

# Non-Nitrogen H<sub>2</sub>S Scavenger, RPA-880

Allows United States Refinery to Keep Pipeline Allocation



The chemistry of results™

## Background and Challenges

During a planned turnaround, a major United States refinery faced loss of pipeline allocation if they were unable to accept committed volumes of crude. The refinery did not have sufficient storage for the crude, but a sister refinery did and agreed to purchase the crude. The major refinery needed to quickly move the crude shipments from pipeline to tankage to barge to ensure that there was room for crude receipt.

In order for the crude oil to be shipped, it needed to be treated to a level that met maritime specifications of less than 100 ppm H<sub>2</sub>S in the vapor phase of the ships' compartments. Furthermore, the use of a traditional nitrogen H<sub>2</sub>S scavenger would cause the sister refinery to limit the throughput of the purchased crude due to the increased corrosion potential. The treatment also needed to be economical for all parties even though the H<sub>2</sub>S concentration was expected to be greater than 1% and the crude oil flow laminar (limiting mixing).

## Athlon Solutions' Recommendation

Athlon Solutions recommended the use of a proprietary new non-nitrogen scavenger, RPA-880, for its suitability in treating crude oil without the harmful downstream effects of other amine containing scavengers. Screening of the opportunity crude was done prior to treatment and confirmed the new chemistry was the fastest reacting and most cost effective for scavenging H<sub>2</sub>S. Further testing ensured the product caused no downstream effects in desalting and effluent plant operation. A unique and proprietary injection system was custom designed in order to feed the scavenger at an effective rate while allowing for increased contact and mass transfer.

## Performance Results

The crude was treated directly at the pipeline before being sent to tankage. The H<sub>2</sub>S specification was met as each tank was filled, and the crude was able to be quickly loaded into barges to make room for additional incoming crude. H<sub>2</sub>S levels averaged 1,000 to 5,000 ppm and reached as high as 18,000 ppm. Every barge that was loaded met the maritime specification of less than 100 ppm of H<sub>2</sub>S in the compartment's vapor space, and no personnel were exposed to H<sub>2</sub>S during the treatment, loading, or unloading process.

Athlon Solutions successfully treated 790,000 barrels of crude oil and the refinery was able to maintain their pipeline allocation with a net financial benefit to their organization of 3-4 million United States dollars. The receiving refinery processed the crude with no throughput restrictions or upset incidents attributed to RPA-880 at the desalter or wastewater plant.

The success of the product in both lowering H<sub>2</sub>S levels effectively and causing no adverse effects to refinery operations proved the unique properties of the non-nitrogen scavenger, RPA-880.

