

## Karratha Gas Plant – Emergency Domgas Flare Tips Changeout

**Client: Woodside Energy Limited**

### Overview

AEC was engaged by Woodside to formulate a lift plan to facilitate the changeout of the flare tips on the Karratha Gas Plant Domgas Emergency flare tower. The flare tower was designed in 1983 and incorporated sheaves and guide rails to facilitate changeout of the flare tips. However, some of the procedures did not meet current Woodside lifting requirements and some crucial information such as the weight take off could not be found.

### The Challenges

Inspection of the upper two thirds of the flare riser wasn't possible due to the requirement for continuous operation of the flares and the intense heat radiation that occurs during flaring operations.

Some of the existing padeyes and sheaves were under-designed and the padeyes had been bent. One of the main hoisting sheave blocks had previously been modified on site due to a clash and this required verification.

### The Solution

AEC carried out detailed site inspections in the accessible areas and combined information from these site inspections with the available documentation to calculate and document the weights of each section.

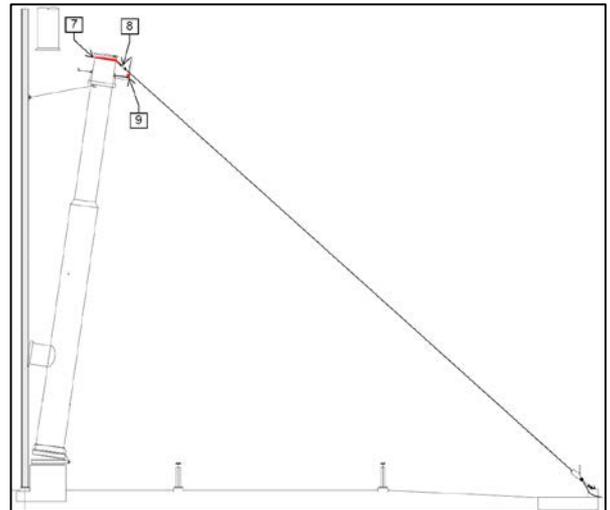
During the site inspection, AEC identified a simpler method for canting the riser sections which would save time on site and result in more control of the lifting operation.

AEC were also able to determine where round slings could be used to choke around structural members and the flare riser in order to avoid using the overstressed (bent) padeyes.

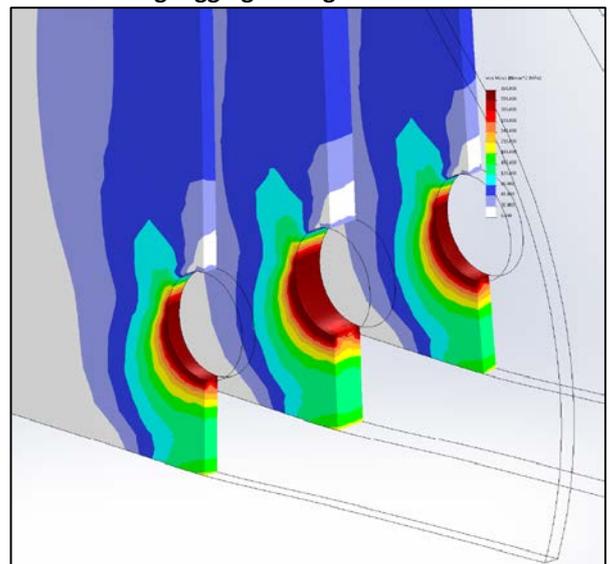
The lift plan procedure includes the use of Robway load cells and direct in-line tension load cells to prevent overload due to the clearance uncertainties of the upper two thirds of the flare tower that could not be inspected while the adjacent flares were operating.

### Outcome

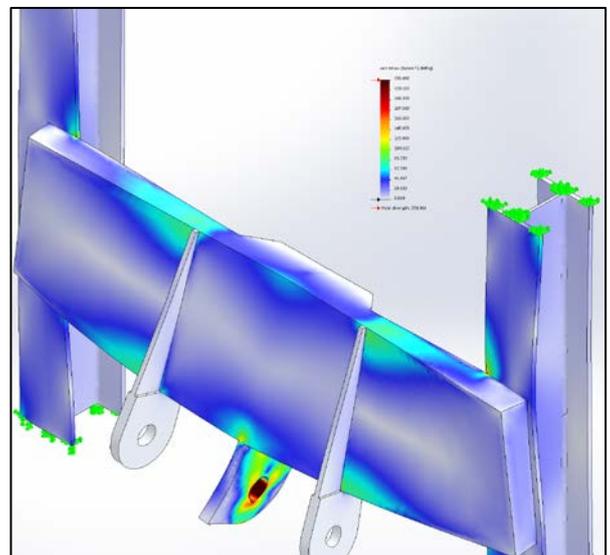
AEC have completed the lift plans and calculation report for ongoing use at Karratha Gas Plant. The lifting activities were successfully carried out in September 2016.



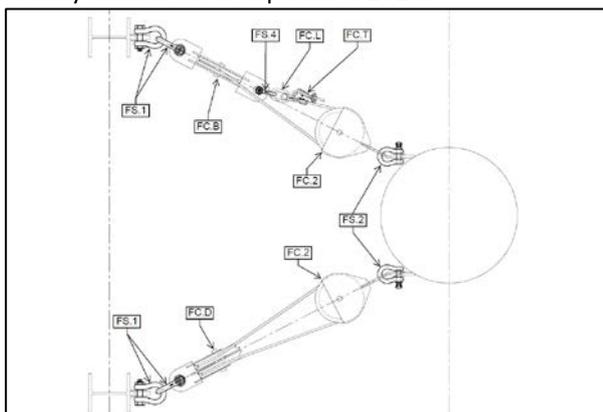
**Canting Rigging Arrangement - Elevation**



**FEA of Sheave Wheel Plates - Detail**



**FEA of Lifting Header Beam**



**Canting Rigging Arrangement - Plan**