



Swellpacker® Systems Change Well Behavior and Increase Production by 2,000 BPD

CEMENTING ALTERNATIVE HELPED PREVENT FORMATION DAMAGE AND INCREASE PRODUCTION

LATIN AMERICA

CHALLENGES

An operator needed to seal off the top of the liner to prevent gas entry from the upper zone and isolate the liner to isolate the low pressure zone.

- » Prevent fluid loss
- » Effectively seal off top liner
- » Prevent gas entry from an upper zone
- » Isolate a low pressure zone
- » 89 degree incline
- » Inhibit formation damage caused by cement

SOLUTION

Four Swellpacker® systems were installed to isolate each challenging zone in the well and the liner.

RESULTS

Complete zonal isolation was achieved.

- » Oil production estimates exceed by 2,000 BPD
- » Operator did not have to inject nitrogen to energize the reservoir
- » Positive results led to the operator implementing this solution in three other wells in the same field

OVERVIEW

An operator in Latin America with a high oil-producing well containing a high permeability producing zone faced several challenges to achieving effective zonal isolation and maximum production. The well was expected to produce up to 8,000 barrels per (BPD) day; however, the challenges faced put this production level at risk. The customer needed a proven solution for zonal isolation that would address these challenges and ensure maximum production. Ultimately, Halliburton Swellpacker® isolation systems were chosen and strategically placed within the completion to address each challenge. Not only was each challenge overcome, but production from the well exceeded expectations by 2,000 BPD. Due to the operational efficiencies gained and rig time savings, the operator decided to use Halliburton Swell Technology on three other wells in the same field.

CHALLENGE

Due to the multiple challenges present in the single wellbore, the operator had several concerns. First, the operator needed to seal off the top of the liner to prevent gas entry from the upper zone and isolate the liner to a low pressure zone below. Second, a fluid loss zone and 89 degree inclination presented a problem for performing cementing operations on the 7-in. liner hanger. Because of this zone, fluid loss was a real concern since it would prevent cement from moving up the hole into the annular space. In addition, cement in the 200 meter horizontal section previously caused formation damage, and the customer was forced to perforate this zone in the open hole. Lastly, due to the high permeability of the reservoirs, the customer was concerned that gas and water production would soon break through. If the break through occurred, it could have an adverse effect on the projected production rates.

SOLUTION

Halliburton recommended using four Swellpacker isolation systems because they provide a reliable, effective method for zonal isolation that doesn't require cementing. Each system is activated by wellbore fluid, which causes the packer to swell and seal against the wellbore. The Swellpacker systems were engineered for this specific application and were strategically spaced out along the completion string. One Swellpacker system was placed near the liner hanger to prevent gas migration and isolate the low pressure



zone. Additionally, Swellpacker systems were placed in the openhole section to straddle a fluid loss zone and provide controlled production from the high permeability reservoir. Swellpacker systems divided the vertical section of the well into three segments 40 meters apart. The Swellpacker system allowed the operator to avoid further damage to their formation, like they had previously experienced with cementing.

RESULT

By using Swellpacker isolation systems, the operator achieved complete zonal isolation of all the challenging zones in the well. The well was put on production without having to use nitrogen to energize the reservoir, a common practice in this particular field. The change in well behavior gave the operator assurance that the Swellpacker systems were sealing.

Additionally, the well produced more than 10,000 BPD, which exceeded the estimated 8,000 BPD expectation. By helping to eliminate operational problems and reduce rig time, the operator's savings were significant. The same application was implemented in three other wells in the same field with equally positive results.

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