



Case History

RAPID RESPONSE TECHNICAL SERVICE SAVES MONTNEY PRODUCER \$15 K/DAY IN TRUCKING COSTS BY SOLVING IRON SULFIDE CHALLENGE

Background

A major oil and gas producer experienced an ingress of unknown, black sludge at a major pad site, causing separation challenges in the horizontal inlet separator, as well as a sudden & complete stoppage in the transfer of ~ 800 m3 of produced water to a third-party processing plant, via pipeline. The third-party processor had to shut in the transfer line on a Saturday morning due to high frequency of water filter fouling. (2X/hour). To maintain gas and condensate production, the produced water had to be trucked away via B-train trucks for disposal, adding a cost per day to the facility of approximately \$16000.00 per day. Platinum Chemical Solutions (PCS) was asked to immediately investigate the root cause of the upset and stoppage of flow. Within hours, technical representatives were in the field to determine the nature of the black material as well as determine the root causes and potential options to re-establish their ability to transfer the produced water via pipeline again. Collection of samples of the fouling material suggested Iron Sulfide (FeS). Acid treatment of the material confirmed FeS. Further investigation the same day led to the discovery that a field wide challenge was emerging and rooted in the fact that some producing wells are sweet and contain high PPM levels of free iron, while others contain high PPM levels of H₂S. PCS sampled both sweet and sour wells and conducted on site bottle testing with operations to confirm that mixing of incompatible waters was the root cause of the formation of FeS. Upon mixing waters, immediate formation of black water was noted. Iron sulfide causes filter plugging and many other process challenges, including safety concerns.

PCS confirmed through testing that application of an iron sulfide chelation chemical could cost effectively reduce the formation of the FeS and re-establish the producer's ability to transfer water by pipeline again. PCS worked with the producer to safely fast track an effective application of ISC-551 iron chelator, upstream of the inlet separation vessel. ISC-551 was applied continuously into a strategic injection point at a dosage of 150 PPM based on incoming water volume. The on-site water filtration was also enhanced to smaller micron size, to ensure that any FeS that would inevitably form, would be captured on site and not sent downstream to the third-party processor. Upon implementation of the program and monitoring for several days, the producer was allowed to resume water transfer by pipeline and eliminated the high trucking costs.

Economic Analysis

The cost of treating the FeS challenge at the facility was approximately \$700/day for chemical, or \$0.88/m³. The cost of trucking the water was approximately \$20/m³. The difference in cost of trucking versus chemical treatment of the water resulted in a savings of approximately \$15,000/day and reduced the congestion and degradation of the rig mat road that was in place to access the facility at the time. Based on the success of this initial application, other programs were started as the emerging challenge with formation of FeS began to appear at other sites. The producer also began to plan for applications of FeS control into new facility designs, as it was established that the situation would become a field wide challenge.