

# Geo-soundings

NEWSLETTER - SEPTEMBER 2001

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## CONFERENCES

The **SEG International Exposition and 71<sup>st</sup> Annual Meeting** was held in San Antonio, Texas from 9-14 September. The Conference Title was *Thriving On New Challenges*. The Department had a booth at the Conference and conducted a business card raffle for a painted emu's egg. ASEG President Tim Pippett and Mrs Margaret Sheriff officiated and the winner was Roy O Lindseth, Royal Resources Technology Inc., formerly of Technica.

The following papers were presented at the conference:

**Fatkhan, and Urosevic, M.**, 2001, *The use of P-wave reflectivity to detect fractured sands and anisotropic clays*: 71st Ann. Internat. Mtg., Soc. Explor. Geophys., Expanded Abstracts, Vol. I, 118-121.

**Leslie, D., and Hartley, B.M.**, 2001, *Focusing time-lapse seismic data using time-reversed acoustics*: 71st Ann. Internat. Mtg., Soc. Explor. Geophys., Expanded Abstracts Vol. II, 1660-1663.

**Luo, M., and Evans, B.J.**, 2001, *Fracture density estimations from amplitude data*: 71st Ann. Internat. Mtg., Soc. Explor. Geophys., Expanded Abstracts Vol. I, 277-279.

**Luo, M., and Evans, B.J.**, 2001, *Mapping fractures using conventional 3-D marine seismic: a physical modeling study for multi-boat multi-streamer survey*: 71st Ann. Internat. Mtg., Soc. Explor. Geophys., Expanded Abstracts Vol. I, 280-283.

**Luo, M., and Evans, B.J.**, 2001, *Development of a fracture mapping technique using conventional one-boat multi-streamer seismic data: a physical modeling study*: 71st Ann. Internat. Mtg., Soc. Explor. Geophys., Expanded Abstracts, Vol. I, 284-287.

**Manuel, C., Uren, N.F., and Lambert, G.**, 2001, *The generalised exploding reflector method*: 71st Ann. Internat. Mtg., Soc. Explor. Geophys., Expanded Abstracts Vol. II, 1167-1170.

**Zhang, F., and Uren, N.F.**, 2001, *Approximate explicit ray velocity functions and travel times for P-waves in TI Media*: 71st Ann. Internat. Mtg., Soc. Explor. Geophys., Expanded Abstracts Vol. I, 106-109.

The **ASEG 15<sup>th</sup> Geophysical Conference and Exhibition** took place from 5-8 August in Brisbane, Queensland. Eleven staff and students from this Department attended the Conference and presented the following papers and posters:

**Fatkhan, Urosevic, M., and McDonald, J.A.**, 2001, *Numerical and physical modelling of P-wave AVO response for fractured media*:

**Gurevich, B.**, 2001, *Seismic Attenuation in a heterogeneous porous rock*:

**Gurevich, B.**, 2001, *Waves in alternating solid and fluid layers*:

**Li-Yun Fu, Xiuming Wang, Hennig, A., and Urosevic, M.**, 2001, *Acoustic analysis of overpressure: from modeling to wireline observation*:

**Luo, M., and Evans, B.J.**, 2001, *Numerical simulation of fractured media*:

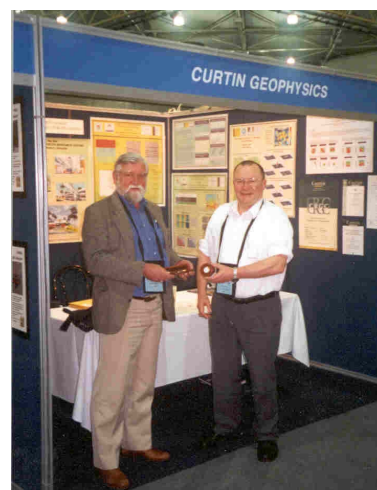
**Luo, M., and Evans, B.J.**, 2001, *A new technique for mapping fractures using 3-D seismic data*:

**Manuel, C.D., and Uren, N.F.**, 2001, *Migration velocity analysis using seismic multiples*:

**Shepherd, A.M.**, 2001, *Accuracy of interpolation for 3D contour mapping from 2D seismic sections*:

**Zhang, F., and Uren, N.F.**, 2001, *Explicit anisotropic P-wave ray velocity functions*:

The winner of the business card raffle was **John Ringis** from Fugro Survey Pty Ltd.



Norm Uren presenting the prize to John Ringis at the Geophysics booth.

## PRIZES/SCHOLARSHIPS

**Troy Thompson** received a MERIWA Supplementary Scholarship. Troy will receive the Scholarship support for two years as he completes his project under the direction of Dr Bruce Hartley.



