

WOODSIDE OFFSHORE PETROLEUM LAMINARIA CORALLINA PROJECT

Heave Compensation System, Timor Sea

ICON was commissioned by Woodside to supply an In Line String Motion Compensator to support a load of 227 tonnes (500,000 lbs) for the installation of the Laminaria and Corallina subsea well completions. The weight of the completion exceeded the capacity of the rig's existing 400,000-lb capacity compensator.

The work scope included design, procurement, manufacture, testing and installation. Of particular note was the fact that the entire system was despatched 5 ½ weeks from the initial enquiry. Woodside had previously



View of the compensator cylinder installed on the Sedco 703 MODU

been quoted delivery times of six months from the traditional suppliers of this equipment. In addition, using an easily installed temporary unit was significantly lower in cost than upgrading the rig's system.

To meet the tight delivery schedule the design was kept as simple as possible utilising available components and equipment wherever possible. ICON's efficient project systems and experience with fast track delivery ensured all sub components were manufactured on schedule and in strict compliance with API codes. Our close relationships with fabricators and oilfield machine shops meant that promised deliveries and specifications were met.

Installation offshore was carried out quickly and had minimal impact on normal drilling operations.

System Specification

The heave compensator is functionally similar to a standard MODU drill string compensator. Similar controls

and terminology were used to simplify training of rig personnel.

The unit can operate simultaneously with or independently from the rig's drill string compensator. The lower capacity rig compensator is locked off during periods of high load. The ICON system is simple yet robust. It consists of a pneumatic cylinder connected to an accumulator bank. A high pressure air system consisting of HP quads and booster compressor automatically maintains 3500 psi supply air. The booster draws from the rig's 2000 psi standby air supply.

Cylinder Stroke	1.5 m
Operating pressure	21 MPa (3,000 psi)
HP air system operating	24 MPa (3,500 psi)
Max load (non-compensating)	364 t (800,000 lbs)
Max load (compensating)	227 t (500,000 lbs)
Onshore test load	500 t (1,100,00 lbs)

Ancillaries include a control panel in the dog house and a large stroke position indicator on the drill floor. This is cable operated using an off the shelf push pull control cable.

The items are all modular and designed for easy and rapid deployment. The accumulator modules were designed such that they could be re used for commercial high pressure air storage after the project and were therefore able to be offered on a hire basis.

ICON personnel installed the equipment, helped with the preparation of the project operational procedures and provided training and assistance during the first few operations.



View on the air accumulator modules and valve skid