



Australian Government

Australian Safeguards and Non-Proliferation Office

# ANNUAL REPORT 2009-2010











**Australian Government**

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Non-Proliferation Office**

**ANNUAL REPORT  
2009-2010**





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**Australian Government**

**Australian Safeguards and  
Non-Proliferation Office**

28 October 2010

The Hon Kevin Rudd MP  
Minister for Foreign Affairs  
Parliament House  
CANBERRA ACT 2600

Dear Minister

I submit the Annual Report on the operations of the Australian Safeguards and Non-Proliferation Office (ASNO) for the financial year ended 30 June 2010. This report is made in accordance with section 51 of the *Nuclear Non-Proliferation (Safeguards) Act 1987*, section 96 of the *Chemical Weapons (Prohibition) Act 1994* and section 71 of the *Comprehensive Nuclear Test-Ban Treaty Act 1998*.

During the reporting period all relevant statutory and treaty requirements were met, and ASNO found no unauthorised access to, or use of, nuclear materials or nuclear items of safeguards or security significance in Australia. All requirements were met under Australia's safeguards agreement with the International Atomic Energy Agency and under the Chemical Weapons Convention, and further progress was made with activities in anticipation of the entry into force of the Comprehensive Nuclear Test-Ban Treaty. All Australian Obligated Nuclear Material was satisfactorily accounted for.

As outlined in this Report, ASNO continued its major contribution to advancing Australia's interests in effective measures against the proliferation of weapons of mass destruction through our activities at the domestic, regional and international levels, and through working closely with colleagues in the Department of Foreign Affairs and Trade in Canberra and Australia's diplomatic missions, and in other departments and agencies.

Yours sincerely

A handwritten signature in grey ink, appearing to read 'John Kalish'.

John Kalish  
Acting Director General



## GUIDE TO THE REPORT

This report complies with the formal reporting obligations of the Director General ASNO. It also provides an overview of ASNO's role and performance in supporting nuclear safeguards and the non-proliferation of weapons of mass destruction.

The report has five parts:

- report by the Director General ASNO on key developments in 2009–10 and a preview of the year ahead
- summary of current major issues
- a functional overview of ASNO, including its operating environment and outcomes-outputs structure—the first outcome demonstrates accountability to Government; the second outlines public outreach and education
- a report on ASNO's performance during 2009–10
- the key features of ASNO's corporate governance and the processes by which ASNO is directed, administered and held accountable.

Because ASNO is funded as a division of the Department of Foreign Affairs and Trade (DFAT), some mandatory annual report information for ASNO is incorporated in the DFAT Annual Report. This includes:

- financial statements
- corporate governance and accountability framework
- external scrutiny
- human resource management, including occupational health and safety
- asset management
- purchasing
- performance against the Commonwealth Disability Strategy
- advertising and market research
- ecologically sustainable development and environmental performance.

A checklist of information included against annual report requirements is set out in the List of Requirements (pages 95–97).



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*Minister for Foreign Affairs, Mr Stephen Smith, delivering  
Australia's address to the General Debate of the NPT Review  
Conference, United Nations, New York May 2010*







DIRECTOR  
GENERAL'S  
REPORT  
SECTION 1





# DIRECTOR GENERAL'S REPORT

## **The Year in Review**

Nuclear Non-proliferation and Safeguards Developments

Comprehensive Nuclear-Test-Ban Treaty Developments

Chemical Weapons Convention Developments

## **Other Non-Proliferation Developments**

## **The Year Ahead**



# DIRECTOR GENERAL'S REPORT

## THE YEAR IN REVIEW

### Nuclear Non-Proliferation and Safeguards Developments

#### The International Non-Proliferation Environment

The eighth Review Conference for the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) was held in New York in May 2010. The Conference adopted a comprehensive and forward-looking final document which is a strong global commitment to the nuclear non-proliferation regime. The Conference agreed on 64 follow-on actions to reinforce the core principles of the NPT — on disarmament, non-proliferation and the peaceful uses of nuclear energy. It is hoped that the international community will be able to build upon this development including further strengthening and improving the system of non-proliferation safeguards in the lead-up to the next Review Conference, in 2015.

The principal challenges for the non-proliferation regime during the year were certain states continuing to be in breach of their safeguards obligations and in violation of binding UN Security Council Resolutions and International Atomic Energy Agency (IAEA) requirements. Efforts to limit the spread of enrichment and reprocessing capabilities—which could be used in nuclear weapons programs—remain central to addressing international concerns about nuclear proliferation.

Iran continued to expand its uranium enrichment capacity in the face of resolutions passed by the UNSC that require it to suspend all enrichment activities. In addition, Iran commenced enriching uranium up to just less than 20% in uranium-235 – the threshold at which uranium is defined as highly-enriched. This last step is particularly worrying as enriching of material to this level lowers the technical barriers that would impede rapid breakout to production of weapons grade uranium.

As noted in previous annual reports, in September 2007, Israel destroyed what was reportedly an undeclared, partially constructed nuclear reactor in a remote region within Syria. IAEA efforts to determine whether the building destroyed was a nuclear reactor are ongoing. During the reporting period the IAEA's efforts to resolve the issue have been blocked by Syria. In an earlier IAEA investigation particles of processed uranium were detected, consistent with the presence of nuclear fuel at the site. Syria continues to deny that the bombed building was nuclear related and refuses to cooperate further with the IAEA's investigation.

The report of the International Commission on Nuclear Non-proliferation and Disarmament (ICNND) *Eliminating Nuclear Threats: A Practical Agenda for Global Policymakers* was released on 15 December 2009. The report outlines a path to the abolition of nuclear weapons and considers the role of disarmament, non-proliferation and the peaceful uses of nuclear energy. The report was widely received as a practical contribution to the current debate. ICNND was a joint initiative of the Australian and Japanese governments, and drew on the input of many distinguished experts in the field of nuclear non-proliferation and disarmament. Director General ASNO John Carlson was a member of ICNND's Advisory Board, and made a significant contribution to ICNND's report. Further information on the ICNND report can be found under Current Topics.



The Nuclear Suppliers Group (NSG)—of which Australia is a member—continued to discuss ways to strengthen the criteria for transfers of enrichment and reprocessing technology (referred to as sensitive nuclear technology – SNT). Debate focused on whether to limit the transfer of SNT to a “black box” basis (i.e. transfers of equipment but no transfers of technology), an approach that is in line with current commercial practice, and on whether the IAEA’s Additional Protocol (AP) on strengthened safeguards should be a condition for the supply of SNT. Australia has long been an advocate for making the AP a universal condition of supply for all nuclear transfers from all states. Australia was the first country to sign and ratify the AP, and was also the first to adopt a policy requiring an AP as a condition of supply of uranium.

The International Framework for Nuclear Energy Cooperation (IFNEC) has emerged during the year as a successor to the Global Nuclear Energy Partnership (GNEP). IFNEC aims to shape institutional and technical arrangements to ensure that nuclear energy for peaceful purposes proceeds in a manner that meets the highest standards of non-proliferation, security and safety. IFNEC will provide a forum for discussing measures such as nuclear fuel supply assurances, fuel leasing and proliferation-resistant technologies. The evolution of IFNEC from GNEP aims to put a greater focus on promoting non-proliferation and nuclear security objectives, and was confirmed at GNEP’s meeting in Ghana in June 2010. Leading up to this meeting Australia, through DG ASNO, worked closely with GNEP member countries, principally the US, to ensure that the evolution from GNEP to IFNEC met Australia’s nuclear policy objectives.

### International Atomic Energy Agency Safeguards

At 30 June 2010, the number of states implementing the Additional Protocol, which gives the IAEA rights to additional information and increased access, grew to 101 from 91 a year prior. As noted in last year’s report, the number of states with comprehensive safeguards agreements (CSA) and an AP in force now exceeds the number of CSA states without an AP.

Of the 62 non-nuclear-weapon states with significant nuclear activities that are party to the NPT, 46 had an AP in force, and 10 had signed an AP or had an AP approved by the IAEA Board of Governors, that is, collectively over 90% of all such states. In light of this, Australia considers that the combination of an AP and a comprehensive safeguards agreement is now firmly established as part of the IAEA’s safeguards standard. Australia has adopted a policy that requires adherence to the AP as a condition for the supply of uranium.

In implementing the AP, by the end of 2009 the IAEA had made whole-of-state evaluations for 52 states. The IAEA reported in its Safeguards Statement for 2009 (see Appendix E) that it had found no indication of diversion or undeclared nuclear materials or activities in any of these states.

“Integrated safeguards” (IS) is the term used to describe the optimum combination of safeguards measures available to the IAEA under a CSA and an AP. Before a state can become eligible for the application of IS, the IAEA must be able to draw the so-called “broader conclusion”, that all nuclear material and activities of safeguards significance have been declared (that is, there are no indications of undeclared activities). During 2009, the IAEA reported that the IAEA implemented IS in 36 states (including Australia)



for the full year. The IAEA was also able to draw the broader conclusion for the first time in eight additional states. Integrated safeguards approaches were developed and approved for a further three states.

There were two significant changes in the leadership of the IAEA in the reporting period. In December 2009 the IAEA Director General Mohamed ElBaradei stepped down after 12 years in the position, and was replaced by Mr Yukiya Amano, the first IAEA Director General from the Asia-Pacific region. Australia acknowledges Dr ElBaradei's excellent service to the IAEA and his commitment to improving international peace. Australia paid tribute to Dr ElBaradei's services to the cause of international peace in a general statement to the IAEA's 2009 General Conference, delivered by the Australia's Governor and Permanent Representative to the IAEA, Ambassador Michael Potts. Australia warmly welcomed the appointment of Mr Amano as the new Director General, and looks forward to working closely with him during his tenure. The other significant change was the retirement at the end of the reporting period of Deputy Director General of Safeguards, Mr Olli Heinonen, who was replaced by Mr Herman Nackaerts. ASNO looks forward to working with Mr Nackaerts and acknowledges the substantial contribution to safeguards made by the outgoing Mr Heinonen.

## Regional Safeguards Developments

The Asia-Pacific Safeguards Network (APSN) commenced on 1 October 2009. APSN is an informal network of safeguards authorities, ministries and other organisations responsible for implementing safeguards in the Asia-Pacific region. APSN's inaugural meeting was held in Bali on 2–4 June 2010, hosted by the Chairman of Indonesia's Nuclear Regulatory Agency (BAPETEN), Dr As Natio Lasman, and co-chaired by Dr Lasman and DG ASNO John Carlson. The meeting was attended by representatives from 19 safeguards organisations and ministries, from 10 regional countries, as well as the IAEA and the European Commission as observers. John Carlson was elected as Chair of APSN for a two year term, to 2012. The APSN web portal was also launched, and can be found at <https://apsn.sharepointsite.net>. Further information on APSN can be found under Current Topics.

The commencement of APSN was a key part of ASNO's safeguards outreach work during the year, which focused on practical training and assistance to regional counterparts, to enhance their operational capabilities to fulfil non-proliferation and nuclear security obligations, including under the NPT and the Convention on the Physical Protection of Nuclear Material (CPPNM). The provision of such training also provides a means of developing and maintaining safeguards expertise within ASNO.

## Bilateral Safeguards Developments

On 18 March 2010, the Government tabled its response to the report of the Joint Standing Committee on Treaties (JSCOT) on the Australia-Russia Nuclear Cooperation agreement. On 21 April, during his visit to the Russian Federation, Foreign Minister Mr Smith agreed with Foreign Minister Sergey Lavrov to ratify the Australia-Russia Nuclear Cooperation Agreement and to use the agreement to strengthen bilateral cooperation on nuclear policy and safeguards. At the end of the reporting period Australia and Russia were working to complete requirements for entry into force of the agreement.



Foreign Minister Smith and United States Under Secretary of State for Arms Control and International Security Affairs, Ms Ellen Tauscher, signed a new Agreement between Australia and the United States of America concerning the Peaceful Uses of Nuclear Energy, on 4 May 2010. The new agreement was considered at a public hearing of the JSCOT on 21 June 2010. The agreement is to replace the existing safeguards agreement concluded in 1979, which expires in January 2011.

As foreshadowed in last year's annual report, Australia's bilateral safeguards agreement with Euratom is set to expire in January 2012. Informal negotiations with Euratom on extending and expanding the current agreement continued, with a view to conducting the first formal round of negotiations in the latter half of 2010.

## Domestic Safeguards Developments

During the reporting period, the IAEA conducted five design information verification inspections, five routine inspections and a short notice inspection in Australia, and also undertook three complementary access visits in accordance with Australia's Additional Protocol. The IAEA confirmed that Australia had met all of its IAEA safeguards requirements. ASNO also conducted domestic safeguards inspections of permit holders including ANSTO, Silex Systems Limited, uranium mines, and other holders of nuclear material.

## Nuclear Security

During 12–13 April 2010 leaders from 47 nations as well as the IAEA attended the inaugural Nuclear Security Summit in Washington DC, hosted by United States President Barack Obama. The Australian delegation to the Summit was led by Senator the Hon John Faulkner, Minister for Defence, supported by DG ASNO John Carlson, as Australia's Sherpa. The Summit leaders agreed on steps to strengthen nuclear security and reduce the threat of nuclear terrorism through national actions, international cooperation, and supporting the objectives of international nuclear security regimes. The Republic of Korea offered to host a follow-up Summit in 2012. Further information on the Summit and its follow-up report can be found under Current Topics.

ASNO, in consultation with other Government agencies, continued to monitor the international maritime security environment, particularly the region around the Gulf of Aden, to develop additional risk-mitigating measures where necessary for shipments of Australian uranium ore concentrates (UOC). ASNO continued to work with industry, the Department of Resources, Energy and Tourism and other Government agencies, and overseas counterparts to assist the industry with expanding the number of shipping services and routes available for shipping UOC to customer countries.

## Comprehensive Nuclear-Test-Ban Treaty Developments

At 30 June 2010, 182 states had signed the Comprehensive Nuclear-Test-Ban Treaty (CTBT) and 153 had ratified. Nine of the 44 states which must ratify the Treaty to trigger its entry into force (known as Annex 2 countries) have yet to do so.<sup>1</sup>

1 The states whose ratifications are required are: China, DPRK, Egypt, India, Indonesia, Iran, Israel, Pakistan and the United States.



Wide support for the CTBT was again demonstrated at key international meetings during the year. At the September 2009 Conference to facilitate the entry into force of the CTBT, 103 countries called for the early entry into force of the Treaty and the completion of the Treaty's verification regime. The UN Security Council, in its Resolution 1887, called also for the entry into force at an early date. The May 2010 NPT Review Conference reaffirmed the vital importance of the Treaty as a core element of the international nuclear disarmament and non-proliferation regime and highlighted the need for states to promote the entry into force and implementation of the Treaty at the national, regional and global levels. The announcement by Indonesia (an Annex 2 country) at the Review Conference that it is moving to ratify the CTBT in the near future was most welcome. The United States Administration also reiterated its intention to ratify the Treaty.

Ratification of the CTBT by all of the NPT nuclear-weapon states is widely seen as necessary to stimulate most of the remaining ratifications by CTBT Annex 2 states.

The Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO) is tasked with establishing the infrastructure of the Treaty's verification system. More than 80% of International Monitoring System (IMS) facilities were operational at the end of the reporting period. However, progress with remaining stations may take some time. Some remaining stations, such as the four Australian stations yet to be installed, are in remote locations. Progress with other stations faces political obstacles, for example, where the host country is yet to sign the CTBT.

Seventeen of Australia's 21 IMS stations are operational and certified as meeting Treaty requirements. One station is planned for installation on Macquarie Island in 2010, and two more are expected to be installed (on the Cocos Islands and the Australian Antarctic Territory) in 2011.

Judgments about compliance with the CTBT will be made by parties to the Treaty, based on technical analysis carried out by National Data Centres (NDCs). If the CTBT is to work well, it is important that as many countries as possible establish an effective NDC capability. From 17 to 20 May 2010 ASNO and Geoscience Australia co-hosted a workshop for countries in Australia's region, to discuss and promote the development of NDCs. Representatives from 19 countries, UNESCO and the CTBTO participated.

## Chemical Weapons Convention Developments

Thirteen years after entry into force, the Chemical Weapons Convention (CWC) has 188 State Parties. No new countries joined the Convention during the reporting year. Universal adherence to the CWC is fundamental to ensuring a world free of chemical weapons, but it remains elusive despite ongoing diplomatic efforts. There are seven countries yet to ratify the Convention (Israel and Burma) or accede to it (DPRK, Syria, Egypt, Angola and Somalia).

State Parties together with the Organisation for the Prohibition of Chemical Weapons (OPCW) continue to work towards achieving the disarmament objective of the Convention. The 8th of July 2010 marked the verified destruction of approximately 41,692 metric tonnes, or 60 percent, of all Category 1 chemical weapons that have been declared by seven chemical weapon (CW) possessor states.



Of the four remaining CW possessor states, Russia and the United States, holders of the largest stockpiles, have expressed regret at their likely inability to meet the April 2012 destruction deadline set under the Convention, because of technical, environmental and political reasons. Despite this setback, there is a clear commitment to complete, transparent and verified CW destruction in the shortest possible timeframe.

Full and effective implementation of the CWC is essential both to the global chemical weapons ban and to ensuring that the non-proliferation goals of the Convention are also met. In particular, this encapsulates obligations of designating a CWC National Authority (182 state parties have done so) and establishing the necessary legislative and administrative arrangements to enable its implementation and the prosecution of offenders. While 126 state parties have informed the OPCW Technical Secretariat of the measures taken in this regard, only 83 have legislation covering all key areas. There remains also a clear need to improve verification coverage by ensuring that all declarable chemical activities are reported to the OPCW and are thereby subject to independent verification by the OPCW. ASNO supported the ongoing efforts of the OPCW to fulfil the goals of the CWC.

During the reporting period, ASNO facilitated one routine OPCW inspection of a declared Schedule 3 chemical manufacturing site in Western Australia, demonstrating Australia's ongoing commitment to its CWC obligations. Two further inspections of "other chemical production facilities", scheduled sequentially in late April 2010, were cancelled due to flight restrictions out of Europe following the volcanic eruption in Iceland.

In June 2009, 144 old chemical weapon projectiles remaining from WWII were uncovered at a privately-owned coal mining site in central Queensland. The projectiles were packed and securely stored, as analysis of several of the munitions indicated the presence of the chemical agent sulfur mustard. ASNO has worked with Defence counterparts to prepare and submit Australia's declaration of the discovery to the OPCW and to make preparations, together with United States experts, for their destruction in 2011.

Ambassador Ahmet Üzümcü of Turkey was appointed Director-General of the OPCW, becoming the third person to hold that office since the Organisation was established in 1997. He will succeed Ambassador Rogelio Pfirter of Argentina, who will complete his second term as Director-General on 24 July 2010

## Other Non-Proliferation Developments

### Fissile Material Cut-off Treaty

During the last reporting period, agreement was reached at the Conference on Disarmament (CD) to proceed with the negotiation of a fissile material cut-off treaty (FMCT). Unfortunately, because the CD was unable to reach consensus on how to implement its program of work, this positive step was not translated into concrete action and there has been no significant progress towards negotiation of an FMCT during the reporting period. However, the CD did decide to hold meetings in June and July 2010 for informal discussion of the issue.



The May 2010 NPT Review Conference repeated calls for commencement of negotiations on an FMCT in the CD, but despite hopes of a breakthrough, progress remains stalled. An FMCT will prohibit the production of fissile material for nuclear weapons, thereby constraining the capability to produce greater numbers of nuclear weapons. ASNO has continued to promote a non-paper on how verification could work under an FMCT, which has been seen as a positive contribution in the development of verification concepts for a treaty.

### South Pacific Nuclear Free Zone Treaty (Treaty of Rarotonga)

During the year, United States Secretary of State Hillary Clinton announced at the opening of the NPT Review Conference on 3 May 2010, that the United States would submit the protocols to the Treaty of Rarotonga to the United States Senate for ratification.

The Treaty has three protocols. Under Protocol I, the United States, United Kingdom and France commit to apply the basic provisions of the Treaty to their respective territories in the zone established by the Treaty. Under Protocol II, the United States, France, United Kingdom, Russia and China agree not to use or threaten to use nuclear explosive devices against any party to the Treaty or against each others' territories located within the zone. Under Protocol III, the United States, France, United Kingdom, Russia and China agree not to test nuclear explosive devices within the zone established by the Treaty.

## THE YEAR AHEAD

The following developments in the international security environment are likely to impact on ASNO's work during 2010–11:

- Iran's nuclear program—Iran has accumulated sufficient low enriched uranium for a nuclear weapon “breakout” capability, heightening international concern about its intentions, and introducing further instability in a volatile region. The IAEA's efforts to resolve questions about new nuclear facilities, and possible military dimensions to Iran's nuclear program, will continue
- continuing IAEA investigations of undeclared nuclear activities in Syria
- ongoing concerns about the DPRK's nuclear program and efforts to resolve the situation
- international efforts to strengthen nuclear security, including the actions specified in the Communiqué and Work Plan agreed during the Nuclear Security Summit in April 2010
- continuing international efforts to limit the spread of enrichment and reprocessing technology, including efforts to develop assurance of supply mechanisms and to multilateralise sensitive stages of the nuclear fuel cycle
- international efforts to progress non-proliferation commitments made during the NPT Review Conference
- international efforts to prevent illicit transfers of sensitive materials and technology
- continued interest in developing nuclear power programs in Australia's region and elsewhere, particularly the Middle East



- international efforts to commence negotiation of a fissile material cut-off treaty, and to complete the verification system of the CTBT
- ongoing work to promote universal and effective international implementation of the CWC.

In addressing the challenges posed by the international security environment, ASNO will continue to provide technical analysis and safeguards and verification policy advice to the Government in the areas of non-proliferation and disarmament. ASNO will continue to ensure international treaty and regulatory obligations are met.

Internationally, ASNO will continue to work with the IAEA and other member states on strengthening the safeguards system, including through Australia's membership on the IAEA Board of Governors, and through the Australian Safeguards Support Program (ASSP), the Standing Advisory Group on Safeguards Implementation (SAGSI), and APSN. ASNO will also work on strengthening the IAEA's nuclear security guidelines. Australia looks forward to working closely with the new Director General of the IAEA, Mr Yukiya Amano.

Regionally, ASNO will continue its outreach program to build operational capacity in the areas of safeguards and nuclear security and non-proliferation treaty implementation, including through further development of APSN.

Bilaterally, ASNO will manage Australia's network of bilateral safeguards agreements, including the tracking of Australian Obligated Nuclear Material (AONM) around the world. ASNO will support the processes required for the nuclear cooperation agreement with Russia including the conclusion of a memorandum of understanding incorporating administrative arrangements for implementing the agreement. ASNO will seek entry into force of the new Australia–United States nuclear cooperation agreement and signature of a new and extended nuclear cooperation agreement with the Euratom. ASNO will continue to work with China to amend the Australia–China nuclear transfers agreement to cover extraction of uranium from copper concentrates.

To ensure safeguards and nuclear security requirements are met domestically, ASNO will work with the Australian Nuclear Science and Technology Organisation (ANSTO) and other permit holders, and with industry and relevant regulatory authorities in the establishment of new uranium mines. ASNO will work with uranium producers and shippers, and other national and foreign government agencies, on international shipping routes and arrangements.

ASNO will continue to review its administrative processes, and implementation of a quality management system, to ensure ASNO processes are fully accountable, effective, efficient and meet ASNO's goals and responsibilities.

ASNO will continue to work with the CTBTO to complete the key elements of CTBT verification, the IMS and on-site inspection capability. Effective verification of the CTBT will rely not only on the infrastructure now being set up to monitor for and investigate possible nuclear explosions, but the analysis of data collected through that infrastructure must also be effective. Unlike other treaties, the CTBT leaves State parties with the task of analysing data at NDCs to verify compliance. Australia and other Parties need to ensure they have NDCs capable of performing this function.



