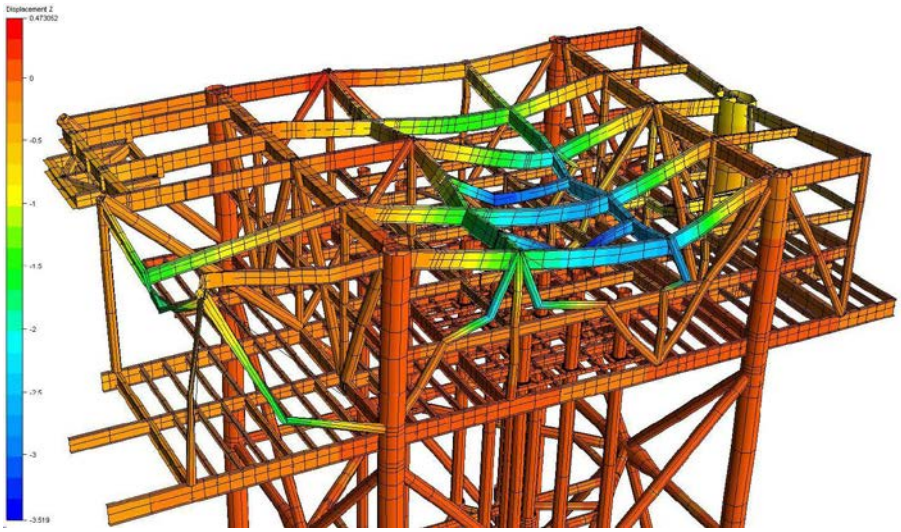
Structural Analysis to Optimise Protection
Client Confidential

The Problem

An existing platform had been subject to much modification over the years and required a fundamental review of the passive and active fire protection system. In the case of either a jet fire or a highly dispersed hydrocarbon fire, the integrity of the platform had to be maintained for at least 60 minutes. MMI specialise in using advanced modelling methods to inform engineering design, and have particular expertise in Fire Load Response Analysis (FLRA).



Our Approach

A range of different fire scenarios was examined, and the worst case determined to be an all-engulfing fire emanating from the cellar deck level. Four derived cases considered different scales of fire, and possible degradations of the Passive Fire Protection (PFP). The existing USFOS model of the platform was then adapted to create a model in FAHTS, a non-linear fire heat flux calculation tool. These heat fluxes were then applied as boundary conditions to the USFOS model.

Using this tool, we could then simulate different scenarios and explore the implications of changes to the PFP scheme. Ultimately we were able to establish areas where new PFP was needed, and where old PFP had to be upgraded.

Outcome

The new scheme was sufficient to ensure a 60 minute integrity life under extreme fire load conditions, and hence keep this core structure intact without subsequent damage to connected installations.

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