

## LUNDIN MALAYSIA LIMITED BUNGA KEKWA FIELD

Annex Platform, South China Sea, Malaysia

### Milestones for Fast Track Development

Lundin Malaysia Limited (LML) had a need to support 2 additional wells from the 6 well slot Bunga Kekwa A platform. Conceptual design of the annexe platform was started in September 2000 and the platform installation was completed by the end of January 2001 - a total project duration of 4 1/2 months. The project was completed during the peak of the north east monsoon season without any incidents, injuries or medical treatments.

ICON's scope covered design assistance, installation procedure development and all installation works.



Transport Vessel standing by, prior to lift

LML also wished to be able to carry out coiled tubing workover of the adjacent platform wells during the same programme. ICON proposed and engineered an option to carry out the CT operations independently of the drilling activities by locating the CT equipment alongside rather than in the derrick.

This allowed the CT operations on any of the 6 existing well slots and the drilling of the 2 new wells on the annexe platform to be carried out concurrently from the one rig position. The rig position was also optimised to allow the transport vessel to be moored head into the prevailing weather for the lift.

The design of the structure is unusual and very economical. The 96 tonne triangular, parallel sided jacket is only 38m long and finishes 18 metres below water level. Three 30inch mechanically connected piles were driven through the legs of the jacket and grouted on completion.

The topsides is a bolted and welded frame which braces the top of the 30 inch conductors. The topsides has no significant equipment. All control functions come from the existing BKA platform.

The structures were fabricated and loaded out at Teluk Ramunia on the south-eastern tip of the Malaysian peninsula.

At site, the transport vessel was moored using its bow anchors and mooring lines to the rig's legs. The jacket was manoeuvred into a position with only 2 metres clearance to

the rig's legs.

The structure was lifted horizontally and then upended with a proprietary but very simple upending system, using only the rig's draw works.



Jacket after Lift

Stage 1 of Topsides Installation

After upending, the structure was lowered to the seabed and the load transferred to lift cylinders so that it could be levelled and repositioned independently of the draw works. The piles were then driven through the legs. The topsides structure was then installed piecemeal using the rig's stern crane and the derrick.

The key features that led to the success of the project include:

- Significant installation input into the conceptual planning
- A good working relationship between the project team, the drilling department, the installation contractor, the designers and the rig operator



The completed BKA Annex Platform