

**RISK ASSESSMENT OF OFFSHORE PIPELINE OWNED BY  
PT. TRANS PACIFIC PETROCHEMICAL INDOTAMA  
(PT.TPPI) TUBAN DUE TO FREE SPAN USING RISK BASED  
INSPECTION (RBI) METHOD**

**Name of Student** : Achmad Rudiyanto  
**NRP** : 4307 100 109  
**Department** : Ocean Engineering FTK – ITS  
**Supervisors** : Prof. Ir. Daniel M.Rosyid, PhD., CPM.  
Dr. Yoyok Setyo Hadiwidodo, ST., MT.

**Abstract**

*In this final project risk analysis discussed free span with a mode of failure for oscillations In-flow (PSL) and the oscillations of Cross-flow (PSLC). Pipeline 36 "belongs to PT Trans Pacific Petrochemical Indotama (TPPI) Tuban has experienced throughout the span of 29 meters. Due to the presence of environmental burden like the weight of the waves, currents, danll. There is the possibility of free will span growing long and cause failure of the structure. Therefore, it should be held an inspection-based reliability. Method of Risk Based Inspection using a combination of two parameters, namely the possibility of failure and the consequences of failure. The probability of failure is obtained by using Monte Carlo simulation and the consequences of failure is obtained with the method of semi quantitative Risk Based Inspection (RBI), so that it can be known risks of a segment of pipeline with category safetyconsequences, environment, economy, and property.From the results of the simulation, then retrieved the odds of failure (PoF) to Oscillation in-flow (PSL) = 0.0076; in-flow(PSL2) = 0.0026%; Oscillation of cross-flow (PSCL) =  $5.21 \times 10^{-5}$  and Oscillations of cross-flow (PSCL2) =  $1.3 \times 10^{-5}$ . With reference to the API RBI 581 obtained level of risk for different types of in-flow (PSL1) & (PSL2) with category safetyconsequences, environment, economy: medium risk (3A) and medium 3B for the category Property; in-flow (PSL2): medium risk (3B) and cross-flow (PSCL1) & (PSCL2) with category safetyconsequences, environment, economy : medium (3A) and medium 3B for the categories Property. Based on the level of risk, then the proper inspection method is with a Clamp-on supports for the frequency of inspection of once every two years (intermediate).*

**Keywords;** *Free span, Risk Based Inspection, In-flow, Cross Flow , PSL, PSLC, Monte Carlo.*