

A Quick Method for Seismic Vulnerability Evaluation of Offshore Structures by Static and Dynamic Nonlinear Analyses

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Abstract : To evaluate the seismic vulnerability of vital offshore structures with the highest possible precision, Nonlinear Time History Analyses (NLTHA), is the most reliable method. However, since it is very time-consuming, a quick procedure is greatly desired. This paper presents a quick method by combining the Push Over Analysis (POA) and the NLTHA. The POA is preformed first to recognize the more critical members, and then the NLTHA is performed to evaluate more precisely the critical members' vulnerability. The proposed method has been applied to jacket type structure. Results show that combining POA and NLTHA is a reliable seismic evaluation method, and also that none of the earthquake characteristics alone, can be a dominant factor in vulnerability evaluation.

Keywords : jacket structure, seismic evaluation, push-over and nonlinear time history analyses, critical members

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