



Safety Alert

From the International Association of Drilling Contractors

ALERT 04 – 39

IMPROPER TOOL SELECTION RESULTS IN INJURY

WHAT HAPPENED:

Two employees were working together to remove the Allen-head bolts that secure the drawworks drum brake flanges to the drum. The drum had been removed from the skid and secured on the rotary table. The tools selected for the job were a $\frac{3}{4}$ " drive impact wrench and socket, and a standard 9/16" Allen key. The tools were fitted up and the impact wrench was engaged. The tapered fit friction of the Allen-head end of the bolt allowed the nut to break initially without applying torque against the Allen-key. The impact wrench operator continued and as the nut loosened, friction lock was lost and the torque was transferred to the Allen key because lock nut was still bound to the bolt. The Allen key shaft length was a standard size and not long enough to react against the drum. The torque now being applied through the bolt to the Allen key was more than the other employee could hold. The Allen key slipped from his hand spun 3 or 4 time and was thrown free. The Allen key struck the injured employee in the forehead and above the upper lip requiring stitches in both places.

WHAT CAUSED IT:

The investigation revealed that there had been little consideration to tool selection other than that they did fit, and were in good shape. The potential hazard associated with using an impact wrench which turns at high speed with a (short lever arm) standard Allen key were not even thought out. While the tools did fit and were in good condition, it was obvious that they were inappropriate for the task in the way they were used. **Impact wrenches free spin at several thousand rpm, and generate significant torque output at several hundred rpm. The back-up wrenches used with impact tools must be firmly secured and personnel clear from harms way.**

CORRECTIVE ACTIONS: To address this incident, this company did the following:

1. Jobs requiring impact tools should be listed on the rig.
2. Each job should be studied to see if a "back up application" exists
3. In cases requiring back up ensure that the back up can be secured in a hands free mode.
4. Safety meetings should be held with all crews to discuss the danger of high speed air tools.

The Corrective Actions stated in this alert are one company's attempts to address the incident, and do not necessarily reflect the position of IADC or the IADC HSE Committee.