

SUBSEA ENGINEERING: DESIGNING FOR INTEGRITY AND OPERATION.

Institution of
**MECHANICAL
ENGINEERS**

16 June 2011
Aberdeen

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www.imeche.org/events/s1563

BY ATTENDING THIS EVENT YOU WILL:

- Find out the latest subsea technologies and techniques and learn how they can be applied to your business
- Learn ways of developing and supporting subsea assets in remote locations around the world
- Discover new business opportunities by networking with fellow subsea industry professionals

SUBSEA ENGINEERING: DESIGNING FOR INTEGRITY AND OPERATION.

As offshore oil and gas developments move to deeper water and more-remote locations, subsea developments become the only option. Subsea engineers must therefore work ever smarter to optimise the integrity of the equipment through good design, while expanding the boundaries of operational capacity and availability.

With presentations by key subsea engineering companies and industry figures, this event will provide an update on best practice in subsea engineering design for integrity and operation.

THIS EVENT WILL ATTRACT:

Offshore oil and gas operators; service and engineering companies and suppliers; subsea engineers; engineering managers; research and development managers; consultants; students

TECHNICAL ADVANTAGES:

- Gain an understanding on how to improve the operability and integrity of subsea technology
- Hear how engineers can improve reliability in subsea projects
- Discuss the challenges and solutions of future subsea operations
- Learn how to manage the threat of subsea pipework-fatigue failure
- Consider diverless maintenance and its potential



THE SEMINAR GIVES A USEFUL INSIGHT INTO VARIED ASPECTS OF SUBSEA DESIGN WHICH ANYONE IN THE INDUSTRY SHOULD FIND USEFUL.

COLIN BUCHANAN

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SUBSEA ENGINEERING: DESIGNING FOR INTEGRITY AND OPERATION.

16 JUNE 2011

ABERDEEN EXHIBITION AND CONFERENCE CENTRE, BRIDGE OF DON, ABERDEEN, SCOTLAND, AB23 8BL

09:00 REGISTRATION AND REFRESHMENTS

09:25 WELCOMING REMARKS AND OPENING ADDRESS BY SEMINAR CHAIRMAN

Lee Billingham, Subsea Technical Authority, Angola Strategic Performance Unit, BP Exploration and Production

Lee has 18 years' experience in the subsea engineering industry. Starting his career in Aberdeen, he worked for several large offshore construction and hardware supply companies before joining BP in Aberdeen in 2001. He subsequently moved to BP's central Exploration and Production Technology Group in Sunbury, where he was the Discipline Lead for Subsea Systems, supporting and developing technology for BP's subsea assets globally. He moved to the Angola SPU in 2008 and is now the Subsea Technical Authority, providing leadership and guidance across operations, projects and partner activities.

9:30 DEVELOPING AND SUPPORTING BG'S SUBSEA ASSETS AROUND THE WORLD

- Overview of BG's current and future subsea development activities
- Expectations of support from BG suppliers
- Sustaining development and operations of subsea fields in remote areas of the world

Tom McCardle, Group Technical Authority – Deepwater Subsea Engineering, BG Group

Tom recently returned to the UK after being based in Houston, Texas, in a variety of deepwater developments. Tom has worked in several engineering roles, including Engineering Manager, Systems Engineering Lead, Project Manager, Technical Assurance Lead and was a team member supporting the API committee on Reliability of Subsea Systems. Tom is currently responsible for Deepwater Subsea Engineering developments supporting the BG Group assets worldwide.

10:00 DESIGNING FOR AVAILABILITY, OPERABILITY AND INTEGRITY

- Overview of scope of subsea system design activities
- Role of flow assurance in definition of overall system requirements and operability constraints
- Integrity considerations in design of deepwater HTHP flowlines

Phil Cooper, UK Operations Director, INTECSEA UK

Phil joined INTEC in 2007, and is now responsible for a staff of over 100 covering all major subsea engineering disciplines, deployed on a variety of international projects at various stages of development. His 25-year career includes design of complex subsea systems comprising flowlines, structures, spools and hardware – most recently as Engineering Manager for the BP Angola Block 31 production flowline system.

10:30 RELIABILITY AND AVAILABILITY ENGINEERING IN SUBSEA PROJECTS

- Reliability and availability as an engineering discipline: how system reliability and availability are addressed in subsea projects; API RP 17N and project life cycle; roles of the operator, engineering contractors and suppliers
- Technical risk: standardisation of products and processes; dealing with new technology
- Reliability management: analysis and decision-making: the learning loop; reliability capability maturity: what companies do well and what they need to do better; organisational reliability: delivering reliability on every project

Professor John Strutt, Chief Consultant, Astrimar

Before setting up Astrimar, John was Chief Consultant with Atkins Boreas. Prior to that John was Professor of Reliability Engineering and Risk Management at Cranfield University. His work involves supporting oil companies in developing their risk and reliability management capability and in facilitating reliability engineering management in subsea projects. John is the champion for, and a drafting author of, subsea industry recommended practice API RP 17N: Subsea Production System Reliability & Technical Risk Management, which was published in February 2009 and which is now being updated to include operational integrity Management.

