

Studying Roughness Effects on Flow Regimes in Offshore Pipelines

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Abstract : Due to the specific condition, offshore pipelines are given careful consideration and care in both design and operation. Most of the offshore pipeline flows are multi-phase. Multi-phase flows construct different pattern or flow regimes (in simultaneous gas-liquid flow, flow regimes like slug flow, wave and ...) under different circumstances. One of the influencing factors on the flow regime is the pipeline roughness value. So far, roughness value influences and the sensitivity of the present models to this parameter have not been taken into consideration. Therefore, roughness value influences on the flow regimes in offshore pipelines are discussed in this paper. Results showed that geometry, absolute pipeline roughness value (materials that the pipeline is made of) and flow phases prevailing the system are of the influential parameters on the flow regimes prevailing multi-phase pipelines in a way that a change in any of these parameters results in a change in flow regimes in all or part of the pipeline system.

Keywords : absolute roughness, flow regime, multi-phase flow, offshore pipelines

Conference Title : ICMT 2017 : International Conference on Marine Technology

Conference Location : London, United Kingdom

Conference Dates : March 14-15, 2017