



**Oct., Nov. & Dec.  
2007  
& January 2008**

**Vol. 24 Nos. 10, 11 & 12  
& Vol. 25 No.1**

**ISSN 0813 - 4227**

\*\*\*\*\*

#### **In This Issue**

- \* **Labor govt. elected**
- \* **Technical Program for 2008**
- \* **Report on ANA 2007 Conference on Oct. 19**
- \* **Report on Fast Reactors talk on 9 Nov.**
- \* **Report on talk on Ansto on 28 Nov.**
- \* **Report on ANA Lunch and Award on 13 Dec.**
- \* **PNC Progress Report & Reminder of 16PBNC**
- \* **International news**

\*\*\*\*\*

**The Australian Nuclear Association is a Member of the Pacific Nuclear Council & International Nuclear Societies Council, and an Affiliate of the World Nuclear Association**

\*\*\*\*\*

**Published by the Australian Nuclear Association Inc.  
PO Box 445  
Sutherland NSW**

# NUCLEAR AUSTRALIA

**NEWSLETTER OF THE  
AUSTRALIAN NUCLEAR ASSOCIATION INC.**

---

#### **Editorial**

The Australian Federal Election held on 24 November 2007 saw the Liberal/National Country Party Coalition government led by Mr John Howard replaced by the Labor Party government led by Mr Kevin Rudd. The previous government had been very supportive of the expansion of the uranium industry and the consideration of nuclear power in the future energy mix for Australia. While the Federal Australian Labor Party had replaced its old "Three Mines Policy" in April 2007, it was still not willing to consider nuclear power for the future in Australia, preferring to support renewable energy and development of clean coal technology. All those who believe nuclear power can make a contribution to Australia's energy needs in a carbon-constrained world will await with interest any statement on energy policy by the new government.

The ANA held a very successful 7th National Conference at the Sydney Mechanics School of Arts in Sydney, on 19 October 2007. The Opening Speaker was Dr Ziggy Switkowski, Chairman of ANSTO and Chairman of the Prime Minister's Review of Uranium Mining, Processing and Nuclear Power (UMPNER) published in December 2006. A brief report on the conference is given on page 2.

The editor apologises for the delay in publishing this issue which was expected to reach members in January. The completion of the details of the joint technical program of the ANA and the Nuclear Panel of Engineers Australia's Sydney Branch took much longer than expected. It is planned to publish Nuclear Australia quarterly in the future. A questionnaire on the ANA's meetings and services is enclosed with the present issue. Members are urged to take a few minutes to complete and return it to assist the Committee in providing better services in future.

---

#### **A Bright Future for Nuclear Power Worldwide**

While the future may not look bright for nuclear power in Australia, it is looking bright overseas. The World Nuclear Association's recently published report on "The Global Fuel Market - Supply and Demand 2007-2030" estimates that the world's installed nuclear capacity will increase by about 20% by 2020 and 40% by 2030 based on its reference scenario. There will be a major increase in China and India, a moderate increase in some developed countries, such as Japan, Korea and Russia, and a small increase in the European Union and North America.

These increases will require a major increase in uranium production in the next two decades as well as an increase in conversion and enrichment services. Even if Australia does not embark on a nuclear power program in this timescale, it has a bright future in expanded uranium production for export. Fortunately, uranium mining now enjoys bi-partisan political support in Australia. BHP-Billiton is considering a major expansion of uranium production at its Olympic Dam copper-uranium-gold deposit. A second uranium in-situ leach processing plant is expected to start production this year at the Honeymoon deposit in South Australia, not far from where the first Australian in-situ leach plant is operating at the Beverley deposit.

A brief report on nuclear power developments in several major countries is provided on page 4.

