Husky Liwan Development Project


CUSTOMER CHALLENGES
- Deepest subsea tieback to date offshore China
- Longest step-out (tie-back) distance offshore China at 80-km
- Joint development with CNOOC who are using the project for training purposes
- Fast track development

PROJECT SERVICES
The Liwan 3-1 Area comprises the Pearl River Mouth Basin Contract Area 29/26 and nearby prospects. The Liwan gas field was discovered in a water depth of 1,500 meters by Husky Oil China Ltd. (HOCL) in 2006 through the drilling of well Liwan 3-1-1. In conjunction with this exploration well HOCL performed extensive seismic surveys over an area of more than 3000 square kilometers. Other nearby prospects were also identified.

The complete development plan was been divided into four segments designated as “deepwater”, “shallow water”, “onshore” and “downstream gas pipelines”. The deepwater segment of the development accumulates and delivers well fluids to the inlet of the fixed platform. The shallow water segment, starting with the fixed platform, provides basic processing and compression required to deliver the fluids through a long distance pipeline to the inlet of an onshore plant. The onshore segment includes gas processing plant to separate the fluids and prepare gas, condensate and other liquid products for delivery to market. The downstream gas pipelines deliver the gas from the onshore plant to various sales points in the Pearl River Delta.

The design rate for Liwan 3-1 is 330 MMscfd of sales gas. In addition, the combined developments of Liwan 34-1 and Liwan 29-1 will provide an additional quantity of sales gas.
The throughput of the facilities development is approximately 1,000 MMscfd with additional process trains.

This FEED project was executed using an Integrated Project Team (IPT) approach. The IPT comprised HOCL, CNOOC and WorleyParsons personnel.

Liwan 3-1 FEED scope was organized by sub-dividing the Project into five Work Packages, with workshare by various WorleyParsons offices across the globe:

- Work Package 1 (Perth Office): Subsea Tieback (SSTB)
- Work Package 2 (Houston Office): Hull, Moorings and Risers (HM&R)
- Work Package 3 (RWP, KL Office: Offshore Facilities (SWH)
- Work Package 4 (INTECSEA KL): Pipelines (DWPL/SWPL/DSPL)
- Work Package 5 (Beijing): Onshore Facilities (OSGP)

Ranhill WorleyParsons (RWP) was responsible for Shallow Water Host (SWH), had executed the work and completed the projects within the budget and schedule.

With 22,000 MT integrated deck, it would set a new record in WorleyParsons group on the largest floatover, high deck concept in the harsh open sea of offshore China.

28,000 MT Jacket stands at 207m water depth on 8 legs and secured by 16 no’s 96” diameter piles driven to 120m below seabed.

**KEY ACHIEVEMENT**

The largest float-over, high-deck designed to be installed in China offshore

**RESULTS**

FEED successfully completed.

Deep water floating host platform evaluated and proved to be technically feasible in S. China Sea.

Extensive flow assurance studies validated the technical feasibility of the long distance ties-back, which was selected in favor of a deep water floating platform for commercial reasons.

Use of gas recirculation was assessed, validated, proved feasible and incorporated into primary operating plan to manage liquids during production turn-down.

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Completed on time and on budget working across 7 WorleyParsons/INTECSEA entities in 5 countries on 3 continents across 14 time zones.