



PARALAX® treatment in Gulf of Mexico, November 2012

PARALAX® treatment performed to clear a 28 mile subsea pipeline, 8" diameter, in the Gulf of Mexico. The pipeline runs from the production platform and ties into a 12" pipeline that is shared with other operators upstream.

Wax in this pipeline had been gradually building up over a six year period with very aggressive Wax build up over the past year. Various efforts over the years had failed to prevent Wax build up.

Drag Reducer chemical had been in use for the past year, which eliminated turbulence in the pipe and reduced pumping pressure by 200psi only. Pipeline pressure cannot exceed maximum working pressure which limits flow rate as pipe ID diminishes. Due to lowering pipeline flow rate capacity a few wells had to be taken offline, to avoid spills and overflows. The pipeline had been reduced to 80 Barrels of Oil per Hour (BOPH) from buildup of Wax.

The Challenge

The client was using a wax inhibitor and drag reducer, but these products were not having any effect on the wax disposition. PARALAX® was challenged to stop the pipeline flow loss, remove the wax buildup.

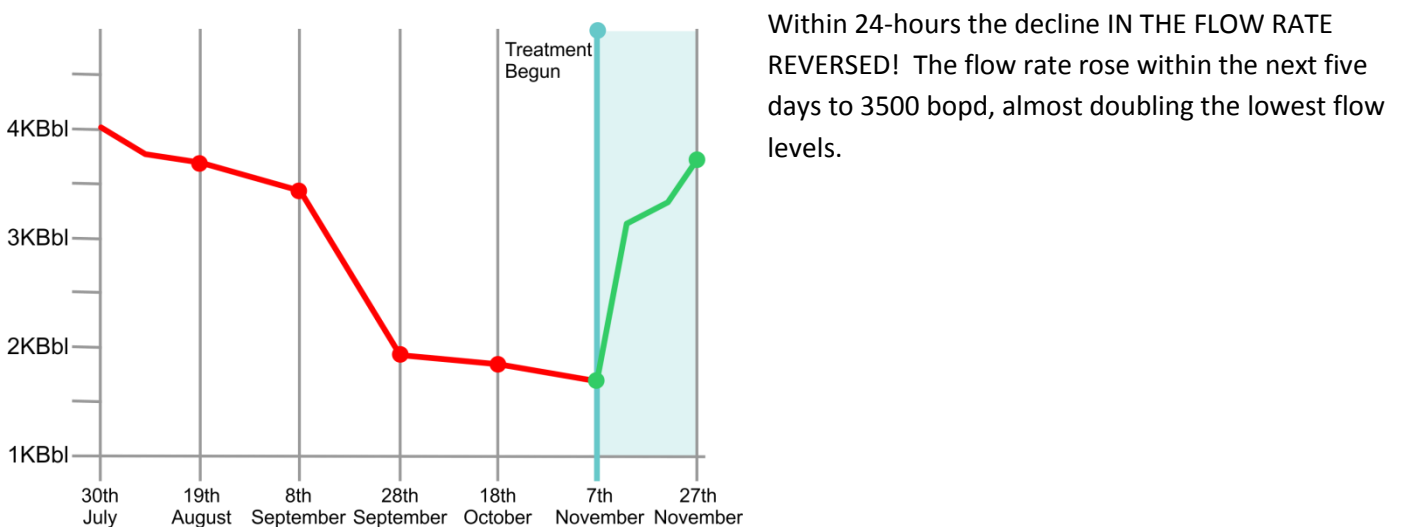
PARALAX® was injected into the pipeline directly before the pump and riser at 200 ppm. Flow rates were closely monitored with daily telemetry reports issued.

The Process

The project began on November 3, 2012. However, the drag reducer was still in use while PARALAX® was being injected.

For seven days the injection rate of PARALAX® was increased, but the decline still continued. On day seven PARALAX® requested that the drag reducer be discontinued.

The client engineers stood ready to turn the drag reducer back on if the flow rate dropped dramatically.



Within 24-hours the decline IN THE FLOW RATE REVERSED! The flow rate rose within the next five days to 3500 bopd, almost doubling the lowest flow levels.

Figure 1



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Two weeks continuous injection of PARALAX®

PARALAX® concentration injected at pump suction is 200ppm. Drag Reducer was still in use. After 7 days of pumping we advised to the operator to discontinue using Drag Reducer during PARALAX® treatment. For this particular application Drag Reducer defeats TURBULENCE – PARALAX® needs turbulent condition to aggressively attack wax. Below is the flow rate graph in Barrels of Oil Per Hour (BOPH) during PARALAX® job.

