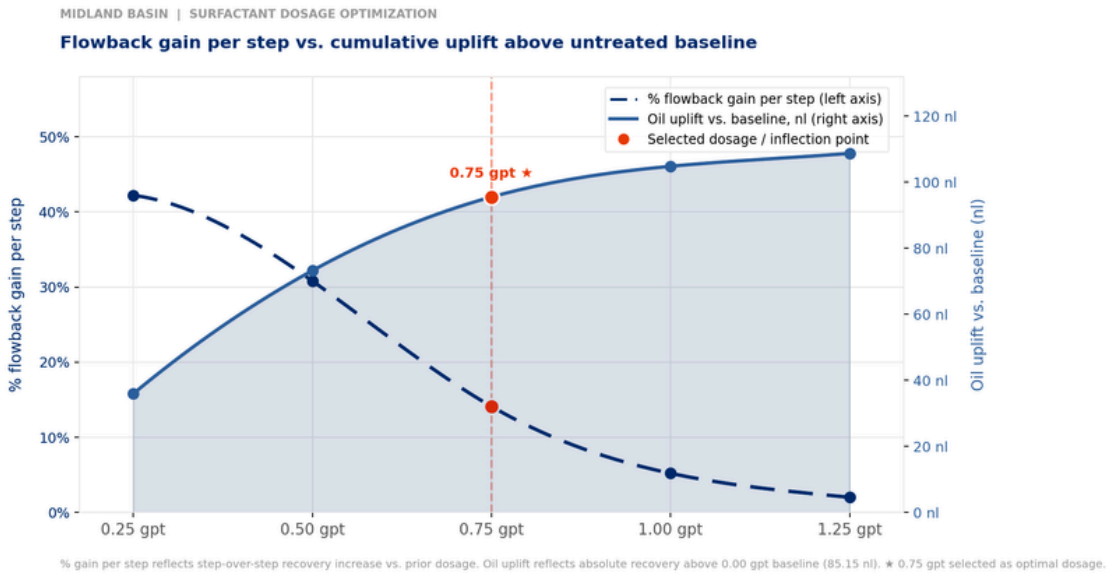
CASE STUDY | MIDLAND BASIN

Surfactant Dosage Optimization: 112% Oil Recovery Increase from Untreated Baseline to Selected Dosage

The Challenge: The operator was adding surfactant to their completions program for the first time and needed to confirm two things: whether surfactant addition would produce meaningful recovery improvement under their specific conditions, and what dosage represented the best balance of performance and chemical spend. Full compatibility with the existing chemistry package — friction reducers, biocides, and scale inhibitors — was required across all dosage steps.

Select's Solution: Select Chemistry conducted a controlled laboratory evaluation using the operator's actual produced water and crude oil at reservoir temperature. Surfactant dosage was varied across six steps from 0.00 gpt (untreated baseline) to 1.25 gpt. The baseline was included to quantify absolute recovery without surfactant — a necessary reference for assessing the full impact of chemical addition, not just differences between dosage steps. Compatibility with the incumbent chemistry package was confirmed across the full dosage range before performance results were assessed.



The Results: The untreated baseline recovered 85.15 nl of oil. At the selected dosage of 0.75 gpt, recovery reached 180.7 nl — a 112% increase above the untreated baseline. Incremental gains declined consistently at each dosage step, with the sharpest drop occurring between 0.75 and 1.00 gpt (+5.2%), compared to +14.1% for the prior step. Dosage beyond 0.75 gpt produced diminishing returns relative to additional chemical spend. The operator reported a significant production increase compared to a sister well.