

Unplanned release of stored energy: Worker struck and injured by tensioning tool

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The International Association of Oil & Gas Producers (IOGP) has published [Safety Alert 293](#) about an incident in which a worker was struck on the head and seriously injured when a tensioning tool came loose and hit him.

What happened?

A four-yearly task was in progress, to check the tension of bolts on the bearing of a floating storage and offloading (FSO) unit turret.

During moving the bolt tensioner, a part (the puller, weighing 13 kg) fell between the bearing stud bolts of the inner (static) and outer (rotating) bearing races. Before it could be removed the FSO weathervaned, trapping and compressing the tensioner part between the two rings of bolts.

A crew member went to investigate further. As he crouched over the tensioner part, it suddenly came free and struck him in the head causing serious injury. He was promptly medevaced to hospital onshore.

IOGP Life Saving Rules:



Line of fire



Energy isolation





What went wrong? What were the causes?

- The risk of a tensioner part falling and becoming trapped between the stud bolts was not recognised in the job safety analysis (JSA), work procedure or turret vendor documentation.
- This risk was not recognised by the crew member, who placed himself 'in the line of fire'.
- No **stop work authority** was applied when the task deviated from the expected work process.
- The design of the turret bearing races and stud bolts location allowed the tensioner part to become trapped and compressed when the FSO weathervaned.

Action taken

- Provide additional safeguarding tools and equipment to prevent the tensioner puller from dropping in between the inner and outer stud bolt or even this tool and equipment could help to support the re-tensioner while moving along the race.
- Investigate a manual handling tool that will reduce the risk of accidentally dropping the tensioner parts.
- Review the JSA and work procedure to include routine and unexpected risks and provide troubleshooting guidance. Include JSA to consider weather limits for the work and use of a tug on the FSO stern.
- Reinforce use of **stop work authority** if work deviates from normal

conditions. Investigate if this task should be performed by a specialist contractor rather than the FSO crew.

- Develop 'line of fire' awareness training.
- Share information with other operating assets with an FPSO and future project FSO, to design out the hazard, e.g. put the two bearing races and rings of bolts at different elevations.

Members may wish to refer to the following incidents relating to the unplanned release of stored energy:

- Stored energy near miss: Person nearly hit by equipment caught during light daughtercraft operations
- High potential stored energy incident: inner buoyancy module clamp failure during removal
- Fatality: Stored pressure release

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