ABSTRACT

RISK ANALYSIS ON KODECO SUBSEA PIPELINE DUE TO SEABED SCOURING

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The risk analysis in this research is performed on subsea piping system owned by Kodeco Energy Co. Ltd. from offshore of Poleng Process Platform (PPP) until Onshore Receiving facilities (ORF) comes of the subsea sediment scouring. The scouring is soil movement of subsea caused by sea water flow that is flow and wave in which its process is equal with erosion which is naturally can be emerged by structural element that is close to seabed. The scouring phenomena can cause rising of freespans which is probably to create deformation and stability disturbance towards subsea gas pipeline as result of change of hydrodynamic energy which is occurred in scouring location. Therefore, it is necessary to be an analysis which is able to determine risk level towards the subsea pipeline Kodeco as consequence of scouring based on reliability. Probability of failure obtained by applying Method of Bea to get reliability index value towards vertical and lateral hydrodynamic energy. From calculation result obtained of failure probability towards the vertical hydrodynamic energy for three locations that are KP 50, KP 52, and KP 54 are 0.0021. Whereas, the probability of failure towards lateral hydrodynamic energy is about 0.0021 – 0.0070 for different span length on each point kilometers reviewed. The calculation of consequence obtained through calculation of combination of stresses working in the pipes system. Determination of risk level based on calculation yearly frequency and consequence of failure given in risk matrix model. By referring on DNV RP F107 so obtained the risk level for third research location towards the vertical hydrodynamic energy that are on green zone. While, the risk level towards the lateral hydrodynamic energy for each the different span length in the third research location are on ALARP zone.

Keywords : Scouring, Freespans, Bea Method, Risk