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Metocean Awareness Course

An essential course providing a greater understanding of metocean and its implications for offshore design and operations

Wednesday 15 – Friday 17 February 2012

Hotel Ibis Perth, 334 Murray Street, Perth 6850, Western Australia

Course highlights

- ▶ **Learn** why meteorology and oceanography (metocean) is important to the offshore oil and gas and marine renewables industries
- ▶ **Ability to engage** internal and external stakeholders about metocean matters
- ▶ **Explore** how the regional metocean conditions around the world impact operations and engineering design
- ▶ **Examine** how metocean statistics are presented and how they are used
- ▶ **Understand** how weather and ocean forecasts are derived
- ▶ **Identify** the process for obtaining key metocean deliverables
- ▶ **Find out** where metocean information and advice can be obtained

Comments from delegates who attended previous courses:

“ The years of experience shine through the presentations. Very informative ”

“ Gained a good knowledge of metocean in such a short time ”

This course is eligible for
CPD
Continuing Professional Development



For further details:

Tel: + 61 8 9446 9903

Email: perthevents@sut.org

Why will this course benefit you?

For all offshore industries, the effects of meteorology and oceanography (metocean) have a major impact on design and operations. If users of metocean information are not aware of the implications that the weather, waves, currents and water levels can have on their operations or design work, then things can go wrong with serious health and safety and economic consequences.

The **Metocean Awareness Course** is aimed at those who need to have a greater understanding of metocean conditions worldwide and how they might impact the effectiveness of their work.

The course format will include a mixture of short presentations presented by expert speakers in this field (see back page) and **interactive workshop sessions** including a **group case study exercise**. Delegates will receive a comprehensive course manual on attendance.



Who should attend?

This course is essential for Project Managers and Engineers in the offshore and renewables industries, involved in operations or design, from new entrants to the industry to those with many years experience. The course will enable delegates to interact with expert speakers and other delegates from various backgrounds who use or provide metocean data.

Expanded learning outcomes for individual parts

Part I: Oil and gas industry requirements for metocean criteria and statistics – the application

After completion of the course, participants will:

- ▶ have an understanding of how and why metocean is important to the offshore oil and gas and marine renewables industries for safe and economic operations, through each phase of field development/operation from initial acreage acquisition to field abandonment;
- ▶ be able to engage internal and external stakeholders about metocean matters and their impact.

Course Schedule

Day 1

08.30 Registration and refreshments

Welcome

08.45 Introductions and objectives of the course

Offshore industry requirements for metocean criteria and statistics – the application

- 09.30**
- ▶ Why metocean is important
 - ▶ What exactly is metocean?
 - ▶ War stories from participants and speakers

10.15 Refreshments

10.30 War stories from participants and speakers (contd)
Offshore engineering applications:

- ▶ Requirements for metocean information at each stage of the project cycle
- ▶ How metocean meets those needs

11.45 Kick-off: Group case study exercise

12.30 Lunch

Metocean data acquisition

- 13.30**
- ▶ Measured – proprietary, national and global
 - ▶ Modelled

15.15 Refreshments

- 15.30**
- ▶ Satellite data
 - ▶ Data QC
 - ▶ National databases/data archiving

16.30 **Data trends/climate variability**

17.30 Finish

18.00 Drinks reception

Part II: Metocean data sources, data quality control, archiving and climate variability

After completion of the course, participants will:

- ▶ be able to describe the various methods of acquiring metocean data, the issues involved, the indicative costs and trends for the future;
- ▶ be aware of safety guidelines (OGP) and the inherent risks of in-field data collection;
- ▶ be aware of vessel requirements to undertake instrument deployment;
- ▶ have an understanding of data processing, quality control and data archiving;
- ▶ know from where they can obtain more relevant information and advice;
- ▶ be able to describe the process of numerical modelling of winds, waves and currents; the limitations and accuracy of results.

