

FATHOM XT black oil foamer reduced subsea flowline slugging

A customer in the Gulf of Mexico had production via subsea tieback from several wells in a field located in 4,000 ft (1219 m) of water. The production frequently experienced slugging (unstable flow), which exhibited effects topside. Periodic slugging (up to 2,200 psig) would lead to tripping the entire subsea field, causing field shut in. The slugging was worsened by subsea corrosion inhibitor application, which is required to maintain subsea pipeline integrity.

The customer requested a solution to this challenge to which Baker Hughes, a GE company (BHGE) recommended the application of **FATHOM™ XT SUBSEA226 foamer technology** for a field trial.

The trial was carried out in two phases: First, steps were taken to mitigate flow assurance risks to the umbilical while a short-term field trial was performed as a proof of concept that the chemical would perform. Next, an extended trial was carried out with the FATHOM XT black oil foamer (BOF) with a secondary corrosion inhibitor application. The main purposes of the extended trial were to optimize the injection rate, determine financial viability

of the application, and ensure that multiple corrosion inhibitor rates would not negatively affect BOF performance.

At the conclusion of the trial, a direct correlation with receiving FATHOM XT SUBSEA226 returns at the topsides and a reduction in topsides slugging was observed. No issues with carryover or fluid separation were noted.

Based on the data collected, the application of FATHOM XT black oil foamer greatly reduced the frequency and intensity of topsides slugging, allowing continuous production while simultaneously providing a continuous application of corrosion inhibitor without the added risk of slugging-induced deferment. This represented a value savings of \$7.9 million USD for the customer. In addition, it was discovered that the amount of slugging was proportionate to the amount of FATHOM XT BOF injected.

The key to the success was not only ensuring that the product worked properly, but that the value of the application outweighed that cost. By looking at historical data and estimating the amount of deferred production being caused by slugging, BHGE could accurately assign a value to the application to prove its viability.

Challenges

- Slugging of up to 2,200 psig was tripping the entire subsea field

Results

- Reduced flowline slugging
- Mitigated risk associated with platform shut-ins due to slugging
- Reduced deferment during well testing
- Reduced deferment during subsea start-up
- Delivered \$7.9 million USD in value to the customer based on historical deferred production from shut-ins, well test, and system start-ups

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