

One-Day Interactive Course

Flow Assurance: Current State of the Art

Thursday 2 June 2011

Bonhill House
1 - 3 Bonhill Street
London
EC2A 4BX

COURSE OBJECTIVE:

Subsea production systems are of increasing importance to the oil and gas industry. They are being used to develop small and satellite hydrocarbon accumulations as tie-backs to existing infrastructure, with increasing emphasis on deepwater applications.

Most operate as multiphase systems and this gives rise to inherent production problems due to the increased potential for deposition of solids, both organic and inorganic. As the industry looks towards expanding potential applications, the likelihood of these problems arising is increasing.

The course objective is to describe the production problems that can arise in multiphase operations, with a particular focus on subsea systems, and the range of possible solutions currently in use. Emerging technologies are also introduced.

WHO SHOULD ATTEND?

Many oil industry personnel are involved in the design and operation of subsea and multiphase equipment and systems. This course is aimed at specialist engineers who require a broader overview of general subsea system design and operational considerations, young engineers who are just entering the field and more senior management who are seeking a greater in-depth understanding in order to make informed decisions.

COURSE FORMAT

The course is made up of eleven sessions in one day. These are highly interactive in nature to enable those attending to gain the maximum benefit. Active questioning is positively encouraged.

The emphasis is on providing explanations at a readily understandable level and on stressing the links between the engineering fundamentals and their practical applications, both current and future. Case studies and examples from around the world are used as much as possible.

DOCUMENTATION

Each delegate attending the course is provided with a full set of the graphics used, annotated with notes describing the material presented. Full colour versions of the graphics and notes are also provided on a CD-ROM, along with some video clips and animations. These are intended to be useful in the delegate's professional activities in the future.

FLOW ASSURANCE: THE CURRENT STATE OF THE ART

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Course Presenter: Alex Hunt. Engineering Technology Manager, BG Group

PROGRAMME – MORNING

09.00 Coffee & Registration

09.30 Introduction

Reservoir Types and Fluids

- Fluid Compositions
- Fluid Phases
- Phase Diagrams
- Reservoir Types
 - ◊ Black Oil
 - ◊ Volatile Oil
 - ◊ Gas Condensate
 - ◊ Wet Gas
 - ◊ Dry Gas
- PVT Analysis
- Model Tuning
- Changes over Time

Fluid Flow Principles

- Physical Principles
- Single Phase Flows
- Laminar & Turbulent Flows
- Multiphase Flow Regimes
 - ◊ Vertical
 - ◊ Horizontal
 - ◊ Inclined
- Liquid Hold-Up
- Slugging

11.00 - 11.20 Coffee/Tea

Systems and Equipment

- Multiphase Meters
- Wet Gas
- Multipoint Selector
- Subsea Separation
- Multiphase Pumps
- Evolution
- Current Records
 - ◊ Deepest
 - ◊ Longest

Gas Hydrates

- Structures
- Occurrence
- Nucleation
- Growth
- Agglomeration
- Blockage Mechanisms
- Prediction
- Laboratory and Flowloop Testing

12.45 - 13.30 Lunch

PROGRAMME – AFTERNOON

13.30 Waxes

- Structures
- Physical Properties
- Deposition
- Prediction

Resins and Asphaltenes

- Structures
- Physical Properties
- Deposition
- Prediction

Diamondoids

Mechanical and Thermal Control

- Mechanical Methods
 - ◊ Pigging/Scraping
 - ◊ Magnets
- Passive Thermal Methods
 - ◊ Insulation
 - ◊ Vacuum Pipe
 - ◊ Bundles
- Active Thermal Methods
 - ◊ Electrical
 - ◊ Hot Water

Chemical Control and Depressurisation

- Nitrogen Generation System
- Thermodynamic Inhibitors
- Recovery Systems
- Low Dosage Inhibitors
- Applicability
- Depressurisation

15.00 - 15.20 Tea/Coffee

Corrosion and Other Issues

- Corrosion
- Sand
- Carbonate Scales
- Naphthenates
- Emulsions/Foams
- Heavy Elements

Emerging Technologies

- All Electric Systems
- Subsea Processing
- Subsea Wet Gas Compression
- Forthcoming Developments

17.00 Conclusion



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REGISTRATION INFORMATION

To register, complete the below form and send your payment to SUT's Aberdeen office: SUT, Innovation Centre, Exploration Drive, Aberdeen Science and Energy Park, Bridge of Don, Aberdeen, AB23 8GX.
Email: anna.henty@sut.org Fax: + (0)1224 820236 Tel: + (0)1224 823637

REGISTRATION FEES

SUT Member Rate GBP £250.00 (excluding VAT)

Non-member Rate GBP £300.00 (excluding VAT)

Fees include all refreshments and course documentation

A 10% discount will be allocated if booking for both "Introduction to Reservoir Engineering for Subsea Engineers" course and the "Flow Assurance: The Current State of the Art" course.

