There was no resultant fire or injuries.
2. **Fuel line failure** – A fuel leak from a generator fuel line resulted in fuel being sprayed onto the generator exhaust resulting in a small pool fire. A Maintenance Engineer, working in an adjacent workshop, smelt fuel and entered the generator room to investigate. He found a fuel oil mist around the generator and called the control room and notified of the leak. He then called for a ships generator to be put on line and left the generator room and shutdown the generator remotely. On his return to inspect the engine, a small pool fire had started on the hot exhaust manifold covers. The fire was extinguished with a hand held extinguisher and there were no injuries.

What went wrong?

The incorrect installation of parts was a contributing factor in both incidents. Investigation of incident 1 found that a large number of installed gaskets did not meet the pipe specification. Two gaskets failed when exposed to an elevated pressure. Likewise for incident 2, the investigation found that incorrect hoses had been installed in a fuel supply service on the generator, which consequently leaked, resulting in a fire.

Contributing factors for the two incidents included:

- Failure of quality control and commissioning checks to identify the risk;
- The crew were unfamiliar with detailed system specifications and there was no formal handover process between construction/installation to operations; and
- Commissioning checks and leak testing did not highlight the faulty parts.

Key lessons

While there are lessons specific to each incident, the following key lessons are common to both:

- Quality control inspections during installation and commissioning of equipment must be sufficient to verify that equipment and components meet approved specifications.
- Operators should ensure equipment suppliers provide adequate documentation and specifications and that these are incorporated into drawings and commissioning procedures.
- Where possible, the commissioning and operations workforces should be integrated during the facility construction phase and should both be involved in quality checks at system mechanical completion.
- The operations workforce should be engaged as early as possible in the project to enhance facility and system familiarisation and awareness.

Contact

For further information email alerts@nopsa.gov.au and quote Alert 04