

HISTORY

An operator in North-Central Alberta was performing horizontal multi-stage fracturing completions on multiple wells, using a coiled tubing/sliding sleeve technology in the Slave Point formation (40°C BHT). Traditional methods of formation breakdown required the use of 1 m³ of 15% HCl Acid to be pumped down the coiled tubing prior to each fracturing stage.

PROPOSAL

Samples of production oil from the area were tested for compatibility on an Enviro-Syn HCR 2000 blend with excellent results. Samples of the fracturing water were also tested for compatibility, as this was proposed to be used as the concentrated HCR diluent. By storing the concentrated Enviro-Syn HCR 2000 in a tank and diluting it with the fracturing water on location a single load was all that was required for the treatments.

OPERATIONS

The tank of concentrated Enviro-Syn HCR 2000 was pre-blended with the fracturing water down to 33% prior to the treatment. 1 m³ of the 33% HCR blend was pumped for each spearhead stage, all other operational components and procedures remained the same as traditional methods using HCl acid - only the reduction of an on-site acid hauling truck was eliminated from operations.

RESULTS

A total of 38 stages were treated on 5 wells, with 100% breakdown success on every stage. Breakdown pressure differentials in the range of 20-25 MPa were observed.

VALUE

The greatest value driven effort seen was the elimination of the on-site acid truck during the 7 day operation. Additional value was seen in the reduction of total loads of acid by delivering concentrated product to location and diluting with location fluids (high salinity production water). Estimated cost reduction was in the range of \$25,000 - not including the vastly reduced liabilities of having a non-hazardous acid on location.

Operational efficiencies saw the elimination of having to circulate an HCl acid blend, reduced potential corrosion to the coiled tubing, and reduced HCl acid exposure to personnel.

The operator is looking to continue the use of the HCR in this, as well as other completion/production treatments on future wells.



