

Changing of the guard

I am sure that most of you don't want to know that Nola and I are currently on holiday and in London, watching the changing of the guard. The changing of the guard – in London and at *Preview*! This issue sees a new editor. Lisa Worrall is taking over from John Theodoridis. I welcome Lisa to the position and thank John for his efforts as Editor of *Preview* over the past couple of years.

Further changes are also taking place on the web. By the time this issue goes to press the new ASEG website and membership database should be up and running. First Carina Kemp and then Kath McKenna have been instrumental in making these changes happen. We hope that the new site and database will overcome many of the problems we have had in keeping track of members. I encourage you to go on-line to ensure your personal details are up to date.

Our trip to Europe has become somewhat of a personal pilgrimage as well as a holiday.

We started at Gallipoli wandering the ANZAC battlefields and looking over the British landing site at Cape Helles. I, like many Australians, was brought up on the legend of ANZAC and Gallipoli and I refreshed my memory by reading Les Carlyon's book *Gallipoli* before I left home. Like many visitors to the peninsula I was astounded by the sites chosen for landings. The choice of ANZAC Cove seemed strange, but the choice of Cape Helles, which was the site of the major British landing, seemed incredibly silly – particularly when the site is viewed from the landward side.

At Gallipoli the rush by generals in the field to accommodate a political idea resulted in a poorly planned and executed operation. There was no questioning of the decision from the frontline, rather an obsequious acceptance of the concept. With little time to plan there was little data available on the Gallipoli Peninsula and most of the intelligence on the Ottoman defences was based on conjecture and prejudice. Lack of planning, unquestioning acceptance of what poor data was available and a keenness to impress those back in London led to a campaign that quickly became a bloodbath and, eventually, a failure.

I liken the Gallipoli campaign to some of the programmes I have seen in resources

exploration. Head office has an idea and, without allowing time for good data collection and analysis, there is a major push to start drilling. Poor data, data analysis and poor execution results in a waste of shareholders' investment. There is nothing that can substitute for a rigorous scientific process; the accumulation of good data and the proper interpretation of that data so that when a drillhole is sited there is a good understanding of what should be intersected.

A quick trip to Troy reminded us of the need for good observation and questioning of what might seem obvious on the surface but somewhat different beneath the surface. If the defenders of Troy had stopped to think, or to doubt what they saw, then perhaps history may have been different, which brings us to Descartes.

We moved on to Paris and visited the Abbey church of Saint-Germain-des-Prés and the tomb of Descartes, considered by many to be the father of modern science. I would like to think that Descartes would have asked the questions needed to avoid something like the Gallipoli campaign or the fall of Troy. Descartes refused to accept almost everything, including the authority of previous philosophers and his own senses. All that was left was *Cogito ergo sum*. The spread of rationalism that followed Descartes is the basic philosophy that we use in science today. Unfortunately the Musée de l'Homme in Paris no longer has Descartes' skull on display. His skull became separated from his body in Sweden only to rejoin his body in Paris many years later.

In this issue we report on the passing of our past president, colleague and friend; Hugh Rutter. Hugh took BMR data, evaluated it, checked it and subjected it to careful interpretation before collaborating with Jim Lalor to site the discovery hole for Roxby Downs, which eventually became the giant Olympic Dam deposit. Good science, good execution, good questioning of the data and a great result. Hugh and I both studied geophysics at the Royal School of Mines, Imperial College, London – which I visited today. Needless to say, Hugh was at the School of Mines some years before me.

Today we also visited Greenwich and the Royal Observatory. The story of the

search for a solution to the measurement of longitude, and the importance of time calculations, is fascinating. James Bradley, the third Astronomer Royal, published his discovery of the nutation of the Earth's axis after 19 years of painstaking measurements and calculations. On the other hand, the second Astronomer Royal, Edward Halley, a name we are much more familiar with, was so careless in regulating clocks and collecting measurements that most of his research was useless. There is no substitute for care and a rigorous approach when taking scientific measurements.

The next part of our trip is perhaps more geological. In a few days' time we visit the Dorset Coast and Lyme Regis where my father's family lived. I have some early childhood memories of looking for fossils in the blue Lias cliffs along the coast in a similar way to Mary Anning, the amateur palaeontologist who inspired the rhyme 'she sells sea shells by the sea shore'. The cliffs along the coast provide an exposure of a continuous sequence of Triassic, Jurassic and Cretaceous rock formations spanning approximately 185 million years of Earth history. It was this coastline that provided the inspiration for William Smith, the man who created



Standing in two hemispheres – or am I? Your GPS receiver would say not. Owing to the shape of the earth, a GPS puts the meridian 100 metres away from where it is calculated.

the world's first geological map, when he realised that he was seeing similar rocks in Dorset to those further north in England – an area we will visit later in our trip.

