

## Lifting M.S.F. Deck Modules

**Client:** Marathon Oil U.K. Limited

**Main Contractor:** Dragados Y Constucciones S.A.



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OFFSHORE 10



**Above:** Module 57 during installation of the four inner legs. After the initial lift of 18m and the installation of the four inner legs, a further lift of 1.5m was carried out, with final lowering down onto the support pads taking place two weeks later. The Fagioli PSC jacks provided the facility to adjust the level of the structure to within 5mm for leg installation and complete support of the 2,500te structure throughout the leg welding operations.

**Right:** Module 58 after initial lifting operation prior to any leg installation taking place. Module 57 can be seen alongside resting on its eight legs ready for load out.

The module support frame for the Marathon Brae Platform is designed as a tubular steel framework incorporating plant and equipment for the platform, with the complete assembly supported on 12 metre high tubular steel legs. To suit offshore craneage capacity the frame was constructed in two similar halves, each having a final lift weight of approximately 2,500te. Space restrictions in the Almeria yard of Dragados, and the advantages of carrying out primary fabrication and outfitting at ground level led to a jack up procedure being adopted for construction of the modules. Fagioli PSC received the order to design, supply, erect and operate a support structure and jacking system for their two operations.

Design restrictions on the lift system included; limits on ground bearing pressure of 3kg/cm<sup>2</sup>; stabilisation within the plan area of the structure; lifting from the offshore padears; non-obstruction of other activities during erection and dismantling; movement of system between the two modules of 25 days; erection of structure by the site Manitowoc 4100. The system proved to be easily adaptable to meet these requirements.

The design arrangement of the Fagioli PSC Tower Lift System chosen consisted basically of two free standing portal frames spanning across the top of the module to be lifted, and on top of which the actual lifting jacks were located. A simple prop and cross guy was provided to give stability between the portals with additional cross guys between the tower bases and the module bottom chords providing storm wind load stability in the other direction. A fully adjustable tension frame assembly was provided to convert the vertical force from the lifting jacks into the individual reaction necessary on the main offshore padears.

