

Pertamina EP Drills Through Lost Circulation Zone and Sets Casing with Direct XCD Bit, Indonesia

The operator eliminated a dedicated casing run, saving nearly 5 days and more than USD 555,000 with drillable alloy bit and casing drilling method

CHALLENGE

Drill through a known lost circulation zone in the upper section to set casing at the required depth and reach the desired TD in an interbedded formation.

SOLUTION

Install and run a 13³/₈-in × 17¹/₂-in Direct XCD* drillable alloy casing bit to eliminate the need for a dedicated casing run through the high-loss section; drill out the Direct XCD bit with a 12¹/₄-in PDC bit.

RESULTS

- Saved 4.75 days and USD 555,913 in drilling and loss-remediation costs.
- Drilled to TD, 50 m [164 ft] deeper versus plan.
- Set 13³/₈-in casing point 221 m [722 ft] deeper than in previous wells.



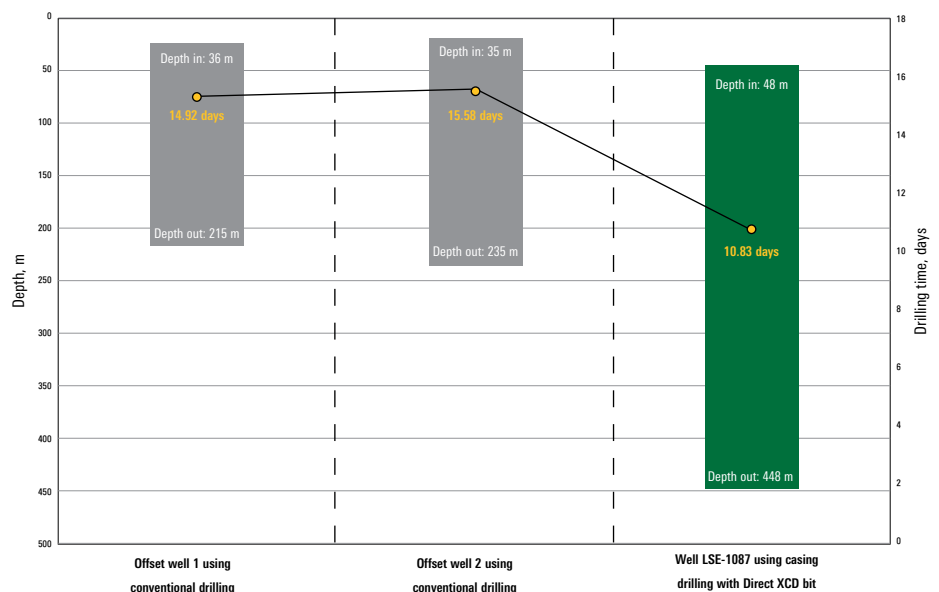
Drill through problematic lost circulation zone

In the oil-producing Sanga-Sanga block onshore Indonesia, Pertamina EP faced lost circulation challenges that prevented setting the casing at the desired depth. The operator had previously drilled two wells in the same block, but was unable to reach TD in one run in either. The block features interbedded claystone and sandstone with coal stringers and unconfined compressive strengths of 1,000 and 6,000 psi, respectively, as confirmed by offset well data.

Pertamina EP observed that a zone of total circulation loss is present in the block's upper section—43 m [141 ft] to 350 m [1,148 ft]—that prevents the setting of 13³/₈-in casing at a sufficiently deep point. In past wells, the operator used conventional drilling, which required two different strings to get through the zone—a 17¹/₂-in string to 200 m [656 ft] and a 12¹/₄-in string to TD. Pertamina EP sought an alternative method that would enable drilling deeper through the lost circulation zone in a single run.

Introduce casing drilling method for increased efficiency

Schlumberger recommended that the operator use casing drilling to drill through and cover the loss hazard zone with one 13³/₈-in casing string. The Direct XCD bit, used in a nondirectional casing drilling system, was presented as the single-run solution that would enable Pertamina EP to simultaneously drill and run the casing through the lost circulation zone. The bit provides a plastering effect that helps strengthen the wellbore by smearing cuttings into the wellbore wall, sealing pores in the formation to reduce fluid losses. The Schlumberger team assigned to the operation used specific casing drilling software to monitor drilling progress and recognize any deviations from the plan.



By using the casing drilling method with the Direct XCD bit, the operator was able to drill 221 m deeper than in two previous offset wells in the same field.

Saved time and costs by setting casing deeper and in a single run

On Well LSE-1087, Pertamina EP deployed casing drilling for the first time and successfully drilled 351 m [1,152 ft] of the 13³/₈-in × 17¹/₂-in section to the casing point in a single run. The operator drilled through the lost circulation zone and was able to set the 13³/₈-in casing point 221 m [722 ft] deeper than in previous wells in the same block. After cementing the casing in place, the operator drilled out the Direct XCD bit successfully using a conventional 12¹/₄-in PDC bit.

The use of the Direct XCD bit enabled Pertamina EP to overcome lost circulation challenges while eliminating a dedicated casing run. The operator was able to cut 4.75 operating days and save USD 555,913 in drilling and loss-combating costs. Well LSE-1087 was not only more time- and cost-effective than its predecessors, but it also performed better at TD, reaching 50 m [164 ft] deeper than planned at 400 m [1,312 ft].

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