

Conference opening 2007

Monday, 16 April 2007
Hall E



The Hon Mike Rann,
Premier of South Australia

Time: 8.40 am

Official Conference Opening Address—South Australia: the resourceful State

The Hon Mike Rann, MP, Premier of South Australia

Labor's Mike Rann became South Australia's 44th Premier after the State election in March 2002 and was re-elected in March 2006.

As well as his duties as Premier, Mr Rann has assumed the portfolios of Economic Development, Social Inclusion, the Arts, and Sustainability and Climate Change.

He was first elected to the South Australian Parliament in 1985 as the Member for Briggs, later Ramsay.

In December 1989 he was elected to the Labor Cabinet under Premier John Bannon, as Minister for Employment and Further Education, Minister for Youth Affairs, Minister for Aboriginal Affairs and Minister Assisting in Ethnic Affairs.

In September 1992 he became Minister for Business and Regional Development, Minister for Tourism and Minister for State Services. After a brief period as Deputy Leader of the Opposition, Mr Rann became Leader of the Opposition in late 1994.

In his first term as Premier, he held the portfolio of Minister for Volunteers; but in the second he was appointed, at his behest, Minister for Sustainability and Climate Change—the first such appointment in Australia.

Mr Rann was born in Sidcup, Kent, in 1953. His grandfather was a London dustman and his father an electrician who fought at El Alamein. His mother worked in a factory during World War II, making parts for Spitfires. In 1962, his family left London for New Zealand.

He was the first in his family to go on to higher education, and he completed a Bachelor of Arts and Master of Arts (Hons) in Political Studies at Auckland University. While at university, he was editor of the student newspaper and prominent in the New Zealand campaign against French nuclear testing in the Pacific.

After graduating, he became a political journalist for the New Zealand Broadcasting Corporation, before moving to South Australia in 1977 to become a press secretary, speech writer and adviser to three South Australian Labor Premiers, including the late Don Dunstan.

Mr Rann is married to Sasha Carruozzo. He has two children, and is involved in soccer and the arts.



Peter Gaffney
Senior Partner, Gaffney
Cline & Associates Pty Ltd

Time: 9.00 am

Australia in a global context—a matrix of opportunities

Peter Gaffney

Attempting to place a country, or an industry, into a global context faces the problem of challenging conventional wisdom. This is especially so because perception, rather than reality, drives what the public, our politicians, stock market analysts and many of our own management think about our industry.

These perceptions colour the interpretation of such aspects as resource availability, demand scenarios, oil and gas prices and the industry's real environmental behaviour. In these areas we know that there are, in fact, more resources available than are perceived to be; demand can be both substantially over- or under-estimated; the industry has demonstrated a capability to work across an exceptionally large price range and our environmental performance has been much better than is widely appreciated.

None of this, however, makes it easy to define where real opportunities for practical and, in some cases, necessary change are for any country. Each country with its respective industry make-up has its own macro influences that impact on what can be done politically, technically and practically.

This brief assessment discusses some of the challenges in the context of taking a more robust approach to the future.

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Jesse Ausubel,
Director, Program for the
Human Environment, The
Rockefeller University

Time: 9.35 am

The future environment for energy business

Jesse H. Ausubel

The future environment for the energy business includes:

- growth in demand, which continuing large efficiency gains fail to offset and even spur;
- stringent requirements for zero-emission power plants (ZEPPs) and vehicles and for sparing of land for nature;
- continuing decarbonisation of energy;
- disillusion with renewables, which may be renewable but are not green;
- emergence of supercompact, superpotent (5 GW) ZEPPs operating on methane;
- alliances between methane and uranium in integrated complexes producing lighter energy gasses and electricity; and,
- growing evidence for alternate theories of origins of so-called fossil fuels that lift estimates of methane abundance and excite exploration.

During the 21st century, the energy business will build an energy system five to 10 times more powerful than the present system but fitting within its present footprint and emitting little or nothing harmful.



Colin Beckett,
General Manager Greater
Gorgon Area, Chevron
Australia Pty Ltd

Time: 10.10 am

APPEA Chairman's Address—APPEA keeps the focus on safety

Colin Beckett

The Australian upstream oil and gas industry is at cross-roads.

Planted firmly at the intersection is the upstream oil and gas industry strategy Platform for Prosperity, pointing the industry down the road that leads to national wealth, frontier exploration, environmental and safety performance, and greenhouse action.

Declining oil production, increasing costs of exploration and construction, climate change, skills shortages, concerns about energy security and rampaging energy demand have created a brave new world for Australia's upstream oil and gas industry. While the challenges are substantial, they are by no means insurmountable—and the opportunities are numerous.

What is the growth potential of our industry over the decade? How do we realise this potential? What is the role of government and what is the prize for Australia?

In the past 18 months, government and industry, under the leadership of APPEA, have developed the industry strategy, which the Minister for Industry, Tourism and Resources, the Hon Ian Macfarlane, will launch today.

The extent to which the industry and Australia's policy-makers embrace the strategy's options will determine the extent of success in meeting the challenges—and indeed the very shape of the industry in the future.

The industry has listed targets that it believes it can achieve by 2017 and, in doing so, ensure that the upstream oil and gas industry is recognised as a vibrant, innovative, safe and responsible industry that produces reliable, clean energy and substantial wealth for Australia.

Keynote address and Roundtable

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The platform for prosperity: a blueprint for Australia's oil and gas exploration and production—Launch of industry strategy

The Hon Ian Macfarlane, MP, Minister for Industry, Tourism and Resources and Dr Agu Kantsler, Chairman, Strategic Leadership Group, Industry Strategy

In conjunction with the Chairman of the Leadership Group, Dr Agu Kantsler, The Hon Ian Macfarlane, MP, will officially launch the Australian Upstream Oil and Gas Industry Strategic Leaders Report that has been developed by APPEA over the past 16 months in consultation with the Australian, State and Territory Governments.

Since the launch of the Australian Upstream Oil and Gas Industry Strategy in March 2006 by the Minister Macfarlane, the industry, Australian, State and Northern Territory Governments, and other stakeholders have identified the opportunities available and the actions needed to make them reality.

These discussions together with submissions received on an Issues Paper released in May 2006, will result in the release of a Strategic Leaders Report by Minister Macfarlane in this session. The report will propose a vision and set of targets for the industry to reach by 2017.

Nearly 60 options for addressing the issues will be canvassed. Options include proposed improvements to Australia's exploration framework (including geoscience research, frontier incentives and acreage management processes), the fiscal framework for gas projects, petroleum regulation and approvals processes, and skilled labour availability.



The Hon Ian Macfarlane, MP,
Minister for Industry, Tourism and Resources; and,
Dr Agu Kanstler,
Director, New Ventures,
Woodside Energy Limited

Time 11.00

Keynote Address—A responsibility to get the policy settings right

The Hon Ian Macfarlane, MP

Minister Macfarlane will provide an address to APPEA delegates highlighting the content of the Strategic Leaders Report for the Industry Strategy including the key options that will make a real difference to Australia realising the benefits of Australia's oil and gas industry potential.

Copies of the Strategic Leaders Report will be available at the APPEA Conference.

Roundtable discussion

The future Australian energy paradigm

The technologies, policies and context of the energy industry have been undergoing a radical shift in Australia and around the world since 2000 towards security of supply and mitigating global warming caused by burning fossil fuels.

In Australia this has been accompanied by the oil game becoming the oil and gas game—and perhaps moving to the gas and oil game.

The rivalry here and overseas of electricity and natural gas for the consumer market has morphed into the supply of energy services, with gas predicted to treble its share of power generation in Australia in 25 years.

New petroleum technologies are increasingly seen as a vital global bridge to the future; prospects for conversion of Australian gas to liquid transport fuel, for example, are under consideration.

Here, too, the information gathered from decades of Cooper Basin petroleum exploration is aiding and abetting the development of hot dry rock geothermal energy.

The emergence of desalination to deal with chronic Australian water shortages may bring a new role for renewable energy.

The nuclear debate has returned to prominence here after 30 years in limbo.



Facilitator:
Keith Orchison,
Coolibah Pty Ltd

Time: 11.30 am

Roundtable panel

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How will the 21st century energy picture be shaped in Australia? How will we maintain secure, reliable energy services at competitive prices using environmentally sound technologies?

This roundtable discussion will be facilitated by Keith Orchison, a former executive director of APPEA and the Electricity Supply Association of Australia.

He is noted for his incisive perspectives on all facets of the energy industry, and the discussion will include:

- Mr Steve Boulton, Chief Executive Officer, Babcock & Brown Infrastructure;
- Mr John Ellice Flint, Managing Director, Santos Limited; and,
- Dr Brian Fisher, Vice President, CRA International.



Steve Boulton is CEO of Babcock & Brown Infrastructure. Previously he was Chief Executive of Powerco Limited and before that held the position of Chief Executive of Allgas Energy Limited. He has also held executive positions with Queensland's Energex and a senior contract management position with Shell Coal Australia in central Queensland. He is chairman of a range of BBI subsidiary entities and was former director of the New Zealand Electricity Networks Association, the NZ Institute for the Study of Competition and Regulation and the AGA. He holds a BBus and a Master of Technology Management (Griffith University) and is a Fellow of the AIM.



John Ellice-Flint was appointed Managing Director and Chief Executive Officer of Santos Limited. He has 35 years of exploration, production, operations and commercial experience in the oil and gas industry and worked in many of the major world hydrocarbon basins. Before joining Santos, John was Senior Vice-President, Global Exploration and Technology at Unocal, where he managed its worldwide exploration, research and information technology portfolios. He is Chairman of the SA Museum and a member of the APPEA Council and the Energy Governors of the World Economic Forum. He holds a BSc (Geology Hons, University of New England) and has completed the Advanced Management Program at Harvard Business School.



Dr Brian Fisher joined CRA International in October last year. Prior to this he was Executive Director of the Australian Bureau of Agricultural and Resource Economics (ABARE) and worked briefly in a senior position in the Federal Department of Primary Industries and Energy. He is a Farrer Memorial Medallist and a fellow of the Academy of Social Sciences in Australia in November 1995, and was awarded the Public Service Medal in 2002. He has a BScAgr (Hons I) and a PhD, both University of Sydney.

Time: 12.20 pm

APPEA Industry Awards

- **Lewis G Weeks Gold Medal**
- **Tony Noon Memorial Award**
- **JN Pierce Award for Media Excellence**

Session 1A—Acreage release

Hall E

2007 offshore petroleum exploration acreage release

J. Hartwell

John Hartwell is head of the Resources Division, Department of Industry, Tourism and Resources, Canberra, Australia.

The Resources Division provides advice to the Australian Government on policy issues, legislative changes and administrative matters related to the petroleum industry, upstream and downstream and the coal and minerals industries.

In addition to his divisional responsibilities, he is the Australian commissioner for the Joint Petroleum Development Area of the Timor Sea and chairman of the National Oil and Gas Safety Advisory Committee. He is now serving on the leadership group delivering a report to the Australian Government on a Strategy for the Oil and Gas Industry and an implementation group for the Uranium Industry Framework. He is the Chair of two of the taskforces under the Asia Pacific Partnership for Clean Development and Climate (AP6); Clean Fossil Energy and Aluminium. He served on the Strategic Leaders Group, which delivered a report to government on minerals exploration, and is involved in the implementation of a range of resource-related initiatives under the Government's Industry Action Agenda process, including Mining and Technology Services, Minerals Exploration and Light Metals. Previously he served as deputy chairman of the Snowy Mountains Council and the Commonwealth representative to the Natural Gas Pipelines Advisory Committee.

He has occupied a wide range of positions in the Australian Government dealing with trade, commodity and energy and resource issues. He has worked in Treasury, the Department of Trade, Department of Foreign Affairs and Trade and the Department of Primary Industries and Energy before the Department of Industry, Science and Resources. From 1992–96 he was a Minister counsellor, in the Australian Embassy, Washington, with responsibility for agriculture and resource issues and also served in the Australian High Commission, London (1981–84) as the counsellor/senior trade relations officer.

He holds a MCom (Econ) Honours from the University of New South Wales, and, prior to joining the Australian Government, worked as a bank economist.


John Hartwell

Department of Industry,
Tourism and Resources

Time: 2.00 pm

Tour of the 2007 release of offshore petroleum exploration areas

J. Maher

Jenny Maher is the project leader of the Acreage Release and Petroleum Promotion Project of the Petroleum & Marine Division at Geoscience Australia. She liaises closely with the DITR Offshore Resources Branch and the State Designated Authorities in compiling and co-ordinating the annual Australian Government Offshore Petroleum Exploration Area release and its promotion in Australia and overseas. Jenny joined Geoscience Australia, known then as BMR, in 1985 after graduating from the University of Canberra. She has worked in many different areas within this organisation including managing the petroleum databases and the digital data collection housed in Chesterhill prior to the relocation to Symonston building repository. She has been working within the Acreage Release Project for the last four annual releases.


Jenny Maher

Geoscience Australia

Time: 2.19 pm

Session 1A—Acreage release (continued)

Hall E

Australian States and Northern Territory annual report —what's new

B. Goldstein



Barry Goldstein
Primary Industries and
Resources South Australia

Time: 2.38 pm

Barry A. Goldstein is South Australia's director, Petroleum and Geothermal, and has 27 years international experience in the energy sector. He holds Geology degrees from the University of New York (BA-75) and the University of Missouri (MA-77).

He is Australia's executive committee representative to the International Energy Agency's Geothermal Implementing Agreement.

