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Artikel: Two gigantic offshore platforms (Japan)
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6. Two Gigantic Offshore Platforms (Japan)

North Rankin "A" Jacket

Owner: *Woodside Offshore Petroleum Pty., Ltd (abbr. WOP), Australia*

Designer: *Earl & Wright Consulting Engineers, USA*

Contractor: *Nippon Kokan K.K., Japan*

The North Rankin "A" Jacket was constructed at Tsu Works between April 1980 and April 1982 for use in the development of a natural gas field in the north-western part of Australia. In its construction, various new technologies were fully exploited, such as a large block construction method including panel roll-up with a floating crane (the first such process ever used in the world), dimensional control with an electronic tachymeter, loading out of a barge float type from a quay with big tidal changes, welding procedure requiring high quality (including COD test), etc.

(1) Scope of work:
Material procurement, fabrication, load out, up to and including tie-down operation.

(2) Configuration: 8 leg bargelaunch type

(3) Water depth: 124.5 m

(4) Dimensions:

Top section	38.4 x 60.4 m
Bottom section	67.4 x 82.9 m
Overall height	146.5 m

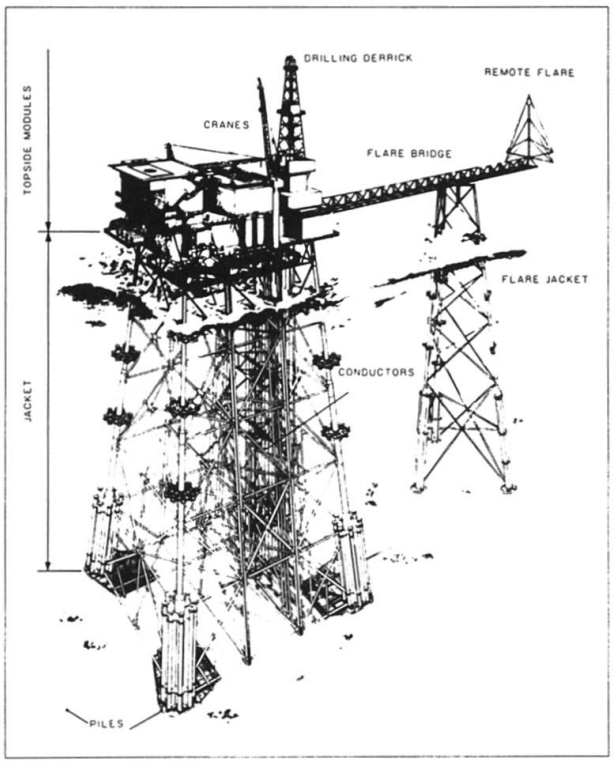

Fig. 1 Overall view of North Rankin "A" platform

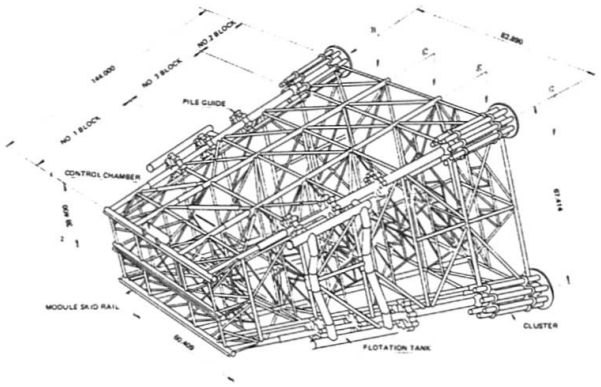

Fig. 2 North Rankin "A" jacket blocking

(5) Weight:
Weight at the time of load out

Jacket structure	15,000 t approx.
Floatation tanks	2,000 t approx.
Carried piles	3,000 t approx.
Piping & Others	2,000 t approx.
Total	22,000 t approx.

(6) Dimension and thickness of principal members

Inner leg:	1600 mm ϕ, 85 mm max. plate thickness
Outer leg:	1500 mm ϕ, 3000 mm ϕ, 4500 mm ϕ, 65 mm max. plate thickness
Brace:	600-1300 mm ϕ, 70 mm max. plate thickness
F. Tank:	4000 mm ϕ, 5000 mm ϕ, 15-20 mm plate thickness

(7) Material: BS4360 50D modified

Basically, the jacket was divided into three blocks along the length of the structure as shown in Fig. 2. Each member was assembled on ground in extremely large sub-blocks (weighing in the neighbourhood of 1000 t) and subsequently put into place using a 3000 t floating crane barge. For this purpose, the No. 1 block was built close to the quay and then "skidded" inland to allow for assembly of the No. 2 block near the quay. In this way, a "skid back" construction method was implemented. The floating crane was used twelve times to lift panels built of legs and braces into place and also to lift the floatation tanks into an upright position and to lift the clusters into place. As a result, a lot of high altitude work could be avoided, and use of large land cranes could be conserved.

On April 26th, 1982 the North Rankin "A" Jacket was towed out to sea by two ocean-going tugboats. On May 22nd, after a 6,000 km voyage, the jacket arrived at north-western part of Australia. And, on June 6th, it was successfully set on the seafloor.

Iwaki Platform Jacket

Owner:	*Esso Petroleum, Japan and Teikoku Oil Co.*
Design and supervision:	*Esso Petroleum, Japan*
Fabrication:	*Nippon Steel Corporation*

In the summer of 1983, the second offshore platform in Japan was installed 41 km off the northern pacific coast in 154 m of water. This Iwaki Project is being jointly implemented by the Esso Group and Teikoku Oil Co., and is aimed at supplying natural gas to the Tokyo Electric Power Co.'s Hirono power station. Orders for the construction of the project's offshore facilities were divided by scope of work, and nearly all of them were awarded to Japanese contractors.

A jacket fabrication was completed at the Wakamatsu Fabrication Center of Nippon Steel Corporation in April 1983. Special capabilities were required to fabricate this 15,000-metric ton, 160-meter high jacket in order for it to withstand harsh environment conditions at the site such as earthquakes and typhoons. The above contractor not only supplied the lamellar tearing resistant steels, but also applied two newly developed technologies to speed up fabrication – a computer-aided system for detailed fabrication designs, and an automatic gas shielded metal arc welding system.

Nippon Steel also received a contract for pipelaying work of some 40 km in length. For the submarine pipelaying work, a specially designed derrick/pipelay barge will be used; and for the shore crossing pipelaying work, the Pipeline Arch Drill Method (PLAD), which has been developed by Nippon Steel in coopoeration with Reading & Bates Construction Co. of USA, will be applied.

(A. Senpaku, S. Oh-hama)

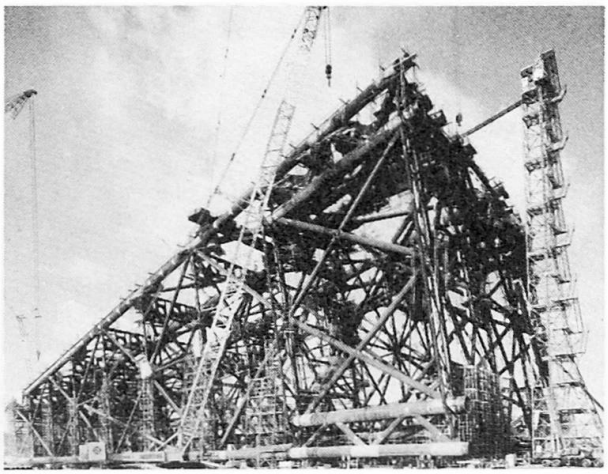

Fig.4 The 15,000 ton Iwaki platform jacket under construction

Fig. 3 North Rankin "A" jacket