

Liquefaction of Cargos in Ships

Synopsis:

The talk will provide a brief introduction to the issue of liquefaction of cargo in ships and explain the recent interest in the topic, the types of cargoes that are problematic and the procedures used to ensure safe transport. Although the cargoes are nominally dry, in practice because of mining and processing procedures the ores often contain significant amounts of moisture when placed into ships. The results of several series of tests conducted to understand the unsaturated soil mechanics behind the liquefaction phenomena will be presented. This will include cyclic tests of unsaturated ore like materials prepared at different densities and degrees of saturation, small centrifuge tests investigating moisture redistribution, 1-D column tests of unsaturated soil subject to shaking and finally the development and results from numerical FE analyses.



Professor David Airey
University of Sydney

Presenter's Bio:

“David Airey graduated from the University of Cambridge in 1979 with a BA in Engineering and stayed on to complete Masters and PhD degrees in Soil Mechanics. He took up a position as a research fellow at the University of Western Australia in 1987, and moved to the University of Sydney in 1989. Professor Airey was Acting Head of School of Civil Engineering during 2016.

David Airey's research interests cover all areas of experimental Geomechanics. He has made significant contributions to the understanding of the behaviour of (cemented) carbonate sediments, experimental measurement of mass transport phenomena (advection, diffusion, sorption, degradation) for a range of inorganic, organic and radioactive species, work which was extended to investigate the geo-sequestration of carbon dioxide in coal and coal seam gas extraction, model tests of foundation systems and the evaluation of soil test equipment and procedures. Current research interests include liquefaction of cargoes during ship transport, the dynamics of unsaturated soils, dynamic compaction and healing of soil cracking. David Airey is on the editorial board of the Geotechnique Letters, Canadian Geotechnical Journal and Geotechnical Testing Journal, is deputy chair of TC306 of the International Society for Geotechnical and Foundation Engineering concerned with geotechnical education, as well as a member of TC101.”

Venue: SKEM 201

Date: 18TH July 2018

(Wednesday)

Time: 10:30