ABSTRACT

Jacket upending process is a combination of flooding technique and lifting techniques by crane barge. The final project examines optimization of buoyancy during upending jacket process in order to get the optimum upending procedure. Optimization is done by varying of compartment leaked as $x_1$ and the step of upending as $x_2$ for each scenario where $x_1$ and $x_2$ are independent variables. There are 3 scenarios are planned at this upending process. Objective function of this optimization is to maximize the buoyancy jacket for selecting the optimum upending jacket procedures. Constraint in the optimization include mudline clearance $> 3$ m, the minimum MGL and MGT $> 0.5$ m, hook load $< 3200$ tonnes and flood ballast $< 2308.52$ tonnes. Having obtained the constraint, it was become into optimization equation form. After that the equation put in the optimization software ILOG OPL. For modeling jacket and floatation-upending analysis is used SACS 5.2. From floatation analysis is obtained the jacket on the stability of free floating conditions are safe and eligible the wind heeling curve momment. From the upending analysis found that scenario 2 has a lot of the minimum value, there are mudline clearance 3.17 m, $M_{L}$ and $M_{G}$, 1.09 m and 4.25 m. And the maximum value found in scenario 1 for hook load is 1069.02 tonnes and flood ballast is 1598.6 tonnes. Optimization obtained by entering into the equation optimization ILOG OPL and produce value $x_1 = 10$ and $x_2 = 9$ which is the independent variable of scenario 3.

Key words: flooding, buoyancy, jacket, optimization