RISK ASSESSMENT OF UNBURIED SUBSEA PIPELINE ON THE TRAWL GEAR DUE TO HOOKING CONDITION

Name : Oridian Popang
Registration number : 4305 100 063
Department : Teknik Kelautan FTK-ITS
Supervisor : Ir. Handayanu, M.Sc., Ph.D
Prof. Ir. Mukhtasor, M.Eng., Ph.D

Abstract
Trawling activities around in the waters which has a lot of pipeline network can cause disruption to the pipeline when the trawler snaged (hooking) in the presence snagging style load. This final project discuss risk assessment on the subsea pipeline that are not buried in the waters of the Delta Mahakam due to the influence of trawl gear 5-10 GT and <5 GT caught in the pipe (hooking). The level of risk that occurs, is obtained by rank the chances of hooking on the pipe and the consequences of hooking based on DNV RP F-107 "Risk Assessment of Pipeline Protection". The calculation of the chances of hooking using Event Tree Analysis (ETA) and the calculation of consequences based on the maximum stress obtained using ANSYS 11.0. Chance of hooking events for the vessels 5-10 GT is $2.76704 \times 10^{-5}$ for a year, while the chances of hooking events for the vessel <5GT is $3.31169 \times 10^{-5}$ for a year. Von Mises Stress caused by trawl boats 5-10GT was stuck in pipe 634.80 MPa for the direction of the force 81.47º and 628.04 MPa for the direction of the force 90º, while the von Mises stress due to ship <5GT is 388.31 MPa for direction force 81.47º and 384.44 MPa for the direction of the force 90º. Risk assessment result of the vessel 5-10 GT for both directions of loading is not acceptable, while the risks to ships <5GT for both directions of loading still acceptable.

Keyword: Risk Assessment, Pipeline, Trawl Gear, Hooking, Event Tree Analysis (ETA), von Mises