

One-Day Interactive Course

Flow Assurance: Current State of the Art

Wednesday 14 March 2007
The Mermaid Conference & Events Centre
Puddle Dock
Blackfriars
London
EC4V 3DB

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.

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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

System Design and Operation

- Applications
- Evolution
- Manifolds and Templates
- Modular Systems
- Trees
- Tie-Ins
 - Flowlines
 - Umbilicals

Gas Hydrates

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

12.50 Lunch

PROGRAMME – AFTERNOON

13.30 Resume

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

Corrosion and Other Issues

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

Subsea Equipment Advances

- Wells and Completions
- Downhole Processing
- Seabed Processing
- Supporting and Emerging Technologies

17.00 Conclusion

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REGISTRATION INFORMATION

To register, complete the registration 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: michele.ross@sut.org. Fax: + 44 (0)1224 820236. Tel: + 44 (0)1224 823637.

REGISTRATION FEES

	SUT Members	Non Members
Multiple registrations (2 or more registering at the same time)	£350.00	£400.00
Single registrations	£400.00	£450.00

All charges quoted exclude VAT @ 17.5%

Fees include all refreshments and course documentation

PAYMENT METHODS

Bank Transfer (exclusive of transfer fees and currency exchange rates) to Barclays Bank plc, Pall Mall Business Centre, PO 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: Mastercard or Visa ONLY. We cannot accept payment on any other card.

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.

ACCOMMODATION

If you need hotel accommodation in London please contact Hotel Direct on 08700 500 550 or go to www.hoteldirect.co.uk

REGISTRATION FORM

Please complete and return to: SUT, Innovation Centre, Exploration Drive, Aberdeen Science and Energy Park, Bridge of Don, Aberdeen AB23 8GX. Telephone: + 44 (0)1224 823637. Fax: + 44 (0)1224 820236. Email: michele.ross@sut.org

Name _____ Company _____

Tel _____ Fax _____ Email _____

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

Address _____

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, deepwater and subsea. Other areas of interest include HP/HT and gas conversion 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 14 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 Flow Working Group and a Visiting Fellow at Cranfield University.

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

DIRECTIONS TO THE MERMAID CONFERENCE AND EVENTS CENTRE

The Mermaid is ideally situated between the City and the West End. Located on the North Bank of the Thames, the building enjoys spectacular views towards the Tate Modern, Globe Theatre and the Millennium Bridge. Transport links are excellent too, with the Underground and mainline links of St Paul's and Blackfriars stations just a short walk away.

