

## Fatal fire incident near Production Installation (GGS)

### Introduction:

An incident of fire occurred at around 1430 hrs. near a production installation (GGS). The fire took place on the leaky gas lift line from GGS-I to GGS-II near a Dhaba, which was located barely at a distance of 30 to 40 meters from GGS-I installation. The fire engulfed the Dhaba and a girl living in that Dhaba got burn injuries. The girl succumbed to her burn injuries in the hospital.

### Brief description:

1. On 04/11/2011, Dhaba owner informed central resident engineer about the gas leakage from pipeline near his Dhaba.
2. Resident engineer identified it as leakage from gas injection line going from GGS-I to GGS-II. The leak was considered to be minor hence it was decided to plan the repair job next day in the morning. During the night shift a close watch was kept on the leakage point.
3. On 5/11/2011, Dhaba was asked to shut down and vacate the area. The gas line was depressurized and permit issued to carry out the repair job by clamping the leaky portion of the line.
4. Repair job was completed by 1230 hrs and pipeline charged with gas. No leakage was observed at 1300 hrs.
5. At 1430 hrs, gas was gushing out from the point where the pipeline was clamped. It turned into fire engulfing the Dhaba, located near the leakage point, completely into flames.
6. Firefighting operation was carried out.
7. A girl child, daughter of the Dhaba owner, suffered burn injuries and admitted to hospital. The girl succumbed to her injuries on 6/11/2011.

### Observations:

- There was no system for preventive health checks for such pipelines. The pipelines have never been inspected since their installation.
- Dwellings and other encroachments were observed in very close vicinity of the pipelines. The Dhaba was about 20 to 30 meters away from the pipeline.

- There was no written down policy/procedure for repair of pipelines. The decisions for repair are taken by the respective field maintenance staff, based on their capability and experience.
- Mechanical integrity assessment of pipeline, post repair job, was not carried out.
- There was no provision of Emergency Shutdown Device (ECD) to timely isolate the facility in case of fire. Shutdown of compressors, closing of block valves etc. was carried out manually during the incident.
- Assessment of physical condition of the pipeline prior to clamping was not carried out. The line had become paper thin at the leaky portion as can be seen from the photographs taken after the incident.
- It may be pertinent to mention that the health of the line was poor, so much so that the section of the line where clamp was provided was highly perforated and clamp repair of such line is never recommended.
- There had been four incidents of leakages in gas injection line going from GGS-I to different locations in the calendar year, which was reported as 'near miss'. However lessons from the near miss incidents are not learnt as the extant accident led to fatality and could have resulted in a disaster.

### Root Cause of the incident:

#### Deficient assessment of situation:

Whether the condition of the pipeline was fit for repair through clamping job or not was not ascertained. In the absence of any written down repair/maintenance procedure, it was left to the installation crew to decide by their experience the method of repair.

#### Deficient hazard management:

Since the place of incident is encroached upon by outsiders, the hazard of leakage turning into fire should have been considered and necessary control measures should have been put in place.

#### Deficient policy of maintenance of pipeline:

There has been incidents of pipeline leakages in the recent past. Health assessment of pipelines has not been carried out since installation of these lines.

### Recommendations:

- I. Present health condition of all the pipelines to be assessed and critical areas requiring immediate attention should be identified with a suitable action plan.
- II. A preventive maintenance manual for the entire pipeline network, covering necessary work(s) to be done, mentioning the periodicity, should be developed and adhered to. Roles and responsibilities for assessment of mechanical integrity, pre and post repairs, should be clearly defined in this manual.
- III. Ground patrolling of the pipeline ROW should be started at regular intervals to observe surface conditions, leakage, construction activity, encroachments, soil washouts and any other factors affecting the safety and operation of the pipeline. All the encroachments along the ROW should be controlled in a time bound manner.
- IV. Villagers/public should be adequately made aware of the possible consequences of gas leaks, on regular basis.
- V. The company should develop a long term plan to completely phase out these old lines in a time bound manner. While laying new lines, guidelines provided in OISD-STD-226 should be duly followed. This standard shall provide minimum requirements for safety in design, construction, inspection, testing, commissioning, operation, maintenance, modifications, abandonment, corrosion protection, safety of these onshore natural gas cross country pipelines.