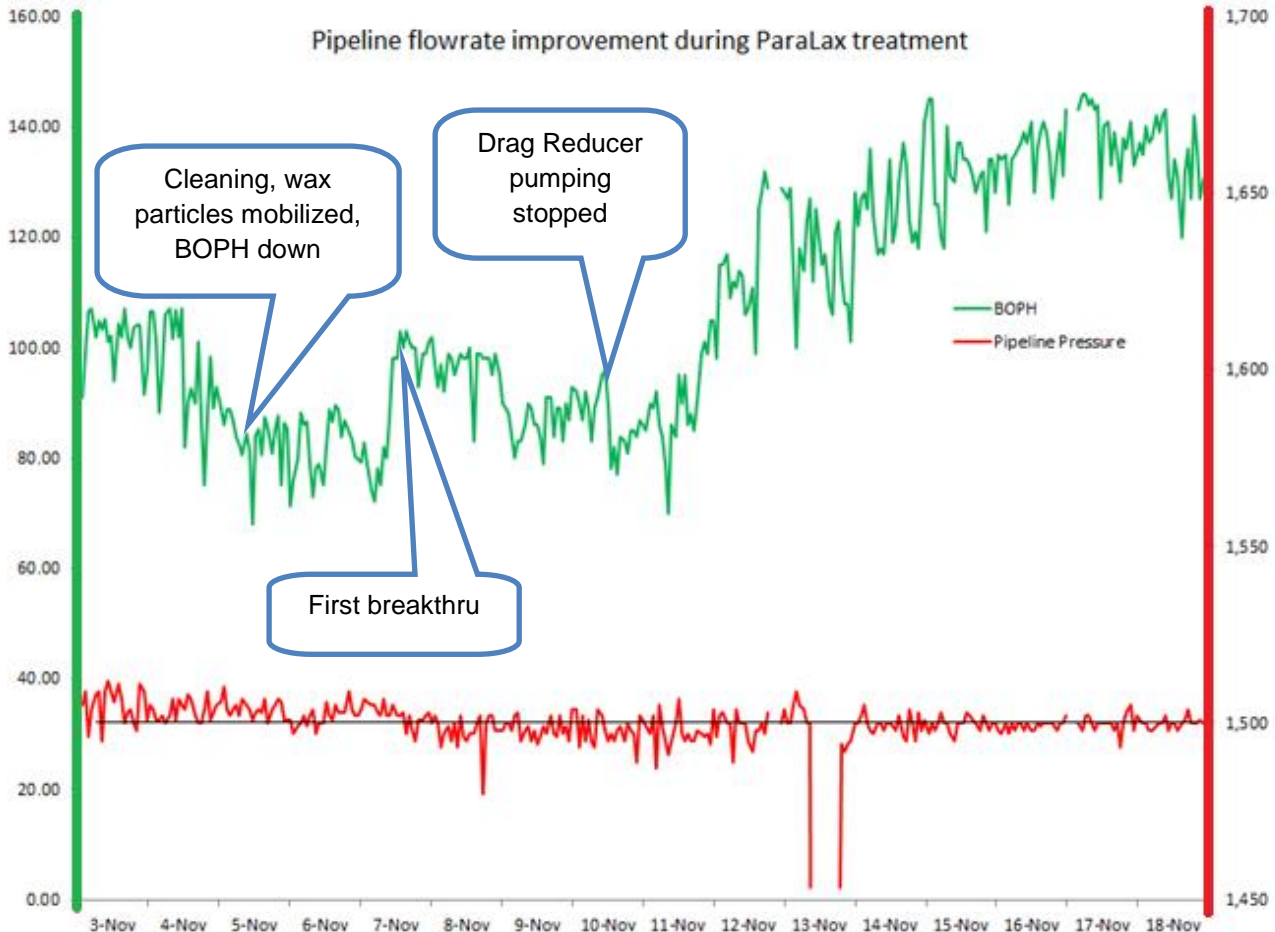


Figure 2. PARALAX® treatment process

- Pipeline flow rate started declining due to wax particles mobilizing and partially plugging the pipe
- At first breakthrough 25boph was gained immediately, but further response was still unsatisfactory
- On November 10th it was decided to turn off the Drag Reducer to have more turbulence for PARALAX® to work better. Immediately lost 20boph due to higher turbulence and friction pressure. But the flow rate started showing signs of improvement.
- We then continued on with a 200 ppm



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A month without PARALAX® injection