After exploring England we head to Iceland and hope to stand on an exposure of the mid-Atlantic ridge and descend into an extinct volcano. When I studied at university the concept of continental

drift, although it had been proposed many years before, was only just becoming accepted. It was the geophysical evidence of magnetic reversals that provided the conclusive evidence that won over the geological community.

All of this sounds very boring for Nola who is being dragged from site to site. In my defence, the trip was not designed to

be a personal pilgrimage but I keep finding influences on my life and career as we travel. At this point I am sure that many of you will think I have gone too far with self-indulgent reflection and it is time to stop, sit back and watch the changing of the guard!

Greg Street
ASEG President
president@aseg.org.au



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The ACT Branch awarded two student prizes in July. **Jack Muir** from the Australian National University was given the 2014 ASEG ACT Branch Student Award of \$2000. **Sanjay Govindan**, also from the Australian National University, was given the 2014 ASEG ACT Branch Travel Award to attend the 2015 ASEG-PESA conference in Perth.

Congratulations Jack and Sanjay! Both students have a history of academic excellence and both thoroughly deserve their awards. Jack and Sanjay will give ASEG Members some insight into their research by submitting short articles to an upcoming edition of *Preview*. Sanjay will also present a poster at the 2015 ASEG-PESA conference.

To launch our student prizes, the ACT Branch teamed up with former Treasurer, now PhD student, **Tim Jones** to host a Student Night. This year the Student Night was held at the UniPub – encouraging all those pool sharks to come on out and sign up to be members. We ended up with eight new student members (not bad considering that the ACT doesn't have a geophysics undergrad programme!).

We had the opportunity to speak with **Lisa Worrall** during our committee meeting held in July. Lisa is taking the reins of *Preview* and we were able to get a sense of the opportunities *Preview* offers Members. The ACT Branch wishes Lisa all the best in her role and thanks **John Theodoridis** for his support during his time as editor.

Once again the ASEG is taking a lead role in the Geo-Societies Quiz Night to be held on 6 August. Our very own **Millie Crowe** and Tim Jones will be Quiz Masters for the evening and have promised not to score the geologists too harshly. ASEG members join with PESA, Geological Society of Australia, AusIMM, and IAH Australia members for a night of brain bending fun with a geological theme.

Heading into August, the branch will host **Dr Dave Hale**, the 2014 SEG/AAPG Distinguished Lecturer, who will be talking about 3D seismic image processing for interpretation of faults and horizons. As always, we look forward to the learning opportunities associated with having a Distinguished Lecturer visit our branch.

As a first for the ACT Branch, we will be running a Geo-Societies student day on

18 August 2014 at Geoscience Australia. Student members from the ASEG will join with PESA, Geological Society of Australia, AusIMM, and IAH Australia members. The afternoon will include short presentations from key geoscientists and provide a cross promotional opportunity for students to learn about the geo-societies. We hope to also pair students with a mentor to help them transition from university to the workforce. The event will be held during science week and just prior to Geoscience Australia's Open Day on 24 August.

Marina Costelloe (ACT Branch President) and Millie Crowe (ACT Branch Secretary)

ACT Student Award Prizes

Jack Muir was awarded the 2014 ASEG ACT Branch Student Award and given \$2000.

Jack is undertaking a Bachelor of Philosophy (Science) honours degree at ANU. His supervisor is **Hrvoje Tkalčić**. His thesis title is 'Bayesian inference of deep earth structure via a joint inversion of normal mode and body wave data'. The objective of his work is to gain greater understanding of the deep earth, including the inner core and the core mantle boundary, by synthesising P-wave travel time data sets and whole earth normal mode oscillations. Jack has a strong record of academic excellence with an average mark in the 90s. Jack has worked with ANSTO and has two publications in preparation. Jack's favourite colour is blue!



Dr Marina Costelloe and Jack Muir

Sanjay Govindan was awarded the ACT ASEG Branch Student Conference Travel Award. The award is to be used for travel and registration for the ASEG-PESA Meeting in Perth in 2015.

Sanjay is enrolled in a combined engineering and science degree at ANU. He is currently undertaking a special topic with **Eva Papp** titled 'The nature of pore space at a weathered/fresh rock interface and its effect on the resistivity signature'. His study of the Majors Creek Gold deposit in NSW will use electrical geophysical techniques to distinguish between mineralisation in *in-situ* and transported host material. He will use CT scanning of core to characterise pore spaces, forward model the electrical response to see how the changes in pore spaces across the weathered/fresh rock boundary affects the electric signature, and then compare the results to the field resistivity measurements at the core location. Sanjay has run THREE ultra-marathons!



Dr Eva Papp and Sanjay Govindan.

