

METOCEAN AWARENESS COURSE

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

**Tuesday 22 – Thursday 24
March 2011**

Marathon Oil Tower
5555 San Felipe Houston TX 77056

Course highlights

- ▶ **Learn** why meteorology and oceanography (metocean) is important to the offshore oil & 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



This course
is eligible
for **CPD**



**Comments from delegates
who attended previous courses:**

“ The general enthusiasm of the speakers about the subject shone through and the course felt new and exciting ”

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

REGISTER ONLINE AT:
www.imarest.org/events

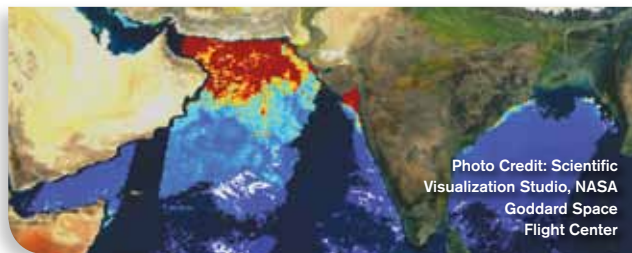
Email: administrator@southouston.com
or telephone: **713-995-5156**

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
**PART I:
Requirements for metocean criteria and statistics – the application**
- 09.30** Setting the scene
 - ▶ Why metocean is important
 - ▶ What exactly is metocean
 - ▶ Sharing of 'war stories'
- 10.15** Refreshments
- 10.30** Offshore engineering applications
 - ▶ Requirements for metocean at each stage of the project cycle
 - ▶ How metocean meets those needs
- 11.45** Kick-off group case study exercise
- 12.30** Lunch
**PART II:
Metocean data sources, data quality control, archiving and climate variability**
- 13.30** Data sources – measured and modelled
- 15.15** Refreshments
- 15.30** Data sources – satellite
- 16.00** Data QC/archiving
- 16.30** Data trends/climate variability
- 17.30** Close

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

PART III:

Metocean parameters and processes and metocean conditions around the world

08.45 Metocean parameters

- ▶ Atmospheric and ocean circulation
- ▶ Winds
- ▶ Waves

10.15 Refreshments

10.30 Metocean parameters (continued)

- ▶ Currents
- ▶ Water level (tides, surges, tsunami)
- ▶ Ice

12.00 Group case study exercise (continued)

12.30 Lunch

13.30 Metocean conditions around the world

- ▶ Temperate climates (eg North Sea)
- ▶ Tropical climates (eg Gulf of Mexico, SE Asia, West Africa)
- ▶ Arctic type climates (eg Sakhalin, North Caspian)

15.00 Refreshments

PART IV:

Weather forecasting

15.15 Generation of weather forecasts

- ▶ Scenarios – when to use, what to ask for, probability forecasts, site-specific forecasts
- ▶ Weather forecast distribution (websites, video, dedicated forecaster)

16.45 Group case study exercise (continued)

17.30 Close

DAY 3

08.30 Refreshments

PART V:

Operational statistics and design criteria

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

10.30 Refreshments

10.45 Metocean criteria for design

- ▶ How to derive 100 year extreme values
- ▶ How to produce final design criteria
- ▶ Typical design criteria products and presentations
- ▶ Differing requirements for fixed versus floating installations
- ▶ Independent criteria versus response based design
- ▶ Uncertainties, reliability and impact of climate variability

12.30 Lunch

13.30 Metocean data and structural integrity monitoring

14.00 Completion Group Case Study exercise and presentations

15.45 Refreshments

16.00 Sum-up, future and conclusions

- ▶ What we have learnt
- ▶ What are we going to do differently
- ▶ Future developments
- ▶ Questionnaire

17.00 End of course

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

Don Conlee is an Instructional Associate Professor at Texas A&M University, where he earned his doctorate in Meteorology in 1994. He also holds an MS in Meteorology and Physical Oceanography from the Naval Postgraduate School. Don is a retired Naval Officer where he was a METOC (Meteorology and Oceanography) operator, program manager and educator in a career of over 20 years. He served NOAA as the Chief Scientist for the National Data Buoy Center, and was an applications scientist for current meter manufacturer Nortek USA before joining the A&M faculty.

Dr Shejun Fan has a BS in Mathematical Mechanics from Peking University, a MS in Naval Architecture and Ocean Engineering from Shanghai Jiao Tong University and a PhD degree in Oceanography from Old Dominion University in Virginia. Dr Fan had worked for East China Normal University, MIT, Princeton University and Stevens Institute of Technology before joining Fugro Global Environmental & Ocean Sciences in 2006. With more than 20 years of combined industrial, research and academic experience in marine science, numerical modelling and all aspects of physical and meteorological data processing and analysis, Dr Shejun Fan serves as Fugro GEOS' consultancy manager.

Dr Chris Graham is a Metocean Engineering Consultant recently retired from Shell. He has nearly 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.

Dr Colin Grant has worked as a metocean specialist for over 30 years and is currently the technical authority for metocean in BP. He currently chairs the metocean committee of the International Association of Oil and Gas Producers (OGP). He is a Chartered Scientist, Chartered Marine Scientist and currently a Vice President of the IMarEST.

Dr John Heideman is a metocean consultant recently retired from Exxon Mobil and currently working for Exxon Mobil, BP and Shell as needed. John has 30 years experience in the development of metocean criteria for offshore structures and the calculation of wind, wave, and current forces on platforms and pipelines.

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.

Bruce A Magnell PhD is a Senior Scientist at Woods Hole Group, he has more than 30 years experience in applied science, and ocean engineering for a wide range of commercial and government clients. He is a recognized expert in the field of physical oceanography in industry, government and academia. His fields of expertise include physical oceanography, electrical engineering, coastal ocean dynamics, and oceanographic instrumentation. He has collected, analyzed, and reported on numerous deepwater current measurement programs worldwide, including some of the first observations of the loop current in the Gulf of Mexico.

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.

Chris Yetsko has worked at ConocoPhillips for over two years as a Senior Metocean Engineer. Chris has almost 15 years of experience in metocean work and marine weather forecasting, primarily in support of the oil and gas industry. He received a Bachelor of Science degree in Meteorology with a Minor in Earth Systems from Pennsylvania State University in 1996.



REGISTRATION

Metocean Awareness Course Rates:
IMarEST/SUT Member Rate **\$2,100**
Non-Member Rate **\$2,500**

PAYMENT INFORMATION:

Payments are made by credit card. SUT Houston accepts all major credit cards.

Further information www.imarest.org/events

Register online at www.SUTHouston.com under the Events Calendar.

Email: administrator@southouston.com

or telephone: **713-995-5156**

