

# Losseal Natural Fracture Treatment Cures Severe Losses

Genel Energy reduces static losses from 26 bbl/h to 0 bbl/h using lost circulation control treatment in offshore well

## CHALLENGE

Cure severe losses experienced after drilling an offshore exploration well below a previously set casing shoe.

## SOLUTION

Apply Losseal Natural Fracture\* lost circulation control treatment to cure losses while drilling.

## RESULTS

Eliminated 26-bbl/h static losses to a no-loss condition after two lost circulation control treatments.



## Severe mud losses encountered while drilling below casing shoe

Genel Energy encountered severe losses in an offshore exploration well while drilling through the Eocene formation. The well experienced losses when the operator drilled just below a 13 $\frac{3}{8}$ -in casing shoe that had been previously set at 7,033 ft [2,144 m]. The mud company made several attempts to regain control over the lost circulation using 65 bbl of lost circulation pill. A partial-loss pill was pumped and temporarily cured the static losses.

Genel Energy resumed drilling to 8,346 ft [2,544 m] and again the well experienced severe losses of 350 bbl/h while drilling with a rig pump rate of 700 galUS/min. The operator pumped a train of partial- and severe-loss pills followed by a high-performance, high-strength additive. Losses reduced throughout the treatment; however, it was not entirely effective, as no pressure buildup was observed and 26 bbl/h of static losses was still reported. The rig had a total mud loss of 2,100 bbl.

**“With a semiremote operation, the deepwater drilling campaign required a technical partner that focused on innovative technology and value-creating solutions, full integration between service lines, and a flawless logistical organization. Our company has been able to fully analyze all well data for the full campaign and are very satisfied with the complete service that Schlumberger provided at a competitive price and on schedule.”**

Drilling Manager  
Drilling Campaign

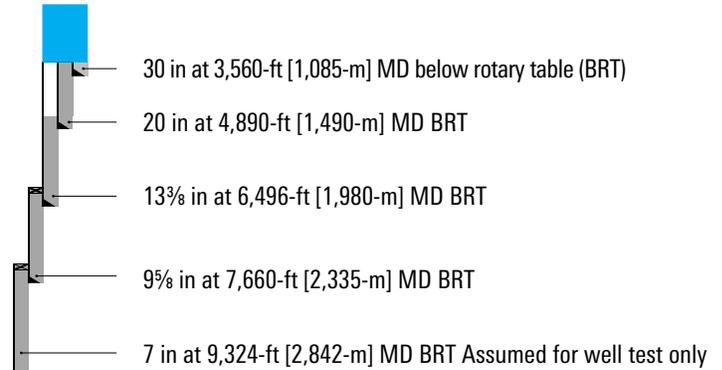
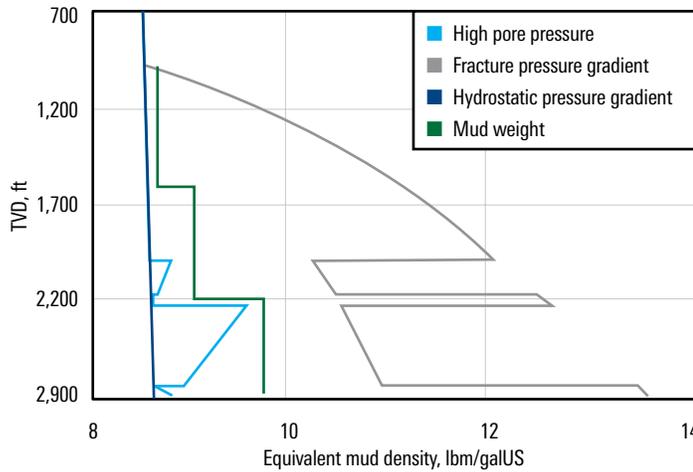
## Lost circulation control treatment selected to cure losses

Schlumberger deployed the Losseal Natural Fracture treatment, part of the Losseal\* reinforced composite pills family, to treat the losses caused by the presence of naturally open fractures. The suction screen of the rig mud pumps was removed prior to pumping the composite pill to eliminate any risk of plugging the filters and causing the pump to lose prime. Immediately before the treatment, the BHA was lowered to top of the loss zone at a depth of 8,346 ft. A first Losseal Natural Fracture treatment pill was pumped through the 5 $\frac{1}{2}$ -in drillpipe using 60-bbl pumpable pill volume and out to the open hole through the sub (4 in  $\times$  1 in), bypassing the entire BHA to eliminate the risk of plugging.

## CASE STUDY: Losseal Natural Fracture treatment reduces static losses by 26 bbl/h, offshore Morocco

The lost circulation pill of 60 bbl with 25% solid volume fraction (SVF) was pumped, following the suggested procedures:

1. Break circulation and stage up the pump rate (increase 1 bbl/min after 5 min).
2. Pump first stage of 20 bbl of clean 9.3 lbm/galUS mud at 3–4 bbl/min.
3. Pump 60 bbl of 11.9-lbm/galUS Losseal Natural Fracture treatment with rig pump at 3–5 bbl/min.
4. Displace treatment with 9.3-lbm/galUS mud at 3–4 bbl/min until 10 bbl of mud exits the circulating sub.
5. Pull out of hole 656 ft [200 m] to make sure there is no treatment fluid being circulated out of hole.
6. Break circulation and stage up the pump rate (increase 1 bbl/min after 5 min).
7. Close the BOP and squeeze the treatment into the formation until the maximum equivalent circulating density has been reached if returns are gained.



(Left) The pore pressure and fracture pressure were used by the operator to determine the casing setting depth (right) and mud weight.



Losseal Natural Fracture treatment plug found in the wireline coring sample.

### Static losses reduced by 26 bbl/h following lost circulation treatments

The static losses were reduced from 26 bbl/h to 15 bbl/h and allowed the wireline logging operation to commence. To further reduce the losses and allow for the casing cementing operation, a second Losseal Natural Fracture treatment pill was mixed with the same formulation at 25% SVF and pumped through the same channel. The loss rate gradually reduced from 15 bbl/h to 0 bbl/h. As a result of both Losseal Natural Fracture treatments, Genel Energy gained control over lost circulation.

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