CASE STUDY

OISD/CS/2020-21/E&P/03

INTRODUCTION

Title: Gas leakage and fire in Natural Gas pipeline.
Location: In a Natural Gas pipeline from Gas Gathering Station to Manifold Header.
Activity: Gas injection in well.
Result: Leak from Natural Gas pipeline, flash fire and one casualty.

BRIEF OF INCIDENT

Gas leakage was observed in a farm land by a local villager and he informed Pipeline Control Room about the same. Control Room officer, sent vehicle with driver and contractual staff (non-technical) to the site to check the status of leakage. The driver and contractual staff reached the site along with the land owner.

After reaching the site there was a sudden flash fire. All three persons got engulfed in the fire, which resulted in burn injuries to all of them. Later, land owner succumbed to death during treatment.

OBSERVATIONS

- Pipeline was commissioned and operated for 3 years for gas injection. Due to non-requirement, pipeline was purged and kept isolated for 7 years. Again on requirement, pipeline was hydro tested and taken into service for gas injection.
- During re-commissioning (6th day), on information of gas leakage, driver and contractual staff visited the site along with land owner. The moment vehicle entered the affected zone, engine speed increased with loud mechanical noise. Even after removing the ignition key, vehicle did not stop. All three person stepped out of the vehicle and tried to find the reason for loud mechanical noise.
- Within 2-3 minutes a flash fire took place. All three person and vehicle got engulfed in fire. Two person (driver and contractual staff) were discharged from hospital after few days of treatment, however, land owner could not survive even after a long treatment at hospital.

REASON OF FAILURE / ROOT CAUSE

- No documents available to verify the preservation of the pipeline after initial decommissioning.
- Though the Operator claimed hydro testing the pipeline, no hydro test report was prepared before gas injection in the pipeline.
- Pipeline operating parameters were not configured in SCADA.

Provided for information purpose only. This information should be evaluated to determine if it is applicable in your operations, to avoid recurrence of such incidents.
- Procedure for attending gas leakage outside the premises was not followed. Also Control Room was not equipped with details of pipeline network in their jurisdiction.
- No plan was in place for inspection and maintenance for small length pipeline i.e. coating survey, External Corrosion Direct Assessment (ECDA), Internal Corrosion Direct Assessment (ICDA), hydrotest, line patrolling etc. in line with OISD-GDN-233.
- SOP does not cover the precautions to be taken while attending the oil/ gas leakage viz. carrying gas detector, parking of vehicle at safe distance from the leakage site etc.
- Emergency Response Procedure (ERP) does not cover the oil/ gas leakage scenario outside the premises.

**RECOMMENDATIONS**

- Inspection & maintenance practices recommended in OISD-GDN-233 shall be implemented in all non-piggable oil and gas pipelines.
- History Sheet of each pipeline section should be maintained with details of maintenance carried out.
- Hydro test of the pipelines shall be carried out as per defined procedures followed in industry and records shall be maintained.
- Pipeline parameters shall be brought in SCADA before start of operation.
- All pipelines shall be purged with inert gas, the moment, they are decommissioned. Records, duly signed by competent person, shall be maintained.
- In smaller length pipeline to prevent internal corrosion, options to be explored i.e. injection of corrosion inhibitor, scrapper pigging and compatibility of pipeline material with composition of oil/ gas.
- Route details and emergency handling procedures should be made available/ displayed in concerned Control Room for prompt response by Shift In-charge.