

Evaluation of Simplified Support Conditions On Jack up Platform Leg Joints

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Abstract

At present study, leg welding joints of Super M2 Jack up are evaluated by structural analysis. By reviewing other researches, it is recognized that jack up joints were analyzed by applying simplified supports. In this research, another method is developed. At first, considering the Persian Gulf environment, jack up platform model was generated and analyzed deterministically, then critical joint by considering welding volume was modeled in finite element software and it was analyzed by applying displacements of neighbor joints (by using the results of Jack up platform analysis) as its boundary condition.

By analyzing the model, it is considered that using displacements of vicinity joints around the critical joint as boundary condition has more accurate results than applying simplified support; also Super M2 jack up platform has reasonable structural strength in Persian gulf conditions. Finally, according to the truss shape of legs, changing of direction for environmental forces do not have essential effects on magnitudes of maximum stresses in legs structure, but the positions of occurrence is variable.

Keywords: Jack up platforms, Deterministic analysis, Joints analysis, Displacement boundary conditions