The effort to get negotiations on an FMCT underway will likely remain high on the international agenda in 2010–11. ASNO will continue to support the development of an effective verification framework for an FMCT, and will provide support in this context, should negotiations commence.

ASNO will continue its work to develop verification concepts in support of nuclear disarmament.

ASNO will continue to work with the OPCW and other member states to promote the objectives of the CWC, including through sharing Australia's CWC implementation experiences with regional counterparts. ASNO will support efforts at the OPCW to promote universal adherence to the CWC and to address chemical terrorism.

ASNO will work with the OPCW and relevant Government agencies in managing finds of old chemical weapon munitions in Australia, and in particular to ensure their reporting and destruction is in accordance with the CWC. In September 2010 the OPCW will inspect the 144 munitions discovered in Columboola, Queensland, and Australia will provide a destruction plan to the OPCW including the destruction timeframe which is anticipated to occur in the first half of 2011. ASNO will continue its CWC industry outreach to ensure compliance with domestic legislation and to prepare such facilities to receive OPCW inspections. ASNO will work with other stakeholder agencies to review the efficacy of Australia's current CWC implementing legislation and regulations.



*Participants at the Asia-Pacific Safeguards Network,  
Bali, 2-4 June 2010*







# CURRENT TOPICS SECTION 2





# CURRENT TOPICS

**Strengthening Nuclear Safeguards in the Asia-Pacific**

**2010 Non-Proliferation Treaty Review Conference**

**Developing the Next Generation of Safeguards Professionals**

**Nuclear Security Summit**

**Strengthening the NPT and IAEA Safeguards –  
Recommendations of the International Commission on Nuclear  
Non-proliferation and Disarmament**

**Fissile Material Cut-off Treaty**

**International Framework for Nuclear Energy Cooperation evolves  
from Global Nuclear Energy Partnership**

**CTBT – Building National Data Centre Capability**

**Standing Advisory Group on Safeguards Implementation**

**Australia's Uranium Production and Exports**



# CURRENT TOPICS

## STRENGTHENING NUCLEAR SAFEGUARDS IN THE ASIA-PACIFIC

The Asia-Pacific Safeguards Network (APSN) is an informal network of safeguards authorities, ministries and other organisations responsible for implementing safeguards in the countries of the Asia-Pacific region. The objective of APSN is to promote safeguards best practice in the region. This will be achieved through enhanced cooperation in areas such as training, professional development and the sharing of experiences.

A 50-strong contingent of representatives from 19 safeguards organisations and ministries from 10 regional countries, as well as the IAEA and the European Commission, attended the inaugural meeting of APSN on 2–4 June 2010 in Bali.

Indonesia's Minister for Research and Technology, HE Mr Suharna Surapranata, officially opened the meeting, telling participants of the importance of developing strong networks for cooperation in the Asia-Pacific region and noting the importance that Indonesia attaches to ongoing efforts to improve and strengthen non proliferation regime in the region.



Front Row (left to right) Dr Michael Burmester, Section Head OA1 of the Department of Safeguards, IAEA; Mr John Carlson, Director General ASNO; His Excellency Mr Suharna Surapranata, Indonesia's Minister for Research and Technology; Dr As Natio Lasman, Chairman of Nuclear Energy Regulatory Agency (BAPETEN); Dr Guritno Lokollo, Senior Expert BAPETEN; Mr Khoirul Huda, Deputy Chairman BAPETEN; Mr Dedi Sunaryadi, Director BAPETEN.



The Chairman of Indonesia's Nuclear Energy Regulatory Agency, BAPETEN, Dr As Natio Lasman, hosted the meeting. The meeting was co-chaired by Dr Lasman and DG ASNO, John Carlson, the Chair of APSN. APSN members agreed to continue Mr Carlson's appointment as APSN Chair for a further two years, to 2012. The success of the meeting reinforces the strong working relationship ASNO and BAPETEN have enjoyed for many years.

## 2010 NON-PROLIFERATION TREATY REVIEW CONFERENCE

On 28 May 2010, 189 State Parties<sup>2</sup> to the NPT adopted a forward-looking outcomes document at its 8th Review Conference<sup>3</sup> held at the United Nations Headquarters in New York.

The 2010 Review Conference reaffirmed the NPT as the cornerstone of the nuclear disarmament and non-proliferation regimes. It agreed, by consensus, on 64 follow-on actions to reinforce the NPT across its three pillars: nuclear non-proliferation, nuclear disarmament and peaceful uses of nuclear energy. The other key conference achievement was agreement to hold a conference in 2012 on a Middle East zone free of weapons of mass destruction and their means of delivery.

While the value of a consensus outcome is significant, more could have been agreed to strengthen the non-proliferation pillar of the NPT. For example, the IAEA Additional Protocol (AP), although regarded as a "significant confidence-building measure", was not recognised as a part of the contemporary safeguards standard. Australia has been at the forefront in the development and adoption of the IAEA's safeguards regime, including the AP to strengthen safeguards and as a tool to detect undeclared nuclear material and activities.

The NPT and the nuclear non-proliferation safeguards system provided through the IAEA have made a crucial contribution to regional and international peace and security since its entry into force in 1970. Its continued success will be reinforced by State Parties' commitment to implement the action plan outlined in the final document of the Review Conference. In Australia, ASNO is the National Authority with responsibility for ensuring that Australia meets its safeguards obligations under the NPT.

Australia worked cooperatively with other State Parties and played an active and constructive role leading up to and throughout the 2010 NPT Review Conference. The report of the independent International Commission on Nuclear Non-proliferation and Disarmament, an initiative of the governments of Australia and Japan, was recognised as a valuable contribution to the NPT Review Conference. Australia and Japan submitted jointly to the NPT Review Conference a package of practical non-proliferation and

2 States that have signed and ratified or acceded to the NPT. These states include all five declared Nuclear-Weapons States (NWS): China, France, the Russian Federation, the United Kingdom and the USA. Countries remaining outside the NPT are India, Israel and Pakistan. North Korea claims to have withdrawn from the Treaty but its withdrawal is disputed.

3 A Review Conference is held every five years. Each conference has sought to find agreement on assess the implementation of the provisions of the NPT and make recommendations on measures to further strengthen it.





*Two members of Australia's delegation at the 2010 NPT Review Conference, United Nations, New York, Mr Allan McKinnon (First Assistant Secretary, International Security Division, DFAT) and Miss Corinne Tran (Executive Officer, ASNO)*

disarmament measures that was recognised as a valuable contribution to the NPT Review Conference deliberations, and many of which were adopted in the 64 follow-on actions.

The 2010 Review Conference was an important test of the viability of the NPT and how it will evolve to meet new challenges. The next five-year cycle will be equally challenging for the NPT. Demonstrated progress on the 64 recommendations will be required to ensure the ongoing vitality of the Treaty and the regime.

## DEVELOPING THE NEXT GENERATION OF SAFEGUARDS PROFESSIONALS FOR ASNO

The value of ASNO's advice to Government lies in the expertise that it brings in support of Australia's non-proliferation, safeguards, disarmament and arms control objectives. The development and retention of well-qualified professional staff is an ongoing challenge for ASNO. At a minimum, staff need to combine knowledge of science and law with analytical and policy skills, including in the field of international relations. To achieve this staff need to develop in-depth understanding of subjects such as the nuclear fuel cycle, chemical weapons and chemical industry, treaty verification and international relations, which generally takes several years.

There are special challenges in ASNO in developing and enhancing the necessary nuclear and chemical expertise amongst staff. For nuclear in particular, Australia has only indirect involvement in most stages of the nuclear fuel cycle. ASNO must devote a major proportion of its resources to creating opportunities for staff to build expertise in technical and policy aspects of the nuclear fuel cycle, chemical industries and treaty



verification. An important aspect of this staff development is participation in international fora, meetings and workshops.

The international non-proliferation and safeguards community consists of scientists, researchers, regulators, diplomats, officials and policy makers, who engage on a regular basis through bilateral, regional and multilateral mechanisms. Effective communication within this community is an important tool in Australia influencing good safeguards implementation and policy outcomes. ASNO uses its well-established networks across this community to facilitate:

- staff development
- information gathering essential for policy development and advice to government
- provision of technical support and policy input to the IAEA, CTBTO and OPCW.

During the reporting period the Secretary of DFAT made funding available for less experienced staff within the Department to accompany senior officials to international meetings, as a means of broadening exposure to international diplomacy and the work of international organisations. ASNO was a beneficiary of this program, enabling less experienced staff to attend some major international meetings (listed below), thereby broadening experience and facilitating mentoring.

- The 2010 NPT Review Conference in New York (May 2010). The month long meeting, which is held once every five years, draws representation from politicians, government officials, diplomats, civil society groups and technical experts and deals with every aspect of the non-proliferation regime.
- The biennial meeting of IAEA Member State Support Programs (MSSP) in Vienna in March 2010. This meeting drew together senior representatives of the 22 MSSPs to receive updates from each of the major operational areas of the IAEA Safeguards Department of their respective research and development needs.
- The inaugural meeting of the APSN in Bali in June 2010.
- The plenary session of the Nuclear Suppliers Group in Christchurch, New Zealand in June 2010.
- A special session on the development of an FMCT at the Conference on Disarmament in Geneva in June 2010.
- Meetings with counterpart safeguards authorities in bilateral safeguards agreement partner countries to reconcile accounts of Australian Obligated Nuclear Material, and to discuss operational aspects of bilateral safeguards agreements.

ASNO will continue its work to develop the next generation of professionals so that we will be able to maintain our ability to provide the Government with high-level advice on safeguards and verification aspects of non-proliferation, disarmament and arms control matters.



## NUCLEAR SECURITY SUMMIT

On 5 April 2009, in a landmark speech in Prague, United States President Obama called for a new international effort to secure all vulnerable nuclear material around the world within four years. This effort was the focus of the inaugural Nuclear Security Summit held in Washington DC on 12–13 April 2010, attended by leaders from 47 states as well as the United Nations, the IAEA and the European Union. This Summit brought together the largest gathering of world leaders convened by a United States President since 1945.

The Australian delegation to the Summit was led by Senator the Hon John Faulkner, Minister for Defence, supported by DG ASNO John Carlson, as Australia's Sherpa, Australia's Ambassador to the United States, the Hon Kim Beazley AC, and Dr Rob Floyd, Assistant Secretary, Infrastructure, Security and Emergency Management, Department of Prime Minister and Cabinet, Dr Stephan Bayer, Director of Nuclear Accountancy and Control, ASNO, as well as the Co-Chair of the International Commission on Nuclear Non-Proliferation and Disarmament, Professor Gareth Evans AO.

The Summit leaders universally agreed in a communiqué to support President Obama's goal by committing to strengthen nuclear security and reduce the threat of nuclear terrorism through national actions, international cooperation, and supporting the objectives of international nuclear security regimes (refer below to key Nuclear Security Regimes). The Republic of Korea agreed to host a follow-up Summit in 2012.

The Communiqué also highlights: the need to protect sensitive nuclear materials (highly enriched uranium and separated plutonium) and prevent illicit trafficking of nuclear materials; the key roles of the IAEA and the nuclear industry; and the importance of a good security culture and capacity building.

To support the commitments articulated in the Communiqué, the Summit also agreed on a work plan of national actions and international cooperation. Australia is already well advanced in satisfying the work plan, having ratified the amended Convention on the Physical Protection of Nuclear Material, converted its HEU-based research reactor to LEU fuel, implemented rigorous domestic security standards, joined international security partnerships, and maintained regional outreach and capacity building programs, including strong interaction with the IAEA.

The Summit was successful in having a large number of states of wide political persuasion agree to an issue of global importance. Moreover, many states committed to concrete actions at the Summit such as accession to international nuclear security instruments, minimising use of HEU and establishment of nuclear security training centres.

In preparation for the Summit, meetings were held in Washington DC, Tokyo and The Hague involving sherpas and sous-sherpas. John Carlson and Stephan Bayer from ASNO were Australia's Sherpa and Sous-sherpa, respectively. The next Sherpa meeting is planned to be held in Buenos Aires in November 2010.





DG ASNO (left), with Senator John Faulkner and Senator Faulkner's Chief of Staff Kate Harrison at the Nuclear Security Summit

## Key Nuclear Security Regimes:

### **Convention on the Physical Protection of Nuclear Material (CPPNM)**

The only legally binding international instrument dedicated to the physical protection of nuclear material. It establishes measures related to the prevention, detection, and punishment of offenses related to nuclear material. The CPPNM was amended in 2005 to make it legally binding for State Parties to protect nuclear facilities and to protect nuclear materials domestically as well as in international transport. Australia played a lead role in that revision process. As of 21 June 2010, 41 states including Australia, had ratified the amended CPPNM, requiring 53 further ratifications for the Amendment to enter into force.

### **International Convention for the Suppression of Acts of Nuclear Terrorism (ICSANT)**

This Convention entered into force in July 2007, and requires all State Parties "to make every effort to adopt appropriate measures to ensure the protection of radioactive materials". Australia signed the Convention on 14 September 2005 but has not yet ratified it – this requires appropriate arrangements with Australian States. Many of Australia's domestic obligations under the Convention are satisfied by existing laws and practices, and the process for ratification is underway.

### **United Nations Security Council Resolution (UNSCR) 1540**

The resolution was adopted in April 2004, establishing binding obligations on all UN member states under Chapter VII of the UN Charter to criminalise the proliferation of WMD and enforce effective measures against the proliferation of WMD, their means of delivery and related materials.

### **Global Initiative to Combat Nuclear Terrorism (GICNT)**

The GICNT is a key forum for multilateral cooperation launched by the United States and Russia in 2006. Australia is an initial partner of GICNT which, as of 30 June 2010, has 82 partner nations and four observers (UNODC, IAEA, European Union, and Interpol). The principles of GICNT aim to encourage international cooperation and commitment to securing nuclear materials while improving enforcement and interdiction mechanisms to counter terrorists procuring or using radioactive or nuclear materials.



## STRENGTHENING THE NPT AND IAEA SAFEGUARDS: RECOMMENDATIONS OF THE INTERNATIONAL COMMISSION ON NUCLEAR NON-PROLIFERATION AND DISARMAMENT

The independent International Commission on Nuclear Non-proliferation and Disarmament (ICNND), co-sponsored by the Australian and Japanese governments, released its report, *Eliminating Nuclear Threats: A Practical Agenda for Global Policymakers*, on 15 December 2009. The Commission was chaired by Australian and Japanese former Foreign Ministers Gareth Evans and Yoriko Kawaguchi (respectively) and included 13 other commissioners from around the world. The Commission's recommendations outline disarmament steps on a path to the abolition of nuclear weapons.

The Commission recognised that an effective nuclear non-proliferation regime is essential to achieving the conditions necessary for nuclear disarmament, and the report outlined further steps to strengthen the non-proliferation regime. In addition, the report considered how the nuclear industry can be developed in ways that best contribute to achieving the goals of non-proliferation and disarmament.

The Commission's report and the numerous research papers can be found on the ICNND website, [www.icnnd.org](http://www.icnnd.org). DG ASNO, John Carlson was a member of ICNND's Advisory Board.

The ICNND report contained 76 recommendations in all. Outlined here are those concerning non-proliferation – specifically, how the NPT and the IAEA safeguards system can be further strengthened. Below represents a shortened version of a paper which John Carlson presented to the 2010 meeting of the Institute for Nuclear Materials Management – this paper is available on the ASNO website.

### Strengthening the NPT

The Commission considered the current strains on the NPT, including the disappointment felt by many states at the pace of nuclear disarmament, failures of both verification and of compliance and enforcement action, and the spread of sensitive nuclear technology (enrichment and reprocessing). The matter of how to deal with withdrawing from the NPT was also a key consideration.

The Commission pointed out that the NPT is notable for having no executive machinery: in particular, no decision-making mechanism for determining Treaty compliance. Effectively, this is entrusted to the IAEA, through the Agency's conclusions regarding compliance with safeguards agreements. The IAEA and its processes bear directly on the effectiveness of the NPT, in that a finding of non-compliance with a comprehensive safeguards agreement amounts inherently to a finding that the state is in violation of Article III of the NPT (the obligation to accept safeguards), and also, depending on the evidence, Article II (not to seek or acquire nuclear weapons).

Having regard to the precedent of DPRK's purported withdrawal from the NPT in 2003, the Commission was particularly concerned with the prospect of one or more states attempting to withdraw from the NPT. It was of concern that a state might be withdrawing



for the very purpose of diverting a civil nuclear program to production of nuclear weapons, and escaping in the process from having its treaty obligations enforced. ICNND research papers pointed to a serious weakness in NPT safeguards agreements, that if a state withdraws from the NPT the safeguards agreement lapses.

In addition to the following recommendations, the Commission suggested that a protocol to NPT safeguards agreements could be developed which applies safeguards in perpetuity to all existing nuclear material and facilities if for any reason the safeguards agreement ceases to apply. In the case of states found in non-compliance, this could be mandated by the UN Security Council.

The Commission made the following recommendations:

- The UN Security Council should severely discourage withdrawal from the NPT by making it clear that this will be regarded as *prima facie* a threat to international peace and security, with all the punitive consequences that may follow from that under Chapter VII of the UN Charter (Recommendation 9).
- A state withdrawing from the NPT should not be free to use for non-peaceful purposes nuclear materials, equipment and technology acquired while party to the NPT. Any such material provided before withdrawal should be, so far as possible, returned, with this being enforced by the UN Security Council (Recommendation 10).
- All states should make it a condition of nuclear exports that the recipient state agree that, in the event it should withdraw from the NPT, safeguards shall continue with respect to any nuclear material and equipment provided previously, as well as any material produced by using it (Recommendation 11).

## Strengthening IAEA safeguards

The Commission discussed the essential role of safeguards, both in deterring diversion through the risk of detection, and through providing timely warning of diversion, to enable the international community to intervene. The Commission noted that the credibility of the safeguards system depends on confidence in two respects: verification capability, and the enforcement actions that are taken on verification findings.

The Commission's main recommendations on safeguards were:

- All states should accept the application of the Additional Protocol. To encourage universal take-up, acceptance of it should be a condition of all nuclear exports (Recommendation 5).
- The Additional Protocol and its annexes should be updated and strengthened by adding specific reference to dual-use items, reporting on export denials, and shorter notice periods (Recommendation 6).
- The IAEA's right to investigate possible weaponization activity, and the right to interview specific individuals, should be made clear (Recommendation 6).
- With safeguards needing to move from a mechanistic to an information-driven system, there should be much more information sharing, in both directions, on the part of both states and the IAEA, with the Agency re-evaluating its culture of confidentiality and non-transparency (Recommendation 7).



- In determining compliance, the IAEA should confine itself essentially to technical criteria, applying them with consistency and credibility, leaving the political consequences for the UN Security Council to determine (Recommendation 8).
- The IAEA should make full use of the authority already available to it, including special inspections, and States should be prepared to strengthen its authority as deficiencies are identified (Recommendation 12).

## FISSILE MATERIAL CUT-OFF TREATY

Achieving a treaty banning the production of fissile material for nuclear weapons (or a fissile material cut-off treaty – FMCT) with effective verification arrangements is a long-standing goal for Australia. An FMCT would substantially further the twin goals of nuclear disarmament and nuclear non-proliferation. By proscribing production of the fissile material needed for nuclear weapons, an FMCT would help cap the size of existing nuclear arsenals, and prevent the development of new ones. An FMCT would also provide an opportunity to further strengthen non-proliferation safeguards.

An FMCT is a natural complement to the Comprehensive Nuclear-Test-Ban Treaty (CTBT), which aims to impede the qualitative development of nuclear weapons. An FMCT would be an important step towards irreversible nuclear disarmament, and is a natural next step towards that goal.

The Conference on Disarmament (CD) is the UN body responsible for the negotiation of international arms control agreements. The CD, or one of its previous incarnations, has facilitated the negotiation of the NPT, the Chemical Weapons Convention, the Biological and Toxin Weapons Convention and the CTBT. However, for more than a decade the CD has been unable to make progress on its work program. Successive draft programs of work submitted to the CD have included negotiation of an FMCT. A program of work was adopted in May 2009, which included negotiation of a verifiable FMCT, but implementation of this program was unable to find consensus.

This is unfortunate, as support for negotiation of an FMCT is very broad. The state parties participating in the NPT Review Conference in May 2010 agreed on “the urgent necessity of negotiating and bringing to a conclusion a non-discriminatory, multilateral and internationally and effectively verifiable treaty banning the production of fissile material for nuclear weapons or other nuclear explosive devices”. The Review Conference invited the Secretary-General of the United Nations to convene a high-level meeting in September 2010 to review multilateral disarmament machinery and particularly the work of the CD. It is hoped that this meeting, together with other current efforts, can help to break the deadlock in the CD.

Australia is a leader in development of concepts for an effectively verifiable FMCT. ASNO has developed and promoted a verification framework that builds on existing IAEA safeguards. This would see a significant expansion of the scope of IAEA safeguards in nuclear-weapon states, to cover the routes by which fissile material may be produced: uranium enrichment and reprocessing (separation of plutonium from irradiated nuclear material). An FMCT would also help to ensure the application of the highest standards of verification in non-nuclear-weapon states – for example by requiring adherence to the IAEA’s Additional Protocol.



To help facilitate negotiation of an FMCT, the 2010 NPT Review Conference encouraged the nuclear-weapon states to commit to declare to the IAEA all fissile material designated as being no longer required for military purposes, and to place such material, as soon as practicable, under international verification.

Although the CD has been unable to start negotiations on an FMCT, it did agree to limited informal meetings in June and July 2010 for discussion of the issues before it. This enabled technical experts from a number of countries to exchange substantive views on an FMCT. ASNO experts supported Australia's Permanent Mission to the UN in Geneva in these discussions.

## INTERNATIONAL FRAMEWORK FOR NUCLEAR ENERGY COOPERATION EVOLVES FROM THE GLOBAL NUCLEAR ENERGY PARTNERSHIP

The Global Nuclear Energy Partnership (GNEP) was established in 2007 with Australia, as a major uranium supplier, among the first group of members. GNEP promoted the development of new technologies and institutional arrangements to minimise proliferation concerns from the wider use of nuclear energy. GNEP has been described in previous ASNO Annual Reports.<sup>4</sup>

On 23 October 2009 the GNEP Executive Committee meeting in Beijing discussed a transformation of GNEP, changing emphasis from promotion of nuclear energy to ensuring that nuclear energy programs meet the highest standards of safety, security and non-proliferation.

Following on the Beijing meeting, the GNEP Steering Group met in Accra, Ghana, on 16–17 June 2010, and decided on a new name and a new mission statement to reflect a major evolution in international cooperation on nuclear energy matters. The new name adopted is the International Framework for Nuclear Energy Cooperation (IFNEC).

“The International Framework for Nuclear Energy Cooperation provides a forum for cooperation among participating states to explore mutually beneficial approaches to ensure the use of nuclear energy for peaceful purposes proceeds in a manner that is efficient and meets the highest standards of safety, security and non-proliferation. Participating states would not give up any rights and voluntarily engage to share the effort and gain the benefits of economical, peaceful nuclear energy.”

At the time of writing, IFNEC comprises 25 participating states<sup>5</sup>, three permanent international observer organisations<sup>6</sup>, and 31 states that are observers pending their decision on joining.

IFNEC aims to develop concepts such as long-term fuel assurances, fuel leasing, and international fuel centres to demonstrate there is no requirement for states to pursue wholly national fuel cycle programs and reduce proliferation concerns.

