

SAFETY ALERT



Crewman caught in the line of fire while using Riser Torque Wrench

ALERT 6-20

WHAT HAPPENED:

During pulling of the Lower Marine Riser Package (LMRP) assembly, crewmen were working on the spider platform removing the eight riser flange bolts from the telescopic joint ("TJ") when the incident occurred. The process involved the use of a hydraulically operated riser torque wrench ("wrench") to break the bolts and raise them up to the retaining insert. The 330lb wrench is suspended via a spring compensator from an overhead utility winch assembly controlled by a wireless remote unit at the drill floor. The winch is used to position the wrench in proximity of the bolts, and the compensator then allows the crewman to manually manipulate the wrench on and off the bolts.

While raising the sixth bolt, one of four on an inner bolt circle, the bolt was unscrewed until the upper section of the wrench motor contacted the larger diameter portion of the TJ. This caused the wrench to become stuck against the body of the TJ, where its diameter increases to accommodate the inner barrel. When the wrench operator and assistant were unable to manually remove the wrench, they gave signals to the nearby winch operator to raise up on the winch, in an attempt to free the wrench from its stuck position. As the wrench operator continued manual attempts to release the stuck wrench and while leaning over it, the wrench suddenly became free, elevating the wrench and the operator rapidly as stored tension in the winch rig-up was released.

This resulted in fatal injuries to the wrench operator.

The formal investigation is ongoing, but initial contributing factors and lessons learned are shown below.



Reenactment of the position of the Riser Torque Wrench on the Telescopic Joint (TJ)

CONTRIBUTING FACTORS:

- Interference between the TJ and wrench which occurred where the outer barrel of the TJ reduces above the flange. Once the interference was encountered, the wrench could not be easily reversed to lower the bolt back down.
- Once the spring compensator was fully extended by paying in the winch, there was no visual or audible indicator to gauge the amount of tension and stored energy introduced to the entire winch rig-up.

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.

LESSONS LEARNED:

- A winch should never be used to free a stuck torque wrench or similar tool or in any other situation where an unknown amount of stored energy may be introduced.
- Crewmen should be continually reminded through training and work planning processes of the importance of identifying stored energy sources and should always consider their body position to avoid line-of-fire risks.
- When a potential interference issue is identified that cannot be eliminated by engineering controls, work procedures and risk assessments should highlight potential for interference, methods to avoid interference, and steps to follow if interference occurs.
- Stop Work should be called at any time there is a change in a task that deviates from the procedure or introduces unknown risks. Supervisors and/or subject matter experts should assist in evaluating the change and implementing the proper mitigations before resuming the task.