

Updates on Northern-Lights monitoring project and R&T efforts input to the program

Anne-Kari Furre and Roya Dehghan-Niri
Equinor R&T, Trondheim, Norway

Abstract

Carbon Capture and Storage (CCS) is regarded as an important instrument to mitigate climate change. Norway is presently in the process of developing a full-scale CCS project (named Longship), comprising all three parts of the CCS value chain; capturing CO₂ from industrial sources, transporting it using ships and pipelines, and storing the CO₂ in a deep saline aquifer offshore the Norwegian west coast. Equinor has together with partners Shell and Total applied for permission to operate the transport and storage part of this full-scale project, referred to as the Northern Lights project. We will here present the development of the Longship project, including storage characterization and plans for monitoring.

The Northern Lights monitoring plan consists of in-well, remote geophysical and environmental monitoring, and is split in a pre-planned and a triggered component. The primary monitoring consists of continuous pressure and temperature monitoring in the injection well, a series of repeated 3D seismic surveys, and passive seismic monitoring of background seismicity in the area. If non-conformance with initial prediction is observed, additional monitoring might be triggered, depending on the non-conform observations. We show how predictions of plume extent has guided the active seismic program, and how the existing passive seismic monitoring network (onshore and offshore nodes) could be enhanced to improve passive detection at the injection site.

In R&T, we have investigated list of technologies to optimize our CCS monitoring solutions and to ensure safe and continuous CO₂ storage.