



CASE STUDY

Disappearing Tubing Hanger Plug – Retrievable utilized successfully for long-term well suspension campaign

Product

TCO DTHP-R Barrier Plug

Outline

- 8 newly drilled wells safely completed and suspended for up to a year long term suspended
- Shallow set barrier plug deployed on wireline or drill-pipe
- Remote open plug allows removal without intervention

Challenge

A major operator on the NCS faced challenges when 8 wells on a large North Sea field development area needed to be suspended for up to a year while waiting for the Vertical Christmas Trees (VXTs).

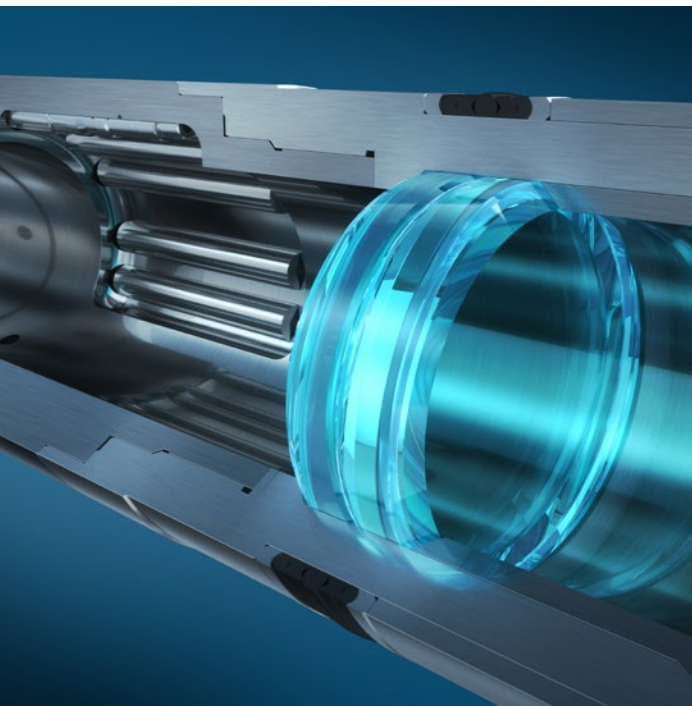
The operator considered multiple solutions for suspending the wells prior to VXT installation. The wells had to be suspended in a cost-effective manner without limiting technological options and compromising safety. Wells also had to be reopened without intervention. The decision was made to install a shallow set barrier plug. To be able to open the barrier plug without intervention, a remote open barrier plug was preferred.

Solution

The operator chose the TCO Disappearing Tubing Hanger Plug – Retrievable (DTHP-R) as a shallow set glass barrier plug for suspending the wells. The DTHP-R is V0 rated to 11 000 psi differential pressure and is deployed using either wireline or run on drill-pipe during the completion phase before suspension. The V0 rating guarantees no gases or liquids pass the barrier. The plug is also retrievable, and the entire plug can be removed if required after opening.

Once the DTHP-R is located in the tubing hanger nipple profile, the locking dogs engage, locking the plug in place. The DTHP-R is fitted with an E-Trigger, which is a programmable remote open device with flexible solutions for opening the glass barrier plug for production.

Together, TCO and the operator determined a dedicated opening signature for the plugs in the project. The unique opening key is a defined sequence of pressure cycles coded into the E-trigger. The sequence was to be run when the VXT was in place and the well was ready start production.





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Result

The DTHP-R plugs were successfully installed using wireline. When the seal area was entered, the plug was jarred down and locked in place. The plugs were tested, before the wells were suspended to await installation of the VXTs.

After a 6-month suspension and successful installation of the VXTs, all plugs were remotely opened by using the pre-determined pressure key.

Three DTHP-Rs were at a later stage successfully retrieved from a Light Well Intervention boat doing other work on the well. The remaining five DTHP-Rs are verified to still be in the locked positions in the well with no indication of shifting. The wells are producing in the range 1000 – 2000 boe/day.

Highlights

- TCO DTHP-R barrier plugs offer an effective solution for suspending subsea wells
- Remote opening feature eliminates need for intervention-run
- V0 and 11 000 psi differential pressure rating ensures robust barrier
- E-Trigger enables user adaptable remote opening pressure sequence

