



**Australian Government**  
**Nuclear Safety Committee**

**NUCLEAR SAFETY COMMITTEE**  
**TRIENNIUM REPORT 2006-2008**

**Introduction**

The Nuclear Safety Committee was established in 1999 under the *ARPANS Act 1998* with the following functions:

- (a) to advise the CEO on matters relating to nuclear safety and the safety of controlled facilities;
- (b) to review and assess the effectiveness of standards, codes, practices and procedures in relation to the safety of controlled facilities;
- (c) to develop detailed policies and to prepare draft publications for the promotion of uniform national standards in relation to the safety of controlled facilities;
- (d) to report to the CEO on matters relating to nuclear safety and the safety of controlled facilities.

The Committee Members for the 2006-2008 triennium were:

**Chair:**

**Radiation Health Committee representative:**

Dr Barbara Shields (Tas)

**CEO:**

Dr John Loy (NSW)

**Person to represent the interests of the general public:**

Mr Jim Hondros (Vic) – appointed 26 April 2006

**Person to represent local government/administration of an area affected by a matter related to a controlled facility:**

Mr Ian Drinnan (NSW)

**Up to 8 other Members:**

Emeritus Professor Ian Polmear (VIC)

Professor Robert Melchers (NSW)

Dr Rob Lee (ACT)

Professor Peter Johnston (VIC)

Mr Don Macnab (NSW) – appointed 15 December 2006

Dr Neil McDonald (NSW)

Dr Tamie Weaver (VIC)

Professor Marcela Bilek (NSW)

**Summary of expertise**

The diverse expertise of the Members and their ability to relate that to the often technical matters for discussion was reflected in the high quality of the advice of a non-regulatory nature provided to the CEO during the triennium. The quality of the advice provided an example the unflagging enthusiasm of the Committee when presented with vast quantities of highly technical documents.

The expertise of the Members appointed in the third triennium included, but was not limited to, the following fields:

- Engineering
- Environmental issues, including those relating to aboriginal heritage
- Human factors
- Hydrogeology
- Local, state and commonwealth government regulation
- Mathematics
- Physics
- Radiation protection.
- Risk management
- The operation of research reactors

The Committee had ongoing discussions regarding the need for maintaining and developing a competent skills base.

### **Committee Advice to CEO of ARPANSA**

The Committee held ten meetings during the triennium, one of which was a special briefing on the OPAL fuel plate event and the proposed redesign of the fuel assemblies (25 January 2008). NSC provided advice to the CEO on a wide range of issues relating to:

- an application from ANSTO for a licence to operate the OPAL Reactor;
- the outcomes of the commissioning process for the OPAL Reactor;
- ANSTO proposals for the future of HIFAR, including the ANSTO application for a licence to “possess and control” HIFAR; and
- the outcomes of the review on uranium mining, processing and nuclear energy (UMPNER) and the associated report.

In particular, the NSC was briefed and provided advice to the CEO on the following issues:

#### *The Application for an Operating Licence for OPAL*

NSC was advised on progress towards ARPANSA issuing a licence on 14 July 2006 for ANSTO to operate the OPAL reactor. The Committee received briefings from both ARPANSA regulatory staff and staff from ANSTO relating to the licence application that included:

- outcomes of the public forum held during the latter stages of the licence assessment process;
- details of the safety features of OPAL;
- ARPANSA’s regulatory deliberations on the licence application;
- outcomes of cold-commissioning of OPAL;
- outcomes of hot-commissioning of OPAL following the issuance of the operating licence; and

- the way in which NSC comments and advice throughout the licensing process had been addressed by ARPANSA and ANSTO;

Using the information obtained during these briefings, Members provided relevant technical advice to the CEO to inform the licence decision-making process relating to:

- staffing levels for HIFAR once OPAL was operating;
- shift changeover issues during the operation of OPAL;
- training and experience for OPAL operating staff; and
- human factors and the need to reduce the likelihood of human error during the long-term operation of OPAL.

#### *The displaced fuel plate event*

NSC was briefed on the ANSTO submission for rectifying the fuel plate event that had occurred in July 2007 and the proposed redesign of the fuel assemblies. The CEO sought additional expert advice from the Committee and asked Members to consider the root cause analysis, the proposed modified design of the fuel assemblies and whether any changes to existing operational licence conditions were needed.

Members considered potential systemic failures in the manufacture of the original fuel assemblies that might have caused the event and also suggested possible options for the redesign of the assemblies.

