CASE STUDY

OISD/CS/2025-26/E&P/04 Dt.:02.06.2025

INTRODUCTION

Title: Fatal accident during the laying down of Drill Pipe on Catwalk through V-door
Location: Offshore Drilling Rig.
Loss/ Outcome: Fatality of a floorman of the rig.

BRIEF OF INCIDENT:

A fatal accident took place near the V-door on the drill floor of an offshore chartered hired drilling rig. The incident occurred during the process of laying down 5-1/2” drill pipe singles onto the catwalk using a single joint elevator. The crew had completed laying down 16 joints of 5-1/2" drill pipe. The injured person (IP, one of the floor men) pushed the 17th Drill Pipe from the mouse hole out towards the V-door. The pipe was pushed towards the inclined ramp. While the pipe was pushed on the ramp, it swung back and hit the V-door. The impact may have caused the safety pin (secondary retention) to fall out. The single joint elevator got unlatched, subsequently releasing the DP. The released drill pipe made contact with the IP before sliding down the V-door and coming to rest on the frame at the bottom of the catwalk. Upon noticing the incident, the Floormen and Tugger on the rig floor immediately stopped work and rushed to assess the situation. Unfortunately, they noticed that one floor man (IP) was severely injured, bleeding profusely from the nose, ear, and mouth. The IP was transferred to the base hospital, where he succumbed to his injuries.

OBSERVATIONS/ SHORTCOMINGS

1. There was no evidence that Category II inspection was conducted, which was also recommended by OEM. As a result, critical deficiencies in the elevator went undetected:
   - Replacement of the OEM-supplied safety latch pin with a cotter pin. The latch spring was rusted and broken.
   - Undersized cotter pin (6 mm vs. OEM-recommended 14 mm) used.

   Though preventive maintenance records were provided, the elevator’s condition indicated that OEM maintenance and storage guidelines were not followed.
2. The Category III inspection reports had several critical deficiencies:
   - Failed to document dimensional checks and condition assessment of the safety latch pin.

- Lacked bore diameter measurements across multiple sections- improper inspection and assessment.
- One of the reports included a mismatched photograph not corresponding to the actual elevator.
- Incorrectly identified the manufacturer name.

None of these discrepancies were identified by OIM/ Authorized representative, suggesting a lack of practice or protocol for reviewing and verifying inspection report findings.

3. A system of reporting and documenting unsafe activities or conditions was available at the rig. However, this procedure was treated as a mere formality rather than being adopted with genuine intent. During the investigation, numerous unsafe conditions were observed on the rig floor, yet the crew did not report them and continued working despite the risks.
4. Safety committee meeting discussions were limited to statistics (e.g. number of unsafe activities or conditions received, number of meetings, etc). Important issues like equipment condition, unsafe acts, or near misses were not addressed or communicated to the crew. The Company Man did not attend safety committee meetings.
5. The visibility of the tugger was found to be obstructed due to the placement of materials on the rig.

CONCLUSION / ROOT CAUSE

The root cause of the fatal incident was the unlatching of the single joint (SJ) elevator, attributed to the following factors:

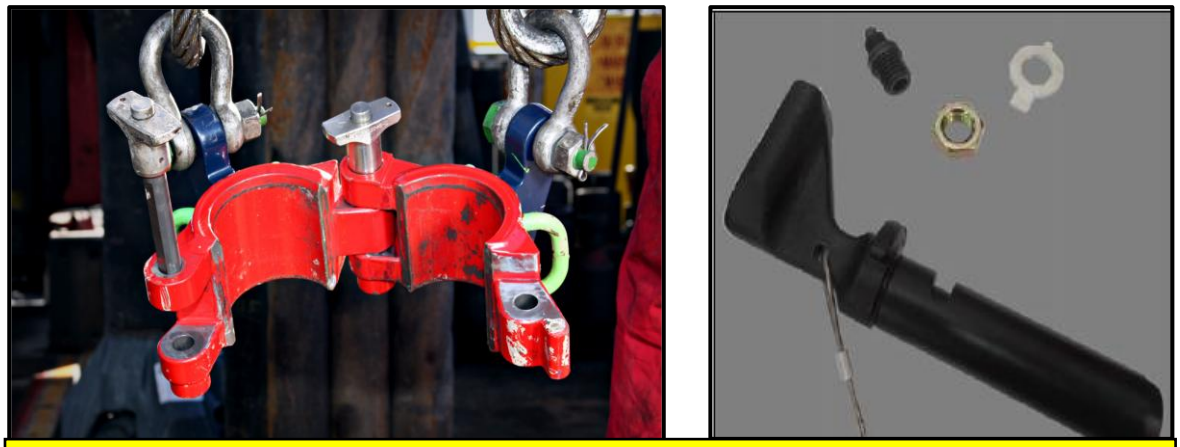
1. The use of the cotter pin in place of the OEM-supplied safety latch pin, which was undersized and loosely fitted, causing it to dislodge from the designated hole due to sudden impact on the V-door incline ramp.
2. The broken latch spring contributed to the unlatching of the elevator.
3. Failure to conduct Category II Inspection, which could have identified the critical deficiencies, such as broken latch spring and an undersized cotter pin in place of the safety latch pin. Inaccurate and incomplete Category III Inspections, where safety latch pin and bore diameter inspections were not documented or done inadequately.
4. Lack of safety culture where the crew did not report unsafe conditions and non-properly maintained equipment.
5. Responsible personnel at the installation failed to identify the poor condition of the SJ elevator, and other unsafe conditions, and took timely corrective action. Their inaction allowed the continued operation of defective equipment, despite clear signs of deficiencies.

