

# Clearwater Heavy Oil Producer Achieves Significant Savings With Newly Developed Emulsion Breaker

Heavy Oil Emulsion Breaker EB 2003

## The Opportunity

In northern Alberta, SECURE worked with a heavy oil producer who operates a pad containing 15 wells. The wells produce 2,000 m<sup>3</sup> to 2,300 m<sup>3</sup> of oil per day with a Basic Sediment and Water (BS&W) of about six per cent. The oil flows into five 2500-barrel tanks, where it is treated to remove water.

With usual chemical treatments, the producer had borderline wet sales oil of 0.6 per cent. The producer ensures their oil meets pipeline specifications by transporting it to other sites with longer retention times for additional treatment. The process, with transportation, is extensive and costly. It requires the rental of two trucks 24 hours a day.

SECURE observed that the production pads lacked adequate retention time to dehydrate oil to pipeline specifications with their current emulsion breaker. Heavy oil produced at this pad had a gravity of 0.985 kg/L. Based on fluid production of 90 m<sup>3</sup>/hr, retention time through the tanks was an estimated 30 minutes.

## Our Solution

It was concluded that a new emulsion breaker was needed to dehydrate oil faster on-site. The new breaker would allow oil in tanks one to three to dehydrate quickly and be trucked directly to battery for sales (see Figure 1). SECURE’s solution improved on-site operation efficiency and relieved the producer from trucking wet fluid to other sites.

## The Results

SECURE’s technical team completed testing on produced fluid samples over several weeks to formulate the Heavy Oil Emulsion Breaker EB 2003.

The testing results determined that a treatment rate of 300 ppm (0.3L / m<sup>3</sup>) was optimal, based on oil. Trials over five weeks demonstrated that water drops in tanks one to three were greatly increased (see Figure 1). Comparatively, oil was dehydrated to pipeline specifications in tanks 4 and 5 (see Figure 1).

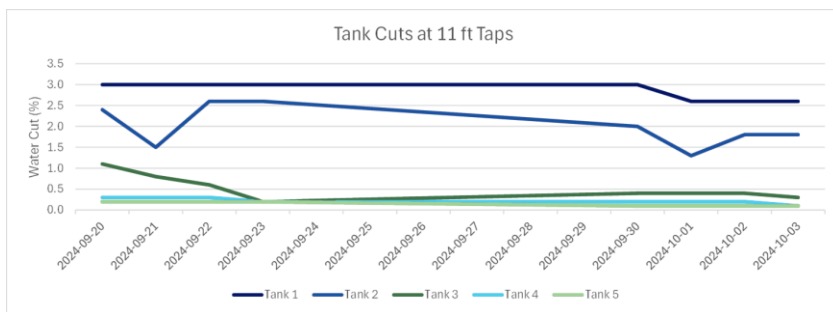


Figure 1— BS&W cuts taken from the 11 ft tap of each tank over the trial period. The trends show that water cuts in all tanks is decreasing with EB 2003 in the system.

The low retention time and high viscosity/gravity of the oil made speedy water drop difficult. SECURE leveraged its in-house chemistries to develop the novel emulsion breaker to meet the unique challenges of this facility and its oil.

EB 2003, at a treatment rate of 300 ppm, provided dehydrated oil that met pipeline specifications with shorter retention times.

The new emulsion breaker reduced the treatment cost by \$0.05 /m<sup>3</sup> and led to a cost savings of \$100,000\* per month on trucking and \$35,000\* per year on chemicals. Moreover, the breaker produces clean oil.

By formulating and implementing the EB 2003, SECURE significantly reduced in-field oil transfers for the producer while maintaining dry sales oil. Our breaker resulted in more efficient operations, substantial cost savings and increased operation sustainability. The success of this project underscores the value of customized chemical solutions and sets a precedent for future collaborations.

## Highlights

New technology developed	Heavy Oil Emulsion Breaker EB 2003
Purpose	Dehydrate oil at faster rates and remove need for fluid transportation to other sites
Treatment Rate	300 ppm
Results	Increased operation efficiency, cost savings and environmental sustainability
Cost Savings	0.05\$/m <sup>3</sup> , \$100,000/month for transportation and \$35,000/year on chemicals*

\*Based on peak pad performance.