

Integrated Approach Reduces Environmental Impact from Well Testing Activities and Sets Benchmark, New Zealand

Fit-for-basin well testing decreases total gas and condensate volumes flared and ensures no overboarding of treated fluid

A collaborative and integrated method using a comprehensive fluid treatment facility, horizontal pumping system, and high-pressure separator enabled an operator to reduce the environmental impact of well testing activities offshore New Zealand while achieving well test objectives.

Reducing environmental impact

An operator of a field offshore New Zealand wanted to reduce the environmental impact from typical well testing activities, such as flaring and overboarding of treated fluid. Given the New Zealand government's high environmental standards for oil and gas activities, deploying an impact-reducing well test package was imperative, not only to abide by regulation but also to set the benchmark for more ecologically sound well test packages moving forward. The operator was also conducting various well intervention activities throughout the campaign and needed a flexible package that would enable achieving objectives at each phase of the project.

Designing and executing an integrated approach

Schlumberger collaborated with the operator to design and execute an integrated, multisegment package tailored to meet the operator's objectives.

A 2,160-psi high-pressure separator was used to overcome the backpressure from the production pipeline and enable well testing operations with the flexibility to meter and selectively choose which phases (water, condensate, or gas) would be reinjected into the production pipeline based on the project phase. The high-pressure separator was paired with a standard separator to mitigate carryover from severe slugging.

To ensure no burning of condensate or overboarding of treated fluid, contaminated condensate would first be treated at the surface and then reinjected back into the production pipeline. It was critical that the condensate be acid free when reinjected back into the production pipeline, as traces of acid could have negative effects on the metallurgy of both the production pipeline and downstream facility. To neutralize any acid recovered at surface, a complex fluid treatment facility was designed comprising two surge tanks, three gauge tanks, and five 125-barrel ISO tanks. The facility enabled the recovery of both contaminated condensate and bulk acid from the separators and provided the ability to accurately apply a neutralizing agent prior to reinjection. This treatment facility design minimized acid contamination risk and allowed fluid to be transferred within the operator's environmental objectives.



Facility to treat contaminated condensate at the surface before reinjecting back into the production pipeline, offshore New Zealand.

Once the large quantities of condensate were treated for acid, a 50-stage centrifugal REDA HPS* horizontal multistage surface pumping system was deployed to provide a low-risk method to overcome production pipeline backpressure while allowing the treated condensate to be reinjected back into the production pipeline instead of flaring it off.

Setting the benchmark

The well test package was delivered on schedule and provided a fit-for-basin solution for this dynamic operation. It offered the flexibility to meter, separate, and flow back individual phases into the production pipeline as well as make changes based on the varied well responses from each intervention activity. The package minimized the environmental impact from all well testing operations as no flaring of condensate occurred and gas flaring was greatly reduced—enabling the operator to generate revenue from these products. Through collaboration across planning, design, execution, and close out, the operation has set the benchmark for ecologically sound well test packages in New Zealand.