Barry is a past president of the PESA and serves on the Boards of PESA (since 2001), the Australian Geoscience Council (since 2004), the Federation of Australian Scientific and Technologic Societies (since 2004), the Australian School of Petroleum (since 2002) and is a member of the AAPG's House of Delegates and International Lecturer Committee.

Barry has published papers in the APPEA Journal, the proceedings of PESA's Canning Basin Symposium, the Oil & Gas Journal, and The Log Analyst.

Barry was chief geologist with three exploration and production companies: Santos (1996–2001), Bridge Oil Ltd (1987–95), and the Kuwait Foreign Petroleum Company (1982–86) after starting his career with Phillips Petroleum (1976–81).

He was a member of APPEA's Exploration Committee (1998–2000) and has a sense of humour. Member: PESA, SPE, ASEG, AAPG and AGU.

Geoscience Australia's Petroleum Program—outcomes and future directions (2003–2011)

C. Foster



Clinton Foster
Geoscience Australia

Time: 2.57 pm

Clinton Foster is chief of the Petroleum & Marine Division of Geoscience Australia. Geoscience Australia is a prescribed agency within the Australian Government Department of Industry, Tourism and Resources. The division provides data to encourage and grow the petroleum exploration industry in Australia; and geoscientific studies and technical advice to support marine and coastal environmental management, and the administration of the Petroleum (Submerged Lands) Act.

Prior to this appointment, he was a divisional group leader at Geoscience Australia.

Before joining Geoscience Australia in 1991, Foster was a senior supervising geologist with Western Mining Corporation (WMC) Petroleum Division. For the period 1976 to 1981 he was employed as a specialist with the Queensland Government Geological Survey. He has worked as a geologist in the USA, Russia, Tatarstan, and China.

Author of more than 80 publications, Foster is a graduate of the universities of Adelaide and Queensland, and an adjunct professor of Geology in the Faculty of Science and Technology, Deakin University. He is a member of Boards of three co-operative research centres; the Oceans Policy Science Advisory Group; and various specialist societies.

Session IB—Evaluation and decision making

Hall D

Shear dilation diagnostics—a new approach for evaluating tight gas stimulation treatments

S.T. Chipperfield, J.R. Wong, D.S. Warner, C.L. Cipolla, M.J. Mayerhofer, E.P. Lolon and N.R. Warpinski

Many tight gas reservoirs require fracture stimulation to achieve commercial outcomes. These reservoirs can often be characterised geologically and geomechanically by high deviatoric stresses and hard, naturally fractured rock. Stimulation treatments in such reservoirs may create complex fracture networks from a combination of shear and tensile failures.

Water fracs can be used where shear failure is anticipated to dominate; however, in these environments few practical modelling tools exist to determine: the level of permeability enhancement; the degree of permeability retainment during draw-down; and, the stimulated rock volume (SRV). This paper seeks to provide the engineer with a suite of tools capable of achieving these goals.

This paper presents a dual porosity, pressure-dependent permeability reservoir simulation model that was devised to honour shear failure mechanisms (also called shear dilation) using basic geological characterisation. The assumptions of this model and the pragmatic selection of first-order effects are discussed. Using the results of this simulation model, three families of diagnostic tools are presented.

The first category is that of treatment diagnostics, which includes bottom hole pressure evaluation, injectivity and fall-off analysis. The second approach is called seismic-based reservoir characterisation (SBRC), which uses the microseismic to determine the SRV as well as provide estimates of the initial and stimulated fracture network properties. The third category is post-treatment diagnostics, which incorporates the evaluation of pressure draw-down characteristics.

Finally, this paper compares these individual approaches and provides a workflow to evaluate data on future wells.



Presenter:

Jay Wong

Santos Ltd

Time: 2.00 pm



Presenter:

Steve Begg

Australian School of
Petroleum

Time: 2.25 pm

The Utility of exploration

S. Begg

The concept of Utility Theory is used to adjust the values assigned to decision alternatives to account for the decision maker's attitude towards risk. It provides a formal means of defining and modelling the commonly used terms risk-averse, risk-neutral and risk-seeking.

The concept of Utility Theory will be introduced in general terms, exploring how we all use it, knowingly or not. This will include a brief discussion of appropriate attitudes to risk, at both a personal and corporate/business level.

The way Utility Theory is used formally to adjust the valuation of exploration projects to account for their perceived riskiness will then be discussed.

Finally, an extension of the standard technique of calculating expected utilities will be introduced, making it applicable to a full probability density function of the uncertain quantity (e.g. recoverable volumes), rather than the usual simple P_s , $1-P_s$ scenario.

This oral presentation to the APPEA Conference will not appear in The APPEA Journal.

Session 1B—Evaluation and decision making (continued)

Hall D



Presenter:

Steve Mackie
Australian School of
Petroleum

Time: 2.50 pm

Decision type—a key to realising the potential of decision making under uncertainty

S.I. Mackie, S.H. Begg, C. Smith and M.B. Welsh

Business underperformance in the upstream oil and gas industry, and the failure of many decisions to return expected results, has led to a growing interest in the past few years in understanding the impacts of decision-making tools and processes and their relationship to decision outcomes.

A primary observation is that different decision types require different decision-making approaches to achieve optimal outcomes.

Optimal decision making relies on understanding the types of decisions being made and tailoring the type of decision with the appropriate tools and processes.

Yet the industry lacks both a definition of decision types and any guidelines as to what tools and processes should be used for what decisions types. We argue that maximising the chances of a good outcome in real-world decisions requires the implementation of such tailoring.

Session IC—Addressing the skills shortage

Hall C

The global workforce—accessing and retaining skilled workers for the upstream petroleum industry

A. McKinnon

The composition of the global workforce in the upstream oil and gas industry has been affected by a number of converging trends, generated by a combination of demographic, economic and industry factors. While governments and peak industry groups are developing initiatives for young people to train for the industry, human resources and line managers need to adapt company processes to these demographic changes in the short to medium term, not only to ensure adequate supply and continuity of talent, but also to meet corporate targets in exploration and production. This paper outlines these changes, their effects on petroleum companies and strategies employed to adapt to change.

Presenter:

Ashley McKinnon

Hudson

Time: 2.00 pm



Presenter:

Meath Hammond

Woodside Energy Ltd

Time: 2.25 pm

Indigenous employment—community impacts

D. Sanders and M. Hammond

This presentation will be an extension of the matters discussed in the paper Maximising Indigenous Employment in the Oil and Gas Industry in Western Australia (Hammond and Sanders, 2006) which was delivered at the APPEA Conference 2006.

Thought needs to be given to some of the implications of encouraging increased numbers of people from indigenous communities to enter the resources industry, and specifically the upstream oil and gas sector.

While the business case from a company or industry perspective for increased numbers of the local communities being employed during high levels of project activity may be compelling, it is really about much more than just bare numbers. Industry needs to give careful consideration to the possible impact of de-populating communities of their best talent. The question should be asked whether the desperate scramble for workers needs to be more carefully considered with respect to the future of many of the indigenous communities as they grapple with a range of internal issues.

The town of Roebourne in the northwest of Western Australia provides a useful case study. The increased need for workers in the near and mid-term for petroleum projects in the neighbouring town of Karratha requires some serious thought about what impact that may have on Roebourne's future.

One option may be to attract and house the workforce in Karratha. Obviously this course of action would have a serious impact on both Karratha and Roebourne. Another option might be for companies to work with State and Federal Governments to provide improved housing and increased health and education infrastructure in the town of Roebourne to retain the workforce and its positive impact on the town. Such matters are often referred to as soft issues, but in reality they are just as complex (and often require more attention) as the scientific and engineering challenges our industry faces.

This oral presentation to the APPEA Conference will not appear in The APPEA Journal.

Session 1C—Addressing the skills shortage (continued)

Hall C



Presenter:

Kevin Hummel

TaPS

Time: 2.50 pm

Refreshing skills

K. Hummel and K. Rhodes

The changes experienced by the industry in the last decade have contributed to increasing competency demands on operational personnel and increased demand for evidence of competency.

This in turn has led to an increased emphasis on the assessment of competencies to externally recognised standards. Many companies are using the nationally endorsed competency standards in the PMA02 Chemical, Hydrocarbons and Oil Refining Training Package.

A group of companies have established the Hydrocarbons Assessor Network to help them move towards best practice competency assessment and to identify industry benchmarks.

Santos Ltd is one such company and its experiences show that a properly designed and supported assessment system can make a positive contribution not only to the skills of the workforce but also the culture in the workplace.

It has been able to use its assessment system as one means of revitalising the workforce and equipping them to face today's and tomorrow's challenges.

Session 2A—PESA Industry Review

Hall E

Exploration highlights for 2006

J. Blevin

Jane Blevin obtained a BS (1981) and MS (1985) in geology at Stephen F. Austin State University (USA), and worked in the exploration industry in Houston, Texas, before coming to Australia to undertake PhD studies at James Cook University (1989).

In 2006, Jane joined FrOG Tech Pty Ltd as a senior geological consultant and business manager of Australian Operations, and has been involved in projects in onshore Australia, PNG, north Africa and the Middle East.

Previously, Jane worked as a principal research scientist and project leader at Geoscience Australia from 1990 to 2005, where she was involved in basin analysis and petroleum prospectivity studies of basins around the Australian offshore margin, including the Bonaparte, Browse, Roebuck, Carnarvon, Perth, Bremer, Bight, Otway and Bass basins.

Jane's research interests are focussed on the application of seismic and sequence stratigraphic concepts to understanding the evolution of basins systems and their resource potential. Jane is a past president of the PESA ACT Branch and now serves on the EABSIII Organising Committee as the Technical Papers Chair.

Presenter:

Jane Blevin
FrOGtech

Time: 3.45 pm



Environmental update for 2006

G. Terrens

Greg Terrens holds qualifications in chemistry and environmental science, and has more than 25 years experience in the oil and gas industry covering all environmental aspects including project approvals.

Greg has led new project environmental approvals in Australia and west Africa, has led and presented the results of scientific studies of produced formation water and drilling marine discharges at international conferences, and has advised the oil and gas industry on greenhouse gas emissions programs.

Greg is an associate with Enesar Consulting, which he joined in 2005 after a career with ExxonMobil, and has recently completed a project manager role on the PNG Gas Project.

Presenter:

Greg Terrens
Enesar Consulting

Time: 4.10 pm



PESA development and production review 2006

G. Bethune

Graeme Bethune is chief executive officer of EnergyQuest, which provides quarterly analysis of Australasian oil and gas production, developments, reserves and product prices to oil and gas producers, gas customers, infrastructure providers and governments. It has also undertaken multi-client studies on coal seam methane and biofuels and consults to a wide range of companies, governments and institutional investors on energy issues.

Prior to establishing EnergyQuest in 2005 Graeme held senior positions with Santos for 10 years, with a range of responsibilities during this time including business development, finance, investor relations and corporate affairs. Earlier in his career he held senior government and treasury positions. He holds a BEc (Hons) from Monash University, a PhD from the Australian National University and has undertaken the Executive Program at the Stanford University Business School. He has lectured on petroleum economics at the Australian School of Petroleum and company courses, is a fellow of the Australian Institute of Company Directors and the Australian Certified Practicing Accountants and a member of the SPE, PESA and the Australian Institute of Energy, of which he is South Australian Chairman.

Graeme Bethune
EnergyQuest

Time: 4.35 pm

Session 2B—Wells and facilities management—case histories

Hall D

Lessons learnt in Flow Assurance

J. Holbeach and J. Gunnar Waalmann



With the large number of potential gas-condensate developments in Australia, particularly in remote locations, Flow Assurance is fast becoming the key to robust solutions. In the last three decades, Norway has been leading research and implementation within the field of multiphase flow. From the first multiphase flow pipeline put into service in Norway in the Large Troll gas development (Statoil) to the present record-breaking developments of Snøhvit (Statoil) and Ormen Lange (Norsk Hydro), the Norwegian oil and gas industry has built substantial experience with the multiphase flow and gas-condensate system Flow Assurance.

The presentation will show this experience with particular focus on hydrate control using Mono Ethylene Glycol (MEG), liquid control in long-distance multiphase pipelines, and regeneration/reclamation of MEG.

This paper will also highlight important design aspects and lessons from ongoing and planned developments in other emerging parts of the gas-condensate world, for example India and Arctic Russia.

This oral presentation to the APPEA Conference will not appear in The APPEA Journal.



Presenters:

**James Holbeach and
Jan Gunnar Waalmann**

Aker Kvaerner Australia
and Norway

Time: 3.45 pm

Long Island Point fractionation plant facilitates life extension

G.R. Keen and M.G. Sethi



ExxonMobil Australia Pty Ltd's subsidiary, Esso Australia Resources Pty Ltd (ExxonMobil), and BHP Billiton jointly own and operate an LPG fractionation facility at Long Island Point, near Hastings in Victoria.

This facility began operating in 1970 as part of the overall development of Gippsland oil and gas resources. The facility had a nominal design life of 30 years; however, the facility will be required to operate for many more years, given the significant gas reserves remaining in Bass Strait.

A plan was developed to identify and progress plant facility upgrades to ensure continued, safe operation to life end. Nine separate projects with a total value in excess of A\$250 million were developed and are now in various stages of progress.

The key projects include: refrigerated LPG storage tank refurbishment, fire system upgrade, a new control room and control system, and plant emergency shutdown system upgrades. These projects focus on achieving high standards of safe operations and long-term reliability through application of advances in technology to ready the facilities for their remaining life.

