CASE STUDY

OISD/CS/2024-25/E&P/03 **02.05.2024**

INTRODUCTION:

Title: Fatal Accident at Wellsite

Location: Onshore- Wellsite

Loss / Outcome: One fatality and four injuries

BRIEF OF INCIDENT

A fatal accident occurred at around 1505 hrs. on 14.02.2024 at one of the onshore wellsite. Four persons received minor injuries while one person received major injury. All injured crew people were shifted to the hospital, where the person with major injury succumbed to his injury.

The incident occurred during bleeding of hydrotest water and gas through 2" bleed line. While opening the 2" valve fitted in the part of the artery line connection, the valve along-with bleed line got dislodged from the changeover nipple and resultant gush of water and gas hit the sand heap nearby. The sandstorm engulfed the entire wellhead area, and the crew was injured by the fast-moving sand particles.

Observation / Lapses

1. The detailed plan for the entire job was not prepared / available.
2. The SOP for construction of flowlines was not adequate.
3. No procedure exists for dewatering of gas pipelines after pressure testing.
4. No Anchoring or support was provided to the bleed line. Also, no specific guidelines exist for anchoring and support of the 2-inch portion of the artery line to the well head casing and flow lines.
5. The source of sand heap could not be established. The presence of sand at well plinth was major reason of injuries to the personnel.
6. The sand heap was not removed before starting the bleeding operation. The crewmember did not move to a safe area.
7. The valve fitted by threaded connection on the artery line was not properly secured.

8. It was seen that the bend at the end was 90 degrees against the requirements of 45 degree as per SOP, also it was not pointed to vertical. (it was pointed to the side).
9. The Mines Vocational Training (MVT) eco-system had several discrepancies: It is observed that:
    - No sequence or continuity of certificate numbers, document control is not exercised.
    - All certificates are hand-written and issued without any authentication like QR code.
    - Difference in training duration. In some cases, duration of training not mentioned.
    - Regular refresher courses are not arranged.

Root Cause of the Accident

a. Non availability of plan for the jobs at well site by Multi-disciplinary team (MDT).
b. Unsupported and non-anchored spool used for bleeding the pressure which was not part of SOP.
c. No SOP for construction of flow lines, artery lines, gas lift lines.
d. Inadequate SOP for hydrotesting. The SOPs should be aligned with OISD standards and statutory requirements.
e. Absence of SOP for dewatering gas lines post hydrotest.
f. Unsecured valve on threaded connection
g. The presence of sand heap in the line of water / gas and too close to the X mas tree.
h. The bend at the end was 90 degrees against the requirements of 45 degree as per OIL SOP, also it was not pointed to vertical. This is a violation of the SOP.
i. Failure to warn: The personnel present at the site were not properly warned about the likely danger of uncontrolled flow. They were not positioned at a safe distance from the drain point.
j. Unsecured well site: The well site is left unsecured. No control on incoming / outgoing material, no control on vehicular movement near the well plinth.

Conclusion:

The unfortunate incident at well site NHK#162 was avoidable incident. It is seen from the observations and probable reasons that accident occurred due to failure of multiple barriers simultaneously. Some of them are unsecured lines and valves. Non-standard threaded connections on the high-pressure gas line. The presence of sand heap at the site added to the increased severity of the injury.

Also, no system or SOP available for construction, testing and dewatering of flow lines and artery lines, attributed to the accident.

Recommendations:

1. All the jobs at well-site should be planned in advance preferably by MDT.
2. SOPs should be reviewed. Following SOPs should be considered:
   i. SOP for construction of Flow lines, Artery lines and Gas lift lines.
   ii. SOP for Anchoring and support during line connection.
   iii. SOP for dewatering after Hydrotesting.
3. The Job Safety Analysis shall include identification of unwanted material at site, their analysis for hazards and remedial actions.
4. The operating crew should be sensitized about SOPs that are relevant for the job. The toolbox talk should include details of all the applicable SOPs.
5. The eco system of providing MVT to the employees should be critically examined. The training duration and refresher course should be standardized.
6. MVT certificates should bear QR code and authenticity, and traceability should be provided.
7. Training to be imparted to crew members for safe operation of well testing and maintenance related operation at well site.

Site Pictures:



Pic 1: Accident site overview



Pic 2: Location of Sand heap



Pic 3: Damaged threads on pipe.



Pic 4: Valve opening

Pic 5: Protected spool