4 See e.g. ASNO's Annual Report for 2006–07, pages 9–12.

5 Armenia, Australia, Bulgaria, Canada, China, Estonia, France, Ghana, Hungary, Italy, Japan, Jordan, Kazakhstan, Republic of Korea, Lithuania, Morocco, Oman, Poland, Romania, Russian Federation, Senegal, Slovenia, Ukraine, United Kingdom and the United States.

6 IAEA, Generation IV International Forum and Euratom.



## CTBT: BUILDING NATIONAL DATA CENTRE CAPABILITY

The task of bringing the Comprehensive Nuclear-Test-Ban Treaty (CTBT) into force is a political challenge for the international community, but one that many countries are actively seeking to advance. Pending entry into force, signatories to the Treaty continue also to pursue actively the establishment of an effective verification system. Article IV of the CTBT calls for establishment of the system, and the Preparatory Commission for the CTBT Organization (CTBTO) has been working since 1997 with signatories to set up the International Monitoring System (IMS), the International Data Centre (IDC) and to prepare for any on-site inspections (OSI). Significant progress has been made.

The IMS, IDC and an OSI will be run under the authority of the CTBTO, and are valuable tools for gathering reliable and authenticated verification data. However, the task of analysing that data to judge compliance with the CTBT falls to State Parties. This gives those countries a significant role in verifying the Treaty – more than is the case in relation to, for example, IAEA safeguards.

To fulfil their role as verifiers of the CTBT, countries are establishing national data centres (NDCs) to receive and analyse data and products from the IMS and IDC, and potentially from any OSI. Each country may choose the level of effort that its NDC will put into treaty verification. An NDC may simply examine IDC products, available through subscription or from the IDC secure website or it may set up a capability to examine events of concern through the analysis of raw data.

At this stage only a relatively small number of CTBT signatories have set up a fully functional NDC, but there are good reasons for most to establish the relevant technical capability. Each is entitled to receive verification data from the IMS, IDC and OSIs. Each State Party will also have a responsibility, if the CTBT is to be implemented effectively, to develop its own technical judgements about any event that appears to have the characteristics of a nuclear explosion. It will only be on the basis of sound technical judgements that state parties can participate effectively in many of the political processes of the CTBT – such as use of the Treaty's consultation and clarification or OSI mechanisms, or dealing with any case of non-compliance.

Australia is working with the Preparatory Commission to promote NDC capacity in countries in our region, and in May 2010 hosted a workshop in Canberra to facilitate this. Further, NDC related outreach activities are planned also for 2010-11.

Geoscience Australia (GA) (and its predecessors) has conducted a programme to monitor for nuclear weapon tests since the 1980s. This experience provides a valuable basis for Australia's NDC capability, but needs to be integrated with the Australian Radiation Protection and Nuclear Safety Agency's (ARPANSA) technical capacity to monitor for radionuclide events.

The focus of Australia's nuclear monitoring programme will need to adjust in other ways also to verify compliance with the CTBT. To date, almost all nuclear tests have been announced by the countries that conducted them. It is more than likely that any nuclear tests challenging the CTBT will be conducted clandestinely. Reliably identifying and characterising the many events that could be a nuclear test is a qualitatively different task from that of confirming and characterising announced events.



## STANDING ADVISORY GROUP ON SAFEGUARDS IMPLEMENTATION

A fundamental purpose of IAEA safeguards is to give confidence to the international community that states are abiding by their commitments not to manufacture or otherwise acquire nuclear weapons. To remain both effective and efficient over time, and in the face of new challenges, the safeguards system must be able to adapt to new circumstances, and make best use of available technologies.

Concerns about Iraq's nuclear activities in the early 1990s were the first trigger for a significant period of evolution for the IAEA's safeguards system. Verification tools and techniques have advanced through this period, but the basic conceptual framework of safeguards has also changed. Safeguards have moved from a mostly quantitative system, dominated by nuclear material accountancy of declared inventories, to a more holistic approach. The combination of a Comprehensive Safeguards Agreement and an Additional Protocol encapsulates both qualitative and quantitative safeguards measures. Through an information-driven framework the IAEA is now has the capacity to assess the nuclear activities of a state as a whole.

To develop and adapt safeguards over the years the IAEA has needed to draw on expertise of member states to support the development and improvement of safeguards techniques and systems through nationally funded projects, and through participation in advisory bodies, chiefly the Standing Advisory Group on Safeguards Implementation (SAGSI).

Australia was one of the first member states to create a support programme for IAEA safeguards, the Australian Safeguards Support Program (ASSP), and this year marks 30 years since it began. ASNO and ANSTO have participated actively in a range of safeguards development projects over the years. SAGSI is a group (currently 18) of safeguards experts with a range of experiences appointed by the IAEA Director General, to advise the Director General on safeguards implementation issues of importance to the IAEA. ASNO, and its predecessor agency the Australian Safeguards Office, have had a member in SAGSI since it was founded in the 1970s<sup>7</sup>. DG ASNO John Carlson, chaired SAGSI from 2001–2006.

The combination of the ASSP and membership in SAGSI has enabled Australia to keep fully appraised of safeguards developments, and to make important contributions to improvements in safeguards implementation. Some examples of major safeguards improvements where Australia has made contributions through the ASSP and SAGSI are listed below:

- ASSP: Development of the safeguards physical model in the mid 1990s, which identifies, describes and characterises every stage of the nuclear fuel cycle, to determine identifying indicators of producing weapon-usable material.
- SAGSI: Development of information-driven safeguards in the early 2000s a safeguards approach where the planning, conduct and evaluation are based on an ongoing analysis of all safeguards-relevant information available to the IAEA about a state.

<sup>7</sup> For further details on SAGSI see: *The Safeguards Revolution—where to from here?*, J. Carlson, paper presented to IAEA Safeguards Symposium, Vienna, 16–20 October 2006



- ASSP: Development of remote monitoring in the early 1990s – the complementary use of technology to enhance safeguards effectiveness, through giving inspectors the capability to make evaluations between inspections.
- SAGSI: Review in 2003-04 of the safeguards criteria that the IAEA uses to determine the scope and frequency of verification activities, which led to reduced use of safeguards criteria in favour of a state-level approach.
- SAGSI: Development of strengthened safeguards measures in the early 1990s

These are just a selection of safeguards developments that together constituted a revolutionary change in safeguards implementation. As a result of these important improvements, for some 52 states the IAEA is now able to draw the broader conclusion not only that all declared nuclear material is accounted for, but that there is an absence of any undeclared nuclear materials or activities. The number of states about which the IAEA can draw this broader conclusion is increasing every year.

These developments in safeguards implementation have led to an environment in which the international community can have an increased confidence in the peaceful nature of the vast majority of nuclear programs around the world. Australia has made important and influential contributions to these developments as a direct consequence of the ASSP and membership in SAGSI.

## AUSTRALIA'S URANIUM PRODUCTION AND EXPORTS

Statistics related to Australia's exports of uranium ore concentrates (UOC) are listed in Table 1.

Australia's Reasonably Assured Resources (RAR) of uranium recoverable at costs of less than US\$80 per kilogram uranium were estimated to be 1,224,000 tonnes U as at December 2009, which represents 46 per cent of world resources in this category.<sup>8</sup> This is based on estimates for Australia by Geoscience Australia and for other countries as reported by the OECD Nuclear Energy Agency in 'Uranium 2009: Resources, Production and Demand'. In 2009, the Ranger and Olympic Dam mines were, respectively, the world's second largest (9% of world uranium production) and fifth largest (6% of world uranium production) uranium producers.<sup>9</sup> Overall, Australia is the third largest uranium producer after Kazakhstan and Canada.

Australia's share of world RAR in this cost category increased from 38% at December 2008 to 46% at December 2009, due to increases in Australia's resources resulting from delineation of additional resources at the Olympic Dam and Ranger deposits, and decreases in total resources for rest of the world as reported by the OECD Nuclear Energy Agency.

<sup>8</sup> Figures from Uranium 2009: Resources, Production and Demand, OECD NEA and IAEA.

<sup>9</sup> Australian production compared with table of top uranium producers from the World Nuclear Association's (WNA) World Uranium Mining (July 2010)—[www.world-nuclear.org/info/inf23.html](http://www.world-nuclear.org/info/inf23.html).



TABLE 1: UOC EXPORT AND NUCLEAR ELECTRICITY STATISTICS

Item	Data
<b>UOC Exports</b>	
Total UOC exports 2009–10	7,555 tonnes
Value UOC exports	A\$758 million
Australian exports as % world uranium requirements <sup>10</sup>	~12%
No. of reactors (1000 MWe) these exports could power <sup>11</sup>	~41
Power generated by these exports	~284 TWh
Expressed as percentage of total Australian electricity production <sup>12</sup>	~111%

Figure 1 shows that Australia's exports of UOC dropped in 2009–10 from the previous year. This was due to lowered production from all three operating uranium mines.

Worldwide, uranium mining currently provides about three quarters of global industry requirements,<sup>13</sup> with the balance coming from down-blending of excess weapons material, stockpiles and reprocessing. The uranium spot price has remained reasonably stable at around US\$40-US\$45 per pound over the last year, and is forecast to increase marginally in 2011 as growth in supply slows compared with demand growth<sup>14</sup>. Over the longer term uranium spot prices are expected to remain strong due to the forecast increase in nuclear power worldwide, and uncertainty surrounding the possible extension of the United States–Russia Megatons to Megawatts program, due to expire in 2013. New mines will be necessary to meet current, as well as future increases in demand.

10 Based on 2009–10 world requirements of 68,646 tonnes uranium (WNA's World Uranium Mining, July 2010).

11 Based on a comparison of TWh of nuclear electricity generation and uranium required, for countries eligible to use AONM. Source: WNA's "World Nuclear Power Reactors and Uranium Requirements", <http://www.world-nuclear.org/info/default.aspx?id=281481> (1 July 2010).

12 Australia's gross electricity generation in 2009–10 is estimated to be 256 TWh. Source: Australian Energy, National and State Projections to 2029–30—Statistical Tables, ABARE Research Report March 2010.

13 World Nuclear Association, World Uranium Mining, July 2010.

14 Australian Commodities - September Quarter 2010, Australian Bureau of Agricultural and Resource Economics – Bureau of Rural Sciences (ABARE–BRS)



FIGURE 1: QUANTITY AND VALUE OF AUSTRALIAN UOC EXPORTS

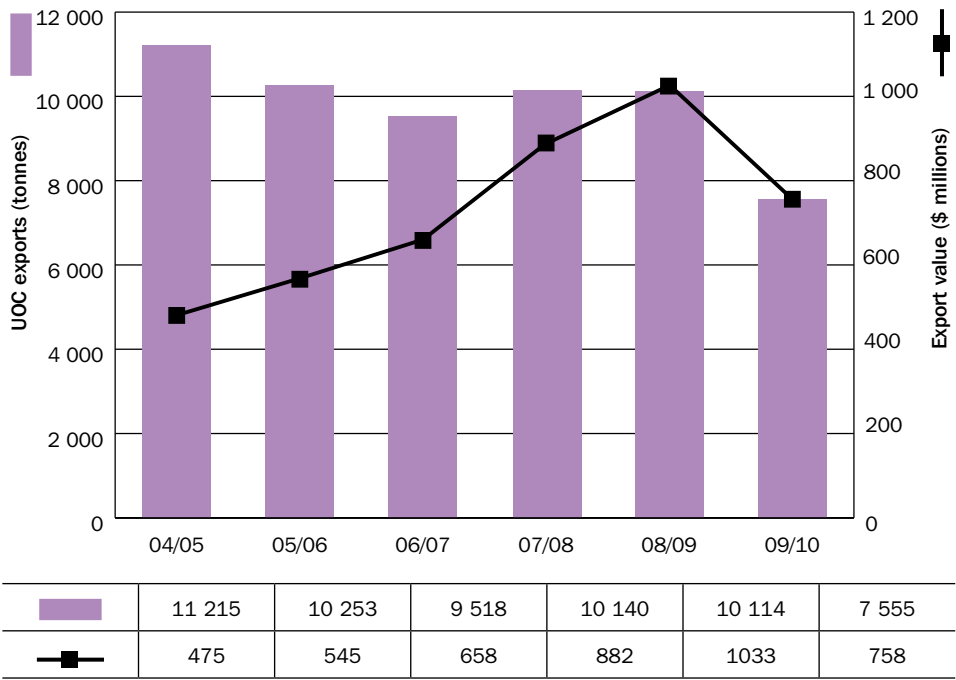
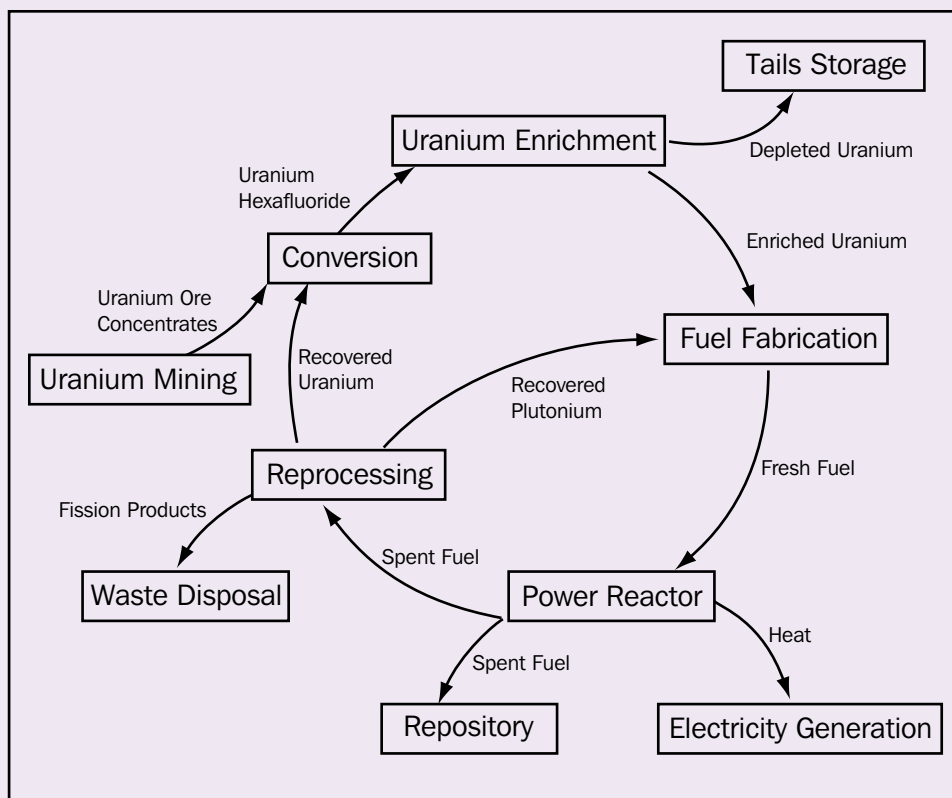




FIGURE 2: CIVIL NUCLEAR FUEL CYCLE



A characteristic of the nuclear fuel cycle is the international interdependence of facility operators and power utilities. It is unusual for a country to be entirely self-contained in the processing of uranium for civil use. Even in the nuclear-weapon states, power utilities will often go to other countries seeking the most favourable terms for uranium processing and enrichment. It would not be unusual, for example, for a Japanese utility buying Australian uranium to have the uranium converted to uranium hexafluoride in Canada, enriched in France, fabricated into fuel in Japan and reprocessed in the United Kingdom.

The international flow of nuclear material means that nuclear materials are routinely mixed during processes such as conversion and enrichment and as such cannot be separated by origin thereafter. Therefore tracking of individual uranium atoms is impossible. Since nuclear material is fungible—that is, any given atom is the same as any other—a uranium exporter is able to ensure its exports do not contribute to military applications by applying safeguards obligations to the overall quantity of material it exports. This practice of tracking quantities rather than atoms has led to the establishment of universal conventions for the industry, known as the principles of equivalence and proportionality. The equivalence principle provides that where AONM loses its separate identity because of process characteristics (e.g. mixing), an equivalent quantity of that material is designated as AONM. These equivalent quantities may be derived by calculation, measurement or from operating plant parameters. The equivalence principle does not permit substitution by a lower quality material. The proportionality principle provides that where AONM is mixed with other nuclear material and is then processed or irradiated, a corresponding proportion of the resulting material will be regarded as AONM.





# OVERVIEW OF ASNO SECTION 3





# OVERVIEW OF ASNO

## Goal

## Functions

Nuclear Safeguards Functions

Chemical Weapons Convention Functions

Comprehensive Nuclear-Test-Ban Treaty Functions

Other Functions

Operating Environment

Outcomes and Outputs Structure



# OVERVIEW OF ASNO

## GOAL

The goal of ASNO is to enhance Australian and international security through activities which contribute to effective regimes against the proliferation of nuclear and chemical weapons.

## FUNCTIONS

The principal focus of ASNO's work is on international and domestic action to prevent the proliferation of nuclear and chemical weapons. Thus, ASNO's work relates directly to international and national security. In particular, ASNO works to strengthen the operation and effectiveness of relevant treaty regimes through the application of specialist knowledge to complex policy problems in technical areas, including treaty verification and compliance. ASNO also performs domestic regulatory functions to ensure that Australia is in compliance with treaty commitments and that the public is protected through the application of high standards of physical protection to nuclear materials and facilities.

The *Non-Proliferation Legislation Amendment Act 2003* enabled the offices of the national authority for safeguards, the national authority for the Chemical Weapons Convention (CWC) and the national authority for the Comprehensive Nuclear-Test-Ban Treaty (CTBT) to be formally consolidated under a common title, named the Australian Safeguards and Non-Proliferation Office. The legislation also enabled the titles of each of the directors of the three national authorities to be combined as the Director General ASNO. These changes confirmed arrangements that had been in place informally for several years.

## Nuclear Safeguards Functions

The Treaty on the Non-Proliferation of Nuclear Weapons (NPT) is the centrepiece of the international nuclear non-proliferation regime. Since its entry into force in 1970, the NPT has become almost universal, with 190 Parties. Only three states—India, Israel and Pakistan—remain outside the NPT. A fourth—the DPRK—announced its withdrawal from the NPT in 2003, but the validity of this withdrawal has not been determined.

Under the NPT, non-nuclear-weapon states commit not to acquire nuclear weapons, and to conclude an agreement with the IAEA for the application of IAEA safeguards to all their nuclear material to verify their compliance with this commitment.



## *The Nuclear Non-Proliferation (Safeguards) Act 1987*

The *Nuclear Non-Proliferation (Safeguards) Act 1987* (Safeguards Act), which took effect on 31 March 1987, forms the legislative basis for ASNO's nuclear safeguards activities. The Safeguards Act gives effect to Australia's obligations under:

- the NPT
- Australia's safeguards agreement and Additional Protocol with the IAEA
- agreements between Australia and various countries (and Euratom) concerning transfers of nuclear items and cooperation in peaceful uses of nuclear energy
- the Convention on the Physical Protection of Nuclear Material (CPPNM).

The Safeguards Act also establishes a system for control over nuclear material and associated items in Australia through requirements for permits for their possession and transport. Communication of information contained in sensitive nuclear technology is also controlled through the grant of authorities.

The safeguards functions of the DG ASNO are set out in section 43 of the Safeguards Act. These include:

- ensuring the effective operation of the Australian safeguards system
- ensuring the physical protection and security of nuclear material and items in Australia
- carrying out Australia's obligations under Australia's safeguards agreement and Additional Protocol with the IAEA
- carrying out Australia's obligations under Australia's safeguards agreements with other countries and Euratom
- operating Australia's bilateral safeguards agreements and monitoring compliance with the provisions of these agreements
- undertaking, co-ordinating and facilitating research and development in relation to safeguards
- advising the Minister for Foreign Affairs on matters relating to the international nuclear non-proliferation regime and the international safeguards system.

## *Chemical Weapons Convention Functions*

The Chemical Weapons Convention (CWC) prohibits the development, production, acquisition, stockpiling, retention and transfer or use of chemical weapons. Its verification regime is based on declaration by State Parties of facilities and activities dealing with particular chemicals, and on confirmation of compliance through on-site inspections.

ASNO is the focal point in Australia for liaison between domestic CWC stakeholders such as declared chemical facilities, the Organisation for the Prohibition of Chemical Weapons (OPCW), and the national authorities of other State Parties.

Through a system of permits and notifications under the *Chemical Weapons (Prohibition) Act 1994* and the Customs (Prohibited Imports) Regulations, ASNO gathers information



from the chemical industry including traders, universities and research institutions to compile declarations that Australia must submit to the OPCW. ASNO has the right to conduct compliance inspections of relevant facilities in Australia, but such powers are exercised only in exceptional circumstances. ASNO conducts outreach activities, including site visits, to promote compliance and to check the accuracy of information provided by industry.

The OPCW conducts routine inspections of facilities listed in Australia's CWC declarations. ASNO facilitates these inspections to ensure Australia's obligations are met, and to protect the rights of facility operators.

ASNO promotes effective international implementation of the CWC, particularly in Australia's region. It works with the OPCW and other State Parties in the formulation of verification policy and by providing practical implementation assistance and advice.

### Key CWC functions are:

- Australia's point of contact for liaison on CWC implementation
- identifying and gathering information on industrial chemical facilities and other activities required to be declared to the OPCW
- preparing for and facilitating OPCW inspections in Australia
- promoting awareness and effective implementation of the CWC, both domestically and internationally
- providing technical and policy advice to Government
- administering and developing related regulatory and administrative mechanisms.

### *Chemical Weapons (Prohibition) Act 1994*

The *Chemical Weapons (Prohibition) Act 1994* (CWP Act) was enacted on 25 February 1994. Division 1 of Part 7 of the CWP Act (establishing Australia's national authority for the CWC, and the position of its Director), and sections 95, 96, 97, 99, 102, 103, and 104 were proclaimed on 15 February 1995. Other provisions of the Act which expressly relied on the CWC came into effect on 29 April 1997 when the CWC Act entered into force. The final parts of the CWP Act, dealing with routine compliance inspections of Other Chemical Production Facilities, came into effect on 17 August 2000.

The CWP Act gives effect to Australia's obligations, responsibilities and rights as a State Party to the CWC. In particular, the CWP Act:

- prohibits activities connected to the development, production or use of chemical weapons, including assisting anyone engaged in these activities, whether intentionally or recklessly—such offences are punishable by life imprisonment
- establishes permit and notification systems to provide a legal framework for the mandatory provision of data to ASNO by facilities which produce or use chemicals as specified by the Convention, so that ASNO can lodge declarations with the OPCW



- provides for routine inspections of declared facilities and challenge inspections of any facility or other place in Australia by OPCW inspectors to verify compliance with the CWC, and for inspections by ASNO to verify compliance with the CWP Act
- provides for procedures should another State Party seek clarification concerning compliance with the Convention at any facility or other place or by any person in Australia.

Regulations under the CWP Act prescribe procedures and details of other arrangements provided for in the CWP Act. In particular, the Regulations define conditions that are to be met by holders of permits issued under the CWP Act, and for granting privileges and immunities to OPCW inspectors when in Australia to carry out inspections.

The text of the CWC is reproduced in the Schedule to the CWP Act. The manner in which any powers are exercised under the CWP Act must be consistent with, and have regard to, Australia's obligations under the Convention.

The CWP Act was amended on 6 April 1998. The amendments refine administration of the CWP Act by simplifying compliance obligations for facilities requiring permits, clarifying the legislative basis for Australia to implement some of its obligations under the Convention, correcting drafting errors and improving certain procedures, including those related to secrecy. For consistency, concomitant Regulations were amended on 17 December 1998.



*OPCW Inspectors during a routine industry inspection at a chemical plant in Western Australia, June 2010.*



On 4–5 December 2006, two minor technical amendments to the text of the Verification Annex of the Convention accepted by Australia were set out in the Regulations. At the same time, a second amendment to the Regulations took effect to ensure that facilities producing or using highly toxic Part A Schedule 2 chemicals in low concentrations are captured under the permit system prescribed under the CWP Act.