Presenters:

**Gordon Keen
(pictured) and Madan
Sethi**

Esso Australia Pty Ltd

Time: 4.10 pm

Session continued next page

Session 2B—Wells and facilities management—case histories (continued)

Hall D

Keeping it going—Longford combinaire refurbishment

G.M. Norman

Presenter:

Garth Norman
Esso Australia Pty Ltd

Time: 4.35 pm

ExxonMobil Australia Pty Ltd's subsidiary, Esso Australia Resources Pty Ltd (ExxonMobil), is undertaking a refurbishment program on the critical combinaire cooling units at its Longford Gas Plant 1. The combinares are combination air-cooled heat exchangers with evaporative cooling supported on a large concrete structure. The functions performed include gas treating, inlet gas cooling, distillation reflux and condensate cooling.

The Longford combinaire units have already been in operation in excess of 30 years and the facility will be required to operate for many more years, given the significant reserves remaining in Gippsland. The combinaire units provide the central cooling duties in both the Longford crude stabilisation plant and Gas Plant 1. Shutdown of these units has a major impact on the plant processing capacity for both oil and gas. An in-depth understanding of forecast market demand, processing requirements and interaction of the process units throughout the Longford facility has enabled the identification of discrete annual periods when certain sections of the combinaire unit can be brought offline.

The refurbishment campaign was developed to systematically refurbish sections of the combinaire unit that were not at full capacity seasonally. Critical to achieving the tight timelines is having timely delivery of refurbished and new components to site. This is being achieved through close collaboration with numerous vendors and initiatives such as setting up a local workshop for tube bundle refurbishment.

The combinaire refurbishment campaign is on track to meet the target completion date and continues with minimal impact on Bass Strait production of oil and gas. Success is being achieved through detailed analysis across a range of disciplines and the application of a design-one, build-multiple philosophy. A large and complex project being undertaken whilst keeping the plant going.

Session 2C—Improving fiscal terms

Hall C



Presenter:

James Hunsaker
ExxonMobil Gas & Power
Marketing, Australia

Time: 3.45 pm

The critical role of gas in Australia's energy mix—challenges for public policy makers

J. Hunsaker

The need for a public dialogue about our future energy needs is essential if we are to respond to the major challenge that confronts us as an industry and as a community. In taking on this challenge ExxonMobil believes that natural gas has a critical role to play in any public debate on our energy future.

As the fastest growing major energy source in Australia (and globally) and as an economically and environmentally attractive fuel, gas must be an essential element in any energy policy response by governments to the challenge of meeting increasing demand while managing greenhouse emissions.

An outlook for gas will be given and some of the key public policy hurdles that need to be overcome to ensure gas competes equally with other energy sources in the fuel mix will be discussed.

This oral presentation to the APPEA Conference will not appear in The APPEA Journal.



Presenter:

Russell Maynard
PKF Chartered Accountants

Time: 4.10 pm

Indirect taxation in Australia—where are we?

R. Maynard

Despite some effort at tax reform in Australia, industry still has to deal with a number of indirect taxes including: goods and services tax (GST); customs and excise duties; fuel tax credits; payroll and other employment taxes; and, stamp duties.

While most of these imposts have been around for some time in one form or another, many changes have occurred in the administration of them, some under the banner of reform or streamlining, some subtle and some extensive.

This paper seeks to summarise where each of the main indirect taxes is at, what issues remain to be resolved or have emerged and offer some suggestions as to how these may be dealt with.

For example, with GST, which has now been in operation for more than six years, a number of significant interpretive issues are yet to be finally determined. The Mining and Energy Industry Partnership Issues Register still lists Supply of Going Concerns: Farm Ins and Farm Outs as an unresolved issue. While the main problems are not so much with the going concern side, but rather with non-monetary considerations and tend to be in the hard rock mining sector, there is a renewed focus from both an income tax and GST perspective that has the potential to alter some long-held positions. Managing the petroleum industry's position through this process will be important. In the case of the Government's much-heralded Fuel Tax Credits Scheme, which has the stated aim of reducing taxes on business inputs, the changes in the early years offer little in the way of reductions for most businesses.

Alternative interpretive views that potentially widen the application of these arrangements are canvassed, as are suggestions for a fresh approach to administering indirect taxes.

This paper will be published in The APPEA Journal after the Conference.

Session continued next page

Session 2C—Improving fiscal terms (continued)

Hall C

Taxation of financial arrangements—further developments

J.H. Murray



Presenter:

John Murray
PKF Chartered Accountants

Time: 4.35 pm

On 3 January 2007 the Minister for Revenue and Assistant Treasurer Peter Dutton released revised exposure draft legislation and explanatory material in relation to the taxation of financial arrangements that would ‘... reduce uncertainties and distortions’. Further Mr Dutton said that: ‘The reforms will lead to lower costs for financial activities conducted by business and result in improved competitiveness and great efficiency in the general operation of Australia’s financial markets.’

This release followed a previous exposure draft released for consultation purposes during December 2005. Many changes have arisen as a result of the consultation process and the current draft is a positive step in providing a comprehensive code to regulate this area. As with any proposal there remain issues that are uncertain; however, the Government is committed to the consultation in relation to the current draft.

At a high level this legislation allows taxpayers to more closely align the tax treatment of financial arrangements to accounting treatment.

The exposure draft is incomplete in that it does not contain rules to address the tax treatment of synthetic financial arrangements and Treasury has left open whether further integrity measures will be introduced.

This paper seeks to outline the primary provisions proposed in the draft legislation and discuss in general terms what the changes may mean to companies operating in the oil and gas industry. Further, the paper recommends several steps that companies can take now to prepare themselves for the introduction of the law.

This paper will be published in The APPEA Journal after the Conference.

Plenary addresses

Tuesday, 17 April 2007
Hall E



Michael Woods
Productivity Commission

Time: 8.30 am

Measuring the optimum level of red tape

Michael C. Woods

The Productivity Commission has been asked to undertake a rolling five-year review of the burdens on business arising from Australian Government regulation. In this first year it will look particularly at businesses in agriculture, aquaculture, forestry, fisheries and mining.

The Commission is required to identify areas of Commonwealth regulation that are unnecessarily burdensome, complex or redundant; or that duplicate regulations or the role of regulatory bodies, including in other jurisdictions.

All regulation imposes costs, and these can take many forms, such as the costs of dealing with regulators, setting up compliance and reporting systems, and any limits placed on the activities of the business, such as restrictions on the markets it can enter, the products or services it can supply or the ways it can produce and market its output. Also, the federal system can lead to unnecessary and costly overlap of regulation between the Commonwealth and the States and Territories.

The Commission is required to develop a short list of priority areas for removing or reducing regulatory burdens, and to identify regulatory and non-regulatory options to achieve this. Although aspects of regulations may need to be re-examined if found problematic, this is not a review of the underlying policy objectives.

This review follows on from the Banks Review, which covered the whole economy. And there has been a number of other regulatory reviews in recent years. Many businesses have responded to them. The Commission will review this material and is asking for submissions, by mid-June, which update earlier material or which raise new issues. The Commission will release a draft report in August and finalise its report by the end of October.



Graeme Neate
President,
National Native Title
Tribunal

Time: 9.00 am

Challenges and the way forward on Native Title Legislation

Graeme Neate

Native title has been part of Australian law since the 1992 decision of the High Court in *Mabo v Queensland (No 2)* and, more comprehensively, since the enactment, amendment and judicial interpretation of the Native Title Act 1993.

While there is ongoing criticism of the length of time it takes to get a native title result—be it a determination of native title or approval for a future act (such as the grant of an exploration, mining or petroleum tenement)—those involved in the native title regime are now largely familiar with its limitations and opportunities, and the ways to meet the challenges of native title.

The Native Title Act expressly favours agreed outcomes, and in recent years there has been a demonstrable increase in the numbers of agreements reached. It is now possible to analyse practical aspects of agreement-making and to assess the options available to parties.

Recent reforms to the native title system include legislative and administrative changes to improve the claims resolution process and further encourage agreement-making in relation to future acts.

Plenary addresses

Tuesday, 17 April 2007
Hall E



Brendan Hammond
Development Approvals
Coordinator,
Office of Development
Approvals Coordination,
Premier and Cabinet

Time: 9.30 am

Approvals processes—‘unscrambling the egg’

Brendan Hammond

The strength of Western Australia’s resources sector is based on its natural endowment of valuable resources and a policy environment that supports responsible development.

Major resource sector developments are very complex undertakings and obtaining the requisite regulatory approvals is a significant component of any project. Industry has called on government to improve the clarity and timeliness of approval processes and has also expressed concern about the growing cost.

Keen to maintain its attractiveness as an investment destination in comparison to other jurisdictions, Western Australia is systematically working on streamlining government approvals processes while maintaining standards consistent with community expectations.

Good progress has been made and much more can be achieved. The key themes of this presentation will be:

- the purpose and impact of Development Approvals Co-ordination in Western Australia;
- the process of Approvals Regulatory reform in Western Australia; and,
- observations on effective ways for proponents to contribute towards better regulatory efficiency and effectiveness.



Senator Chris Evans
Leader of the Opposition
in the Senate, Shadow
Minister for National
Development, Resources
and Energy

Time: 10.00 am

Where does energy policy have to go?

Senator Chris Evans

Born in the United Kingdom, Senator Chris Evans from Western Australia, the Leader of the ALP Opposition in the Senate, was elected to the Senate in 1993.

He has served on a number of the Upper House committees and on the Joint Statutory Committee on Native Title (Chair) and on the Joint Standing Committees for Electoral Matters, Foreign Affairs, Defence and Trade. He has held a significant number of Shadow Ministries and is now Shadow Minister for National Development, Resources and Energy.

He was Opposition Whip in the Senate for more than 2-1/2 years and has been Leader of the Opposition in the Senate since 2004.

A former State Secretary of the ALP in Western Australia, he is a delegate to Party State and ALP Conferences.

He holds a BA (UWA).

Session 3A—Move to the deep water

Hall E

Changing patterns of discovery

M. Bradshaw



Presenter:

Marita Bradshaw
Geoscience Australia

Time: 11.15 am

There have been several cycles of successful hydrocarbon exploration and discovery in Australia since 1960. The first cycle, from 1960 to 1972, revealed most of the productive basins and all of the giant oil fields found to date.

Following an interval of very low activity between 1973 and 1977, the early 1980s marked the peak of exploration drilling in Australia resulting in the discovery of giant gas accumulations (Gorgon, Scarborough) and significant oil fields (Jaibru, Challis, Harriet) found in already proven basins.

Since 1989, though fewer exploration wells have been drilled annually, there has been sustained and steadily rising expenditure and this has delivered important discoveries (Wanaea, Laminaria, Jansz) and brought new provinces into production—Exmouth Sub-basin, offshore Otway and Perth basins and a second LNG hub at Darwin.

The present episode of high oil prices may translate into an acceleration of activity in Australia and another major cycle of exploration and discovery. In contrast to the 1980s, gas as well as oil is now an exploration target and technological advances in geophysics have the potential to markedly improve success rates. Will the offshore continue to be the dominant sector, and how much of the effort will be directed into frontier basins?

This oral presentation to the APPEA Conference will not appear in The APPEA Journal.

Deepwater and frontier exploration in Australia—historical perspectives, present environment and likely future trends

T.R. Walker



Presenter:

Terry Walker
Woodside Energy Ltd

Time: 11.40 am

Australian deepwater (>500 m) basinal areas are generally extensions of known shallow-water basins, filled with non-marine to marginal marine sedimentary facies. True deepwater sedimentary facies are found in very few of these basins. In Australia, the transition to deep water is often associated with the edge of thick, prograding Tertiary carbonates, which have buried the inboard sediments and promoted recent hydrocarbon generation.

Of ~1,040 offshore exploration wells, only 61 have been drilled in deep water, and only one in depths greater than 1,500 m. Most deepwater exploration drilling has occurred on the greater North West Shelf. About 9.4 billion boe of recoverable deepwater resources have been discovered since 1979, of which 94% is gas and 6% liquids. Elsewhere in Australia, deepwater drilling has been sporadic, with only seven wells drilled on the entire southern margin, and none on the southwestern or eastern margins, due to perceptions of limited prospectivity or limited accessibility. The northern basins of Australia lie predominantly in shallow water.

An unprecedented amount of deepwater exploration activity will occur in the next three years, with more than 17,500 km of 2D, 14,300 km² of 3D, and 36 wells committed. Secondary term (variable) commitments comprise a further 5,200 km of 2D, 1,200 km² of 3D and 24 wells.

The challenges for exploration of Australia's frontier deepwater provinces include identifying new petroleum systems capable of hosting large fields, and working in harsh, remote and high-cost operating environments. Government-sponsored initiatives should encourage future uptake of the frontier areas.

Session continued next page

Session 3A—Move to the deep water (continued)

Hall E



Presenter:

Chris Uruski

NZ Institute of Geological
and Nuclear Sciences

Time: 12.05 pm

Petroleum potential of the Great South Basin, New Zealand—new seismic data improves imaging

C. Uruski, C. Kennedy, T. Harrison, G. Maslen, R.A. Cook, R. Sutherland, and H. Zhu

Much of the Great South Basin is covered by a 30,000 km grid of old seismic data, dating from the 1970s. This early exploration activity resulted in drilling eight wells, one of which, Kawau-1a, was a 461 Bcf gas-condensate discovery. Three other wells had significant oil and gas shows; in particular, Toroa-1 had extensive gas shows and 300 m oil shows. Cuttings are described in the geological logs as dripping with oil. The well was never tested due to engineering difficulties, meaning that much of the bore was accidentally filled with cement while setting casing.

