

## Unocal Q1 Halfweg platform installation.

**Client:** Unocal Netherlands B.V.

**Consulting Engineer:** Marine Structure Consultants.



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Unocal Q1 Halfweg Platform was installed in March 1995 in the Dutch sector of the southern North Sea. It was designed for "self installation" and consists of a concrete gravity base which supports a manned process deck by means of four tubular steel legs in 24 meters water depth.

On the deck of a transportation barge in Rotterdam Europoort, a smaller flotation barge was sandwiched between the gravity base and the process deck at the base of the legs. Fagioli PSC was engaged by Unocal Netherlands B.V. to provide and operate the automatic, computer controlled system of eight Fagioli PSC L600 strand jacks which were used to install the platform.

The L600 jacks were arranged as opposing pairs at each leg location. Both jacks in each opposed pair were connected to the floating barge, the cable from one being connected to the leg top and the cable from the other being connected to the gravity base. Installation was a five stage operation:

1. Trials/commissioning: trials were conducted in the dry, on board the transportation barge in Rotterdam and consisted of lifting the flotation barge and deck (1,000 tonnes) six metres up the legs and then lowering them again, whilst constantly maintaining an active tension in the lifting cables of the opposing jacks. Static load tests were also conducted individually on each pair of opposed jacks.

2. Securing the gravity base beneath the flotation barge: the gravity base was tensioned to the bottom of the flotation barge with a force of 100 tonnes per jack to counter the dynamic effects produced by launching of the assembly from the transport barge. Then to counter the effects of the sea swell during towing and mooring at sea this tension was adjusted to 165 tonnes per jack.

3. Lowering of the gravity base into the subsea template: this operation was the most delicate because it required co-ordination of the four jacks lowering the base with the four opposed restraining jacks to ensure the restraining tension necessary to control differential movements due to sea motion between the barge and the immersed gravity base. The restraining tension was maintained at 165 tonnes per jack to control dynamic effects calculated to be plus or minus 135 tonnes for a 1.5 metre wave height. The piston movements in the eight jacks under load were regulated by the automatic tolerance of less than one millimetre. The lowering speed was 4 metres per hour.

4. Lifting of the barge deck: after having placed the gravity base on the sea bed the barge and deck were lifted 18 metres.

5. Lowering of the barge: After weld out of the deck to the legs the barge was lowered into the water and removed.

