Short Course on
Structural Analysis and Design of Vessels for Offshore Production and Transport of Oil and Gas

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14 PDUs accredited by the Professional Engineers Board, Singapore

Date: 28th – 29th November 2005, Monday & Tuesday
Time: 0900 – 1700hrs daily
Venue: National University of Singapore

Organized by:
- Professional Activities Centre, NUS
- Centre for Offshore Research & Engineering, Faculty of Engineering

Supported by:
- Keppel Offshore & Marine Ltd
Abstract
An overview of structural analysis and design issues relating to ships applied for offshore production of oil and gas and transport of gas, will be given. Methods based on first principles of mechanics will be emphasized, as such approaches are extensively used for the vessels considered in this short course. Hopefully such practice will also pave the way for applying this kind of analysis and design approaches for other types of ships as well.

COURSE PROGRAMME (DAY 1)

1. Introduction
   - Overview of systems (FPSO/LNG, OIL/LNG)
   - Structural systems
   - Mechanical requirements
   - Safety requirements
   - Regulations, Guidelines

2. Loads on Ship Hull
   - Overview (extreme and fatigue loading)
   - Still-water
   - Wave-induced loads
   - Green water, slamming
   - Sloshing

3. Load Effects
   - Finite element modelling
   - Special features like turret for FPSO, tank-hull interaction for LNG vessels
   - Springing and whipping effects for large LNG vessels

COURSE PROGRAMME (DAY 2)

4. Ultimate Strength Check
   - Steel and special material for containment structure
   - Hull girder strength
   - Component checks
   - Containment strength

5. Accidental loads and Accidental limit state requirements to ships
   - Fires, explosive ship impacts

6. Fatigue analysis
   - SN – viz fracture mechanics approach
   - Design viz inspection
   - Local design viz fabrication costs
   - Balance of safety and economy by design and inspection

7. Brief overview of reliability and risk analysis as a tool for decision – making in design and operations

8. Summary

Course Lecturer’s Profile

Torgeir Moan has been Professor of Marine Structures in Norwegian University of Science & Technology (NTNU) since 1977. His main research interest is structural analysis and design of all kinds of marine structures. He has authored more than 250 scientific papers, and delivered more than 10 keynote, plenary lectures in international conferences and award lectures. He has educated 40 and is currently supervising 10 doctoral students and has hosted 25 foreign postdoctoral and visiting professors. He has been a visiting professor at MIT for one year and UC Berkeley (two years). He has contributed in the development of various structural design standards for offshore structures, ships and floating bridges in Norway and internationally. Most recently he was responsible for the most modern standard for analysis of loads and load effects for offshore structures (NORSOK N-003) that will serve as basis for ISO standard for floating platforms. He has also been engaged in accident inquiries. Since 1976 he has been involved in ISSC, was the main responsible for ISSC in 1994-97 and currently as Standing Committee member. He is editor of J. Marine Structures and serves on the editorial board of 6 other journals. Moan has been elected member of 3 Norwegian academies and a Fellow of the Royal Academy of Engineering in UK, as well as elected Fellow of several international professional societies like ASCE and IABSE. In 1998, he received the Statoil research prize. Professor Moan has been Dean of Faculty of Marine Technology, NTH (NTNU) and served as project manager in several research projects in SINTEF. Since 2002 he has been director of the Centre of Excellence for Ships and Ocean Structures at NTNU. He was appointed the first Keppel Professor in National University of Singapore in December 2002.
2 Ways to Register!

ENQUIRIES
Please contact Lilian CHOONG for more information at
Tel: +65 6516 5113 / +65 6778 2314
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FEE
Participants from Singapore: SGD700.00 + SGD35.00 (5% GST)
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A 50% refund will be made for withdrawals (received in writings) ten working days before the commencement of the course. No refunds will be made thereafter. However, a replacement will be accepted upon prior arrangement at no extra cost. Please inform us of the changes, if any, by fax. The Professional Activities Centre reserves the right to cancel the course and fully refund the participants, should unforeseen circumstances warrant it. Every effort will be made to inform participants of any changes.

Please register me: Structural Analysis and Design of Vessels for Offshore Production and Transport of Oil and Gas, 28th – 29th November 2005

Course Fees:
Participants from Singapore: SGD700.00 + SGD35.00 (5% GST)
Overseas participants: SGD700.00 (GST Exempted)

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