

Subsea Tieback Completion Flowback:

1600bbls treated with innovative Kleen Flux technology, no consumables



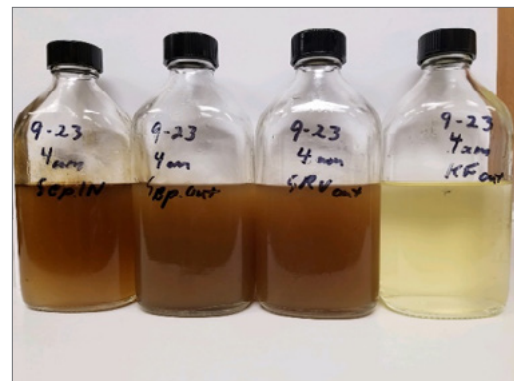
BACKGROUND

One challenge operators face on subsea tieback wells is during completion flowback. The existing production facility might not allow the tieback company to send the completion flowback fluid to the platform treatment system. In this case, the tieback company has to capture the fluid for shipment and disposal onshore, transfer the fluid to a boat and bring fluid to shore for disposal, or hire a third-party filtration company. Historically, filtration companies would use consumable media like Granular Activated Carbon (GAC) to treat the completion fluid. Unfortunately, consumable media usually cannot treat all the completion fluid and some of the completion fluid would still have to be shipped to shore for disposal.

SOLUTION

Baleen Process Solutions' KLEEN FLUX™ non-consumable treatment option can tie into the platform system similar to historical GAC treatment packages are. The KLEEN FLUX™ package has the robustness to treat most—if not all—flowback fluids. The KLEEN FLUX™ treatment system allows operators to:

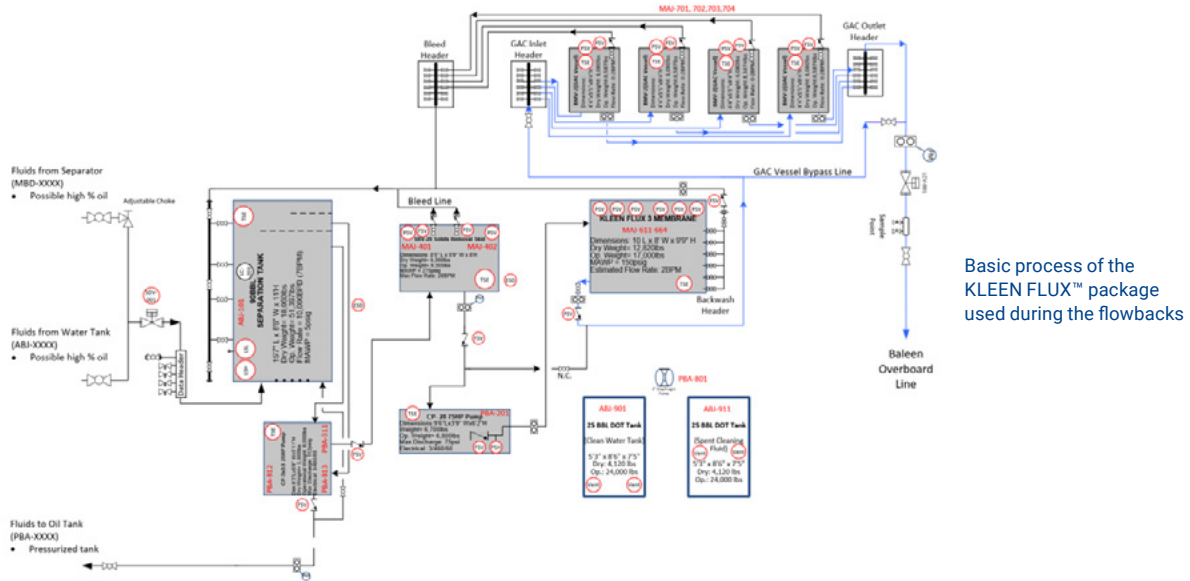
- to: Meet NPDES discharge requirements
 - Significantly reduce consumable media and media disposal charges
 - Decrease the safety hazards of lifting GAC vessels in/out during flowbacks
 - Treat 100% of flowback fluid
 - Perform Incident Free Operations (IFO)
 - Eliminate the use of a third-party vessel for fluid capture



Inlet: Avg 1,650ppm | Outlet: Avg 3ppm

SOLUTION

Baleen Process Solutions worked closely with platform personnel to interface the KLEEN FLUX™ package with existing platform systems as well as with third-party vendor equipment also assisting with the flowbacks. The workhorse of the treatment package is the KLEEN FLUX™ membrane skid; this regeneratable composite membrane technology can break hard-to-treat emulsions and works in high oil/grease concentration fluids. The KLEEN FLUX™ membrane treats the fluids to NPDES overboard requirements. For this application, Baleen Process Solutions incorporated four small GAC media vessels. The GAC vessels were not expected to be used but were incorporated as another layer of treatment, if required. A bypass line around the GAC vessels was incorporated in the design. Baleen Process Solutions technical personnel completed all necessary documentation (PFD, PIDs, SAFE Chart, SAFD - all reviewed by a professional engineer) to submit to BSEE for MOC.



RESULTS

The Baleen Process Solutions KLEEN FLUX™ package functioned as described:

- Treated fluid met NPDES discharge permit requirements and was discharged overboard
- Reduced consumables by 99%, no GAC was consumed, no GAC disposal charges
- Reduced lifts by 95%
- Treated all fluid from flowback - 1,600+ bbls; no barrels of flowback fluid were shipped to shore for disposal
- Provided IFO
- Required no third-party vessel
- Incoming fluid averaged an oil/grease concentration of 1,650ppm. The discharge fluid average oil/grease concentration, post-treatment, was reduced to 3ppm with no sheen.

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