CNR International

DECOMMISSIONING OVERVIEW: NINIAN SOUTHERN PLATFORM

The Ninian Southern Platform (NSP) is located in the UK sector of the North Sea, 120 km east of the Shetland Islands and 457 km north-north-east of Aberdeen, in UKCS Block 3/8a, 25 km from the UK/Norwegian median line, as shown below in Figure 1.

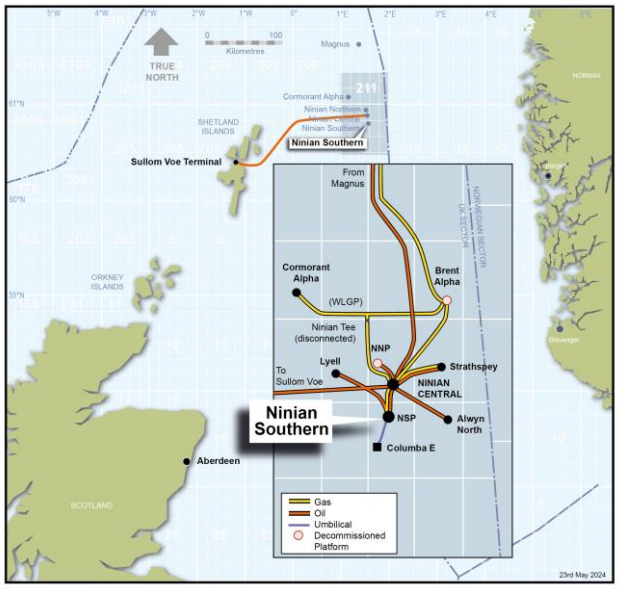

Figure 1: Ninian Southern Platform – Location

The platform (see Figure 2) was installed in June 1977 as part of the Ninian field development comprising the Ninian Central Platform (NCP), tied back facilities, and the now-decommissioned Ninian Northern Platform – together known as the Ninian 'Hub'. Designed to operate as a combined drilling, production and process facility, exporting to NCP, production from NSP began in December 1978.

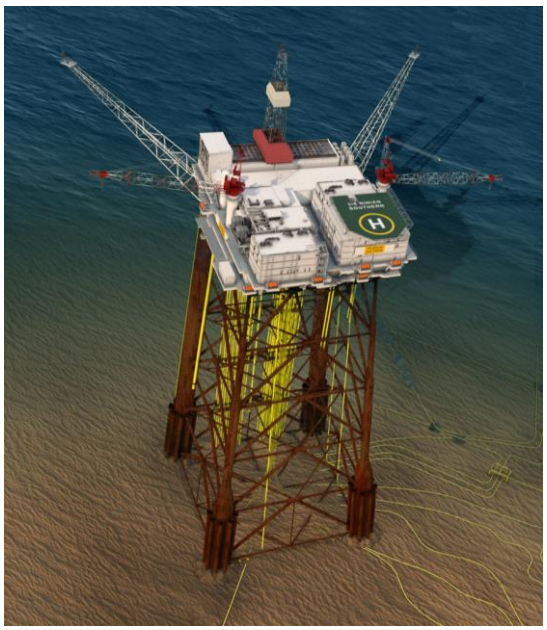

Figure 2: Ninian Southern Platform

The NSP platform topsides comprise fully integrated production, injection, drilling and accommodation facilities. Its 42 production and injection wells are linked to a process system that separates crude oil, gas and produced water. Production fluids from the Columba E Field are served by the facilities, while NSP water injection supports the Ninian Reservoir, Lyell Field and, previously, the now-mothballed system for the Strathspey fields.

The topsides are supported by a four-legged welded steel jacket, installed in position with 32 grouted piles (eight piles for each leg), which stands in a water depth of 140 metres. Diesel fuel is stored in a tank within one leg (Leg F4), while an equivalent tank in another (Leg B4) was formerly used for similar storage purposes.

Production fluids from the Lyell subsea field are routed to NSP via a 12-inch pipeline (PL2473). Cooled and metered oil is exported to NCP via a 10-inch pipeline (PL1999) and from there is sent by pipeline (PL10) to Sullom Voe Terminal in Shetland. Gas is imported as fuel from NCP via an 8" pipeline (PL72).

Today, NSP is approaching the end of its economic life, after significantly exceeding its original design life. Planning has therefore commenced for the decommissioning of the facilities in line with regulatory guidance, including the development of Decommissioning Programmes (DP) for public and statutory consultation, together with regulatory approvals. Two DPs will be developed for NSP covering Topsides and the Lower Jacket and Footings:

1) The Topsides DP will be focused largely on the structure above the water line and will include details of the following: plugging and abandonment of the platform wells, flushing and cleaning and making safe of the topsides, removal of the topsides and upper jacket and their associated risers and umbilicals.

2) The Jacket DP will describe the activities required to safely decommission the substructure supporting the topsides. Studies exploring the decommissioning options for the lower jacket and footings have recently been initiated. These will include expert assessment of the feasibility and potential safety and environmental impacts of the different decommissioning options. This will allow an authoritative comparative evaluation of alternative decommissioning end points against five key criteria to be carried out, namely: environment, safety, societal, and technical feasibility, plus cost (as a differentiator only where other criteria are equal).

A more comprehensive process of assessment is needed to ensure understanding of the particular challenges which decommissioning presents. While the starting point is full removal of the whole NSP installation including the entire substructure, under international rules (OSPAR Convention Decision 98/3), NSP is classed as a derogation candidate from the 'clear seabed' requirement because the weight of its jacket exceeds 10,000 tonnes and the date of installation precedes February 1999. This option of partial removal will therefore also be examined.

There are a number of technical and safety issues associated with complete removal of a more than 45 year old steel jacket. Significant challenges to be explored include the interrelationship between the steel jacket footings and the large drill cuttings pile underneath the platform (not shown in Figure 2). At its highest point, the cuttings pile rises some 40 metres from the seabed; to access the jacket footings this pile would need to be removed.

It should be noted that the separate DPs for the topsides and upper jacket will not prejudice options for decommissioning the substructure, including the potential for full removal of the NSP jacket footings.

Subsea infrastructure associated with NSP e.g. pipelines and manifolds including the Lyell Field will be decommissioned as part of a separate, later programme across the Ninian Hub, to be developed and submitted for regulatory approval in its own right after appropriate studies and investigations have been carried out.