Australian Government

ASNO
Australian Safeguards & Non-Proliferation Office

Annual Report 2023–24

Produced by

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Creative commons

The report should be attributed as the Australian Safeguards and Non-Proliferation Office Annual Report 2023-2024.

Use of the Coat Of Arms

The terms under which the Coat of Arms can be used are detailed on the It's an Honour website.

www.pmc.gov.au/government/its-honour

Acknowledgement of country

The Australian Safeguards and Non-Proliferation Office (ASNO) acknowledges the Traditional Owners and Custodians of Country throughout Australia. ASNO recognises their continuing connections to land, waters and community. We pay our respects to all First Nations peoples, their cultures and to their Elders, past and present.

ASNO is situated in Canberra. We wish to acknowledge the Ngunnawal people as the traditional custodians of the land on which we work. We also wish to acknowledge other people and families with connection to the ACT and region and the continuing culture and contribution First Nations people make to the life of the city and region.

Guide to the report

This report complies with the formal reporting obligations of the Director General. It 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 six parts:

1. report by the Director General ASNO on key developments in 2023–24 and a preview of the year ahead
2. review of selected topics in ASNO's work
3. functional overview of ASNO, including its operating environment and outputs
4. report on ASNO's performance during 2023–24
5. key features of ASNO's corporate governance and the processes by which ASNO is directed, administered and held accountable
6. appendices which include ASNO's 'broader conclusion' and other important supplementary information.

As 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 work health and safety
- asset management
- purchasing
- agency-specific social inclusion strategies
- advertising and market research
- ecologically sustainable development and environmental performance.

Letter of Transmittal

Australian Government

ASNO
Australian Safeguards & Non-Proliferation Office

20 September 2024

The Hon Penny Wong
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 2024. 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. A small quantity of nuclear material was identified out of regulatory control. This material was transferred to a permit holder, characterised and reported to the IAEA. No other unauthorised access to, or use of, nuclear materials or nuclear items of safeguards or security significance in Australia was found. 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 developing the verification capabilities of the Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization. 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 non-proliferation measures against 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, Australia's diplomatic missions and in other departments and agencies.

Yours sincerely

Geoffrey Shaw (Dr)
Director General
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Our vision
is to enhance
Australia's domestic
and international
security.

We do this through our three core pillars:

1. Upholding Australia's international non-proliferation commitments through robust domestic regulation
2. Supporting regional non-proliferation implementation
3. Shaping and strengthening the global non-proliferation and disarmament verification mechanisms

What does ASNO do?

ASNO works to enhance Australian and international security through activities which strengthen the effectiveness of regimes against the proliferation of weapons of mass destruction.

ASNO officials in Canberra, 2024.

To better meet the Australian Government's priorities, including for naval nuclear propulsion, and in response to some of the most complex and challenging strategic circumstances of the post-war period, ASNO is redefining its strategic priorities under three pillars:

- Upholding Australia's international non-proliferation commitments through robust domestic regulation
- Supporting regional non-proliferation implementation
- Shaping and strengthening the global non-proliferation and disarmament verification mechanisms.

ASNO is a unique office as it administers the responsibilities of a domestic regulator and the role of the national authority for Australia's international non-proliferation treaties. Other core functions of ASNO include providing expert advice to government in the technically complex area of non-proliferation and disarmament verification mechanisms; coordinating and managing nuclear safeguards research and development activities, and supporting non-proliferation treaty implementation across the region.

Under the *Nuclear Non-Proliferation (Safeguards) Act 1987*, ASNO ensures that Australia's international obligations are met under the Nuclear Non-Proliferation Treaty (NPT), Australia's NPT safeguards agreements with the International Atomic Energy Agency (IAEA), the Amended Convention on the Physical Protection of Nuclear Material (A/CPPNM), the International Convention for the Suppression of Acts of Nuclear Terrorism (ISCANT) and Australia's nuclear cooperation agreements (NCAs). In doing this, ASNO has five main areas of responsibility:

- the application of safeguards in Australia
- the physical protection and security of nuclear items in Australia
- the operation of Australia's network of NCAs, including tracking Australia's uranium exports
- building regional nuclear safeguards and nuclear security capacity
- contribution to the operation and development of IAEA safeguards and the strengthening of the international nuclear non-proliferation regime.

Under the *Chemical Weapons (Prohibition) Act 1994*, ASNO ensures that Australia's international obligations under the Chemical Weapons Convention (CWC) are met while protecting the rights of relevant areas of the chemical industry.

ASNO also supports the technical implementation work of the Organisation of the Prohibition of Chemical Weapons (OPCW), particularly in Australia's immediate region.

Under the *Comprehensive Nuclear-Test-Ban Treaty Act 1998*, ASNO coordinates work in Australia supporting the verification system for the Comprehensive Nuclear-Test-Ban Treaty (CTBT), including facilitating the operation of 21 treaty-monitoring facilities in Australia.

ASNO also contributes to the technical work of the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO) Preparatory Commission in developing procedures for the conduct of CTBT verification activities.

The position of Director General, ASNO embraces the statutory responsibilities of Director of Safeguards, Director, Chemical Weapons Convention Office (CWCO) and Director, Australian Comprehensive Test Ban Office (ACTBO). The Director General reports directly to the Minister for Foreign Affairs.

ASNO's Director General, Dr Geoffrey Shaw delivers Australia's national statement at the IAEA's International Nuclear Security Conference 2024.

Section 1
Director General's Report

The year in review

In July 1974, following Australia's ratification of the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), Australia showed global leadership by establishing what is now referred to as ASNO. As one of the first agencies of its kind, ASNO is dedicated to stopping the spread of nuclear weapons. This role has since expanded to include working towards ridding the world of chemical weapons and the monitoring of the ban on nuclear weapons testing.

Geoffrey Shaw (Dr)

Director General

Australian Safeguards and Non-Proliferation Office

For five decades, ASNO has been advancing global and Australian security through practical and effective measures against the proliferation of weapons of mass destruction (WMD).

As I look towards our 50th year, I must acknowledge the profound geo-strategic challenges that we face today, and the unprecedented strain on the non-proliferation architecture and the international organisations that steward them. The disregard of international norms by Russia, Iran and the Democratic People's Republic of Korea (DPRK) increasingly undermine the non-proliferation architecture and threaten global peace and security.

Russia's withdrawal of its ratification of the CTBT in October 2023 is deeply concerning. It represents a backward step to all who want a world without nuclear weapons and an end to nuclear weapons testing.

The Russian invasion of Ukraine and its ongoing occupation of the Zaporizhzhia Nuclear Power Plant (ZNPP) continues to place Europe's largest nuclear power plant at risk. In response, the IAEA has maintained a permanent presence at ZNPP to independently monitor the situation and to provide nuclear safety and nuclear security support at the site.

The IAEA has also maintained a permanent presence at Ukraine's other nuclear power plants.

In November 2023 during the 25th Session of the Conference of the States Parties to the Chemical Weapons Convention, Russia lost its seat on the 41-member OPCW Executive Council for the first time since the treaty's entry in force.

Iran has continued to build its stockpiles of high enriched and low enriched uranium while failing to comply with its nuclear safeguards obligations. This is of concern because it reduces the time that would be required to produce a nuclear weapon. In September 2023, Iran withdrew the designation of several experienced IAEA inspectors, denying those inspectors access to the country and seriously affecting the IAEA's ability to effectively conduct in-country verification activities.

