

The Problem

An FPSO operator needed to remove Passive Fire Protection (PFP) coatings from a series of process separators as part of an inspection and replacement activity. The work was going to take some time and they wanted to ensure that the fire risk during the project would be tolerable if production continued. MMI were asked to assess the risk on their behalf.

Our Approach

We decided the most appropriate way to analyse the situation was to use the Vessfire software developed by Petrel AS. Vessfire accurately models the shell temperature of process vessels during blowdown under fire loading, taking into account the progressively greater volume of the vessel filled with gas as blowdown completes. Using customer supplied data, we built a full Vessfire model of the separator train, including the inventory and the steel properties' response to temperature. Two worst-case scenarios were then selected from the QRA for the FPSO with heat loads applied.

Outcome

Our conclusion was that blowdown under the planned conditions could be completed before the vessels failed, and that the risk was therefore tolerable. Under conditions representing continuous fire engulfment for two hours, the wall temperatures and stresses were predicted, and found to be within acceptable levels.

