



Geo-soundings

NEWSLETTER - SEPTEMBER 2004

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WELCOME

Welcome to the 3rd edition of Geosoundings for 2004. This edition clearly shows that all members of the Department have been very busy during this past quarter, presenting **18 papers** at 3 international conferences/workshops, **4 public presentations**, with more in the planning stage. The proposal to establish a new **Centre of Excellence in High Definition Geophysics** has passed stage 1 and we provide some news about **patents** and an appearance on the **ABCs 'Catalyst'**.

You will notice that there is a new logo shown at the top of this newsletter – **CO2CRC**. Involvement with the Cooperative Research Centre for Greenhouse Gases Technologies commenced on the 1st July following the conclusion of the APCRC.

We hope you enjoy the news items provided in this newsletter and we welcome any feedback.

CENTRE OF EXCELLENCE FOR HIGH DEFINITION GEOPHYSICS

The Department submitted an expression of interest (EOI) to the Department of the Premier and Cabinet for a '**Centre of Excellence in High Definition Geophysics**'. We have received advise that it has passed the first stage and a consultant will now be employed by Curtin University to develop a formal proposal with submission at the end of 2004. The EOI was based on the recently successful work done for MERIWA project 363 "Feasibility of seismic methods for imaging gold deposits in WA", and also development of EM sensors, low cost MT equipment, electro kinetic seismic systems, NMR methods for water and sub-audio magnetic methods for mineral exploration.

PATENTS

We are pleased to advise that after a long wait, approval has finally been received for **USA Patent Application No. 10/366007**, in the name of Curtin University of Technology, entitled "**Method of producing continuous, orthogonal signals and method of their use for examining and for detecting changes in a body**". This application was originally lodged by **Dr Bruce Hartley** in 2002.

Professor Brian Evans has developed a new method for imaging beneath karst topography. It has the potential to open up areas for exploration and monitoring of producing fields wherever imaging is a problem. The method is called "**Sub-Karst Imaging**". A provisional patent is expected to be approved by the end of September, after which we can share the method with you. Watch this space!

CONFERENCES PRESENTATIONS

ASEG-PESA 17TH GEOPHYSICAL CONFERENCE AND EXHIBITION, SYDNEY, 15-19 AUGUST:

Amiri Besheli, S., Saleh Hendi, S. and Vali, J., 2004, Reservoir property estimation in the carbonate reservoir with rock property inversion - a case study.

Brajanovski, M., Gurevich, B. and Lambert, G., 2004, Attenuation of compressional waves in porous rocks with aligned fractures – comparison of the theory with the numerical experiments.

Ciz, R. and Gurevich, B., 2004, Scattering of seismic waves by a spherical inclusion in a porous rock.

Ciz, R., Siggins, K., Dodds, K., Dewhurst, D. and Urosevic, M., 2004, Quantitative prediction methodology of differential stresses and discrimination between pressure and fluid saturation based on seismic attributes derived from experimentally recorded waveforms.

Evans, B., 2004, A PVT chamber for observing the time-lapse seismic response to pressure.

Galvin, R. and Gurevich, B., 2004, Fluid effect on shear-wave splitting in a porous fractured reservoir.

Hansen, B., Gurevich, B., Lawson, K. and Koster, K., 2004, Evaluating the impact of fracture-induced anisotropy on reservoir rock property estimates made from seismic data.

Hashemi, A. and Meyers, J., 2004, HoistEM data processing for discovery of high grade manganese ore under regolith cover.

Hunter, D. and Kepic, A., 2004, ANMR signal contribution in conductive terrains.

Meyers, J., Cantwell, N., Nguyen, P. and Donaldson, M., 2004, Sub-audio magnetic survey experiments for high-resolution, subsurface mapping of regolith and mineralisation over blind gold discovery near Agnew in Western Australia.

Mueller, T., Hardy, B. and Gurevich B., 2004, Attenuation and dispersion in partially saturated porous rocks: Theory and numerical simulation.

Mueller, T. and Gurevich, B., 2004, Attenuation and dispersion of seismic waves in 3D randomly inhomogeneous porous rocks.

Norvill, M. and Kepic, A., 2004, Enhancing electrical signals with sensor arrays.

Rosid, S. and Kepic, A., 2004, Hydrogeological mapping using the seismoelectric method.

Stolz, E., Urosevic, M. and Connors, K., 2004, Reflection seismic surveys at St Ives gold mine, WA.

Street, G. and Harrison, A.K., 2004, Groundwater recharge mapping using airborne radiometric data.

Thompson, T., Lamont, M., Hartley, B. and Glinsky, M., 2004, Automated event picking in the prestack hyperspace.

During the conference, minerals staff and students also attended the *Airborne Gravity, Inversion, and Salinity Workshops*, as well as the AMIRA P407b Sponsors Meeting. **Greg Street** convened the Salinity workshop.

