



CASE STUDY

OISD/CS/2025-26/E&P/11

Dt.: 30.09.2025

INTRODUCTION

Title: Fall & damage of workover rig mast.
Location: Onshore workover rig.
Loss/ Outcome: Loss of rig mast-downtime/ Fatal Injury.

BRIEF OF INCIDENT

While attempting to free a stuck string, the telescopic mast broke, causing the traveling block to fall and a metallic piece to detach from the mast. A roustabout was struck by it, sustained injuries, lost consciousness, and was later declared dead at a nearby hospital. The detached metallic truss member of mast (13.3 kg -1.84 m) is suspected to have caused the fatal injury.

OBSERVATIONS/ SHORTCOMINGS

- Several truss members of both the upper and lower mast were found to be severely corroded. Some truss members were found bent at multiple points, with welded plates added at certain locations, which was not carried out in line with clause 4.4 of OISD-GDN-202.
- Visual inspection and magnetic particle test were carried out in Dec 2024 by a TPI. Two-page report was issued for four workover rigs. Locations of NDT measurements were not verifiable/traceable from the report. It does not look reliable for the purpose of inspection.
- Operator has 6 workover rigs and 2 drilling rigs. However, based on the frequency of workover jobs, usually only two to three rigs are deployed at a time, and that too infrequently. As a result, most rigs remain idle for long periods and are not subjected to audits.

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- In Level I inspection for Mast & Sub-structure, visual inspection is carried out by rig personnel to determine the surface condition of the part, change in shape and visible cracks. There was no awareness of Level I inspection of mast and substructure.
- In Level II inspection for the case of mast and structures, a thorough & intensive inspection of load bearing areas and sheaves for cracks, damage, corrosion, loose or missing components and premature wear is carried out as per clause 4.2 of OISD-GDN-202. No record of Level II inspection, carried out by rig personnel, was found.
- Level III of inspection includes NDT of critical areas which may involve disassembly to access specific components and to identify wear & tear that exceeds the manufacturer's allowable tolerances. Level III inspection of mast and substructure was not carried out since commissioning of the rig in 13.11.2009.
- Level IV inspection requires, equipment to be disassembled and cleaned to the extent necessary to conduct NDT of all defined critical areas. Level IV inspection of the rig mast and substructure has never been carried out since commissioning of the rig.
- The original control panel (Driller console) of the rig was removed, and a makeshift arrangement has been made. Pneumatic lines were tied with rope. Management of Change (MOC) was not implemented for these changes. Pneumatic gauge of Draw works was observed defective.
- Tool Pusher, Drillers and Assistant Drillers did not undergo any training like First aid, MVT and Firefighting training etc in line with OISD-STD-176.
- CCTV system was not installed at site for monitoring high risk activities, unsafe acts, unsafe conditions etc. as per clause 7.6.9(c) of OISD-GDN-206.

ROOT CAUSE OF THE INCIDENT

- Lack of inspection and maintenance of mast & substructure: Level I, Level II, Level III and Level IV inspections of the mast and substructure were not carried out since the commissioning of this Workover Rig on 13.11.2009. The condition of the mast was observed to be very poor. Several truss members of the mast were found bent or welded at multiple locations with additional plates to strengthen without any analysis.
- Lack of competency of manpower for work over operation: The rig crew, including the Tool Pusher, Driller, and Assistant Driller, were found to be neither competent nor trained in well control. Additionally, they had not undergone mandatory Mines Vocational Training, Firefighting, or First Aid training.

RECOMMENDATIONS

- Level I, Level II, Level III & Level IV inspections of the mast & substructure shall be carried out as per desired frequency in line with OISD-GDN-202.
- Rig equipment like Travelling block, draw works, crown block etc shall be periodically inspected as per OISD-GDN-203.
- Mandatory and essential trainings shall be imparted to all the personnel in line with OISD-STD-176. Maintain proper training records and ensure refresher courses are conducted before the expiry of training validity.
- The level III & Level IV inspections shall be conducted by a competent third-party agency having adequate experience and knowledge in the specific field.
- Any modification in rig shall be carried out in accordance with the OEM manual.
- Use of mounted CCTV cameras at installation should be done for monitoring of high-risk activities, unsafe acts, unsafe conditions etc. as per clause 7.6.9(c) of OISD-GDN-206.



Photograph of broken telescopic mast

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Photograph of fallen travelling block & broken metallic piece of Rig mast



Photograph of Incident location

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