

1. **Well Name:** withheld due to confidentiality
2. **Field/Block Name:** withheld due to confidentiality
3. **State & Country:** Greece
4. **Onshore or Offshore:** Offshore
5. **Hole Sizes, Intervals where Liquid Casing-Coarse used:** 4 1/8" and 6"
6. **Rates of Losses before spotting the Liquid Casing Pill:** Product used for preventing cross flow between laterals & for preventing differential sticking due to depleted reservoirs.
7. **Operator Name:** North Aegean Petroleum Company Ltd.
8. **Mud Company name:** Name Withheld.
9. **In which Mud System Liquid Casing-Coarse is used:** Polymer mud system
10. **Date of the using the LCM Pill:** Nov-1998
11. **Dosage of Liquid casing-Coarse used in the pill:** 30 pounds per barrel
12. **Mud Density:** 14-14.5 ppg

Brief Description of the Job Performed:

Two applications by this client:

1. Preventing cross flow in producing wells
2. Preventing sticking of drill string in high differential conditions.

These wells are multi-layers and with time, they have developed depleted oil zones & super charged water zones with upto 2500 psi differential between layers. In the past, they tried with other products to seal off the low pressure oil zones and prevent water cross flow when wells are shut in, but with no success.

How they shut off cross-flow?

Bull head 20 bbl of viscosified sea water with 30 ppb of Liquid Casing-coarse & Fine into producing wells until they obtain a formation lock up of 500 psi over pumping pressure. Then, shut the well in, hold 500 psi excess pressure, leave the well s upto 10 days before bringing them back to production. All wells brought back to production after 10 days shut in have immediately produced same flow rates prior to shut in indicating that no formation damage or blocking occurs. The great benefit they achieved is that no unloading of cross-flowed water and the oil produced has less water cut compared to earlier.

Preventing differential sticking during work over using heavy muds:

This operator has high differential pressures when working over using heavy muds. This field has at least one zone with up to 3000 psi differential pressure, which has repeatedly stuck down hole tools resulting heavy jarring for many hours. The holes are very slim (4 1/8"). The heavy mud (of 14-14.5 ppg) is treated with 5 ppb of Liquid Casing-Fine & Coarse and spotted fresh Liquid Casing Pills (1 bbl with 20 ppb of Liquid Casing concentration) while working through these zones. Upon using the Liquid Casing in the whole mud system and Liquid casing pills across the zones, the operator experienced no repeat mud bridging or sticking. Also no formation damage and the Liquid Casing material (being its non-invasive nature) came out during the initial flow of the well. No acid job was made and money is saved. These wells are extremely sour with 62-65% H₂S and Liquid Casing products worked very well in these high sour gas conditions.