

ReNu Non-Acid Treatment Returns GoM Oil Well to Initial Production Levels

SITUATION ANALYSIS

Wells had quickly declined with significant increases in produced water. Offset wells have been acidized, resulting in additional produced water and little to no increase in oil.

OBJECTIVE

Run ReNu Analytical Simulation to determine the full range of potential organic and inorganic depositional tendencies. Once identified, measure the change/delta over a short time period to confirm actual depositional morphology. Determine if the formation damage is removable, can future damage be prevented or mitigated and establish monitoring protocols to indicate when wells require further treatment.

SOLUTION

PIC conducted laboratory testing which showed that there was no inorganic deposition from water formed scale or fines migration. The crude analysis showed with a solvent to solute ratio of 0.31 (1.0 would indicate a safe equilibrium) that deposition is occurring. The form and location of the deposition was determined analytical. The average carbon number was >C39 with 10.46% being >C60. The WAT was near the BHT which would indicate that complete wettability reversal and wax deposition was a certainty. Full carbon number analysis was conducted on paraffin cuttings to exclude from the measurement of the delta/change of heavy molecular weight organics over time. This process allows for determining The ReNu treatment design.

TREATMENT PROCEDURE

- 500 gals of a ReNu thermal solvent containing:
 - Solvent Booster to KB Value of 350. 300% higher than xylene or toluene.
 - Penetrant-reduces surface and interfacial tension to near zero dynes/cm³.
 - Nanosurfactant continuously de-oils and encapsulates solids for removal.
 - Super Wetter restores water-wet condition.
 - Paraffin inhibitor/dispersant
- 250 gals of PetroGel diverter containing nanofibers that swell in high water saturation.
- 1000 gals of a ReNu thermal solvent weighted with aromatic solvent to provide higher density than produced crude.
- Displace ReNu thermal solvent with treated crude.
- Shut in well and allow to soak for 12 hours and return to production.

RESULTS

Before Treatment		After Treatment	
BOPD	68	BOPD	338
BWPD	262	BWPD	144

The ReNu thermal fluid treatment increased oil production by 497%. It also lowered the water cut from 79% to 30%. The incremental oil increase lasted for 16 months.