Open-source imagery has shown that the DPRK maintained the readiness of its Punggye-ri nuclear test site, enabling it to conduct another nuclear test at short notice. Furthermore, in late 2023, the DPRK's experimental light water reactor went critical for the first time, while its experimental nuclear power plant continued to operate intermittently.

In combination with the DPRK's reprocessing capability, these reactors provide the DPRK with the capability to produce plutonium for nuclear weapons.

On a more positive note, I am pleased there has been some good news during this reporting period. On 7 July 2023, the international community achieved a major milestone with the OPCW verifying the destruction of the last declared chemical weapons stockpiles by States Parties to the CWC. More than 72,000 metric tonnes of chemical weapons have been destroyed.

The implications for nuclear security of emerging technologies such as artificial intelligence, autonomous systems and quantum technologies was a focus at the IAEA International Conference on Nuclear Security (ICONS), held in Vienna in May 2024. Global cooperation to establish effective rules and norms was recognised as a key factor if we are to realise the benefits of these technologies while mitigating the risks. Getting these fundamentals right in domestic legal frameworks and policies will be important in creating a sound platform on which to build global resilience.

How ASNO is taking action

ASNO is focused on making meaningful and practical contributions to support non-proliferation and disarmament, including through ensuring compliance with treaty commitments and through domestic regulation. During the reporting period, we stepped up our collaboration with partners across the Indo-Pacific to support their non-proliferation treaty implementation. We also continued our strong technical support of the international organisations, the IAEA, OPCW and CTBTO, that oversee the non-proliferation regimes.

ASNO ensured that Australia's non-proliferation obligations under the NPT, CWC and CTBT continued to be fully met. As a result of these efforts, Australia continued to receive the "broader conclusion" from the IAEA that "all nuclear material remained in peaceful activities". Domestically, ASNO regulated approximately 300 permit holders to ensure all nuclear materials and activities, and all CWC-related chemicals, were accounted for and controlled. Our efforts in nuclear security are globally recognised, as evidenced by Australia maintaining its number one position on the Nuclear Threat Initiative's Nuclear Security Index in July 2023.

To support Ukraine's energy security, I have continued to approve, based on rigorous risk assessments, the case-by-case retransfer of nuclear fuel assemblies containing Australian Obligated Nuclear Material for use in Ukrainian-controlled reactors outside of the conflict zone.

Future-proofing our operations

In 2023-24 ASNO received budget supplementation for nuclear safeguards regulation of Australia's naval nuclear propulsion program. This increase is in response to the significant step-up in the breadth and complexity of our regulatory task – as we transition from a single research reactor and a uranium mining industry to a country that will possess multiple mobile reactors fuelled with high enriched uranium.

Internally, I placed an emphasis on building ASNO's capabilities to ensure it is fit-for-purpose to meet its regulatory responsibilities over the duration of the naval nuclear propulsion program. This included an internal organisational restructure, a recruitment campaign and implementing a rigorous training program to strengthen technical and regulatory expertise. This serves to ensure that ASNO remains an informed, trusted source of technical advice and a competent nuclear regulator.

Verify

Building upon the long standing Australian Safeguards Support Program (ASSP), this year ASNO launched Verify, a new safeguards research and development program to support of the next generation of IAEA safeguards techniques and technologies, and to build the next generation of safeguards experts in Australia. Both will be essential for safeguarding naval nuclear propulsion for the duration of the program.

Under Verify, ASNO is providing a grant of $3.3 million over two years to the IAEA to support the research and development and implementation of innovative verification and analysis tools. Verify is also funding universities to design and implement a formal post-graduate qualification in nuclear safeguards, aimed at enduring sovereign expertise in this area.

Regional engagement

Strengthening Australia's security required us to look beyond our borders and ASNO has continued worked with our regional partners to enhance non-proliferation treaty implementation.

ASNO facilitated three regional events including a nuclear security workshop for Pacific and Indian Ocean States, a Pacific focused workshop on the implementation of CTBT obligations and a nuclear safeguards masterclass for countries with nuclear non-proliferation obligations in the region. Working with the United States Government, ASNO also presented at safeguards workshops and training events in Fiji, Laos, Timor-Leste and the Maldives.

ASNO actively supported the Asia-Pacific Safeguards Network (APSN), currently chaired by Thailand, and hosted a senior delegation of Timorese officials on a tour of relevant facilities in Australia, with a focus on nuclear safeguards and security for practical applications of nuclear science and technology.

OPCW engagement

ASNO also contributed to OPCW workshops in the Republic of Korea, and Fiji, and served as co-facilitator in the OPCW's first table-top exercise on chemical counter-terrorism. The exercise, held at the OPCW Centre for Chemistry and Technology, brought together experts from across the world to consider the readiness, response and investigation capabilities of both the OPCW and States Parties. Discussions centred on the practical and legal measures required, as well as best practices, to mitigate the growing global threat of chemical terrorism, especially by non-state actors.

IAEA International Conference on Nuclear Security (ICONS) 2024

In May 2024, Assistant Foreign Minister, The Hon Tim Watts MP co-presided over ICONS 2024, alongside the Kazakh Vice Minister of Energy, Mr Sungat Yessimkhanov. ASNO supported Minister Watts in this role and, as part of a broader delegation, reinforced Australia's commitment to nuclear stewardship, our leadership in nuclear security advocacy and diplomacy, and our technical expertise in this field.

Participants of the OPCW chemical counter-terrorism exercise receive briefing by an expert from the OPCW Technical Secretariat. Photo credit: OPCW

The year ahead

In our upcoming 50th year ASNO will continue to respond to the global non-proliferation challenges and to building our regulation capabilities to meet them.

1

Meeting international obligations and delivering robust domestic regulation

ASNO will:

- ensure that Australia continues to meet our NPT, CWC and CTBT obligations to the highest international standard
- work with permit holders to ensure effective, streamlined domestic regulation.

2

Safeguarding Australia's naval nuclear propulsion

ASNO will:

- work with partners on the safeguards and verification approaches, including an Article 14 Arrangement, that will enable the IAEA to meet its safeguards objectives throughout the lifetime of the naval nuclear propulsion program, while protecting information and assets
- ensure Australia's existing obligations under the CSA and AP are met, including reporting to the IAEA on the naval nuclear propulsion program and facilitating IAEA verification activities, as required
- work on the bespoke safeguards and nuclear security permits for establishment of facilities and possession of nuclear material and associated items.

3

Supporting our regional partners

ASNO will:

- collaborate with regional partners to support treaty implementation, including through the exchange of knowledge on best practices, technical learning and the practical applications of our work
- work with the APSN, IAEA, CTBTO, OPCW, and regional counterparts to design and deliver bespoke workshops, training events and study tours for Pacific and Southeast Asian partners.

4

Strengthening non-proliferation verification mechanisms

ASNO will:

- manage Verify, a research and development program to support novel safeguards technology and approaches as well as build Australia's next generation of safeguards experts.

5

Building organisational capabilities and profile

ASNO will:

- continue its uplift, including through targeted recruitment and rigorous training and professional development to build core competencies and technical expertise
- strengthen our corporate identity to reinforce regulatory independence and subject matter expertise, including through upgrading the ASNO website.

6

Celebrating 50 years of ASNO

Finally, this is a year of celebration for ASNO as we embark on our 50th year of operation. We will take time in this busy year to remember the key moments that have led us to where are today.

ASNO DG and IAEA DDG Safeguards sign an Australia Safeguards Support Program agreement in May 2024.