In early 2006, Crown Minerals, New Zealand's petroleum industry regulating body, conducted a new 2D seismic survey in a previously lightly surveyed region across the northern part of the Great South Basin.

While previous surveys were generally recorded for five seconds, sometimes six, with up to a 2,500-metre-long cable, the new survey, acquired by CGG Multiwave's *Pacific Titan*, employed a 6,000-metre-long streamer and recorded for eight seconds.

The dataset was processed to pre-stack time migration (PreSTM) by the GNS Science group using its access to the New Zealand Supercomputer. Increasing the recording time yielded dividends by more fully imaging, for the first time, the nature of rift faulting in the basin. Previous data showed only the tops of many fault blocks.

The new data show a system of listric extensional faults, presumably soling out onto a mid-crust detachment. Sedimentary reflectors are observed to seven seconds, implying a thickness of up to 6,000 m of section, probably containing source rock units. The rotated fault blocks provide focal points for large compaction structures. The new data show amplitude anomalies and other features possibly indicating hydrocarbons associated with many of these structures.

The region around the Toroa-1 well was typified by anomalously low velocities, which created a vertical zone of heavily attenuated reflections, particularly on intermediate processing products. The new data also show an amplitude anomaly at the well's total depth (TD) which gives rise to a velocity push-down.

Santonian age coaly source rocks are widespread and several reservoir units are recognised. The reservoir at Kawau-1a is the extensive Kawau Sandstone, an Early Maastrichtian transgressive unit sealed by a thick carbonate-cemented mudstone. In addition to the transgressive sandstone target, the basin also contains sandy Eocene facies, and Paleogene turbidite targets may also be attractive. Closed structures are numerous and many are very large with potential to contain billion barrel oil fields or multi-Tcf gas fields.

Session 3B—New approaches in reservoir modelling

Hall D



Presenter:

Gerardo Sanchez
CSIRO

Time: 11.15 am

Integration of reservoir and well flow simulators for analysis of horizontal well performance

G. Sanchez, A. Kabir, E. Nakagawa and Y. Manolas

The optimisation of a well's performance along its life cycle demands improved understanding of processes occurring in the reservoir, near wellbore and inside the well and flow lines. With this purpose, the industry has been conducting, for several years, initiatives towards reservoir-wellbore coupled simulations.

This paper proposes a simple way to couple the near wellbore reservoir and the wellbore hydraulics models, which contributes to the optimisation of well completion design (before and while drilling the well) and the maximisation of the well inflow performance during production phases, with support of real-time and historical data. The ultimate goal is the development of an adaptive (self-learning) system capable of integrated, real-time analysis, decision support and control of the wells to maximise productivity and recovery factors at reservoir/field level. At the present stage, the system simulates the inflow performance based on an iterative algorithm. The algorithm links a reservoir simulator to a hydraulics simulator that describes the flow inside the wellbore. The link between both simulators is based on equalisation of flow rates and pressures so that a hydraulic balance solution of well inflow is obtained. This approach allows for full simulation of the reservoir, taking into consideration the petrophysical and reservoir properties, which is then matched with the full pressure profile along the wellbore. This process requires relatively small CPU time and provides very accurate solutions. Finally, the paper presents an application of the system for the design of a horizontal well in terms of inflow profile and oil production when the production is hydraulically balanced.



Presenter:

Charlie Gao
Petroleum Engineering Department,
Curtin University of Technology

Time: 11.40 am

Pore network modelling of formation damage due to suspended particles

C. Gao, M. Rivero, E. Nakagawa and T. Rajeswaran

Formation damage caused by suspended particles takes place in various stages of drilling and production operations. The particles in drilling fluid, completion fluid, workover fluid, or injected water can clog the formation and cause severe reductions in productivity or injectivity. Related research has been conducted for years and the most widely used models are empirical, based on specific core flooding data. These models are easy to use; however, when they are applied to formations with different characteristics, the predictions are often rather poor.

This work investigates a promising way to model formation damage at the pore level. Even though reservoir rocks have very different characteristics, they are all combinations of pore necks and pore bodies. In the proposed model, pore necks are represented by tubes and pore bodies are represented by globes to form a 2D network where particle deposition takes place. The pore size distribution is measured by porosimetry and assigned to the network. By adjusting the parameters of the pore necks and pore bodies, this pore network model can represent real porous media quite well. Surface deposition was considered to be the main mechanism of formation damage for small particles. The model was validated with lab test data and reasonable results were obtained. Compared with the empirical model, the pore network model could be applied to a much wider range of reservoirs.

Tuesday

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Session 3B—New approaches in reservoir modelling (continued)

Hall D



Presenter:

Peter Behrenbruch

AED Oil Ltd

Time: 12.05 pm

Reservoir simulation—upscaling, streamlines and parallel computing

M. Asadullah, P. Behrenbruch and S. Pham

Simulation of petroleum reservoirs is becoming more and more complex due to increasing necessity to model heterogeneity of reservoirs for accurate reservoir performance prediction. With high oil prices and less easy oil, accurate reservoir management tools such as simulation models are in more demand than ever before. The aim is to capture and preserve reservoir heterogeneity when changing over from a detailed geocellular model to a flow simulation model, minimising errors when upscaling and preventing excessive numerical dispersion by employing variable and innovative grids, as well as improved computational algorithms.

For accurate and efficient simulation of large-scale models there are essentially three choices: upscaling, which involves averaging of parameters for several blocks, resulting in a coarser model that executes faster; the use of streamline simulation, which uses a more optimal grid, combined with a different computational algorithm for increased efficiency; and, the use of parallel computing techniques, which use superior hardware configurations for efficiency gains. With uncertainty screening of various multiple geostatistical realisations and investigation of alternative development scenarios—now commonplace for determining reservoir performance—computational efficiency and accuracy in modelling are paramount.

This paper summarises the main techniques and methodologies involved in considering geocellular models for flow simulation of reservoirs, commenting on advantages and disadvantages among the various possibilities. Starting with some historic comments, the three modes of simulation are reviewed and examples are given for illustrative purposes, including a case history for the Bayu-Undan Field, Timor Sea.

Session 3C—Environmental management and the cost of carbon

Hall C



Presenter:

Matthew Ames
URS Australia Pty Ltd

Time: 11.15 am

Challenges in applying an integrated risk management approach to social and environmental issues

M.B. Ames and J. Wysocki

Global warming, ecosystem destruction, outraged communities, workers compensation, corruption and ineffective governance—these are just some of the myriad of social and environmental risks facing today's petroleum exploration and production companies. Once perceived as peripheral issues to be dealt with by technical specialists, these issues can now significantly impact on the viability of businesses. In an attempt to manage these risks many organisations have integrated the management of social and environmental risk with other risks to the organisation (financial, legal, technical, governance, etc.). In contrast to some other risk areas, the application of risk assessment to social and environmental issues can involve significant qualitative analysis. The concepts surrounding risk management have broad applications and many organisations struggle with the development of company-specific risk management processes. This paper discusses the limitations associated with the integrated approach and presents tools for improving the quality of the assessment process.



Presenter:

Scott Singleton
Minter Ellison

Time: 11.40 am

The emerging market in carbon credits in Australia

A. Warburton, S. Singleton and C. Robbins

Climate change policy in Australia is in a state of upheaval. The Federal Government, after years of opposing mandatory carbon constraints, has changed tack and is now investigating emissions trading as a possible means of reducing greenhouse gas emissions.

With a federal election looming, the Labor opposition has committed to ratifying the Kyoto protocol and reducing greenhouse gas emissions by 60% by 2050. Not to be left out, the State Governments say they will introduce an emissions trading regime themselves, if the Federal Government of the day does not move quickly enough.

It now seems clear that we will have some form of carbon price signal in Australia within the next 5–10 years. What is unclear is the form that the carbon constraints might take.

Amid this policy uncertainty, large energy producers and users are quietly starting to invest in emissions reduction projects in Australia, as a form of risk management for potential future carbon liabilities. These projects are unusual in that the carbon rights that are being traded are not recognised under any existing Australian statutory scheme, nor are they part of the Kyoto mechanisms.

Consequently, they are not recognised by law and do not have any real value today. Their value is largely potential future value under some form of emissions trading scheme or carbon tax regime. These projects raise some novel issues for project developers and purchasers.

- What is the carbon right which is being sold? How do you frame it to maximise flexibility for use under a future carbon constraint regime?
- How do you ensure ongoing validity of the carbon right for an indefinite period into the future? For carbon sink projects, the purchaser will want some comfort regarding permanence of abatement of CO₂ emissions.
- Project developers are often small start-up companies with few assets and limited cash flow. They may not be in a position to offer securities for performance. What mechanisms can a purchaser use to assist with start-up funding and also secure the rights they are purchasing?
- What pricing structures are available, particularly for future sales against the background of a possible future carbon market?
- What obligations should the developer/seller have in relation to verification, monitoring and reporting of avoided emissions?
- How might projects be structured to involve multiple buyers to support the project and facilitate development of a market?

This paper will be published in The APPEA Journal after the Conference.

Session continued next page

Session 3C—Environmental management and the cost of carbon (continued)

Hall C

Responding to the threat of a cost of carbon

L. Maimone and R. Curtin

Climate change is an emerging issue with the potential to have a significant impact on the energy sector and, more specifically, the oil and gas industry. Pressures from public opinion and the introduction of climate change policy and regulations could affect the competitiveness of the industry. Conversely, incentives and subsidies for renewable energy or other lower carbon energy sources could present a potential opportunity for companies looking to diversify their asset portfolios.

Australia has implemented a range of mandatory and voluntary schemes that encourage the reduction of greenhouse gas emissions; however, there is still uncertainty as to if and how a cost of carbon may be regulated in the future.

This paper will be published in The APPEA Journal after the Conference.



Presenters:

**Liza Maimone and
Russell Curtin**

Ernst & Young

Time: 12.05 pm

Session 4A—Old areas—new ideas #I

Hall E



Presenter:

Grant Ellis
Eni Australia Limited

Time: 2.00 pm

Hydrocarbon entrapment in Triassic to Late Jurassic reservoirs in the Timor Sea, Australia—new insights

G. Ellis

Abundant oil-filled fluid inclusions at quartz overgrowth/detrital quartz boundaries and in fractures cutting quartz grains are often used as the primary evidence of palaeo-oil columns in Triassic to Late Jurassic reservoirs in numerous wells in the Timor Sea. Based on fluid inclusion analysis of sandstone reservoirs in present oil columns, a Grains containing Oil Inclusions (GOI) value of 5% has been used as a threshold with values >5% indicating palaeo-oil columns. However, values <1% have been measured in present oil columns, indicating that low GOI values do not necessarily preclude past or present oil entrapment as the trapping of oil in inclusions is dependent upon reservoir conditions conducive to formation of fluid inclusions at the time of oil entrapment.

Other indications of palaeo-oil columns are evident below and/or within GOI-defined palaeo-oil columns: good to excellent direct and cut fluorescence on cuttings and/or core, elevated resistivity and reservoir diagenesis. In the case of oil shows these hydrocarbon indications have been discounted as indicating focussed oil migration below a palaeo-oil–water contact rather than indicating a palaeo-oil column.

While GOI provides valuable data to support the interpretations of palaeo-oil columns, it provides a picture at one instance in the hydrocarbon entrapment history and therefore should not be used in isolation. Other hydrocarbon indications are equally valid evidence of oil entrapment at one or more different times in the hydrocarbon entrapment history, and should be used with GOI data to provide a comprehensive picture of the evolution of a hydrocarbon trap. Case histories from wells Crux-1, in the northern Browse Basin, and Oliver-1 and Eclipse-2, in the Vulcan Sub-basin of the Timor Sea, illustrate how an integrated picture of hydrocarbon entrapment history can be developed and demonstrate that structures in the Timor Sea have undergone more than one phase of oil entrapment and leakage, with each oil phase potentially from a different oil source.



Presenter:

Robert Seggie
Woodside Energy Ltd

Time: 2.25 pm

Integrated multi-disciplinary analysis of the Rankin Trend gas reservoirs, North West Shelf, Australia

R.J. Seggie, S.C. Lang, N.M. Marshall, C.J. Cubitt, D. Alsop, R. Kirk and S. Twartz

An integrated geological study of the Rankin Trend of the North West Shelf, Australia, was undertaken to underpin the ongoing development of the giant gas fields it contains. The study applied an improved understanding of the regional stratigraphy in conjunction with interpretation of the regional-scale Demeter 3D seismic survey and focussed on existing fields, undeveloped discoveries, and exploration prospects. The study included a redescription of 1,500 m of core, a new facies-based petrological analysis, a revision of the well-based stratigraphy and palaeogeographic mapping, and a seismic stratigraphic analysis. Reservoir production and hydrodynamic data were also integrated. The stratigraphic framework was improved by implementing a broad range of depositional and facies analogues and a system-wide sequence stratigraphic approach to understanding lateral and vertical stacking patterns of the reservoir succession. Visualisation and modelling technologies were also employed to more adequately describe genetic reservoir packages.

Specific outcomes include: improved correlation of reservoir sequences, application of appropriate subsurface depositional analogues to field descriptions, updated palaeogeographic maps and recognition of palaeosols as stratigraphic marker horizons—resulting in a more consistent regional interpretation framework. This forms the basis for seismic stratigraphic interpretation away from well control.

The new regional geological model has enabled the linkage of exploration, development and production understanding across the North West Shelf assets as well as management of geological uncertainties.

