

MetalSkin® Openhole Liner Provides Permanent Mechanical Barrier for Weak Interval and Saves 3 to 4 Days of Rig Time By Eliminating A Sidetrack

Objectives

- Enable Kuwait Oil Company (KOC) to complete a horizontal well in the upper Zubair formation using 5-in. cemented liner. Initially, two issues complicated this plan. First, located immediately above the Zubair formation was the laminated, unstable Burgan shale formation and the loss-prone Shuaiba dolomite formation. Drilling through the Burgan formation required using approximately 11.7 ppg (1,402 kg/m³) oil-base mud (OBM) to control stability. Meanwhile, the Shuaiba formation induced mud losses at rates of more than 9.1 ppg (1,090 kg/m³). This made it challenging to drill through both formations in one hole section to reach the Zubair formation. Second, another casing string that would enable drilling through the Burgan and Shuaiba formations separately—while also enabling the successful cementation of the 5-in. liner in the upper Zubair formation—was not available.

Our Approach

- Weatherford proposed using the MetalSkin openhole liner as a means to drill through the Burgan and Shuaiba formations separately.
- KOC ran and cemented 9 5/8-in. casing from the surface through the Burgan formation and to the top of the Shuaiba formation using 11.7 ppg (1,402 kg/m³) OBM. This part of the operation had no mud losses and resulted in a good cement-bond quality.
- Using 9.1 ppg (1,090 kg/m³) water-base mud (WBM), KOC drilled through the Shuaiba formation and 40 ft (12 m) into the upper Zubair formation at a 70° deviation until reaching the target depth of 12,300 ft (3,749 m).
- KOC deployed 1,264 ft (385 m) of 7 5/8- x 9 5/8-in. MetalSkin liner to the target depth in the upper Zubair formation. Then KOC successfully cemented the MetalSkin liner and expanded it hydraulically to an inside diameter of 7.795 in. The MetalSkin liner overlapped the 9 5/8-in. host casing by 198 ft (60 m), which provided adequate clearance to run and cement the 5-in. liner in the horizontal section.

Value to Client

- The Weatherford MetalSkin openhole liner provided a permanent mechanical barrier for a weak interval and enabled implementing the operator's well-completion plan.
- By eliminating the need to sidetrack the well to avoid drilling through the challenging Burgan and Shuaiba formations, Weatherford saved 3 to 4 days of rig time valued at approximately US \$650,000 per run.
- Running the MetalSkin liner mitigated formation instability and mud-loss issues while drilling through the Shuaiba formation.



The Weatherford MetalSkin openhole liner made it possible for KOC to complete a complex well as planned. The MetalSkin liner provided a permanent mechanical barrier for a weak interval, avoided mud losses, and saved rig time and costs by eliminating the need to sidetrack the well.

CLIENT

Kuwait Oil Company

LOCATION

Kuwait

FORMATIONS

Burgan, Shuaiba, Zubair

FIELD

Ratqa Field

WELL NAME

RQ-183

RIG

SP-266

WELL TYPE

Onshore, development, horizontal, oil, gas

HOLE SIZE AND ANGLE

8-1/2 to 9-7/8 in., 70°

CASING TYPE AND SIZE

9-5/8 in., L-80, 47 lb/ft (69.9 kg/m), BTC

MEASURED DEPTH

12,300 ft (3,749 m)

PRODUCTS/SERVICES

7 5/8- x 9 5/8-in. MetalSkin openhole liner



MetalSkin is a registered trademark of Weatherford in the US and United Kingdom.