CETCO
ENERGY SERVICES

Well Testing Case History

Fluid Handling Compliance and Innovation

Challenge

On a deepwater drillship in the Gulf of Mexico, CETCO was contacted to provide reverse-out package of high volumes of methanol, oil, and gas. On other locations, client previously utilized open top tanks and locally vented gas buster for this application which did not comply with drilling contractor's standards, API RP 14C, or API RP 500. CETCO was asked to design a system that could accommodate a 7,200 bbl/day max liquid rate, a 6,000 MMscfd max gas rate, fluid holding capacity of ~600 bbl, and a MAWP (max allowable working pressure) of 15,000 psi on all components upstream of choke while complying with location and regulatory standards.

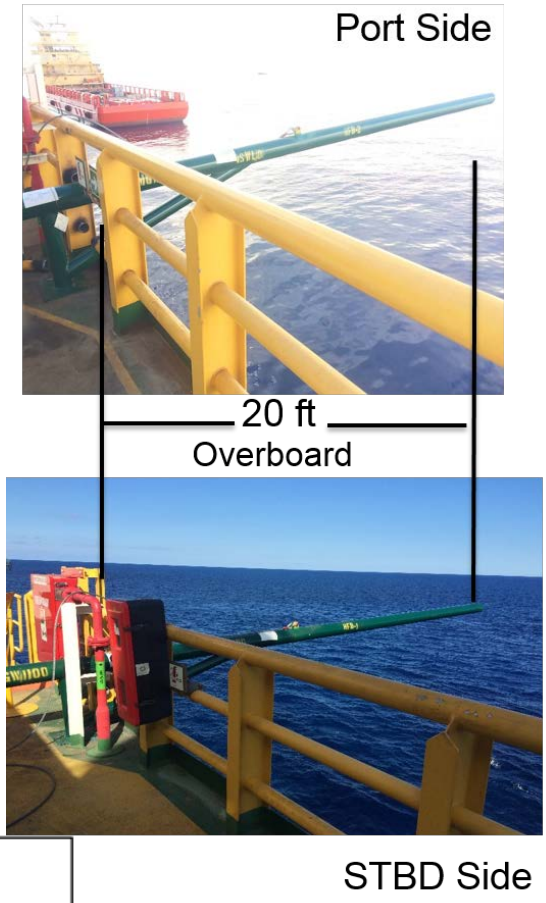
CETCO Solution

After review of drilling contractor's standards and scope of work, it was determined remote venting and reclassification of the rig was required for this operation. CETCO assembled a document to include P&IDs, safe chart, MTRs, dispersion study, and general arrangement for submission to regulator groups and approving parties. With all parties approval, the drill ship's well test area was utilized to house the reverse out package which included (3) 300 bbl vertical 400 series tanks and (2) custom cold vent booms. Due to deck capacity, spreader beams were utilized under 300 bbl vertical tanks to disperse the load.

CETCO reverse out package was designed to handle maximum amount of fluid in a minimum foot print. Choke manifold was utilized as 15,000 psi pressure control and isolation device between tanks and rig tie point. The (3) 300 bbl vertical 400 series tanks offered a total fluid holding capacity of 900 bbls. 25' spreader beams increased foot print of the tanks to decrease the deck loading. All fluid returns were batch treated with biocide to decrease likelihood of H2S generation. Gas was cold vented remotely either through port or starboard vent booms via gas diverting manifold.

Vent booms were designed at 20' length from edge of rig to tip incompliance with gas dispersion study and API RP 500. Fluid transfer was efficiently managed with the 100 series 3" Diaphragm pump skid. Closed system filling operation was utilized when transferring fluid from 300 bbl vertical tanks to 25 bbl MPTs returning atmosphere within 25 bbl MPTs to 300 bbl tanks. Nitrogen purge system was utilized during start up and fluid transfer to ensure inert atmosphere within tanks.

LEL concentrations were monitored throughout the operation in well test area and along the edge of the rig. All safety systems were functioned on location in compliance with API RP 14C. CETCO reverse out package was operated by two specialist per 12 hour shift throughout operation.



Outcome

CETCO superseded client expectations with increase fluid holding volume, rate capacity, and documentation to support the package design. Client was able to sweep the wells free of hydrocarbons before pulling tubing. This eliminated previous HSE concerns and non-productive time. Regulatory groups and approving parties accepted submissions without resubmission or modifications. CETCO's innovative equipment design and expertly trained personnel were attributed to success of the operation.

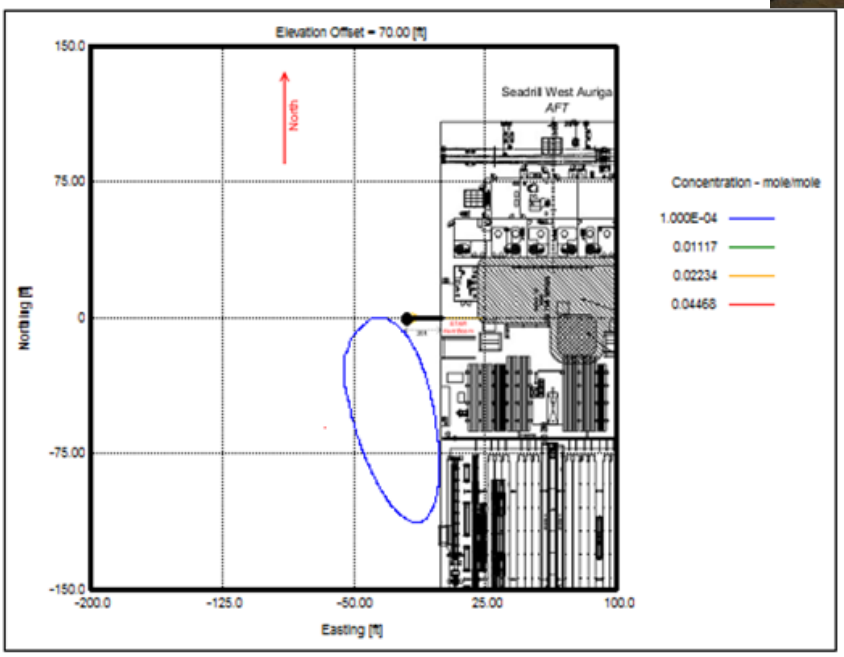


Figure 14 – Gas concentrations for Vent Case 4 – wind -15 deg from North Elevation @ 70 ft