

## MC P-3650 Removes Wax in Subsea Pipelines

### 30% Pipeline Volume Removed Economically

#### BACKGROUND

The GOM producer is trying to recover from Hurricanes Katrina, Gustav and Ike. These storms have thrown their pipelines all over the seabed. They are starting with what they find to get production back online. Some of these lines were total production and will now become high pressure gas in which case the lines need to be very clean to prevent gas system plugging. Other lines just have too much wax for the amount of production expected and need to have some of the solids removed to reduce back pressure and reduction of production.

#### ISSUES

A producer in the GOM asked MC to clean out a 4" pipeline running between platforms. The line had been used for total production and is slated to be used for high pressure gas. This line needs to be very clean to prevent wax from sloughing off the pipe and plugging the gas system. The line is over 5700' long of which some 2500' has some unknown amount of wax and the remainder is brand new pipe.

#### ANALYSIS

Lab work was performed in Multi-Chem's R&D and showed that the P 3650 along with P 3040 would work to remove the wax. A ratio of 2 parts wax and 1 part solvent P 3650 showed the wax became a somewhat pumpable fluid. This provided the bottom limit.

#### Assumptions:

Multi-Chem assumed that the original line 5750', 4" OD line held 3433 gallons when clean. The 2500' new line held 1492 gallons. For an

ID = 3.826, 2550' line +10% =2800', with 0.56" wax would equal 836.1 gallons of wax. The effective ID of 2.71, with the line ½ filled with paraffin would require ~ 19,410 gallons of P3650. Wax dispersant MC P-3040 @ 5.5% would help increase effectiveness of the cleanout and hold the wax in solution.

#### RESOLUTION

A seawater flush was conducted to determine actual volumes. 71 gallons of Methanol (SS5189) was pumped after the seawater flush to act as a spacer between seawater and solvent and also help condition wax in the line.

#1 pill followed after methanol, allowing a >4 hour soak, followed by another 71 gallons of methanol, seawater displacement, and methanol, carefully monitoring the pipeline returns.

Pill #2, followed by a >4 hour soak, followed by another 71 gallons of methanol, seawater displacement, and methanol, carefully monitoring the pipeline returns.

Pill #3, same as #2

Multi-Chem monitored the pipeline pressures and flow rate several times per pill and flush along with samples every 3 minutes or so.

#### DELIVERED VALUE

Results show that the the line was filled with 30% wax by volume. The majority of the wax was removed by the 1st pill, with the line being 96% clean after the flush. A camera was run down the line after the 3rd pill and showed the line clean with no wax or oil.


This operator was very happy and wants a repeat on 4 more lines.

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