Section 2
Current topics

ASNO's work to support Australia's naval nuclear propulsion

On 14 March 2023, after an 18-month consultation period, AUKUS Leaders announced the pathway for Australia's acquisition of naval nuclear propulsion capability. At this announcement, Australia, the United Kingdom and the United States reiterated their strong commitment to setting the highest nuclear non-proliferation standard for the program.

Consistent with its legislative mandate under the *Nuclear Non-Proliferation (Safeguards) Act 1987*, ASNO will regulate nuclear safeguards and nuclear security for the naval nuclear propulsion program. Our regulatory work in safeguards and security will complement the work of the Australian Naval Nuclear Power Safety Regulator (ANNPSR), which will regulate nuclear safety when it is established.

Engaging the IAEA and trilateral partners on an Article 14 Arrangement

Safeguarding naval nuclear propulsion is unprecedented globally. Since May 2023, ASNO has been leading Australian government efforts to develop technically complex, first-of-a-kind nuclear safeguards arrangements for the naval nuclear propulsion program through multiple consultations with the IAEA and AUKUS partners. These arrangements will enable the IAEA to verify Australia's continued compliance with its NPT obligations. To do this, the IAEA will need to be able to meet its safeguards objectives throughout the lifecycle of the naval nuclear propulsion program, namely, to verify no diversion of declared nuclear material, no misuse of declared nuclear facilities and no undeclared nuclear material or activities. At the same time, the safeguards and verification arrangements will need to protect sensitive, classified and controlled information and assets.

The safeguards and verification arrangements for the naval nuclear propulsion program will include an Article 14 Arrangement under Australia's Comprehensive Safeguards Agreement (CSA).

The Article 14 Arrangement will include a package of technical measures that will enable the IAEA to continue to meet its safeguards objectives while nuclear material is subject to the arrangement. Negotiating the Article 14 Arrangement, and the subsidiary implementing arrangements and procedures, will take time.

Minister for Foreign Affairs, Senator the Hon Penny Wong speaking during the AUKUS Nuclear Submarine announcement at Osborne Naval Shipyard in Adelaide.

Article 14 is the legal mechanism under the CSA by which a non-nuclear-weapon State, like Australia, and the IAEA can make an arrangement for the use of nuclear material in a non-proscribed military activity, such as naval nuclear propulsion.

Australia continues to meet our obligations under its CSA and Additional Protocol (AP)

While Article 14 Arrangement work continues, ASNO works to ensure that Australia remains compliant with its obligations under its CSA and AP and continues to receive the 'broader conclusion' from the IAEA (see Appendix 4). Since 2022, ASNO submits yearly declarations under the AP outlining plans for and progress in delivering Australia's naval nuclear propulsion program through the AUKUS partnership.

Key milestones in IAEA activities to date include the IAEA conducting a Design Information Verification activity at the future Nuclear-Powered Submarine Construction Yard at Osborne, South Australia, in May 2023 and the first Complementary Access inspection activity at HMAS Stirling in June 2024. These activities were facilitated by ASNO in coordination with the Australian Submarine Agency (ASA). These activities are part of a significant increase in IAEA verification activities across Australia since AUKUS was announced. This trend will likely continue over the years as the naval nuclear propulsion program develops.

Domestic regulation of nuclear safeguards and nuclear security

Domestic regulation of nuclear safeguards and nuclear security, pursuant to the Safeguards Act, is required for Australia to continue to meet our safeguards obligations and to apply appropriate levels of security of nuclear material. All nuclear facilities in Australia, including for naval nuclear propulsion, require permits under the Safeguards Act before their construction or acquisition, and before the possession of nuclear material or associated equipment. ASNO is developing bespoke permits that will be applicable to Australia's naval nuclear propulsion program.

ASNO provides technical advice, including on 'safeguards-by-design' and 'security-by-design' principles, and expertise to a range of AUKUS stakeholders as implementation of Australia's naval nuclear propulsion program continues. This proactive approach to guiding engineering and operational design features will help ensure domestic regulatory and treaty obligations can be met in the most efficient and cost-effective manner.

Research and development of safeguards technologies and capability

ASNO established a safeguards research and development program – Verify – to build the next generation of IAEA safeguards technology and techniques, and safeguards expertise in Australia. Both are essential to support the future implementation of the multi-decade naval nuclear propulsion program.

Working to ensure that the nuclear regulatory environment is fit for purpose

ASNO has worked with Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) and the Defence Nuclear-Powered Submarine Regulator Design (ANNPRSD) team to establish a common understanding of regulatory practices and responsibilities. Creating a community of nuclear regulators will provide for shared capacity building and a robust and accountable regulatory framework.

AUKUS Agreement on Cooperation Relating to Naval Nuclear Propulsion

ASNO contributed to the development of the non-proliferation, nuclear safeguards and security aspects of *The Agreement Among the Government of Australia, the Government of the United Kingdom of Great Britain and Northern Ireland, and the Government of the United States of America for Cooperation related to Naval Nuclear Propulsion,* which was signed outside of the reporting period (5 August 2024).

> "Safeguards, and their related verification techniques, deter the spread of nuclear weapons through the early detection of the misuse of nuclear material or technology.
>
> Australia will provide funding to connect Australian expertise in robotics, AI and advanced physics with the nuclear safeguards work of the IAEA. This will equip the IAEA to develop more effective and technologically advanced methods to improve safeguards verification techniques."
>
> **Senator the Hon Penny Wong**
> Minister for Foreign Affairs
> 14 June 2024

Safeguarding uranium exports amid surging geostrategic volatility

While we maintain our regulatory independence, ASNO is a collaborative and agile regulator. We respond quickly when needed, and we work with our permit holders to find solutions that ensure Australian Obligated Nuclear Material (AONM) remains secure.

Responding to threats to international shipping in the Red Sea

The importance of maintaining productive working relationships with our permit holders, and being responsive to the geostrategic environment, was well illustrated by ASNO's response to regional instability in the Middle East and its significant impacts on Australian Uranium Ore Concentrate (UOC) shipments.

Australian UOC exports are undertaken in accordance with the security provisions contained in transport permits issued by ASNO. These requirements are applied across all transport modes, reinforced by arrangements under bilateral nuclear cooperation agreements with partner countries that process and use Australian uranium. Minimum security requirements across permits and bilateral arrangements include verifying the integrity of containers holding UOC and checking container seals at each port of unloading or trans-shipment.

In reaction to the first attack of a commercial vessel by Yemen-based Houthis in the Red Sea in October 2023 ASNO closely monitoring the situation for escalation. Of immediate concern was the potential security risk to Australian UOC shipments that pass through the Gulf of Aden and Red Sea enroute to European ports.

ASNO officials conduct nuclear security inspections at shipping ports.

The indiscriminate attacks on commercial and cargo vessels escalated within weeks and by December 2023, I engaged with our permit holders, Australian uranium miners, to find mitigation measures to counter the developing security threats posed to Australian UOC shipments. I advised permit holders that ship UOC to conduct a risk assessment and consider using alternate shipping routes.

