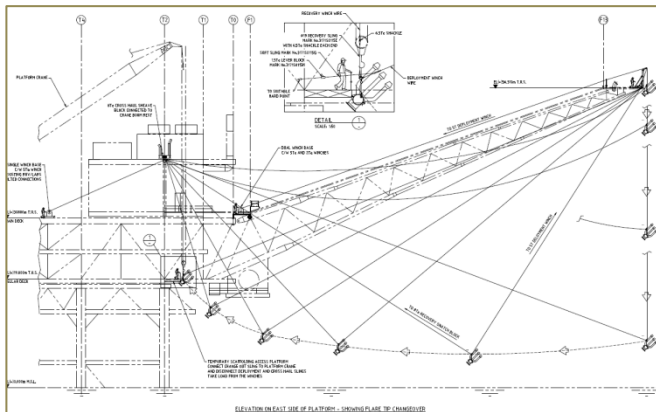


MCDERMOTT AUSTRALIA MARLIN B FLARE TIP HANDLING PACKAGE Design and Engineering Services

ICON Engineering was commissioned by McDermott to provide engineering services for a Flare Tip Handling Package (FTHP) to be used for changing out flare tips on ExxonMobil's Marlin B platform in the Bass Strait.

The FTHP Devised by ICON

ICON's scope of work was to develop a reliable FTHP for the MLB Platform that would provide a safe and controlled methodology for replacing the MLB Flare Tip. ICON carried out the detailed engineering and design of all components of the system, specified all equipment necessary to undertake the flare tip replacement, and conducted all the relevant installation engineering to create the installation workpack and installation drawings.



Flare Tip Handling Procedure Sketch

The FTHP devised by ICON consisted of the following components:

- **Lift Frame:** Custom designed lift frame capable of lifting, supporting and skidding the Flare Tip. The frame was designed as parts capable of being manhandled and assembled in situ without the use of lifting equipment
- **Handling trolley:** Custom designed trolley designed to run along the Flare Boom to transport Lift Frame and tooling to the flare tip. Complete with self-locking mechanism in case of rigging failure
- **Winches and Winch Bases:** Off the shelf winches mounted to custom winch bases which were able to bolt on to existing structure
- **Skidding Rails / Skidding Posts / Roller Sheaves / Guide Posts:** Miscellaneous fabricated steelwork and procured equipment as required to aid lifting, skidding and manoeuvring the Handling Trolley, Lift Frame and Flare Tip

An Operations and Maintenance Manual was also compiled by ICON that included the procedure for the Flare Tip change-out operation and installation and assembly drawings (schematics) for the FTHP. Instructions on the set-up, installation, operation and storage of the FTHP were also included.

The following discrete procedures were produced to cover all installation activities:

- Onshore pre-handling
- On platform tasks (set up of winch bases and sheaves)
- On flare tip access platform tasks (set up skidding posts, handling trolley, roller sheaves, setup winch wire)
- In situ assembly of Lift Frame on access platform
- Removal of Existing Flare (Lifting and skidding, overboard deployment, recovery)
- Placement of New Flare Tip (Haul in and lifting, skidding)



Marlin B Platform

The FTHP in Action

ExxonMobil has successfully replaced the flare tip on the Marlin B platform tip using ICON's FTHP and associated fabricated assemblies. This has been carried out without incident and has allowed quick, safe and repeatable replacement of the flare tip without the use of expensive support vessels.