Although the CEO did not request a formal report from the Committee, the Member's discussion and the meeting minutes were used to inform his final decision. The Committee Chair wrote to the CEO summarising the NSC deliberations to formalise the process.

#### *Decommissioning of HIFAR*

NSC continued to be briefed on options for the decommissioning of HIFAR, noting its formal shut down on 30 January 2007. ARPANSA would provide further information on the issue to the Committee as HIFAR decommissioning progressed.

Members also noted that ANSTO had applied for a licence to "possess and control" HIFAR and that ARPANSA was considering the application. NSC discussed the scope of such a licence. ANSTO removed many of HIFAR's structural items under the existing operating licence including the cooling towers and much of the electronics. ANSTO had also removed the HIFAR fuel to on-site storage following shutdown.

ARPANSA would continue to brief NSC on progress with HIFAR and the CEO would seek advice or input from the Committee on the status of HIFAR in the longer term as needed.

#### *Radioactive Waste Management Facility (RWMF)*

Following the Prime Ministerial decision in 2004 to cease all work on the then proposed waste repository and store, the focus on the disposal of Australia's low and intermediate level waste shifted towards the possibility of establishing a RWMF at a new location to be determined. Several sites were under investigation, including one volunteered by the Northern Territory Lands Council.

To facilitate any future licence application process, APANSA had prepared **Draft Regulatory Guidance for Radioactive Waste Management Facilities: Near Surface Disposal**

**Facilities; and Storage Facilities**, which was released for public comment in early 2006. At the request of the CEO, NSC Members provided input on the document following its amendment to incorporate public comment.

ARPANSA expected NSC to be involved with any licence application for a RWMF should the issue be finalised during the next triennium.

*Review of ARPANSA by the Australian National Audit Office (ANAO) and the subsequent IAEA International Regulatory Review Service (IRRS) Mission*

ARPANSA advised the Committee on progress with the 19 performance improvement recommendations arising from the 2004 Australian National Audit Office (ANAO) investigation of ARPANSA's licensing processes and regulatory systems. ARPANSA had either fully implemented or substantially achieved most of the ANAO recommendations. The findings and recommendations continued to form an essential framework for the continuous improvement of regulatory management.

Following the ANAO report, ARPANSA requested that the IAEA conduct an IRRS assessment of ARPANSA's regulation of radiation protection and nuclear safety. The IRRS mission team comprised members from several countries who analysed ARPANSA's regulatory role. The Mission took place in mid-2007 with a final report issued in late 2007. The mission report included some recommendations relating to the way ARPANSA could improve its regulatory functions including:

- carrying out unannounced inspections of regulated entities;
- improving its methods of preparing its regulatory assessment principles to be consistent with the method of preparing radiation protection series documents. NSC could, in turn, have a role in the review of that documentation;
- improving its compliance strategy.

Dr Shields, Chair – NSC, met with the mission team during their visit to discuss the NSC's role in advising the CEO on nuclear safety issues and the regulation of controlled facilities.

The Committee expressed its satisfaction with outcomes of the regulatory reviews.

*Other issues covered*

Other issues were brought to the attention of the Committee during the triennium including:

- An update on the decommissioning of the Moata research reactor;
- Summaries of reactor related conferences attended by ARPANSA staff, NSC Members or both including the :
  - 15<sup>th</sup> Pacific Basin Nuclear Conference in Sydney, 15-20 October 2006;
  - Research Reactor Conference in Sydney, 5-9 November 2007; and
  - International Conference on the Challenges faced by Technical and Scientific Support Organizations in Enhancing Nuclear Safety, Aix-en-Provence, France, 23-27 April 2007; and
- Outcomes of inspections carried out by ARPANSA.

*Site visits*

During the third triennium, the NSC visited:

- The OPAL control room in February 2006 for a briefing on the control room layout including human factors aspects.
- HIFAR and Australian Radioisotopes in February 2007.
- The OPAL reactor and the Bragg Institute in October 2007.
- The Australian Synchrotron at Clayton in February 2008 for information on regulatory issues relating to a large controlled facility. During the visit, the Victorian regulator advised how regulatory control was developed for the Synchrotron.

## **Conclusions**

In summary, during this triennium NSC received briefings on, discussed and provided advice on a wide range of nuclear safety issues. The reconstituted Committee for the 2009-2011 triennium is expected to continue to consider issues relating to the OPAL Reactor, the decommissioning of HIFAR, and a radioactive waste management facility and any related licence application should the issue progress to that stage.