New South Wales

In May, **Dean Hillan** from the CSIRO gave a talk entitled 'Automated Anomaly Analysis and Massive Magnetic Maps'. Dean explained that much of Australia is covered by aeromagnetic data with good flight line spacing and that much more value can be extracted from that data. Dean outlined a method whereby rectangular samples containing isolated field anomalies are located. Dean explained how these samples are then analysed to recover an empirical estimate



One of the many questions being asked at the June NSW Branch Meeting

of their source magnetisation direction. Dean noted that the analysis has the considerable advantage in that it is not dependent on the spatial distribution of magnetization. Dean showed results from an area of the Musgrave Block in SA to illustrate the methodology. Much discussion followed the talk.

In June, **Kevin Hill** from Oil Search spoke about 'Tectonics and Geophysical and Geological Oil Exploration in the Papuan Fold Belt in PNG'. Kevin spoke about what techniques worked in that geological environment and how exploration had progressed over time. Kevin presented a detailed 3D model of the area that incorporated data from all the datasets. A large audience attended the meeting, many questions were asked and much discussion ensued after the talk had finished.

An invitation to attend NSW Branch meetings is extended to interstate and international visitors who happen to be in town at the time. The meetings are held on the third Wednesday of each month from 5:30 pm at the Rugby Club in the Sydney CBD. Meeting notices, addresses and relevant contact details can be found on the ASEG NSW Branch website (aseg.org.au/nsw/).

Mark Lackie (NSW Branch President)

Queensland

The Queensland Branch of the ASEG has had a number of interesting speakers on a variety of technical topics so far this year. We kicked off with **Andrew McMahon** presenting a geothermal case study on seismicity in an enhanced geothermal system. In March we hosted SEG Honorary Lecturer **Sandeep Chandola**

with his presentation on Marine Seismic Acquisition. Our AGM was held early April with **David Close** giving a talk about a method of using rock physics in unconventional exploration. In May **Remke van Dam** spoke to us about the geophysical methods that may be used to more accurately predict pollution migration in groundwater. At our June technical meeting **Junichi Sakakibara** showed us how he uses high resolution seismic cross-hole tomography to detect position and displacement of faults in coal seams then, in July, we welcomed back **Dave Isles** who showed us how we could use clues from Magnetic data to improve our exploration!

Currently we are looking forward to our annual Zoeppritz night in July and to the 2014 SEG/AAPG Distinguished Lecturer **Dave Hale** coming on 4 August. His presentation on '3D seismic image processing for interpretation of faults and horizons' is sure to be popular. The Queensland Branch is also excited to hosting the **Brian Minty** OzSTEP course on 15 September, followed by an evening technical talk.

We invite any member who is visiting Brisbane to attend our technical meetings and to give a talk while they are in town!

Fiona Duncan (Qld Branch President)

South Australia and Northern Territory

The Adelaide contingent of the SA/NT Branch has been taking respite from the wet weather at the Coopers Alehouse, in the company of a good crowd of geophysicists and a stimulating talk. Recent topics have included 'The

Norwood Resource, marine seismic acquisition advances, field portable X-ray fluorescence analysis' and details of a new gravity survey in the Musgrave Range.

This year's one-day SEG DISC course was on 'Micro seismic Imaging of Hydraulic Fracturing: Improved Engineering of Unconventional Shale Reservoirs' and was presented by **Dr Shawn Maxwell** of Schlumberger. The course was very well attended, some members even travelled from interstate to hear Shawn talk on what is a hot topic in the hydrocarbon industry.

All of these events were made possible by our very generous group of sponsors for 2014, including Beach Energy, the Department of State Development, Geokinetics, Ikon Science, Minotaur Exploration, Petrosys, Santos, Schlumberger, Statoil and Zonge.

Upcoming events include a Distinguished Lecture on seismic processing, a quiz night, a one day OzSTEP course on GR-Spectrometry, a near surface geohazard lecture and, of course, the Melbourne Cup luncheon.

New members and other interested persons are always welcome. For further details, please contact Luke at luke.gardiner@beachenergy.com.au or 8338 2833.

Luke Gardiner (SA&NT Branch President)

Tasmania

Editor's note: There is no report from the Tasmanian Branch in this issue of *Preview* – not because Tasmania has slipped off the edge of the ASEG consciousness, but because all of the branch executives appear to be on holiday in exotic parts. We look forward to their report in the next issue!

Victoria

Winter and spring continue to be busy for the ASEG Victorian Branch.

On Wednesday 16 July **Theo Aravanis** from Rio Tinto gave a well-received presentation on the necessity of establishing an Australian-wide, widely space Airborne EM map to map the regolith in order to improve exploration success.

On 6 August the PESA Victoria will hold its first R&D forum, which aims to forge better links between local geoscience businesses and R&D conducted at local universities, within government

organisations or privately. An invitation to this event has been extended to all ASEG members who would like to attend.

