DIRECTOR GENERAL'S REPORT
SECTION 1

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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

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The Year in Review

Nuclear Non-Proliferation and Safeguards Developments

The International Non-Proliferation Environment

The principal challenges for the non-proliferation regime during the year included: the response to the determination by the International Atomic Energy Agency (IAEA) Secretariat that the facility destroyed in Syria in 2007 was very likely an undeclared nuclear reactor; Iran's continuing defiance of United Nations Security Council (UNSC) resolutions; and the ongoing issues related to the Democratic People's Republic of Korea's (DPRK—or North Korea) nuclear weapons program.

As noted in earlier 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 were completed during the reporting period. In his report to the June 2011 Board of Governors (BOG) meeting, IAEA Director General Amano informed Governors that:

'The Agency regrets that Syria has not cooperated since June 2008 in connection with the unresolved issues related to the Dair Alzour site and the three other locations allegedly functionally related to it. Based on all the information available to the Agency and its technical evaluation of that information, the Agency assesses that it is very likely that the building destroyed at the Dair Alzour site was a nuclear reactor which should have been declared to the Agency.'

Iran continued to expand its uranium enrichment capacity in defiance of resolutions passed by the UNSC that require it to suspend all enrichment activity. At the end of the reporting period Iran announced that it was in the process of moving the production of uranium enriched to just below 20% from the Pilot Fuel Enrichment Plant (PFEP) at Natanz to the yet to be completed Fordow enrichment plant near Qom.

The IAEA repeatedly raised issues related to 'possible military dimensions' of Iran's nuclear program. Iran has maintained that such claims are baseless and have not engaged with the IAEA on the substance of these issues since August 2008. Iran has, to date, failed to address IAEA concerns over reported research and development activities which may assist in the development of nuclear explosive devices.

Iran has continued to defy the UNSC obligation to suspend construction of its heavy water research reactor (which, when completed, could be used to produce plutonium suitable for nuclear weapons). The IAEA remains unable to provide assurances to the international community that there are no undeclared nuclear activities or materials in Iran.

International Atomic Energy Agency Safeguards

In November 2010 at the IAEA Safeguards Symposium, the Deputy Director-General (DDG) for Safeguards, Mr Herman Nackaerts, launched the Department of Safeguards Long Term Strategic Plan (LTSP): 'Preparing for Future Verification Challenges'. A major focus of the LTSP is the further evolution of the IAEA's safeguards system away from the traditional facility-specific criteria-based safeguards approaches that have been the foundation of inspection activities for decades. Under the LTSP , the evolution of the safeguards system will be away from the traditional, rigid and formulaic, criteria-based safeguards approach towards one that is fully information-driven – in other words, making greater use of state-level approaches that use all information available to the IAEA about the state, both facility-specific factors and state-specific factors (see report on the state-level concept at page 15).

At the end of the reporting period, DDG Nackaerts announced a major reorganisation of the Safeguards Department. The reorganisation is intended to support the LTSP and to ensure that departmental resources are allocated in ways that support its longer term aims. While the three safeguards operations divisions (the areas principally responsible for safeguards inspections) are relatively unaffected, there have been major changes in the structure and form of the support divisions.

Under the traditional structure, the operations divisions were seen as having the primary responsibility for safeguards with the role of the other divisions of the department seen as providing support for the operations divisions. The move towards safeguards that are more fully information-driven gives a more prominent role to all-source information analysis and requires skill sets that are primarily found in the support divisions. The new structure recognises all of the divisions as having a role in the State Evaluation process for drawing safeguards conclusions and for planning safeguards implementation. The structure makes it clear that safeguards requires a multi-disciplinary team effort and that the staff of the Safeguards Department are all safeguards practitioners and that this function does not rest solely with the inspectorate activities of the operations divisions.

The changes announced by DDG Nackaerts will unfold over the next few years. ASNO will not only monitor the changes closely, but will also engage in the technical and strategic discussions that will be important to ensuring the best outcomes from these changes.

