Abstract

Pipelines are used for multipurpose in development offshore’s hydrocarbon resources. Marine environment has high corrosivity and all of structures which are in corrosive environment, must be protected in order to the corrosion is reducible. One of the corrosion protection is coating. API 5L X65 is used and have differ coating system then, i.e 3 layers coating system: Zinc ethyl silicate-epoxy-glass flake epoxy and 4 layers coating system: Zinc ethyl silicate-epoxy-modified epoxy-polyurethane. Each coating system has some scratch as coating defect, 1 scratch and 2 scratches on the surface of each specimen. Cell 3 electrode method is used for corrosion rate measurement. The research concluded the corrosion rate on 3 layers coating system with 2.8% coating defect is 0.001044 mmpy, 0.0001495 mmpy for 5.6% coating defect and corrosion rate increase 30.17%. Whereas the corrosion rate for 4 layers coating system with 2.8% coating defect is 0.000565 mmpy and 0.000757 mmpy for 5.6% coating defect, corrosion rate increase 25.36%. Analysis of corroded surface specimen using SEM (Scanning Electron Microscope) and the result is morphology the surface of coating defect area which corroded, the initial corrosion occurs.

Key words: coating, API 5L X65, scratch, cell 3 electrodes, corrosion rate, SEM.