

Eliminating Water Cut with Water Shutoff Treatment

Case study: CoilFLATE permanent bridge plug and OrganoSEAL fluid eliminate water production in the Gulf of Mexico

CHALLENGE

Effectively shut off water production in 7-in [177.8-mm] liner.

SOLUTION

Set 3-in [76.2-mm] CoilFLATE* packer as a mechanical isolation device to effectively place OrganoSEAL* F water shutoff treatment fluid in the water-producing section of the well.

RESULTS

Eliminated water production. Increased oil production to 1,490 bbl/d.

Ten days after the water shutoff treatment using the ACTIVE tool and OrganoSEAL organic crosslinked gel, oil production was at 100%—no water cut.



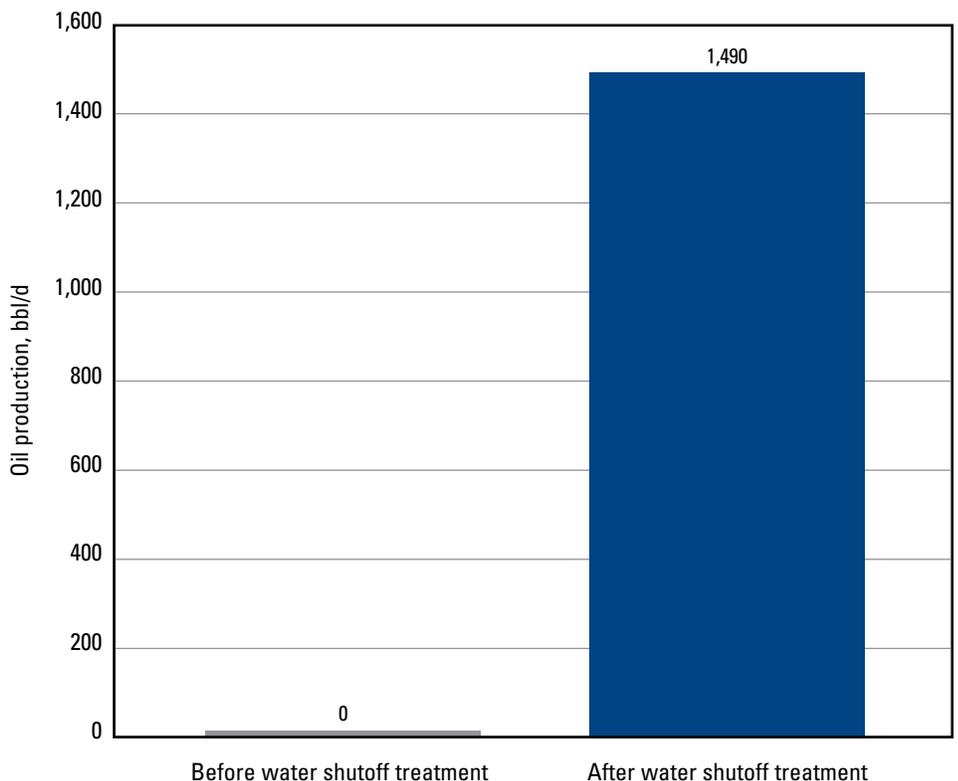
Water cut causes 54-month shut-in

A Gulf of Mexico well in the Calcarenitias formation was drilled as an oil producer and was completed with a 7-in [177.8-mm] liner. The minimum restriction in the well was 3.675 in [93.345 mm]. The operator had to shut it in for 54 months because of high water cut.