Minor amendments were made to the Act on 10 April 2007, as part of the *Non-Proliferation Amendment Act 2007*. Amendments included repealing subsection 8(2) thereby removing the requirement that approved forms or procedures made pursuant to the CWP Act are disallowable instruments. Approved forms or procedures under the CWP Act specify matters that are essentially administrative in character, and do not fit the definition in section 5 of the *Legislative Instruments Act 2003*.

## Comprehensive Nuclear-Test-Ban Treaty Functions

Article IV of the CTBT provides that its verification regime shall be capable of meeting the requirements of the Treaty when it enters into force. This requires a substantial program of preparation in advance of the Treaty's entry into force.

To make the necessary preparations, a Preparatory Commission (PrepCom) was established in 1997, made up of CTBT States Signatories and supported by a Provisional Technical Secretariat (PTS). The tasks of the PrepCom include the establishment of an International Monitoring System (IMS) comprising 337 monitoring facilities around the world and an International Data Centre in Vienna. The PrepCom must also develop detailed procedures for the operation of these facilities and for the conduct of on-site inspections where concerns are raised about a possible nuclear explosion.

ASNO is Australia's designated national authority for the CTBT. This role is one of liaison and facilitation to ensure that the IMS is established efficiently and relevant domestic arrangements are in place.

ASNO makes a strong contribution on behalf of Australia to the overall work of the PrepCom to develop the CTBT verification regime. ASNO also assists DFAT with efforts to encourage ratification of the CTBT by countries that have not yet done so.

### Key CTBT functions include:

- national point of contact for liaison on CTBT implementation
- establishing and maintaining legal, administrative and financial mechanisms to give effect to the CTBT in Australia
- coordinating the establishment of IMS facilities in Australia, and of measures to enable Australia to effectively monitor and analyse IMS and other CTBT verification data
- contributing to the development of Treaty verification, through the PrepCom and its working groups
- participating in development and implementation of Australian policy relevant to the CTBT.



## Comprehensive Nuclear Test-Ban Treaty Act 1998

The *Comprehensive Nuclear Test-Ban Treaty Act 1998* (CTBT Act) gives effect to Australia's obligations as a Party to the CTBT. It prohibits the causing of any nuclear explosion at any place within Australian jurisdiction or control and establishes a penalty of life imprisonment for an offence against this prohibition. The CTBT Act also prohibits Australian nationals from causing a nuclear explosion in any other place.

The CTBT Act requires the Australian Government to facilitate verification of compliance with the Treaty provisions, including the obligation to arrange for the establishment and operation of Australian IMS stations and the provision of data from these. It provides the Government with the authority to establish IMS stations and to make provision for access to them for CTBT monitoring purposes. The CTBT Act makes provision for the Minister for Foreign Affairs to enter into arrangements with the CTBT Organization to facilitate cooperation in relation to monitoring stations under Australian control.

Article IV of the Treaty obliges State Parties to allow CTBT inspectors to inspect any place within their jurisdiction or control in an on-site inspection. The CTBT Act provides comprehensive powers for inspection arrangements, including the right for inspectors to gather information, to collect and remove samples, and to apply a range of monitoring and sensing techniques over a designated area. Access to locations by inspectors is by consent of the occupier of any premises, or by warrant issued by a magistrate.

The CTBT Act was assented to on 2 July 1998, but was not able to enter into effect, absent the entry into force of the CTBT, until amended by the *Non-Proliferation Legislation Amendment Act 2003*. On 11 June 2004 sections 3 to 7, Part 2, Division 1 of Part 4, Division 1 of Part 5, sections 68 to 72, sections 74, 75 and 78, and Schedule 1 to the CTBT Act came into effect following proclamation by the Governor-General. The proclaimed provisions were to:

- create the offence of causing a nuclear weapons test explosion, or any other nuclear explosion
- provide a framework for the establishment and operation of IMS facilities in Australia, and a legal basis for the functioning of Australia's CTBT National Authority.

## Other Functions

### South Pacific Nuclear Free Zone Treaty

The South Pacific Nuclear Free Zone (SPNFZ) Treaty, (also known as the Treaty of Rarotonga) prohibits the manufacture, possession, stationing and testing of nuclear explosive devices, as well as research and development relating to manufacture or production of nuclear explosive devices, in any area for which the Signatory Parties are responsible. The SPNFZ Treaty also bans the dumping of radioactive waste at sea. Australia ratified the Treaty on 11 December 1986.



### ***South Pacific Nuclear Free Zone Treaty Act 1986***

The *South Pacific Nuclear Free Zone Treaty Act 1986* (SPNFZ Act), which came into force in Australia on 11 December 1986, gives effect to Australia's obligations, responsibilities and rights under the Treaty. The SPNFZ Act also establishes the framework for SPNFZ Treaty inspections. Safeguards Inspectors appointed under the Safeguards Act are also inspectors for the purposes of the SPNFZ Act. These inspectors are to assist SPNFZ Treaty inspectors and authorised officers in carrying out Treaty inspections, and to investigate possible breaches of the SPNFZ Act.

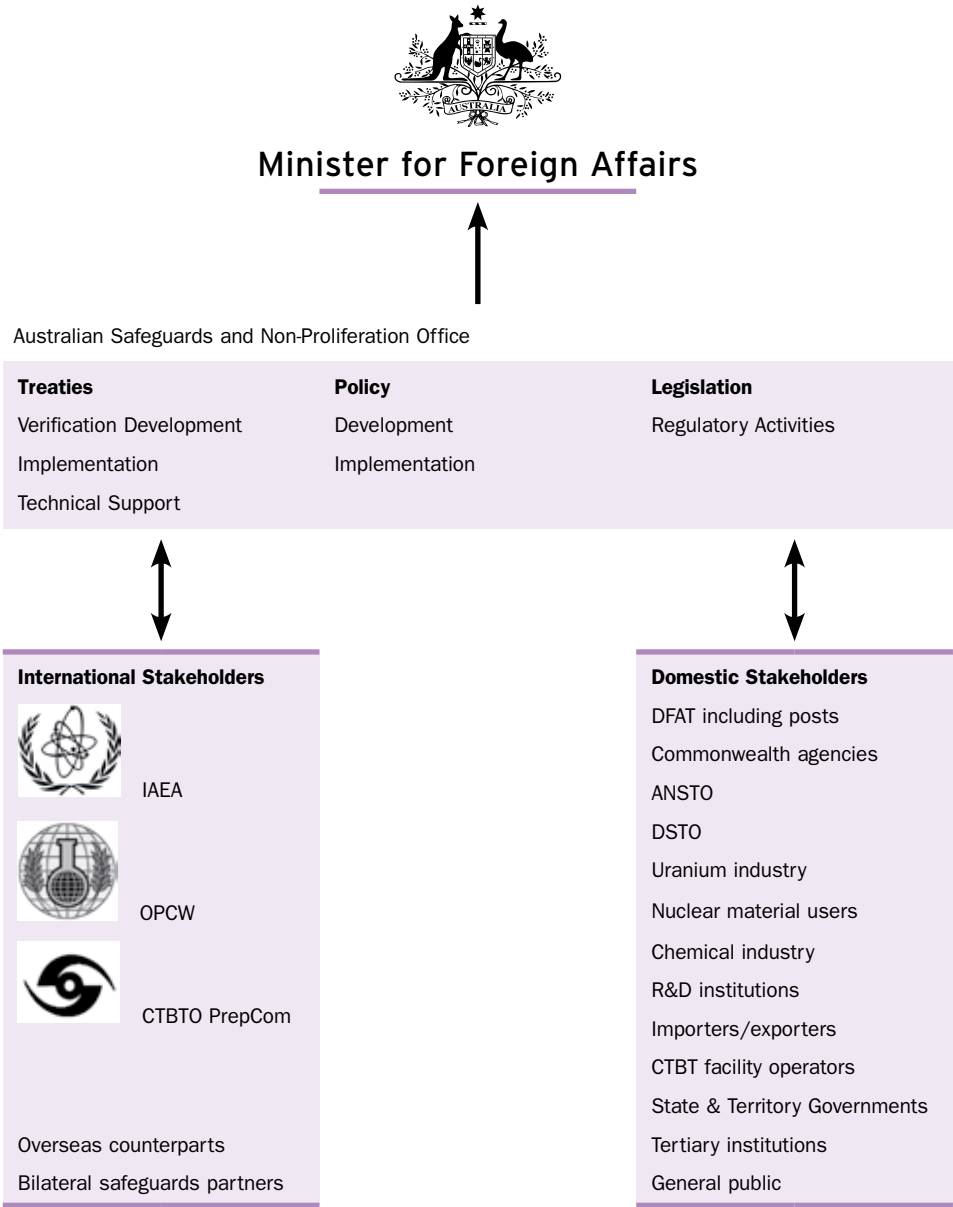


*View of the corridors at the United Nations Headquarters, New York, 2010*



# Operating Environment

FIGURE 3: ASNO'S OPERATING ENVIRONMENT





## Outcomes and Outputs Structure

FIGURE 4: ASNO'S OUTCOMES AND OUTPUTS STRUCTURE

<b>Outcome 1:</b>	<b>Australian and international security protected and advanced through activities which contribute to effective regimes against the proliferation of nuclear and chemical weapons.</b>
Output 1.1	Operation of Australia's national system of accounting for, and control of, nuclear material, items and facilities.
Output 1.2	Protection of Australia's nuclear facilities, nuclear material and nuclear items against unauthorised access and sabotage. Internationally agreed physical protection standards applied to Australian Obligated Nuclear Material overseas.
Output 1.3	Nuclear material and associated items exported from Australia under bilateral agreements remain in exclusively peaceful use.
Output 1.4	Contribution to the development and effective implementation of international safeguards and the nuclear non-proliferation regime.
Output 1.5	Regulation and reporting of Australian chemical activities in accordance with the Chemical Weapons Convention, and strengthening international implementation of the Convention.
Output 1.6	Development of verification systems and arrangements in support of Australia's commitments related to the Comprehensive Nuclear-Test-Ban Treaty.
Output 1.7	Contribution to the development and strengthening of other weapons of mass destruction non-proliferation regimes.
Output 1.8	Provision of high quality, timely, relevant and professional advice to Government.
<b>Outcome 2:</b>	<b>Knowledge about Australian's efforts to prevent the proliferation of weapons of mass destruction enhanced through public advocacy.</b>
Output 2.1	Provision of public information on the development, implementation and regulation of weapons of mass destruction non-proliferation regimes, and Australia's role in these activities.



*Dr John Kalish, Assistant Secretary ASNO, presenting  
at the Annual Australasian Institute of Mining and  
Metallurgy conference, 16-17 June 2010*







# PERFORMANCE

## SECTION 4





# PERFORMANCE

**Output 1.1: National Safeguards System**

**Output 1.2: Physical Protection**

**Output 1.3: Bilateral Safeguards**

**Output 1.4: International Safeguards and Non-Proliferation**

**Output 1.5: CWC Implementation**

**Output 1.6: CTBT Implementation**

**Output 1.7: Other Non-Proliferation Regimes**

**Output 1.8: Advice to Government**

**Output 2.1: Public Information**



# PERFORMANCE

## OUTPUT 1.1: NATIONAL SAFEGUARDS SYSTEM

Operation of Australia's national system of accounting for, and control of, nuclear material, items and facilities.

### Performance Measures

- Australia's obligations are met under Australia's safeguards agreement with the IAEA
- Australia's system of safeguards permits and authorities is administered in a timely and effective manner
- Australian uranium at mines and in transit accounted for properly

### Performance Assessment

#### International Obligations

##### Reporting

ASNO met all of Australia's obligations during the reporting period for the submission of declarations and notifications on nuclear materials and facilities as required by Australia's safeguards agreement with the IAEA.

ASNO reported changes to Australia's nuclear material inventory to the IAEA on a monthly basis. These reports are summarised in Tables 2 and 3. In particular, ASNO regularly audited and reported on the inventory at the Lucas Heights site of the Australian Nuclear Science and Technology Organisation (ANSTO), the principal location in Australia of nuclear material subject to IAEA safeguards. The high number of reports attributed to "other locations" relates to holdings of chemical salts, mainly held by universities, and depleted uranium shielding held by industrial radiographers.

TABLE 2: ASNO REPORTS (LINE ENTRIES) TO THE IAEA, 2004–2010, BY FACILITY

Facility	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10
ANSTO research laboratories	498	451	454	550	588	607
HIFAR (defuelled 2007)	103	36	66	27	117	8
ANSTO vault storage	22	18	18	18	27	22
Moata (defuelled 1995)	11	83	9	11	10	8
OPAL reactor	0	28	67	60	106	196
Silex laboratories	34	35	39	68	4	13
Other locations	2 198	2 258	3 252	3 024	3 286	2948
<b>TOTAL</b>	<b>2 866</b>	<b>2 909</b>	<b>3 905</b>	<b>3 758</b>	<b>4 138</b>	<b>3802</b>



TABLE 3: ASNO REPORTS (LINE ENTRIES) TO THE IAEA, 2004–2010, BY DATA TYPE

Type of Data	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10
Inventory Change Report	496	407	839	488	589	459
Physical Inventory Listing	1135	1200	1232	1476	1550	1584
Material Balance Report	139	160	152	152	152	136
Concise Note	1096	1142	1682	1642	1847	1623
<b>TOTAL</b>	<b>2866</b>	<b>2909</b>	<b>3905</b>	<b>3758</b>	<b>4138</b>	<b>3802</b>

Table 4 shows a summary of totals of nuclear material by category in Australia. A notable change from the previous year's totals includes an increase in enriched uranium, from the import of fresh fuel for the OPAL reactor.

TABLE 4: NUCLEAR MATERIAL IN AUSTRALIA AT 30 JUNE 2010

Category	Quantity	Intended End-use
<b>Source Material</b>		
Uranium Ore Concentrates (UOC)	401 tonnes	Export for energy use pursuant to bilateral agreements
	6 tonnes	Storage
Natural Uranium (other than UOC)	10 870 kg	Research and shielding
Depleted Uranium	14 462 kg	Research and shielding
Thorium Ore Residues	59 tonnes	Storage/disposal
Thorium (other than Thorium Ore Residues)	1 975 kg	Research, industry
<b>Special Fissionable Material</b>		
<sup>235</sup> U	115 908 grams	Research, radioisotope production
<sup>233</sup> U	4 grams	Research
Plutonium (other than <sup>238</sup> Pu)	1 243 grams	Research, neutron sources

## Nuclear Research and Development

ASNO ensured that all IAEA requirements were met during the reporting period with respect to formal reporting of nuclear R&D in Australia, and ensured that any developing technology remained in exclusively peaceful use and did not contribute to any proliferation activity.



TABLE 5: ASSOCIATED ITEMS IN AUSTRALIA AT 30 JUNE 2010

Category	Quantity	Intended End-use
<b>Associated Material</b>		
Deuterium and heavy water	28.9 tonnes	Research, reactors
Nuclear grade graphite	82.92 tonnes	HIFAR, Moata and storage
<b>Associated Equipment</b>		
Moata <sup>15</sup>	1	Reactor
HIFAR <sup>16</sup>	1	Reactor
HIFAR coarse control arms (unused)	5	Reactor components
HIFAR safety rods	3	Reactor components
HIFAR fuel charging and discharging machines	2	Reactor components
OPAL reactor <sup>17</sup>	1	Reactor
OPAL control rods	13	Reactor components
OPAL control rod drives	6	Reactor components
Silex equipment	–	Enrichment R&D

## Permits and Authorities System

ASNO continued to operate Australia's State System of Accounting for and Control of Nuclear Material in accordance with Australia's safeguards agreement with the IAEA and legislation. Administration of this system was carried out in a timely manner.

TABLE 6: STATUS OF SAFEGUARDS PERMITS AND AUTHORITIES AT 30 JUNE 2010

Permit or Authority	Current Total	Granted	Varied	Revoked	Expired
Possess nuclear material	91	3	9	1	4
Possess associated items	15	0	4	0	0
Transport nuclear material	23	4	1	0	0
Transport associated items	0	0	0	0	0
Establish a facility	0	0	0	0	0
Decommission a facility	2	0	0	0	0
Communicate information contained in associated technology	11	0	1	0	0
<b>TOTAL</b>	<b>142</b>	<b>7</b>	<b>15</b>	<b>1</b>	<b>4</b>

Notice of all permit changes was published in the Commonwealth Gazette as required by the Safeguards Act (section 20(1)). Five permits were revoked or expired where that permit holder no longer held nuclear material. Most of the 15 permit variations were permit extensions.

15 The ANSTO Board decided to cease operation of Moata in February 1995. The reactor was de-fuelled in May 1995. It is now undergoing decommissioning.

16 The ANSTO Board decided to cease operation of HIFAR in January 2007. The reactor de-fuelled in May 2007. It is now awaiting decommissioning.

17 Includes, *inter alia*, the reactor reflector vessel and core grid.



**ASNO Inspections**

During the reporting period, ASNO carried out seven domestic inspections to ensure that requirements of permits and authorities were being met. While there were fewer separate inspections completed this year, the average effort applied to inspections was far greater. From these inspections, ASNO found no indication of unauthorised access to, or use of, nuclear materials or nuclear items.

FIGURE 5: NUCLEAR INSPECTIONS BY ASNO, 2009-10, BY TYPE OF PERMIT HOLDER

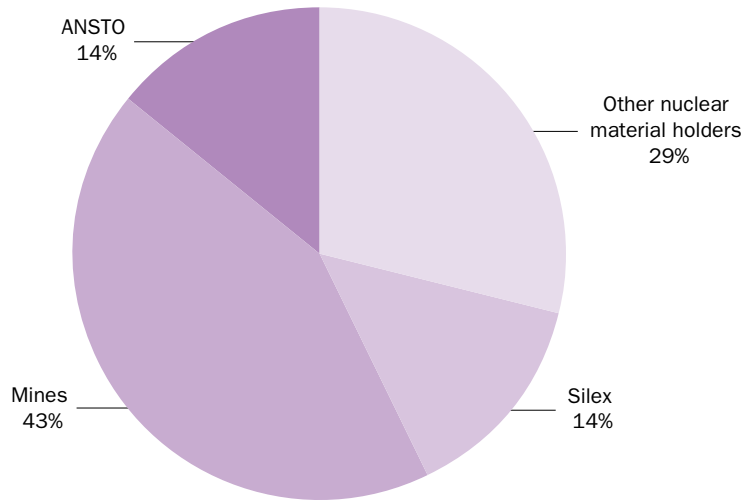
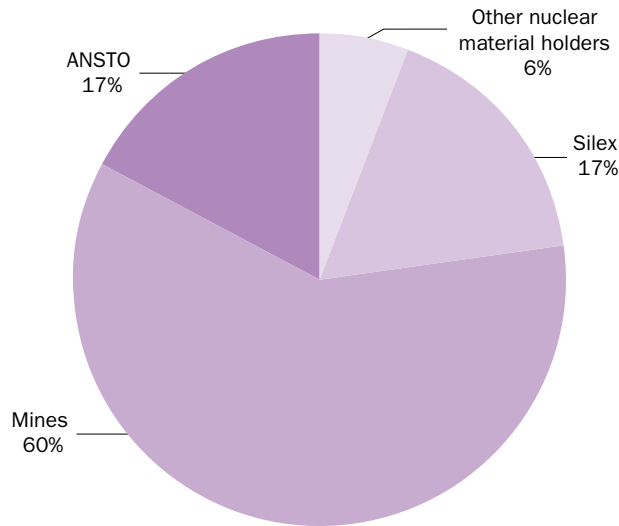


FIGURE 6: NUCLEAR INSPECTIONS BY ASNO, 2009-10, BY EFFORT FOR EACH TYPE OF PERMIT HOLDER





IAEA Inspections

ASNO ensured that all of Australia’s obligations with respect to IAEA inspections were met. During the reporting period, the IAEA conducted five design information verification inspections, five routine nuclear material inventory verification inspections and a short notice inspection. The IAEA exercised its complementary access rights in accordance with the Additional Protocol on three occasions. Details are provided in Table 7.

TABLE 7: IAEA SAFEGUARDS INSPECTIONS AND COMPLEMENTARY ACCESSES 2009–10

Date	Facility	Type
19 October 2009	OPAL reactor	Short Notice Inventory Verification Inspection
20 October 2009	ANSTO’s R&D Laboratories	Complementary Access
22 October 2009	ANSTO’s R&D Laboratories	Complementary Access
03–07 May 2010	HIFAR MOATA reactor ANSTO’s R&D Laboratories OPAL reactor SSL Laboratories	Routine Inventory Verification Inspection Design Information Verification Inspection
10 May 2010	Olympic Dam	Complementary Access

The IAEA reported the outcomes of its safeguards inspections and complementary access in Australia, including comments on any inventory differences, in statements summarised in Appendix D. These statements confirm that all of Australia’s IAEA safeguards obligations were discharged satisfactorily and that relevant records had been maintained in accordance with prescribed practice.



ASNO and IAEA inspectors with ANSTO representatives during a routine inspection in November 2009



During the reporting period, some small inventory differences were reported to the IAEA. These were due to re-measurements of batches and rounding at various locations (e.g. hospitals and universities); there were no inventory differences at facilities of Lucas Heights. Details are provided in Table 8.

**TABLE 8: INVENTORY DIFFERENCES RECORDED DURING 2009-10**

Material Balance Area	Difference between Book and Physical Inventory	Comment
HIFAR (defuelled) MOATA Reactor (defuelled) ANSTO research laboratories ANSTO vault storage OPAL reactor Silex laboratories	none	Book inventory equalled the Physical Inventory
Other locations	0.01 kg Natural uranium	Rounding and re-measurement
	0.01 kg Depleted uranium	
	0.02 kg Thorium	



## OUTPUT 1.2: PHYSICAL PROTECTION

Protection of Australia's nuclear facilities, nuclear material and nuclear items against unauthorised access and sabotage. Internationally agreed physical protection standards applied to Australian Obligated Nuclear Material overseas.

### Performance Measures

- Physical protection of nuclear material, technology and facilities meets Australia's obligations under the Convention on the Physical Protection of Nuclear Material (CPPNM), bilateral agreements and IAEA guidelines
- Australian uranium at mines and in transit is properly protected
- Internationally agreed standards for the physical protection of nuclear material are applied to all AONM
- Proactive and professional contributions made to the development and effective international implementation of the CPPNM and associated physical protection guidelines

### Performance Assessment

#### International and Bilateral Obligations

ASNO's inspections confirmed that current physical protection arrangements for nuclear material in Australia were implemented satisfactorily in 2009–10 in accordance with Australia's obligations under the CPPNM, IAEA guidelines, relevant bilateral safeguards agreements and the *Nuclear Non-Proliferation (Safeguards) Act 1987*. ASNO also met Australia's international shipment notification obligations under the CPPNM.

#### Domestic Security of Australian Uranium

ASNO visited the Ranger, Olympic Dam and the under construction Honeymoon mines during the reporting period. Advice on ASNO's security requirements was provided to the operator of the Honeymoon mine in advance of its planned commencement in late 2010 or early 2011. ASNO will visit the Beverley mine late in 2010, in order to complete a security benchmarking exercise.

#### Exports of Australian Uranium

Reporting by conversion facilities, safeguards authorities and shipping agencies confirmed that all AONM transferred from Australia safely reached its destination. The physical protection measures specified for these transfers effectively contributed to this outcome.

ASNO continued to require exporters to adopt and report on specific procedures to ensure appropriate levels of physical protection for uranium ore concentrates (UOC) shipments from Australia to the port of unloading overseas. These procedures included checking



of the physical condition of the containers and verifying the integrity of the containers and seals at each port of unloading or transshipment to detect any breaches of physical protection.

