

CASE STUDY 401 | NATURAL GAS | Pro3 Nano®

# REPLACEMENT OF SULFATREAT WITH NON-TRIAZINE H<sub>2</sub>S SCAVENGER Pro3® NANO TO UNLOCK OIL PRODUCTION

**Q2 Technologies** has brought to market the **Pro3® Nano**, a novel nanoparticle non-triazine H<sub>2</sub>S scavenger. **Pro3® Nano** removes H<sub>2</sub>S from gas streams and converts it into non-hazardous elemental sulfur. When combined with the SulfurCycle process, **Pro3® Nano** is regenerable allowing the reagent to be used multiple times resulting in much lower operating costs compared to triazine scavengers. With a larger operating range and lower cost than SULFATREAT, **Pro3® Nano** combined with SulfurCycle add value to reserves by allowing operators to produce otherwise uneconomical wells.

## CHALLENGES

- An oil well in Southwest Wyoming co-produces sour gas and water. In order to economically produce the oil, a robust strategy for sour gas treatment was needed.
- The coproduced sour gas comprises 80% CO<sub>2</sub>, 5,300ppm H<sub>2</sub>S and a balance of nitrogen, not dissimilar to amine plant off-gas. The high concentration of carbon dioxide greatly constrains caustic or amine-based technologies.
- Hot wet gas produced from the well proved difficult to sweeten with SULFATREAT due to condensation affecting the capacity and efficiency of the SULFATREAT material.
- With no market value for the gas and high lifting costs, it was necessary to reduce sour gas treatment costs to profitably produce the associated oil.

## TAKE-AWAYS:

- **Pro3® Nano** and SulfurCycle regeneration process allowed production of oil that otherwise would be shut in and stranded. Chemical use cut by 80%.
- SulfurCycle and **Pro3® Nano** can specifically treat H<sub>2</sub>S in a wet acidic gas stream with no loss in efficiency or capacity.

## SOLUTION

- **Pro3® Nano** replaced SULFATREAT without any ill effects from the wet acid gas, thereby reducing the cost of treatment per pound of sulfur by as much as 10X.
- Being an aqueous process, **Pro3® Nano** and SulfurCycle were not affected by the water saturated gas, and required no conditioning other than standard three phase separation.

## RESULTS

- **Pro3® Nano** aggressively and specifically treats the 5,300ppm H<sub>2</sub>S with high scrubbing efficiency (>99.9%) and excellent regeneration capacity, reusing the reagent >10X.
- SULFATREAT required more frequent change-outs than expected, incurring high labor and material costs.
- After 3 months of initial production, SulfurCycle achieved >98% availability and 100% reliability.
- With **Pro3® Nano** and SulfurCycle, oil sales are profitable with less than 10% of oil revenues spent on sour gas treatment while SULFATREAT was economically unsustainable.