Operator implements water shutoff treatment

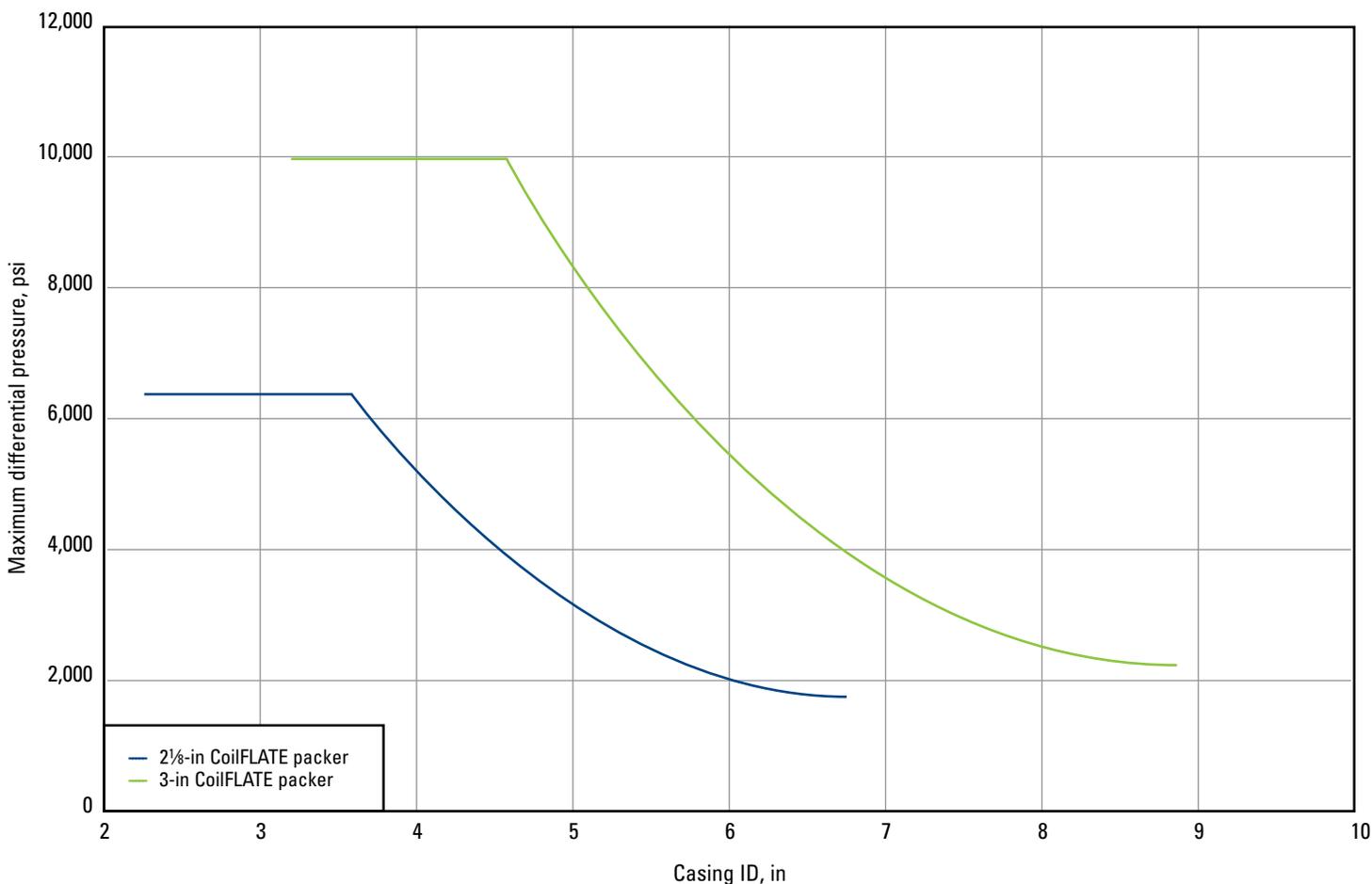
The operator chose a Schlumberger water shutoff treatment. The project included

- setting a CoilFLATE packer in a 65-ft [19.8-m] window (at 10,500 ft to 10,435 ft [3,200 m to 3,180.6 m])
- injecting OrganoSEAL F fluid below the packer
- leaving the packer in the well as a permanent bridge plug
- placing a 30-ft [9-m] cement plug on top of the bridge plug
- perforating a new zone above the packer.



The Schlumberger water shutoff treatment boosted oil production from 0 bbl/d to 1,490.

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The engineered slat design allowed higher differential pressures at varying inflation ratios.

A dummy run was performed with the Jet Blaster* jetting scale removal service and ACTive* in-well live performance—an optical fiber pressure, temperature, and casing collar locator (CCL) tool—to correlate depth in real time, clean the ID of the casing at setting depth, and drift the casing. The setting depth had to be accurate to ensure that the top of the cement plug to be placed on the bridge plug was below the new interval to be perforated. The ACTive tool in the coiled tubing (CT) string provided accurate real-time transmission of casing collar information from the downhole CCL tool to the surface acquisition system for correlation.

The packer was run in hole and set at 10,480 ft [3,194 m] in the 6.184-in [157.074-mm]-ID liner. After the packer was set, 200 bbl of OrganoSEAL F organic crosslinked gel and 20 bbl of SqueezeCRETE* cement were injected through the packer to shut off water production from the zone below. The CT was disconnected from the packer, and a 30-ft [9-m] cement plug was placed on it to make the packer a permanent bridge plug.

Oil production increases by 100%

New perforations were made from 10,320 ft to 10,420 ft [3,145 m to 3,176 m], and 10 days after the water shutoff treatment, oil production was at 100%—with zero water cut.

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Schlumberger