---

---

## ANA 2007, Theme: "A Nuclear Future"

ANA 2007, the ANA's Biennial National Conference, was held on Friday, 19 October 2007, at the Sydney Mechanics School of Arts, 280 Pitt St, Sydney. The program included presentations by experts in nuclear science and technology:

*Opening Address: Nuclear Issues in Australia*

Dr Ziggy Switkowski, Chairman, ANSTO

*World Nuclear Power Developments*

Mr Ian Hore-Lacy, World Nuclear Association

*Australia's Uranium Scene*

Mr Michael Angwin, Australian Uranium Assocn

*The Case for Uranium Enrichment in Australia*

Dr Clarence Hardy, Nuclear Fuel Australia Ltd

*OPAL Research Reactor and Applications*

Dr Ron Cameron, Chief of Operations, ANSTO

*Law and Regulation – The Developing International*

*Safety Framework*

Dr John Loy, CEO, ARPANSA

*Nuclear Growth and Proliferation Issues*

Mr John Carlson, Director-General, Australian Safeguards and Non-Proliferation Office

*Radioactive Waste Management*

Mr Pat Davoren, DEST, Canberra

*Building Nuclear Skills in Australia*

Dr Ron Cameron, Chief of Operations, ANSTO.

A Panel Discussion with the speakers on all topics covered was held in the afternoon. Copies of the Conference Handbook including the texts of the papers are available at a cost of \$20.00 per copy plus postage from the ANA Secretary at PO Box 85, Peakhurst, NSW 2210. For more information contact the website: [www.nuclearaustralia.org.au](http://www.nuclearaustralia.org.au)

The conference was judged to have been a great success by the ANA Committee and from remarks made by the over 100 participants. The Chairman, Dr John Harries, and the Conference Manager, Dr Peter Airey, are to be congratulated.

---

## Progress Report on the Pacific Nuclear Council and 16PBNC

The last meeting of the Pacific Nuclear Council was held in Washington, DC, USA, in association with the ANS Annual Winter Meeting. Dr Clarence Hardy chaired the PNC meeting as PNC President. The PNC dealt with a large agenda of items including choosing the host and venue for the 17<sup>th</sup> Pacific Basin Conference. This will be hosted by the Mexican Nuclear Society and held at Cancun in Mexico on 24-30 Oct.2010. Dr Hardy presented the draft Report of the PNC Task Group on Public Information and Education in Nuclear Science & Technology. Dr Hardy has been the leader of this Task Group for the last two years.

The next meeting of the PNC will be held in Seoul, Korea, on 18 April 2008, in association with the annual conference of the Korean Atomic Industrial Forum. It will be chaired by Dr Hardy, who will also present the Final Report of the PNC Task Group on Public Information and Education in Nuclear Science & Technology. Copies of the Report will be made available on request to ANA members after it is approved by the PNC.

The final meeting of the PNC for 2008 will be

held in Aomori, Northern Japan, on 13 October in association with the 16<sup>th</sup> Pacific Basin Nuclear Conference (see below). Dr Hardy completes his two-year term as President at the PNC meeting.

The 16th Pacific Basin Nuclear Conference (16PBNC) will be hosted by the Atomic Energy Society of Japan and the Japan Atomic Industrial Forum and held at Aomori in northern Japan from 13-17 October 2008. There is a large nuclear centre at Aomori including a reprocessing plant, an enrichment plant and waste management facilities and tours will be arranged to the centre.

The topics include all aspects of nuclear power, the nuclear fuel cycle, applications of isotopes and radiation, research reactors, nuclear education, etc. Over 400 abstracts of proposed papers have been received. The deadline for early registration is 31 March 2008 and the early registration fee is Y70,000 (A\$730). Early registration at one of the conference hotels is advised as over 600 persons are expected to attend and Aomori is only a small city. Information on the conference can be obtained from the website: [www.pbnc2008](http://www.pbnc2008) or email: [info@pbnc2008.org](mailto:info@pbnc2008.org)

TECHNICAL PROGRAM FOR 2008

The first meeting for 2008 will be the traditional Four Societies meeting of the ANA, Engineers Australia's Nuclear Panel, the Australian Institute of Energy and the Royal Society of NSW, hosted by the Royal Society of NSW (see box below).