Regional Safeguards Development

The Asia-Pacific Safeguards Network (APSN) took advantage of a gathering of safeguards authorities in Singapore in late March 2011 to hold an ad hoc meeting on 25 March 2011. The meeting was co-chaired by Director General (DG) ASNO and Mr KOH Kim Hock, Director General of the Environment Protection Division of the Singapore National Environment Agency. ASNO, as APSN secretariat, provided the secretariat functions for the meeting. The meeting was attended by representatives of 13 organisations, departments and agencies with responsibility for safeguards implementation, from nine regional countries, as well as representatives from the IAEA and the European Commission (EC).

The meeting was the first opportunity for the new DG ASNO to meet many of the APSN members to discuss the vision and direction of this developing regional network. The meeting held discussions on APSN's work program and activities, and made several recommendations on the establishment of working groups as well as a steering committee (consisting of Australia, Indonesia, Japan, and the Republic of Korea), for consideration and endorsement by the APSN plenary meeting. The APSN plenary meeting was scheduled to take place in the Republic of Korea, from 5–7 July 2011.

Bilateral Safeguards Developments

On 11 November 2010, Prime Minister Gillard and Russian President Dmitry Medvedev witnessed an exchange of notes, bringing into force the Australia-Russia Nuclear Cooperation Agreement. Subsequently, on 20 June 2011, DG ASNO and Mr Sergey Kirienko, General Director of Rosatom, signed the ASNO-Russia Memorandum of Understanding (MoU) on administrative arrangements underpinning the Agreement.

On 22 December 2010 the revised and expanded bilateral agreement on peaceful uses of nuclear materials and technology with the United States of America entered into force. The new expanded agreement explicitly adopts the Additional Protocol as part of the safeguards framework.

As foreshadowed in last year's annual report, Australia's bilateral safeguards agreement with Euratom (covering the 27 states of the European Union) is set to expire in January 2012. Negotiations were held in the latter half of 2010, and *ad referendum* text was agreed in June 2011. At the end of the reporting period, ASNO and Euratom were working towards signature of the expanded and revised agreement[1].

In March 2011, Foreign Minister Rudd announced that Australia would begin negotiations with the United Arab Emirates (UAE) on developing a bilateral nuclear cooperation agreement. The first round of negotiations was held in May 2011. In 2010, the UAE established contracts with a consortium from the Republic of Korea to build four nuclear power reactors in the UAE.

Domestic Safeguards Developments

During the reporting period, the IAEA conducted two design information verification inspections, three 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.

The Fukushima Dai-ichi Nuclear Accident

The accident at the Fukushima Dai-ichi nuclear power plant after the terrible tragedy of the Great Tohoku Earthquake and subsequent tsunami brought the issue of nuclear safety to the fore. It also highlighted the importance of effective communication to

1 The Agreement was subsequently signed by Prime Minister Gillard and European Commission President Barroso on 5 September 2011.

states and relevant organisations (e.g. IAEA) of information on emergency incidents in order to ensure the most effective response possible. The Department of Foreign Affairs and Trade (DFAT) was able to draw upon ASNO as a major source of technical expertise to assist in the initial crisis period and as the accident unfolded.

ASNO provided briefing to Ministers and senior officials on the technical aspects of the accident, placing the reporting in context and ensuring the technical accuracy of the consular advice provided to the public. ASNO ensured staff were available 24 hours a day during the initial two week period of the crisis.

While primary responsibility within the Australian Government on nuclear safety and radiation issues rests with the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA), the expertise within ASNO proved to be a very valuable resource for DFAT more broadly and we were able to make a significant contribution to DFAT's responses to the evolving crisis.

Comprehensive Nuclear-Test-Ban Treaty Developments

At 30 June 2011, 182 states had signed the Comprehensive Nuclear-Test-Ban Treaty (CTBT) and 154 had ratified, including 35 of the 44 states which must ratify the Treaty to trigger its entry into force (known as Annex 2 states).

