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Allegro CD Service Saves Apache Energy 7 Rig Days in Australia's North West Shelf

Casing while drilling finishes 12¼-in, 1,054-m horizontal well section in one run

CHALLENGE
Drill a 12¼-in horizontal well section of at least 1,000 m in an unstable formation offshore Australia.

SOLUTION
Use Allegro CD* directional casing-while-drilling service with a rotary steerable system (RSS) assembly and an underreamer.

RESULT
Cased while drilling a 1,054-m horizontal well section in one run, saving 7 rig days.

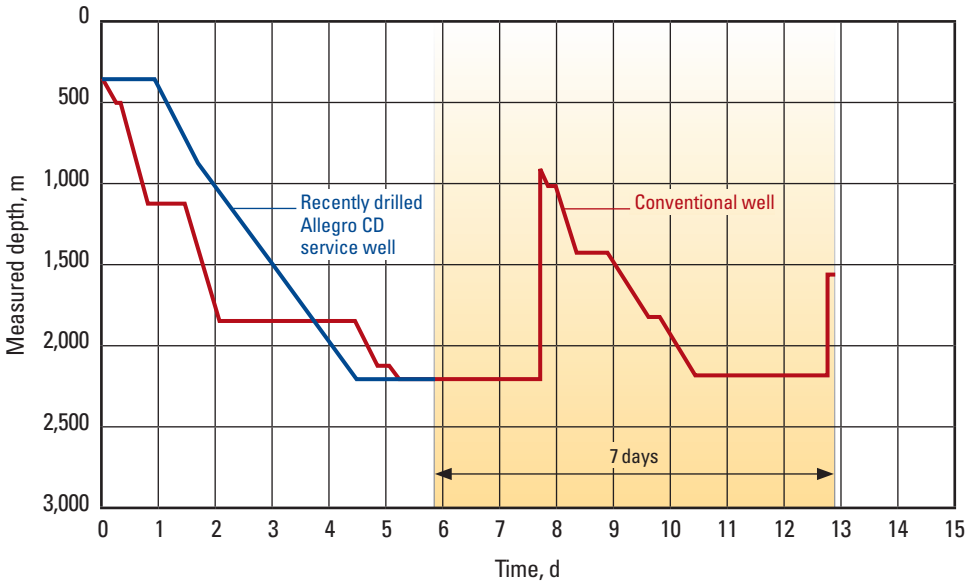
Demanding application causes excessive NPT

While working in Australia's North West Shelf, Apache Energy encountered wellbore instability while drilling development wells, which caused hole problems and the loss of a wellbore. During the operation, greater-than-normal NPT resulted from controlling circulation losses, making wiper trips, tripping in and out, and running casing. Apache wanted to reduce NPT-related costs and improve performance by reducing off-bottom risks when drilling the 12¼-in sections.

Greater wellbore integrity eliminates borehole collapse issues

To help Apache reduce NPT and minimize operational risk, the Allegro CD directional casing-while-drilling service with a retrievable BHA was used. The 12¼-in section was directionally drilled from the 13⅜-in shoe to TD in a single run, using 9⅝-in casing instead of a conventional drillstring. Casing the wellbore while drilling eliminated the danger of borehole collapse before casing could be run.

The Allegro CD service retrievable BHA included an RSS to drill a pilot hole and an underreamer to enlarge the borehole to 12¼ in. The BHA was actively steered to avoid unstable regions and wellbore collision risks using real-time MWD measurements. The resulting wellbore inclination increased from 27° to 90°, holding angle to section TD at 2,197-m MD and 723-m TVD. Once TD was reached, the underreamer's cutters were retracted, the BHA was unlocked from the 9⅝-in casing and retrieved on drillpipe, and the casing was cemented.



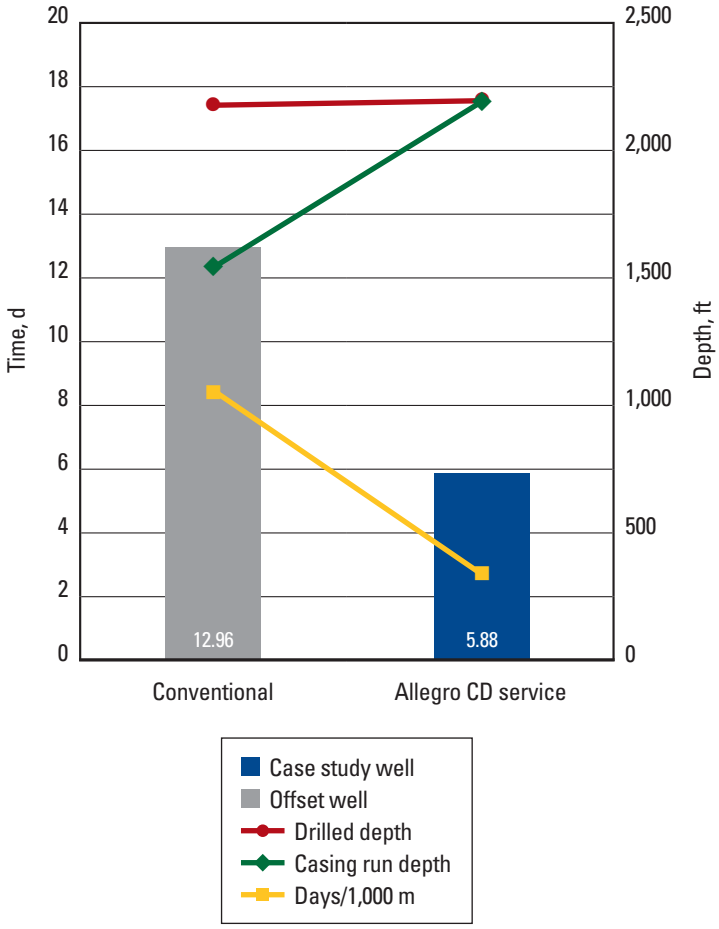
This comparison of time versus depth for a recently drilled Allegro CD service well and an offset well after the formation integrity test to cement in place shows a reduction in NPT as well as a 7-day time savings.

Casing while drilling saves 7 rig days, sets world records

Compared with nearly 13 days to drill the offset well by conventional means, the Allegro CD service ran casing to TD while drilling in 5.88 days, saving approximately 7 rig days.

In addition to reducing Apache's NPT-related costs and drilling time, the run eliminated the need for a long liner run on the next section. The operation also resulted in three Allegro CD service world records for

- the longest 9⅝-in interval drilled in one run with a single retrievable casing-while-drilling BHA
- the longest 9⅝-in horizontal section drilled—1,054 m with a TVD of 723 m
- the longest 9⅝-in horizontal well section drilled with a casing-while-drilling RSS BHA—3.04 throw ratio of MD to TVD.



The chart shows the difference in the time needed to construct the 12¼-in section in the offset well using conventional drilling and the time to construct the current well section using casing while drilling.

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