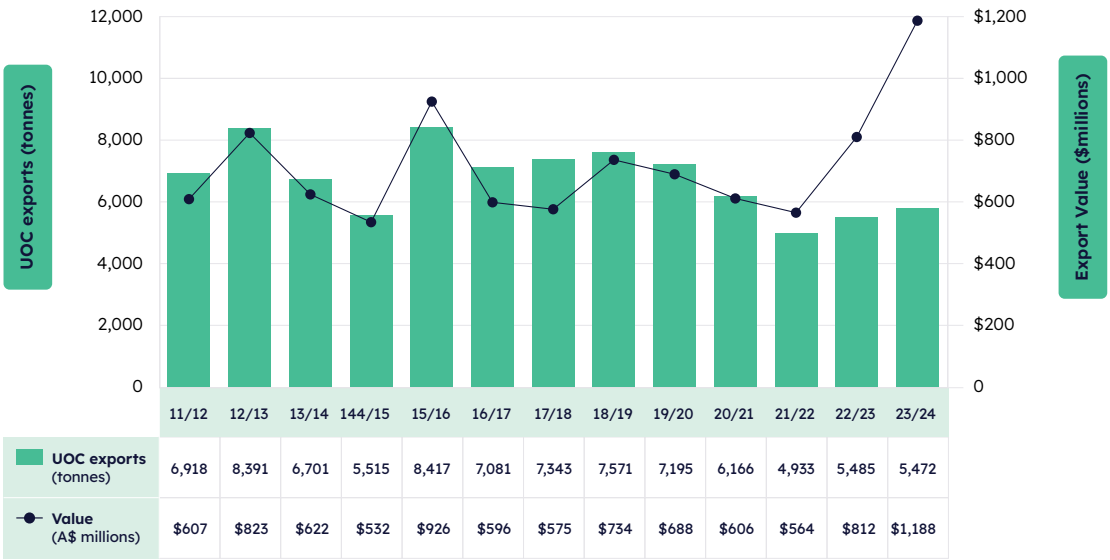
By the end of December 2023, my staff were prioritising the assessment and approval of new vessels and alternate shipping routes including transiting ports proposed by shipping liners.

The efforts of my staff to work closely with Australian miners and the shipping liners meant shipping was able to continue with reduced risks. During the reporting period I approved 31 vessels and two new shipping routes — and though routes meant longer travel time, AONM has remained secure. We continue to actively monitor the situation, with a view to returning to standard shipping routes when conditions allow.

UOC exports

Australia continues to be a major producer of UOC. In March 2024, I issued a permit for the Honeymoon Mine in South Australia to resume production, raising the Australian operating uranium mines to three. Further, Mulga Rock in Western Australia expects to complete feasibility studies by mid-2025.

Australian UOC exports



	11/12	12/13	13/14	144/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24
UOC exports (tonnes)	6,918	8,391	6,701	5,515	8,417	7,081	7,343	7,571	7,195	6,166	4,933	5,485	5,472
Value (A$ millions)	$607	$823	$622	$532	$926	$596	$575	$734	$688	$606	$564	$812	$1,188

Table 1: UOC (U_3O_8) export and nuclear electricity statistics

Location	Material balance area
Total Australian UOC exports FY2023–24	5,742 tonnes
Value Australian UOC exports	$1.19 billion
Australian exports as percentage of world uranium requirements	8.5%
Power generated by these exports	193 TWh

ASNO official during an OPCW inspection of an Other Chemical Production Facility in Victoria.

Section 3
ASNO's regulatory functions

ASNO's role

ASNO ensures that Australia upholds its international commitments to the International Atomic Energy Agency (IAEA), the Organisation for the Chemical Weapons Convention (OPCW) and the Comprehensive Nuclear Test-Ban-Treaty Organization (CTBTO).

The rules of these agreements are put into Australian law under three pieces of legislation that ASNO administers and provides the core of ASNO's domestic regulatory functions.

ASNO officials conducting domestic inspections.

Nuclear Non-Proliferation (Safeguards) Act 1987 (Safeguards Act)

Comprehensive Nuclear-Test-Ban Treaty Act 1998 (CTBT Act)

Chemical Weapons (Prohibition) Act 1994 (CWP Act)

Nuclear Non-Proliferation Treaty functions

Australia signed the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) on 27 February 1970. As a signatory to the NPT, Australia accepted a set of agreements. For each Non-Nuclear Weapon State, safeguards obligations under the NPT are detailed in the Comprehensive Safeguards Agreement (CSA). Most countries, including Australia, also have an Additional Protocol (AP) agreement which strengthens the IAEA's ability to detect undeclared nuclear activities.

ASNO is Australia's national authority responsible for ensuring that Australia meets these safeguards obligations and for administering corresponding domestic regulation under the *Nuclear Non-Proliferation (Safeguards) Act 1987*.

Nuclear Non-Proliferation (Safeguards) Act 1987

The Safeguards Act, which took effect on 31 March 1987, forms the legislative basis for ASNO's nuclear safeguards and security activities across Australia.

The Safeguards Act gives effect to Australia's obligations under:

- the NPT
- Australia's CSA and AP with the IAEA
- treaty-level agreements between Australia and various countries (and Euratom) concerning transfers of nuclear items and cooperation in peaceful uses of nuclear energy, known as nuclear cooperation agreements (NCAs)
- the Amended Convention on the Physical Protection of Nuclear Material (A/CPPNM)
- the International Convention for the Suppression of Acts of Nuclear Terrorism (ICSANT).

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

The functions of ASNO and the Director General are set out in Part IV of the Safeguards Act and 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 Comprehensive Safeguards Agreement and Additional Protocol with the IAEA
- carrying out Australia's obligations under Australia's NCAs with other countries and Euratom
- operating Australia's bilateral NCAs and monitoring compliance with the provisions of these agreements
- undertaking, coordinating 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.

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 has required a substantial program of preparation in advance of the Treaty's entry into force.

To make the necessary preparations, a Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO) was established in 1996, made up of CTBT States Signatories and supported by a Provisional Technical Secretariat. The tasks of the CTBTO include the establishment and provisional operation of an International Monitoring System (IMS) comprising 337 facilities around the world and an International Data Centre in Vienna.

The CTBTO must also establish a capability to conduct an on-site inspection if 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.

Key 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 operation 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 CTBTO and its working groups
- participating in development and implementation of Australian policy relevant to the CTBT
- supporting regional CTBT implementation.

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 CTBT 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 CTBTO to facilitate cooperation in relation to monitoring stations under Australian control.

Chemical Weapons Convention functions

The Convention on the Development, Production, Stockpiling and Use of Chemical Weapons and Their Destruction (Chemical Weapons Convention, or CWC) prohibits the development, production, acquisition, stockpiling, retention, transfer and use of chemical weapons.

Its verification regime is based on declarations by States Parties of facilities and activities dealing with particular chemicals, and on confirmation of compliance through on-site inspections.

ASNO is Australia's designated national authority for the CWC. It acts as the primary 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 States Parties.

Through a system of permits and notifications under the *Chemical Weapons (Prohibition) Act 1994* and the *Customs (Prohibited Imports) Regulations 1956*, ASNO gathers information from the chemical industry, traders, universities and research institutions to compile declarations that Australia must submit to the OPCW. ASNO conducts compliance inspections of relevant facilities in Australia. 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 States Parties to formulate policy and provide practical implementation assistance.

ASNO's 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, subsequently reported to the OPCW if declarable
- 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.

OPCWDay participant trying on the suit that OPCW inspectors wear on missions.

Chemical Weapons (Prohibition) Act 1994

The Chemical Weapons (Prohibition) Act 1994 (CWP Act) was enacted on 25 February 1994.

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 establishes a penalty of life imprisonment
- establishes permit and notification systems for the mandatory provision of data by facilities which produce or use chemicals as specified by the CWC, so that ASNO can lodge declarations with the OPCW
- provides for routine inspections of declared facilities and challenges 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.

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, which enabled its entry into force.