ASNO continued to monitor the international maritime security environment, particularly the region around the Gulf of Aden, and consulted with other Government agencies on risk-mitigating measures, where necessary. ASNO continued its work with industry, other Government agencies, principally the Department of Resources, Energy and Tourism, and overseas counterparts to assist the industry with expanding the number of shipping services and routes available.

### **Nuclear Security at Lucas Heights**

ASNO, ARPANSA and ANSTO continued to work together on ANSTO's plan to rationalise its site security within the current HIFAR protected area, given that the HIFAR reactor is shut down and all the spent fuel has been shipped overseas. It was expected that ASNO would be ready to grant its final approval to remove the HIFAR protected area within 1–3 months.

### **Review of Recommendations for Nuclear Security**

In February 2010 Dr Stephan Bayer attended an open-ended meeting of all IAEA member states to consider the latest draft of the recommendations for physical protection of nuclear materials and facilities for the document on IAEA's Nuclear Security Series, also to be published as revision 5 of INFCIRC/225. After robust negotiations, the meeting endorsed the document proceeding for a 120-day review process by member states, which closes on 11 August 2010. The other two recommendations level documents (on protection of radioactive materials and for material out of regulatory control) will also conclude a 120-day review process on 11 August 2010.

### **International Nuclear Security**

During 21–22 January 2010, Dr Bayer attended a seminar on Strengthening Nuclear Security in Asian Countries in Tokyo, Japan. The seminar was organised by the Ministry of Foreign Affairs of Japan and the IAEA, and included representatives from 16 countries. Dr Bayer gave a presentation on nuclear security in South-East Asia, encouraging States to join International nuclear security instruments and promoting capacity building in nuclear security to match any nuclear power ambitions.



## OUTPUT 1.3: BILATERAL SAFEGUARDS

Nuclear material and associated items exported from Australia under bilateral agreements remain in exclusively peaceful use.

### Performance Measures

- AONM is accounted for in accordance with the procedures and standards prescribed under relevant bilateral agreements
- Implementing arrangements for the bilateral agreements are reviewed and revised as necessary to ensure their continuing effectiveness

### Performance Assessment

#### Australian Obligated Nuclear Material

On the basis of reports from bilateral treaty partners, other information and analysis, ASNO concluded that all AONM is satisfactorily accounted for. The IAEA validated through its transit matching system that, as at 1 May 2010, there were no unconfirmed nuclear material shipments to or from Australia. Based on the IAEA's Safeguards Statement for 2009, and ASNO's analysis of reports and other information from counterparts on AONM located overseas, ASNO concludes that no AONM was used for non-peaceful purposes in 2009–10. A copy of the IAEA's Safeguards Statement for 2009 is located at Appendix E.



ASNO and IAEA Inspectors conduct verification activities at ANSTO, May 2010



TABLE 9: SUMMARY OF AONM BY CATEGORY, QUANTITY AND LOCATION AT 31 DECEMBER 2009<sup>18</sup>

Category	Location	Tonnes <sup>19</sup>
Depleted Uranium	European Union, Japan, Republic of Korea, United States	96,627
Natural Uranium	Canada, European Union, Japan, Republic of Korea, China, United States	24,926
Uranium in Enrichment Plants	European Union, Japan, United States	23,490
Low Enriched Uranium <sup>20</sup>	Canada, European Union, Japan, Mexico, Republic of Korea, Switzerland, United States, Taiwan	13,968
Irradiated Plutonium <sup>21</sup>	Canada, European Union, Japan, Mexico, Republic of Korea, Switzerland, United States	127
Separated Plutonium <sup>22</sup>	European Union, Japan	1.7
<b>TOTAL</b>		<b>159,139</b>

During the reporting period, Australia exported 7 555 tonnes<sup>23</sup> of UOC—U<sub>3</sub>O<sub>8</sub> or U<sub>3</sub>O<sub>8</sub> equivalent—in 57 shipments from the Ranger mine, Northern Territory, and the Olympic Dam and Beverley mines in South Australia. This corresponds to 6 407 tonnes of contained uranium.

TABLE 10: SUPPLY OF AUSTRALIAN URANIUM TO CUSTOMERS DURING 2009—AS DELIVERED TO CUSTOMERS' CONVERTER ACCOUNTS

Region	Tonnes UOC (U <sub>3</sub> O <sub>8</sub> )	% of Total
North America	3 929	35.5
Europe	3 641	32.9
Asia	3 491	31.6
<b>TOTAL</b>	<b>11 061</b>	<b>100.0</b>

(Source: Uranium Industry Section, Department of Resources, Energy and Tourism. Individual country information is not provided in order protect commercial confidentiality)

- 18 Figures are based on yearly reports to ASNO in accordance with Australia's bilateral agreements and other information held by ASNO.
- 19 All quantities are given as tonnes weight of the element uranium, plutonium or thorium. The isotope weight of <sup>235</sup>U is 0.711% of the element weight for natural uranium and from 1 to 5% for low enriched uranium.
- 20 An estimated 80–90% of Australian obligated low enriched uranium is in the form of spent reactor fuel.
- 21 Almost all Australian-obligated plutonium is irradiated, i.e. contained in irradiated power reactor fuel or plutonium reloaded in a power reactor following reprocessing.
- 22 Separated plutonium is plutonium recovered from reprocessing, before return to reactors for re-use in reactors for further power generation. This plutonium is used for reactor fuel after being mixed with uranium—termed mixed oxide (MOX) fuel. A significant proportion of Australian obligated separated plutonium is stored as MOX. Separated plutonium holdings fluctuate as plutonium is fabricated as MOX fuel and returned to reactors. On return to reactors the plutonium returns to the "irradiated plutonium" category. During 2009 0.5 tonnes Australian-obligated plutonium was fabricated into MOX fuel and transferred to reactors.
- 23 This figure is for the financial year 2009–10, so is different to the quantity received by end-users (see Table 10) which is for the calendar year 2009.



TABLE 11: SUMMARY OF AONM TRANSFERS, DURING 2009<sup>24</sup>

	Destination	U (tonnes)
Conversion	Canada	1175
	China	294
	European Union <sup>25</sup>	3622
	United States	4678
Enrichment	European Union	1807
	United States	63
Fuel Fabrication	Japan	134
	Republic of Korea	95
	United States	291
	European Union	30
Reactor Irradiation	Japan	5
	Taiwan	22

The shipper's weight for each UOC consignment is entered on ASNO's record of AONM. These weights, subject to amendment by measured Shipper/Receiver Differences, are the basic source data for ASNO's system of accounting for AONM in the international nuclear fuel cycle. ASNO notified each export to the safeguards authorities in the relevant countries. In every case, those safeguards authorities confirmed to ASNO receipt of the shipment. ASNO also notified the IAEA of each export to non-nuclear-weapon states pursuant to Article 35(a) of Australia's IAEA safeguards agreement as well as to nuclear-weapon state under the IAEA's Voluntary Reporting Scheme. Receiving countries similarly reported receipts to the IAEA.

## Bilateral Agreements

### Reporting

Reports from ASNO's counterpart organisations were mostly received in a timely fashion and in the agreed format, which enabled analysis and reconciliation with ASNO's records. Figures provided in Table 10 and Table 11 are based on ASNO's analysis of all available information at the time of publication.

### Australia–Russia Nuclear Cooperation Agreement

On 18 March 2010, the Government tabled its response to the report from JSCOT on the Australia-Russia Nuclear Cooperation Agreement. The Government's view, as reflected in the response is that the Australia-Russia Nuclear Cooperation Agreement provides appropriate safeguards for the supply of Australian uranium for use in Russia's civil nuclear sector. In preparing its response to the JSCOT report, the Government consulted

<sup>24</sup> Figures are for transfers completed between jurisdictions from 1 January to 31 December 2009. Figures do not include transfers of AONM made within the fuel cycle of a state (or of Euratom), return of heels (residual UF<sub>6</sub> remaining in cylinders), or damaged product.

<sup>25</sup> Includes transfers from Cameco (Blind River Canada) to Springfields Fuels, Ltd (United Kingdom).



closely with the IAEA and other relevant governments, which have similar agreements in place with Russia. On 21 April 2010 during Foreign Minister Smith's visit to the Russian Federation, the Minister agreed with his counterpart Foreign Minister Sergey Lavrov, to bring into force the Australia-Russia Nuclear Cooperation Agreement and to use the Agreement to strengthen bilateral cooperation on nuclear policy and safeguards.

### **Australia–United States Cooperation Agreement**

Minister for Foreign Affairs, Mr Smith and United States Under Secretary of State for Arms Control and International Security Affairs, Ms Ellen Tauscher, signed a new Agreement between Australia and the United States of America concerning the Peaceful Uses of Nuclear Energy on 4 May 2010.

The new agreement was tabled in Parliament on 12 May 2010 and the JSCOT conducted a hearing into the agreement on 21 June in Canberra. The new agreement is to replace the existing safeguards agreement concluded in 1979 and which expires in January 2011. The new agreement is for an initial period of 30 years, but may be extended further.

The new agreement will extend and refine existing arrangements governing cooperation in the peaceful use of nuclear energy, including the application of non-proliferation safeguards and the security of nuclear material. Arrangements for technical cooperation will also be refined to more closely align with current activities between our two countries. The agreement also provides for the protection of intellectual property in connection with nuclear cooperation.

### **Australia–Euratom Cooperation Agreement**

As foreshadowed in last year's annual report, Australia's bilateral safeguards agreement with Euratom is set to expire in January 2012. Informal negotiations with Euratom on extending and expanding the current agreement continued with a view to conduct the first formal round of negotiations in the latter half of 2010.



## OUTPUT 1.4: INTERNATIONAL SAFEGUARDS AND NON-PROLIFERATION

Contribution to the development and effective implementation of international safeguards and the nuclear non-proliferation regime.

### Performance Measures

- Contribute to the strengthening of international safeguards in ways that advance Australia's interests
- Contribute to policy development and diplomatic activity by Department of Foreign Affairs and Trade
- Contribute to the IAEA's Standing Advisory Group on Safeguards Implementation (SAGSI)
- Manage the Australian Safeguards Support Program (ASSP)
- Cooperate with counterparts in other countries in the strengthening of international safeguards and improvement of domestic safeguards implementation
- Provide advice and assistance to the Australian Intelligence Community in support of national and international non-proliferation efforts
- Manage ASNO's international outreach program
- Assess developments in nuclear technology

### Performance Assessment

#### Strengthening International Safeguards

ASNO took an active role in the development and effective implementation of international safeguards during the reporting period. ASNO remained actively engaged with the IAEA at both management and operational levels, and participated in the Australian delegation to the IAEA Board of Governors meetings in September 2009 and June 2010. ASNO also participated in the 2009 IAEA General Conference and the biennial combined meeting of the various Member State Safeguards Support programs in March 2010. Other relevant meetings attended included a meeting on Advanced Safeguards Technology held in Japan in November 2009 and a first of its kind meeting on enrichment technology hosted by URENCO in the United Kingdom in December 2009. Continuing engagement in international safeguards forums ensured that ASNO is well-informed on developments and issues in safeguards. Active engagement with the IAEA ensured that ASNO's work program remained relevant to the international non-proliferation agenda.

ASNO assessed that the IAEA safeguards system effectively fulfilled its task of verifying the non-diversion of significant quantities of nuclear material subject to IAEA safeguards. The IAEA has noted that inadequately developed State Systems of Accountancy and Control in some states is an ongoing safeguards implementation issue. ASNO has sought to address this important issue by working with regional and international counterparts to develop the skills-levels of regional safeguards authorities through training and support.



## Contribution to DFAT policy development and diplomatic activity

A number of major safeguards issues arose during the year, and ASNO was well-placed to contribute to policy development and diplomatic activities to resolve these issues by providing analysis and advice.

ASNO has a close and supportive working relationship with the Australian Mission in Vienna, particularly with the Australian Ambassador in the role of Australian Governor on the IAEA Board of Governors. ASNO plays a major role in providing the Mission with timely and comprehensive advice on IAEA reports and briefing materials. ASNO analyses are frequently shared with the IAEA Secretariat and with like-minded governments in Vienna and other key capitals.

Issues dealt with by ASNO included:

- high level advice as Australia's Sherpa and Sous-sherpa for the Nuclear Security Summit
- Iran's safeguards breaches, including analysis of nuclear developments in Iran particularly in relation to uranium enrichment and advice to the Minister of Foreign Affairs on handling these issues in the IAEA Board of Governors and elsewhere
- assessment of nuclear developments in the DPRK
- Syria's reported undeclared reactor program.

## IAEA Standing Advisory Group on Safeguards Implementation

SAGSI is an international group of safeguards experts appointed by the IAEA Director General (DG) to advise the DG on safeguards issues. Dr Craig Everton, Senior Safeguards Officer, ASNO, was invited to become a member of SAGSI in 2009, and took part in one plenary meeting during the period covered by this report.

During the year SAGSI completed its review of the strategic objectives, structure and content of the IAEA's safeguards implementation reports (SIRs). The SAGSI review considered the safeguards details contained in SIRs and the SIR structure, with a view to enhancing the value of SIRs for informing IAEA Member States of the IAEA's safeguards activities.

Other topics examined by SAGSI during the year included:

- the long-term strategic planning process in the IAEA Department of Safeguards
- state-level safeguards implementation
- the starting point of safeguards as applied to uranium processing activities
- the safeguards significance of uranium derived from non-conventional sources of uranium
- intensity of safeguards effort in states under integrated safeguards
- cooperation with, and guidelines for State Systems of Accountancy and Control.



## Australian Safeguards Support Program

The resources available to the IAEA are not sufficient to allow all necessary safeguards R&D programs to be conducted 'in-house'. Safeguards are an evolving discipline and the Australian Safeguards Support Program (ASSP) assists the IAEA to develop the concepts, equipment and procedures needed to meet new challenges in a cost-effective way. The ASSP comprises collaborative work with ASNO and its counterparts and expert groups on a number of safeguards projects formally agreed with the IAEA. ASNO is the national manager for the ASSP, coordinating activities with other Australian agencies as well as undertaking several tasks internally. These projects are outlined below.

### Re-examination of basic safeguards implementation parameters

ASNO is in discussion with the IAEA about the next assignment to be undertaken under this important and long-standing task. Historically projects under this task have made a significant contribution to the effectiveness of safeguards and have also represented major professional development exercises for ASNO staff. During the reporting period the IAEA proposed a new sub-task under this umbrella task dealing with support for safeguards for new pyroprocessing technologies.

### Support for information review and evaluation

ASNO has worked with the IAEA's Division of Safeguards Information Management (SGIM) to improve access to open source information on nuclear activities and developments.

### Design information review and evaluation for the Pebble Bed Modular Reactor (PBMR)

In September 2005, ASNO accepted a task to evaluate the methods that could be used by the IAEA to verify the design information of the South African designed PBMR. Delays in the project have been explained in previous annual reports. In September 2009 this project was terminated by the IAEA.

### Analytical services for environmental sampling

Environmental sampling is an important safeguards measure that enhances the IAEA's capability to detect undeclared nuclear activities. Work on this important project is ongoing by ANSTO.

### Experimental investigation of behaviour of trace elements in uranium during the concentration and conversion processes

In 2008, ANSTO agreed to take on a new support program task relating to the way in which trace element concentrations change as material enters the front end of the fuel cycle. This project is expected to take up to three years. The IAEA is hopeful that this work will contribute substantively to efforts to determine the origin of material found during inspection activities ('nuclear forensics'—tracing materials back to their points of origin). There has been no progress on this task during the reporting period.



### **Updates to fuel cycle manuals**

In 2008, the IAEA proposed a task related to updating elements of the basic fuel cycle training manuals used in the training of IAEA inspectors. The IAEA requested Australian assistance with the preparation of a new manual relating to the mining and milling of uranium. As reported last year the IAEA is continuing to assess the material to ensure that it reflects current mining practices. ASNO hopes to produce a new draft on the basis of IAEA feedback in the next reporting period.

### **Proliferation Analysis Workshop**

A Proliferation Analysis Workshop was conducted by the ASSP with the IAEA's Safeguards Training Section from 15–17 June 2010 in Vienna. The workshop participants were senior inspectors and analysts from both the IAEA Safeguards Department's operations and support divisions. The Australian team consisted of three analysts from the Department of Defence, one from the Office of National Assessments, one from the Attorney-General's Department and two from ASNO. The Australian Permanent Mission to the IAEA provided active support and assistance for the running of the workshop.

The focus of the workshop was on 'tradeecraft' for proliferation analysis. Participants explored not just analytical tools, but also the techniques for combining information from disparate sources to provide an overall picture of the objects of study. The IAEA expects that these workshops will enhance the analytical culture, information exchange and capabilities both in SGIM and operations divisions.

### **New Australian Safeguards Support Program tasks in the reporting period**

#### **Network of analytical laboratories**

The University of Western Australia (UWA) installed a Cameca IMS 1280 large-geometry ion microprobe during the reporting period and is now seeking to join the IAEA's Network of Analytical Laboratories. Preliminary tests, in collaboration with the European Commission's Institute for Transuranium Elements (ITU), indicate that this state-of-the-art instrument combined with new particle search software will provide an enhanced analytical capability in support of the IAEA's ongoing work. This initiative by the UWA in support of the IAEA is a useful illustration of Australia's long-term efforts to seek synergies between Australia's long-term national research priorities and the needs of the IAEA. The UWA has made the large-scale investment in the microprobe as a research capability, but is prepared to devote a proportion of this new capability to support the IAEA's safeguards mission. This work will benefit both Australia and the IAEA.

#### **Support for novel technologies**

ASSP agreed to accept an umbrella task covering support for the IAEA's development of novel technologies during the reporting period. The Novel Technologies Project was established to develop and evaluate effective techniques, meeting IAEA needs, which can be incorporated within safeguards approaches to search for, and to detect evidence of, undeclared nuclear fuel-cycle activities, particularly at undeclared locations. To that end, the project will continue to conduct surveys to identify safeguards needs that cannot be



met with available techniques, broaden technical collaboration with other non-proliferation organisations and the international R&D sector and, where required, initiate further tasks that will lead to safeguards-useable methods and instruments.

### Cooperation with other State Parties

ASNO actively strengthened its contacts with other safeguards agencies and international safeguards practitioners, including from China, Indonesia, Malaysia, Japan, Republic of Korea, Thailand, Vietnam, the United Kingdom and the United States.

ASNO staff presented papers at the July 2009, Institute of Nuclear Materials Management Annual Meeting, in Tucson in the United States, and at a regional workshop on the 'nuclear renaissance' hosted by the National University of Malaysia and Tokyo University in Bangi, Malaysia.

### International Outreach

ASNO continued its international outreach activities to assist countries in the region with the fulfilment of their non-proliferation and physical protection obligations. Training has been provided to professionals in countries in the Asia-Pacific region over the past 12 months. All of this work was well received and led to requests for further assistance.

Key contributions included:

- Chairing the first meeting of APSN
- lectures by ASNO officials at national and international training activities in Indonesia, Japan, Malaysia, the Republic of Korea, the United States, and Vietnam.



## OUTPUT 1.5: CWC IMPLEMENTATION

Regulation and reporting of Australian chemical activities in accordance with the Chemical Weapons Convention, and strengthening international implementation of the Convention.

### Performance Measures

- Australia's obligations under the Chemical Weapons Convention (CWC) are met
- Effective regulation of CWC-related activities in Australia, involving the chemical industry, research and trade
- Contribute to strengthening CWC verification and implementation, including through cooperation with the Organisation for the Prohibition of Chemical Weapons (OPCW) and with CWC States Parties
- Contribute to enhancing regional CWC implementation through targeted outreach

### Performance Assessment

#### Meeting CWC Obligations

ASNO maintained Australia's strong record of performance in meeting its CWC obligations. Accurate and timely annual declarations and notifications were provided to the OPCW as follows:

- Declaration of imports and exports of CWC-Scheduled chemicals and of the 46 facilities with CWC-relevant chemical production, processing or consumption activities during 2009 (declared in March 2010).
- Article VI declaration of anticipated activities of 10 CWC-Scheduled chemical facilities during 2010 (declared in September and October 2009).
- Article X, paragraph 4, declaration of Australia's national programs for protection against chemical weapons (declared in April 2010).
- Verification Annex, Part IV(B) declaration of the recovery of 144 old chemical weapon (OCW) projectiles, of United States origin, buried after WWII at Columboola, Queensland (declared in Nov 2009).
- Responses to OPCW Third Person Notes including routine clarification of the operational status of chemical plants.
- Routine responses to OPCW notifications and amendments/corrections to inspector details and deletions or additions to the OPCW inspectorate.

The OPCW has conducted 32 Article VI routine facility inspections to verify declarations since 1997. One of these inspections was a subsequent inspection during the reporting period at a Schedule 3 production facility in Western Australia. Two inspections at 'other chemical production facilities' which were to occur sequentially in April 2010 were cancelled due to OPCW travel ban resulting from the volcanic eruption in Iceland.





*Facility and ASNO representatives with the OPCW Inspection Team during a routine industry inspection at a chemical plant in Western Australia, June 2010*

The Schedule 3 inspection proceeded smoothly and the OPCW Inspection Team verified Australia's declaration as well as the absence of undeclared CWC-Scheduled chemical production, in accordance with the inspection mandate. ASNO facilitated this inspection and was most appreciative of the support and cooperation by industry during the inspection.

### Legislation and Regulation

The permit systems under the *Chemical Weapons (Prohibition) Act 1994* and Regulation 5J of the *Customs (Prohibited Imports) Regulations 1956*, continued to operate well. Table 12 provides statistics for permits issued as of 30 June 2010 and permit activities during the reporting period.



TABLE 12: PERMITS FOR CWC-SCHEDULED CHEMICAL FACILITIES AND IMPORTERS

CWC-Scheduled Chemicals	CW(P) Act 1994	Type	Permits at 30 June 2010	New Permits issued 2009–10	Renewed Permits 2009–10	Permits not renewed 2009–10*	Import Permits 2009–10
Schedule 1	s19(4)	Production (Protective)	1				2
	s19(5)	Production (Research)	8		2	1	
	s19(6)	Consumption	7				
Schedule 2	s18(1)	Processing	11	3		2	57
	s18(1)	Consumption	1				
Schedule 3	s18(1)	Production	3				

\*Permits which have been cancelled or expired and were no longer required.

## Cooperation with the OPCW and CWC States Parties

ASNO continued to provide input to discussions at the OPCW regarding the technical aspects of the CWC's declaration and verification provisions, which were not fully defined at entry into force of the CWC. ASNO has worked to make verification as practical and effective as possible, taking into account risk-benefit considerations.

ASNO has provided ongoing technical advice to Australia's representatives to the OPCW, who have been actively involved in consultations on enhancing the site selection methodology for other chemical production facilities (OCPFs), and the establishment of guidelines on low concentration thresholds for declarations of Schedule 2A/2A\* chemicals. A final decision on these guidelines was agreed at the 14th Conference of the States Parties (C-14/DEC.4 dated 2 December 2009). Given that consultations had spanned for more than a decade, reaching agreement on these guidelines was a significant achievement.

Consultations on OCPF inspections are still ongoing, and there was real progress to improve the methodology during the reporting period. Australia is one of a number of countries that has introduced product subcategory codes (Declarations Handbook in 2008) into annual declarations to help ensure that lower risk dedicated continuous plants are less likely to be inspected than other types of chemical production facilities. However, the OPCW is yet to implement the new product subcategory codes into the OCPF site selection methodology, despite the need for more effective targeting of OCPF sites being inspected.

Australia worked closely with the Australian chemical industry and other State Parties during the reporting period on issues discussed at industry consultations at the OPCW, including proposals to enhance the declaration template for OCPFs and thereby improve the OCPF site selection methodology.

