Monitoring-Based Safety Evaluation of Offshore Jacket Platform Structure

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Abstract

One of the goal of structural health monitoring (SHM) is to assess the structural condition with the inputs from SHM system. Based the monitored data from real offshore platform structure, the system safety evaluation method is studied in this paper. Firstly, the ultimate base shear capacity is determined by updating the structural stiffness with identified structural frequencies. Secondly, the monitoring index for structural system safety is determined by the ultimate base shear capacity based on the design code, monitoring goal and structural system mechanical property. Finally, an online safety evaluation procedure is proposed using base shear force as the control parameter. The proposed online safety evaluation method is applied in the structural health monitoring system for CA32A platform structure. Based the monitored data from the offshore platform, the evaluating results indicate the structure is in safe condition.