

FEASIBILITY, CONCEPT SELECT AND DEFINITION ENGINEERING SUPPORT MULTIPLE OFFSHORE FIELDS

North-West Shelf, Western Australia

ICON Engineering was engaged by an Australian-based energy company to assist in Feasibility, Concept Select and Definition Engineering Support for the prospective development of multiple oil and gas fields in the North West of Australia. The work continued from 2018 through to 2021.

Overview

The oil and gas fields in question have been discovered in various permit areas in the North West of Australia.

However, the fields are geographically separated and as such there is no potential for a phased development around a centralised hub.

As such the basis for the fields' development was to exploit the fields sequentially and to use the same field infrastructure across all the fields where possible.

The fields are of varying size in terms of hydrocarbon reserves. The fields are located too far from shore and other infrastructure for cost effective tie-ins. The fields are in water depths up to 90m.

ICON Scope of Work

ICON performed various activities in support of the Client including:

- Project management consulting;
- Sourcing of key development infrastructure (e.g. MOPU - Mobile Offshore Production Unit);
- Evaluation of existing Jack-Ups for conversion - including condition assessment; and
- Structural engineering support.

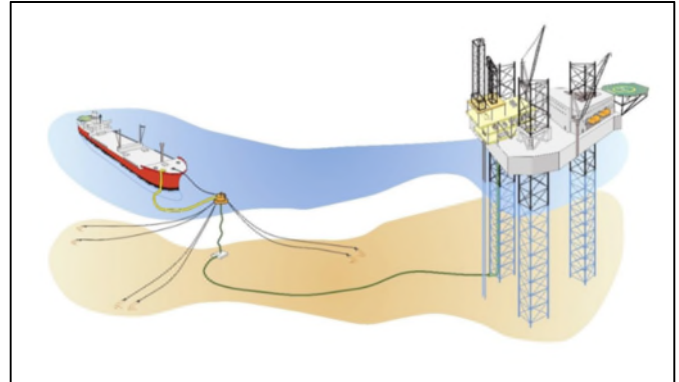
Project Management Consulting

ICON has worked closely with the client since it acquired the portfolio of assets.

The work has continued from the initial feasibility stage and continued through the various project phases leading up to Project Sanction.

The initial work focused on:

- Review of existing work performed by earlier asset owners;
- Identifying base case development schemes to be considered for feasibility level economic assessment;
- Further definition of options as part of the concept screening phase; and
- Inputs to major development planning including risk and opportunity assessment, cost estimating, project schedules, technical definition, operations input etc.



Proposed Field Development Plan
and Facilities Configuration

Sourcing of Key Development Infrastructure (e.g. MOPU)

The base case development comprised of a MOPU and FSO (Floating Storage and Offtake) vessel. The key component of the development hardware was provision of the MOPU.

The site conditions at the various fields included water depths of up to ninety (90) metres and maximum wave heights (Hmax) in excess of twenty (20) metres.

As such, sourcing the MOPU structure was an integral part of the technical and commercial robustness of the development.

ICON supported the client in:

- Shortlisting the suitable jack-up manufacturers/models and rig owners suitable for the site-specific location;
- Developing the Site-Specific Design Criteria for the MOPU; and
- Assessment of new-build Jack-ups that may be available due to market over-supply.

From this work the client and ICON were able to focus on the specific structures that could be used at the sites, and which companies to commence dialogue on MOPU acquisition.

Evaluation of Jack-Up rigs

ICON supported the client in rigorous technical assessment of short-listed Jackups including:

- Rig site visits for condition assessment;
- Review of rig maintenance and operability records;
- Dialogue with original rig designers; and
- Assessment of costs and schedule for conversion to MOPU, including probabilistic risk analysis.