

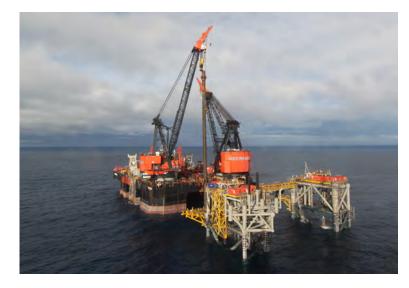
## North Rankin B Grouting the 16-sleeve-jacket for one of the world's largest topsides

The North Rankin B foundation houses one of the world's largest topsides and is immense compared to a regular jacket. It is 150m tall, has four 22m<sup>2</sup> mudmats, and stands in 125m of water. Because the grout volume was so large, FoundOcean used two of their unique Recirculating Jet Mixers (RJM) in unison to mix the material, and pump the grout down a single hose.

The seabed in Western Australia is particularly complex, with the structure requiring 16 foundation piles to secure it to the seabed. Each 182m-long pile was placed in two sections. The upper part of the hollow pile was driven as normal into the seabed. The ground below the pile was then drilled out to form a socket to enable the lower section of the pile to be inserted through the upper part.

To grout the lower part of the pile, a Stinger was inserted to the bottom of the socket where ducts in the lower section carried grout out to the rock surrounding the pile. The Stinger was raised as the column of grout filled the annuli inside and outside of the lower pile. The sleeve-to-pile connection was then grouted using standard procedures via primary and secondary grout lines. The lower end of each primary pile sleeve was equipped with a grout packer system to retain the grout in the annulus whilst it was curing.

This was FoundOcean's biggest pile grouting project by cement volume to date.

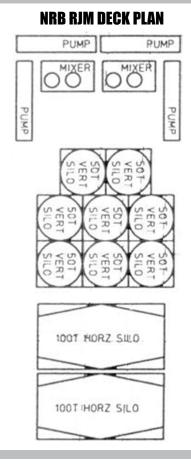




## PROJECT FACTS

Industry Region Services Project year Operator Contractor Water depth Cement type

Total cement Mixer type Grout specification Mixing rate Oil & Gas Western Australia Pile grouting 2012 Woodside Energy Heerema Marine Contractors 125 m Semen Padang ASTM type 1 AS 3972 General Purpose 4,456 tonnes Recirculating Jet Mixer 45 MPa



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