Day 2

08.30 Refreshments

Metocean parameters and processes

- 08.45** ▶ Atmospheric and ocean circulation
▶ Winds and waves

10.15 Refreshments

- 10.30** ▶ Ocean circulation
▶ Currents
▶ Water level (tides, surges, tsunami) and ice

12.00 Group case study exercise (contd)

12.30 Lunch

Metocean conditions around the world

- 13.30** Metocean conditions worldwide from an offshore industry perspective:
- ▶ NW Australia
 - ▶ Tropical climates – GOM, South China Sea and West Africa
 - ▶ Temperate and Arctic: North Sea and Caspian/Arctic

15.00 Refreshments

Weather and ocean forecasting

- 15.15** ▶ How weather and ocean forecasts are generated
▶ Presentation of weather forecasts
▶ Weather forecast exercise

16.45 Group case study exercise (contd)

17.30 Close

18.00 Course dinner

Day 3

08.30 Refreshments

Developing metocean operational statistics

- 08.45** Metocean statistics for operational planning:
- ▶ Scenarios – when to use, what to ask for
 - ▶ Operability – weather windows: seismic, drilling, pipelaying, installations, heavy lifts, tows, float-overs, decommissioning, etc
 - ▶ Aviation and marine logistics: helicopters, marine crew change, etc
 - ▶ Operational statistics exercise

10.30 Refreshments

Developing metocean design criteria

- 10.45** Metocean criteria for design:
- ▶ Key elements of design ISO 19901-1
 - ▶ Developing metocean criteria for range of engineering applications; response-based design
 - ▶ Uncertainties
 - ▶ Extreme value analysis exercise

12.30 Lunch

13.30 **Metocean data and structural integrity monitoring**

Group case study exercise

14.00 Finalise group case study exercise
Group presentations and award of prize

15.45 Refreshments

Wrap-up/feedback

- 16.00** Wrap-up/feedback discussion:
- ▶ Future developments
 - ▶ What we have learnt
 - ▶ What are we going to do differently?
- Feedback questionnaire

17.00 Close

Part III: Metocean parameters and processes and metocean conditions around the world

After completion of the course, participants will:

- ▶ have a broad understanding of the key meteorological and oceanographic parameters impacting offshore design and operations;
- ▶ be able to describe the metocean conditions in the various regions around the world where the offshore oil and gas industry and marine renewables industry operates;
- ▶ know from where they can obtain more metocean information and advice.

Part IV: Weather forecasting

After completion of the course, participants will:

- ▶ have an understanding of how weather and ocean forecasts are derived, their accuracy and how they are presented;
- ▶ know from where they can obtain more relevant information and advice.

Part V: Operational statistics and design criteria

After completion of the course, participants will:

- ▶ know how metocean conditions are presented statistically and are used for design in various scenarios;
- ▶ be able to specify the process for undertaking design criteria studies and for preparing operational planning statistics reports;
- ▶ know from where they can obtain more relevant information and advice.

Meet your speakers

Steve Buchan is General Manager of RPS MetOcean Pty Ltd, a physical oceanographic consultancy which initiated in Perth in 1974. He joined in January 1979, and (probably uniquely) has been involved in the development of operational and/or design metocean criteria for every operational Offshore Oil & Gas facility (and related coastal facilities) on the NW Shelf and in the Timor Sea. He is a Member of The Institution of Engineers Australia and of the Society for Underwater Technology. He has over 30 years of experience in Physical Oceanography, and in Coastal and Ocean Engineering.

Jan Flynn is a senior metocean engineer with Shell Development Australia Pty Ltd. She graduated from Southampton University with an MSc in Oceanography in 1987 since when she has worked in applied oceanography, primarily for the oil and gas, and water industries. She has undertaken studies in a wide variety of ocean environments in Europe, Middle East, Africa and SE Asia, including extensive field measurements, data analysis and interpretation. She is presently supporting the development of the world's first Floating LNG processing plant, to be installed off the coast of Western Australia.

Dr Chris Graham is a Metocean Engineering Consultant recently retired from Shell. He has 40 years experience in the offshore business and has worked in various metocean capacities around the world from the Arctic to the Tropics. His experience ranges from towing icebergs, to developing metocean data collection systems, and deriving metocean criteria. Most recently he has developed and presented online and face-to-face bespoke metocean courses. Chris is both a Chartered Engineer and a Chartered Scientist.

Ron Hille has been working for the Bureau of Meteorology since 1984, and spent the last 21 years working in the Commercial Weather Services (CWS) section of the Bureau of Meteorology in Australia. CWS specialise in providing detailed tailored weather services to the Oil & Gas Industry operating in Australia and offshore waters (NW Shelf, Timor Sea, Bass Strait and Southern Ocean). He has worked for many years as the marketing manager for CWS and is currently under contract as a senior meteorologist with the CWS team. He has experience working on offshore drilling rigs/drilling ships/barges and platforms during weather sensitive operations, and has made numerous visits to offshore facilities providing pre cyclone season briefings. In more recent years he has been one of the main facilitators in weather training seminars and workshops provided by CWS for the Oil & Gas Industry.

