In-place analysis for design-level assessment of the fixed offshore platform

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Abstract:

The structural integrity of platform components under operational loads and environmental storm conditions is required for risk assessment and inspection plan development. In-place analysis was performed to verify that the platform structural members have the robustness and capability to support the loads in operating and storm conditions. A finite-element analysis is adopted to estimate the in-place behavior of a typical fixed offshore platform for reassessing design parameters based on measured performances. The SACS software is employed to find the dynamic characteristics and the displacement responses of platform consistent with in-place analysis aligned with the stresses at selected members and joints are examined based on unity checks. The directions of environmental loads and water depth variations have significant effects on the results of the in-place behavior. The results confirm that the in-place analysis is quite essential for the reliable design of the offshore platform and assessment of existing offshore structures.

Keywords:

FEM, offshore platform, storm conditions, pile-soil interaction, in-place analysis, design level assessment

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