ABSTRACT

Environmental loads, equipment loads, work over rig loads and impact loads due to the supply vessel collisions can cause damage to the jacket’s members. Sometimes damage occurs under the age of the planned operations so as to cause danger and harm. This final task force aimed at analyzing the structure of the jacket due to a combination of operational loads. The analysis carried out on MSN's jacket Kondur Petroleum which operated in the Strait of Lalang, Riau. Analysis conducted using GT Strudl 27.0 software to see how much damage is caused by the load member operations, with a static analysis method. To know the size of the impact force used ANSYS LS-DYNA software. That the chance of failure on the structure member by member the burden will increase in the addition of polynomial (order 2) with a trend which followed the equation \( Y(POF) = 0.0018 V^2 + 0.05 V + 0.01 \) for minimum work over rigs and \( Y(POF) = 0.0037 V^2 + 0.05 V + 0.019 \) for maximum work over rigs, where \( V \) is the speed of vessel. By looking at the opportunities and the failure of the structure reliability targets \( \beta = 2 \) equivalent to the \( POF = 0.0228 \), can know the maximum speed of the vessel is allowed against the 0.7 m/s for the condition of minimum work over rigs, and 0.475 m/s for maximum work over rig.

Risk analysis methods with qualitatif chance of failure and the consequences that have been identified as a component to show a risk matrix. Consequences criteria refers to the API- RP2A WSD and jacket MSN into the category of high risk for all loading scenarios. Mitigation method is done to reduce the loads of risk is acceptable, rigs activities not carried on jackets, but done above jack-up. Adding the tires used on the barge bumpers to reduce the burden on the impact and cost considerations, because the POF structure for the vessel to lean to the speed of 0.25, 0.5, 0.77 m/s is still at high risk category.

Keywords: work over rig, impact, jacket, risk, mitigation