

MC C-6955 Controls Oxygen Corrosion in Water Disposal System Repairs and System Down Time Eliminated

BACKGROUND

This SWDS was treated previously by another chemical company for over a year. Extensive corrosion in the SWDS was ongoing during that period. The treatments applied used a conventional inhibitor program. These treatments were not effective and the failures continued. It was apparent that the conventional program was not preventing the corrosion.

ISSUES

A Salt Water Disposal System's (SWDS) surface pipes and/or header required repair or patching every twelve days. Replacement was also required frequently, sometimes as often as once per month. This damage was caused by severe corrosion.

ANALYSIS

The SWDS injects 4500 bbls of 130,000 mg/l chloride water per day. The brine contains 25 mg/l H₂S and 0.5-1.0 mg/l O₂. The injection temperature is 180 °F. Oxygen scavengers could not be used because of the high amount of dissolved solids. A corrosion coupon was placed into the SWDS pump header to determine the corrosion rate. The corrosion coupon indicated a corrosion rate of 186 MPY (mils per year).

RESOLUTION

The Multi-Chem team reviewed the SWDS to recommend a treatment program to prevent the oxygen corrosion. MC C-6955, a corrosion inhibitor designed to control corrosion in systems containing oxygen, was selected to control the production challenges in the SWDS. MC C-6955 was started at a rate of 60 ppm (based on water injection) injected continuously into the heater treater water dump line. A second coupon was placed in the disposal header to monitor the performance of MC C-6955 and to prove that it was effective at controlling the corrosion challenges.

DELIVERED VALUE

Since introducing MC C-6955 into the SWDS, the system has been LEAK FREE (40 days at time of writing). Analysis of the corrosion coupon revealed a corrosion rate of 3.0 MPY, a significant reduction over the prior program. The MC C-6955 has been so successful that remediation by welders and roustabouts has been eliminated. Operating costs have been reduced and there has been no system down time of the producing wells due to the SWDS being shut in for repairs.

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Global Technology Center

World Houston International Business Center
15865 International Plaza Drive, Suite 200
Houston, Texas 77032 USA

(800) 805 9178
(325) 223 6200
(325) 942 7500 FAX

www.multichem.com