The importance of the CTBT to nuclear disarmament and non-proliferation has been reiterated in a number of political statements during the year. In September 2010 Australia's Minister for Foreign Affairs Mr Rudd chaired a meeting in New York of over 70 countries to promote entry into force of the Treaty. In April 2011 the foreign ministers of Australia and nine other countries reaffirmed the CTBT as a major objective on the multilateral agenda, urged further ratifications and reaffirmed support for the setting-up of an effective monitoring and verification system for the Treaty. Ratification of the CTBT by all of the Nuclear Non-Proliferation Treaty (NPT) nuclear weapon states is widely seen as necessary to stimulate most of the remaining ratifications by Annex 2 states. During an NPT Review Conference follow-up meeting on 30 June – 1 July 2011 the NPT nuclear weapon states recalled their commitment to promote and ensure the swift entry into force of the CTBT and its universalisation.

However, the CTBT will not enter into force until all of the remaining nine Annex 2 states ratify. Among these, the United States and Indonesia have commented publicly on progress towards their respective ratifications, but without setting a timeframe for this goal. The US Administration has announced a campaign to engage the US public and Senate on the Treaty, but the timing of any Senate reconsideration of the CTBT remains to be determined. A bill for ratification of the CTBT was introduced into Indonesia's House of Representatives (DPR) on 1 December 2010 and is being debated within the DPR's Commission I on Foreign Affairs, Defence and Information.

More than 80% of CTBT International Monitoring System (IMS) facilities are now operational. Progress with remaining stations may take some time, however, in some case due to political obstacles, for example where the host country is yet to sign the Treaty. Eighteen of Australia's 21 IMS facilities are operational. Except for the recently completed radionuclide station on Macquarie Island, all have been certified as meeting Treaty requirements. Installation of two more stations commenced in 2011.

Chemical Weapons Convention Developments

Fourteen years after entering into force, the Chemical Weapons Convention (CWC) has 188 States Parties. No new countries have joined the Convention since May 2009. Universal adherence to the CWC is fundamental to ensuring a world free of chemical weapons, but it remains elusive despite on-going diplomatic efforts. There are two countries that have signed, but are yet to ratify the Convention (Israel and Burma) and five yet to accede to it (Democratic People's Republic of Korea, Syria, Egypt, Angola and Somalia).

States Parties together with the Organisation for the Prohibition of Chemical Weapons (OPCW) continue to strive towards achieving the disarmament objective of the CWC. By 30 June 2011, 66% (approximately 47 286 metric tonnes) of all Category 1 and 2[2] chemical weapons that have been declared by seven chemical weapons possessor states had been destroyed.

In the lead up to the final extended chemical weapons destruction deadline of 29 April 2012, ASNO has been working with the Australian Embassy in The Hague to ensure effective transition of the CWC beyond the missed deadlines foreshadowed by Russia and the United States, holders of the largest chemical weapons stockpiles (see report on chemical weapons destruction deadline on page 27).

ASNO supported ongoing efforts by the OPCW Technical Secretariat (TS) to promote the full and effective implementation of the CWC. This is essential to the global chemical weapons ban and to ensuring that the non-proliferation goals of the CWC are realised. In particular, national implementation involves obligations under Article VII to designate a CWC National Authority (185 States Parties have done so) and to establish the necessary legislative and administrative arrangements to enable its implementation and the prosecution of offenders. We are encouraged by the progress made by States Parties in the reporting year towards the implementation of Article VII but note that more work needs to be done. While 137 States Parties have informed the OPCW TS of measures taken in this regard, only 87 States Parties have legislation covering all key areas.

In 2010–2011, ASNO facilitated five routine OPCW inspections, including one Schedule 1 facility and four 'Other Chemical Production Facilities'. The success of these inspections demonstrates Australia's compliance with the Convention, and reflects positively on the cooperation of Australia's chemical industry.