Session continued next page

Session 4A—Old areas—new ideas #1 (continued)

Hall E



Presenter:

Ben Royal

Shell Development
(Australia) Pty Ltd

Time: 2.50 pm

Petroleum potential of the northern Arafura Basin

I. Wilson, M. Partington, B. Lehner, B. Royal, M. Power

The Arafura Sea is located between Australia's Northern Territory and the Indonesian provinces of West Irian Jaya and Papua. Water depths vary between 60 and 220 m and the area is located about 300 km northeast of Darwin. Gazettal blocks NT06-1 to -4 within the region close for bidding on 10 May 2007.

The nearest hydrocarbon accumulations are in the eastern Bonaparte Basin and include the Sunrise, Troubadour, Evans Shoal and Abadi giant gas fields. Nine wells have been drilled to date in the Arafura Sea area and all lie within the tectonically distinct limits of the Goulburn Graben.

The critical elements influencing prospectivity in the Arafura Sea area are periods of tectonism that have had a long-lasting regional impact on hydrocarbon charge and more locally on trap integrity. Palaeozoic tectonism and uplift in the area was primarily concentrated in the Late Triassic, followed by an extended period of tectonism in the Early-Mid Jurassic. There has also been a more recent phase of tectonism dating from the Miocene to Recent due to the collision of Australasia with the Asian plate. Hydrocarbon charge modelling carried out by Shell Development (Australia) Pty Ltd (SDA) has demonstrated the Goulburn Graben to be most likely bereft of recent charge. The Goulburn Graben is also high risk from a trap integrity perspective due to fault re-activation. It is therefore not surprising that the gazettal round for 2007 focusses on the likely more prospective areas to the north of the graben, where a thick sequence of relatively undeformed (but massively uplifted) Proterozoic and Palaeozoic strata underlies the Triassic/Jurassic unconformities and where there is less risk associated with trap integrity. The risks associated with hydrocarbon charge and effective reservoir presence within valid traps, however, remains equivocal at best.

This oral presentation to the APPEA Conference will not appear in The APPEA Journal.

Session 4B—Advances in geophysical and interpretation technologies

Hall D



Presenter:

Barry Hung
CGGVeritas

Time: 2.00 pm

Azimuthal anisotropy analysis in marine seismic data

B. Hung, F. Zhang, J. Sun

Interest in azimuthal anisotropy analysis on marine seismic data has grown significantly in recent years. One of the reasons for this growing interest is that insights can be gained from these analyses on fracture detection and pressure prediction, which are important tools for reservoir characterisation. Another reason is that a number of 3D processing problems, such as footprint and loss of frequency content in stacking, that are caused by azimuthal anisotropy can be solved if the effects of azimuthal anisotropy are taken into account. It is, therefore, important to quantify the azimuthal properties of 3D seismic data.

In this presentation, we outline the characteristics of azimuthal anisotropy on narrow-azimuth marine streamer data. We also discuss how we can estimate the azimuthal anisotropy parameters using the data that exhibit azimuthal anisotropy. Using these parameters, we show how the effect of azimuthal velocity anisotropy can be handled using a residual moveout correction.

Using a recent survey that was acquired off Western Australia, we demonstrate that our approach is able to obtain dense anisotropies and directions in large-scale areas. In addition, we show that the method can significantly improve the imaging of the data.

This oral presentation to the APPEA Conference will not appear in The APPEA Journal.



Presenter:

Paul Williamson
Geoscience Australia

Time: 2.25 pm

The role of amplitude versus offset technology in promoting offshore petroleum exploration in Australia

P. E. Williamson and F. Kroh

Amplitude versus offset (AVO) technology has proved itself useful in petroleum exploration in various parts of the world, particularly for gas exploration. To determine if modern AVO compliant processing could identify potential anomalies for exploration of open acreage offshore Australia, Geoscience Australia reprocessed parts of four publicly available long cable lines. These lines cover two 2006 acreage release areas on the Exmouth Plateau and in the Browse Basin on the North West Shelf. An earlier study has also been done on two publicly available long cable lines from Geoscience Australia's Bremer Basin study and cover areas from the 2005 frontier acreage release on the southern margin. The preliminary results from these three reprocessing efforts produced AVO anomalies and were made publicly available to assist companies interested in assessing the acreage. The results of the studies and associated data are available from Geoscience Australia at the cost of transfer.

The AVO data from the Exmouth Plateau show AVO anomalies including one that appears to be at the Jurassic level of the reservoir in the Jansz/Jo supergiant gas field in adjacent acreage to the north. The AVO data from the Caswell Sub-basin of the Browse Basin show an AVO anomaly at or near the stratigraphic zone of the Brecknock South-1 gas discovery to the north. The geological settings of strata possibly relating to two AVO anomalies in the undrilled Bremer Basin are in the Early Cretaceous section, where lacustrine sandstones are known to occur. The AVO anomalies from the three studies are kilometres in length along the seismic lines.

These preliminary results from Geoscience Australia and other AVO work that has been carried out by industry show promise that AVO compliant processing has value—particularly for gas exploration offshore Australia—and that publicly available long-cable data can be suitable for AVO analysis.

Session continued next page

Session 4B—Advances in geophysical and interpretation technologies (continued)

Hall D



The CUBE—a new ventures subsurface compute technology concept

N. Shaw

With oil prices reaching record highs, exploration companies are eagerly venturing into the new and sometimes remote markets of Asia, Russia and North Africa. Commercial competition is fierce—leveraging a competitive advantage requires any and all means at a company's disposal.

The CUBE concept—combined unified business environment—provides computing infrastructure to new venture operations in dispersed global locations. Fast and efficient implementation of standardised infrastructure, applications and support help Shell New Venture business to hit the ground running, fast.

Presenter:

Neil Shaw

Shell Development
(Australia) Pty Ltd

Time: 2.50 pm

Session 4C—Small independents' forum

Hall C



Presenter:

Peter Southgate
Geoscience Australia

Time: 2.00 pm

Geoscience Australia returns to onshore Australia to support petroleum exploration—current plans and priorities

P. Southgate

Peter Southgate completed his PhD at the Research School of Earth Sciences at The Australian National University in 1983. Between 1983 and 1988 he focussed on outcrop and drill core facies analysis in rocks of Neoproterozoic to early Phanerozoic age in the Georgina, Amadeus and Officer basins. In 1989 he retrained as a subsurface basin analyst, forming part of a multi-disciplinary team conducting a study of petroleum systems in the onshore Canning Basin.

In 1995 he moved to the Minerals Division to lead a major multi-disciplinary basin analysis project with the aim of identifying and reconstructing basin geometry, sedimentary architecture and fluid evolutionary pathways in the Palaeoproterozoic Carpentaria Zinc Belt of northern Australia, at the times of metal-bearing fluid migration.

In 2007 Peter returned to the Petroleum and Marine Division as a group leader responsible for Petroleum Prospectivity and Promotion in Geoscience Australia.



Presenter:

Heidi Zwar
ASX Limited

Time: 2.19 pm

Reporting oil and gas reserves—issues and considerations for ASX-listed entities

H. Zwar

Heidi Zwar is a senior policy analyst in ASX's Regulatory and Public Policy Unit. She has a LLM (The University of New South Wales); Graduate Certificate in Applied Finance and Investment (Finsia) and undergraduate degrees in arts and law (The Australian National University). Heidi formerly worked in ASX's market surveillance department. Before joining ASX, Heidi was employed by Australian Securities and Investments Commission (ASIC); the UK Financial Services Authority (FSA); and, UK law firm Speechly Bircham. Heidi was a delegate to the 1999 Constitutional Convention, and an Australian representative at the international Forum of Federations. Heidi grew up in Melbourne, and barracks for Collingwood—but asks that you don't hold that against her.

Session 4C—Small independents' forum (continued)

Hall C



Presenter:

Geoff Barker
SPE and RISC

Time: 2.38 pm

What everyone needs to know about SPE's new reserves definitions and the ASX

G. Barker

Geoff Barker is a partner with Resource Investment Strategy Consultants (RISC) where he has been responsible for company and property valuations, reservoir studies, reserve assessments, and business and project development plans for oil and gas assets in more than 50 countries.

Geoff's career started with Bridge Oil, an Australian independent, where he worked as a petroleum engineer in their Surat and Cooper basin operations. After Bridge, Geoff was with Woodside, holding positions as the head of petroleum engineering for the North West Shelf Gas Project, corporate reservoir engineer, oil development team leader, an assignment with the Business Improvement Program team and as a senior reservoir engineer on secondment to Shell in the Netherlands.

Geoff has a BSc from Melbourne University and a MEng (Petroleum Engineering) from Sydney University. He is now Chairman of the SPE Western Australian Section and is serving on the SPE's Oil and Gas Reserves Committee.



Presenter:

Geoffrey Towner
Amadeus Energy Ltd

Time: 2.57 pm

US/Australia international competitiveness comparison

G. Towner

Geoffrey Towner is the founding managing director of Amadeus Energy Ltd, which was established in 1996. He has extensive international management experience in the oil and gas industry, gaining direct knowledge and expertise while living and working in Dallas, Texas, USA, in the 1980s where he operated a Limited Partnership with Australian oil company Bridge Oil.

In December 2002, Mr Towner was appointed as a non-executive director of Australian Renewable Fuels Limited, which listed on the Australian Stock Exchange in May 2005.

A member of the Australian Institute of Company Directors, Mr Towner has held several resources and public company directorships in the past 25 years in Australia.

Session 5A—Frontier potential

Hall E



Presenter:

John Draper
Geological Survey of
Queensland

Time: 3.45 pm

Georgina Basin—an early Palaeozoic carbonate petroleum system in Queensland

J. Draper

Queensland contains a number of carbonate-bearing basins which are under-explored for petroleum, but contain the elements of potentially economic petroleum systems. The oldest such basin is the Neoproterozoic to Ordovician Georgina Basin which straddles the Queensland-Northern Territory border and is traversed by the Ballera to Mount Isa gas pipeline.

The basin developed across several major crustal blocks resulting in regional variations in deposition and deformation. Thick Neoproterozoic rocks of the Centralian Superbasin form the base of the sequence in apparently fault-bounded, extensional sub-basins. These rocks are generally tight and source rocks are unknown. The Cambrian to Ordovician rocks have the best petroleum potential with the most prospective part of the basin being the Toko Syncline. The Burke River Structural Belt is less prospective, but is worthy of further exploration. Basin fill consists of Cambrian and Early Ordovician rocks which are dominantly carbonates, with both limestones and dolostones present. In the Early to Middle Ordovician, the rocks became predominantly siliciclastic.

The main phase of deformation affecting the Georgina Basin occurred in the Devonian as part of the Alice Springs Orogeny. The Toomba Fault, which forms the western boundary of the asymmetric Toko Syncline, is a thrust fault with up to 6.5 km of uplift. The angle of thrusting is between less than 40 degrees and up to 70 degrees. Rich, marine source rocks of Middle Cambrian age in the Toko Syncline are mature for oil except in the deepest part of the syncline where they are mature for dry gas. The deeper part of the Toko Syncline may be gas saturated.

Potential hydrocarbon targets include large folds associated with fault rollovers, stratigraphic traps and fault-bounded traps. Vugular, secondary porosity in dolostones offers the best chance for commercial reservoirs within the Ninmaroo and Kelly Creek formations and Thornton Limestone. There are also oolitic carbonates which may have good primary porosity, as well as interbedded sandstones in the carbonates with preserved porosity. Structurally controlled hydrothermal dolomite facies represent potential reservoirs. The dominantly siliciclastic Ordovician sequence is water flushed. Fracture porosity is another possibility (cf. the Palm Valley gas field in the Amadeus Basin). As the deeper part of the Toko Syncline appears to be gas saturated, there may be potential for basin-centred gas. Fine-grained carbonates and shales provide excellent seals. There has not been a valid structural test; although AOD Ethabuka-1 flowed 7,000 m³/d of dry gas, the well was abandoned short of the target depth.



Presenter:

Greg Ambrose
Central Petroleum

Time: 4.10 pm

Petroleum geology of Middle–Late Triassic and Early Jurassic sequences in the Simpson Basin and northern Eromanga Basin of central Australia

G. Ambrose, M. Scardigno and A.J. Hill

Prospective Middle–Late Triassic and Early Jurassic petroleum systems are widespread in central Australia where they have only been sparsely explored. These systems are important targets in the Simpson/Eromanga basins (Poolowanna Trough and surrounds), but the petroleum systems also extend into the northern and eastern Cooper Basin.

Regional deposition of Early–Middle Triassic red-beds, which provide regional seal to the Permian petroleum system, are variously named the Walkandi Formation in the Simpson Basin, and the Arrabury Formation in the northern and eastern Cooper Basin. A pervasive, transgressive lacustrine sequence (Middle–Late Triassic Peera Peera Formation) disconformably overlies the red-beds and can be correlated over a distance of 500 km from the Poolowanna Trough into western Queensland, thus providing the key to unravelling Triassic stratigraphic architecture in the region. The equivalent sequence in the northern Cooper Basin is the Tinchoo Formation. These correlations allow considerable simplification of Triassic stratigraphy in this region, and demonstrate the wide lateral extent of lacustrine source rocks that also provide regional seal. Sheet-like, fluvial-alluvial sands at the base of the Peera Peera/Tinchoo sequence are prime reservoir targets and have produced oil at James-1, with widespread

Session 5A—Frontier potential (continued)

Hall E

hydrocarbon shows occurring elsewhere including Poolowanna-1, Colson-1, Walkandi-1, Potiron-1 and Mackillop-1.

