Solugen

Verza360™ FT406+

Iron Sulfide Remediation with Bio-Based Chemistry Saves Lost Time and Production in Midstream SWD System

Challenge

Iron Sulfides Plugging SWD Inlet Filter

A production operator operating in the Bakken was experiencing daily fouling and plugging of an inline metal filter screen (Figure 1A) at a regional saltwater disposal (SWD) facility. The problem was causing frequent maintenance downtime and unwanted solid wastes. If left unabated, the plugging would increase inlet line pressures and potentially curtail ESP well production upstream. The customer surveyed and characterized the fouling solids as containing various forms of iron sulfide. Further examination of the downhole chemical program upstream revealed the downhole scale inhibitor was marginally performing in preventing iron sulfide scale formation.

Solution

Verza360™ FT406+ for Iron Sulfide Remediation

Given the variety of iron sulfides identified from the inlet filter, Solugen proposed trialing Verza360™ FT406+ (Verza) for remediation. Verza is a proprietary and winterized blend that is stable below -40°C and includes a carbon-negative, biodegradable organic acid (Verza360™) and THPS to prevent or remediate iron-containing scales.

Verza360™ itself is a non-toxic, carbon-negative organic acid intermediate effective at enhancing chelation properties of typical chelant chemistries, such as THPS. This product enables the chelation power to be more effectual for systems containing barium. Certain formulations with THPS can contribute to the formation of barium sulfide scales. This special blend (Verza) significantly reduces the unintended side effects standardly associated with THPS and other chelants/crystal inhibitors.

Trial

Applying Verza Upstream of SWD Inlet Filter

The trial had three main goals:

1. Provide a chemical solution that could reduce or eliminate solids formation.
2. Ensure that the chemistry was compatible for continuous use in field applications.
3. Implement the new chemical application in less than 48 hours to restore production consistency.

In this case, the customer diluted Verza to 20% activity and applied it at 100 ppm upstream of the iron sulfide formation within 24 hours of being notified of a plugging filter.

Results and Conclusion

Verza Remediates Iron Sulfide Formation

Since applying Verza, the iron sulfide formation has been virtually eliminated (Figure 1B). This unique chemical solution has removed the need for fluid diversion or shut-ins of high producing wells, providing immediate resolution and stable water injection operation.

(A) (B)

Figure 1. SWD Inlet Filter (A) before Verza application and (B) after Verza application.

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