11:00 TEA, COFFEE AND DISCUSSION

11:30 DESIGN FOR RELIABILITY

- Overview of design for reliability process
- Organisation and planning for reliability
- Integrating reliability engineering within design and manufacture
- The challenge of reliability verification
- Reliability engineering moving forward

Ken Powell, Reliability Engineering Manager, Cameron

Ken started his reliability engineering career with ten years in the aerospace industry (Boeing and Lockheed Martin) and has been Cameron's Reliability Engineering Manager for the past five years. Cameron is headquartered in Houston and is a leading provider of flow equipment products, systems and services to worldwide oil, gas and process industries.

12:00 CASE STUDY: ACHIEVING DESIGN FLEXIBILITY & ULTRA-RELIABLE OPERATION FOR A BROWNFIELD CONTROL SYSTEM UPGRADE

- Tordis/Vigdis Control System upgrade – challenges
- Flexible design solutions – for field life extension.
- Testing to ensure long term ultra-reliable operations
- Reliability verification & validation using aerospace methodologies

Ray Phillips, Product Market Manager, GE Oil & Gas

Robert Dalziel, Senior Consulting Technologist, Advanced Technology Organisation, GE Oil & Gas

Ray and Robert each have over 30 years experience in the subsea industry, and have lived through the evolution of several generations of multiplexed electro-hydraulic production control system equipment.

12:30 LUNCH

13:30 SUBSEA SYSTEMS' DESIGN INTEGRITY AND THE CHALLENGES FOR AN INTERNATIONAL OIL COMPANY

- Asset Integrity and Process Safety from an organisational perspective
- Designing for Integrity and alignment with fitness for purpose
- The challenges of operational lifetime extension for subsea facilities
- The New frontiers : Petro-Chemical Plant on the seabed

Peter Griffiths, Subsea Engineering Discipline Team Leader, Shell

Peter has worked in the offshore subsea oil and gas industry for over 30 years, encompassing offshore operations,

onshore discipline engineering, project management and engineering management. His current role is with the Shell Upstream International where he is technically and contractually responsible for delivering all subsea hardware and systems engineering within Europe.

14:00 SAFETY, CRITICALITY AND ECONOMY OF SUBSEA AND RISER SYSTEMS: PROVISION FOR LONG-TERM INTEGRITY ASSURANCE

- Utilising integrity management plans in order to maintain subsea or riser systems
- Use of sensor data and algorithms to yield system health information
- Employing key performance indicators (KPIs) to each monitored parameter to determine – and notify personnel – when these parameters have reached a critical or near-critical level
- The importance of early implementation in the design process of integrity management

Peter Falconer, Global Business Manager – IM, 2H Offshore

Peter joined 2H in 2007. His career in the last ten years has focused on integrity management, and he has been responsible for setting up and operating integrity systems around the globe. 2H is recognised as having been responsible for pioneering underwater IM and continues to develop and operate subsea IM systems – particularly for deepwater facilities – on behalf of a number of operators, through its global offices.

14:30 DESIGN OF HPHT PIPELINES

- Practical problems of designing pipeline systems for elevated temperatures
- Strain-based design methodology
- Techniques and approaches to overcome lateral and upheaval buckling
- Defining mitigation measures to prevent global (lateral and upheaval) buckling
- Verifying solutions available to ensure HPHT pipelines operate safely

Kevin Williams, Technical Director, KW Carlos Sicilia, Principal Engineer, KW

Kevin has worked for 25 years in the offshore oil and gas industry; the last ten years have been with KW. Prior to joining KW he worked at APA, AME and JP Kenny.

Carlos joined KW in 2004 where he has been involved in a wide range of pipeline engineering problems, where structural integrity is often a key factor. Over the last ten years he has been working on numerical modelling of structural problems.

KW is an independent engineering consultancy company, founded in May 1999, offering specialist design, analysis and third-party support services in offshore pipeline, subsea, structural and mechanical engineering.

15:00 TEA, COFFEE AND DISCUSSION

15:30 MANAGING THE INTEGRITY THREAT OF SUBSEA PIPEWORK-FATIGUE FAILURE

- Overview of vibration-induced fatigue as an integrity issue subsea
- Challenges associated with the fatigue assessment of subsea equipment
- A combined monitoring and predictive methodology for subsea equipment qualification
- Design stage considerations

- Some future developments in the fatigue assessment of subsea equipment

Rob Swindell, Dynamics Manager, Xodus Group

Rob is a member of the Royal Institution of Naval Architects, a Fellow of the Institution of Mechanical Engineers and a Chartered Engineer. Over the last 20 years he has been involved with a wide variety of structural integrity projects in the oil and gas industry both onshore and offshore, particularly related to vibration-induced fatigue issues on piping systems.

16:00 DESIGNING FOR DIVERLESS MAINTENANCE

- Key technologies used for diverless maintenance
- Operational characteristics of diverless maintenance
- The important considerations when designing for diverless operations and maintenance
- Examples of application of best/poor practice

Doug Scott, ROV and Tooling Manager, Consultant to BP Angola Block 31 Project

Doug has worked offshore in the oil and gas industry for 32 years. He is involved in the BP Block 31 project, which is a deepwater project comprising four fields situated in 2,500m of water offshore Angola. The work includes the design of tools and equipment to carry out deepwater connections, maintenance and repair in water depths up to 3,000 metres.