On Thursday 7 August 2014, the Victorian Branch will host the SEG 2014 Distinguished Lecture: '3D seismic image processing for interpretation of faults and horizons', presented by **Dave Hale** from Colorado School of Mines. This will be a noontime lunch meeting.

On 19 September we will host **Brian Minty's** OzStep course on 'The gamma ray Spectrometric Method for Mineral Exploration and Environmental Mapping'. More information about this course will sent to members and made available on the ASEG website.

On Wednesday 8 October 2014 we will host an evening technical meeting with the SEG 2014 Near Surface Honorary Lecture: 'Integrated Geophysical Methods Applied to Geotechnical and Geohazard Engineering: From Qualitative to Quantitative Analysis and Interpretation' given by **Koichi Hayashi** from Geometrics.

We look forward to seeing many ASEG Victoria Branch members at these meetings, particularly on 6 August when we will have the joint SPE-PESA-ASEG Winter Social Event at the Duke of Wellington in Melbourne.

Seda Rouxel (VIC Branch Secretary)

Western Australia

The WA Branch of the ASEG is having an extremely busy year. By the end of June we had hosted numerous events, including *eight* technical nights (including SEG DL, SEG DISC and EAGE EET8) and we had participated in the Careers in Geoscience Night and Perth Careers Expo.

In February **Dr Peter Strauss** of AusGeos delivered a talk on 'Image improvements of poor quality legacy seismic data – a case study from the onshore Otway basin, SA'. This was the first technical talk of 2014 and was well attended. GLOBE Caritas was the sponsor. In March, we hosted SEG Pacific Honorary Lecturer **Dr Sandeep Chandola**, who presented on 'Marine Seismic Acquisition: Expanding the Possibilities'. UTS Geophysics was the sponsor. In the same month we also held an ASEG OzSTEP one-day workshop on an 'Introduction to Geophysics for Explorationists' which was run by **Professor Michael Asten**, from Monash University, Melbourne.

On the April Technical Night, we had two short talks. One on 'Recent advances in multi-dimensional geo-electrical imaging methods' was given by **Meng Heng Loke**, Geotomo Software, Kuala Lumpur and one on an 'Introduction to the Ground Geophysical Survey Safety Association (GGSSA)' was given by **Kathlene Oliver** of the GGSSA. The sponsor for this event was GPX Surveys. On 28 April, we hosted SEG DISC instructor **Dr Shawn Maxwell** of Schlumberger who gave a one day course on 'Microseismic Imaging of Hydraulic Fracturing: Improved Engineering of Unconventional Shale Reservoirs'. Schlumberger sponsored this event.

On 9 May, **Dr Enru Liu**, ExxonMobil Research delivered an EAGE EET8 one day workshop on 'Seismic Fracture Characterization: Concepts and Practical Applications'. Later, on 14 May, **Dr Chris Wijns** of First Quantum Minerals spoke on 'Looking for graphite and granite to find copper in Zambia'. This event was sponsored by First Quantum Minerals and there was standing room only.

In addition to organising the aforementioned technical events, the WA branch was a co-organiser of the WA Careers in Geoscience Night and took part in the Perth Careers Expo. The Careers in Geoscience event for 2014 was hosted at the Technology Park Function Centre, Bentley on Tuesday 6 May. A large number of companies (Woodside, Chevron, ConocoPhillips, FMG, Iluka Resources, TGS, Baker Hughes, ION GX Technologies, Newmont Asia Pacific, Schlumberger), universities (Curtin University and UWA), professional organisations (ASEG, GSA, PESA & ESWA) and volunteers allowed students to interact with a wide variety of enthusiastic geoscientists, with support also from Sandfire Resources and the Geological Survey of WA. The Perth Careers Expo 2014 was held at the Perth Convention Centre between 15 and 18 May. ASEG-WA participated in this event jointly with Curtin University Exploration Geophysics Department. The four day event was well attended by a large number of high school students along with their parents.

On 11 June **Dr Anton Kepic** of Curtin University spoke on 'New logging and sensing technologies for mineral exploration'. Even though the Exploration/Mining industry has been less vibrant during the past few months, the number of attendees at the technical nights has been pretty impressive. We are

also looking forward to attending the Hale and St Mary's Schools Careers Expo in a joint geoscience effort with the AIG scheduled for 21 July.

The date has also been set for a **One-Day Workshop on Geophysical Inversion for Mineral Explorers**. This event will be held on **Tuesday 2 September** at the City West Function Centre. Targeting geologists and geophysicists, this event will be a seminar series focused on the application of geophysical inversion in modern mineral exploration. Topics include a wide range of geophysical techniques, commodities and geological settings. It will include practical theory, case studies and a review of recent and future developments. Registration will be available online on the ASEG website soon.



