

FIVE-DAY COURSE

# SUBSEA AWARENESS



## ABERDEEN

## PROGRAMME AND REGISTRATION FORM

**THE COURSE IS  
AIMED AT ENGINEERS  
WHO ARE:**

- New entrants to the industry
- Technology conversions within the offshore industry
- Refresher candidates

This five-day Course has been designed to be suitable for engineers new to the offshore industry, those transferring from other disciplines within the industry and engineers who have worked in subsea previously but would benefit from a refresher course and exposure to the latest technology.

The modules are presented by key supply and service companies in the subsea sector.

Whilst most of the course will be presented in a 'classroom' environment, the sessions will be interactive, with the opportunity to ask questions and discuss what has been learnt. In particular, hands-on and visual components have been included wherever possible to enable delegates to view software models and products destined for subsea service.

ORGANISED BY

**SOCIETY FOR UNDERWATER TECHNOLOGY**

INNOVATION CENTRE, ABERDEEN SCIENCE & ENERGY PARK, BRIDGE OF DON, ABERDEEN AB23 8GX

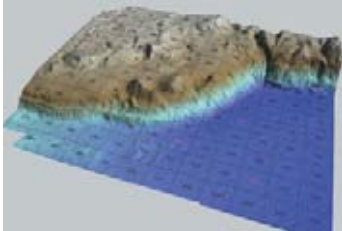
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# Subsea Awareness



Images on cover and above courtesy of Fugro Survey Limited

## PROGRAMME

### DAY 1 – MONDAY

09.00–17.00

#### General Introduction to the Subsea Sector

##### Overview:

- Why subsea? ■ What other options are available, including option evaluation and selection?
- Examples of different systems used on existing fields. ■ What are the current design philosophies and the technology drivers?

##### Subsea development options:

- Single well tieback. ■ Template.
- Cluster/ manifold etc.

##### Components of subsea systems/ 'building blocks':

- What is the purpose of each and how do they fit into the overall system?

##### Development areas:

- Deep water/ultra deep water.
- Complete subsea solutions.

Lunch

#### Overview of Principles of Fluid Flow

- Understanding the nature of fluids.
- Thermal management of subsea systems.
- Deep and Ultra deepwater development.
- Seabed Processing.

#### Subsea Well Intervention

- Access to subsea wells.
- Installing and replacing subsea trees.
- Decommissioning subsea wells.
- Recent projects.
- Intervention techniques.

17.00 Depart

19.00 Course Dinner

### DAY 2 – TUESDAY

08.30–17.30

#### Subsea Wellheads/Trees

**Introduction: Overview of subject area/systems.**

##### Wellhead system.

- Typical subsea Wellhead overview.

##### Completion system:

- Production packers. ■ Sub-surface safety valves. ■ Reservoir monitoring gauges.

Lunch

##### Tour of equipment in plant.

##### Dual bore xmas tree system:

- Production guidebase. ■ Tubing suspension system. ■ Xmas tree system. ■ Installation and workover equipment.

##### Spool tree system:

- Production guidebase. ■ Tubing suspension system. ■ Xmas tree system. ■ Installation and workover equipment.

##### Chokes.

##### The future:

- Operator requirements.
- Technology drivers, gaps and solutions. ■ Sealing technology.

17.30 Depart

## HOST COMPANIES

Aker Solutions ■ A

Cameron UK Ltd ■ C

ClerkM

MSi ■ S

Subsea 7 ■ Te

All details of locations, host companies, and contact information will be provided in the programme, with a separate set of Joining Instructions together with a telephone number.

## DAY 3 – WEDNESDAY

08.30–17.00

### Subsea Control Systems

#### Introduction.

- Overview, what does the control system do.

#### Types of Control System.

- Advantages/disadvantages of each type.

#### Typical Equipment.

- Hydraulic Power Unit, Electrical Power Unit, Master Control Station, Subsea Control Modules

#### System Options.

- Hydraulics, Electrics, Umbilicals, Sensors.

#### Operator Interface.

- Master Control Station, functionality and options.

*Lunch*

#### Tour of equipment in plant.

#### Subsea Control Fluids.

- The control fluid as a component of the system.
- Anatomy of a control fluid.
- Environmental impact.

#### Controls Intervention.

#### Future.

- Technology Drivers.

17:00 *Depart*

## DAY 4 – THURSDAY

08.30–17.00

### Installation and Decommissioning

#### Flexible pipe:

- Design principals. ■ Flowlines.
- Risers. ■ Typical installation applications.

#### Pipeline Installation:

- Installation design.
- Conventional lay barges.
- Reel ship. ■ Deep water J lay.
- Bundles.