16:30 THE IMPACT OF THE MACONDO OIL SPILL ON UKCS OPERATIONS

- The formation of OSPRAG to assess and make an appropriate response
- OSPRAG achievements to date
- Implications for future activities on the UKCS

Paul Dymond MBE, Operations Director, Oil & Gas UK

Paul has more than 35 years experience in the industry, having joined BP in the 1970s and worked in a wide variety of roles in petroleum engineering, commercial and government affairs. He joined Oil & Gas UK (then UKOOA) in 2003 as Operations Director, responsible for operational and business issues arising from oil and gas exploration, through production to decommissioning. Oil & Gas UK, the leading representative body for the UK offshore oil and gas industry, is a not-for-profit, membership organisation that extends across the diversity of operating and contracting companies.

17:00 CLOSING STATEMENT BY CHAIRMAN

This programme is subject to change.

The Institution is not responsible for the views or opinions expressed by individual speakers.

Process Industries Division Organising Committee:

Lee Billingham, Subsea Technical Authority,
Angola Strategic Performance Unit, BP Exploration
and Production

Tom McCardle, Group Technical Authority –
Deepwater Subsea Engineering, BG Group

Phil Cooper, UK Operations Director, INTECSEA UK

The Committee would like to thank the following supporters:

Safety & Reliability Group, Pressure Systems Group

**19 MAY 2011
THE WILTON CENTRE, TEESSIDE
REDUNDANT PLANT: ENGINEERING AND SAFETY**

If you have plants that are redundant or might become redundant in the near future, you need to be aware of the engineering and safety implications. This seminar will enable you to prepare, plan and specify the work necessary when a plant is to be taken out of service. Key industry experts will present all the options and discuss the actions required.

www.imeche.org/events/S1568

**19-20 OCTOBER 2011
LONDON
CARBON CAPTURE AND STORAGE:
THE LEADING EDGE**

This seminar will present on the leading edge of carbon capture technology. Key industry leaders will cover the latest position and the implications across the regulatory, financial and process technology spectra. Call for papers deadline 4 April 2011.

www.imeche.org/events/S1606

**25 OCTOBER 2011
LONDON
PROCESS SAFETY: AVOIDING MAJOR DISASTERS
ARE YOU DOING ENOUGH?**

Industry thinking in the effective management of major hazards has moved on significantly; stakeholders are becoming less tolerant of risk, and expect to see organisations minimise their exposure to such events. This seminar will enable businesses to understand ways they can develop a 'safety' culture and manage major accident risk more effectively.

www.imeche.org/events/S1616

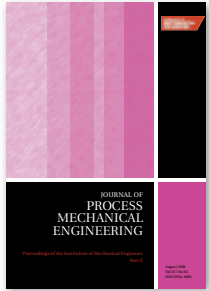
**26-27 OCTOBER 2011
NORTH WEST. VENUE TBC
LEAK AND ESCAPE OF HAZARDOUS FLUIDS**

This seminar will discuss the various legislation that applies, the factors affecting loss of containment including leak before break, detection, the use of secondary containment, prevention strategies, and a case study of an event.

www.imeche.org/events/S1619

JOURNALS

Professional Engineering Publishing is the publisher for the Institution of Mechanical Engineers. For more information about our magazines, journals and conference proceedings visit www.pepublishing.com



You may be interested in:

- **Journal of Process Mechanical Engineering (Proceedings of the Institution of Mechanical Engineers, Part E)**

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The Institution of Mechanical Engineers is the professional body representing over 80,000 mechanical engineers worldwide. As a Learned Society, the Institution seeks to be a source of considered, balanced and impartial information.

Institution of Mechanical Engineers

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SUBSEA ENGINEERING: DESIGNING FOR INTEGRITY AND OPERATION. BOOKING FORM

Please complete and return this form to:

Event Registrations
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For registration enquiries call
Tina Churcher on +44 (0)20 7973 1258
or email t_churcher@imeche.org

One form per person only (forms may be photocopied)

For added convenience, you can also book online at:

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How did you hear about this event? Direct Mail Website Colleague Other _____

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Registration fees include entry to the sessions, refreshments, lunch and a copy of the event proceedings.

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Institution of Mechanical Engineers Member	£255.00	£51.00	£306.00	_____
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Extra Items				
Invoice Charging (if applicable)	£10.00	£2.00	£12.00	_____
			Total	_____

Please do not send payment separately from this booking form.

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Supporting Organisations

Members of the supporting organisations listed on page 2 can register at our members' rates.

Venue

This event will be held at Aberdeen Exhibition and Conference Centre, Bridge of Don, Aberdeen, Scotland, AB23 8BL
Details will be sent upon registration.

Liability

The organisers do not accept liability for any injuries or losses of any nature incurred by delegates and /or accompanying persons, nor for loss or damage to their luggage and/or personal belongings.

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