ASEG-WA President Anne Tomlinson and Treasurer Heather Carey with volunteers from other professional organisations at the Careers in Geoscience Night.



Snapshots of the ASEG booth at the Perth Careers Expo 2014.

John Joseph on behalf of Anne Tomlinson (WA Branch President)



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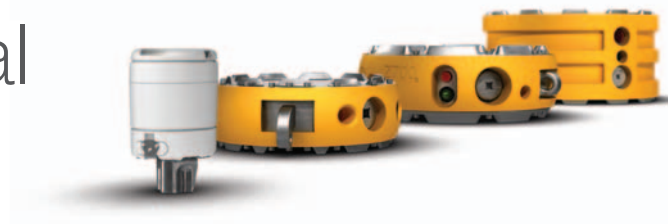
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ASEG national calendar: technical meetings, courses and events

Date	Branch	Event	Presenter	Time	Venue	
2014						
13	Aug	WA	Humanitarian geophysics	Jeff Shragge, UWA, Perth	1730–1900	City West Function Centre, Perth
18	Aug	ACT	Geo-Societies Student Day			Geoscience Australia, Canberra
20	Aug	NSW	Remanence in Layered Ultramafic Intrusions of the Giles Complex	James Austin, CSIRO	1730–1900	The Rugby Club, Off 31 Pitt Street, Sydney
2	Sep	WA	Geophysical inversion for mineral explorers	Various	0830–1830	City West Function Centre, Perth
8	Sep	WA	Mix it up Monday		1630–1800	Parmelia Hilton, Perth
10	Sep	WA	New logging and sensing technologies for mineral exploration	Brett Harris, Curtin University, Perth	1730–1900	City West Function Centre, Perth
15	Sep	QLD	Technical Talk		1730–1900	Metropolitan Motor Inn, Spring Hill, Brisbane
19	Sep	SA	ASEG-PESA-SPE Quiz Night		1800–late	Unley Community Centre (TBC)
Late Sep		SA	Industry Night (Topic TBA)	Various	1730–1930	Coopers Alehouse, Hurtle Sq, Adelaide
20–24	Oct	WA	CET hosted short course on Magnetotellurics	Prof. Alan Jones, Dublin Insitute of Advanced Studies		University of Western Australia, Crawley, Perth
4	Nov	SA	Melbourne Cup Luncheon		1200–1630	National Wine Centre, Adelaide
7	Nov	WA	ASEG-PESA WA 27th Annual Golf Classic			TBA
13	Nov	WA	Honours and Masters Students Research Presentations	Various	1730–1930	City West, Function Centre, Perth
Late Nov		SA	Student Honours Night	Various	1730–1930	Coopers Alehouse, Hurtle Sq, Adelaide
10	Dec	WA	WA Christmas Party and AGM		1730 till late	TBA
OzSTEP 2014: ‘The Gamma-ray Spectrometric Method for Mineral Exploration and Environmental Mapping’, Dr Brian Minty, Minty Geophysics, Canberra (https://aseg.org.au/events/industry-events/ozstep-2014-gamma-ray-method)						
Date		State branch		–	Time	Venue
12	Sep		ACT		0845–1700	Geoscience Australia, Canberra
15	Sep		QLD		0845–1700	Watermark Hotel, Spring Hill, Brisbane
17	Sep		NSW		0845–1700	The Rugby Club, Off 31 Pitt Street, Sydney
19	Sep		VIC		0845–1700	Melbourne
22	Sep		WA		0845–1700	City West Function Centre, Perth
24	Sep		SA		0900–1700	Hotel Richmond, Adelaide (TBC)
30	Sep		TAS		0845–1700	CODES Conference Room, Sandy Bay Campus, UTAS, Hobart
2014 SEG Honorary Lecturer Near Surface: ‘Integrated geophysical methods applied to geotechnical and geohazard engineering: from qualitative to quantitative analysis and interpretation’, Koichi Hayashi, Geometrics, San Jose, California (http://www.seg.org/education/lectures-courses/honorary-lecturers/2014/hayashi/abstract)						
Date		State branch		–	Time	Venue
1	Oct		NSW		1730–1900	The Rugby Club, Off 31 Pitt Street,Sydney
3	Oct		ACT		1230–1400	Geoscience Australia, Canberra
6	Oct		TAS		TBA	Hobart
7	Oct		SA		1730–1930	Coopers Alehouse, Hurtle Sq, Adelaide
8	Oct		VIC		TBA	The Kelvin Club, 24–30 Melbourne Place, Melbourne
10	Oct		WA		1730–1900	City West Function Centre, Perth
13	Oct		QLD		1730–1900	Metropolitan Motor Inn, Spring Hill, Brisbane

TBA, to be advised (please contact your state branch secretary for more information); TBC, to be confirmed.

