



Maersk Platforms: Passive Fire Protection Analysis

Services Performed

IRC completed thermal-stress analysis on behalf of J. Ray McDermott Engineering (JRME) for two Maersk platforms offshore Qatar. The work was a follow-up to a previously completed fire risk analysis (FRA) that identified fire scenarios that potentially could cause platform collapse before the minimum required 30-minute evacuation period.

Objectives

- Conduct a robust thermal-stress analysis to address collapse concerns
- Determine passive fire protection (PFP) requirements for various areas on the two platforms

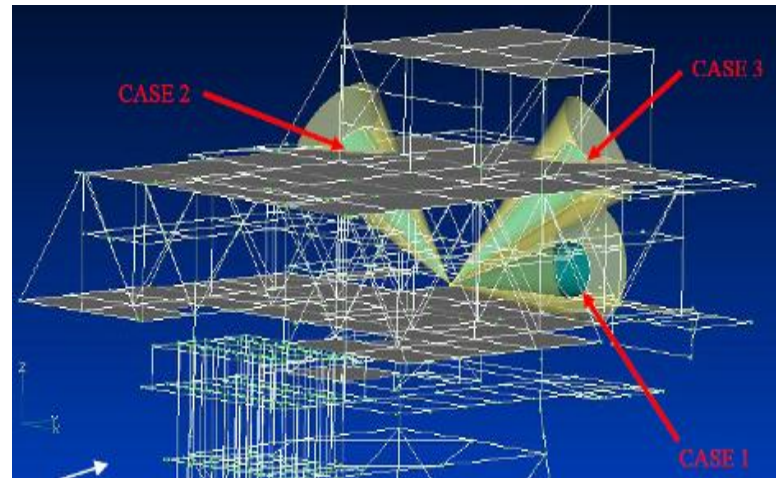
Project Description

Maersk is developing the Al-Shaheen Field offshore Qatar with engineering support from JRME for the development of wellhead platforms.

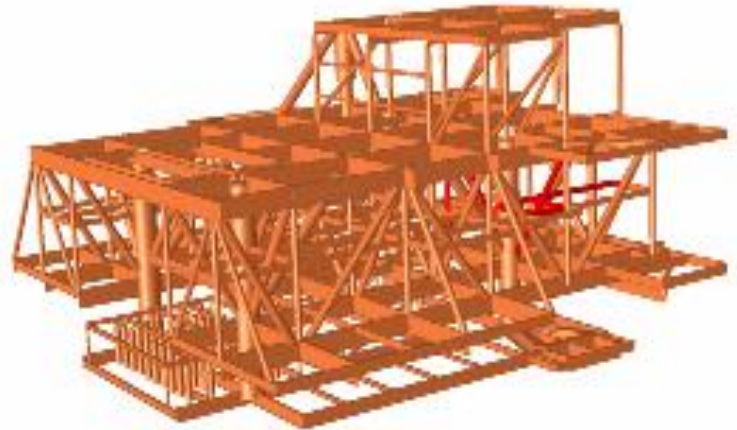
JRME was concerned about the survivability of the platforms against fire events defined in the FRA. To address this issue, IRC conducted a thermal-stress analysis to determine passive fire protection requirements for primary structural steel, buildings, and firewalls. To make this determination, IRC undertook analyses to:

- Determine the thermal rating necessary for buildings and firewalls
- Confirm which primary steel structures would require passive fire protection based on credible fire scenarios
- Verify integrity of primary steel structures and the fire separation decks
- Confirm that primary single-member failure does not lead to progressive structural collapse

Analysis was consistent with API RP 2FB method for determining maximum structural member temperature and used a structural analysis computer simulation (SACS) program to model structural loads throughout the platform.



Jet Fire Orientation for 3 Scenarios



Failed Structural Members (in Red) for Case 1

Key Benefits to Client

- Identified key structural members that require PFP
- Determined ratings for firewalls and buildings for identified release scenarios
- Gained understanding of primary structure design required to withstand fires and to ensure personnel can evacuate the platform



Protecting life and improving production by shaping the design and operation of hazardous facilities

IRC Risk and Safety, LLC, 10497 Town & Country Way, Suite 800, Houston, Texas, 77024, USA
Telephone: 713 647 7929, Facsimile: 713 467 9757, Email: irc@ircrisk.com, Web: www.ircrisk.com