

Comparison of Reserve Strength Ratio and Capacity Curve Parameters of Offshore Platforms with Distinct Bracing Arrangements

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Abstract : The phenomenon of corrosion, especially in the Persian Gulf region, is the main cause of the deterioration of offshore platforms, due to the high corrosion of its water. This phenomenon occurs mostly in the area of water spraying, threatening the members of the first floor of the jacket, legs, and piles in this area. In the current study, the effect of bracing arrangement on the Capacity Curve and Reserve Strength Ratio of Fixed-Type Offshore Platforms is investigated. In order to continue the operation of the platform, two modes of robust and damaged structures are considered, while checking the adequacy of the platform capacity based on the allowable values of API RP-2SIM regulations. The platform in question is located in the Persian Gulf, which is modeled on the OpenSEES software. In this research, the Nonlinear Pushover Analysis has been used. After validation, the Capacity Curve of the studied platforms is obtained and then their Reserve Strength Ratio is calculated. Results are compared with the criteria in the API-2SIM regulations.

Keywords : fixed-type jacket structure, structural integrity management, nonlinear pushover analysis, robust and damaged structure, reserve strength ration, capacity curve

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