11th SA Exploration and Mining Conference

Friday 5 December 2014

22 PRESENTATIONS

- New companies/IPOs;
Exploration projects;
Feasibility studies/development projects;
Near mine exploration; Mining operations

KEYNOTE ADDRESSES

- Opening address (TBA)
- DSD Review

SUMMARY

- Questions and Panel Discussion,
Chaired by Dominic Piper, Editor Paydirt

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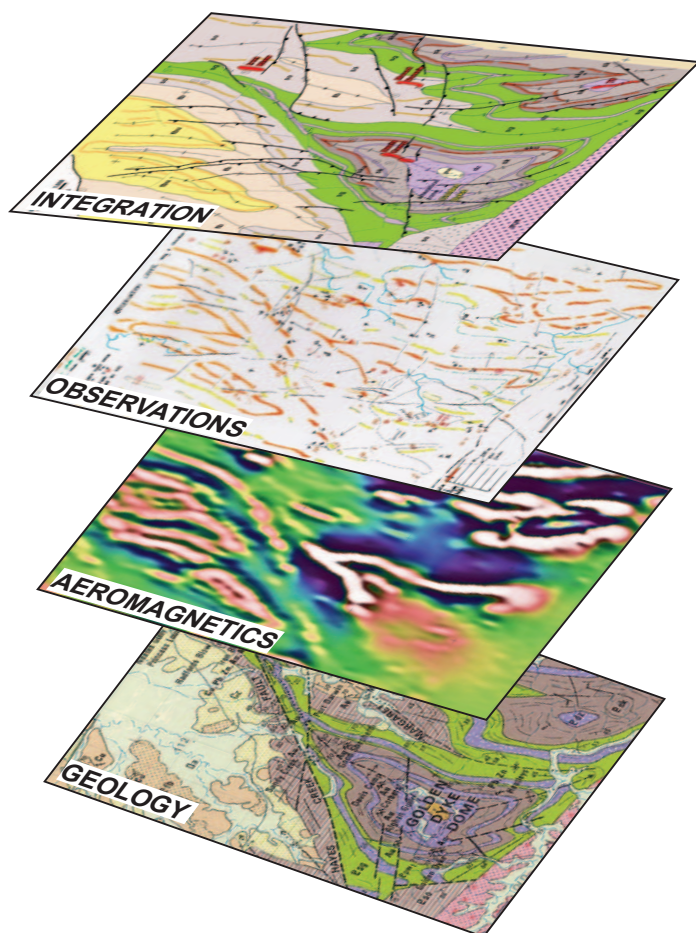
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GEOLOGICAL INTERPRETATION of AEROMAGNETIC DATA

a **NEW** e-BOOK by Dave Isles and Leigh Rankin

This book is a practical manual for aeromagnetic interpretation written primarily for geologists.

As well as covering the basic physics of magnetic anomalies and chemistry of magnetisation in rocks, it features three expansively worked examples illustrating the integration of aeromagnetics and geology in terrains ranging from Archaean 'granite-greenstone' to Phanerozoic sedimentary basins.

It generously illustrates modern imagery and the basic steps in the integration and interpretation process.

Based on the short course "Geological Interpretation and Structural Analysis of Aeromagnetic Data" conducted by the authors since 1995, the book aims to provide readers with the basic qualitative observation and interpretation skills necessary for integration of aeromagnetics with geology.

It is suited to both explorers and mappers, and covers the basic targeting concepts used in mineral, hydrocarbon and groundwater exploration.

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Nominate a colleague for an ASEG Honour or Award in 2015

An important role of the ASEG is to acknowledge the outstanding contributions of its individual members both to the profession of geophysics and to the ASEG. The society has a number of different Honours and Awards across a range of categories. The next Awards are scheduled to be presented at the ASEG-PESA 24th International Geophysical Conference and Exhibition 15–18 February 2015 in Perth, WA.

All ASEG members as well as State and Federal executives are invited to nominate those they consider deserving of these awards. A list of the various available awards is set out below as well as a 'Nomination Procedure'.

Some awards carry considerable prestige in the eyes of the ASEG and therefore require detailed documentation to support the nomination. Please contact the ASEG Honours and Awards Committee Chair, Andrew Mutton, if you require further guidelines on what is required.

ASEG Gold Medal

For exceptional and highly significant distinguished contributions to the science and practice of geophysics, resulting in wide recognition within the geoscientific community. The nominee must be a member of the ASEG.

Honorary Membership

For distinguished contributions by a member to the profession of exploration geophysics and to the ASEG over many years. Requires at least 20 years as a member of the ASEG.

Grahame Sands Award

For innovation in applied geophysics through a significant practical development of benefit to Australian exploration geophysics in the field of instrumentation, data acquisition, interpretation or theory. The nominee does not need to be a member of the ASEG.

