The Life-Cycle of Flexible Risers and Flowlines
3-Day Awareness Course
Aberdeen

REGISTRATION FEES
SUT Member Rate: £900 (+VAT)
SUT Non Member Rate: £1100 (+VAT)

REGISTRATION
To register, please contact events@sut.org / 01224 823637

PAYMENT METHODS
Invoice
Credit Card: All major credit cards accepted
Bank Transfer: Bank details will be advised on request
Excluding transfer fees and currency exchange rates

Cheque: Please make cheques 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 charges are met at source.

VAT No. 242 3504 95. VAT must be paid on all registration fees, including those from overseas.

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.

JOINING INSTRUCTIONS
Joining instructions will be sent direct to the registered delegate (unless otherwise advised).
**Day 1**

**Welcome and introduction**

**Design of flexible flowlines and risers**
- The structure of different types of flexible pipe
- Materials: plastics and their selection; corrosion considerations for steel
- Static flowline design issues, including flow assurance and impact protection
- Dynamic riser design issues, including dynamic analysis and fatigue analysis.

**Installation of flexibles**
- Installation of equipment (reels, carousels, etc.)
- Considerations for selection of method, equipment, installation vessel, etc.
- Installation analysis: load prediction, sea state limitations, minimum bend radius, etc.
- Tie-in operations.

**Day 2**

**Integrity management – operator’s perspective**
- Legislative drivers
- Business drivers
- How flexibles are managed.

**Damage, degradation and failure modes**
- How design takes account of failure modes
- Flexible pipe degradation & failure modes, and their mechanisms
- Operational experience – what degradation & failure mechanisms have been experienced
- How integrity management is linked to degradation & failure mechanisms
- Oil & Gas UK documents: “State Of The Art Report On Flexible Pipe Integrity” and Guidance Note on Monitoring Methods and Integrity Assurance for Unbonded Flexible Pipes”.

**Day 3 (1/2 day)**

**Flexible riser configuration design analysis – in practice**

**Presentation – Numerical considerations for flexible riser design analysis**
- Numerical approaches (brief discussion of software tools available, strengths, weaknesses, etc.)
- Time domain vs. frequency domain approach
- Riser modelling techniques, including ancillary equipment
- Environment characterisation; wave theory; deterministic vs. stochastic approaches
- Response assessment.

**A hands-on session using finite element riser analysis software**
- A range of representative riser configurations used in the North Sea will be used.
  These will demonstrate:
  - Riser response characteristics for different riser configurations
  - Influence of the environment, vessel type and modelling assumptions on riser response
  - Analysis post-processing and results interpretation.

**Companies Contributing to the Course**
BP, Fairfield Energy, Flexlife, Flex-Tech, NOV, Subsea 7, Technip, Wellstream, Wood Group Kenny