

HiPo: HDS1B LOPC at HP Separator (V203B) 7TH August 2019



Brief description of Event:

At approx. 21:00 hrs on 07/08/19, a CZ operator noticed a leak on the inlet nozzle of HDS1B HP separator, V203B. The system at the time was operating at approx. 4200kPag and 190°C, in preparation for the pre-sulphiding step as part of the TA2019 start-up sequence. The leak, containing a mixture of gasoil and hydrogen, quickly escalated. The Panel person having been informed of the leak by the field operator, stopped the unit feed pumps and activated the EDP, subsequently depressurizing the unit. A fixed water monitor was also commissioned to suppress the evolving hydrocarbon vapours. The LOPC has been quantified at 81 kg. There were no injuries and no damage to assets.

Subsequently, after replacing V203B gasket and during the pre-sulphiding step, additional flange leaks were detected after operators picked up high H2S content in the HP section. The leaking flanges were in V202B (HDS1B Recycle Gas KO Drum). Both V203B and V202B leaking flanges were part of TA2019 scope. The decision was made to put on hold HDS1B unit start-up until completing further assurance checks on flange tightness that were worked during the turnaround.

Summary of main causes:

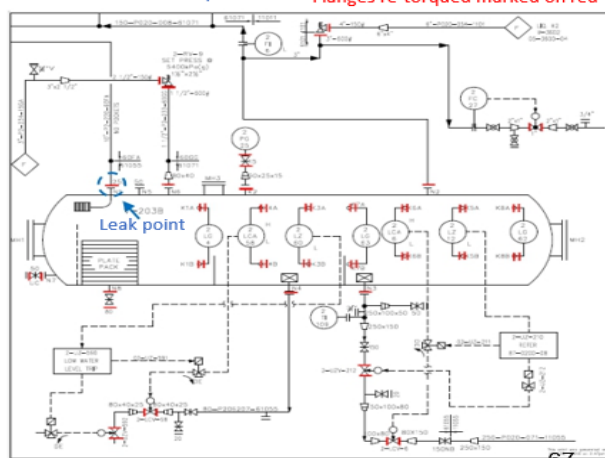
- The leaking flange on V203B was inspected. The flange face and gasket were fine, but the bolts were too long and touched the sleeve, possibly resulting in them not being tight enough.

Measures to avoid reoccurrence:

- A plan was developed to check and re-torque risk flanges in HDS1B HP section work (i.e. those reinstated after pressure testing or not pressure tested).
- Scope included all vessel trimmings and flanges onto and off vessels (e.g. nozzles, instrument take-offs, etc.), including control valves and RVs.
- The flange tightness assurance team checked a total of 142 flanges worked during TA2019 and proactively re-torqued them until gasket compression.
- There were 4 findings during the check that were addressed:
 - V204 stub gasket replaced due to incorrect size (i.e. too small).
 - 3 impulse lines where leaking where the nipple screws into the instrument flange. Nipples threads were sealed and reinstalled.
- After the checks were completed, the unit was safely restarted with no leaks.

V203B - HDS1B HP Separator

Flanges re-torqued marked on red



67

HiPo (RAM4+) Near Miss - HDS4 feed/effluent exchanger flange leak – 14th August 2019



Brief Description of Event

At around 11h45, a small flame was observed on HDS4 feed/effluent exchanger (E4701D). The fire alarm was activated and operations commissioned steam ring (snuffing steam) around the exchanger head to extinguish the fire. The panel operator activated the Emergency Depressurising (EDP) system and unit shutdown. During this time there was high flaring in refinery. Some liquid was carried over to the North flare tip, caught alight before falling to ground and resulted in some grass fires. There were no injuries and no consequential damage to assets and environment.

Immediate actions taken:

- Steam was commissioned to E4701A/B/C/D steam rings,
- EDP was activated to depressurise the system.
- E4701D bolts were replaced with normal bolts and torqued.
- HDS4 was then restarted safely and there were no leaks.

Summary of Main Causes

Incident is currently under investigation.

- The Rota bolts on E4701D were found to be relatively loose.
- There was no evidence of thermal shocks on E4701D.

Corrective & Preventative Actions

Incident is currently under investigation.

- Reinforced the conditions for activation of EDP system.
- E4701D exchanger gasket will be changed in next NZ major TAR and Rota bolts reinstated.



Location of Flames