

SRB (Sulfate-Reducing Bacteria) Management Roadmap for Oil-Field Production

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Objectives/Scope

The objectives of this project are to manage Sulfate-reducing bacteria (SRB) at an oil-field production to be under acceptable level, minimize the risk of pipeline failure from SRB and protect environment by keep zero spill from production pipelines.

Methods, Procedures, Process

Review historical SRB and biocide treatment records at an oil-field production. Gather updated SRB data and operating conditions. Correlate SRB data with field activity especially when high SRB was found. Several action items had been developed e.g., changing biocide treatment procedure, installing new launcher/receiver to make pipeline piggable, performing cleaning pig with biocide at SRB concern pipelines, developing SRB likelihood criteria for future pipeline risk assessment, etc.

In addition, there were some studies carried out at field laboratory to understand which parameter will impact to SRB results. This helps to improve SRB lab testing procedure and better control test quality.

Results, Observations, Conclusions

The key results after implementing some action items in Q1-Q2 2023 are as follows:

1. Be able to control SRB at a produced water pipeline from tanker to central processing platform (CPP) into acceptable level after continuously high SRB in the past few years by changing biocide treatment procedure from inline injection at pipeline to batching at PLFSO water tank.
2. Significantly reduce number of high SRB cases at an oil pipeline from CPP to tanker by changing biocide treatment frequency from once after high SRB found to weekly biocide treatment. In addition, it was found that high SRB at this oil pipeline related to pigging activity from other pipelines. This was potentially from pigging at other pipeline carrying high SRB into CPP and oil pipeline. Therefore, a new practice of adding biocide in front of pig for pipeline which has not been pigged for long time has been added to control SRB at CPP and this pipeline.

In conclusion, the results in early 2023 show positive trend. The SRB management roadmap at this oil-field production is gradually developed based on updated study and knowledge. The business impact is potential cost saving from pipeline repair and production loss avoidance \$8.9MMUSD/year.

Please explain how this paper will present novel (new) or additive information to the existing body of literature that can be of benefit to a practicing engineer.

Some action items of SRB management at this oil-field production e.g., change biocide treatment procedure, special biocide treatment for pigging, etc. may be in consideration to manage SRB at other fields that may have similar SRB concern. This oil-field production demonstrated the positive trend of SRB in a short period of time because of the strong support from Operation team. Engagement with Operation team is another key of success for SRB management program.