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MA D6—going beyond the limits of deep water fast track projects

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Abstract

The MA D6 Field development project in 1100 metres of water is the first deep water development on the East Coast of India for Reliance Industries Limited which sub-contracted the supply contract to Aker Solutions and the installation contract to Aker Installation Floating Production AS. At the beginning of 2007, the Technip Group was awarded a contract by Aker Solutions for the supply of flexible flowlines and umbilicals for this oil field. An additional order for the supply of 18 km of flexible flowlines was then added to the initial order. The Technip Group was also awarded a contract by Aker Installation FP AS for the installation of the umbilicals supplied by the client as well as the engineering and installation of 14 km of flexible risers.

The installation vessel the Constructor was mobilised in India by 18th December 2007 less than one year after the start of the project. The project involved also diving in saturation. Operations were successfully completed end of May 2008.

The challenges that were overcome during this very fast track deepwater project are:

- The first batch of 14km of flexible pipe was designed and manufactured in less than 12 Months which is unusually fast for such a type of project,
- Limited technical specification at the beginning of project inducing a lot of iteration for the flexible pipe design ; soils conditions known only in July 2007 inducing changes in design and fabrication of 20 off suction piles,
- Restricted turret buoy capacity requiring a “wave” configuration for the risers with about 150 buoyancy modules per riser (1t capacity each) ; a large quantity of buoyancy modules to be manufactured ; Interference issues to be mitigated with Lower and Upper riser configurations,
- Absence of logistical infrastructures on the east coast which required major involvement of the operational team locally ; issue with many fishing boats on site with fishing nets, managed effectively through support from the Field Operator Reliance Industries Limited.
- Design and fabrication of a state-of-the-art 60t subsea pulling winch installed on the submerged buoy and operated by divers in saturation at depths varying from 60 to 100 metres,
- Potential heavy current on site to be accounted for in the riser installation methodology and diving operations ; the installation of risers with so many buoyancy modules was quite new and very critical with respect to the vessel motion because of the huge added mass associated with the whole suspended string,
- A dynamic umbilical bending stiffener assembly of 13m long. The largest size and heaviest assembly ever attached to a light umbilical,
- A very tight schedule that was met thanks to early commitments for raw material order and critical vessels booking.

The MA D6 project has been one of the fastest deep water projects of its size involving a large amount of technical content in a location which has minimal established infrastructures.

The paper will describe the project’s technical aspects and the resulting designs that were selected along with an outline of the logistical issues associated with this first deepwater and fast track, project in the region.