The Treaty has 13 Parties: Australia, Cook Islands, Fiji, Kiribati, Nauru, New Zealand, Niue, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu.

The SPNFZ Treaty has three protocols. Under Protocol 1, the US, UK and France are required to apply the basic provisions of the Treaty to their respective territories in the zone established by the Treaty.

Under Protocol 2, the US, France, UK, Russia and China agree not to use or threaten to use nuclear explosive devices against any party to the Treaty or to each other's territories located within the zone.

Under Protocol 3, the US, France, UK, Russia and China agree not to test nuclear explosive devices within the zone established by the Treaty.

France and the UK have ratified all three protocols.

Russia and China have ratified the protocols relevant to them, Protocols 2 and 3. The US is yet to ratify the SPNFZ Treaty protocols.

South Pacific Nuclear Free Zone Treaty Act 1986

The South Pacific Nuclear Free Zone Treaty Act 1986 (SPNFZ Act) came into force in Australia on 11 December 1986 and gives effect to Australia's obligations, responsibilities and rights under the SPNFZ Treaty.

The SPNFZ Act also establishes the framework for SPNFZ Treaty inspections.

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 SPNFZ Treaty inspections and to investigate possible breaches of the SPNFZ Act.

ASNO officials conduct inspections of chemical facilities.

What are International Atomic Energy Agency safeguards?

The goal of safeguards is to deter the spread of nuclear weapons by the early detection of the misuse of nuclear material or technology. Safeguards assure the international community that states are abiding by their nuclear non-proliferation commitments.

For Australia, safeguards obligations are specified in:

- The **Comprehensive Safeguards Agreement (CSA)**, an agreement between Australia and the IAEA providing an important set of rules to make sure that countries who use nuclear materials don't use them to make nuclear weapons.
- The **Additional Protocol (AP)** is like an extra set of tools such as environmental sampling, satellite imagery and short-notice inspections that are given to the IAEA to make sure countries like Australia are being completely honest and have no undeclared nuclear activities or facilities. Most countries with a CSA also have an Additional Protocol.

Here's what Australia's CSA does:

Makes sure Australia's nuclear materials are used as declared.

The CSA's main job is to ensure that nuclear materials, like those used in Australia's nuclear research reactor, are only used in ways intended. The CSA ensures that the IAEA can verify that these materials are used exclusively for important medical or scientific research or product development, and not for building nuclear weapons.

Ensures that Australia keeps track of its nuclear materials.

When Australia agreed to have a CSA with the IAEA, we also agreed to keep careful records of all our nuclear materials. Australia has a nuclear accounting database called NUMBAT which is used by ASNO, industry and other partners to input, track and report on the movement of nuclear materials in Australia.

The IAEA needs to know the location of all Australia's nuclear materials and how they're being used as they go through the different stages in the nuclear life cycle or are used for non-nuclear uses such as radiation shielding or microscopy.

Ensures that Australia reports what it is doing.

Australia must tell the IAEA what we are doing with our nuclear materials.

We do this by sending a monthly report outlining any nuclear material movements as recorded in our database, and then once a year we conduct a stock take of all nuclear material in Australia, which is reported in detail to the IAEA and in summary form in the Annual Report.

IAEA inspections.

The IAEA can inspect Australia's nuclear facilities and places where nuclear materials might be to make sure everything is as declared. They use special devices to check the amount of nuclear material is present as reported. They also check if nuclear activities at facilities and sites match what has been reported.

Here's what Australia's Additional Protocol does:

Checks for hidden nuclear activities.

The main goal of the Additional Protocol is to provide the IAEA tools to verify that Australia isn't hiding any secret nuclear materials or activities anywhere in Australia.

Requires more reporting.

Countries that agree to the Additional Protocol must tell the IAEA additional details about their nuclear-related activities. These details include research on nuclear topics, mining uranium, importing and exporting nuclear equipment (used in nuclear reactors), and providing information about all the buildings on all the sites where nuclear materials might be stored.

IAEA inspector attends the first ever complementary access inspection at a mine. Ranger Mine on 28 June 1999.

Australia became the first country to bring an Additional Protocol into force with the International Atomic Energy Agency on 12 December 1997. The first complementary access inspection under Australia's Additional Protocol occurred on 21 April 1998 at ANSTO. The first ever complementary access inspection at a mine was also in Australia on 28 June 1999.

IAEA safeguards conclusions

The IAEA provides the annual safeguards conclusion that is published in our Annual Report. The safeguards conclusion is like a yearly report card for countries with a CSA.

In this safeguards conclusion, it advises that: "declared nuclear material remained in peaceful activities".

Australia has also successfully implemented an AP since 1997. Using the additional information provided in the AP, the IAEA can reach a 'broader conclusion' (see Appendix E) that: "all nuclear material remained in peaceful activities".

In 2000, Australia was the first state to receive the IAEA's 'broader conclusion', and has received it every year since. In 2023, of the 189 states with IAEA safeguards agreements in force, the IAEA drew the broader conclusion for only 74 states.

ASNO helped the IAEA run the Integrated Nuclear Security Sustainability Plan in Melbourne, April 2024.

Section 4
Our performance

Our Pillars

To better meet the Australian Government's priorities, including for naval nuclear propulsion and in response to some of the most complex and challenging strategic circumstances of the post-war period, ASNO is realigning its strategic priorities to sit under three pillars:

1. Upholding Australia's international non-proliferation commitments through robust domestic regulation
2. Supporting regional non-proliferation implementation
3. Shaping and strengthening the global non-proliferation and disarmament verification mechanisms

Our performance is measured against these three priorities.

Pillar one

Uphold Australia's international non-proliferation commitments through robust regulation

1.1

International safeguards

Performance Measures

Australia continues to receive the 'broader conclusion' that 'all nuclear material remained in peaceful activities' from the IAEA.

Australia's obligations are met under Australia's Comprehensive Safeguards Agreement and Additional Protocol with the IAEA.

During the reporting period, ASNO ensured that all nuclear material and nuclear activities in Australia were accounted for and controlled in accordance with IAEA requirements and domestic legislation. ASNO submitted correct, complete and timely reports, notifications and declarations to the IAEA in fulfilment of Australia's obligations under its safeguards agreement with the IAEA.

The IAEA found no indication of the diversion of declared nuclear material from peaceful nuclear activities, no indication of undeclared production or processing of nuclear material at declared sites, and no indication of undeclared nuclear material or activities in Australia. It found that Australia has met its obligations under the CSA and the AP.

ASNO's nuclear regulatory permit system

Under the Safeguards Act, ASNO administers a system of permits for anyone who:

- produces, uses, stores or transports nuclear materials,
- produces, uses, processes, stores or transports/transfers associated items, such as specific types of nuclear equipment and technology,
- constructs new facilities, or
- decommissions facilities.

The permit system, along with other authorities and notifications under the Safeguards Act, provides one of the tools that ASNO uses to give domestic regulatory effect to Australia's obligations under international agreements for nuclear non-proliferation, safeguards and security.

Permit holders must:

- Report regularly to ASNO on each item of nuclear material, equipment or technology they have and on their related activities.
- Report to ASNO on the design, construction and operation of their facilities.
- Implement risk-based permit conditions scaled for the quantity and type of nuclear materials, equipment or technology.
- Facilitate compliance checks by IAEA and ASNO inspectors, including inspections.