Australian experts from ASNO and the Defence Science and Technology Organisation attended the following meetings held in The Hague: the Workshop on matters relating to OCPFs (25–26 November 2009); the 11th Annual Meeting of CWC National Authorities (27–28 November 2009); and the 14th Conference of the States Parties (30 November –



4 December 2009). ASNO also participated in the annual meeting of the Australia Group held in Paris, 31 May – 4 June 2010.

Australia worked to enhance the OPCW's role in reducing the threat of, and in preparing to respond to chemical terrorism, including by contributing to discussions in the OPCW's Open-Ended Working Group on Terrorism (OEWT). Under the guidance and leadership of the Australian facilitator (Deputy Head of Mission at The Hague), the OEWT succeeded in prompting the 60th Session of the OPCW Executive Council to reaffirm the OEWT's mandate to review the OPCW's contribution to global anti-terrorism, with a view to recommending additional measures, and for the OPCW Director-General to report on the matter annually.

Between June and July 2009, civilian contractors discovered 144 corroded World War II old chemical weapon projectiles (United States origin), during remediation of a coal mining site at Columboola Queensland. The projectiles were packed and securely stored, as analysis of several munitions indicated the presence of the chemical agent sulphur mustard. ASNO worked with its Defence counterparts to prepare and submit Australia's declaration of the discovery to the OPCW in accordance with the CWC. ASNO, requested United States assistance with preparations for destruction of the munitions which is expected to take place in 2011. United States experts have been working closely with Defence to make preparations for assessment of the projectiles using X-ray and Portable Isotopic Neutron Spectroscopy (PINS) analysis to determine whether there are any explosives or chemical warfare agents inside the chemical weapon projectiles.



*Old empty WWII chemical weapon projectiles uncovered at Columboola, Queensland.  
Photo courtesy of the Department of Defence.*





*Representatives from ASNO and the Defence Science and Technology Organisation at the old chemical weapons storage site in Columboola, Queensland.*

The 14th Conference of the States Parties appointed Ambassador Ahmet Üzümcü of Turkey as the new OPCW Director-General, who took up the position just after the reporting period on 25 July 2010. Ambassador Üzümcü succeeds Ambassador Rogelio Pfirter of Argentina, as the third person to hold this position since 1997.

### International Outreach

ASNO continued to exchange chemical trade data regarding CWC-Scheduled chemicals with key trading countries to improve the quality and accuracy of their respective declarations to the OPCW. ASNO attended the 7th Regional Meeting of National Authorities of States Parties in Asia, Hanoi, Vietnam from 28–30 October 2009. This meeting provided an opportunity to share Australia's experience with facilitating routine OPCW inspections, including sampling and analysis and Australia's system for regulating trade in CWC-Scheduled chemicals.





*Participants at the 7th Regional Meeting of National Authorities of States Parties in Asia, Hanoi, Vietnam, 28-30 October 2009.*

## Domestic Outreach

ASNO undertook consultation and outreach with several chemical facilities to strengthen collaboration with industry. The on-site visits focused on promoting greater awareness of the CWC, regulatory obligations and preparing industrial sites for possible OPCW inspections.

ASNO attended relevant meetings of the National Government Advisory Group with other Australian Government, State and Territory representatives to implement a program to prevent terrorist access to chemicals of security concern in Australia.

ASNO continued to monitor Australian Bureau of Statistics (ABS) chemical trade data and liaised with Customs to reduce the frequency of occurrence of misclassified chemicals. Customs has taken measures to address this issue by ensuring that correct codes are applied to chemical trade. Such measures help detect unauthorised trade and improve the accuracy of trade statistics for CWC-Scheduled chemicals published by the ABS.



## OUTPUT 1.6: CTBT IMPLEMENTATION

### Development of verification systems and arrangements in support of Australia's commitments related to the Comprehensive Nuclear-Test-Ban Treaty.

#### Performance Measures

- Australia's obligations under the Comprehensive Nuclear-Test-Ban Treaty (CTBT) are met
- Legal and administrative mechanisms which support Australia's commitments related to the CTBT are effective
- Contribute to the development of CTBT verification, including through the work of the CTBT Organization (CTBTO) Preparatory Commission
- Contribute to Australia's CTBT outreach efforts

#### Performance Assessment

##### International Obligations

Of the 21 facilities that Australia will host for the CTBT International Monitoring System (IMS), 17 are in place and certified as operating to CTBTO technical specifications. A list of Australia's IMS facilities and their status is at Appendix F.

Specific advances during 2009–10 in relation to Australian hosted IMS stations included plans to construct:

- radionuclide monitoring stations at Macquarie Island and Mawson Base, Australian Antarctic Territory. The Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) is beginning installation work at Macquarie Island in 2010 and at expects to commence work at Mawson in 2011. During the year, ASNO continued consultation with the Tasmanian Government on acquiring land interests for the Macquarie Island station under the *Lands Acquisition Act 1989*
- an infrasound monitoring station on the Cocos Islands. Installation is planned for 2011.

The final Australian IMS station, at Davis Base, Australian Antarctic Territory requires considerable planning and preparation, and will take several years to complete.

##### Legal and Administrative Measures

ASNO continues to fund Geoscience Australia (GA) to carry out nuclear test monitoring through its network of seismic stations. This arrangement, set out in a Letter of Understanding between GA and DFAT, has been administered by ASNO on behalf of DFAT since 1 July 2000. ASNO is satisfied that GA has met its requirements during the reporting period. ASNO and GA also reviewed the arrangement during the reporting year and found that the arrangement remains satisfactory for Australia's requirements at this time.





*The CTBTO's technical working group discusses on-site inspection procedures, led by ASNO's Malcolm Coxhead, Director CTBT Implementation—photo courtesy of CTBTO Preparatory Commission*

The operation of a National Data Centre (NDC), to verify an in-force CTBT will require additional activities. ASNO, ARPANSA and GA, working with the Department of Defence, commenced a review of Australia's future NDC requirements.

As well as use for Treaty verification, data from the CTBT's monitoring system has the potential to contribute to civil and scientific purposes. Following the 2004 Boxing Day tsunami, the CTBTO, Australia and other states recognised the contribution of data from the IMS could make to the early detection of seismic events which could trigger a tsunami. In 2005, 'test' arrangements were agreed for the release of selected IMS data to tsunami warning organisations, including the Joint Australian Tsunami Warning Centre (JATWC). During the year Australia signed a long-term arrangement with the CTBTO for release of IMS data to the JATWC. The arrangement allows the provision of primary seismic, auxiliary seismic and hydroacoustic data to the JATWC.

## Nuclear Test Ban Verification

While more than 80 per cent of CTBT IMS stations are now in place, further preparatory work is needed to bring the Treaty's verification to a good level of readiness. ASNO continues to contribute to the verification work of the CTBTO in conjunction with Australia's permanent Mission in Vienna, and with technical specialists from GA and ARPANSA.

When the CTBT enters into force, it will provide for on-site inspections (OSI) to determine whether a nuclear explosion has taken place in a particular area. ASNO's Malcolm Coxhead, as the Task Leader for the elaboration of an Operational Manual on the conduct of OSI, continued to chair discussions on this subject at the CTBTO Preparatory Commission's technical working group. Progress towards a final draft text has continued, although the time available for discussions in 2009–10 was less than in previous years.



Consistent with principles set out in the CTBT, activities associated with the development of CTBT verification are funded primarily from the contributions of States Signatories. This includes training of people involved with the work of the Treaty. ASNO coordinates the involvement of Australians in this training and during the year, two Australians participated in these activities.

## Outreach

Judgements about compliance with the CTBT will be made by Parties to the Treaty, based on technical analysis carried out by NDCs. If the CTBT is to work well, it is important that as many countries as possible establish an effective NDC capability. During 17–20 May 2010, ASNO and GA co-hosted a workshop for countries in the Asia-Pacific region, to discuss and promote the development of NDCs. A total of 19 countries were represented, as well as representation from UNESCO and CTBTO.



*Participants in the NDC Development Workshop, Canberra, May 2010*



## OUTPUT 1.7: OTHER NON-PROLIFERATION REGIMES

Contribution to the development and strengthening of other weapons of mass destruction non-proliferation regimes.

### Performance Measures

- Provide support and assistance to Australia's Permanent Mission to the Conference on Disarmament (CD) in Geneva in their efforts to advance Australia's non-proliferation and disarmament objectives, in particular, on the negotiation of an internationally verifiable fissile material cut-off treaty (FMCT)
- Follow and support other developments in the field of non-proliferation and disarmament that are relevant to Australia's interests

### Performance Assessment

#### Nuclear Suppliers Group

An ASNO staff member attended the Nuclear Suppliers Group (NSG) meeting held in Christchurch, New Zealand in June 2010. ASNO provided oral and written briefing materials and technical papers to support Australia's delegation and through consultations with international counterparts. A particular area of focus was on the development of strengthened criteria for the transfer of sensitive nuclear fuel cycle technology. The NSG's consideration of this subject is ongoing.

#### Fissile Material Cut-Off Treaty

In May 2009, the CD agreed to proceed with negotiation of a verifiable FMCT, a treaty that will prohibit the production of fissile material for nuclear weapons. However, one member of the CD succeeded in blocking the implementation of the agreement to commence negotiations of an FMCT.

A key component of FMCT negotiations will be the technical challenges associated with verification. ASNO is recognised internationally as an authority on verification aspects of an FMCT. ASNO has prepared and circulated a non-paper on how verification could work under an FMCT. The utility of this non-paper has been recognised by a number of countries as a useful articulation of the key issues that will need to be addressed during negotiations.

Although progress in the CD on an FMCT has remained elusive, the CD agreed to limited expert discussions of substantive issues for a treaty. ASNO participated in the discussions, which took place on 8 June 2010 in Geneva.



## OUTPUT 1.8: ADVICE TO GOVERNMENT

Provision of high quality, timely, relevant and professional advice to Government.

### Performance Measures

- Provide policy advice, analysis and briefings which meet the needs of Ministers and other key stakeholders
- Contribute to the development of Australia's policies by DFAT in the area of WMD arms control, disarmament and non-proliferation
- Cooperate on technical issues of common interest with departments and agencies such as ANSTO, ARPANSA, Department of Defence, Department of Resources, Energy and Tourism, and the Australian Intelligence Community

### Performance Assessment

ASNO has specialist knowledge in complex policy and technical areas dealing with nuclear non-proliferation, and has substantial experience in: verification methods; domestic, bilateral and international safeguards; nuclear technology and the nuclear fuel cycle; nuclear security; and CWC and CTBT verification issues. ASNO draws on this expertise and an international network of contacts in agencies and organisations to provide high quality technical and policy advice to Government and other bodies. ASNO provides the Government with advice on nuclear non-proliferation safeguards, from both international and domestic perspectives, together with expert advice across the range of WMD technologies.

During the year ASNO provided advice and analysis on a range of non-proliferation issues and developments. ASNO has analysed and reported on nuclear programs of concern, in particular that of Iran, but also developments in Syria, DPRK and Burma. Advice and support on Australia's contribution to the Nuclear Security Summit has been a major task during the year. Other multilateral priorities on which ASNO has advised included the NPT Review Conference, and efforts to promote entry into force of the CTBT and negotiations on an FMCT. In connection with Australia's bilateral nuclear safeguards agreements, ASNO has provided advice on new agreements with the United States, Russia and Euratom. ASNO prepared approximately 61 ministerial submissions during the year, and provided submissions and oral briefing for Ministers, departments and Parliament on specific issues, including to the JSCOT on the new nuclear safeguards agreement with the United States.

ASNO provided special briefing and additional assistance to the Australian Missions to the IAEA and CTBTO (in Vienna), to the OPCW (in The Hague) and to the CD (in Geneva), as well as to Australian missions elsewhere, particularly in Washington, London, Moscow, and Beijing.



ASNO has worked closely with other departments on a range of issues, including destruction of old chemical weapons, maritime security and to ongoing development of CTBT verification. ASNO participates in the transport working group of the Uranium Industry Framework, a government-industry forum coordinated by the Department of Resources, Energy and Tourism, designed to assist in the development of a sustainable, safe, secure, socially and environmentally responsible uranium industry. The goal of the transport working group is to address impediments to transport of uranium, both domestically and internationally.



## OUTPUT 2.1: PUBLIC INFORMATION

Provision of public information on the development, implementation and regulation of weapons of mass destruction non-proliferation regimes, and Australia's role in these activities.

### Performance Measures

- Effective public education and outreach

### Performance Assessment

ASNO works to ensure Australia's WMD non-proliferation objectives are widely understood. This involves liaison with industry, tertiary institutions and non-governmental institutions, including presentations at various national and international fora. Activities during the year through which ASNO pursued public information objectives included:

- The annual conference of the Australasian Institute of Mining and Metallurgy in June 2010
- the Uranium Regulation Industry Briefing hosted by the Western Australian Department of Mines and Petroleum, July 2009
- a Strategic Policy Forum: Asia's Nuclear Future and Policy Options for Australia, in April 2010 hosted by the Australian Strategic Policy Institute.

ASNO continued its series of seminars on non-proliferation issues for government officials. The aim of the seminars is to provide clear, understandable and accurate information on concepts relevant to officials involved in Australia's broader non-proliferation and counter-proliferation efforts.

ASNO has an active program of preparing papers and presentations for conferences and professional journals. Many of these are available on ASNO's website. Details can be found in Appendix G.

ASNO's website, [www.dfat.gov.au/asno/](http://www.dfat.gov.au/asno/), provides detailed information on Australia's non-proliferation policies, treaty and statutory obligations and safeguards agreements as well as notification and permit application forms. The Current Topics section of this, and previous ASNO Annual Reports, is included as a public information source.





# MANAGEMENT AND ACCOUNTABILITY SECTION 5





# MANAGEMENT AND ACCOUNTABILITY

## **Corporate Governance**

Portfolio Minister

Director General ASNO

Assistant Secretary ASNO

ASNO Staff

ASNO Administrative Review

Training and Development

## **Financial Management**

Administrative Budget

Uranium Producers Charge

Australian Safeguards Support Program

Environmental Management System (EMS)



# MANAGEMENT AND ACCOUNTABILITY

## CORPORATE GOVERNANCE

### Portfolio Minister

Responsibility for administration of the legislation under which ASNO operates—the *Nuclear Non-Proliferation (Safeguards) Act 1987*, *Non-Proliferation Legislation Amendment Act 2003*, *Non-Proliferation Legislation Amendment Act 2007*, *Chemical Weapons (Prohibition) Act 1994* and *Comprehensive Nuclear-Test-Ban Treaty Act 1998*—rests with the Minister for Foreign Affairs, Mr Stephen Smith MP.

### Director General ASNO

The Director General ASNO reports directly to the Minister for Foreign Affairs. The position combines the statutory offices of the:

- Director of the national authority for nuclear safeguards (formerly Director of Safeguards), as established by the *Nuclear Non-Proliferation (Safeguards) Act 1987*
- Director of the national authority for the Chemical Weapons Convention, as established by the *Chemical Weapons (Prohibition) Act 1994*
- Director of the national authority for the Comprehensive Nuclear-Test-Ban Treaty, as established by the *Comprehensive Nuclear Test-Ban Treaty Act 1998*.

The Director General ASNO is a statutory position, appointed by the Governor-General. Remuneration for this position is determined by the Remuneration Tribunal.

Mr John Carlson, has held the position of Director General ASNO since the establishment of ASNO on 31 August 1998, having previously held the position of Director of Safeguards since 1989. Mr Carlson's current term of appointment will expire on 30 September 2010.

### Assistant Secretary ASNO

The Assistant Secretary, ASNO, deputises for the Director General and is responsible for the day-to-day operations of the office. Dr Geoffrey Shaw held this position from January 2008 to February 2010. Dr John Kalish commenced in the position as Assistant Secretary in April 2010.

### ASNO Staff

ASNO has a small core of staff whose day-to-day operations are overseen by the Director General. ASNO staff are employed under the Public Service Act 1999 as a division within the Department of Foreign Affairs and Trade (DFAT). ASNO staff other than the Director General, are also employed under the DFAT Certified Agreement. Further details are in Table 13.

In 2009–10 ASNO achieved an average staff level of 15.2 (against an approved level of 15.5).



FIGURE 7: ASNO'S ORGANISATIONAL STRUCTURE (AS AT 30 JUNE 2010)

ASNO Administrative Review

In 2009 ASNO commenced a detailed review of its administrative processes, and implementation of a quality management system, to ensure ASNO processes are fully accountable, effective, efficient and meet ASNO's goals and responsibilities. The service of an external consultant was engaged to assist with this process. The first stage of the review focused on accounting for AONM. Further stages covered the nuclear permit system, inspections, reporting to the IAEA and ultimately all of ASNO's functions.

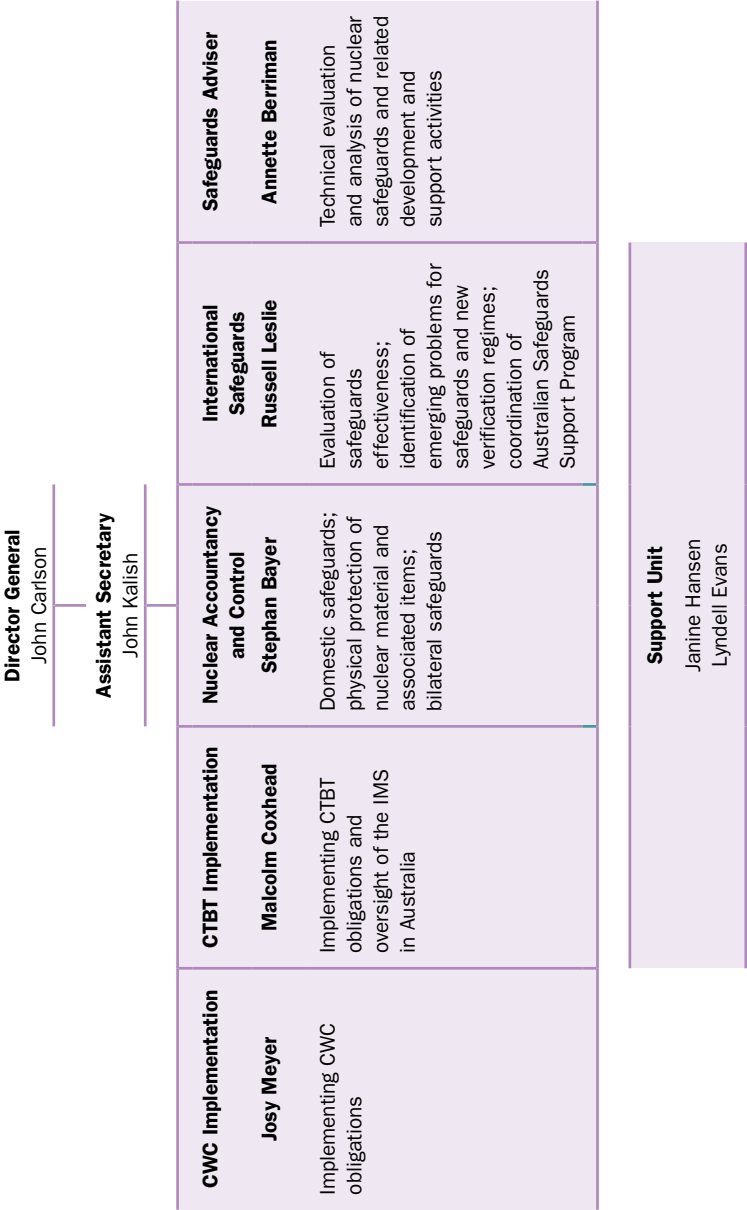




TABLE 13: ASNO STAFF AT 30 JUNE 2010

	Male	Female	Total (Approved)
SES B2	1	0	1 (1)
SES B1	1	0	1 (1)
Executive Level 2	3	2	5 (5)
Executive Level 1	2	1	3 (2.5)
APS Level 6	1	1	2 (3)
APS Level 5	0	1	1 (0)
APS Level 4	1	1	2 (3)
<b>TOTAL</b>	<b>9</b>	<b>6</b>	<b>15 (15.5)</b>

## Training and Development

ASNO's primary training requirements are professional development of specialist skills. ASNO is proactive in managing this training, in part through a schedule of conference programs. Further details are in Table 14.

TABLE 14: TRAINING AND DEVELOPMENT ACTIVITIES

Training and Development Activity	Person Days
Formal DFAT courses	14
Structured work unit & on-the-job training including planning days	0
Seminars, workshops, conferences, overseas negotiations	52
External formal courses	9
Academic study	34.5
Other (IAEA Consultancy)	0
<b>TOTAL</b>	<b>109.5</b>

## FINANCIAL MANAGEMENT

The *Audit Act 2001* requires ASNO to submit an annual Financial Statement to the Auditor-General. As ASNO is funded as a division of DFAT, this financial statement is published in the DFAT Annual Report. Further details of ASNO activities relating to financial management and performance are also contained in the DFAT Annual Report.



## Administrative Budget

TABLE 15: ASNO ADMINISTRATIVE COSTS<sup>26</sup>

		2008-09	2009-10
Salaries <sup>27</sup>		\$ 1 847 224	\$1 996 176
Running Costs	General	\$361 168	\$365 085
	Seismic monitoring <sup>28</sup>	\$579 860	\$587 108
	Nuclear & radiological security enhancement for Asia and the Pacific	\$246 566	\$294 901
	Sub-Total	\$1 187 594	\$1 247 094
<b>TOTAL</b>		<b>\$3 034 818</b>	<b>\$3 243 270</b>

## Uranium Producers Charge

ASNO is responsible for the implementation of the Uranium Producers Charge. This charge is payable to Consolidated Revenue on each kilogram of UOC production (set in 2009 to 6.0570 cents per kilogram). The charge collected in 2009-10 was \$528,244.

## Australian Safeguards Support Program

The cost of the Australian Safeguards Support Program (ASSP) totalled approximately \$450,000 in 2010-11. This amount included approximately \$100,000 of direct expenditure by ASNO relating to services provided to the IAEA, including participation in SAGSI (total includes travel costs and salaries). Expenditure on ASSP projects by ANSTO amounted to approximately \$235,000. The University of Western Australia incurred costs totaling \$25,179. Other Australian Government agencies contributed services in support of the IAEA through the ASSP valued at approximately \$90,000.

## Environmental Management System

Under coverage of DFAT, ASNO has continued its Environmental Management System (EMS). Negative impacts on the environment are being reduced further with improvements in methods of waste recycling and the re-use of materials. ASNO continues to provide input into the development of programs and processes as a continuing member of the DFAT EMS committee. ASNO also provides specialist advice on the licensing, storage and disposal requirements for radioactive sources. In May 2009, DFAT was audited by an accredited certifying body, NCS International, against the International Standard for Environmental Management Systems, ISO 14001:2004. Following this, DFAT received certification to the International Standard in June 2009 for a further three year period.




DFAT, including ASNO remains focused on its EMS. New innovations in lighting (sensors in low traffic areas), paper and food scrap recycling continue to reduce DFAT's environmental footprint.

<sup>26</sup> Excludes GST.

<sup>27</sup> Includes Long Service Leave accruals.

<sup>28</sup> Undertaken by Geoscience Australia.





