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Abstract Submitted

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A Statistical investigation of sloshing parameters for multiphase offshore separators MD MAHMUD, Lamar University, RAFIQUUL KHAN, Cameron Corporation, QIANG XU, Lamar University — Liquid sloshing in multiphase offshore separators has been the subject of intense investigations for last several decades both by experiments and simulations. Large number scientists have worked to minimize sloshing impacts/intensity and some others have developed new methods to describe the sloshing patterns. In addition, complex mathematical models are developed to characterize sloshing phenomenon. However, a comprehensive statistical study of the input parameters and output results is not yet been studied. In this study, statistical approach will be considered to determine the significant parameters for liquid sloshing. The factor analysis and principal component analysis techniques are considered to identify the significant parameters for liquid sloshing. Numerical experiments are carried out through Computation Fluid Dynamics (CFD) technique using ANSYS Fluent software. The input parameters considered here are liquid depth/tank length ratio, tank acceleration, wave frequencies, amplitudes in various sea state conditions. The measured variables include hydrodynamic force, pressure, moments, turbulent kinetic energy, height of the free surface, vorticity. Mathematical correlations may be developed from the data analysis.

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