Lindsay Ingall Memorial Award

For the promotion of geophysics to the wider community. This award is intended for an Australian resident or former resident for the promotion of geophysics (including but not necessarily limited to applications, technologies or education) within the non-geophysical community, including geologists, geochemists, engineers, managers, politicians, the media or the general public. The nominee does not need to be a geophysicist or a member of the ASEG.

Early Achievement Award

For significant contributions to the profession by way of publications in *Exploration Geophysics* or similar reputable journals by a member under 36 years of age. The nominee must be a member of the ASEG and have graduated for at least 3 years.

ASEG Service Awards

For distinguished service by a member to the ASEG, through involvement in and contribution to State Branch committees, Federal Committees, Publications or Conferences over many years. The nominee will have been a member of the

ASEG for a sustained period of time. All nominations will be considered for the award of an ASEG Service Certificate. Where the nomination details outstanding contributions to the shaping and the sustaining of the Society and the conduct of its affairs over many years, consideration will be given to the award of the ASEG Service Medal to the nominee. Honorary Members are not eligible for nomination.

Nomination Procedure

Any member of the Society may nominate applicants. These nominations are to be supported by a seconder and, in the case of the Lindsay Ingall Memorial Award, by at least four geoscientists who are members of an Australian geoscience body (e.g. GSA, AusIMM, AIG, IAH, ASEG or similar).

Nominations must be specific to a particular award and all aspects of the defined criteria should be addressed. To gain some idea of the standard of nomination expected, nominees are advised to read past citations for awards as published in *Preview*. If required, *proforma* nomination forms are available from the Chair of the Honours and Awards Committee.

Nominations including digital copies of all relevant supporting documentation are to be sent electronically to:

Andrew Mutton
ASEG Honours and Awards Committee
Chair
awards@aseg.org.au

The deadline for applications is 10 December 2014.

History Committee: recent developments

Good progress has been made by the History Committee since the last general meeting held during the Melbourne conference last year. We have been talking to established museums about starting a collection of early exploration instruments, but generally museums will only take a few items and those items must have a 'back story'. The SIROTEM story has been written and will be published in an upcoming issue of *Preview*. SIROTEM is Australia's own TEM system and the ASEG has been offered the earliest prototype to display. The story of other instruments will follow.

The search for suitable instruments has uncovered a large number, especially

where individuals had the commendable foresight to acquire the stock that would otherwise be disposed of by their companies. As a result, the only place big enough to accommodate the collection may be an outdoor park. Does anyone have a spare backyard we could use?

The History Committee has also compiled a list of all of the *Preview* articles of historical interest. This list, with hyperlinks to the articles themselves, will be posted to the History page on the ASEG website (<https://aseg.org.au/aseg-history>). In addition, the History Committee is working on a history of exploration geophysics teaching in

Australia. This history is requiring extensive research, with the cooperation of past and present University staff. The first formal courses took place at Sydney University in 1950.

The Committee would welcome any offers of assistance from any reader with regard to any of these matters. If you have instruments to donate, you will need to agree that they become the property of the ASEG to utilise as it sees fit. If you wish to be on the History Committee mailing list please contact me.

Roger Henderson (ASEG History Committee Chair)
rogah@tpg.com.au

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2014 SEG Honorary Lecturer: near surface

In October **Koichi Hayashi**, who is from Geometrics in San Jose, California, will visit the ASEG State Branches to the deliver a lecture entitled 'Integrated geophysical methods applied to geotechnical and geohazard engineering: from qualitative to quantitative analysis and interpretation'.



Koichi Hayashi

Koichi Hayashi is presently a Software Development Manager at Geometrics in San Jose, California. Over the past 20 years, he has worked as a research geophysicist focusing on providing better tools and algorithms for near-surface geophysical methods. He earned a bachelor's degree in Earth Sciences from Chiba University, a master's in Earth Sciences from the Massachusetts Institute of Technology, and a PhD in Earth Resources Engineering from Kyoto University. His main research areas are seismic refraction, active and passive surface waves, finite-difference seismic modeling, and traveltimes inversion. He is the main developer of the widely used SeisImager programme and has incorporated many of his theoretical developments into the software, making SeisImager the premier surface-wave, refraction, and downhole processing

package available today. He regularly presents papers at SEG meetings and has published over 30 papers in journals and proceedings of SEG, EEGS, and SEGJ. In 2006, he received an award from SEGJ for the development of surface-wave methods. He presented in an SEGJ one-day seminar on the surface-wave method. He is a member of SEG's Near-Surface Task Force and of the International Affairs Committee of SEGJ.

