

World's First Subsurface, RFID-Enabled Reverse Cementing System Is Successfully Implemented for a Liner Installation

Objectives

- Validate field performance of the prototype tools in the Weatherford CrossStream™ subsurface reverse cementing system: circulation tool, crossover tool, fall-through flapper, and bidirectional float collar.
- Achieve high-quality cement coverage in the openhole annulus and shoe track.
- Collect lessons learned for using CrossStream technology in offshore environments. Weatherford developed the system to enable cementing liners in deepwater wells with weak or depleted formations.

Our Approach

- Weatherford ran the 11 7/8-in. liner and CrossStream tools downhole with the crossover tool in reverse mode.
- The crew cemented the liner annulus using a reverse flowpath and a 15.6-ppg cement slurry.
- The crossover tool enabled rotating the reverse cementing tools and liner hanger during cement placement to enhance the quality of the cementing job and to improve displacement efficiency.
- Once cement was in place, a radio-frequency-identification (RFID) tag dropped downhole and commanded the crossover tool to shift into conventional mode. The liner then set successfully.
- The crew pulled the reverse cementing tools out of the wellbore along with the liner hanger running tool.

Value to Client

- The operation met all objectives.
- Cement-bond logs confirmed a good-quality cement job in the annulus.
- The crew tagged hard cement in the shoe at the depth calculated during drillout, which confirmed good coverage.
- During the cementing job, the memory logging feature of the CrossStream system collected downhole pressure and temperature data at the location of each CrossStream tool.



The CrossStream subsurface reverse cementing system relies on gravity-assisted placement to cement wellbores in weak and depleted formations efficiently, cost effectively, and with a reduced risk of fluid losses.

LOCATION

Pennsylvania, USA

WELL TYPE

Onshore

HOLE SIZE AND TYPE

12.375 in., openhole

PREVIOUS CASING SIZE

13-3/8 in.

LINER SIZE

11-7/8 in.

MEASURED DEPTH

1,500 ft (457 m)

PRODUCTS/SERVICES

- CrossStream subsurface reverse cementing system
- Nodeco® cement head
- Model IP 1000 rotating control device



Nodeco is a registered trademark of Weatherford in the US, European Union, and Norway.