RISK ANALYSIS OF Ø 6 INCH INSTALLATION SUBSEA PIPELINE

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Abstract

In the process of laying subsea pipelines, buckling is a failure that can not be avoided. Therefore, the need for an examination of the risks that occur under stress when the deployment process. By estimating the minimum bending stress that occurs in critical areas to comply with design criteria. For stress analysis it is necessary that occur in the pipeline during the installation process with the help of software that is OFFPIPE software, with a radius of curvature and thickness variations obtained concrete pipe voltage variations that occur. With this technique, are expected to know the major risks that occur on projects of PT. PERTAMINA EP Region Java as "Installation of Submarine Oil Pipeline (Subsea Pipeline) Ø 6" who uses failure modes: the combination of loading, and the occurrence of overbend strain which is a critical area pipe having the largest voltage. For the calculation of risk analysis, using the Montecarlo method. The purpose of this method is to look for a function of frequency probability of failure and the consequences of failure functions. Furthermore, the multiplication value is included in the risk matrix to determine the level of danger that happens according to DNV RP F107. From the simulation results, obtained by voltage for R = 100 m and R = 170 m amounted to 223.14 MPa and 212.27MPa and experienced pipe buckling. While for R = 250 m and R = 330 m is of 159 MPa and 114.46 MPa, the voltage is still below% SMYS permitted and secure pipe to the risk of buckling. Simulated probability of failure that occurs in combination with loading of 3.8 x 10-5, and the occurrence of overbend strain of 6.62 x 10-4. The result of the risk occurring is the process of deployment of subsea pipeline is still in the safe category that is acceptable. And the possibility of failure due to negligence of the results of NDT inspection is very small.

Keywords: pipeline laying, risk analysis, buckling, combined loading, strain overbend, OFFPIPE, Monte Carlo.