11TH INTERNATIONAL WORKSHOP ON SEISMIC ANISOTROPY (IWSA), ST JOHNS, CANADA, 25-30 JULY:

Galvin, R., 2004, *Fluid effect on shearwave splitting in a porous fractured reservoir.*

Li, R., Zhang, F. and Urosevic, M., 2004, *Determination of anisotropic parameters from long offset movement correction.*

2004 SEG/EAGE SUMMER RESEARCH WORKSHOP ON CHARACTERISATION OF FRACTURED RESERVOIRS, VANCOUVER, CANADA, 1-5 AUGUST:

Galvin, R., 2004, *Fluid effect on shear-wave splitting in a porous fractured reservoir.*

PUBLIC PRESENTATIONS

Dr. Jayson Meyers, through the **Australian Institute of Geoscientists (AIG)**, organised and convened a 1 day seminar on *“Leading edge geophysical technologies for mineral exploration geologists”*. This seminar was held on **September 6th** at the Perth Zoo, with approximately 200 mineral explorers and miners attending. There were 14 oral presentations and 1 poster session and topics ranged from SQUID sensors for EM to seismic reflection surveying at St. Ives Gold Mine. A lively discussion was held at the end of the day, followed by drinks sponsored by Fugro.

There papers were presented by the following staff members:

- **Meyers, J.** and Wolfgram, P., 2004, *Time domain airborne electromagnetic systems for mineral exploration.*
- **Meyers, J.** and Cooper, M., 2004, *sub-audio magnetics (SAM) for mineral exploration.*
- **Urosevic, M.** and Stolz, N., 2004, *Reflection seismic surveys for mine scale geology at the St Ives Gold Mine, WA.*

The following presentation was given at an **ASEG WA Branch Technical Evening**, held on the **15th September** at The Irish Club of WA:

- **Rosid, M.**, 2004, *Seismoelectric methods.*

EXPOS

Career and Education Expo – Burswood Dome

We are happy to report that the Department again participated in this expo on the 6th and 7th August, and extend a grateful thank you to all staff and senior students as well as ASEG members, who helped promote geophysics to the next generation on both the Corporate and the ASEG booths.

Curtin Open Day

Curtin Open Day was held at the Bentley campus on Sunday the 8th August. The day offered an excellent opportunity to display our technology. Interactive demonstrations ran inside all day while a field exercise showing the operation of ground penetrating radar and seismic refraction ran outside. Thank you to all staff and students who helped out at this event.

APPEA School Visits to ARRC

We extend our appreciation to –

- **Brett Harris** and **Justin Vermeulen** who spoke to visiting school students from ‘**Carine SHS**’ on the 19th August and gave them a tour of the Geophysics Department.
- **Dominic Howman** who spoke to students from ‘**Corpus Christi**’ who visited the Department on the 31st August.

DEPARTMENT NEWS

Congratulations to Luke Brown and Shelly Weaver who recently became engaged. Our best wishes to both Luke and Shelly.

AWARDS/PRIZES/SCHOLARSHIPS/GRANTS

Congratulations are extended to **Jason McKenna** whose PhD was executively approved on the 13 August. His thesis entitled *“Seismic response to CO₂ storage in a saline aquifer”* received two ‘A’ grades from his examiners and was recommended for a commendation by the Chancellor. We wish Jason every success in his future career.

John McDonald has been awarded the **ASEG Service Certificate** from the Australian Society of Exploration Geophysics at the ASEG-PESA Conference held in Sydney during August. The award is in recognition of John’s distinguished service to the ASEG, through his long involvement with the WA State Branch, his activities representing the ASEG with the SEG and SEGJ, and his work with students.

Simon Abbott has obtained HoistEM survey data surrounding Esperance, and has begun processing and interpreting the data in collaboration with Greg Street, Jayson Meyers, and Anousha Hashemi. His project is supported by CALM, the CRC-LEME, and GeoAg Pty Ltd.

3RD YEAR FIELD TRIP

This year the 3rd year Project Geophysics field trip has been sponsored by **Agincourt Resources Limited** at their Gold Mine situated at Wiluna. Field trip leaders, Paul Wilkes, Anton Kepic and Dominic Howman accompanied 7 students in order to assist them to undertake their final year field project work. We are very grateful to the sponsorship provided by Agincourt Resources.



L-R: Paul Wilkes, Heika Bredhauer, Thomas Lee, Jacob Paggi, Alan Nanini, Kabilan Krishnamurthy, Fumihito Watanabe, Cameron Jones, Anton Kepic and Dominic Howman in the foreground.

CRC NEWS

The ABC-TV program ‘Catalyst’ spent half a day filming and interviewing Professor Brian Evans during August about his pressure vessel. He explained that fluids could be injected into physical reservoir models and how ultrasonic reflection data could provide an image of the fluid’s movement during pressure variations. This has application in reservoir management in terms of understanding fluid migration properties and as a result, changes to rock properties. The program focused on the pressure chamber’s application to CO₂ injection monitoring studies, and was aired on the 9th September, along with other ongoing research within CO2CRC.

UPCOMING EVENTS

The **CRC-LEME Perth Symposium** will be held at Curtin University on the **18th & 19th of November**.

The **ASEG Student Night** is scheduled for the **13th October**.

The **CRGC Annual General Meeting** will be held at the Rottnest Island Lodge on the **2nd and 3rd December**.