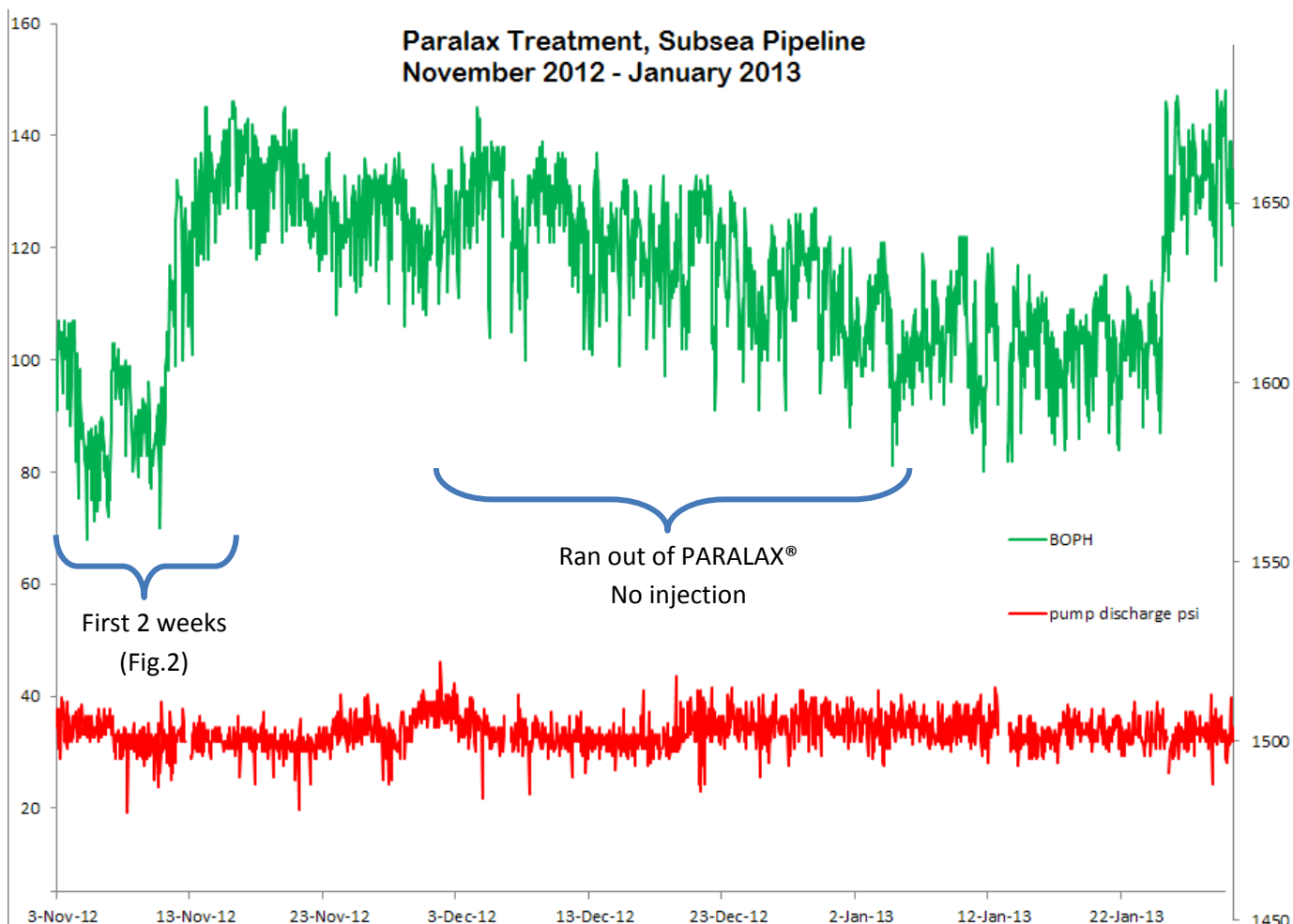


Figure 3.

On January 18th PARALAX® treatment started again. As you can see from the graph the BOPH went back to the 140 range. After that we decided to increase to 500 ppm then gradually the pipeline leveled out at 180 BOPH.

Conclusion:

PARALAX® increased the flow rate by over 2400 barrels per day. It worked where other solutions failed and added over \$200,000 a day in production cash flow. PARALAX® is the best solution for wax free production.

Platform Engineers Comments:

"To be completely honest I was the worst skeptic until we started seeing results. I have no problem admitting when I am wrong. I feel that we are down to the hard more resilient paraffin. It appears that since we have increased the rate our BPH has decreased pointing towards us freeing up more solids and wax and having to pump it up the 2850' uphill climb without even considering all of the hills and valleys creating low spots for accumulation to form.

When you take into consideration that this pipeline has not been pigged in 7 years, you have to ask yourself how long will it take to free it up considering the longer displacement time of the line, increasing the 40° oil residence time.

PARALAX® was a miracle chemical for us, and we all said there was no way possible it would work. But we were all very pleased to be proven wrong."