Koichi Hayashi's lecture addresses the 'near surface', a region of day-to-day human activity on the Earth. It is exposed to the natural phenomena that sometimes cause disasters. The lecture covers a broad spectrum of the geotechnical and geohazard ways of mitigating disaster and conserving the natural environment using geophysical methods, and emphasises the contribution of geophysics to such issues.

The lecture focuses on the usefulness of geophysical surveys in providing information to mitigate disasters, rather than the theoretical details of a particular technique. Several techniques are introduced at the level of concept and application. Topics include various geohazard and geoenvironmental applications, such as for earthquake disaster mitigation, preventing floods triggered by tremendous rain, for environmental conservation and studying the effect of global warming. Many geophysical techniques are discussed with the applications of active and passive surface-waves, refraction, and resistivity methods highlighted. Several related issues, such as performance-based design, standardisation or regularisation, internet access, and databases are also discussed.

The lecture discusses the application of geophysical methods to engineering

investigations from a 'nonuniqueness' point of view and introduces the concepts of 'integrated' and 'quantitative'. Most geophysical analyses are essentially nonunique and it is very difficult to obtain unique and reliable engineering solutions from only one geophysical method. The only practical way to improve the reliability of investigation is the joint use of several geophysical and geotechnical investigation methods, an 'integrated' approach to geophysics. The result of a geophysical method is generally vague; here is a high-velocity layer, it may be bed rock; this low-resistivity section may contain clayey soils. Such vague, qualitative and subjective interpretation is not worthwhile in general engineering design work. Engineers need more quantitative information, such as bedrock depth is 10.5 m and permeability of this sand layer is 1.5×10^{-3} cm/s. In order to apply geophysical methods to engineering design work, 'quantitative' interpretation is very important. The lecture introduces several case studies from different countries around the world from the 'integrated' and 'quantitative' points of view.

The details of Koichi Hayashi's schedule are shown in the ASEG National Calendar (see proceeding page). Also shown in the calendar are details of the schedule for Brian Minty's OzSTEP course, 'The Gamma-ray Spectrometric Method for Mineral Exploration and Environmental Mapping'. If you would like to register for this event please contact your local branch secretary.

Wendy Watkins
ASEG Education
education@aseg.org.au



Australian Specialist's Travelling Education Programme (OzSTEP)

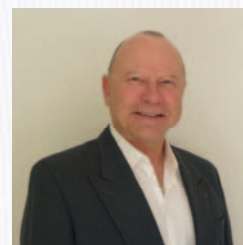
The Gamma-Ray Spectrometric Method for Mineral Exploration and Environmental Mapping

Date: September 2014 Contact your local ASEG branch secretary for more information about this event

Who should attend: Geophysicists and geologists seeking to broaden their knowledge of the gamma-ray spectrometric method and its geoscience applications.

Instructor: Brian Minty

Brian Minty graduated from Rhodes University (BSc) in 1976 with majors in mathematics and physics. He then received a BSc (Hons) (1977) in geophysics from the University of the Witwatersrand, an MSc (Cum Laude, 1982) in exploration geophysics from the University of Pretoria, and a PhD (1997) from the Australian National University. Early in his career, Brian worked for the Geological Survey of South Africa (1977–1981), and Hunting Geology and Geophysics (1982–1986). In South Africa he worked on airborne surveys targeting uranium, and it was during this period that he developed a life-long interest in airborne geophysics and, in particular, the gamma-ray spectrometric method. In 1986 he joined Geoscience Australia, and soon found himself in a research role. He has published techniques for mapping cesium fallout, the micro-levelling of airborne magnetic data, the estimation of atmospheric radon background, and the multichannel processing of airborne gamma-ray spectrometric data. He also developed a methodology for the automatic merging of gridded airborne geophysical survey data. After 25 years with Geoscience Australia, and its predecessors, Brian started his own consultancy (Minty Geophysics) in 2011. Over the years he has undertaken a number of international training consultancies – mainly in the field of airborne gamma-ray spectrometry. These include consultancy work for the Geological Survey of France, Geological Survey of Norway, Anglo American Corporation, the South African Geophysical Association, and the Iranian Geophysical Society. He has also represented Australia on two International Atomic Energy Agency consultancies – looking at the standardisation of acquisition, calibration and data processing procedures for gamma-ray spectrometry.



Course outline:

Session 1:

- Course overview and scope
- Fundamentals of gamma-ray spectrometry
- Introduction to ground and airborne surveying

Session 2:

- Calibration and data processing
- Spectral methods for reducing noise
- Data reduction methods
- Radioelement baselines and back-calibration

Session 3:

- Contract specifications and survey monitoring
- Quality control for airborne gamma-ray surveys
- Radon effects in gamma-ray surveys

Session 4:

- Gamma-ray fundamentals for effective interpretation
- Disequilibrium and accuracy
- Measurement precision
- Presentation and interpretation