In September 2010, the OPCW inspected and thereby verified Australia's declaration of 144 old chemical weapon (OCW) projectiles of United States origin remaining from WWII, which had been buried on private property in central Queensland. ASNO, together with the Department of Defence, facilitated the inspection, which was the first of its kind in Australia. ASNO worked with Defence officials to submit a destruction and

2 Paragraph 16 of Part IV(A) of the Verification Annex to the CWC determines that for the purposes of destruction of declared chemical weapons they are divided into the following categories: Category 1: chemical weapons on the basis of Schedule 1 chemicals and their parts and components; Category 2: chemical weapons on the basis of all other chemicals and their parts and components; Category 3: unfilled munitions and devices, and equipment specifically designed for use directly in connection with employment of chemical weapons.

disposal plan to the OPCW TS and thereby confirmed that the OCW would be eliminated in accordance with the CWC's requirements. Defence facilitated the destruction of the OCW projectiles inside a purpose-built transportable detonation chamber during April–May 2011 (see report on destruction of OCWs on page 24). Advice and support provided by United States chemical weapons demilitarisation experts was valuable in the preparations for, and in the execution of, destruction activities.

Australia (ASNO, Defence Science and Technology Organisation and officials from the Australian Embassy in The Hague) actively participated in an inaugural Workshop held in The Hague from 24 to 25 November 2010, to promote international cooperation in the peaceful uses of chemistry under Article XI. The Workshop took place on the eve of the year 2011, which the General Assembly of the United Nations[3] has proclaimed as the 'International Year of Chemistry'. Australia continued to engage with the OPCW and other States Parties in The Hague to develop a framework for implementation of the concrete measures identified in the Workshop Report.

Australia, led by staff based in The Hague, concluded its facilitation of the open-ended working group on terrorism (OEWGT) in February 2011 with the delivery of a report to the 63rd session of the Executive Council of the OPCW. During the period of Australia's facilitation, the OEWGT has progressively considered the relevance of the implementation of key articles of the Convention (i.e., Articles IV, V, VII, X and XI) to the OPCW's contribution to the global efforts against terrorism. Australia also participated in the practical exercise entitled "ASSISTEX 3" held in Tunis, Tunisia in October 2010 and a table-top exercise on the preparedness of States Parties to prevent terrorist attacks involving chemicals, which took place in Warsaw, Poland in November 2010.

Other Non-Proliferation Developments

Fissile Material Cut-off Treaty

Calls for the commencement of negotiations on a Fissile Material Cut-off Treaty (FMCT) in the Conference on Disarmament (CD) have grown stronger during the year – highlighted at the UN Secretary General's High Level Meeting on the CD in September 2010. However, the required consensus of CD members to agree to negotiations has continued to be blocked. Australia has been seeking to break the impasse and together with Japan hosted three expert-level meetings in Geneva during the year, to help build confidence and momentum in the CD towards the commencement of FMCT negotiations. ASNO experts participated actively in the meetings. Through the newly established Non-Proliferation and Disarmament Initiative, Australia has worked to build support for progress towards an FMCT including in relation to what could be done if the CD remains unable to agree to start negotiations. At a 30 June – 1 July 2011 meeting in Paris the five NPT Nuclear Weapon States reiterated their support for immediate commencement of negotiations at the CD on an FMCT.

3 The sixty-third session of the General Assembly of the United Nations adopted resolution 63/209 on 19 December 2008, proclaiming 2011 as the International Year of Chemistry.

The Year Ahead

The following developments in the international security environment are likely to impact on ASNO's work during 2011–12:

- IAEA's continuing investigations of undeclared nuclear activities in Syria and related action in the UN Security Council
- Iran's nuclear program and the IAEA's continuing efforts to resolve questions about possible military dimensions
- the evolving international response to the Fukushima Dai-ichi nuclear accident
- international efforts to strengthen nuclear security including through the Nuclear Security Summit
- ongoing efforts to commence negotiations on a Fissile Material Cut-off Treaty (FMCT)
- continued interest in developing nuclear power programs in the Asia-Pacific region and elsewhere
- the work program and further development of the Asia-Pacific Safeguards Network
- changes in the IAEA's safeguards system to one that is fully information-driven
- the inability of some States Parties to complete destruction of their chemical weapon stockpiles by the CWC's final extended deadline of 29 April 2012.

In addressing the challenges posed by the international security environment, ASNO will continue to provide technical analysis and 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 of the IAEA Board of Governors, and through the Australian Safeguards Support Program, the Standing Advisory Group on Safeguards Implementation, and the US-led Next Generation Safeguards Initiative. ASNO will also work on strengthening the IAEA's nuclear security guidelines. Australia looks forward to working closely with the IAEA Secretariat, in these and other areas.

