

TRUE SUCCESSES

WATER CLARIFIER DELIVERS 85% SAVINGS IN COSTS AND USAGE

Challenge

An oil and gas producer in Saskatchewan had SAGD well pairs producing with electric submersible pumps. The production was approximately 18% heavy crude oil with an API gravity of ~11°. The operator was experiencing production of a reverse emulsion where the crude oil was emulsified in a water exterior phase and needed to be broken prior to the FWKO (free water knock out) treating vessel to allow oil/water phase separation. The operator felt their chemical provider's treating rates were excessive and no improvements had been made for years; PureChem was asked to evaluate and provide a recommendation.

Solution

To be successful, we needed to identify a reverse emulsion breaker that would function synergistically with a common emulsion breaker to adequately separate the fluids within the FWKO treatment vessel. After extensive field bottle testing, PCR-4204 was recommended due to its strong attraction for the oil/water interface and ability to neutralize the effects of the emulsifier and reduce the surface tension between the oil and water droplets, allowing separation.

PCR-4204 was injected into the flowline on a continuous basis at a pump rate of 1.0-1.5 ppm, upstream of the FWKO. It successfully broke the reverse emulsion and worked extremely well in conjunction with the selected emulsion breaker, making the water crystal clear.

Benefit

PureChem's PCR-4204 exceeded the criteria of <0.5% BS&W specifications for sellable oil, with BS&W levels of 0.1% to 0.2%. Oil carryover in the produced water was <50 ppm in water exiting the FWKO, consistently better than the required specification of <100 ppm. The implementation and performance of PCR-4204 resulted in chemical usage and costs to be reduced an average of 85% while maintaining excellent oil and water quality.

Area

East Central Saskatchewan

Formation

North Bakken

Form of Lift

Electric Submersible Pump

PureChem Product

PCR-4204



Excellent water quality exiting the FWKO