RECOMMENDATIONS

1. Daily Category II inspections must be conducted as per OEM Recommendations /API RP 8B. Inspection parties should be selected with due diligence and reports must be cross verified by competent rig officials to ensure quality and accuracy.
2. Maintenance activities, including lubrication and greasing of critical components, must adhere to OEM manuals. Equipment storage should follow OEM procedures to maintain integrity during non-use.
3. Rig materials must be positioned to avoid obstructing the tugger or driller's line of sight. CCTV coverage should provide a 360-degree view for enhanced situational awareness.

4. A positive safety culture must be promoted, encouraging reporting of unsafe acts/conditions and prompt action. Individuals should adhere to safety values in daily operations.
5. A structured induction and orientation program should be made mandatory for all personnel, including Company Man, prior to their deployment on offshore installations as per the requirement of clause 7.2 of “Report of the working group on safety in Indian petroleum sector-2023”.
6. Safety Committee meetings should address significant HSE issues, beyond procedural formalities, with clear actions and responsibilities communicated to the crew.
7. The Internal Safety Audits should be carried out by the operator (including chartered hired rigs) each year through a multidisciplinary team.
8. The company should develop a safety rating system to monitor the safety performance of the contractors as per clause 7.3.2 of the Working Group Committee Report.
9. To mitigate the risk of incidents similar to the one observed, the following measures, as highlighted in the International Journals on Accidents involving single joint elevators, may be adopted:

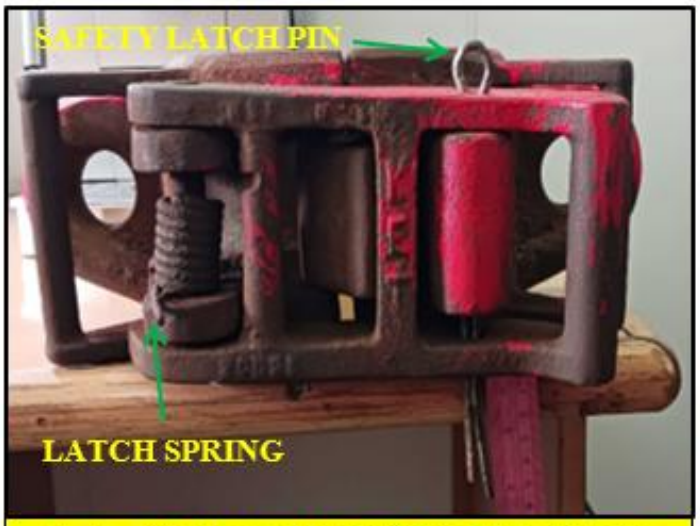
- Locking pins designed to remain fixed within the tool’s body should be used, eliminating the need for additional retention methods such as chains, thereby enhancing reliability and safety.
- Locking pins with a positive latch mechanism should be used that includes visual confirmation, ensuring that when the activator pin is fully extended, the pins are securely engaged and locked, providing a clear and reliable indicator of proper securing.



Picture 1: Safety Lock Pin Remains Fixed to tool body

This Case study is based on the Investigation report submitted by committee and published for information purpose only. This information should be evaluated to determine if it is applicable in your operations, to avoid recurrence of such incidents.

PHOTOGRAPHS OF SAFETY LATCH PIN AND LATCH SPRING



Picture 2: BROKEN LATCH PIN AND SPRING

Picture 3: OEM LATCH PIN AND SPRING

PHOTOGRAPHS OF ELEVATOR

Picture 4: USED AT THE OFFSHORE DRILLING RIG

Picture 5: ORIGINAL ELEVATOR CONDITION

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