

Dual Casing Perforation – Without Explosives.

825 Deep Penetrating Tool (DPT)

CHALLENGE

To complete an abandonment the operator needed an alternative to explosives that had the ability to perforate the 9 5/8" and 13 3/8" at the same time, to circulate out degraded OBM without damaging the 16" casing.

SOLUTION

The Lee Energy Systems 825 Deep Penetrating Tool (DPT) was deployed on drill pipe, perforating 4 intervals every 2ft from 457ft – 451ft. After each perforation, the tool was rotated 45 degrees.

RESULT

- 4 tool activations.
- 9 5/8" and 13 3/8" casing successfully penetrated.
- No damage done to the 16" casing due to precise depth control of the 825 DPT.
- All Degraded OBM circulated to surface and abandonment completed.
- Total job time from RIH to POOH and circulating the B and C annulus clean was 4.5 hours.

Lee Energy, taking the risk out of dual casing perforation.

The DPT evolved from the 4-bladed system, the Gator perforator. This one-bladed system can perforate two casing strings at once allowing access to circulate the C - annulus. This is a repeatable cutting system and can be restricted for cutting depths to prevent damage to the C-annulus casing. It is also capable of cutting both casings when cemented up.

The solution was provided with Lee Energy Systems 825 Deep Penetrating Tool:

- **Circulation Sub (ULS)** – Equalization sub with ports to the A-annulus that close in tension and open in compression. Allows for equalization of the string and A-annulus after perforations are made.
- **825 DPT** – A hydro mechanical perforator activated by differential pressure generated by pumping through stackable pistons. Once the desired penetration is achieved, the dump sub will bleed some pressure indicating the full stroke has been achieved.
- **Velocity Control Valve** – A rate activated valve that closes once the pre-determined activation rate is achieved.

The Tool was successfully activated 4 times at 457ft, 455ft, 453ft and 451ft, and the client completed the top abandonment as planned.



Figure 1: 9 5/8"



Figure 2: 13 3/8"

