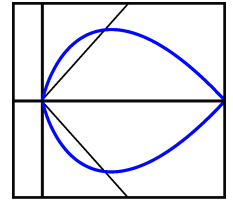




UNIVERSITY OF
CAMBRIDGE

Department of Engineering



GEOTECHNICAL
SOCIETY

Challenges of Lowering a Live Subsea Buried Gas Pipeline by 6 m

Dr Indrasenan Thusyanthan

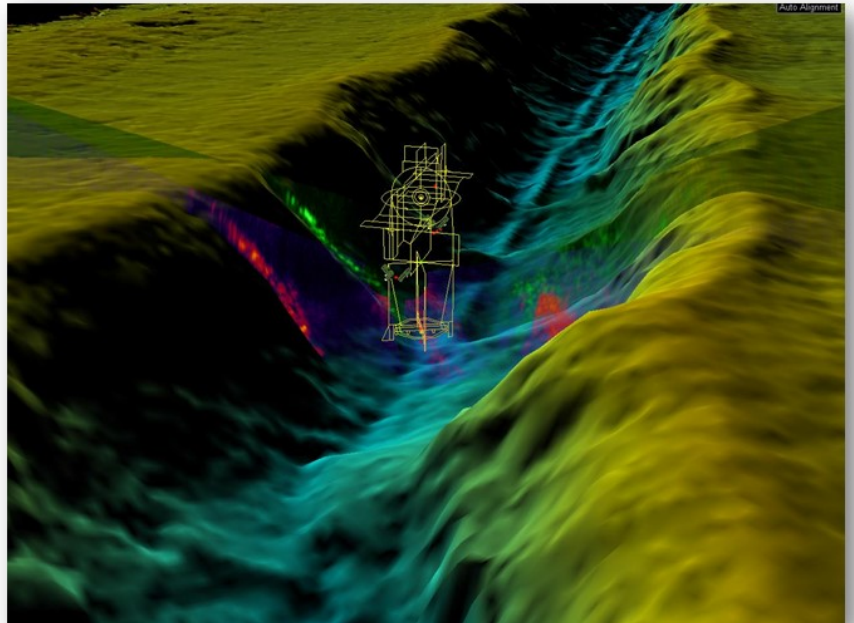
Geotechnical Consultant, SaudiAramco

Seminar overview:

This talk will consist of two parts; the first part aims to highlight the importance of understanding soil classification and its limitations on pipe-soil interaction design. The second part presents a case study on how a live gas pipeline was lowered by 6 m for a length of about 350 m, which is the world's first such lowering.

Geotechnical surveying and the resulting soil classification is one of the fundamental design inputs for any subsea structure or pipeline design. Yet, details of soil classification and its limitations for predicting soil behaviour under various scenarios are not fully understood by design engineers. As soil classification is often used by pipeline engineers to predict pipe-soil interaction behaviour for a given scenario, lack of fundamental understanding of soil

classification often leads to problems later in projects. The talk will highlight the commonly used soil classification standards; ASTM D-2487, BS 5930 and ISO 14688. The important message is that soil behaviour in a given application is not always in accordance with its soil classification. Examples such as ploughability assessment results and pipeline on-bottom stability assessment results are highlighted to show that when particle size distribution falls near the classification boundary of coarse/fine soils, then soil classification alone may not fully capture the soil behaviour for particular aspects of design and operation.



When and where:

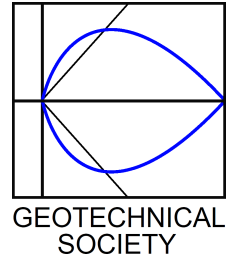
Wednesday, 01 March, 13:00

Department of Engineering, Baker Building Board Room

Queries:

Stefan Ritter

sr671@cam.ac.uk



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The second part of the talk will present a project case study of a live gas pipeline lowering. A live gas pipeline was crossing a shipping channel and was buried at 3 m below seabed. In order for the port to expand and allow bigger vessels to enter the port, the shipping channel needed to be deepened. Thus the top of pipeline (TOP) was required to be lowered to LAT 19m (a lowering of almost 6m) where it crosses the shipping channel. The lowering operations had to be carried out whilst the pipeline is fully operational. Engineering challenges faced, engineering assessments, pre-operational plans and associated risks, and operational issues of the project will all be presented. The pipeline was successfully lowering to it's target depth. This achievement of lowering a "live gas" pipeline by 6 m is considered to be the first in the world.

Biography:

Dr Thusyanthan is a Chartered Engineer with extensive design and consultancy experience in various aspects of geotechnical and pipeline engineering. Dr Thusyanthan has a First class BA/MEng and PhD degree from University of Cambridge, UK, where he also served as University Lecturer in Geotechnics. He has project experience around the world covering South East Asia, Australia, North Sea UK, Middle East, West Africa, Adriatic Sea, Caspian Sea and Gulf of Mexico. He has worked as Consultant, Head of R&D and Project Manager on pipeline projects with clients, operators, contractors and certification bodies. He was also the recipient of Cambridge Gates Scholarship, "Bill Curtin Medal" from Institution of Civil Engineers for the Best Paper in ICE Civil Engineering Journal and "Roscoe Prize" for soil mechanics.

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