

RPS-853 Non-Nitrogen H₂S Scavenger

TURNAROUND TREATMENT OF MORE THAN 1MM BBL CRUDE OIL ALLOWS FOR INCREASED MARGINS

BACKGROUND AND CHALLENGES

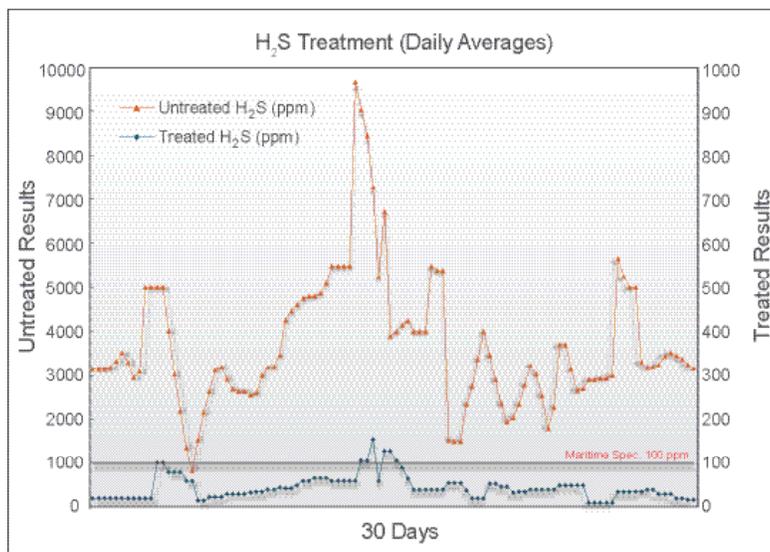
A major U.S. refiner requested assistance from Athlon, a Halliburton Service, in the H₂S scavenging of approximately 1,200,000 barrels of opportunity crude while the refinery was shut down for turnaround. Due to contractual obligations from upstream suppliers and a lack of storage to hold incoming crude, refinery personnel decided on the use of a H₂S scavenger and barges to store crude oil during turnaround. The refiner refused to use any amine-based triazines due to corrosion and fouling, as well as catalyst poisoning issues. Furthermore, the crude needed to be treated to a level that met maritime specifications of less than 100 ppm H₂S in the vapor phase of the ship's compartments.

ATHLON'S RECOMMENDATION

Athlon recommended the use of a proprietary new non-nitrogen scavenger, RPS-853, 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 helped ensure the new chemistry performed as well as, or at times better than, the usual amine bearing products in scavenging H₂S. Further testing helped ensure the product caused no downstream effects in desalting and effluent plant operation. The crude was then delivered and treated directly from the pipeline before being sent to tankage, and finally to ships. H₂S levels generally ranged from 2,000 to 5,000 ppm and reached as high as 18,000 ppm. RPS-853 was fed using a unique and proprietary injection system in order to feed the scavenger product at an effective rate, while also allowing for increased contact and mass transfer.

PERFORMANCE RESULTS

Treatment of the raw crude oil reduced H₂S levels to as low as 10 ppm and met maritime specifications throughout the transfer and storage process. In addition, dosage of RPS-853 was calculated at 0.27 ppm liquid chemical used /1.0 ppm H₂S in vapor, comparable to dosages for triazine-based products. After turnaround operations were completed at the refinery, the RPS-853 treated crude was run through the refinery process. The treated crude was run with incoming crude in a ramp-up fashion over the course of several months. No unit upsets attributable to the treated crude were observed throughout the ramp-up process. The success of the product in both lowering H₂S levels effectively and causing no adverse effects to refinery operations proved the unique properties of the non-nitrogen scavenger.



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