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

ASNO will manage Australia's network of bilateral safeguards agreements, including the tracking of Australian Obligated Nuclear Material (AONM) around the world. ASNO will finalise and seek signature of a new and extended nuclear cooperation agreement with Euratom and will continue negotiation of an agreement with the UAE.

Domestically, to ensure safeguards and nuclear security requirements are met, ASNO will work with 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.

Although US President Obama has made clear his support for the CTBT, Senate approval of ratification requires a two-thirds majority. The US Administration announced in May 2011 that it is preparing to engage the US public and Senate with an education campaign that it expects will lead to ratification of the Treaty. Discussion of the New START treaty in 2010 has given an indication of likely key issues in a debate on CTBT: steps required to ensure the long-term safety and reliability of US nuclear weapons without explosive testing, and the effectiveness of treaty verification. The strength of international support for the CTBT will also be an important consideration – especially by those countries whose ratification will be needed to bring the Treaty into force.

ASNO will continue to work with the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO) and Australian agencies to complete the key elements of CTBT verification, the International Monitoring System (IMS) and on-site inspection (OSI) capability. Australia will continue to work towards the establishment of all IMS facilities for which we are responsible. The CTBTO's Preparatory Commission has identified progress towards an effective OSI capability as a priority, driven by plans for a large-scale inspection exercise in 2014. ASNO coordinates whole-of-government efforts to establish and maintain Australia's IMS stations, and has an active and leading role in the Preparatory Commission's work on OSI.

The effort to get negotiations on an FMCT underway will likely remain high on the international agenda in 2011–2012. Most interested countries have said that they prefer the CD as the venue for FMCT negotiation, but some have said that it could become necessary to progress discussions outside the CD. The UN General Assembly is expected to revisit later in 2011 how the impasse may be overcome, and to look at the functioning of the CD more broadly. ASNO will continue to support Australia's work in this area as opportunities arise, focusing in particular on how an FMCT can be effectively verified.

At the 30 June – 1 July 2011 meeting in Paris the five NPT Nuclear Weapon States also discussed the political and technical challenges associated with verification in achieving further progress towards disarmament and ensuring non-proliferation. They agreed to continue their discussion of this issue later in 2011 at an expert-level meeting in London. This is a welcome development. ASNO is looking to build Australia's engagement in technical issues related to the verified dismantlement of nuclear weapons (see page 79).

ASNO, with officials from DFAT, will contribute to international efforts to minimise any damage to the Chemical Weapons Convention arising from the failure of some States Parties to complete the destruction of their chemical weapons stockpiles in the prescribed time. Australia will continue to seek the destruction of all remaining chemical weapons in the shortest possible timeframe (see report on the chemical weapons destruction deadline on page 27).

ASNO will collaborate closely with the OPCW and other States Parties to promote the objectives of the CWC, including by sharing Australia's experience implementing the

CWC with regional counterparts. ASNO, with DFAT officials, will support OPCW efforts to promote universal adherence to the CWC and to address chemical terrorism.

Industry outreach on CWC matters is an important element of ASNO's strategy to ensure compliance with domestic legislation. ASNO will work with other Commonwealth Government agencies to review the efficacy of Australia's current CWC implementing legislation and regulations.

ASNO will participate in a Challenge Inspection Exercise, jointly organised by the OPCW Technical Secretariat and the Government of Thailand to be held from 31 October to 4 November 2011 in Thailand. The goal of the exercise is to demonstrate and test the OPCW's preparedness to conduct a Challenge Inspection under Article IX of the Convention and to identify areas for improvement. Australia regards challenge inspections as an important verification mechanism for addressing concerns about possible non-compliance with the CWC.

Dr Robert Floyd
Director General ASNO

Prime Minister Julia Gillard and Russian President Dmitry Medvedev witnessed the exchange of notes that brought the Australia-Russia nuclear cooperation agreement into force on 11 November 2010.