

## Sour Well Treatment Case Study Williston Basin, ND, Jan-Feb 2015

An oil well in North West ND with a 19,000 ft lateral about 7000 ft below surface had been contaminated with bacteria and was producing hydrogen sulfide. The H<sub>2</sub>S measured about 800 ppm on the gas side (annulus). Clean Chemistry was invited by the well operator to develop a down-hole H<sub>2</sub>S treatment program using PeroxyMax™ oxidation technology to reduce or replace the use of triazine H<sub>2</sub>S scavenger.

Clean Chemistry produced 130 bbls of diluted (3300 ppm) PeroxyMax™ oxidant solution in a tanker truck at a location near the well pad. The tanker was moved to the well head and the pump jack was turned off. The oxidant solution was pumped down the annulus of the well in about 20 minutes. The goal of this fluid was to treat the annulus to a depth below the production tube.

The well was left shut in for about 90 minutes until a second tanker containing 130 bbls of diluted (3300 ppm)

PeroxyMax™ oxidant solution was brought to the well head. After starting the second injection of oxidant solution down the annulus the pump jack was turned back on to flow back active oxidant fluid to treat the production side of the well.

One day after the well treatment the gas side H<sub>2</sub>S reading was 0 ppm and fluid production (oil to water ratios & volumes) returned to normal within 3 days after the treatment. Six days after treatment the H<sub>2</sub>S reading was 2 ppm and two weeks after treatment the H<sub>2</sub>S reading was about 32 ppm.

With the H<sub>2</sub>S content climbing after about 2 weeks the PeroxyMax™ treatment was conducted again. One day after the well treatment the gas side H<sub>2</sub>S reading was 10 ppm and fluid production from the well returned to normal within 3 days after the treatment. Twelve days after treatment the H<sub>2</sub>S reading was 0 ppm. The second treatment seemed to be holding longer than the initial treatment. Two weeks after treatment, analysis of the crude oil from the heater treater measured 4 ppm H<sub>2</sub>S in the oil phase (method UOP 163). This was a significant improvement for the operator.