**The Four Societies Meeting,  
Wednesday, 5 March 2008**  
Lecture Room 1, Darlington Centre,  
University of Sydney

**"Future Prospects for Large Scale  
Solar Thermal Power Technologies"**  
By Associate Professor Keith Lovegrove  
Solar Thermal Group Leader,  
ANU Dept of Engineering

**Summary:** The Australian National University has been working on paraboloidal dish solar concentrators since the early 1970s. Construction has just begun on a new 500m<sup>2</sup> dish prototype that will be the basis for commercial plants by Wizard Pty Ltd, which has an exclusive ANU licence. Dish concentrators, trough shaped linear concentrators and central receiver towers with heliostat fields are the basic approaches for solar thermal systems. The last two years have seen a worldwide resurgence in this field.

This talk will review the activity overseas and in Australia, especially at ANU. The potential scope for solar thermal power systems to make a contribution to renewable energy supply will be discussed, including the longer term potential for solar thermo-chemical production of fuels for transport and export.

**CV:** Associate Professor Keith Lovegrove is the leader of the Solar Thermal Group in the Dept. of Engineering at ANU. He also teaches undergraduate and postgraduate courses in Energy Systems and Systems Engineering. He has authored or co-authored over 100 research papers, and contributed to many media interviews and reports in the renewable energy field. He has had a long involvement with the Australian and NZ Solar Energy Society and served as Chair, Vice-Chair and Treasurer. During his time as Chair, he initiated the now well-known "Solar House Day" held across Australia and NZ each September.

The technical meetings for the rest of 2008 are:

24 April Host: ANA at the AINSE Theatre at Lucas Heights at 1 pm.  
**"Neutron Instruments at OPAL"** By Dr R. Robinson, Director, Bragg Institute, ANSTO.

28 May Host: Nuclear Panel, Engineers Australia Theatre at 8 Thomas St, Chatswood, at 5.30pm refreshments for 6pm start.  
**"Rebirth of the Russian Nuclear Industry"**  
By Dr Clarence Hardy, ANA

26 June Host: ANA at the AINSE Theatre at Lucas Heights at 1 pm.  
**"The World of Molybdenum-99"**  
By Mr Ian Turner, General Manager, ARI, ANSTO

23 July Host: Nuclear Panel, Engineers Australia Theatre at 8 Thomas St, Chatswood at 5.30pm refreshments for 6pm start.  
**"The Nuclear Research Program at ANSTO"**  
By Dr George Collins, Director, Research, ANSTO  
Title and Speaker to be confirmed.

28 August Host: **Annual General Meeting** of the ANA at the AINSE Theatre at Lucas Heights at 12.30 pm, followed by talk at 1.00pm.  
**"Progress on Small and Medium Reactors"**  
By Dr Clarence Hardy, ANA

24 Sept. Host: Nuclear Panel, Engineers Australia Theatre at 8 Thomas St, Chatswood, at 5.30pm refreshments for 6pm start.  
**"The Australian Synchrotron"**  
By Speaker to be confirmed.

23 October Host: ANA at the AINSE Theatre at Lucas Heights at 1 pm.  
**"Mini-Cyclotrons and PET in Australia"**  
(PET is Positron Emission Tomography)  
By Mr Ian Turner, General Manager, ARI, ANSTO

26 Nov. Host: Nuclear Panel, Engineers Australia Theatre at 8 Thomas St, Chatswood, at 5.30pm refreshments for 6pm start.  
**"Nuclear Education"** (Title to be confirmed)  
By Professor V. G. Agelidis, Univ. of Sydney

5 or 12 Dec. **ANA Annual Lunch or Dinner and Award Presentation**  
(Date and venue to be confirmed)

---

## REPORTS AND LATEST NEWS

### REPORT ON SPECIAL ANA MEETING

9 Nov. 2007

A special meeting was held by the ANA in the AINSE Theatre on 9 Nov. 2007 when Dr M. Guidez, Director of France's Phenix Fast Reactor Program, and Chairman of the International Group of Research Reactors, visited Australia to attend a conference on research reactors. The title of his talk was:

#### **"Sodium-cooled Fast Breeder Reactors and Sustainable Development"**

Dr Guidez explained that sodium-cooled fast reactors (SFRs) are based on well-known technology and 18 of these reactors have operated in the world. They offer good availability and safety and do not need enriched uranium. Their cost is now believed to be competitive. Added advantages of the reactor are burning plutonium and radioactive waste. Several new reactors are under construction or planned in China, India, Japan and Russia. This type of reactor is one of six systems being studied in the Gen IV program.

In 2007 there were six SFRs in operation and three under construction. The total operating experience is 379 reactor-years. Advantages of this system are: minimum gaseous or liquid releases during operation; uranium use may be increased by a factor of 100 by using depleted uranium and plutonium from light water reactors as a source of fuel; and it is possible to transmute long-lived actinide waste.

Dr Guidez reported that the French reactor Phenix restarted in 2003 after safety upgrading. Its availability factor ranged from 78% in 2004 to 96% in 2007. In January 2007 it recorded 99 days of operation without a shutdown. A significant irradiation test program is being carried out with international cooperation with organisations in Europe, Japan and the USA.

Dr Guidez believed that with France's currently available supply of uranium of about 100,000 te and a fleet of SFRs, the country's electricity demand could be met for 5000 years. He concluded that nuclear power was an essential element for a sustainable future. There was a good attendance for this talk.

---

### Report on Annual Lunch and ANA Award, 13 Dec.

The ANA held its Christmas Function and Award Presentation as a Lunch at the Chinese Gardens, Darling Harbour, in place of the traditional Christmas Dinner. Twenty-two members and friends attended and the 2007 Annual Award was made to Professor George Dracoulis of ANU in recognition of his outstanding contribution to nuclear physics research.

### REPORT ON NUCLEAR PANEL MEETING

28 Nov. 2007

Dr Ian Smith, Executive Director of ANSTO, gave this talk on **"The Role of ANSTO in Providing Access to Nuclear Science"** in the Engineers Australia theatre at Chatswood on 28 November 2007.

Dr Smith prefaced his talk by saying that it was too early after the Federal election on 24 November to know how the new Labor government would expect ANSTO to address nuclear science research in the future. He was sure that the government would support research on and production of radioisotopes for industry and nuclear medicine as well as basic and applied research in materials and in environmental science, which had been key areas under the previous government.

A new development in the nuclear medicine field will be the installation of two new baby cyclotrons from Siemens. These will be used especially to produce short-lived fluorine-18 for positron emission tomography diagnostic work in hospitals as well as research.

Finally, Dr Smith stated that he expected OPAL to start up again early in 2008 and it would be one of a small number of high performance research and isotope production reactors in the world.

When asked if ANSTO had the expertise to do carbon capture and sequestration research if asked to by the government, Dr Smith's answer was yes, although this area was presently dealt with by CSIRO.

---

### Recent Information on World Nuclear Power

(Source - Australian Uranium Association news)

**USA** - In 2007 the 104 US nuclear power reactors had a record high average capacity factor of 91.8% and produced a record 807 B kWh at a record low cost of 1.68c/kWh for fuel, operation and maintenance.

**France** - Areva reported that at the end of 2007 it had orders worth EUR 39.8B, up 55% on orders at the end of 2006. This included an EUR 8B contract for two EPR units at Taishan in China plus services.

**China** - Jiangsu NP Cororation has agreed to purchase two Russian VVER-1000 plants for Tianwan Nos 3 & 4 similar to the two operating units Tianwan 1 & 2. China earlier agreed to purchase four Westinghouse AP1000 plants for the Sanmen and Haiyang sites.

**EU** - The European Parliament voted strongly in favour of a report stating that nuclear power is indispensable if the EU is to meet its future low-C energy needs.