

1. **Well Name:** A development well in Habban field (Well no. withheld)
2. **Field/Block Name:** Block S-2, Habban Field
3. **State & Country:** YEMEN
4. **Onshore or Offshore:** Onshore
5. **Hole Sizes, Intervals where Liquid Casing-Coarse used:** 17 ½" section, around ±1100m depth.
6. **Rates of Losses before spotting the Liquid Casing Pill:** Total losses and No return
7. **Operator Name:** OMV (An Austrian Oil Company)
8. **Mud Company name:** Petrochem (Abudhabi based regional mud company)
9. **In which Mud System Liquid Casing-Coarse is used:** Bentonite Mud
10. **Date of the using the LCM Pill:** Nov-2013
11. **Dosage of Liquid casing-Coarse used in the pill:** 40 lb/bbl in bentonite mud
12. **Mud Density:** 8.8 ppg

Brief Description of the Job Performed:

Severe down hole losses to the tune of total losses in 17 ½" section in Habban field on shore in Yemen are quite common due to large geological fault, cracks. The depths where losses occur are anywhere between ±880 to 1150m. On this well, where Liquid Casing-coarse is used on trial basis to see whether it solves the losses problem or not, the losses occurred at ±1100m depth while drilling 17 ½" section and while drilling, well suddenly went to total losses situation without any prior warning.

Two Conventional LCM Pills (2X 100 bbl) consisting 100 ppb of Various grades of Mica, Nut plug, Super seal-Cotton Seeds didn't work. Later 1X 100 bbl of LCM pill made with various grades of caCO₃ also found to be futile. Later, two cement plugs were put. The first cement plug could not be traced and second cement plug after drilling 2-3 m, without any returns (but some level in the annulus was observed) well went to total losses situation. Later, one special non-conventional LCM pill of 150 bbl from a reputed major Service provider was placed, but no success.

At this stage, a 120 bbl pill of Liquid Casing-coarse made in bentonite mud (with 15 ppb bentonite) with 40 ppb of Liquid Casing-coarse was pumped as Balanced plug at bottom. Pull out few stands to make sure the string is out of pill. Close the Annular BOP (Hydril) and applied 200 psi in the annulus gently for 15 min to 20 min. Allowed the pill to soak for 45 min and opened the Hydril and attempted to circulate. After pumping 50-75 bbl of mud, observed partial returns (nearly 60-70%) coming over the flow line and slowly increased the pump rate while going to bottom. While circulation, the losses slowly subsided with nearly 80% returns and losses tolerable. Resumed drilling the well to section TD by pumping Liquid casing-coarse pills in Hi-Vis intermittently to cure losses in newly drilled formations and before reaching section TD, losses were subsided completely. Later, upon lowering 13 3/8" casing, suspected some losses in the cementation, but observed excess cement return during displacement and cement level in the well was stable at top till cement set. The client decided to order more stock to use it regularly on all their rigs to cure losses in the 17 ½" section.