

Well Testing Case History

Offshore Oil and Water Storage Capacity

Challenge

In the deepwater market of the Gulf of Mexico, CETCO Energy Services' client drilled a dual zoned oil well and contacted CETCO to make all of the necessary arrangements for the well test dual zone completion operation. The well test objectives were to safely test completion integrity while acquiring reservoir properties with a lower zone target rate of 2,000 bbl/d total fluid and an upper zone target rate of 4,000 bbl/d total fluid. After an initial client meeting and site survey, the greatest challenge on the semi-submersible moored drilling facility was storage capacity due to limited deck capacity and deck area combined with logistical challenges.

CETCO Solution

A cost-effective three-phase separation process was identified. After separating and measuring well effluent, gas phase hydrocarbons would be burned, liquid hydrocarbons would be transferred to six 500 bbl tanks on a supply vessel, and water would be discharged overboard.

CETCO's Water Treatment Division filtered all recovered water to a 10.2 PPM IR (max. 29 PPM IR GOM requirement). CETCO's Well Testing Division then transferred oil overboard to six 500 bbl tanks on a work boat. A hose reel and cradle were positioned on the drilling rig to transfer fluid overboard to the workboat. The overboard transfer hose was equipped with a Coast Guard Approved Safety Breakaway Coupling to limit fluid discharge in the event of a boat drive-off. A flare scrubber was installed between the flare boom and the separator to reduce the risk of carryover to flare. The entire package was designed in accordance with API 14C.

Outcome

Both CETCO's Well Testing and Water Treatment Division's combined services provided a cost-effective solution, which met client test objectives and superseded government requirements.

The recovered fluid totals were as follows:

Lower Zone

0.335 MMscf of gas
388.9 bbl of oil
621.7 bbl of water

Upper Zone

0.909 MMscf of gas
1,163.2 bbl of oil
846.7 bbl of water

Well Test Fluid Totals

Total gas: 1.244 MMscf
Total oil: 1,552.1 bbl
Total water: 1,468.4 bbl