

Expro Excellence

Creating confidence in the geology and injection storage simulation modelling allowing the Northern Lights Carbon Capture project to go ahead

Well Testing/DST/Subsea/Fluids



Customer challenge

- The Norwegian government signed the Paris agreement in 2015
- The first full-scale Carbon Capture Storage demonstration project in Norway to support the overall EU-umbrella goal of carbon emission neutrality was successfully realised in the Northern Lights Project in 2020
- The government initiative was sponsored via GassNova, with the newly-formed Northern Lights consortium, comprised of Equinor, Shell and Total as partners
- The initial challenge facing the consortium was the uncertainty in their geological and injection/storage simulation models; preventing them from drafting a viable development plan for submission to authorities for the first Norwegian Carbon Capture licence: EL001
- The consortium was required to regularly update parliament, government agents, directorates and the project sponsor: GassNova during the planning phases
- Environmental Preservation Organisations were given oversight once the project entered critical drilling and testing operational phases - with reporting intervals shifting to a daily basis; increasing the focus required by the team to perform under considerable scrutiny
- Expro was chosen as the trusted service provider for the Well Test, Fluids, Subsea and Drill Stem Testing (DST)/Tubing Conveyed Perforating (TCP) operations – owing to their long-standing track record and collaboration with consortium members on the NCS and internationally, with over 47 years' experience

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- Expro designed a combined DST and electric submersible pump (ESP) tool string, with flexibility to allow for mid-project changes to address the evolving design criteria
- The Provision of Expro's ExACT tool was critical to enabling use of the third party ESP pump selected for the project; being the only

combined tester and multi circulation valve in the industry controlled by absolute pressure

- Expro Fluids' leading accredited onshore oil-in-water measurement capability was applied in calibrating offshore instruments, to ensure critical "no oil to sea" criteria for the project was achieved
- Heavy well test equipment required modification to fit the limited space available on the rig; and planning schedules and specialist crews required agility to adapt to dynamic operations
- The complexity of the DST string and interface with multiple third party providers increased planning, logistics and equipment handling challenges. These were seamlessly managed by Expro as a fully integrated team across all provided services: DST/TCP, Subsea, Well Test and Fluids, to deliver impeccable planning and operational performance
- The window for start date of Expro's installation was a shifting target; driven by dynamic winter conditions and the drilling & logging progress on this unprecedented well
- Drilling commenced late November 2019, and the DST operations were completed in March 2020

Value to the client

- All data gathering objectives for the well were met. The client received the dynamic DST data, (near wellbore formation and fluid identification, quantification of gas-in-water solution, information on heterogeneities confirming reservoir connectivity, flowing/injectivity data) required to enable creation of geological and injection/storage simulation modelling for subsequent future operations
- The integrated Expro Testing Operation on well 31/5-7 Eos was the first carbon capture well in Norway, under the Northern lights project
- Following this successful operation, Equinor was able to formulate, confirm and submit their development plans to the government authorities: on-schedule for further parliamentary review of their Northern Light Phase 1 progress plan for commercialisation of carbon capture as a new business

Insightful



Environment



Contact

For further project information, click [here](#)