



2K7 BIOCIDES PROVIDES CONSISTENT MICROBIAL CONTROL AND OUTLASTS CURRENT PRODUCT IN TEXAS COILED TUBING OPERATION

Water Soluble Paks demonstrate improved performance in 2-well study

BACKGROUND

Coiled tubing (CT) mill out of bridge plugs is a common operation. To increase the lifespan of their tubing, Service Companies are turning to a variety of products to mitigate microbiologically influenced corrosion (MIC), which has been shown to cause pitting leading to premature string failure¹. Microbial growth in mill-out fluids pumped downhole can also cause formation damage, such as souring.

CHALLENGE

A variety of biocide actives are available on the market, each with a unique performance range based on their chemistry. Creating a comprehensive biocide treatment program for a particular application requires an understanding of these characteristics. For this reason, CT service companies are turning to chemical providers such as OSP to provide expertise for both testing and treatment of microbial contamination.

STUDY

A US Service Company approached OSP to assist in the determination of the best chemistry to provide long-term microbial control for their CT mill-out operations. They chose 2 horizontal wells on the same pad in the Eagle Ford formation. Two CT units were used, such that one fluid system could be treated with the current product, and the other with 2K7 Water Soluble Paks (WSP).

In all cases, the milling fluid was pretreated on location by the water supplier with a glutaraldehyde-quaternary ammonium (Glut-Quat) combination biocide compound at 5 gal per 500 bbl tank. The Service Company then treated the fluid for one well with their current product, which was added on-the-fly at 250 ppm, and the other with 2K7 WSP added to the surface tanks.

OSP also provided onsite microbial testing of fluid samples taken from surface tanks at various time points during the operation. The LifeCheck ATP Test Kit was used to rapidly measure total microbial levels in real-time through quantification of ATP (adenosine triphosphate). ATP levels (measured in pg/ml) indicate the metabolic activity of living cells, enabling accurate measurement of total microbial content.

Table 1.
Treatment dosages of microbial control chemistries.

Product	Dosage
2K7 WSP	8 WSP per 500 bbl tank
Current Product	250 ppm, on-the-fly

RESULTS

The LifeCheck ATP test kit results during and after mill-out operations is shown in Figures 1 and 2. In both the main and return tanks, the well treated with 2K7 WSP maintained ATP levels below 50 pg/ml; whereas, ATP levels in the well treated with the current product spiked to 129 pg/ml and 1,380 pg/ml in the main and return tanks, respectively. These results indicate that the current product was unable to provide long-term microbial control compared to treatment with 2K7 WSP.

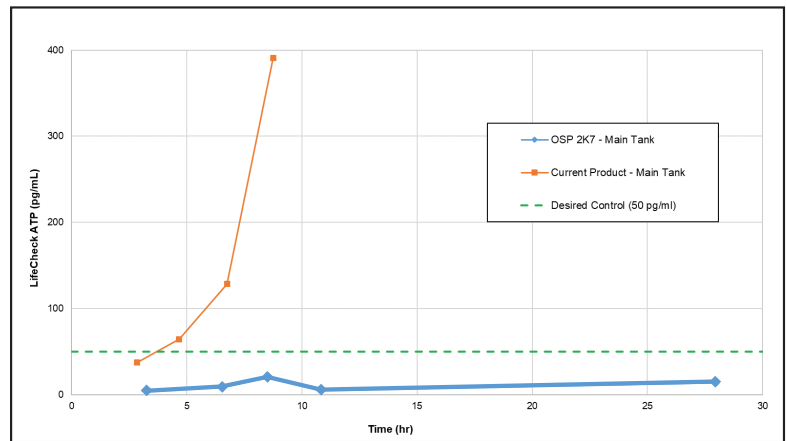


Fig. 1— LifeCheck ATP Test Kit results from main tanks.

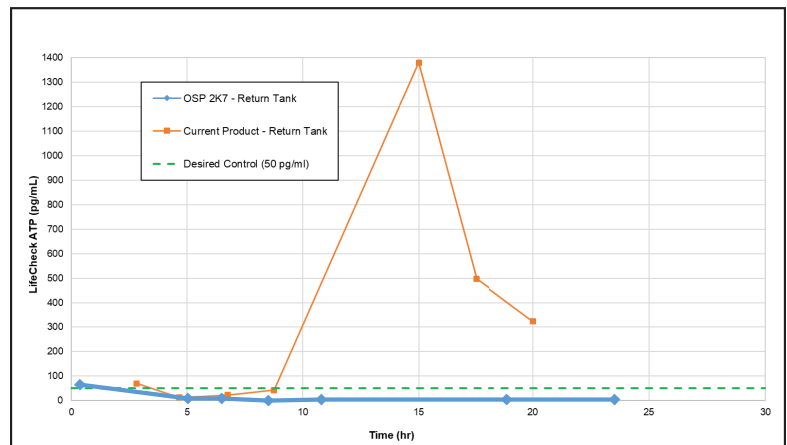


Fig. 2— LifeCheck ATP Test Kit results from return tanks.

REFERENCES

¹ Edillon, L., McLeod, R., Henderson, M.A., McVicar, W., Eyre, K., Pelletier, R., Yao, S., and Yan, J. 2015. Application of a Biocide Water Treatment Program to Prevent Coiled Tubing Corrosion: A Case Study. Paper SPE 173675 presented at the SPE/ICoTA Coiled Tubing and Well Intervention Conference & Exhibition held in The Woodlands, Texas, USA, 24-25 March.