Case study: East Asia

Chemical Services prevented costly system shut-ins

An oil and gas producer in East Asia needed to successfully start up and reach first production in a remote deepwater FPSO installation. Knowing Baker Hughes had vast expertise and supply chain planning capabilities, the producer employed Baker Hughes during the front end engineering design (FEED) stage.

Through early engagement, Baker Hughes was able to perform a complete crude oil characterization analysis as well as qualify fit-for-purpose chemical products.

The offshore field was located in 4,200 ft water depth with 39°F (4°C) seabed temperature. It produced 120 to 150,000 bbls/day oil, and had a water injection capacity of 200,000 bbls/day. Production conditions led to flow assurance concerns, particularly related to the crude oil pour point 70 to 73°F (21 to 23°C) and the potential for gas hydrate plugs. Corrosion control and scale deposit mitigation were also key customer concerns.

After discussions with the customer and a thorough system evaluation, it was clear that capillary injection of pour point depressant (PPD), hydrate inhibitor, scale inhibitor, and corrosion inhibitor was required for 12 dry tree unit (DTU) wells. In addition, four subsea wells required umbilical injection of PPD, hydrate inhibitor, and scale inhibitor. Baker Hughes built upon its robust supply chain to provide all the chemical service needs for the field. Commissioning engineers were provided to handle all production chemical issues during start up and into production phases. They were also able to assist the FPSO operators with laboratory setup, operator training, oil-in-water analyzer calibration, and crude survey sampling and testing.

The customer was pleased with the commitment shown by Baker Hughes to meeting their critical needs. No flow assurance issues occurred during start up, and trouble-free performance has been maintained well into production phases. If a single well had been plugged, the resulting lost/deferred production could have cost the customer approximately $500,000 USD per day. Baker Hughes minimized this risk through complete service solutions backed by extensive deepwater service expertise.

Building on the mutually beneficial efforts, the customer continued to rely on Baker Hughes to provide solutions to new challenges as production operations expanded.

Challenges

- FPSO deepwater startup and production
- Critical flow assurance concerns
- 4,200 ft water depth: FPSO with subsea and DTU wells

Results

- Avoided flow assurance issues during production startup and beyond
- Prevented potential production upsets that could have cost $500,000 USD per-day, per-well
- Reduced customer risk with deepwater expertise and global supply chain capabilities

FPSO deepwater production information	
Water depth	4,200 ft (1280 m)
Oil production	120,000 to 150,000 BOPD
Water injection capacity	200,000 BWPD
Well type	Subsea and DTU
Seabed temperature	39°F (4°C)
Crude oil pour point	70 to 73°F (21 to 23°C)

FPSO vessel.

Baker Hughes™