

LFI: LP & HP Flare Header Pressures dropped to below Zero.



Context: Prelim. Investigation

- Most GTL Refinery units parked as natural gas supply from offshore has dropped below minimum level for 1X1 train operation.
- Offsites & Utilities, and Blending & Storage units in operation.
- FA Platform total power trip and subsequent extended gas supply interruption for maintenance repairs.
- GTL Refinery' LP and HP Flare header pressure dropped below zero – HiPo process safety incident.
- Fuel gas supply ex natural gas from offshore is usually sufficient to maintain both LP and HP flare header pressures.
- Control system enabled alternative is nitrogen supply from air separation units that are parked,
- Liquid nitrogen import from supplier to air separation with supply to flare header closed at the time.

What Happened? – prelim.

- During extended FA Platform outages, some of the fuel gas boilers are taken offline to maintain the offshore supply header pressure.
- If too little steam supply, the fuel gas heater ES101 trips the supply control valves shut – effectively shutting off the fuel gas supply to the HP/LP flare header pressure controller.
- Control of the flare header pressure is lost – and that causes the flare pressure to go negative – especially during periods of low ambient temperature.
- Air can ingress the flare header can cause explosive mixtures with potential severe consequences.

Corrective Actions: Interim

- Monitor the LP and HP flare header pressure.
- If start going too low, the manual fuel gas supply points to the flare headers must be opened to alleviate the problem.
- In an emergency, Air Separation can be requested to open their nitrogen export to improve the flare header pressure through the LP Flare header pressure controller.
- Supply from Air Separation was limited at the time because the amount of liquid nitrogen available is dependent on fresh supply from external supplier.
- **MOC:** operating the flare system without nitrogen supply ex Air Separation completed – decision not to implement such.

Update: formal investigation in progress. Reinstated control system enabled supply of nitrogen to the flare from air separation. LFI will be shared at next SAPIA session.

Thank You...

