

EARTH STRESSES FOR PETROLEUM EXPLORATION, DRILLING AND PRODUCTION

2 to 4 Day Field-Based Course in Hobart, Tasmania

Monday-Thursday, 16-19 February 2015

(Attend 2, 3 or all 4 days, \$675 per day)

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The Course

Lectures will be held at The Old Woolstore Apartment Hotel, Hobart and integrated with nearby field trips which were taken by Charles Darwin while in Hobart for 12 days, 5th to 16th February, 1836. All lectures will be held in The Merino Room at The Old Woolstore.

The Course is derived from PSI's successful Southwest UK course which evolved over 30 years in the UK type sections. The Hobart Course has been further updated and links outcrop structures and global seismic examples to synchronous global compressional events, the basis for pre-drill, quantified, stress analysis (Patented method and software). This is the only 'upstream' course of its kind in the world.

The structures of the Derwent River extensional and compressed graben will be directly linked to the productive Lake Albert structures of the East African Rift, and to numerous Australian and global basins and fields. Emphasis is placed on accurate structural interpretation of reflection seismic to produce quantified earth stresses for planning prospects to secondary recovery.

Who Should Attend

Drilling and reservoir engineers should attend at least the first two days. Geologists, seismic interpreters and managers should attend at least the first three days and preferably all four. The daily cost of AU\$675 (inc. GST) covers the course folder for the day, lunch, morning and afternoon teas and coach travel. Predictive 4D structural and stress history will be demonstrated for such applications as quantified fault seal to multidirectional and inclined wells for frac planning.

Registration

The Old Woolstore Apartment Hotel, 200m from Hobart's Constitution Dock, currently has 18 one bedroom apartments for arrival Sunday evening 15th and departure Friday morning 20th February. This is at the peak of the Tasmanian tourist season, but has the convenience of the lowest tides for best outcrop viewing. You can register your interest by emailing your nominated days to Stewart at [sjdavidson@predrillstress.com](mailto:sj davidson@predrillstress.com). He will invoice you and on payment, quoting your tax invoice reference and bank transfer details, he will advise you of apartment availability. This has to be done on a first come-first served basis and it is recommended the registration be completed by the end of November, otherwise accommodation could become an inconvenience.

Timetable

DAY 1

PRE-DRILL EARTH STRESSES FOR DRILLING AND RESERVOIR ENGINEERS, GEOLOGISTS, SEISMIC INTERPRETERS AND MANAGERS

0830-0900	(1) Introduction Measuring Stresses Post-drill Stress Determination
0900-1000	(2) Pure and Simple Shear
1000-1100	(3) S_H Direction and S_H Magnitude Example: Ofek-2ST, Israel, 5960 m well, pre-drill stress planning using earthquake focal mechanism solutions Pre-drill Stress Determination from interpreted Reflection Seismic
1100-1230	(4) Globally Synchronous Compressional Pulses
1230-1300	Lunch
1300	(5) 4DGeoStress Software and Applications How Can Stress Knowledge be Applied to Every Well? Exploration Stress Consistent Seismic Interpretation (Mapping Validation) Example: Oliver-1ST, 174 m gas discovery, 3D seismic for stress from seismic Arbitrary Stratigraphic and Stress Sections Prospect Assessment (Fault Seal/Flow Barriers) Effective Geo-Engineer Interactions (Geologic Hazards) Drilling Drilling Risk Reduction (Wellbore Stability) Well Planning (Pressure-Depth Graphs) Backup Plans Pre Versus Post Drill Costs Pre-drill Stress Applications for Wells in Challenging Environments Extended Reach Overpressure Example: Valhall Field, North Sea Production Initial Stress State Fracking Example: Nappamerri Trough, Cooper Basin Excessive Stress Secondary Recovery Flow Barriers (Compartmentalisation) Increased Safety
1700	Close

DAY 2, FIELD TRIP

COMPRESSION IN EXTENSIONAL RIFT VALLEYS, HOBART AREA

Hobart to Mt Wellington to Charles Darwin Cliff, Sandy Bay to Bellerive.

0800	Depart Hotel Cascades Fault at the Cascade Brewery, S Hobart Darwin in Hobart Town, Cross Sections of the Cascades Fault
0900-1000	Huon Road Permian glacial deposits (Darwin's 'lower' sandstones) Cascade Fault
1000-1130	'Springs', Mt Wellington Triassic ('middle' sandstones) and dolerite sill
1130-1230	Top of Mt Wellington Jurassic dolerite Aalenian/Toarcian (Aa) compressional pulse Tertiary basalt
1230-1300	Lunch
1300-1500	Sandy Bay Tertiary ('upper' sandstones) Darwin's Cliff and volcano Derwent Estuary seismic, folds and reverse faults
1500-1730	Bellerive Darwin's 'lower sandstone' Dolerite heating/cooling and folding (Aa) Compressional pulses
1730-1800	The Old Woolstore Hotel

DAY 3

PRE-DRILL EARTH STRESSES FOR EXPLORATION

0830-0915	Why are Faults Curved in Profile?
0915-1000	(7) Tectonic Profiles Example: Bristol Channel and Celtic Sea deep crustal seismic
	What Controls Faults in Plan?
1000-1130	(8) Plate Tectonic Forces- 2D Examples: W, S and E margins of Australia and elsewhere
	How do the Seven Global Tectonic Forces Relate to Faults?
1130-1230	(9) Global Tectonic Forces-3D Plate Tectonics (Pacific) Equatorial Bulge, Example: Cooper, Perth basins Geoid Stress Equator Momentum Compressional Pulses Expansion Today
1230-1300	Lunch
	How and When are Faults Stress Checked?
1300-1430	(10) Plate Tectonics Plus (PT⁺) - 4D
1430- 1700	(11) Summary

DAY 4, FIELD TRIP

COMPRESSION IN EXTENSIONAL BASINS, TASMAN PENINSULA

Hobart to Tasman Peninsula return

0800	Depart hotel
1000-1030	Pirates Bay Look Out – Regional structure Tasmania/New Zealand
1030-1200	Tessellated Pavement formation (glacial 'lower sandstones')
1230-1300	Lunch at Eaglehawk Neck Blowhole
1330-1600	Lime Bay Early Triassic compressional pulse Dolerite and Tertiary Volcano Permian pulses, local and Australia wide Convict Ruins, Coal Mines
1800	The Old Woolstore Hotel