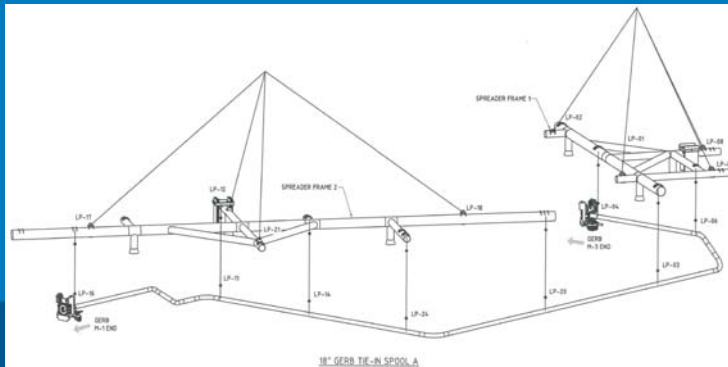


PROJECT:

GERB / PRB Spool Analysis and Spreader Beam Design

**under-promise
over-deliver**



CLIENT:

McDermott Australia Pty Ltd

LOCATION:

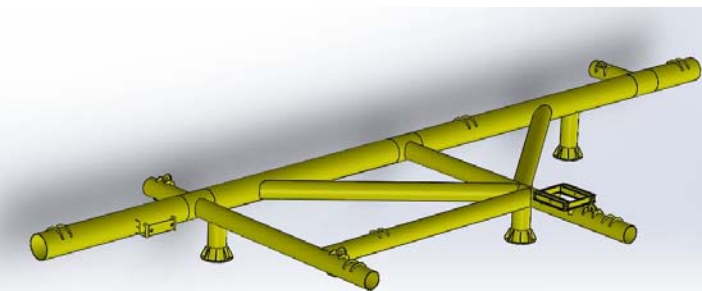
North West Shelf

DATE:

2017



Linch-pin was engaged by McDermott Australia to design spreader beams suitable for handling existing Gas Export Riser Base (GERB) and Production Riser Base (PRB) tie-in spools to support the Ichthys LNG project. The spreader beams were designed as part of planning for a contingent recovery campaign of 18" spools from the seabed through the splash zone and land out on a material barge for inspection and repair. By considering a range of spreader beam orientations and clump weight positions each of the 8 unique spools were accommodated with the design of only 3 spreader beams. The hydrodynamic software OrcaFlex was utilised to simulate the recovery and subsequent re-deployment of the spools through the splash zone with a range of wave heights, periods and directions. Bespoke Python code was written to manage batch Monte Carlo analyses and post processing to generate statistical response parameters. This method was used to increase operability of the vessel crane.



In addition to this work the relative motion between the hoisted spool and the cargo barge was assessed in the frequency domain by calculating the relative motion for various reference points. Re-impact probabilities and snatch load calculations were carried out to establish operational limiting seastates and rigging design respectively.

The dynamic analysis work and the structural design were carried out in parallel, with continuous feedback between the two teams, to ensure the clients tight schedule could be met.