

SAFETY ALERT



MARINE RISER DROPS TO DRILL FLOOR

ALERT 21-1

WHAT HAPPENED:

While transporting the first riser joint to the drill floor, the joint slipped out of the Running Riser Tool (RRT) and dropped on to the drill floor. Before lifting the RRT, it had been visually inspected by drill floor crew and verified as locked. In addition, a positive indication from the tool's proximity switch was given to the drilling control, that the tool was locked and ready to lift. There were no personnel in the red zone. *(Images on Pages 2)*

CONTRIBUTING FACTORS:

The RRT in this event is hydraulically operated to a locked position, and then secured with a hydraulically operated secondary locking ring which mechanically ensures that the primary lock is in position and cannot unlock. The lock ring in use is further secured with a locking pin which requires manual intervention to install. The RRT in this event was not equipped with this pin, but was equipped with a proximity switch to indicate RRT lock status to the driller when the secondary lock was rotated into lock position. In this event, it was verified by review of equipment logs that the proximity switch transmitted the signal to the driller's control panel indicating the RRT was locked before the joint could be lifted. It was also found in the investigation that the proximity switch could be activated in some conditions in which the secondary lock was not fully engaged.

When installing the RRT, it was inserted with an angle into the riser and the RRT didn't engage properly into the riser. This gap was not detected by the rig crew involved. The procedures did not provide detail on **how** the RRT was to be verified as locked, only that it should be verified. During the planning up-front, the important task of lock verification wasn't discussed.

Similar incidents had occurred in the past and lessons learned distributed across the organization. However, risk mitigation was focused primarily on procedural and human action, at the lower end of the hierarchy of controls, while engineering controls were reviewed for elimination of the risk. In this case, the additional barrier of an engineered interlock was in place that was designed to prevent lifting the riser with an unlocked RRT, however the component selection for the application failed to meet the design purpose.

LESSONS LEARNED:

In this event two verification methods failed, a visual verification and electro-mechanic verification.

Following this incident, the design has been improved to replace the proximity switch with a contact switch which lowers the probability of the switch falsely indicating a locked RRT. It is recommended that all members review their riser running system for risks – with a special focus on mechanisms used to both lock and verify the RRT is locked.

Rigs are recommended to review procedures, work plans, work tempo, and task-based risk assessments to ensure sufficient risk controls are in place when running riser. Equipment owners should review the riser running tool training and competency assurance programs that specifically address the installation and locking verification details of the rig riser running tool design in use.

A Safety Alert can consist of any type of health, safety & environment (HSE) notification or Near Miss/Near Hit alert. Proactive Alerts on jobs well done are also encouraged.

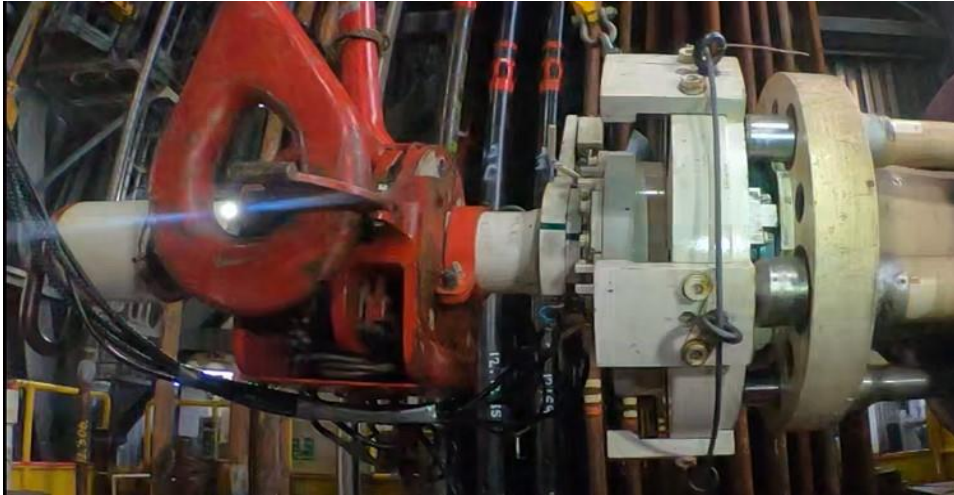


Figure 1 RRT stabbed onto the riser



Figure 2 Proxy Switch giving signal to driller when the RRT is locked



Figure 3 The dropped marine riser hitting the V-door

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