

# Abstract

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## **A Finite Element Model for Subsea Pipeline Stability and Free Span Screening**

An approach for the screening of subsea pipelines against on bottom lateral instability and free spanning is presented in this paper. The approach is based on the use of a nonlinear finite element model. Combined stresses/lateral displacement acting on offshore pipelines due to combined hydrodynamic loads including wave/current effects are computed using the finite element model for both on bottom stability and free spans. Results are compared with those obtained from pipeline design codes. A case study is presented for an actual pipeline off the shore of Saudi Arabia. Results show that computed stresses/lateral displacements are within the specified code values. The proposed approach can be a valuable tool for the pipeline designer/operator for assessment of pipeline stability and free spans.