

A Study on Nonlinear Structural Analysis of Offshore Structures subject to Elevated Temperature due to Fire

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Summary

In offshore structures, fire is one of the most important hazardous events. This has been proved by several disasters such as Piper Alpha and Deepwater Horizon accidents. The concern of fires has recently been reflected in rules and quantified risk assessment based design practice. Within the framework of quantified risk assessment and management for offshore installations, therefore, more refined computations of consequences or hazardous action effects due to fire is required.

The aim of the present study is to examine the technologies involved in computations of nonlinear structural analysis of offshore structures subject to temperature due to fire. It is motivated that structural analysis is most likely to use valuable technology for the optimization and design on offshore structures. The thermal and structural analysis has been performed using computer program LS-DYNA. This study concludes that structural fire response modeling and fire definition provide reasonable solution in structural analysis of offshore structures subject to temperature due to fire. Insights modeling techniques and analyses procedures of this study will be very useful and practical for fire risk assessment of offshore structures.