# APPENDICES, LIST OF REQUIREMENTS, GLOSSARY, INDEX SECTION 6



**Appendices**

Appendix A	World Nuclear Energy, June 2010
Appendix B	Australia's Bilateral Safeguards Agreements
Appendix C	Status of Additional Protocols
Appendix D	IAEA Statements of Conclusions for Australia 2009
Appendix E	IAEA Safeguards Statement for 2009
Appendix F	Status of CTBT IMS Facilities in Australia
Appendix G	Freedom of Information Statement

**List of Requirements****Glossary****Index**



## APPENDIX A

## WORLD NUCLEAR ENERGY, JUNE 2010

TABLE 16: WORLD NUCLEAR ENERGY, JUNE 2010<sup>29</sup>

	Operating Reactors		% of Total Electricity in 2009	Reactors under Construction	
	Total	Capacity (GWe)		Total	Capacity (GWe)
United States*	104	100.7	20.2	1	1.2
France*	58	63.1	75.2	1	1.6
Japan*	54	46.8	28.9	1	1.3
Russian Federation	32	22.7	17.8	11	9.2
Germany*	17	20.5	26.1	0	0
Republic of Korea*	20	17.7	34.8	6	6.5
Ukraine	15	13.1	48.6	2	1.9
Canada*	18	12.6	14.8	0	0
United Kingdom*	19	10.1	17.9	0	0
Sweden*	10	9.3	37.4	0	0
China*	11	8.4	1.9	24	24.6
Spain*	8	7.5	17.5	0	0
Belgium*	7	5.9	51.7	0	0
Taiwan* <sup>30</sup>	6	5.0	20.7	2	2.6
India	19	4.2	2.2	4	2.5
Czech Republic*	6	3.7	33.8	0	0
Switzerland*	5	3.2	39.5	0	0
Finland*	4	2.7	32.9	1	1.6
Bulgaria*	2	1.9	35.9	2	1.9
Brazil	2	1.9	2.9	1	1.2
Hungary*	4	1.9	43.0	0	0
Slovak Republic*	4	1.8	53.5	2	0.8
South Africa	2	1.8	4.8	0	0
Romania*	2	1.3	20.6	0	0
Mexico*	2	1.3	4.8	0	0
Argentina*	2	0.9	7.0	1	0.7
Slovenia*	1	0.7	37.9	0	0
Netherlands*	1	0.5	3.7	0	0
Armenia	1	0.4	45.0	0	0
Pakistan	2	0.4	2.7	1	0.3
Lithuania*	0	0	76.2	0	0
Iran	0	0	0	1	0.9
<b>TOTAL</b>	<b>438</b>	<b>372.0</b>	<b>(est) 15.0</b>	<b>61</b>	<b>58.8</b>

Source: IAEA Power Reactor Information System (PRIS) ([www.iaea.or.at/programmes/a2/](http://www.iaea.or.at/programmes/a2/))

29 Countries having bilateral agreements with Australia covering use of AONM are marked with an asterisk. These countries operate 365 power reactors, which produce around 14% of total world electricity and about 88% of world nuclear energy. In addition Australia has an agreement with Russia which covers processing on behalf of third countries. Australia has signed a new agreement with Russia which, upon entry into force, would allow for the use of AONM in Russian nuclear power plants.

30 Supply of AONM to Taiwan is covered by an agreement between Australia and the United States.



## APPENDIX B

### AUSTRALIA'S BILATERAL SAFEGUARDS AGREEMENTS

TABLE 17: AUSTRALIA'S BILATERAL SAFEGUARDS AGREEMENTS AT 30 JUNE 2010

Country	Entry into Force
Republic of Korea	2 May 1979
United Kingdom	24 July 1979
Finland	9 February 1980
United States	16 January 1981
Canada	9 March 1981
Sweden	22 May 1981
France	12 September 1981
Euratom <sup>31</sup>	15 January 1982
Philippines	11 May 1982
Japan	17 August 1982
Switzerland	27 July 1988
Egypt	2 June 1989
Russia <sup>32</sup>	24 December 1990
Mexico	17 July 1992
New Zealand	1 May 2000
United States (covering cooperation on Silex technology)	24 May 2000
Czech Republic	17 May 2002
United States (covering supply to Taiwan)	17 May 2002
Hungary	15 June 2002
Argentina	12 January 2005
People's Republic of China <sup>33</sup>	3 February 2007

Note: Australia also has an Agreement with Singapore concerning cooperation on physical protection of nuclear materials, which entered into effect on 15 December 1989.

31 The Euratom agreement covers all 27 member states of the European Union.

32 A new agreement with Russia was signed on 7 September 2007—this has yet to enter into force.

33 Australia has two agreements with China, one covering nuclear material transfers and one covering nuclear cooperation.



# APPENDIX C

## STATUS OF ADDITIONAL PROTOCOLS

At 30 June 2010, there were 70 states (plus Taiwan) with significant nuclear activities<sup>34</sup>. Of these states, 5 were nuclear-weapon states (NWS), 62 were non-nuclear-weapon states (NNWS) party to the NPT, and 3 were non-NPT Parties.

In the following tables, states with significant nuclear activities are shown in bold.

Of the 62 NNWS NPT Parties with significant nuclear activities, 46 had an Additional Protocol in force (Table 18). A further 10 such states had signed an Additional Protocol or had an Additional Protocol approved by the Board of Governors (Table 19).

**TABLE 18: STATES WITH ADDITIONAL PROTOCOLS IN FORCE AT 30 JUNE 2010**

State	State	State	State
Afghanistan	El Salvador	<b>Libya</b>	<b>Russia</b>
Angola	<b>Estonia</b>	<b>Lithuania</b>	Rwanda
<b>Armenia</b>	Fiji	Luxembourg	Seychelles
<b>Australia</b>	<b>Finland</b>	Madagascar	Singapore
<b>Austria</b>	<b>France</b>	Malawi	<b>Slovakia</b>
Azerbaijan	FYROM	Mali	<b>Slovenia</b>
<b>Bangladesh</b>	Gabon	Malta	<b>South Africa</b>
<b>Belgium</b>	<b>Georgia</b>	Marshall Islands	<b>Spain</b>
Botswana	<b>Germany</b>	Mauritius	<b>Sweden</b>
<b>Bulgaria</b>	<b>Ghana</b>	Mauritania	<b>Switzerland</b>
Burkina Faso	<b>Greece</b>	Monaco	<b>Tajikistan</b>
Burundi	Guatemala	Mongolia	Tanzania
<b>Canada</b>	Haiti	<b>Netherlands</b>	<b>Turkey</b>
Central African Rep	Holy See	New Zealand	Turkmenistan
Chad	<b>Hungary</b>	Nicaragua	Uganda
<b>Chile</b>	Iceland	Niger	<b>Ukraine</b>
<b>China</b>	<b>Indonesia</b>	<b>Nigeria</b>	<b>United Kingdom</b>
<b>Colombia</b>	Ireland	<b>Norway</b>	Uruguay
Comoros	<b>Italy</b>	Palau	<b>USA</b>
Croatia	<b>Jamaica</b>	Panama	<b>Uzbekistan</b>
Cuba	<b>Japan</b>	Paraguay	
Cyprus	Jordan	<b>Peru</b>	
<b>Czech Republic</b>	<b>Kazakhstan</b>	<b>Philippines</b>	
<b>DR Congo</b>	Kenya	<b>Poland</b>	
<b>Denmark</b>	Kuwait	<b>Portugal</b>	
Dominique Republic	<b>Latvia</b>	<b>Republic of Korea</b>	
Ecuador	Lesotho	<b>Romania</b>	
<b>TOTAL: 101 states (including 46 NNWS with significant nuclear activities), plus Taiwan</b>			

Source: International Atomic Energy Agency ([www.iaea.org/OurWork/SV/Safeguards/sg\\_protocol.html](http://www.iaea.org/OurWork/SV/Safeguards/sg_protocol.html)) Source: International Atomic Energy Agency ([www.iaea.org/OurWork/SV/Safeguards/sg\\_protocol.html](http://www.iaea.org/OurWork/SV/Safeguards/sg_protocol.html))

34 'Significant nuclear activities' encompasses any amount of nuclear material in a facility or 'location outside a facility' (LOF), or nuclear material in excess of the exemption limits in INFCIRC/153 paragraph 37.



A further 38 states had signed an Additional Protocol or had an Additional Protocol that had been approved by the IAEA Board of Governors.

**TABLE 19: STATES WITH AN AP SIGNED OR APPROVED BUT NOT IN FORCE AT 30 JUNE 2010**

State	State	State	State
Albania	The Gambia	<b>Morocco</b>	<b>Vietnam</b>
<b>Algeria</b>	Honduras	Mozambique	Zambia
Andorra	<b>India</b> (non-NPT)	Namibia	
Bahrain	<b>Iran (1)</b>	Senegal	
<b>Belarus</b>	<b>Iraq</b>	<b>Serbia</b>	
Benin	Kiribati	Swaziland	
Cameroon	Kyrgyzstan	<b>Thailand</b>	
Cape Verde	Liechtenstein	Timor-Leste	
Congo, Rep of	<b>Malaysia</b>	Togo	
Costa Rica	<b>Mexico</b>	Tunisia	
Côte d'Ivoire	Moldova	United Arab Emirates	
Djibouti	Montenegro	Vanuatu	
<b>TOTAL: 38 states (including 10 NNWS NPT Parties with significant nuclear activities)</b>			

Source: International Atomic Energy Agency ([www.iaea.org/OurWork/SV/Safeguards/sg\\_protocol.html](http://www.iaea.org/OurWork/SV/Safeguards/sg_protocol.html))

Note: (1) Iran implemented its AP "provisionally" from 2003 but "suspended" this in 2005.

The remaining 6 NNWS NPT Parties with significant nuclear activities had not signed an Additional Protocol.

**TABLE 20: STATES WITH SIGNIFICANT NUCLEAR ACTIVITIES AND NO AP AT 30 JUNE 2010**

State	State	State	State
<b>Argentina</b>	<b>DPRK</b> <sup>35</sup>	<b>Israel</b> (non-NPT)	<b>Syria</b>
<b>Brazil</b>	<b>Egypt</b>	<b>Pakistan</b> (non-NPT)	<b>Venezuela</b>
<b>TOTAL: 8 states (including 6 NPT Parties)</b>			

Source: International Atomic Energy Agency ([www.iaea.org/OurWork/SV/Safeguards/sg\\_protocol.html](http://www.iaea.org/OurWork/SV/Safeguards/sg_protocol.html))

35 On 10 January 2003, DPRK gave notice of withdrawal from the NPT. Pending clarification of its status, DPRK is counted here as an NPT Party.



# APPENDIX D

## IAEA STATEMENTS OF CONCLUSIONS FOR AUSTRALIA 2009

Inventory verification inspections carried out by the IAEA at Australian nuclear facilities and locations are shown in Table 7. In addition, the Agency carries out a range of other verification activities, such as short notice inspections, complementary accesses, design verifications and increased data collection and analysis.

The IAEA provides statements of conclusions of inspections under Article 91.b. of Australia's NPT Safeguards Agreement. Table 21 summarises the latest available Article 91.b. statements arising from physical inventory inspections.

**TABLE 21: IAEA CONCLUSIONS OF INSPECTIONS IN AUSTRALIA**

Verification Activity	Applicable Facilities	End Date of Material Balance Period	Conclusion
Examination of records	HIFAR	03/05/2010	'The records satisfied the Agency requirements.'
	MOATA	03/05/2010	
	OPAL	06/05/2010	
	R&D Laboratories Silex Systems Ltd	04/05/2010 07/05/2010	
Examination of Reports to the Agency	HIFAR	03/05/2010	'The reports satisfied the Agency requirements.'
	MOATA	03/05/2010	
	OPAL <sup>36</sup>	06/05/2010	
	R&D Laboratories Silex Systems Ltd	04/05/2010 07/05/2010	
Application of Containment and Surveillance	HIFAR	03/05/2010	'The application of containment measures adequately complemented the nuclear material accountancy measures.'
Verification of Physical Inventory	HIFAR	03/05/2010	'The physical inventory declared by the operator was verified and the results satisfied the Agency requirements.'
	OPAL	06/05/2010	
	Silex Systems Ltd	07/05/2010	
	R&D Laboratories	04/05/2010	
Confirmation of the Absence of Unrecorded Production of Direct-Use Material from Material Subject to Safeguards	HIFAR	03/05/2010	'The absence of unrecorded production of plutonium from nuclear material subject to safeguards was confirmed by the Agency in accordance with its requirements.'
	MOATA	03/05/2010	
	OPAL	06/05/2010	
	Silex Systems Ltd	07/05/2010	
Verification Activities for Timely Detection	OPAL	06/05/2010	The verification activities for timely detection during the material balance period satisfied the Agency requirements.'
	R&D Laboratories	04/05/2010	

<sup>36</sup> Reports ICR56 and ICR59 did not meet timeliness set out in facility attachment after recognising ICR55 and ICR 58 has been sent twice.



The IAEA provides statements of conclusions for states in which strengthened safeguards are in force. These statements are provided under Article 10.c. of the Additional Protocol to Australia's NPT Safeguards Agreement. The Statement for 2009 concluded as follows:

Access pursuant to Article 4.a.(i) did not indicate the presence of undeclared nuclear material or activities at the following sites. However, final conclusion is pending the results and evaluation of environmental and destructive samples analysis:

- Ranger Uranium Mine, Jabiru, Northern Territory—AS-2009/001
- Lucas Heights Science & Technology Centre, Buildings 76 and 79—AS-2009/002
- Lucas Heights Science & Technology Centre, Buildings 80 and 82—AS-2009/003.



# APPENDIX E

## IAEA SAFEGUARDS STATEMENT FOR 2009

The following is extracted from the IAEA's Annual Report for 2009.

In 2009, safeguards were applied for 170 States<sup>37</sup> with safeguards agreements in force with the Agency. The Secretariat's findings and conclusions for 2009 are reported below with regard to each type of safeguards agreement. These findings and conclusions are based upon an evaluation of all the information available to the Agency in exercising its rights and fulfilling its safeguards obligations for that year.

1. 89 States had both comprehensive safeguards agreements and additional protocols in force:
  - a) For 52 of these States<sup>38</sup>, the Secretariat found no indication of the diversion of declared nuclear material from peaceful nuclear activities and no indication of undeclared nuclear material or activities. On this basis, the Secretariat concluded that, for these States, all nuclear material remained in peaceful activities.
  - b) For 37 of the States, the Secretariat found no indication of the diversion of declared nuclear material from peaceful nuclear activities. Evaluations regarding the absence of undeclared nuclear material and activities for each of these States remained ongoing. On this basis, the Secretariat concluded that, for these States, declared nuclear material remained in peaceful activities.
2. Safeguards activities were implemented for 73 States with comprehensive safeguards agreements in force, but without additional protocols in force. For these States, the Secretariat found no indication of the diversion of declared nuclear material from peaceful nuclear activities. On this basis, the Secretariat concluded that, for these States, declared nuclear material remained in peaceful activities.

While the Secretariat concluded that, for 2009, declared nuclear material in Iran remained in peaceful activities, verification of the correctness and completeness of Iran's declarations remains ongoing.

3. As of the end of 2009, 22 non-nuclear-weapon States party to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) had not yet brought comprehensive safeguards agreements with the Agency into force as required by Article III of that Treaty. For these States, the Secretariat could not draw any safeguards conclusions.

37 The 170 States do not include the Democratic People's Republic of Korea (DPRK), where the Secretariat did not implement safeguards and, therefore, could not draw any conclusion.

38 And Taiwan, China.



4. Three States had safeguards agreements in force based on INFCIRC/66/Rev.2, which require the application of safeguards to nuclear material, facilities and other items specified in the relevant safeguards agreement. For these States, the Secretariat found no indication of the diversion of nuclear material or of the misuse of the facilities or other items to which safeguards had been applied. On this basis, the Secretariat concluded that, for these States, nuclear material, facilities or other items to which safeguards had been applied remained in peaceful activities.
5. Five nuclear-weapon States had voluntary offer safeguards agreements in force. Safeguards were implemented with regard to declared nuclear material in selected facilities in four of the five States. For these four States, the Secretariat found no indication of the diversion of nuclear material to which safeguards had been applied. On this basis, the Secretariat concluded that, for these States, nuclear material to which safeguards had been applied in selected facilities remained in peaceful activities or had been withdrawn from safeguards as provided for in the agreements.



# APPENDIX F

## STATUS OF CTBT INTERNATIONAL MONITORING SYSTEM FACILITIES IN AUSTRALIA

TABLE 22: STATUS OF AUSTRALIAN CTBT IMS FACILITIES AT 30 JUNE 2010

Facility	Status	Operator
<b>Primary Seismic Stations</b>		
Warramunga, NT	Operational and certified against CTBTO standards	ANU
Alice Springs, NT	Operational and certified against CTBTO standards	GA / USA
Stephens Creek, NSW	Operational and certified against CTBTO standards	GA
Mawson, Australian Antarctic Territory	Operational and certified against CTBTO standards	GA
<b>Auxiliary Seismic Stations</b>		
Charters Towers, QLD	Operational and certified against CTBTO standards	GA
Fitzroy Crossing, WA	Operational and certified against CTBTO standards	GA
Narrogin, WA	Operational and certified against CTBTO standards	GA
<b>Infrasound Stations</b>		
Warramunga, NT	Operational and certified against CTBTO standards	ANU
Hobart, TAS	Operational and certified against CTBTO standards	GA
Shannon, WA	Operational and certified against CTBTO standards	GA
Cocos Islands	Construction planned from 2011	GA
Davis Base, Australian Antarctic Territory	Site survey completed	GA
<b>Radionuclide Stations</b>		
Melbourne <sup>39</sup> , VIC	Operational and certified against CTBTO standards	ARPANSA
Perth, WA	Operational and certified against CTBTO standards	ARPANSA
Townsville, QLD	Operational and certified against CTBTO standards	ARPANSA
Darwin <sup>40</sup> , NT	Operational and certified against CTBTO standards	ARPANSA
Cocos Islands	Operational and certified against CTBTO standards	ARPANSA
Macquarie Island, TAS	Construction planned from 2010	ARPANSA
Mawson, Australian Antarctic Territory	Construction planned from 2011	ARPANSA
<b>Radionuclide Laboratory</b>		
Melbourne, VIC	Operational and certified against CTBTO standards	ARPANSA
<b>Hydroacoustic Stations</b>		
Cape Leeuwin, WA	Operational and certified against CTBTO standards	GA

39 In addition to the IMS particulate monitoring station at Melbourne, an IMS Noble Gas monitoring system is installed and operating in a testing and evaluation phase.

40 In addition to the IMS particulate monitoring station at Darwin, an IMS Noble Gas monitoring system is installed and operating in a testing and evaluation phase.



# APPENDIX G

## FREEDOM OF INFORMATION STATEMENT

This statement is provided in accordance with section 8 of the *Freedom of Information Act 1982* (FOI Act) and is correct to 30 June 2010.

The FOI Act extends the right to obtain access to documents in the Government's possession. Access is limited only by exemptions that, for example, protect essential public interests and the private and business affairs of people about whom departments and statutory authorities collect and hold information. ASNO received one FOI request relating to the Global Nuclear Energy Partnership in 2009–10. ASNO also responded with respect to several FOI requests lodged with DFAT.

Members of the public seeking access to documents should lodge a formal FOI request. This must be made in writing and include a contact name, address to which notifications can be sent, telephone number and fax number (if available). All enquiries should be directed to:

Director General  
Australian Safeguards and Non-Proliferation Office  
R G Casey Building  
John McEwen Crescent  
BARTON ACT 0221  
Australia  
Telephone: +61 (2) 6261 1920  
Facsimile: +61 (2) 6261 1908  
E-mail: asno@dfat.gov.au

### Documents

ASNO produces a wide range of documents in administering its responsibilities including:

- Submissions to the portfolio minister, Cabinet, the Director General ASNO and other government agencies
- Records of parliamentary related business such as responses to parliamentary questions on notice, briefings for parliamentary delegations and parliamentarians, possible parliamentary questions, written submissions to parliamentary committees and responses to questions from parliamentary committee inquiries
- Records of technical and other reports, literature, media reports and journals relevant to ASNO's responsibilities
- Replies to ministerial and departmental correspondence
- Papers prepared in whole or in part by ASNO officers for presentation at conferences and meetings
- Texts of speeches and press statements on issues related to ASNO's responsibilities
- Briefs, reports and documents on international and Australian aspects of policy relevant to ASNO's safeguards, CWC and CTBT responsibilities
- Annual Reports



- Treaties, memoranda of understanding and other agreements between the Australian Government and other governments
- Documents relating to program and financial management, contracts and tenders
- Reviews, evaluations and audit reports on management systems, controls and the efficiency and effectiveness of development programs and activities
- Minutes and working documents of the working groups, committees and organisations to which ASNO is party
- Guidelines, policies and procedures relating to strategies and corporate planning, project planning and implementation, including risk assessment and fraud prevention
- Materials relating to staff development, training, personnel management and general administration
- Customer feedback surveys.

## Publications, Presentations and Submissions

ASNO produced a range of publications and conducted various presentations to increase community awareness and understanding of ASNO responsibilities and issues for which it has expertise. ASNO also made a number of submissions to Parliamentary and other inquiries. These include:

### Nuclear

- John Carlson, *New Verification Challenges*, Tucson, Arizona, USA, 12–16 July 2009.
- Craig Everton, *Physical Protection (Security) and Safeguards Requirements for Uranium Mines and Transport*, Western Australia, 30 July 2009.
- John Carlson, *Policy Issues Relating to Use of Plutonium in the Civil Fuel Cycle, Obninsk, Russia*, 30 September – 2 October 2009.
- Stephan Bayer, *Nuclear Security in South-East Asia*, Seminar on Strengthening Nuclear Security in Asian Countries, Tokyo, Japan, 21–22 January 2010.
- Stephan Bayer, *Australia's system of tracking obligated nuclear material*, 2010 Nuclear Materials Management & Safeguards System Users and Training Meeting, Las Vegas, USA, 19 May 2010.
- John Kalish, *Developments in Non-Proliferation and Disarmament, and Implications for the Nuclear Industry*, Keynote Address presented to The Australasian Institute of Mining and Metallurgy International Uranium Conference 2010, Adelaide, 16–17 June 2010.

### CTBT

- Donald Sorokowski, *The CTBT Verification Regime and its Implementation—National Legislative Experience for CTBT Implementation*, presented at the CTBTO Workshop on Capacity Building For SEAPFE States, 17–20 May 2010, Canberra.
- Donald Sorokowski, *National Legislative Experience for CTBT Implementation* (Australia), presented at the CTBTO Workshop on Capacity Building For SEAPFE States, 17–20 May 2010, Canberra.



- Malcolm Coxhead, *CTBT as a confidence building measures*, presented at the CTBTO Workshop on Capacity Building For SEAPFE States, 17–20 May 2010, Canberra.
- Malcolm Coxhead, *National Data Centres Working Together*, presented at the CTBTO Workshop on Capacity Building For SEAPFE States, 17–20 May 2010, Canberra.
- Malcolm Coxhead, *CTBT on-site inspection (the why, where, when, who, what and how)*, presented at the CTBTO Workshop on Capacity Building For SEAPFE States, 17–20 May 2010, Canberra.
- Malcolm Coxhead, David Jepsen, *Putting the CTBT into practice*, VERTIC Briefs, December 2009.

## Chemical

- Josy Meyer, *The CWC and Regulatory Requirements for Producers, Users and Traders in Chemicals*, 2009 SSBA Regulatory Scheme Road Show, Canberra 28 July 2009.
- Josy Meyer, *OPCW Article XI Workshop, Australia Group*, Paris, 31 May – 4 June 2010.
- Josy Meyer, *Schedule 2 Inspections Including Sampling and Analysis, 7th Regional Meeting of National Authorities of CWC States Parties in Asia*, Hanoi, Vietnam, 28–30 October 2009.
- Josy Meyer, *Article VI Inspections Including Sequential Inspections, 7th Regional Meeting of National Authorities of CWC States Parties in Asia*, Hanoi, Vietnam, 28–30 October 2009.
- Josy Meyer, *Australia's Use of HS codes to Track Chemical Trade*, 7th Regional Meeting of National Authorities of CWC States Parties in Asia, Hanoi, Vietnam, 28–30 October 2009.
- Josy Meyer, *Update on CWC Implementation in Australia*, Defence Export Control Office Meeting, 18 May 2010.

