Worker's Hand Crushed in Iron Roughneck

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For more information on this event, please contact: safety@enform.ca

Description of Incident:

The incident occurred as the crew of a single drilling rig was running back into the hole.

- After making the final connection, a die fell out of the die block of the Iron Roughneck.
- The Floorhand was detailed to inspect, and then re-attach the die into the die block. The rest of the crew performed a Measurement While Drilling (MWD) survey, and then the Driller hoisted up to mark the pipe and determine where the tool face needed to be to continue operations.
- The Driller stopped working the pipe and came out and marked the pipe. He didn't see the Floorhand at the Iron Roughneck so he assumed the Floorhand was finished changing the die.
- The Driller went into the doghouse to determine where the tool face needed to be. At this point the Floorhand went back to install a new die into the die block.
- The Driller had determined that he only required a 10 degree rotation on the drill pipe to correctly place the tool face.
- Experience (*not procedure*) had shown that to achieve this minor correction, top drive pressure could be released gradually through engaging of the Iron Roughneck, as both pieces of equipment operated from a common hydraulic system.
- The Driller was watching his screen and activated the Iron Roughneck to release top drive pressure to get the required turn at the same time the Floorhand was screwing the die in with a T-handle allen wrench.
- When engaged, the Iron Roughneck closed and crushed the Floorhands hand against the Allen wrench he was holding, crushing his middle finger.

Figure 1
Lower Die Block Changeout

Note:

- Floorhand hand position
- Use of Allen wrench tool
- Setback of Iron Roughneck from pipe

What Caused It:

The primary cause of this incident was the failure to follow standard lock out procedures when working on equipment, including the isolation and physical lock out of the equipment under inspection or repair.

A contributing cause includes the failure of the Driller, who was operating the equipment, to visually confirm that no one was in the field of operation of the Iron Roughneck prior to its being engaged.

Finally, the use of the Iron Roughneck for the purpose of releasing Top Drive pressure is not a standard, documented and approved procedure.

Corrective/Preventive Actions:

- Before beginning any task ensure that any hazardous energy is isolated, flagged and locked out and key(s) are kept with anyone involved in the task.
- Prior to any task do a basic risk assessment and use your obligation to refuse unsafe work if needed.
- Before operating a control ensure that no one is in the field of operation of the equipment involved.
- During job safety reviews ensure all personnel involved understand the hazards and what needs to be done to mitigate them.
- Before allowing someone new to a task to perform that task on their own verify that they can perform it properly on your specific rig. Identify and mentor any "Greenhands" to ensure they are adequately trained and informed of all safety procedures.
- Evaluate and either document or change unofficial procedures (such as the use of Iron Roughneck to release top drive pressure) including a detailed safety case for each.