ASNO-led domestic compliance inspections

ASNO conducts its own domestic inspections separate from those done by the IAEA to:

- ensure existing permit holders are complying with the Safeguards Act and their permits or notification requirements
- determine whether potentially regulated entities (such as permit applicants) have the necessary arrangements in place to meet obligations under the Safeguards Act
- investigate any indications of nuclear material or associated items outside of regulatory control
- identify and resolve compliance issues, such as inconsistencies in reporting by regulated entities to ASNO
- work with regulated entities to ensure that they know and are meeting their compliance requirements. Sometimes ASNO staff assist by characterising nuclear materials or associated items
- ensure nuclear material, associated items and facilities have adequate physical security to prevent, detect and respond to nuclear security threats.

Australia's declarations to the IAEA

ASNO continuously provides correct, complete and timely reporting to the IAEA on all nuclear material, associated items, facilities and activities in Australia based on information gathered from a variety of sources (including permit holders). Under the CSA, ASNO reports on holdings and movements of nuclear material. ASNO makes declarations of nuclear activities (including those not including nuclear material) under the AP.

IAEA inspections under safeguards agreements

As part of Australia's IAEA safeguards agreements the IAEA conducts inspection activities, which take the form of:

- Inventory inspections at any locations where nuclear material is in use or stored. At these locations the IAEA measures and verifies each item of nuclear material against the inventory that ASNO reports to the IAEA on a monthly basis
- Inspection activities at nuclear facilities focused on verifying the design of those facilities against design information provided by ASNO
- Complementary access, which is different to other inspection activities as it allows the IAEA access to locations where there may be no declared nuclear materials or activities. In Australia this may include research facilities, manufacturing locations and other relevant sites. These visits are about verifying the correctness of ASNO's declarations about nuclear-related activities and sites and the absence of undeclared nuclear material or activities anywhere in Australia.

ASNO officials inspecting nuclear materials.

ASNO officials inspecting nuclear materials.

Accounting for Australia's nuclear materials

Australia's material balance areas are described in Table 2. For nuclear accounting purposes, material balance areas are established in areas that have nuclear materials.

Physical inventories are taken to establish a nuclear material balance, and all transfers in and out of material balance areas can be determined. ASNO provided reports to the IAEA as required by the CSA.

In 2023, the IAEA drew a 'broader conclusion' for Australia (see Appendix E), the IAEA's strongest level safeguards conclusion. Of the 189 States with safeguards agreements in force with the IAEA, the IAEA drew the 'broader conclusion' for only 74 States in this period.

Table 2: Material balance areas in Australia for IAEA safeguards purposes

Location	Material balance area	Name of facility or location outside facility
Lucas Heights	AS-A	HIFAR (Note: de-fuelled in 2007)
Lucas Heights	AS-C	Research and development laboratories
Lucas Heights	AS-D	Vault storage
Elsewhere	AS-E, ASE1 & ASE2	Other locations in Australia (e.g. universities, industrial radiography companies, hospitals)
Lucas Heights	AS-F	OPAL reactor
Lucas Heights	AS-H	Synroc waste immobilisation (SyMo) plant
CSIRO (various sites)	AS-I	CSIRO

The total quantities of nuclear material by category in Australia are shown in Table 3. A small quantity (2.75 kg) of uranium-235 in high enriched uranium is retained in Australia and used for a variety of purposes primarily due to the utility of its chemical, physical and isotopic characteristics.

Typical uses of this material include:

- research and development related to nuclear non-proliferation activities
- validating the commercial application of the Australian Nuclear Science and Technology Organisation's (ANSTO) Synroc waste immobilisation technology
- nuclear forensics for identifying illicit nuclear materials
- neutron detection
- development of other detection technologies
- chemistry work.

ASNO's reporting on nuclear material and associated items in Australia is based on regulatory activities completed by ASNO and annual physical inventory takings completed by regulated entities as a condition of the permits issued by ASNO (see Section 1.2).

Table 3: Nuclear Material in Australia at 30 June 2024

Category	Quantity	Intended end-use
Source Material		
Uranium ore concentrates (UOC)	785 tonnes	Export for energy use pursuant to bilateral agreements
	3.5 tonnes	Storage
Natural uranium (other than UOC)	4,487 kg	Research, storage
Depleted uranium	28,477 kg	Research, shielding
Thorium ore residues	59 tonnes	Storage/disposal
Thorium (other than thorium ore residues)	1,936 kg	Research, industry
Special Fissionable Material		
^{235}U – low enriched	204,311 grams[1,2]	Research, radioisotope production, storage
^{235}U – high enriched	2,747 grams[2]	Research, storage
^{233}U	3.8 grams[3]	Research
Plutonium (other than ^{238}Pu)	1,201 grams	Research, neutron source

[1] The quantity of ^{235}U in low enriched uranium in Australia increased between 30 June 2023 and 30 June 2024 primarily due to the import of fresh fuel assemblies for the OPAL reactor.

[2] Quantities of ^{235}U are isotope weights.

[3] Quantities of ^{233}U are isotope weights.

As part of ASNO's annual material balance evaluation of nuclear material in each material balance area, ASNO further evaluated each material balance area where minor differences between book and physical inventories were present. These inventory differences were reported to the IAEA in conjunction with inventory change reports, physical inventory lists, material balance reports and in Additional Protocol declarations as applicable. Details are provided in Table 4. Differences were primarily due to re-measurement of batches of nuclear material (including medical shielding and reagents) at universities, hospitals and research institutes.

An unreconciled difference in the quantity of depleted uranium held by one permit holder was discovered. ASNO worked with the permit holder to establish the reasons behind this situation and to ensure that it does not occur in the future. Investigations suggest that the items were previously used on the permit holder's premises and were not returned to centralised storage by mistake. ASNO reported the discrepancy to the IAEA in the form of a 'Special Report' letter and also in declarations under the Additional Protocol (article 2.a.(vii)).

Table 4: Inventory Differences Recorded during 2023-24

Material Balance Area	Difference between book and physical inventory	Comment
ANSTO (AS-D)	+32.93 kg depleted uranium	Depleted uranium shielding in pots that could not be located.
Other locations (MBA AS-E & ASE1)	-202.86 kg depleted uranium	Re-measurement and re-assignment of batch weights, including medical radiography equipment, industrial gauge shielding, industrial radiography devices, counterbalance weights and chemical reagents.
	+1.59 kg natural uranium	
	+1.13 kg thorium	

As well as requiring reporting on nuclear material inventory and transactions, the CSA also requires reporting of information relevant to safeguards on design and operational attributes of nuclear facilities and locations outside facilities. During the reporting period, ASNO ensured that all Design Information Questionnaires and preliminary design information remained up to date.

To fulfill Australia's obligations under safeguards agreements, ASNO also administers permits under the Safeguards Act for possession of associated material, associated equipment and associated technology (referred to as associated items).

These permits ensure Australia can maintain regulatory controls on technology, equipment and material with potential proliferation risks, can report on design attributes for Design Information Questionnaires and meet other reporting obligations under various Nuclear Cooperation Agreements (NCA). Table 5 lists the inventory of associated items in Australia.

