Subject: Clarification of Operating Procedure and Capabilities of the ST-80 Iron Roughneck.

Product: All ST-80 Iron Roughnecks

Affected Assemblies: ST-80 Torque Wrench

Objective: To provide additional information regarding Operational Sequences when Making/Breaking Thin-Wall Connections with the ST-80 Iron Roughneck

Problem: A limited number of customers have reported difficulties in breaking and spinning higher torque and thin wall connections using the ST-80. The reported issues have typically involved the use of Grant-Prideco HT or XT type drill pipe connections

Solution: National Oilwell Varco has prepared procedures which provide additional operational information and allow users to operate the ST-80 successfully on high torque or thin-walled connections (e.g.: HT or XT connections)

The ST-80 was designed to make up drill pipe and drill collar connections to a maximum of 60,000 ft-lbs and break out connections to a maximum of 80,000 ft-lbs. Although the ST-80 was designed, tested, and field proven to achieve the maximum output torque, there are several factors which could reduce the maximum torque that can be applied in a particular situation.

The factors affecting maximum torque capabilities include hydraulic system pressure, the diameter of the specific tool joint, the condition of the clamp jaw dies, the condition of the specific tool joint, and the actual operation sequence being performed by the ST-80 operator.
If problems occur while operating the ST-80 within its specified capacities, one or more of the above factors could be attributing to the issue. Refer to the additional information that follows. If problems with make up or break out torque persist, please contact your local National Oilwell Varco Service Center for assistance.

**Revised Operating Procedures:** The procedures listed below are based on the standard ST-80 operating procedure, although several sequences have been modified to assist with thin-walled connections.

**ST-80 Operational Sequences for Thin Wall Connections-**

### Make-up:
1) Properly position the tool at the connection.
2) Clamp the jaws on the connection.
3) "Jog", or "bump" the unclamp lever slightly *.
4) Hold the TW/SW (Mode) lever in the SW position. Wait 2 seconds before spinning.
5) Spin in connection.
6) Hold the TW/SW (Mode) lever in the TW position. Wait 2 seconds before torquing**.
7) Make the connection.
8) Recycle torque wrench to prepare for next connection.

### Breakout:
1) Properly position the tool at the connection.
2) Clamp the jaws on the connection.
3) Hold the TW/SW (Mode) lever in the TW position***. Wait 2 seconds before torquing**.
4) "Jog" or "bump" the Break lever****.
5) Break the connection.
6) "Jog" or "bump" the Unclamp lever.
7) Hold the TW/SW (Mode) lever in the SW position. Wait 2 seconds before spinning**.
8) Spin out the connection.
9) Recycle wrench to Make to prepare for next connection.

* - Briefly (1/2 second) unclamping the wrench relieves box distortion caused by clamping force.
** - Allows time for full clamp pressure.
*** - If SW is selected accidentally, unclamp and reclamp to reset the hydraulic circuit. Failure to do so will result in torque dies not retracting during spin.
**** - Briefly (1/2 second) torquing the wrench helps seat dies and allows time for clamp pressure to recover.
Notes:

1) If slipping occurs while either torquing or spinning, STOP IMMEDIATELY, then resume. This will allow the dies or rollers to re-grip the pipe and will result in higher torque output.

2) Always fully stroke (recycle) the torque cylinders prior to making or breaking a connection.

3) Align ST-80 on pipe such that the tool hangs level. A bubble level on top of spinning wrench may be used and, if your ST-80 is not configured with bubble levels, they can be ordered from Varco. (Refer to Varco kits 30160389-1 and 30160392-1, which include levels and reinforced bumper plates to prevent gearbox damage.)

4) Verify the system pressure is at 2050-2100 psi (Ref: Product Bulletin ST-80-03-06).

5) Replace dies if severely chipped or worn.

Refer to General Description “Controls” section of service manual or the Operation Placard for proper use of controls.

This product bulletin should be posted in a conspicuous location near the rig floor and filed as a supplement in your existing ST-80 Service Manual for future reference.

Please contact your local Varco Service Center if you have any questions regarding this product bulletin.
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