Tom Johnson is President of BMT Scientific Marine Services. He has worked on over 45 permanent monitoring systems in the Gulf of Mexico including the Holstein spar, the Independence Hub semi-submersible and the Neptune mini-Tension Leg Platform. A large proportion of these systems include real time wind, wave and current measurements for operational decision support as well as instrumentation for monitoring of structural response and integrity.

Jason McConochie is Metocean Team Leader and Principal Metocean Engineer in Woodside. He holds a Bachelors degree in Civil Engineering from James Cook University, where he worked as a researcher on the measurement and numerical modelling of tropical cyclones and on developing a methodology for estimating wave heights at very low probabilities (1 in 100,000 years). For this, Jason and his colleagues were awarded the Institution of Engineers Kevin Stark Memorial Award in 2002. Since joining Woodside in 2003, Jason has developed new databases of tropical cyclone winds and waves across the North West Australian region that are now used for setting extreme design loading on all of Woodside's offshore structures. This work included the "Ten-to-the-Minus Four Waves Study" which is now regarded as world's best practice in tropical cyclone wave climatology.

Professor Ralph Rayner has worked in metocean data collection and modeling for over 30 years. He is currently sector director for energy and environment for the BMT Group as well as having an advisory role to the US Integrated Ocean Observing System initiative. He serves as chair of the Global Ocean Observing System Scientific Steering Committee, is a Vice President of the Institute of Marine Engineering, Science and Technology and is a member of the Council of the Society for Underwater Technology.

Stan Stroud has 45 years experience with Oil companies, and 35 years in the metocean area mainly for Woodside, where he is presently Senior Metocean Adviser and Metocean Technical Authority. He has been responsible for design of many oceanographic measurement programmes, assessment of operational and extreme conditions including FPSO response to tropical cyclones, and has lead research in the areas of extreme wave height, internal waves and impact of climate change on design wave heights. Experience is mainly off NW Australia, the Southern Ocean, East & West Africa, and Korea.

Associate Professor Kevin Walsh is an active researcher and consultant in the field of tropical meteorology. He has published numerous papers on the present and future climate of the tropics, on tropical cyclone observations and theory, and on the interaction between the atmosphere and ocean at extreme wind speeds. He teaches classes ranging from introductory synoptic meteorology to advanced honours seminars on current topics in research. He is an Editor of the Journal of Climate, and a past President of the Australian Meteorological and Oceanographic Society.

Application Form – Metocean Awareness Course

Wednesday 15 February – Friday 17 February 2012

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Instructions: Please print clearly or attach business card and photocopy this form for further delegates.

Personal Information

IMarEST/SUT Membership Number _____

Full name _____

Job title _____

Organisation/company _____

Address _____

City _____

County _____

Postcode _____

Telephone _____

Email _____

Signature _____

Metocean Awareness Course fees: (please tick)

Member \$1850 AUD

Non-member \$2000 AUD

Early bird discount \$200 AUD

(Registrations received before Friday 11 November 2011)

Rates include GST at standard rate

Total amount payable _____

Registration fees include: extensive course materials, daily refreshments over the 3 days, one evening drinks reception and one course dinner.

For full details on terms and conditions including cancellation policy, venue and accommodation visit: www.imarest.org/events

PAYMENT INFORMATION:

Please invoice (PO NO.) _____

GST receipt

Cheque Australian Dollar only, made payable to The Society for Underwater Technology

Credit card Mastercard, Visa or AMEX* ONLY. We cannot accept payment by any other card. *Payment by AMEX will carry a 2.75% surcharge

Amex Mastercard Visa

Card number

Card holder's name _____

Signature _____

Expiry date _____

Start date _____

Issue number (if applicable) _____

Security Code (last 3 digits on the back of your card)

Address at which card is registered _____

ADDITIONAL REQUIREMENTS:

Vegetarian/special dietary meals Access requirements (please specify) _____

You will receive a confirmation email, an invoice or GST receipt and further information on receipt of your application form. Please contact us if you do not receive confirmation.

Registration Information

For further information, please contact

Joyce Bremner on: perthevents@sut.org

or **+61 8 9446 9903** or fax in the completed

form to: **+61 8 9446 9905**

Alternatively, you can send to: **Post Office Box 7284
Cloisters Square, Perth, WA 6850**