The Early Jurassic Poolowanna Formation disconformably overlies the Peera Peera Formation and can be subdivided into two transgressive, fluvial-lacustrine cycles, which formed on a regional scale in response to distal sea level oscillations. Early Jurassic stratigraphic architecture in the Poolowanna Trough is defined by a lacustrine shale capping the basal transgressive cycle (Cycle 1). This shale partitions the Early Jurassic aquifer in some areas and significant hydrocarbon shows and oil recoveries are largely restricted to sandstones below this seal. Structural closure into the depositional edge of Cycle 1 is an important oil play.

The Poolowanna and Peera Peera formations, which have produced minor oil and gas/condensate on test respectively in Poolowanna-1, include lacustrine source rocks with distinct coal maceral compositions. Significantly, the oil-bearing Early Jurassic sequence in Cuttahirrie-1 in the Cooper Basin correlates directly with the Cycle-1 oil pool in Poolowanna-1. Basin modelling in the latter indicates hydrocarbon expulsion occurred in the late Cretaceous (90–100 Ma) with migration into a subtle Jurassic age closure. Robust Miocene structural reactivation breached the trap leaving only minor remnants of water-washed oil. Other large Miocene structures, bound by reverse faults and some reflecting major inversion, have failed to encounter commercial hydrocarbons. Future exploration should target subtle Triassic to Jurassic–Early Cretaceous age structural and combination stratigraphic traps largely free of younger fault dislocation.

Terrane analysis of the Lord Howe Rise region—implications for petroleum prospectivity in a remote frontier region

L. Pryer and J. Blevin



Presenter:

Lynn Pryer
FrOG Tech Pty Ltd

Time: 4.35 pm

The Basins East of Australia study has used seismic and non-seismic datasets to map the basement terranes underlying more than 20 sedimentary basins in the remote frontier region of the Lord Howe Rise (LHR). Basins of the LHR are associated with two main basement terrane assemblages (Lachlan and New England fold belts) joined by a major suture/mobile belt (Peel Fault Zone/PFZ). The PFZ has undergone repeated reactivation in successive extension events that affected eastern Australia and formed basement to the Late Palaeozoic basins in eastern Australia. The mobile belt also underlies the South Gower Basin (east LHR), Fairway Trough (central LHR), central and southern New Caledonia Basin (southeast LHR), and the Taranaki and Reinga basins (northwest New Zealand). The New England Terrane underlies the northern LHR. The Lachlan Terrane, which forms basement to the Gippsland Basin, underlies the majority of the southern LHR and Challenger Plateau.

Basins of the LHR range in age from late Palaeozoic to Cainozoic, and about 10 basins are assessed as prospective and worthy of further investigation with higher resolution datasets. Petroleum prospectivity is greatest in the basins overlying the mobile belt due to the potential for repeated basement strain during successive extensional events. These events drove subsidence that accommodated thick sedimentary successions of stacked basins (Permian, through Mesozoic to Tertiary), as well as trap formation. Cretaceous age-equivalent sequences to those in the Gippsland Basin can be recognised in seismic data over most of the LHR, especially the northern LHR, extending from the Chesterfield Plateau to New Caledonia. While these sediments are age-equivalent to the source rocks and reservoir intervals in the Gippsland Basin, ODP and DSDP wells indicate mostly deeper water environments existed across much of the LHR. Potential source rocks in the LHR basins are more likely to have been deposited as part of the syn-tectonic succession. Loading of the syn-rift section is a major factor in determining the overall prospectivity of the region. On the southwestern LHR, thick accumulations of sediments are restricted to small (2,500–5,000 km²) isolated basins except for the Bellona Trough, which may be very deep. Sediment thickness increases dramatically to the east in the southern New Caledonia Basin (NCB) where the petroleum systems are probably similar to those in the Taranaki Basin. Numerous potential hydrocarbon indicators have been documented in seismic data from the south and central NCB.

This oral presentation to the APPEA Conference will not appear in The APPEA Journal.

Session 5B—Sources of Australian LNG

Hall D



Presenter:

Robert Pritchard
ResourcesLaw
International

Time: 3.45 pm

How to facilitate or strangle an LNG project

R. Pritchard

Natural gas is now almost universally acknowledged as a bridging fuel to a clean global energy future, providing one of the key solutions to the modern-day energy crisis that is the dual challenge of energy security and climate change. With increasing frequency and with an increasing tone of concern, politicians everywhere are calling for international trade in natural gas to be expanded.

How easy it is to seize on solutions of this type? How much do their proponents really know about how to actually achieve them?

Proponents of renewable energy and nuclear power (and even clean coal) are even more vocal about their respective merits. This paper leaves these competitive claims to the side and focusses only on natural gas.

The expansion of international natural gas trade is not the problem. Nor is there any problem of peak gas. The problem is how to expand capacity: that is, production capacity, liquefaction capacity, shipping capacity, terminal capacity and storage capacity. If capacity can be expanded, trade will look after itself.

In other words, the problem is one of investment. Investors in LNG projects, like investors everywhere, are risk averse. The paper outlines what this implies for the development of LNG projects and how easy it is to strangle them to death.

This oral presentation to the APPEA Conference will not appear in The APPEA Journal.



Presenter:

Barry Jones
Invest Australia

Time: 4.04 pm

The role of governments in facilitating major projects

B. Jones

Invest Australia is Australia's national inward investment agency. Its mission is to promote, attract and facilitate productive foreign direct investment (FDI) to support sustainable industry growth and development.

Companies interested in establishing operations in Australia or expanding their business can obtain information and assistance from Invest Australia and its international network of 16 offices. Invest Australia works in partnership with other Australian government agencies, the States and Territories, and industry to facilitate investment projects and provide investors with professional whole-of-government assistance.

In regard to the petroleum sector, Invest Australia seeks to promote Australia as an investment destination at all stages of petroleum exploration and production. This involves helping to identify farm-in opportunities and to attract projects involving the downstream processing of petroleum products. Additionally, it acts as a conduit, relaying information gained from industry players in the petroleum sector to senior policy advisers in government.

Perhaps the most prominent role Invest Australia plays in the petroleum sector is one of project facilitation. Through the Major Project Facilitation program, Invest Australia acts as a central contact point within the Australian Government. The program can help to co-ordinate and streamline government approvals processes. In addition, it identifies government assistance programs for which projects may be eligible. Projects that have gained benefit from this program include: the Greater Gorgon, Pluto and Ichthys LNG developments; and, the Otway, Blacktip, and Bayu Undan gas projects. The program is open to both Australian and foreign firms and consortiums proposing major projects of national significance.

This oral presentation to the APPEA Conference will not appear in The APPEA Journal.

Session 5B—Sources of Australian LNG (continued)

Hall D

Case study—the Browse LNG development

P. Moore



Presenter:

Paul Moore
Woodside Energy Ltd

Time: 4.23 pm

Browse is a major proposed LNG development based on a cluster of three large gas fields operated by Woodside in the Browse Basin, offshore the Kimberley region of Western Australia.

The Torosa, Brecknock and Calliance fields contain an estimated 20 Tcf of gas and some 300 million barrels of condensate. This world-scale resource allows the Browse Joint Venture to target the development of a significant LNG project pursuing delivery of first LNG in the first half of the next decade.

During 2006 Woodside has been working towards an improved understanding of the fields and their volumes, whilst in parallel maturing offshore and onshore development concepts, to ensure identification of the optimal technical, commercial and sustainable solution for field development.

During 2007 appraisal activities will focus on reducing volume uncertainty to allow sizing of LNG train and plant facilities. Work also continues maturing both onshore and offshore liquefaction schemes to the standard necessary to support a concept selection decision and for the preparation of the environmental approvals documents for the preferred concept.

Woodside and partners have funded comprehensive research on the entire Scott Reef system for more than 10 years, which provides us a detailed understanding of the physical and biological characteristics of the reef.

The Browse Joint Venture includes Woodside (operator), BHP Billiton, BP, Chevron and Shell.

This oral presentation to the APPEA Conference will not appear in The APPEA Journal.

Australia; Asia's energy future

H. Butler



Presenter:

Hilton Butler
Chevron Australia Pty Ltd

Time: 4.42 pm

Global demand for liquefied natural gas (LNG) is growing rapidly compared to other fuel sources, as indigenous energy supplies rapidly decline and international markets recognise the benefits of power generation using this efficient, cleaner burning fuel. LNG demand growth is predicted to increase at a rate of 8% a year to 2020. Nowhere is this growth more apparent than in the Asia-Pacific region where demand for LNG is now about 80 million tonnes a year and is forecast to more than double by 2015.

In the last 25 years, Australia has built a strong reputation as a reliable energy provider. Since the late 1980s, Australia has become a major global energy supplier of LNG. Australia is able to offer more than just a long-term supply of the world's most sought-after fuel. It is able to offer low sovereign risk, technology capital and management expertise, a huge resource base and a track record as a reliable and stable LNG producer. Australia is well positioned to capture energy export opportunities in expanding economies around the world, particularly the unmet demand in the Asia-Pacific region.

The Chevron-led Gorgon Project, located off the northwest coast of Australia is well placed to meet this growing demand. Significant agreements have already been signed with major Japanese companies as foundation customers.

This oral presentation to the APPEA Conference will not appear in The APPEA Journal.

Session 5C—Working together with communities

Hall C



Presenter:

Barry Goldstein
PIRSA

Time: 3.45 pm

The virtuous life cycle for exploration and production—lead and lag factors

B.A. Goldstein, E. Alexander, D. Cockshell, M. Malavazos and J. Zabrowarny

‘High-trust societies fare better than low-trust societies,’—Francis Fukuyama.

Trusted land access is both the first factor and the final outcome of a virtuous exploration and production life cycle. Key leading factors in the stewardship of trusted land access and a virtuous life cycle for exploration and production in South Australia include:

1. evolutionary, best practice, objective-based legislation;
2. transparent statements of environmental objectives (SEOs) that enable regulators to provide a one-stop-shop for approvals and avoid capture;
3. administrative arrangements between government agencies to foster expeditious co-regulatory work-flows;
4. conjunctive native title land access agreements that are fair and sustainable in relation to development;
5. prioritised, pre-competitive studies that reduce critical uncertainties; and,
6. highly motivated government officers focussed on building trust and reducing uncertainties, so both the community and investors sustain positive expectations for outcomes from exploration and production investment.

This paper characterises the South Australian Government’s roles and measures for success in the virtuous life cycle for petroleum and geothermal resource investment. The critical importance of local, leading actions will be demonstrated with examples, including: proposed enhancements to South Australia’s Petroleum Act 2000; streamlined but stringent project approvals; progressive achievements in native title land access agreements; the evolution of Australia’s geothermal energy sector; and, perception moulding research in the Cooper, Otway and Officer basins.

Presenter:

Geoffrey McDougall
Federal Attorney-General’s
Department

Time: 4.00 pm

Recent changes in Native Title legislation

Following the opening presentation by PIRSA’s Petroleum and Geothermal director Barry Goldstein, the Native Title Unit acting assistant secretary of the Federal Attorney-General’s Department, Geoffrey McDougall, will give a short presentation regarding Native Title Act amendments.



Panel moderator:

Doug Young
Young Law

4.10 pm

Panel discussion

Working with the Native Title Act

Panellists: P. Agius, J. Dnistrianski, B. Goldstein, M. Steele, E. Vickery and C. Lane

This will be a panel discussion with audience interaction on experiences with the Native Title Act 1993 and possible solutions that could facilitate access to land for exploration and development.

This session draws on the recent experiences of the panellists in their work in South Australia and in settling some of Australia’s first conjunctive Indigenous Land Use Agreements (ILUA). It will explore how the provisions of the Native Title Act 1993 have been used to deliver outcomes for all parties involved, allowing exploration for and development of oil and gas resources.

The session will also discuss how these ILUAs in South Australia may be replicated in other parts of Australia. The industry is faced with a delicate balancing act in dealing with the complexities of achieving native title agreements and commercial decisions that surround exploration and development investment decisions on the part of the upstream oil and gas industry.

Session continued next page

Session 5C—Working together with communities (continued)

Hall C

Working with the Native Title Act—Panellists



Parry Agius has had a lifetime's experience dealing with Aboriginal issues, coming from a family involved in caring for and protecting Aboriginal rights. He is a Narungga man; his people are the traditional owners of the land and waters in and around the Yorke Peninsula district in South Australia. He is the executive officer of the Native Title Unit of Aboriginal Legal Rights Movement Inc, which is the native title representative body for greater south Australia. NTU deals with legal, educational and negotiation issues involved with native title claims, the resource industry, farmers, fishing interests and Local and State Government policy. NTU, through Parry Agius, also has a national profile; making valuable contributions to the Australian native title scene.



Julia Dnistrianski is a partner at Finlaysons. She has practised as a commercial lawyer for more than 15 years and has specialised in the area of resources and native title law during the past 10 years, both as key legal adviser to the State Government on resources projects and in the private sector.

Julia has provided native title advice on numerous infrastructure projects including the SEAGas Pipeline Project and has most recently represented the petroleum industry in the negotiation of the Conjunctive Petroleum Indigenous Land Use Agreement (ILUA) with the Yandruwandha Yawarrawarrka native title claimants in the Cooper Basin.



