

Middle East

6000 ProMILL Duo® Dual Casing Section Mill Enables Abandonment Operations Below a 7-inch Scab Liner

An innovative solution was implemented to mill a 9 $\frac{5}{8}$ -inch window using tools capable of drifting through a 7-inch scab liner positioned above the desired window depth

Milling a Single Casing Window Below a Scab Liner Using Dual Casing Milling Technology for the First Time

A key customer in the Middle East urgently needed to set a barrier across a 9 $\frac{5}{8}$ -inch casing. However, a restriction above the target depth—caused by a 7-inch scab liner installed during previous workover operations—prevented the use of standard section milling tools. These tools, with a maximum outer diameter of 8 $\frac{1}{2}$ inches, could not pass through the 6-inch inner diameter of the scab liner.

To overcome this challenge, dual casing milling technology was recommended to drift the scab liner's ID, followed by milling the casing window using smaller-diameter tools from the 6000 ProMILL Duo™ system.

CHALLENGE

Mill a 150-foot window across 9 $\frac{5}{8}$ -inch casing at a depth where 8 $\frac{1}{2}$ -inch tools could not drift due to the presence of a 7-inch scab liner above.

SOLUTION

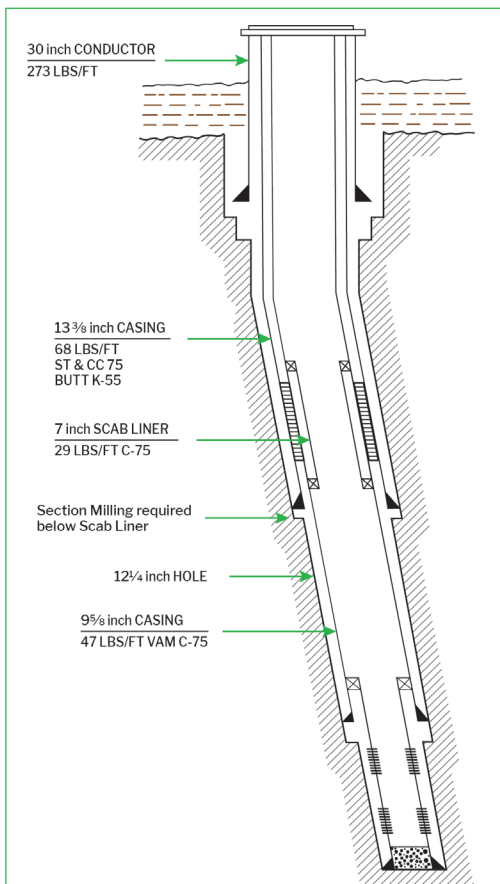
Standard section milling tools for 9 $\frac{5}{8}$ -inch casing could not pass through the 7-inch scab liner. To overcome this, dual casing milling technology was proposed to mill a single casing window using the 6000 ProMILL Duo tool.

To confirm free access below the restriction:

- A dedicated run with the 6000 ProMILL HRU, equipped with scrapper arms, was performed
- This setup served as a dummy/access bottomhole assembly (BHA)

RESULT

- Successfully cleaned and scraped the 9 $\frac{5}{8}$ -inch casing ID using the 6000 HRU prior to milling
- Deployed the 6000 ProMILL Duo through the 7-inch scab liner ID to open a window in the 9 $\frac{5}{8}$ -inch casing
- Completed a 150-foot window to enable well plug and abandonment



Because the 9 $\frac{5}{8}$ -inch casing could not be adequately drifted in advance for milling, a dedicated run with the 6000 ProMILL high-ratio underreamer (HRU) was executed to confirm clear access through the 9 $\frac{5}{8}$ -inch casing ID across the desired window interval. Once verified, section milling operations were successfully completed using ProMILL Duo technology, enabling the required well abandonment.

Complex well geometry for abandonment operations; window required on 9 $\frac{5}{8}$ -inch casing at 5,795 ft, however there is a 7-inch scab liner at 2,837 ft – 5,713 ft.