

# Introduction to Positioning and Survey

## Programme

**09.00 Introduction - Greg Paten, Woodside Energy Ltd.**

**09.15 SESSION 1 - GEODESY and POSITIONING PRINCIPLES**

**Geodesy - Mal Jones, Fugro Survey Pty Ltd.**

- \* Coordinates - Geographical - Grid - Cartesian \* Ellipsoids \* Horizontal Datums
- \* Datum Transformations \* Vertical Datums \* Geoid \* Projections and Grids

**10.00 Tea/Coffee**

**10.20 Positioning Principles - Gareth Jones, BHP Billiton**

- \* Range-Range \* Angular \* Range-Bearing \* Pseudo Range \* GPS principles \* Precision
- \* Reliability \* Least Squares Adjustment

**11.05 SESSION 2 - POSITIONING TECHNOLOGY**

**Surface Positioning - Gareth Almond, Fugro Omnistar**

- \* History of Surface Positioning Radio Waves \* Principles \* Frequency and Range \* Triangulation
- \* GPS \* GPS Error Sources \* DGPS positioning (Code Phase/Carrier Phase)
- \* Transmitting Corrections \* WAS, SA, RTK \* Correction & Subscription Service

**12.00 Lunch**

**13.00 Vessel Dynamics - Capt. Phil Griffin, Marine Management Consulting**

- \* Centre of Gravity \* Stability \* Pressure Point \* Turning of Vessels \* Squat
- \* Magnetic Compass \* Gyro Compass \* Attitude Sensors \* Attitude Sensor Calibration
- \* Inertial Navigation Sensor

**13.30 Underwater Positioning Technology - Bruce Baker, Tri-surv**

- \* USBL \* LBL \* Metrology \* ROV \* INS

**14.15 Tea/Coffee**

**14.30 SESSION 3 - OVERVIEW OF OTHER SURVEY TECHNIQUES**

**Tides and Currents - Scott Noreika, RPS MetOcean**

- \* Tide Measurement \* Current Profiling \* Sound Velocity Profiling \* Prediction \* Temp Salinity

**14.50 Bathymetry and Engineering Geophysics Systems - Andy Lane, Woodside Energy Ltd.**

- \* SBES \* MBES \* SSS \* SBP \* Magnetometer \* ROV mounted vs AUV

**15.10 Accuracy, Resolution and Error Sources - Roger Loweth, RPS**

- \* Coverage and Resolution \* Positioning Accuracy of survey data \* Error Budgets, Total Propagated Error

**15.30 Survey Data Processing - Martin Watson, Fugro Survey Pty Ltd.**

- \* Validation \* Tide Correction \* Interpolation \* Data Modeling - Gridding and Thinning and Countouring
- \* Data Presentation/Visualization

**16.00 SESSION 4 - CASE STUDIES**

**Bayu Undan Installation - Ken Eddy, Fugro Survey Pty Ltd.**

**Angel Installation - Peter Wademan, Woodside Energy Ltd.**

**17.00 Day End**

