ABSTRACT

The final task was undertaken to analyze the stress that occurs due to differences of rigging configuration in the process of lifting structure Wellhead Platform which designed by PT. Tripatra Engineering. This structure has a mass of 364 Tons with four deck elevation. Deck structure is modeled and analyzed with SACS 5.2 software for gain self weight and central of gravity deck. Then the deck structure is modeled again for lifting analysis with rigging components are varied to obtain SR (stress ratio) deck and tension sling. Rigging components which varied are spreader bar by using a configuration without spreader bars, single spreader bars, two spreader bar and spreader frames. From the results running with SACS 5.2 obtained SR 0.56 and slings tension 2318.8 MPa for lifting without spreader bars, SR 0.3 and slings tension 2278.2 MPa for lifting with a spreader bar, SR 0.296 and sling tension 2167.1 MPa for lifting with two spreader bars, SR 0.296 and sling tension 2121.4 MPa for lifting with spreader frame. Then, stress analysis is performed on the structure padeye as component receiving lifting loads directly with ANSYS Workbench software. The structural strength of padeye analyzed based on the force due to component cause variations of the spreader bar. From the results running with ANSYS Workbench obtained von-Mises stress 96,874 MPa and deformation 0.298 mm for lifting without spreader bars, von-Mises stress 88,496 MPa and deformation 0.268 mm for lifting with a spreader bar, von-Mises stress 87,092 MPa and deformation 0.266 mm for lifting with two spreader bars, von-Mises stress 63,053 MPa and deformation 0.162 mm for lifting spreader frame. So it can be concluded that the lowest stress occurs at the lifting by using a spreader frame.

Key words: lifting structure, rigging, spreader bar, stress ratio, von-Mises