

HISTORY

An Oil & Gas company in Central Alberta has been using new Hz drilling and completion techniques to help develop their field targeting specific carbonate formations. Initial development utilized pumping 15% HCL acid in stages down coiled tubing, using CT deployed open hole packer for zonal isolation which showed promising results.

PROPOSAL

Following core flow test results comparing 15% HCL vs Enviro-Syn® HCR 2000 the operator decided to trial HCR-2000 as it showed 1000x better post permeability. This is due to the methodical spend nature of Enviro-Syn® HCR 2000, as it was able to fully penetrate the core with live acid. Samples of production oil and high salinity produced water from offset wells in the area were tested for compatibility with Enviro-Syn® HCR 2000 Acid which required far less additional chemistry compared to traditional HCL packages. An actual field comparison was required to prove the results.

OPERATIONS

~150m³ of concentrated Enviro-Syn® HCR 2000 Acid was delivered to location and mixed 50/50 with high salinity produced water from the local battery in tanks. Acid was then pumped in stages down CT with friction reducer added on the fly. All other chemicals were pre blended at the Fluid Energy manufacturing facility prior to shipping to ensure the correct blend was deployed for this specific operation.

RESULTS

After the initial trial, production was monitored for >6months to see how the well completed with HCR compared against the previous HCL treatments. The well produced above type curve with an “all in” cheaper completion cost. These two facts convinced the operator to switch to HCR on a go forward basis with their upcoming multi-well completion program.

VALUE

The major value-add was an increase in well performance while reducing overall costs.

- Due to the methodical spend nature of HCR 2000 it is able penetrate deeper into the formation while still being able to react with the rock to increase both permeability and formation connectivity.
- Hazardous trucking requirements were reduced by half due to the product being transported as a concentrate
- The ability to dilute HCR with high salinity produced water with no precipitation issues was utilized as water could be pulled from offset wells and the local battery, also reducing costs.

The ability to utilize an environmentally responsible product that is non-hazardous, safe to handle and has a low toxicity level was seen as an “excellent, cost-effective alternative while providing peace of mind with respect to HSE concerns”.

- With large volumes of acid on location human exposure and fuming are the two most dangerous hazards encountered by field personnel dealing with HCL acid. HCR 2000 is a non-irritant to skin and is non-fuming, whereas HCL has a corrosive effect on human tissue, with the potential to damage respiratory organs, eyes, skin and intestines irreversibly and potentially fatal.
- Due to HCR 2000 inherently low corrosion rates >24hrs, risks associated with downtime due to equipment issues are greatly minimized, especially with CT operations.



Core Flow

Post core flow testing

50% HCR vs 15% HCL



Note: Wormholing seen on HCR core compared to severe face dissolution on HCL treated plug