PAYMENT METHODS

Bank Transfer: (exclusive of transfer fees and currency exchange rates) to Barclays Bank plc, Pall Mall Business Centre, P.O. Box 15164, London SW1A 1QE. Sort Code No. 20 65 82. Account No. 80849499

Cheque: Sterling only drawn on a UK Bank Account. An International cheque can be obtained from all major overseas banks. Please ensure any charges are met at source.

Credit Card: We do not accept AMEX.

VAT: Our VAT No. is 242 3504 95. VAT must be paid on all registration fees, including those from overseas. All EC country organisations must provide their VAT number in accordance with EC VAT regulations. A VAT receipted invoice will be sent in acknowledgement of all pre-paid registrations.

CANCELLATIONS

Refunds will be made on written cancellations received up to ten working days in advance of the event but will be subject to a 15% handling charge. 50% will be deducted up to three working days in advance and 100% thereafter up to the start of the event. No refund will be given for non-attendance. Delegates may wish to nominate a substitute in their place.

REGISTRATION FORM

Name _____ Tel _____

Company _____ Fax _____

Address _____

_____ Email _____

(For multiple registrations) please book places on the seminar for the following personnel:

Credit Card No. ____/____/____/____ Expiry Date ____/____ Security No. _____ Amount £ _____

Name on Card _____ Billing Address _____

Please Invoice quoting PO No. _____ Amount _____

COURSE PRESENTER

Alex Hunt is currently the Engineering Technology Manager for BG Group, based in Reading. In this role, he manages a portfolio of external technology development projects funded by the company in areas including metering, flow assurance and subsea. In addition, he is also running a specific programme looking at ultra-deepwater technologies. With Bachelors' and Masters' degrees in Chemical Engineering from Jesus College, Cambridge, he is a Registered Subsea Engineer, Chartered Engineer and Chartered Scientist. He has 25 years' experience in the energy industry and 15 years' involvement in subsea projects.

He has previously held positions with operators, contractors and consultancies and has authored over thirty papers and articles on flow assurance, subsea issues, deepwater and emerging technologies. He currently serves on committees of the Society for Underwater Technology and the Engineering and Physical Sciences Research Council. He is a member of the UK National Measurement System Engineering & Flow Working Group and a Visiting Fellow at Cranfield University.

The permission of BG Group to present this course is gratefully acknowledged.

HOW TO FIND BONHILL HOUSE



Parking

There are two NCP car parks within close proximity to Bonhill Street. One is located Paul Street. The second is located in Finsbury Square. In addition there are a limited number of parking meters along Bonhill Street. Please remember the venue sits within the congestion charge zone – for further information visit www.cclondon.com.

London Underground Stations

Old Street – Northern Line

Take exit 4 marked 'City Road South'. On exiting the station follow the pavement round in to City Road. Take the third road on the left in to Epworth Street, then right in to Tabernacle Street. Bonhill Street is the first road on the left.

Moorgate – Northern Line

Take exit marked 'Moorgate East Side, buses heading south'. Turn right on exiting the station. Proceed straight ahead passing Finsbury Square on the right. Continue ahead towards a large corner building with dome shaped roof (Lowndes House). Keeping this on your left proceed along Tabernacle Street. Bonhill Street is the first road on the right.

Moorgate – Metropolitan, Circle or Hammersmith & City Lines

Take exit marked 'Moorgate'. On exiting the station, cross over into Moor Place and proceed straight ahead. Turn left into Moorgate. Cross the road and turn left. Proceed straight ahead passing Finsbury Square on the right, proceeding along Tabernacle Street. Bonhill Street is the first road on the right.

Liverpool Street – Central, Metropolitan, Circle or Hammersmith & City Lines

From the Underground follow the signs for 'British Rail'. Once in the mainline station follow the directions given below for Liverpool Street Mainline station. (10 mins).

Mainline Stations

Liverpool Street Station

Follow the exit sign for 'Broadgate' passing through the shopping mall. On exiting, follow the sign for The Museum of London, which takes you into Eldon Street. Continue straight ahead into South Place and proceed to traffic lights. Turn right just after HSBC bank and continue straight-ahead passing Finsbury Square on the right, proceeding along Tabernacle Street. Bonhill Street is the first road on the right. (10 mins)