ABSTRACT

Lifting process is often done with a lot of assumptions, one of which is assumed loads and dynamic response. In general, these assumptions are realized by static analysis and dynamic factor given for modeling dynamic loads, lateral loads and impulse loads are also very likely to occur in the actual lifting operation. Therefore, the final task was carried out research on how the dynamic response of a structure of the topside module if it is really given dynamic load. On static analysis to the model used, the voltage that occurs quite large, with UC ratio of 1.35. Then the dynamic analysis, a large UC ratio is equal to 0.297. So also with the influence of the speed of the crane to lift the sling tension. Voltage that occurs is 24.18 ksi. The maximum crane lifting acceleration is 5.15 ft/s². The crane needs 0.056 seconds to reach the constant lifting speed by 0.29 ft/s. This shows how much influence the dynamic approach to the analysis of lifting. This thesis also aims to identify how the chances of failure and how the risks that occur during the process (risk-based analysis). The chances of failure on the member is at 0.003 and the sling is for 0401. So that the lifting process can be classified in the low-risk operation.

Keywords: Lifting Analysis, Dynamic Analysis, Monte Carlo, Risk Based Analysis, Sling Analysis, Topside Module