Solution Mining Research Institute Spring 2019 Technical Conference

New Orleans, Louisiana, USA 8-9 APRIL 2019

PROJECT ISLANDMAGEE ENERGY THE NATURAL GAS STORAGE FACILITY IN NORTHERN IRELAND

Evan Passaris[1] and John Wood[2]

[1] Atkins Limited, UK

[2] InfraStrata plc, UK

Abstract

Islandmagee Energy Limited is developing an underground gas storage facility in a rock salt formation underneath Larne Lough at Islandmagee in County Antrim, Northern Ireland. The planned Islandmagee facility will consist of seven underground salt caverns, which will be constructed in two consecutive project phases: 'Phase I' includes the construction and commissioning of two caverns while the remaining five caverns will be developed in the subsequent 'Phase II'. All seven cavern wells will be drilled from a single surface location at the north-eastern shoreline of Larne Lough. It is the only gas storage project being developed on the Island of Ireland and will be situated adjacent to the 135 km (84 mi) Scotland Northern Ireland (gas) Pipeline and the Moyle 500 MW electricity inter-connector.

When complete, the Islandmagee facility will store 450 Mcm (1,590 Mccf) of gas, sufficient to satisfy peak demand for electricity in Ireland for around 14 days. The Island of Ireland relies upon gas for some 60% of its power generation without any gas storage facilities. The facility is expected to provide over 25% of the UK's natural gas storage capacity (based on 2018 data) and will support the growing demand for gas-fired power development and renewable energy generation throughout the UK and the Irish Republic. The Islandmagee facility is unique in being the only gas storage project in North West Europe to be awarded 'Project of Common Interest' (PCI) status by the European Union (EU), confirming its strategic importance to the entire continent.

This paper outlines the progress achieved so far in connection with the investigations concerning the development of the seven gas storage caverns that will be constructed in the Permian salt structure in the Larne Lough area at a depth of approximately 1,350 m (4,430 ft) below sea level.

Work for the Islandmagee Energy commenced in 2007 with the acquisition of 3D seismic data to image the Permian salt. During 2012, planning permission was granted for the project and a gas storage license was issued by the Utility Regulator. In 2015, the IM-1 exploratory well was drilled to core the salt and confirm the technical feasibility of the planned underground gas storage facility. The Front End Engineering and Design (FEED) element of the project that followed, was completed in November 2018 and the FEED report was submitted to the EU in December 2018.

The FEED project phase established the next engineering level before completing the detailed design and eventually the construction execution. A primary objective of the FEED study was to reduce project uncertainties related to project economics and potential geological and technical challenges.

The commercial rationale for InfraStrata's gas storage facility has strengthened since the announcement, in June 2017, of the permanent closure of the UK's largest gas storage plant, the Rough facility off the coast of Yorkshire, which has left the UK without 70% of its former storage capacity.

Key words: Cavern Design, Caverns for Gas Storage, Geology, Northern Ireland