

The new BP North Sea oil rig with Vandex waterproofing for highly stressed components: **VANDEX SUPER** and **VANDEX BB 75 E** were used on external walls in the transition zone from the slab to the rising walls of the crude tanks.



The gravity base tank of the ultramodern North Sea oil rig for the Harding Field is the largest concrete structure ever built by BP. The cellular oil storage tank with its immense 120 m x 115 m x 34 m dimensions (length x width x height) forms the base of the rig. Built using a specific ratio of lightweight aggregate

concrete and prestress techniques to anticipate various loads and achieve defined floating, the huge reinforced concrete structure comprises 80 oil tanks joined in cellular fashion and holds 500,000 barrels of crude overall.

Having wall thicknesses of 400 mm, the reinforced concrete tanks feature a common slab 850 mm thick and roof slabs of 900 mm thickness. The entire reinforced concrete structure comprises 35,000 m³ of concrete, 17,000 tons of rebars and 1,000 tons of prestress cable. Built in a dry dock in Hunterston on Scotland's west coast, the gigantic structure was floated to the North Sea Harding Field and will be positioned on the seabed, 110 m deep.

VANDEX for High-Stress Zones in the reinforced Concrete

The complex building procedure including the dry dock activities through floating to location and lowering to the ocean floor exposes the structure to extreme loads.

To meet the particular loads induced during building, transporting and installation, a flexible concrete coating was prescribed as additional waterproofing for high-stress zones.

Building materials intended for the crude tanks were field-tested by the test laboratories of Taywood Engineering, London.





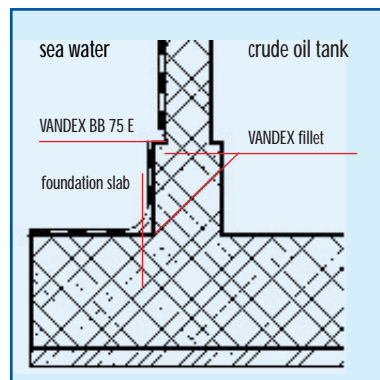
The oil rig base together with the crude oil tank weighing approximately 90,000 tonnes was towed using 4 tugs from its dry dock in Hunterston to the Harding Field in the North Sea.



New BP-Oil Rig with Vandex Waterproofing for High-Stress Zones

Vandex products also underwent rigorous testing including permeability tests on both the positive (at water pressures of 110 m) and negative sides. VANDEX BB 75 E was also subjected to crack-bridging tests at 110 m water pressure.

Taywood's engineers opted for VANDEX BB 75 E and VANDEX SUPER. VANDEX BB 75 E or VANDEX SUPER respectively were used on external walls in



the transition zone from the slab to the rising walls of the crude tanks. In areas where calculations indicated a

likelihood of cracks, Vandex coatings were also used.

Products used:

VANDEX BB 75 E area: 2100 m²

VANDEX SUPER area: 3000 m²

Owner:	Britoil Plc, Aberdeen, Scotland, U.K.
Engineers:	Taywood Engineering Ltd, London, U.K.
Contractor:	Costain-Taylor Woodrow Joint Venture, London, U.K.
Materials testing:	Taywood Engineering Ltd, London, U.K.
Vandex applicator:	PLS Construction Johnstone, Scotland, U.K.