Installation of offshore N.A.C.P.T deck for Abu Dhabi National Oil Company

Client: Abu Dhabi National Oil Company
Main Contractor: Daewoo Heavy Industries

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OFFSHORE 13

Above : Deck 'float out'

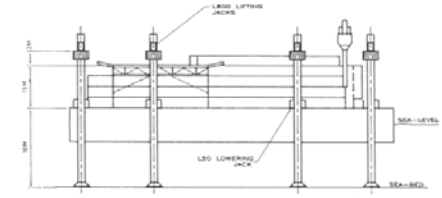
The Abu Dhabi National Oil Company A.D.N.O.C. existing platforms, accommodation and production facilities needed to be expanded to increase oil production. To achieve this, they employed South Korean company, Daewoo Heavy Industries to build and install the platform. The platform was built in a dry dock in Daewoo's yard at Okpo with the platforms final support legs located to enable an offshore transportation barge to be installed beneath the platform. This would allow the platform to be transported by this barge to Abu Dhabi.

The legs were to be subsequently lowered to the sea bed at the permanent offshore location in order that the deck could then be jacked to its final position using the legs as a structural support. Fagioli PSC were contracted to undertake the strand jacking operations.

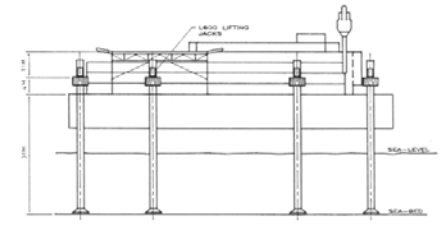
The leg lowering equipment was installed at Okpo as the fixed anchor connections to the legs would be submerged and would have required connection by divers at the offshore site. The platform was transported to N.P.C.C. fabrication yard in Abu Dhabi for the installation of the main jacking equipment prior to transportation to the offshore location.

The deck is supported by eight legs. On top of each were mounted the main lifting jacks. Due to the rigidity of the deck structure, the jacking system was required to maintain a level of accuracy to within 10mm. The 5,652 tonnes total weight of the deck was distributed unevenly between the eight legs.

The main lifting jacks employed by Fagioli PSC were L600 jacks working on 37/18 dia cables. Each leg had two L600 jacks fixed to the top with the L600 fixed anchors ready for connecting to the deck after leg lowering. The leg lowering jacks were L50 type working on a 3/18 dia cable.



Elevation view after leg lowering



Elevation view after jack-up comp.

Both types of jacks were powered by L2/70/D power packs, a total of 4 No. being used in the operation. All jacks and power packs were controlled from a central console enabling one engineer to be in control of the whole operation. After the positioning of the platform at its final location, the eight legs, each weighing 100 tonnes were lowered 12.5 metres in approx. 3 hours.

The L600 fixed anchors, through a special pinned fixed anchor fabrication, were then connected to the platform deck. The L600 jacks then raised the platform to one metre draft at which stage each leg was loaded to 1000 tonnes and settlement monitored until it was less than 1mm in 30 minutes. Two days later the lifting jacks were reactivated and the platform raised to 3.7 metre level to allow piling and grouting of the legs to be completed.

After another eight days the piling and grouting operation complete, the deck was raised to its final elevation. The weld out of the platform to the legs was then completed over a three week period after which the lifting equipment was demobilised and containerised.