Table 5: Associated items[4] in Australia at 30 June 2024

Category	Quantity	Intended end-use
Associated material		
Deuterium and heavy water	20.9 tonnes	Research, reactors
Nuclear grade graphite	83.3 tonnes	Research and storage
Associated equipment		
HIFAR[5]	1	Reactor
HIFAR coarse control arms (unused)	5	Reactor components
HIFAR coarse control arms (used)	14	Reactor components
HIFAR safety rods	3	Reactor components
HIFAR fuel charging and discharging machines	2	Reactor components
OPAL reactor[6]	1	Reactor
OPAL control rods	14	Reactor components
OPAL control rod drives	6	Reactor components
Nuclear-grade zirconium tubes	<50 kgs	Research, development and storage
Self-powered neutron detectors	46	Reactor components

[4] Not including items categorised as associated technology.
[5] The ANSTO Board decided to cease operation of HIFAR in January 2007. The reactor was de-fuelled in May 2007. It is awaiting decommissioning.
[6] Includes, among other things, the reactor reflector vessel and core grid.

Additional Protocol reporting to the IAEA

ASNO prepares and provides annual declarations to the IAEA under a range of AP provisions, as well as quarterly declarations on relevant exports. An important aspect of the AP is reporting to the IAEA on nuclear fuel cycle-related research and development activities and plans relevant to the development of the fuel cycle.

ASNO ensured that all IAEA requirements were met during the reporting period, including with respect to Australia's plans to acquire naval nuclear propulsion.

IAEA inspections

The IAEA conducted 22 inspection activities in accordance with standard arrangements under Australia's CSA and the AP. ASNO ensured that the IAEA met its inspection objectives. ASNO inspectors facilitated access for the IAEA inspectors in accordance with the *S*afeguards Act and, where applicable, conditions under respective permits and accompanied the IAEA inspectors during their activities.

Details on all IAEA inspections are provided in Table 6. The IAEA's findings from these inspections (where available at the time of publishing this Annual Report) are listed in Appendix D.

As part of these activities, the IAEA performed a complementary access at a private company that is not a permit holder of ASNO to verify the absence of undeclared nuclear material, equipment and activities, following up on the answers that ASNO provided to questions raised by the IAEA.

In March 2024, the IAEA performed a design information verification and environmental sampling at ANSTO's SyMo facility, which (once commissioned) will utilise Synroc® technology to immobilise waste from ANSTO's Mo-99 production. The IAEA is likely to conduct more baseline environmental sampling of this facility in 2025 or 2026.

In June 2024, ASNO with ASA facilitated a complementary access visit for the IAEA at HMAS Stirling. This was done at Australia's invitation under article 8 of the Additional Protocol. The aim of this activity was to provide the IAEA with access to information about the site and to apply technical measures to verify the absence of safeguards-relevant activities, prior to the Submarine Tendered Maintenance Period (STMP) involving US vessels planned for August-September 2024, which will be the first maintenance activity of its type in Australia.

> “Since ratifying the Nuclear Non-Proliferation Treaty fifty years ago, Australia has been an example to the world on non-proliferation and disarmament – including through being the first country to implement enhanced NPT safeguards under the Additional Protocol.”

Senator the Hon Penny Wong
Minister for Foreign Affairs
19 September 2023

IAEA’s first Inspector-General (equivalent to Deputy Director-General IAEA) was Australian, Allan McKnight.

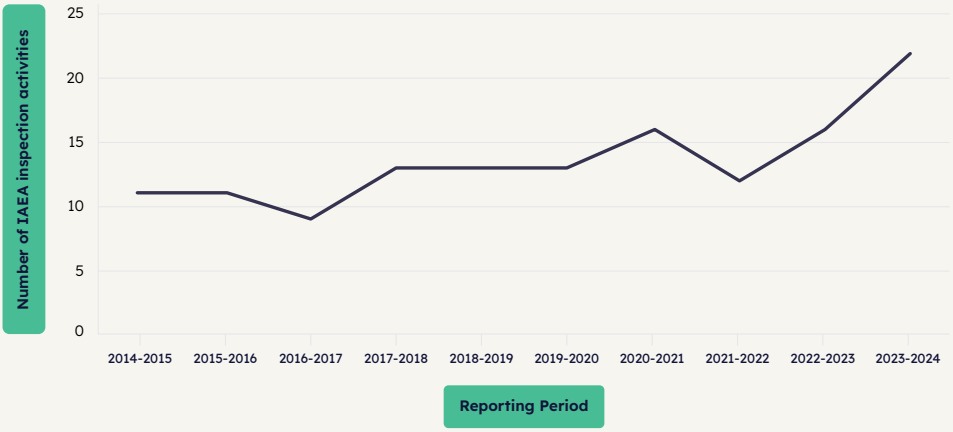
Table 6: IAEA safeguards inspections activities 2023-24

Date	Facility	Material balance area[7]	Type[8]
28 August 2023	ANSTO	AS-C	Random Interim Inspection of hot cells
		AS-F	Random Interim Inspection of hot cells
29 August 2023	Ubaryon	ASE1	Complementary Access (4.a.i)
30 August 2023	ANSTO	AS-C AS-D	Complementary Access (4.a.i)
01 September 2023	UNSW Canberra	AS-E	Physical Inventory Verification
04 September 2023	Australian Radiation Protection and Nuclear Safety Agency	AS-E	Physical Inventory Verification
06 November 2023	University of South Australia	ASE2	Physical Inventory Verification
07 November 2023	Environmental Protection Authority, South Australia	AS-E	Physical Inventory Verification
07 November 2023	Private company	N/A	Complementary Access (4.a.ii)
10 November 2023	Sandy Ridge PT	ASE2	Complementary Access (4.a.i)
19 March 2024	ANSTO	AS-H	Design Information Verification
19 March 2024	ANSTO	AS-F	Complementary Access (4.a.i)
20 March 2024	ANSTO	AS-C	Random Interim Inspection of hot cells
22 March 2024	AJJA Technologies	N/A	Complementary Access (4.a.i)
10 May 2024	Silex	N/A	Complementary Access (4.a.i)
10-20 May 2024	ANSTO	AS-F	Design Information Verification & Physical Inventory Verification
		AS-D	Design Information Verification & Physical Inventory Verification
		AS-C	Design Information Verification & Physical Inventory Verification
18 June 2024	Defence	TBA	Complementary Access (8)

[7] See explanation of each material balance area in Table 2.

[8] Details on different types of inspections are outline in Appendix D.

Number of IAEA inspection activities during reporting periods



How ASNO characterises nuclear material for safeguards purposes

Nuclear material (uranium, thorium and plutonium, as defined in section 4 of the Safeguards Act) has many uses outside the nuclear fuel cycle. For example, depleted uranium is frequently used in shielding for medical and industrial devices, owing to its extremely high density (it is almost twice as heavy as lead for a given size). Uranium compounds are also used as 'stains' for electron microscopy, where the density of uranium leads to higher-contrast images.

ASNO frequently assists permit holders in characterising nuclear material for safeguards purposes. ASNO characterises nuclear material using a variety of tools, including sophisticated gamma spectroscopy devices.

By conducting this kind of characterisation, ASNO makes it easier for permit holders to comply with permit conditions, which in turn, maximises compliance, while ensuring accurate and comprehensive reporting to the IAEA.

Case study
Depleted uranium cylinder

When a permit holder was unsure of the composition and quantity of uranium in this item, ASNO was able to help. Using weight and volume measurements and a gamma-ray spectrum, ASNO discovered that the item was made almost entirely from depleted uranium. With this information, ASNO was able to assist the permit holder in correcting their inventory list of nuclear material. ASNO, in turn, provided corrected reporting to the IAEA.

1.2

National Safeguards

Performance Measures

Australia's system of safeguards permits and authorities is administered in a timely and effective manner.

The quantities, categories, locations and intended end-uses of nuclear material and associated items within Australia are accounted for.

