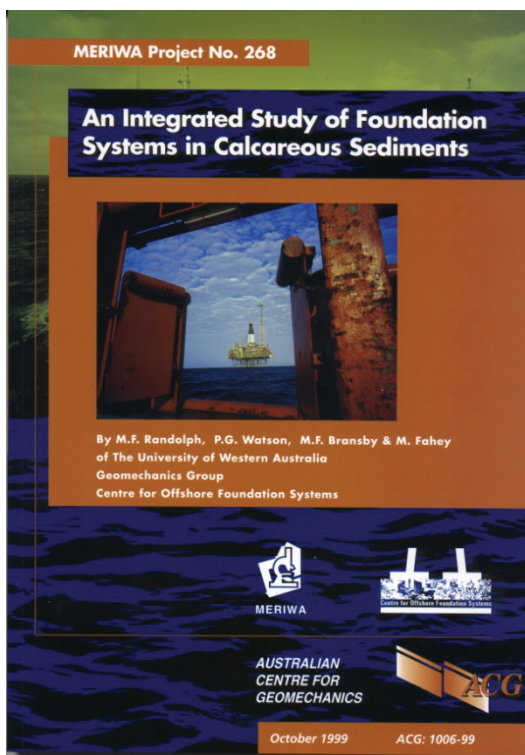


An Integrated Study of Foundation Systems in Calcareous Sediments

ACG Research Report No.: ACG 1006-99
MERIWA Project No. M268



This project was undertaken in the anticipation of future developments of offshore facilities around Australia that must overcome challenges of deep water and the potential lack of any substantial cemented sediments near the surface. Novel foundation approaches are needed, moving away from traditional piled jacket structure, in order to reduce costs and minimize the risk of installation problems. Shallow foundation and anchoring systems, or partially piled foundations, appear to be cost-effective alternatives to conventional drilled and grouted piles, but there was a dearth of data on the performance of such systems in uncemented calcareous soils.

The main objectives of the project were:

- Formulation of a design framework for alternative foundation systems in weak calcareous sediments, calibrated through physical model tests. Attention was focused on two main foundation types, namely piles under lateral loading, and skirted foundations (or caissons) under combined vertical, moment and horizontal loading.
- Analytical techniques were to be developed for use in design.

The project produced three main areas of research:

- Soil Characterisation
- Laterally Loaded Piles
- Caisson Foundations

Researchers

The research project was initiated by Mark Randolph and Martin Fahey, and conducted by researchers from the University of Western Australia Geomechanics Group and the Centre for Offshore Foundations with particular input from Fraser Bransby, Phil Watson, Gerard Dyson and Xiaoyan Mao, and a steering group from sponsoring companies chaired by Mohamed Khorshid (Advanced Geomechanics). The ACG extends its congratulations to the authors and the project team.

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