## Papers prepared during the reporting period and presented after June 2009

- Carlson, John, *Strengthening Safeguards through Regional Cooperation: Establishment of the Asia-Pacific Safeguards Network*, INNM Meeting, Baltimore, Maryland, USA, 11–15 July 2010.
- Russell Leslie, Craig Everton & John Carlson, *Revisiting the Practices and Technical Objective of Safeguards*, INNM Meeting, Baltimore, Maryland, USA 11–15 July 2010.
- Craig Everton, Stephan Bayer & John Carlson, *Developments in the IAEA's Nuclear Security Series and Physical Protection Guidance Document INFCIRC/225*, INNM Meeting, Baltimore, Maryland USA 11–15 July 2010.
- John Carlson, *Strengthening the NPT and IAEA Safeguards: Recommendations of the International Commission on Nuclear Non-Proliferation and Disarmament*, INNM Meeting, Baltimore, Maryland, 11–15 July 2010.
- John Carlson, *Fissile Material Cut-off Treaty—a Discussion*, briefing for ICNND, 6 July 2009.
- John Carlson, *Proposed Fissile Material Cut-off Treaty Verification Issues*, INNM Meeting, Baltimore, Maryland 11–15 July 2010.



# LIST OF REQUIREMENTS

This list is prepared from the checklist of annual report requirements set out in Attachment E to the Requirements for Annual Reports for Departments, Executive Agencies and FMA Act Bodies as approved by the Joint Committee of Public Accounts and Audit under subsections 63(2) and 70(2) of the Public Service Act 1999 in June 2005.

Description	Requirement	Location
Letter of transmittal	Mandatory	Page iii
Table of contents	Mandatory	Page v
Index	Mandatory	Page 104
Glossary	Mandatory	Page 98
Contact officer(s)	Mandatory	Page ii
Internet home page address and Internet address for report	Mandatory	Page ii
<b>Review by Secretary</b>		
Review by statutory office holder	Mandatory	Page 3
Summary of significant issues and developments	Suggested	Page 3
Overview of department's performance and financial results	Suggested	N/A
Outlook for following year	Suggested	Page 9
Significant issues and developments—portfolio	Portfolio departments—suggested	Page 13
<b>Departmental Overview</b>		
Overview description of Office	Mandatory	Page 31
Role and functions	Mandatory	Page 33
Organisational structure	Mandatory	Page 78
Outcome and output structure	Mandatory	Page 41
Where outcome and output structures differ from PBS format, details of variation and reasons for change	Mandatory	N/A
Portfolio structure	Portfolio departments—mandatory	DFAT AR
<b>Report on Performance</b>		
Review of performance during the year in relation to outputs and contribution to outcomes	Mandatory	Page 43
Actual performance in relation to performance targets set out in PBS/ PAES	Mandatory	DFAT AR
Performance of purchaser/ provider arrangements	If applicable, mandatory	N/A
Where performance targets differ from the PBS/ PAES, + details of both former and new targets, and reasons for the change	Mandatory	N/A



Description	Requirement	Location
Narrative discussion and analysis of performance	Mandatory	Page 45
Trend information	Suggested	Pages 43–74
Factors, events or trends influencing departmental performance	Suggested	N/A
Significant changes in nature of principal functions/ services	Suggested	N/A
Performance against service charter customer service standards, complaints data, and the department's response to complaints	If applicable, mandatory	N/A
Social justice and equity impacts	Suggested	N/A
Discussion and analysis of the Office's financial performance	Mandatory	Page 79
Discussion of any significant changes from the prior year or from budget.	Suggested	N/A
Summary resource tables by outcomes	Mandatory	DFAT AR
Developments since the end of the financial year that have affected or may significantly affect the department's operations or financial results in future	If applicable, mandatory	N/A
<b>Corporate Governance and Management Accountability</b>		
Statement of the main corporate governance practices in place	Mandatory	DFAT AR
Names of the senior executive and their responsibilities	Suggested	Page 77
Senior management committees and their roles	Suggested	N/A
Corporate and operational planning and associated performance reporting and review	Suggested	DFAT AR
Approach adopted to identifying areas of significant financial or operational risk and arrangements in place to manage risks	Suggested	DFAT AR
Agency heads are required to certify that their agency comply with the Commonwealth Fraud Control Guidelines.	Mandatory	DFAT AR
Policy and practices on the establishment and maintenance of appropriate ethical standards	Suggested	DFAT AR
How nature and amount of remuneration for SES officers is determined	Suggested	Page 77
<b>External Scrutiny</b>		
Significant developments in external scrutiny	Mandatory	DFAT AR
Judicial decisions and decisions of administrative tribunals	Mandatory	DFAT AR
Reports by the Auditor-General, a Parliamentary Committee or the Commonwealth Ombudsman	Mandatory	DFAT AR
<b>Management of Human Resources</b>		
Assessment of effectiveness in managing and developing human resources to achieve departmental objectives	Mandatory	DFAT AR
Workforce planning, staff turnover and retention	Suggested	Page 77
Impact and features of certified agreements and AWAs	Suggested	DFAT AR
Training and development undertaken and its impact	Suggested	Page 79
Occupational health and safety performance	Suggested	DFAT AR
Productivity gains	Suggested	DFAT AR



Description	Requirement	Location
Statistics on staffing	Mandatory	Page 79
Certified agreements and AWAs	Mandatory	DFAT AR
Performance pay	Mandatory	DFAT AR
Contracts exempt from Purchasing and Disposal Gazette	Mandatory	DFAT AR
<b>Assets management</b>		
Assessment of effectiveness of assets management	If applicable, mandatory	DFAT AR
<b>Purchasing</b>		
Assessment of purchasing against core policies and principles	Mandatory	DFAT AR
Consultants		
The annual report must include a summary statement detailing the number of new consultancy services contracts let during the year; the total actual expenditure on all new consultancy contracts let during the year (inclusive of GST); the number of ongoing consultancy contracts that were active in the reporting year; and the total actual expenditure in the reporting year on the ongoing consultancy contracts (inclusive of GST).	Mandatory	DFAT AR
(Additional information as in Attachment D to be available on the Internet or published as an appendix to the report. Information must be presented in accordance with the proforma as set out in Attachment D.)		
<b>Competitive Tendering and Contracting</b>		
Competitive tendering and contracting contracts let and outcomes	Mandatory	DFAT AR
Absence of contractual provisions allowing access by the Auditor-General	Mandatory	DFAT AR
Contracts exempt from the Purchasing and Disposal Gazette	Mandatory	DFAT AR
Financial Statements	Mandatory	DFAT AR
<b>Other Information</b>		
Occupational health and safety (section 74 of the Occupational Health and Safety (Commonwealth Employment) Act 1991)	Mandatory	DFAT AR
Freedom of Information (subsection 8(1) of the Freedom of Information Act 1982)	Mandatory	Page 92
Report on performance in implementing the Commonwealth Disability Strategy	Mandatory	DFAT AR
Advertising and Market Research (section 311A of the Commonwealth Electoral Act 1918)	Mandatory	DFAT AR
Ecologically sustainable development and environmental performance (Section 516A of the Environment Protection and Biodiversity Conservation Act 1999)	Mandatory	DFAT AR
Discretionary Grants	Mandatory	DFAT AR
Correction of material errors in previous annual report	If applicable, mandatory	N/A



# GLOSSARY

<b>Additional Protocol</b>	An agreement designed to complement a state's Safeguards Agreement with the IAEA in order to strengthen the effectiveness and improve the efficiency of the safeguards system. The model text of the Additional Protocol is set out in IAEA document INFCIRC/540.
<b>Agency Inspector</b>	Person nominated by the IAEA and declared under section 57 of the Safeguards Act to undertake IAEA inspections.
<b>ANSTO</b>	Australian Nuclear Science and Technology Organisation.
<b>AONM</b>	Australian Obligated Nuclear Material. Australian uranium and nuclear material derived therefrom, which is subject to obligations pursuant to Australia's bilateral safeguards agreements.
<b>APSN</b>	Asia-Pacific Safeguards Network
<b>ARPANSA</b>	Australian Radiation Protection and Nuclear Safety Agency.
<b>ASSP</b>	Australian Safeguards Support Program.
<b>Australia Group</b>	The Australian-chaired, multilateral arrangement for coordinating national export controls on materials and equipment of potential relevance to chemical and biological weapons.
<b>BAPETEN</b>	Indonesian Nuclear Energy Control Board.
<b>BWC</b>	Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction. Also known as the Biological Weapons Convention.
<b>Challenge Inspection</b>	(For CWC purposes) An inspection, requested by a CWC State Party, of any facility or location in the territory or in any other place under the jurisdiction or control of another State Party.
<b>Complementary Access</b>	The right of the IAEA, pursuant to the Additional Protocol, for access to a site or location to carry out verification activities.
<b>Comprehensive Safeguards Agreement</b>	Agreement between a state and the IAEA for the application of safeguards to all of the state's current and future nuclear activities (equivalent to 'full scope' safeguards) based on IAEA document INFCIRC/153.
<b>Concise Note</b>	Supplementary explanatory notes on formal reports from a national safeguards authority to the IAEA.
<b>Conversion</b>	Purification of uranium ore concentrates or recycled nuclear material and conversion to a chemical form suitable for isotopic enrichment or fuel fabrication.
<b>COAG</b>	Council of Australian Governments
<b>CPPNM</b>	Convention on the Physical Protection of Nuclear Material.
<b>CTBT</b>	Comprehensive Nuclear-Test-Ban Treaty.
<b>CTBTO</b>	Comprehensive Nuclear-Test-Ban Treaty Organization. The Vienna-based international organisation established at entry into force of the CTBT to ensure the implementation of its provisions.
<b>Customs</b>	Australian Customs & Border Protection Service



<b>CWC</b>	Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction. Also known as the Chemical Weapons Convention.
<b>CWC Scheduled Chemicals</b>	Chemicals listed in the three Schedules to the Chemical Weapons Convention. Some are chemical warfare agents and others are dual-use chemicals (that can be used in industry or in the manufacture of chemical warfare agents).
<b>Defence</b>	Australian Department of Defence.
<b>Depleted Uranium (DU)</b>	Uranium with a <sup>235</sup> U content less than that found in nature (e.g. as a result of uranium enrichment processes).
<b>DFAT</b>	Department of Foreign Affairs and Trade.
<b>Direct-Use Material</b>	Nuclear material defined for safeguards purposes as being usable for nuclear explosives without transmutation or further enrichment, e.g. plutonium, HEU and <sup>233</sup> U.
<b>Discrete Organic Chemical</b>	Any chemical belonging to the class of chemical compounds consisting of all compounds of carbon, except for its oxides, sulphides and metal carbonates, identifiable by chemical name, by structural formula, if known, and by Chemical Abstracts Service registry number, if assigned. Long chain polymers are not included in this definition.
<b>DOE</b>	United States Department of Energy.
<b>DPRK</b>	Democratic People's Republic of Korea.
<b>Enrichment</b>	A physical or chemical process for increasing the proportion of a particular isotope. Uranium enrichment involves increasing the proportion of <sup>235</sup> U from its level in natural uranium, 0.711%: For LEU fuel the proportion of <sup>235</sup> U (the enrichment level) is typically increased to between 3% and 5%.
<b>Environmental analysis</b>	A technique for detecting residual traces of nuclear material on building surfaces, in plants and soil, in water and in the air. A very powerful safeguards tool, the value of which was first demonstrated in Iraq.
<b>Euratom</b>	Atomic Energy Agency of the European Union. Euratom's safeguards office, called the Directorate General of Transport and Energy H (DG), is responsible for the application of safeguards to all nuclear material in Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, and Sweden; and to all nuclear material in civil facilities in France and the United Kingdom.
<b>Facility</b>	(For CWC purposes) A plant, plant site or production/processing unit.  (For safeguards purposes) A reactor, critical facility, conversion plant, fabrication plant, reprocessing plant, isotope separation plant, separate storage location or any location where safeguards significant amounts of nuclear material are customarily used.
<b>Facility Attachment</b>	A document agreed between the IAEA and the relevant Member State that specifies the nuclear materials accountancy system for a specific facility and defines the format and scope of inspection activities.
<b>Fissile</b>	Referring to a nuclide capable of undergoing fission by neutrons of any energy, including 'thermal' neutrons (e.g. <sup>233</sup> U, <sup>235</sup> U, <sup>239</sup> Pu and <sup>241</sup> Pu).



<b>Fission</b>	The splitting of an atomic nucleus into roughly equal parts, often by a neutron. In a fission reaction, a neutron collides with a fissile nuclide (e.g. $^{235}\text{U}$ ) that then splits, releasing energy and further neutrons. Some of these neutrons may go on to collide with other fissile nuclei, setting up a nuclear chain reaction.
<b>Fissionable</b>	Referring to a nuclide capable of undergoing fission by 'fast' neutrons (e.g. $^{233}\text{U}$ , $^{235}\text{U}$ , $^{238}\text{U}$ , $^{239}\text{Pu}$ , $^{240}\text{Pu}$ , $^{241}\text{Pu}$ and $^{242}\text{Pu}$ ).
<b>FMCT</b>	Fissile material cut-off treaty. A proposed international treaty to prohibit production of fissile material for nuclear weapons.
<b>Full Scope Safeguards</b>	The application of IAEA safeguards to all of a state's present and future nuclear activities. Now more commonly referred to as comprehensive safeguards.
<b>GA</b>	Geoscience Australia (formerly the Australian Geological Survey Organisation).
<b>GW</b>	Gigawatt (Giga = billion, $10^9$ ).
<b>GWe</b>	Gigawatts of electrical power.
<b>GWt</b>	Gigawatts of thermal power.
<b>Heavy Water (<math>\text{D}_2\text{O}</math>)</b>	Water enriched in the 'heavy' hydrogen isotope deuterium ( $^2\text{H}$ ) which consists of a proton and a neutron. $\text{D}_2\text{O}$ occurs naturally as about one part in 6000 of ordinary water. $\text{D}_2\text{O}$ is a very efficient moderator, enabling the use of natural uranium in a nuclear reactor.
<b>HEU</b>	High enriched uranium. Uranium enriched to 20% or more in $^{235}\text{U}$ . Weapons-grade HEU is enriched to over 90% $^{235}\text{U}$ .
<b>HIFAR</b>	High Flux Australian Reactor. The 10 MWt research reactor located at ANSTO, Lucas Heights.
<b>Hydroacoustic</b>	Term referring to underwater propagation of pressure waves (sounds).
<b>IAEA</b>	International Atomic Energy Agency.
<b>ICNND</b>	International Commission on Nuclear Non-proliferation and Disarmament.
<b>IDC</b>	International Data Centre. Data gathered by monitoring stations in the CTBT IMS network are compiled, analysed and archived by the Vienna-based IDC. IDC products giving the results of analyses are made available to CTBT signatories.
<b>IMS</b>	International Monitoring System. A network of 337 monitoring stations and analytical laboratories established pursuant to the CTBT which, together with the IDC, gather and analyse data with the aim of detecting any explosive nuclear testing.
<b>Indirect-Use Material</b>	Nuclear material that cannot be used for a nuclear explosive without transmutation or further enrichment (e.g. depleted uranium, natural uranium, LEU and thorium).
<b>INFCIRC</b>	IAEA Information Circular. A series of documents published by the IAEA setting out, inter alia, safeguards, physical protection and export control arrangements.



<b>INFCIRC/66 Rev.2</b>	The model safeguards agreement used by the IAEA since 1965. Essentially this agreement is facility-specific. For NNWS party to the NPT it has been replaced by INFCIRC/153.
<b>INFCIRC/153 (Corrected)</b>	The model agreement used by the IAEA as a basis for comprehensive safeguards agreements with non-nuclear-weapon states party to the NPT.
<b>INFCIRC/225 Rev.4 (Corrected)</b>	IAEA document entitled 'The Physical Protection of Nuclear Material and Nuclear Facilities'. Its recommendations reflect a consensus of views among IAEA member states on desirable requirements for physical protection measures on nuclear material and facilities, that is, measures taken for their physical security.
<b>INFCIRC/540</b>	The model text of the Additional Protocol.
<b>Infrasound</b>	Sound in the frequency range of about 0.02 to 4 Hertz. One category of CTBT IMS stations will monitor sound at these frequencies with the aim of detecting explosive events such as a nuclear test explosion at a range up to 5000 km.
<b>Integrated safeguards</b>	The optimum combination of all safeguards measures under comprehensive safeguards agreements and the Additional Protocol to achieve maximum effectiveness and efficiency.
<b>Inventory Change Report</b>	A formal report from a national safeguards authority to the IAEA on changes to nuclear materials inventories in a given period.
<b>Isotopes</b>	Nuclides with the same number of protons, but different numbers of neutrons, e.g. <sup>235</sup> U (92 protons and 143 neutrons) and <sup>238</sup> U (92 protons and 146 neutrons). The number of neutrons in an atomic nucleus, while not significantly altering its chemistry, does alter its properties in nuclear reactions. As the number of protons is the same, isotopes are different forms of the same chemical element.
<b>JSCOT</b>	Joint Standing Committee on Treaties
<b>LEU</b>	Low Enriched Uranium. Uranium enriched to less than 20% <sup>235</sup> U. Commonly, LEU used as fuel in light water reactors is enriched to between 3% and 5% <sup>235</sup> U.
<b>Light water</b>	H <sub>2</sub> O. Ordinary water.
<b>LWR—Light water reactor</b>	A power reactor which is both moderated and cooled by ordinary (light) water. In this type of reactor, the uranium fuel must be slightly enriched (that is, LEU).
<b>Material Balance Report</b>	A formal report from a national safeguards authority to the IAEA comparing consolidated inventory changes in a given period with the verified inventories at the start and end of that period.
<b>Moata</b>	Small training reactor located at Lucas Heights. The ANSTO Board decided to cease operation of this reactor in February 1995. The reactor was defuelled in May 1995.
<b>Moderator</b>	A material used to slow fast neutrons to thermal speeds where they can readily be absorbed by <sup>235</sup> U or plutonium nuclei and initiate a fission reaction. The most commonly used moderator materials are light water, heavy water or graphite.
<b>MOX</b>	Mixed oxide reactor fuel, consisting of a mixture of uranium and plutonium oxides. The plutonium content of fresh MOX fuel for a LWR is typically around 5–7%.



<b>MUF</b>	Material Unaccounted For. A term used in nuclear materials accountancy to mean the difference between operator records and the verified physical inventory. A certain level of MUF is expected due to measurement processes. MUF does not usually indicate “missing” material—because it is a difference due to measurement, MUF can have either a negative or a positive value.
<b>MWe</b>	Megawatts of electrical power.
<b>MWt</b>	Megawatts of thermal power.
<b>Natural uranium</b>	In nature uranium consists predominantly of the isotope <sup>238</sup> U (approx. 99.3%), with the fissile isotope <sup>235</sup> U comprising only 0.711%.
<b>NNWS</b>	Non-nuclear-weapon state(s). States not recognised by the NPT as having nuclear weapons at 1 January 1967 when the Treaty was negotiated
<b>NPT</b>	Treaty on the Non-Proliferation of Nuclear Weapons.
<b>Nuclear material</b>	Any source material or special fissionable material as defined in Article XX of the IAEA Statute (in practice, this means uranium, thorium and plutonium).
<b>Nuclear Suppliers Group, NSG</b>	A group of countries (currently 45) which seeks to contribute to the non-proliferation of nuclear weapons through the implementation of harmonised guidelines for nuclear and nuclear-related exports.
<b>Nuclide</b>	Nuclear species characterised by the number of protons (atomic number) and the number of neutrons. The total number of protons and neutrons is called the mass number of the nuclide.
<b>NWS</b>	Nuclear-weapon state(s). States recognised by the NPT as having nuclear weapons at 1 January 1967 when the Treaty was negotiated, namely the United States, Russia, the United Kingdom, France and China.
<b>OCW</b>	Old chemical weapons.
<b>OCPF</b>	Other Chemical Production Facilities
<b>OPAL</b>	Open Pool Australian Light-Water reactor. The 20 MWt research reactor located at ANSTO, Lucas Heights, reached full power on 3 November 2006 and was officially opened on 20 April 2007.
<b>OPCW</b>	Organisation for the Prohibition of Chemical Weapons.
<b>OSI</b>	On-Site Inspection. A short notice challenge-type inspection provided for in the CTBT as a means for investigation concerns about non-compliance with the prohibition on nuclear explosions.
<b>Physical Inventory Listing</b>	A formal report from a national safeguards authority to the IAEA on nuclear materials inventories at a given time (generally the end of a Material Balance Report period).
<b>PrepCom</b>	Preparatory Commission. In this report the term is used for the Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization.
<b>Production</b>	(For CWC purposes) The formation of a chemical through chemical reaction. Production of chemicals specified by the CWC is declarable, even if produced as intermediates and irrespective of whether or not they are isolated.



<b>PTS</b>	Provisional Technical Secretariat for the CTBTO PrepCom
<b><sup>239</sup>Pu</b>	An isotope of plutonium with atomic mass 239 (94 protons and 235 neutrons). The fissile isotope of plutonium most suitable for nuclear weapons.
<b>Radionuclide</b>	An isotope with an unstable nucleus that disintegrates and emits energy in the process. Radionuclides may occur naturally, but they can also be artificially produced, and are often called radioisotopes. One category of CTBT IMS stations will detect radionuclide particles in the air. A radionuclide monitoring station contains <i>inter alia</i> , an air sampler and detection equipment. At the air sampler, air is forced through a filter, which retains most particles that reach it. The used filters are processed and resulting gamma radiation spectra are further analysed. 40 stations are equipped with radionuclide noble gas technology to detect the abundance of the noble gas xenon in the air.
<b>R&amp;D</b>	Research and Development.
<b>Reprocessing</b>	Processing of spent nuclear fuel to separate uranium and plutonium from highly radioactive fission products.
<b>Safeguards Inspector</b>	For domestic purposes, person declared under section 57 of the Safeguards Act to undertake inspections to ensure compliance with provisions of the Act and to assist IAEA Inspectors in the conduct of Agency inspections and complementary access in Australia.
<b>SAGSI</b>	Standing Advisory Group on Safeguards Implementation. An international group of experts appointed by, and advising, the IAEA Director General on safeguards implementation matters.
<b>Schedule 2A/2A*</b>	These are toxic Part A Schedule 2 chemicals (2A: Amiton and PFIB, 2A*: B2) listed under the CWC
<b>SNT</b>	Sensitive Nuclear Technology
<b>SQP</b>	Small Quantities Protocol—A protocol to a state's Safeguards Agreement with the IAEA, for states with small quantities of nuclear material and no nuclear facilities. The protocol holds in abeyance most of the provisions of the state's Safeguards Agreement.
<b><sup>232</sup>Th</b>	Thorium-232.
<b><sup>233</sup>U</b>	An isotope of uranium containing 233 nucleons, usually produced through neutron irradiation of <sup>232</sup> Th.
<b><sup>235</sup>U</b>	An isotope of uranium containing 235 nucleons (92 protons and 143 neutrons) which occurs as 0.711% of natural uranium.
<b><sup>238</sup>U</b>	An isotope of uranium containing 238 nucleons (92 protons and 146 neutrons) which occurs as about 99.3% of natural uranium.
<b>UNSCR</b>	United Nations Security Council Resolution
<b>UOC</b>	Uranium Ore Concentrates. A commercial product of a uranium mill usually containing a high proportion (greater than 90%) of uranium oxide.
<b>WMD</b>	Weapons of mass destruction. Refers to nuclear, chemical, biological and occasionally radiological weapons.



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