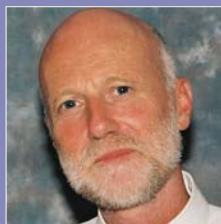
Barry A. Goldstein is South Australia's director, Petroleum and Geothermal, and has 27 years international experience in the energy sector. He is Australia's executive committee representative to the International Energy Agency's Geothermal Implementing Agreement. Barry is a past president of the PESA and serves on the Boards of PESA (since 2001), the Australian Geoscience Council (since 2004), the Federation of Australian Scientific and Technologic Societies (since 2004), the Australian School of Petroleum (since 2002) and is a member of the AAPG's House of Delegates and International Lecturer Committee. Member: PESA, SPE, ASEG, AAPG and AGU.



Michael Steele (LLB, University of Adelaide; PGradDip Laws [Intellectual Property], University of London) acts on instructions from the Aboriginal Legal Rights Movement, the representative body in South Australia. He is the principal external legal advisor to, and counsel for, ALRM on strategy and policy for native title matters in South Australia. In that capacity he was legal advisor in the Spear Creek mediation of a large number of overlapping native title claims in the central west of South Australia, being a mediation under the auspices of the National Native Title Tribunal but using senior aboriginal men and women as a consultative body on aboriginal law as part of the mediation strategy. This was a groundbreaking exercise that has been successfully followed elsewhere in Australia.



Ewan Vickery is a partner of Minter Ellison Lawyers based in Adelaide, and has practiced business law since being admitted to the bars of the Supreme Court of South Australia and the High Court of Australia in 1972. Prior to that he lived in rural South Australia and for one year in an active oil-producing area of the Julesburg Basin in the USA. He presented a paper to APPEA at its 2004 Conference on the development of the first native title agreements in the South Australian Cooper Basin, in which his role was as the lawyer for all of the exploration companies. He also teaches in this topic as a Visiting Fellow at the University of Melbourne each year, and is a former National President of AMPLA, the Australian Mining & Petroleum Law Association.



Chas Lane completed a BSc in Applied Geology from RMIT in 1977 and started in the oil patch as a mudlogger in Perth in 1979. During the early '80s resources boom he moved to Sydney with Australian Aquitaine, then moved his young family back to Perth with Hudebay Australia. In 1983 he joined the young Strata Oil to continue development work on the Woodada gas field, and four years later joined Victoria Petroleum, first in new ventures and then as JV operations manager, where he now holds the position of exploration manager. Chas is a past president of the PESA Western Australian Branch, co-author of an APPEA Best Paper, a keen aviator and is active in Orienteering WA.

Plenary addresses

Wednesday, 18 April 2007
Hall E



Greg Bourne
WWF-Australia

Time: 9.00 am

Climate change: we've got five to 10 years

Greg Bourne

If we are to avoid dangerous global warming from both an environmental and societal point of view, it is imperative that we dramatically and urgently reduce our global CO₂ emissions.

The oil and gas industry as a whole needs to face up to a carbon-constrained future and needs to develop strategies to thrive in a fast-changing world.

Greg Bourne studied chemistry at the University of Western Australia under a scholarship from BP Refinery, Kwinana. After graduating with Honours in 1971, he carried out research into refinery processes for two years at BP's Research Centre in Sunbury in England before joining BP Exploration as a drilling engineer in Abu Dhabi. His exploration activities saw him living and working in the United Kingdom, America, Canada, Ireland, Brazil, China, Venezuela and Australia.

Seconded to the Prime Minister's Policy Unit at 10 Downing Street in 1988, he was the special adviser on energy and transport, and returned to BP in January 1990 to take up the position of chief executive, BP Marine, London.

He returned to Australia in October 1992 as president and general manager, Exploration and Gas, BP Developments Australia Ltd, with responsibility for BP Exploration's activities in Australia and Papua New Guinea. After working overseas as director BP Scotland and then regional director, Latin America, based in Caracas; he returned to Australia in January 1999 to become regional president, BP Australasia—the position from which he retired from BP in September 2003. Greg took up his present position as CEO WWF, Australia, in October 2004.



Mark McKenzie
Rare Consulting

Time: 9.30 am

Natural gas for road transport in Australia—the challenges and opportunities

Mark McKenzie

Global concern over the long-term economic outlook of conventional oil-based fuels has prompted many of the world's economies to explore alternatives to the wholesale use of conventional fuels for road transport. This effort has assumed greater urgency in more recent times, on the back of rising global concern about greenhouse and climate change—and the growing contribution of road transport emissions to this phenomenon.

Unfortunately, the search for genuine alternative fuels is complex and has been made even more difficult by the highly contestable claims and counter-claims of the various advocates about the green value of their fuel. The subsequent confusion has made it difficult for policy-makers to identify the fuels that are likely to be genuine substitutes in the future, often resulting in contradictory legislative and policy settings for vehicle fuels in Australia.

Much of the recent effort in this area has focussed on contemporary environmental outcomes, but paid insufficient attention to the other core requirements such as: abundance of supply, producer economics, fuel quality, user economics, and operational performance. When considered in light of these wider criteria the majority of the available alternative fuels fair badly when compared with conventional transport fuels.

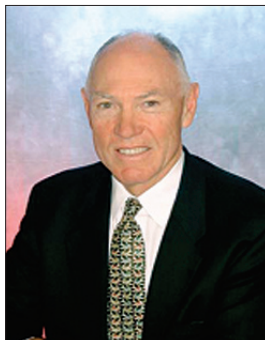
One exception is natural gas, where real-world trials conducted by the Australian heavy vehicle industry (under the auspices of the Australian Government Alternative Fuel Conversion Programme) have revealed positive economic and environmental outcomes. Analysis of these outcomes suggests that they are likely to be sustainable in the medium to long term.

While the realisation of these benefits will require successful negotiation of a number of significant technical and industry-development challenges, the much talked about chicken-and-egg problem is no longer considered to be an insurmountable barrier to the wider use of natural gas in the Australian heavy vehicle fleet.

Session continued next page

Plenary addresses

Wednesday, 18 April 2007
Hall E



John Daley

Australian Industry
Greenhouse Network

Time: 10.00 am

How competitive is gas in carbon-priced power generation?

John Daley

Natural gas and coal seam gas are widely regarded as the transition fuels from coal-fired, base load electricity generation to the low emission sources of a highly carbon-constrained future. These might include nuclear power, clean-coal plants with carbon capture and storage (CCS), hot dry rocks and other renewables. Gas-fired CCGTs produce only about half the greenhouse emissions of (black) coal-fired plants. They are cheaper to build and can be built much faster, but their role as intermediate stations, down the merit order, is decided by their much higher variable cost. Gas is much more expensive than coal. A sufficiently high emissions charge would change that equation and could trigger new investment in CCGTs and promote them to base load duty. Power prices would rise, of course, particularly if sharply increased demand for gas were to push up gas prices. These price effects are the medium by which the industry will change and, in particular, by which investment in new low emissions technologies will be justified. This presentation explores these questions on the basis of two arbitrary carbon price levels and a set of assumptions about power station investment costs and fuel costs. The analysis suggests that CCGTs are unlikely to be sustainable as base loads in the long term if common assumptions about the additional costs of CCS and the cost of nuclear power are correct, even if CCS were applied to gas plants. However, this conclusion does not deny the transition role, nor the fact that CCGT technology, and real investment projects, are available now.

Time: 10.30 am

Presentation of the Environment and Safety Awards

Session 6A—Old areas—new ideas #2

Hall E



Presenter:

Darren Ferdinando
ARC Energy Ltd

Time: 11.15 am

Illite/smectite clays preserving porosity at depth in Lower Permian reservoirs, northern Perth Basin

D.D. Ferdinando, J.C. Baker, A. Gongora and B.A. Pidgeon

The appraisal well Hovea-2, drilled in July 2002, was the first well in the onshore Perth Basin to discover commercial volumes of gas in sandstone reservoirs of the Artinskian (Early Permian) High Cliff Sandstone sealed beneath basal shales and siltstones of the Irwin River Coal Measures. A drill stem test in this formation, in the interval 2,370–419 m MDRT (measured depth below rotary table), flowed gas to surface at 16.5 MMcfd. Thereafter, the High Cliff Sandstone became an important play for exploration in the basin; however, no additional discoveries have been made in this reservoir, even though it has been tested in another seven wells (Jingemia-1, Eremia-1, Kunzia-1, Corybas-1, Yardarino-6, Hakia-2 and Bunjong-1).

In Corybas-1, drilled in 2005, this reservoir was found to be water bearing, but an 18 m core was taken within the topmost High Cliff Sandstone. This core provided important insights into the fluvial depositional environment of these sands. Importantly, porosity and permeability are highly variable within the reservoir, with some coarser grained beds retaining anomalously high porosity and permeability due to the coating of constituent quartz grains by illite/smectite that inhibited late stage quartz overgrowth. Study of this core along with core from overlying Irwin River Coal Measures indicates that there may be some facies control on the presence of the grain-coating clays in the High Cliff Sandstone, and that the fluvial to tidal facies are more likely to be an effective petroleum reservoir than the overlying fluvial/alluvial facies. This reservoir is the primary objective in the upcoming exploration wells Beharra Springs Deep-1 and Drakea-1, to be drilled in 2007.



Presenter:

Kevin Lanigan
Nexus Energy Limited

Time: 11.40 am

Longtom—confirmation of a new play in offshore Gippsland

K.P. Lanigan, G. Bunn and J. Rindschwentner

The Longtom gas field was discovered in 1995, when the Longtom-1/ST1 wildcat well in the northern part of the offshore Gippsland Basin encountered dry gas in tight sandstones towards the base of the Latrobe Group, in what is now called the Admiral Formation of the Emperor Subgroup. In 2004 the Longtom-2/ST1 exploration well confirmed significant vertical and lateral extension of these prospective gas sands, and also provided very encouraging production test and core data. The recent Longtom-3 wells have demonstrated the viability of this new play by confirming significant lateral continuity of the thicker gas sands and demonstrating high gas flow rates. The history of the field's discovery and appraisal illustrates how a multi-disciplinary and interactive approach, guided by innovative seismic inversion techniques and real-time petrophysical data, resulted in the successful planning and execution of the Longtom-3 drilling and evaluation program. The results of the wells and the outline of the field development plan illustrate how Longtom represents new production potential in this mature basin.

Session 6A—Science-based approaches to mitigating environmental risk

Hall E



Presenter:

Peter Harris
Geoscience Australia

Time: 12.05 pm

Marine zone management and the EPBC Act—how environmental marine geological information provides certainty for petroleum exploration

P.T. Harris, A. Heap, A. Post, T. Whiteway, A. Potter and M. Bradshaw

To protect the diversity of marine life in Australia's Exclusive Economic Zone (EEZ), the Federal Parliament has passed the Environmental Protection and Biodiversity Conservation (EPBC) Act 1999. The Act is being implemented through the design of a national representative system of marine protected areas (MPAs) that will place under protection a representative portion of Australia's EEZ by 2012. There have already been 13 MPAs nominated for the southeast region in 2006.

Limited biological data in Australia's EEZ has resulted in biophysical information compiled by Geoscience Australia being used as a proxy for seabed biodiversity in support of marine conservation planning. Information we use to characterise the seabed includes bathymetry, geomorphology, acoustic properties, sediment properties, and slope and sediment mobilisation due to waves and tides. To better characterise habitats on the Australian continental shelf, Geoscience Australia is creating seascape maps (similar to geological facies maps) that integrate these multiple layers of spatial data, and which are useful for the prediction of the distribution of biodiversity in Australia's EEZ. This information provides 100% spatial coverage based on objective, multivariate statistical methods and offers certainty for managers and stakeholders including the oil and gas industry, who are involved with designing Australia's national MPA system. Certainty for industries operating in the EEZ is enhanced by a reproducible, science-based approach for identifying conservation priorities and the classification of sea floor types within multiple use areas.



Presenter:

John R. Hughes
Santos Ltd

Time: 12.30 pm

E&P sound and marine life—the value of research and monitoring programs

J.R. Hughes

Since 2002, Santos Ltd has conducted extensive research and monitoring programs in conjunction with its seismic surveys on the southern margins and, more recently, on the North West Shelf.

The investigations have provided valuable insights into the nature of seismic signals in different water depths and the behaviour of marine animals such as mammals and fish in the vicinity of seismic surveys.

This presentation briefly describes the results achieved from using such techniques as towed PAM (passive acoustic monitoring), sea bed acoustic loggers, shipboard observations (MMOs), aerial surveys, independent vessel surveys and extraction of whale calls from seismic streamers.

Although the cost of such research and monitoring imposes additional cost burdens on seismic surveys, our experience demonstrates that positive cost benefits can accrue as a result of opening up recording windows, enabling surveys to proceed in the unexpected presence of blue whales and avoidance of recording shutdowns by closely monitoring cetacean behaviour.

This oral presentation to the APPEA Conference will not appear in The APPEA Journal.

Session 6B—Trends in gas technologies

Hall D

Australia's gas future—a research and development perspective

D. J. Whitford and J. Pullar



Presenter:

David Whitford
Energy Transformed
Flagship, CSIRO Division
of Petroleum Resources

Time: 11.15 am

Australia's large natural gas resource offers the prospect of a secure and competitive supply of transport, domestic and industrial fuels, lower emissions and an opportunity for significant wealth generation. Although the use of gas is growing fast, there remain significant technological hurdles that must be overcome before its full potential is realised. Many of the technical issues have a distinctive Australian dimension that demand local solutions—we cannot necessarily rely on imported technology.

In consultation with industry, government and other research and development providers, CSIRO has developed a gas technology roadmap that provides the basis for an integrated research program in support of the Australian gas industry. The roadmap addresses the needs of both the conventional and unconventional gas industries and covers the value chain from exploration, production and processing, to utilisation and end use.