#### Subsea Field Decommissioning:

- Risers and pipe. ■ Templates.
- Manifolds. ■ Case History.

*Lunch*

### Intervention

#### Introduction:

- Safety. ■ Current Environment.
- Technology Drivers.
- Water Depths.

#### ROV Technology:

- Introduction. ■ System Types.
- Typical System Components.
- Operational systems and capabilities. ■ Launch and Recovery systems.

#### AUV Technology:

- Introduction. ■ System components. ■ Capabilities.
- Sensors. ■ Trials and Testing.

#### Remote Intervention Systems:

- Tooling Standards. ■ Interfacing.
- Component Replacement systems.
- Connection systems. ■ Diverless Pipeline Repair.

#### Diver Intervention:

- Air and Saturation Diving. ■ Safety.
- Diver Tasks. ■ Support Vessels.

#### Workshop tour.

17.00 *Depart*

## DAY 5 – FRIDAY

08.30–16.00

### West of Shetland Subsea Case History

#### Overview of West of Shetland Subsea Development(s):

- Key Design Criteria and Technology Drivers. ■ Challenges faced.
- Development concept and schedule from discovery to implementation.
- Lessons learnt from other projects.

#### Overview of Project Phase:

- Contractual issues and differences – Schiehallion and Foinaven. ■ Key Technical issues during Feed and Detailed design. ■ Overview of subsea equipment design and key features. ■ Installation issues and progress.

#### Overview of Operational Phase:

- Overview of Operational experience. ■ Lessons learned.
- Recommendations for future similar projects. ■ Future technology requirements.

#### View of physical models of Schiehallion equipment:

- Possible use of video footage or other simulation tools.

*Lunch*

### The Subsea Challenge: hotter, deeper, further, cheaper

#### Future subsea developments

- Northwest Europe. ■ Worldwide.

#### Tackling the Economic Hurdles

- Small field size. ■ Increasing step-out distances. ■ Mature assets.

#### Tackling the Technology Hurdles

- Hotter (HPHT). ■ Deeper.
- Further (increasing tie-back distances).

#### The Subsea Future

- Workshop/discussion.

16.00 *Depart*

## COMPANIES INCLUDE:

Atkins Boreas ■ bp

Castrol Offshore

Maxwell

Shell UK

Technip Offshore

Companies, lecturers and updates

will be provided with the

program with maps, address and

phone number.

## REGISTRATION INFORMATION

To register please complete the registration form and send to SUT's Aberdeen office 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: nicola.taylor@sut.org.

Space on the course is limited so early booking is advised.

### REGISTRATION FEES

SUT Member Rate:  
GBP £1,750.00 (excluding VAT)

Non Member Rate:  
GBP £2,000.00 (excluding VAT)

All refreshments and copy of the course notes included in the fees.

### 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, Account Name: Society for Underwater Technology

**Cheque:** Please make payable to "Society for Underwater Technology". 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:** Please provide details below. We do not accept American Express Cards.

**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.

**JOINING INSTRUCTIONS** Joining instructions will be sent direct to the registered delegate (unless otherwise advised) on receipt of their written confirmation of attendance.

**ACCOMMODATION** Aberdeen has a wide range of accommodation; please contact the SUT Aberdeen office for information.

**TRANSPORT** Delegates are responsible for their own travel arrangements at the beginning and end of each day. Assistance with travel will be given between modules.

**COURSE DINNER** An informal dinner will be held in a local restaurant on the first night of the course (details will be with the joining instructions).

**CANCELLATIONS** Refunds will be made on written cancellations received up to 10 working days in advance of the event but will be subject to a 15% handling charge. 50% will be deducted 5 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

## Subsea Awareness Course

Five-Day Courses : Aberdeen

Please complete and either email to nicola.taylor@sut.org or print off a copy and fax to + 44 (0)1224 820236

Name \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

Postcode \_\_\_\_\_

Email \_\_\_\_\_

Phone No. \_\_\_\_\_

Fax No. \_\_\_\_\_

SUT Member No. \_\_\_\_\_

Credit Card Payment (Not American Express):

Amount £ \_\_\_\_\_

Card No. \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

Start Date \_\_\_\_\_

Expiry Date \_\_\_\_\_

Security No. (last 3 digits on back) \_\_\_\_\_

Name on Card \_\_\_\_\_

Billing Address \_\_\_\_\_

Please indicate your preferred payment method:

Credit Card (details above)

Cheque enclosed, made payable to  
Society for Underwater Technology

Please Invoice quoting PO No. \_\_\_\_\_

