



# Deepwater Foundations and Pipeline Geomechanics (Civil & Environmental Engineering Series)

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## Deepwater Foundations and Pipeline Geomechanics (Civil & Environmental Engineering Series) From Brand: J. Ross Publishing

Practicing engineers in the offshore engineering industry will find in this contributed handbook practical information on current oil field production development practices for foundations and subsea flowlines. The technical challenges associated with deepwater developments have led to significant innovations. The contributors are practicing engineers and academics who have been at the forefront of offshore geotechnical development for several decades. Until the 1980s, the most common design concerns for offshore foundation and pipeline engineering were associated with extreme storm loadings, earthquakes, mudflows, fatigue, and installation activities. Engineers today face additional concerns, including: submarine slope failures, thermal buckling of pipelines, catenary riser interaction with the seafloor, vortex induced vibration of flowlines, shallow water flows encountered during drilling operations, and thermal interaction of pipelines with permafrost. **Deepwater Foundations and Pipeline Geomechanics** describes recent advances in geophysical data acquisition and evaluation as they relate to offshore developments, as well as foundation and pipeline design considerations. The presentation is focused on deepwater geotechnics as well as subsea and Arctic pipeline design considerations, but engineers will find much of it applicable to other situations.

### Key Features:

- Describes deepwater foundation issues and the corresponding site investigation requirements
- Illustrates the use of integrated geophysical studies in field architecture planning, geohazard investigations, planning geotechnical investigations and foundation selection
- Demonstrates the application of centrifuge modeling techniques for soil-structure interaction and introduces the application of risk analysis to foundation design with example applications
- Discusses geomaterial models and features necessary for their successful application to various foundation problems and includes illustrative examples for suction piles, flowline-soil interaction and more

--WAV offers downloadable spreadsheets to calculate soil-pipe interaction responses, spreadsheets demonstrating reliability calculations, color versions of geophysical profiles, and example Abaqus analysis input files for analyzing lateral buckling of subsea flowlines, **available from the Web Added Value Download Resource Center at [jrosspub.com](http://jrosspub.com)**

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### Editorial Review

#### About the Author

**William O. McCarron**, Ph.D., PE, has worked as an independent consultant since 2001 when he founded ASGM Engineering. He specializes in structural mechanics and geomechanics. Prior to that, Mr. McCarron worked for Amoco Production Company for 14 years where he held several research and project engineering positions. He was responsible for delivery of the tendon, foundation and production riser components for Amoco's Gulf of Mexico Marlin tension leg platform installed in 3,234 ft of water. Mr. McCarron earned his degrees from Oklahoma State University and Purdue University.

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