HISTORY

An E&P company operating in the Central Alberta was performing horizontal multi-stage slickwater completions on multi well pads. Using plug and perf completion techniques they were targeting the East Duvernay formation which require acid to help breakdown the formation and initiate fracture propagation. Historically 7.5% HCL acid has been used to accomplish this.

PROPOSAL

Typically, HCl acid is the most dangerous chemical on site during fracturing operations. “Hydrochloric Acid (and its fumes) will damage respiratory organs (irreversible), eyes, skin, and intestines and can cause death in some cases”. HCR-7000FRAC-WL™ Modified Acid™ was selected as a far safer, more environmentally friendly and technically advanced acid system for spearhead applications. HCR-7000FRAC-WL™ offers an instant operational advantage as it could now be deployed simultaneously with the perforating guns and plug (w/ball in place) during the pump-down operations. This would save 20 – 35 minutes of time per stage with the elimination of the hole volume displacement of HCl acid per stage. During placement with the perforating guns, HCR-7000FRAC-WL™ Modified Acid™ is placed to ensure placement across the perforations. Once the plug set and perforating had been completed, the guns were removed from the wellbore and the frac commenced with acid spotted across all perfs.

OPERATIONS

When placed with the perforating guns, there was a marked savings in time as the acid is already placed at the perforations once the spent guns are out of the wellbore and the stage completion can commence immediately without having to drop the ball and displace a hole-volume to get acid to the perforations. Time savings are seen in the charts below and ~20 – 35 minutes of pump time per stage average.

RESULTS

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Case History

Enviro-Syn® HCR Saves 20–35 Minutes Per Stage and a Hole Volume of Water

Value

By pumping HCR-7000FRAC-WL on location both the E&P and Pumping Company were able to use an acid that has an inherent safety profile that helps to minimize or eliminate the extremely dangerous properties associated with HCl while providing substantial “instant” value add and long-term asset corrosion protection.

- Non-Corrosive to dermal tissue (3rd party testing) (HCR-7000-WL)
- Low-Vapor Pressure effect (fuming)
- Low-Toxicity
- Biodegradable

Along with the safety aspect of the acid there is also the major technical advantages it brings to the operations:

- Low corrosion properties: 0.026lb/ft² for > 90 hrs on P110 and equivalent casing @ 195˚F
  - Pump acid with wireline BHA (save time and water)
  - If surface equipment failures occur no need to flush acid out of wellbore
- Hauled as a concentrate and diluted on location
  - Ability to adjust acid strength for tougher breakdowns
  - Less acid trucks on the road (landowner optics)
  - Less water usage (public perception and marketability by operator as being green)
  - Class one product (chemicals will not separate out over time)
  - Can dilute with available water (produced/sea water/fresh)
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