



# DEEPWATER FOUNDATION CONDUCTOR INSTALLATION FOR PAPA TERRA FIELD, BRAZIL

## THE PROBLEM

InterMoore, an Acteon company, installed drilling and production conductors using own patented conductor installation methodology on the papa terra field in the Southern Campos basin, Brazil.

Stringent welding qualification procedures needed to be adherence to with Det Norske Veritas (DNV) standards. These standards are typically used for welding rigid risers; subsequently, allowable flaw sizes were exceedingly tight.

This project presented the challenge of strict inclination, position and height tolerances, especially in water depth of 1,200 metres. Positioning and installation tolerances were within 11.8 in (30 cm) of the conductor target position at less than one degree of inclination and a stick-up tolerance of +/- 3.9 in (10 cm). InterMoore was also required to complete the work scope within a tight timeframe; they had to fabricate and install 15 of the conductors in 365 contract days with 160 of those days used by the pipe supplier to fabricate and deliver the pipes to Morgan City, La., USA.

## THE SOLUTION

InterMoore manufactured all 17 of the 36 in (914.4 mm) conductors at its Morgan City, La., USA, facility to DNV-OS-F101 standards and client specifications. Engineering Critical Assessment (ECA) studies determined whether a given flaw was safe from brittle fracture, fatigue, creep or plastic collapse under the specified installation and service life loads. InterMoore inspected all conductor welds using Automated Ultrasonic Testing (AUT), a very sensitive non-destructive testing system. A special configuration for the AUT equipment was required and specifically designed for this project due to the J-bevel joint profile, 1.5 in (38.1 mm) pipe thickness and allowable flaw sizes defined by the ECA study. InterMoore designed and fabricated five individual templates in cooperation with Claxton, an Acteon company, and the InterMoore survey and fabrication team. Each of these 35-ton templates measured 78.7 x 14.8 x 4.9 ft (24 x 4.5 x 1.5 m), and each guided three conductors.

### Summary of actions:

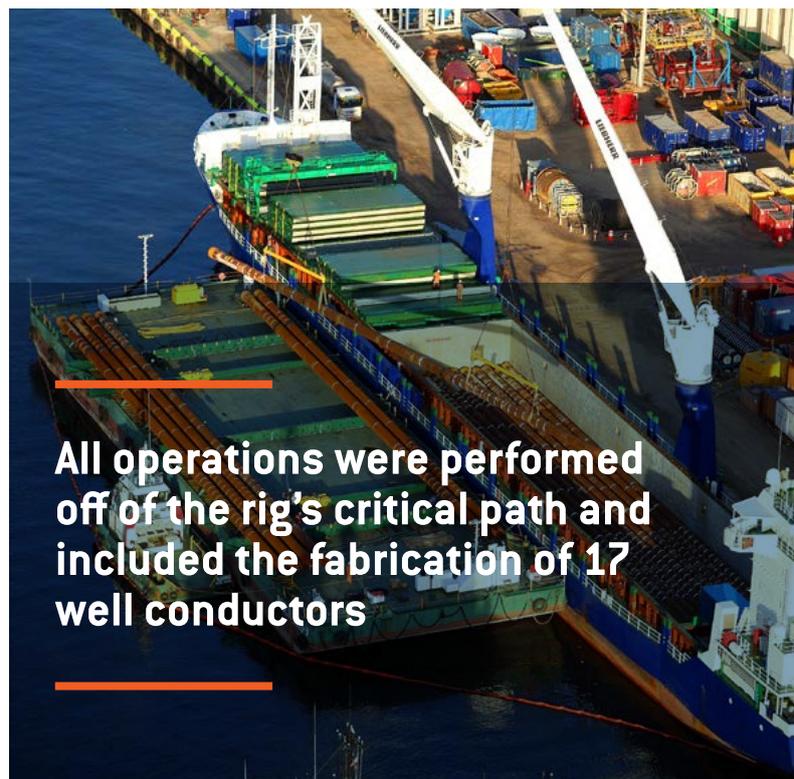
- Seventeen conductors and five templates were fabricated, inspected and approved.
- InterMoore then began the high-level logistical process of the safe transportation of these materials to Rio de Janeiro, Brazil. The offload in Brazil was performed incident free two days prior to the arrival of the installation vessel. The barge, Muliceiro X, was used to store, transport and launch the conductors.
- The barge was modified by the installation of a custom shuttle system that elevated and transported each conductor to the barge's side. The conductors were connected by a tow line to the installation vessel and side launched from the barge by the shuttle system.

- The conductors were pre-installed before the arrival of the drilling rig. This technique had been applied in deepwater once before and installing the conductors off the rig's critical path proved to increase drilling schedule efficiency. It enabled the utilization of lower cost platforms to support offshore installation and also prevented the operator from paying drilling spread rates which allowed additional cost savings.
- InterMoore used the MENCK MHU 270 T deepwater hammer spread. All 15 conductors were batch set in one field visit, requiring only one hammer launch. This approach saved substantial time offshore and minimized risks. Installation was completed in April 2012 after removal of the templates and final as-laid survey.

## THE RESULT

All operations were performed off of the rig's critical path and included the fabrication of 17 well conductors; the design, fabrication and installation of five templates; and the provision of the installation barge. The dimensions of the conductors were 36 in (914.4 mm) – OD x 1.5 in (38.1 mm) wall x 193.6 ft (59 m). Fifteen of the conductors were driven to client positioning specifications. Additional survey work was completed including surface navigation and Long Base Line (LBL) positioning.

This project was successful in all significant aspects: finance, logistics, time, operations, mechanics and especially Quality, Health, Safety and Environment.



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