In the context of ensuring a reliable and secure supply of competitively priced gas, two research streams have been identified, focussing on accessing remote conventional gas that is economically stranded, and unlocking Australia's large unconventional gas resources to supply the southeast quadrant. Gas is an intrinsically cleaner fuel than oil or coal in terms of CO₂ emissions and specific research opportunities in geosequestration, gas-based alternative fuels and distributed energy have been identified.

Gas in the form of LNG is a fast-growing export industry enhancing Australia's position as a leading energy exporter. There are opportunities for research and development to contribute to LNG, gas-to-liquids (GTL) fuel conversion as well as the greater use of gas for large-scale resource developments. Given the diversity and range of research opportunities, Australia has the potential to become a global leader in gas technologies with the chance to grow knowledge-based exports in addition to the export of raw fuels and embedded-energy products.

Novel offshore LNG solutions

J. Driver, O.F. Graff, R. Eie, T. Lund and S. Woodhouse



Presenter:

Jacqui Driver
Aker Kvaerner Australia

Time: 11.40 am

The demand to process associated and stranded gas is growing and there is increasing commercial interest in offshore LNG production. Limitations in available land and carrier access, safety and environmental considerations and difficult onshore permitting have created an interest in locating LNG terminals offshore.

These factors are providing incentives to develop solutions and the technologies required to transfer the liquefaction and re-gasification segments of the LNG chain to offshore locations. Some of the hurdles that need to be overcome are associated with equipment size, weight and layout, energy consumption, the marine environment and, for floating facilities, the moving environment.

All of these aspects need to be addressed to produce an overall design that meets technical, commercial, safety and environmental requirements. This paper presents some recent developments in offshore LNG solutions for floating and fixed offshore LNG production and offshore LNG re-gasification terminals.

Specific case studies for each facility are: a floating LNG production facility for the Nnwa-Doro gas field offshore Nigeria; a fixed offshore liquefaction facility in the Arctic region; and, the Adriatic LNG receiving terminal located offshore Italy. Information about an alternative method of transporting natural gas—called heavy liquefied gas (HLG)—which has some specific advantages over traditional LNG, is also presented. For each case study, design, construction, cost and schedule are discussed where applicable.

Session continued next page

Session 6B—Trends in gas technologies (continued)

Hall D



Presenter:

Sandeep Sharma
CRC for Greenhouse Gas
Technologies, Schlumberger
Australia Pty Ltd

Time: 12.05 pm

Australia's first geosequestration demonstration project—the CO₂CRC Otway Basin Pilot Project

S. Sharma, P. Cook, T. Berly and C. Anderson

Geological sequestration is a promising technology for reducing atmospheric emissions of carbon dioxide (CO₂) with the potential to geologically store a significant proportion of Australia's stationary CO₂ emissions. Stationary emissions comprise almost 50% (or about 280 million tonnes of CO₂ per annum) of Australia's total greenhouse gas emissions. Australia has abundant coal and gas resources and extensive geological storage opportunities; it is therefore well positioned to include geosequestration as an important part of its portfolio of greenhouse gas emission mitigation technologies.

The Cooperative Research Centre for Greenhouse Gas Technologies is undertaking a geosequestration demonstration project in the Otway Basin of southwest Victoria, with injection of CO₂ planned to commence around mid 2007. The project will extract natural gas containing a high percentage of CO₂ from an existing gas well and inject it into a nearby depleted natural gas field for long-term storage. The suitability of the storage site has been assessed through a comprehensive risk assessment process. About 100,000 tonnes of CO₂ is expected to be injected through a new injection well during a one- to two-year period. The injection of CO₂ will be accompanied by a comprehensive monitoring and verification program to understand the behaviour of the CO₂ in the subsurface and determine if the injected carbon dioxide has migrated out of the storage reservoir into overlying formations. This project will be the first storage project in Australia and the first in the world to test monitoring for storage in a depleted gas reservoir. Baseline data pertinent to geosequestration is already being acquired through the project and the research will enable a better understanding of long-term reactive transport and trapping mechanisms.

This project is being authorised under the Petroleum Act 1998 (Victoria) and research, development and demonstration provisions administered by the Environment Protection Authority (EPA) Victoria in the absence of geosequestration-specific legislation. This highlights the need for such legislation to enable commercial-scale projects to proceed. Community acceptance is a key objective for the project and a consultation plan based on social research has been put in place to gauge public understanding and build support for the technology as a viable mitigation mechanism.

A case study of a carbon dioxide well test

J.Q. Xu, G. Weir, L. Paterson, I. Black and S. Sharma



Presenter:

Josh Xu
CRC for Greenhouse Gas
Technologies, Curtin Uni-
versity of Technology

Time: 12.30 pm

This paper reports on the planning, procedure, results and analysis of a carbon dioxide (CO₂) well test performed on Buttress-1, a well located in the Otway Basin, Victoria, Australia. A large-scale pilot study of CO₂ sequestration is planned by the Australian Cooperative Research Centre for Greenhouse Gas Technologies (CO₂CRC) in this area, which will involve, inter alia, taking CO₂ from the Buttress reservoir and injecting it into a nearby depleted gas field. Understanding the production characteristics of this well is important to the success of this pilot, which forms part of a more extensive study to establish viable means to mitigate CO₂ emissions to the atmosphere. This general backdrop forms the motivation for this study.

Testing comprised of a standard suite of draw-downs and build-ups to determine reservoir/well characteristics, such as the well deliverability, the non-Darcy skin coefficient and the average reservoir permeability and volume.

Compared to the wealth of experience developed over many years in testing oil and gas wells, the collective experience in CO₂ well testing is extremely limited. The distinguishing features between this test and those of a typical natural gas well test need to be emphasised. Although, in general, flow testing a CO₂ well should be similar to testing a natural gas well, differences in the thermodynamic properties of CO₂ affect the analysis of the well test considerably. In particular, the non-Darcy skin effect is more pronounced and the wellbore and surface flow can involve dramatic phase changes, such as the formation of ice. Also, since CO₂ is more compressible than a typical natural gas, the accurate measurement of the flow rate becomes more challenging. It is also apparent that the use of pseudo pressure, as opposed to simpler methods of dealing with the pressure dependency of key properties, is essential to the successful analysis of the pressure response to the CO₂ production.

Session 6C—Improving regulatory terms

Hall C



Presenter:

Bob Pegler

Australian Department
of Industry, Tourism and
Resources

Time: 11.15 am

Smoothing the path—changes to Commonwealth offshore petroleum legislation

B. Pegler, J. Lautenbach and L. Richards

The last few years have seen a range of important changes to the Commonwealth legislation governing offshore petroleum resources. Not the least of these has been the passing of the new Offshore Petroleum Act 2006 (OPA)—which will replace the Petroleum (Submerged Lands) Act 1967 (PSLA)—and the recent ratification of the Treaty on Certain Maritime Arrangements in the Timor Sea (CMATS) and the Greater Sunrise International Unitisation Agreement.

The PSLA has been the primary legislation for the administration of Australia's offshore petroleum resources for close to 40 years and, through age and many amendments, it has become complex and unwieldy. The Government saw the need to rewrite the Act to provide a more user-friendly enactment that would reduce compliance costs for governments and industry. The rewrite, passed as the Offshore Petroleum Act 2006, focussed on restructuring the Act, deleting outdated text, rewriting specific sections and generally improving its readability rather than rewriting the entire Act in plain English or changing present regulatory arrangements.

The OPA was passed through the Commonwealth Parliament in 2006 and has been passed as mirror legislation to cover offshore waters by the majority of States and the Northern Territory. It will be proclaimed to cover Commonwealth waters once it has been mirrored by the States. The Australian Government will continue to press the remaining States to enact the OPA and it is hoped this process can be finalised later this year.

Another major step forward has been the setting up of the National Offshore Petroleum Safety Authority (NOPSA). NOPSA is the centralised Australian Government statutory authority responsible for the administration and enforcement of occupational health and safety legislation in the offshore petroleum industry. It has this role for offshore petroleum activities both in Commonwealth waters and in State and Northern Territory offshore waters. The safety authority commenced its regulatory operations on 1 January 2005. It has its headquarters in Perth and an office in Melbourne.

This paper will be published in The APPEA Journal after the Conference.



Water and the coal seam gas industry

G. Scott and C. Ammundsen

Access to water is a significant issue in Queensland as much of the State continues to be affected by a prolonged drought. Coal seam gas production involves extracting water from coal seams to reduce the ground water pressure that keeps the methane trapped in the coal. This process produces large volumes of water. Local councils, primary producers and industrial developers are potential end users of this water; however, if the water is of poor quality, it may be unsuitable for release in the environment and for other direct beneficial uses.

This paper examines the complex legislative and regulatory hurdles that need to be overcome before any mutually beneficial agreement between the coal seam gas producer and end user may be completed. It also examines an operational policy recently released by the Queensland Environmental Protection Agency that proposes a framework for the regulation and management of water extracted from coal seams.



Presenters:

**Gavin Scott, Caroline
Ammundsen**

Blake Dawson Waldron

Time: 11.40 am

Session continued next page

Session 6C—Improving regulatory terms (continued)

Hall C



Presenter:

Mark Carkeet
Minter Ellison

Time: 12.05 pm

Changes to gas access legislation—policy rationale and implications for industry

M.L. Carkeet

The introduction of a national gas access regime has coincided with a rapid expansion in the Australian market for gas transportation services. The threat of regulation and the approach of regulators, however, have influenced both the configuration of pipelines and the nature of transportation contracts. The recent introduction of reforms to the National Third Party Access Regime for Natural Gas Pipelines (Gas Access Regime), and to part IIIA of the Trade Practices Act 1974 (Cth), has the effect of introducing part but not all of the reforms recommended by the Council of Australian Governments' Independent Review of Energy Market Directions, and the Productivity Commission's Review of the Gas Access Regime. The principal amendments, relating to the insertion of an objects clause and the introduction of regulatory holidays for certain greenfield projects are also likely to influence the configuration of pipelines and the nature of pipeline contracts. These amendments are precursors to a major restatement of National Gas Access legislation that will, if enacted, have the effect of creating greater uniformity between the National Electricity Law and the regulatory environment that will apply to gas, but, will also open up the opportunity for pipeline owners and operators to submit to a lighter form of regulation.



A critical analysis of the offshore unitisation regime in Australia

A. Soh and C. Pope

Unitisation, and the threat of unitisation, is a major risk for petroleum industry participants because it can significantly affect both project timelines and project profitability. Despite this, the Commonwealth legislative framework is sparse on detail regarding the process for offshore unitisation in Australia. This article examines the offshore unitisation regime in Australia and its implications. It describes the historical context for unitisation in Australia and describes the key concepts of unitisation, including both forced unitisation and voluntary unitisation. It also reviews the current Commonwealth legislative framework, analyses the adequacy of the Commonwealth legislative framework in achieving efficiency in unitisation and addresses recommendations for amendments to that framework.



This paper will be published in The APPEA Journal after the Conference.

Presenters:

Ann Soh, Clare Pope
Minter Ellison

Time: 12.30 pm

Closing addresses

Wednesday, 18 April 2007
Hall E

2.50 pm

Closing Session: Perspectives and future directions



Michael Economides,
Professor
Cullen College of Engineering, University of Houston and Editor-in-Chief, Energy Tribune, USA

Leading Industry Address—Energy geopolitics

Michael Economides

There is a substantial imbalance in the location of energy producers and consumers, an imbalance that has precipitated world conflicts and one that will likely cause future upheavals. Prominent among these areas is the Middle East, where five of the six countries with 75 billion barrels of reserves are located. The Straits of Hormuz, through which one-third of all oil world trade passes, is a geopolitical choke point. Other areas such as Venezuela, Nigeria and Indonesia have also caused or are causing difficulties. Russia's recent ascendancy in the energy world has been an important counterbalance to the power of OPEC. However, recent events surrounding Russia's energy industry and newly emerged militant populism elsewhere have given rise to what can easily be described as energy imperialism.

Several professionals have concluded that energy limits should be a 'genuine concern' not only for the developed world, but more importantly, 'if the rich/poor gap is finally narrowed'. Consider that about two billion people (one-third of the global population) have no access to energy sources of any kind outside of charcoal, wood and animal dung. One obvious bright spot for the future is that energy consumption in the generation of wealth and the form of primary energy sources have not been constant throughout the last two centuries. Instead, the process has been dynamic, technology has played a considerable role and nations have and will leap-frog in status by adopting technologies and efficiencies developed elsewhere, without having to repeat painful processes in pioneering nations such as the United Kingdom and the United States. Globalisation of the economy will certainly aid the process further.

APPEA and PESA Paper Awards

- The APPEA Technical and Commercial Papers committee will make a number of Best Paper and Best Poster awards.
- PESA will make an award for the Best Presented Paper.

2007 APPEA Conference Closing Address

Belinda Robinson



Belinda Robinson,
Chief Executive, APPEA

APPEA Chief Executive Belinda Robinson will close the Conference with an overview of the upstream oil and gas industry, and its likely future direction from the perspective of its peak E&P council.

Belinda has been with APPEA a little less than two years. With a Master of Environmental Law from the Australian National University, she came to the organisation from the Australian Plantation Products and Paper Industry Council where she was Chief Executive Officer.

There she became conversant with such issues as energy policy, resource security, climate change, and manufacturing industry and trade policy.

Before that she spent nine years with the Australian Government, including six years in the Department of the Prime Minister and Cabinet where she was responsible for a range of resource, primary industries and environment policy issues.

She has also worked in a variety of resource planning roles in State and Local Governments. She holds three degrees.