*Deputy Premier Eric Ripper, Troy Thompson, and MERIWA Chairman, Dr Colin Bland*

**Martin Kim**, currently enrolled in the BSc (Geophysics) (Honours) course, was awarded a 2001 Neville Stanley Bursary. The announcement was made in July this year by the Department of Commerce and Trade. Only 6 bursaries were awarded out of 36 applications received, 3 being awarded to Curtin students. The Bursary is valued at \$5,000 and is awarded to assist students with their research programs. Martin Kim's honours thesis is entitled: "*Fluid and lithology prediction within a coal sequence using seismic attribute modelling and analysis*".

We congratulate Martin Kim on this excellent achievement.

**Ben Sanderson** secured a research grant from Woodside. The grant is of the order of \$60K over three years for research into Quantitative Interpretation on the North West Shelf. More details later.

## STUDENTS

The following students will be presenting talks at the **ASEG, WA Branch Meeting** to be held on Wednesday 17 October:

**CALLEJA, Bronwyn:** *Soil mapping using high resolution radiometrics*

**CAMPBELL, Tristan:** *The role of geophysics in the monitoring of soil moisture and the zone of influence of trees*

**GALVIN, Robert:** *Calculation of correct compressional wave amplitudes for simple three-dimensional Earth models in seismic exploration using computer algebra*

**KIM, Martin:** *Fluid and lithology prediction within a coal sequence using seismic attribute modelling and analysis*

**NORVILL, Margarita:** *A geophysical investigation of the relationship between gravity ridges and ironstone hosted gold/copper mineralisation in the northern Tennant Creek region of the Northern Territory, and the implications for further exploration*

**PITTARD, Karen:** *The contribution of magnetite to the induced polarisation effect of the Centenary orebody*

**SALTI, Christophe:** *The development of wireline logging in analogue reservoir models*

**TOMLINSON, Mitchell:** *Seismic imaging on Barrow Island*

## NEW PROJECTS

Two new MERIWA projects have recently commenced in this Department.

### Physical Modelling Study of Sleipner West CO<sub>2</sub> Sequestration

In this project a physical model will be built that simulates the base 3-D seismic data recorded at a North Sea site where CO<sub>2</sub> sequestration is currently underway. The construction of a physical

model of this case study area will require that the seismic properties of each geological layer be simulated exactly.

### Development of a New Seismic Fracture Mapping Technique

This project is to develop a simple, full-azimuthal fracture mapping technique and apply it to mapping complex fractured regions. Researchers have shown that 2-D fracture analysis methods are inadequate and the full azimuth 3-D is preferable. Using physical models and field data the method is being refined with improvements from layer stripping.

## NEW APPOINTMENT

**Andre Gerhardt**, Senior Research Fellow in Visualisation Applications. Andre leaves Petrobras Brasil, where he was Visualisation Interpretation Centre Manager. He has a Masters degree in Geophysics and another in Computer Science. His Computer Science thesis was on volume rendering. Andre will be a staff member in our Department, funded by IVEC. Andre will be presenting future courses on seismic interpretation using virtual reality technologies.

## HAYDN WILLIAMS FELLOW

**Dr William French** is a distinguished research scientist who has risen to very high positions in the oil contracting industry. He headed a team at Gulf Oil that culminated in recording, processing and interpreting the world's first modern marine 3D seismic survey. **Dr French is the Haydn Williams Fellow for 2001** and will deliver the 2001 Haydn Williams Public Lecture on Friday 12 October 2001.

Dr French may be contacted on *Tel: 9266 4975* or *email: french3D@geophy.curtin.edu.au* during his stay at Curtin University.

Bill will be based in the Department of Exploration Geophysics for six months.

## CRC LEME-2

### Appointment of Deputy Director

At the CRC-LEME Board meeting held on 29 September 2001, Prof. Norm Uren was appointed Deputy Director for a period of two years. As Deputy Director, Norm fills the role of Assistant Director for the Perth site.

On October 1<sup>st</sup> the Department moved into the new Australian Resources Research Centre which will be known by the acronym 'ARRC' pronounced 'Ark'.

Geophysics was joined in ARRC by Curtin's Department of Petroleum Engineering and the Petroleum Centre of Excellence from the School



of Applied Geology. ARRC is a custom built research facility situated on the Western Precinct of Bentley Technology Park. ARRC also houses the CSIRO Divisions of Petroleum Resources, and of Exploration & Mining. ARRC will become the focal point for resources related research in Australia & SE Asia.

## STOP PRESS

Apologies for *Geosoundings* being a little late this quarter because of the move to ARRC referred to above.