

SANTOS (MADURA OFFSHORE) Pty Ltd

MALEO FIELD DEVELOPMENT

Minimal Wellhead Structure

ICON Engineering was contracted by Santos (Madura Offshore) Pty. Ltd. to provide conceptual engineering, multi-discipline detailed design and installation engineering for the Maleo wellhead platform. The platform is located in 56m of water in the Madura Strait, East Java, Indonesia and braced to a converted MODU production facility.

Icon developed the Tall Template Structure (TTS) and Short Template Structure (STS) for the jacket and topsides respectively from the previous Oyong project. The TTS acts as a drilling template with 30" conductors drilled and grouted into the three (3) 36" legs and doubling as structural piles. Four internal 20" conductors can be supported within the TTS thus accommodating seven wells in total.

Both the STS and TTS were fabricated in Balikpapan, East Kalimantan, Indonesia.



TTS up-ending on barge

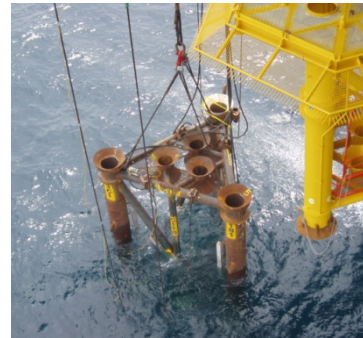
The 132 tonne TTS was transported with the lower half suspended out over the end of the transport barge. Once at location, the TTS was up-ended with the aid of a tailing winch to the vertical position.



STS hung off aft transom with TTS ready for lowering to seabed

Once vertical, stabilizing rigging and lift rigging were attached and the TTS lifted clear of the barge using the Diamond Drilling Ocean Sovereign jack-up drilling rig.

Once on the seabed, the lift rigging was removed by divers and the TTS was held in position by the stabilisation rigging. Three (3) 30" conductors were then drilled & grouted into the corner legs and left suspended several meters above sea level.



TTS lowering to seabed



STS stabbed over 30" conductors

The 48 tonne STS topsides was then lifted and stabbed over the freestanding conductors and temporarily supported whilst it was grouted into position.

Wells were drilled and completed prior to a jack-up MOPU production facility being installed adjacent to the wellhead platform. The wellhead platform was subsequently braced to the MOPU facility for stability.

ICON was engaged at the conceptual stage to develop the TTS and STS in conjunction with Santos' installation and operational requirements based on the previously designed Oyong wellhead platform. Icon went on to produce the structural detailed design of the wellhead facility and installation engineering / procedures for all components using the jack-up drilling rig. Icon further chaired an installation HAZID at Santos' offices in Indonesia prior to the offshore installation phase and supervised the offshore installation.

By using the rig install method, the TTS and STS installation was not subject to a specific "lift" date and the schedule allowed significant float on the design & fabrication completion. Furthermore, the significant cost of an installation barge was not incurred.

The TTS & STS were installed January 2006.

Platform Data

Water Depth	56 m
TTS Lift Weight	132 t
STS Lift Weight	48 t
Well Slots	6
Legs	3 no. vertical 36"
Conductor Piles	3 no. 30" x 1" to 81.3m