Australia's system of nuclear accountancy

Australia, under its CSA with the IAEA, is obligated to establish and maintain a system to keep track of and be in control of its nuclear material – referred to as a SSAC (State system of accounting for and control of nuclear material).

It is a requirement of the SSAC that Australia has a set of regulations relating to nuclear safeguards (Australia's Safeguards Act) and a body to implement and ensure compliance with the regulations (ASNO).

Australia's SSAC, including the system of permits under the Safeguards Act, enables ASNO to:

- control Australia's nuclear material, associated items and facilities
- account for all nuclear material and associated items
- fulfill international legal obligations.

ASNO undertakes ongoing reviews of permits according to industry type or permit class, with major reviews done on a five-year cycle.

This process allows ASNO to be responsive to changes in the regulatory environment, ensuring that permits are effective and efficient. All permits revised in 2023-24 are consistent with relevant governance and risk management policies under the Government's regulatory reform agenda.

Notices of all permits and their changes are published in the Australian Government Gazette as required by subsection 20(1) of the Safeguards Act.

During the reporting period, all permits to possess nuclear material of the class 'U4 – Stevedores/ Ports' were varied and extended as part of ASNO's rolling plan of permit updates.

Establishing permits for Australia's naval nuclear propulsion

ASNO is advising the relevant government agencies with regulatory advice on the permits that will be required for Australia's naval nuclear propulsion program under the Safeguards Act.

ASNO's operation of Australia's system of accounting for and control of nuclear materials (SSAC)

ASNO continued to operate Australia's SSAC effectively and efficiently, and in accordance with national legislation and the CSA in 2023–24. A summary of all permits granted, varied, revoked and expired in the reporting period is in Table 7.

Permits and Authorities System

Table 7: Status of permits and authorities under the Safeguards Act at 30 June 2024

Permit or authority	Current total	Granted	Varied	Revoked	Expired
Possess nuclear material	115	6	14	1	0
Possess associated items	10	0	4	0	0
Transport nuclear material	16	0	17	0	5
Transport associated items	0	0	0	0	0
Establish a facility	1	0	0	0	0
Decommission a facility	2	0	0	0	0
Communicate information contained in associated technology	7	0	3	0	0
Total	**151**	**6**	**38**	**1**	**5**

ASNO requires all entities holding a permit to possess nuclear material or associated items to conduct an annual physical inventory taking. The 2024 physical inventory takings were completed successfully, on time and with a high degree of willing compliance from permit holders. ASNO uses the physical inventory taking process as an opportunity to build productive relationships with permit holders — a key aspect of ensuring compliance through education.

ASNO uses the NUMBAT database to manage permits, conduct nuclear material accountancy and complete some types of reporting under the CSA, Additional Protocol and NCAs to the IAEA and bilateral partners. NUMBAT also has an external-facing portal that enables permit holders to fulfil many of their reporting obligations online.

It is essential that NUMBAT is developed into a fit-for-purpose database for managing permits and preparing routine reports on nuclear material inventory and transactions to the IAEA. ASNO continued to work with the database development team (under DFAT's Information Management Division) on the continuing development and enhancement of NUMBAT.

ASNO's domestic inspections and physical inventory taking visits

Throughout 2023–24 ASNO engaged in numerous inspection activities. In addition to the IAEA inspections in Table 6, ASNO conducted a successful domestic inspection at University of Melbourne, in which a physical inventory taking was conducted, and items of nuclear material were measured with radiation detection equipment.

Separately ASNO visited several permit holders, and other regulated entities, to discuss their arrangements for implementing permit conditions and regulatory requirements.

ASNO visited University of New South Wales (UNSW) Canberra, University of South Australia, South Australian Environment Protection Authority and ACT Health Directorate to assist with characterising nuclear material and conducting physical inventory takings during the reporting period.

1.3

Nuclear security

Performance Measures

Security of nuclear material, technology and facilities meets Australia's obligations under the amended Convention on the Physical Protection of Nuclear Materials (A/CPPNM), the ICSANT and bilateral NCAs and accords with relevant IAEA guidelines.

Internationally agreed standards for the security of nuclear material are applied to all AONM.

The regulation of ASNO permit holders verifies that security arrangements at Australian nuclear facilities are in accordance with Australia's obligations under the A/CPPNM and relevant bilateral NCAs.

Throughout the reporting period, ASNO ensured that domestic nuclear security arrangements for nuclear material and facilities incorporated IAEA recommendations and implemented protective security to associated items and sensitive information in accordance with the Protective Security Policy Framework (PSPF)[10].

Providing advice on nuclear investigations

In October 2023, ASNO worked with Australian Border Force, ANSTO and other government agencies to investigate the discovery of a small quantity of nuclear material in the possession of an individual without an ASNO permit. This material was moved to an existing ASNO permit holder, characterised and reported to the IAEA. Reporting of nuclear incidents is a core function of ASNO and Australia has supported the IAEA Incident and Trafficking Database (ITDB) since 1995.

New approvals for uranium ore concentrate production and transport

In 2024, ASNO revised the permit to possess nuclear material granted to Boss Uranium Pty Ltd (Boss) following advice that they sought to return to operations from the previous status of care and maintenance at the mine.

[10] Department of Home Affairs, Protective Security Policy Framework (PSPF) can be found at: www.protectivesecurity.gov.au.

The key activities in this process during 2023-24 were:

- **August 2023**
  ASNO conducted a domestic inspection to verify existing safeguards and physical production measures at the Honeymoon mine. During the inspection, ASNO provided guidance on the legislation requirements and Australia's international nuclear safeguards and security obligations.
- **March 2024**
  ASNO conducted a second detailed inspection to confirm that Boss had met its nuclear safeguards and security requirements under its ASNO permit and was compliant with the Safeguards Act. Following this inspection, Boss was granted approval by ASNO to re-commence production of UOC.
- **June 2024**
  Boss submitted the finalised transport management plan for transport of UOC. ASNO reviewed the plan and authorised transport of UOC from the mine.

ASNO domestic nuclear security inspections

ASNO conducted 16 nuclear security inspections during the reporting period, covering a range of nuclear facilities across Australia. Inspectors were able to achieve inspection objectives and the physical protection and nuclear security systems, met with permit requirements.

ASNO nuclear security domestic inspections of uranium mines

ASNO concluded that the current mining permit holders continued to meet permit conditions related to nuclear security and material accountancy to satisfactory levels.

ASNO continued to reinforce good security management practice of mines and transport companies by requiring appropriate facilities and arrangements for the secure storage of UOC held up during transport due to unforeseen delays. ASNO conducted a siting inspection for a secure UOC storage compound for BHP in June 2024.

In June 2024, ASNO inspectors conducted a routine inspection of the Beverley Uranium mine, owned by Heathgate Resources Pty Ltd, to verify security and accountancy arrangements and evaluated security plans and procedures against ASNO's permit requirements. Inspectors reviewed recommendations arising from previous inspections. In addition, Heathgate submitted revised Security Management Plans to ASNO for approval in the reporting period.

ASNO inspecting perimeter fencing on a nuclear security inspection.

Protection of Australian UOC during transport

Australian UOC exports are undertaken in accordance with transport permit requirements. These requirements are reinforced by arrangements under bilateral nuclear cooperation agreements with partner countries that process and use Australian uranium. ASNO approves vessels for shipping UOC out of Australia and the shipping routes they take. During the reporting period, ASNO approved 31 vessels and two new shipping routes.

There were no security incidents (malicious acts) involving the transport of UOC in Australia during the reporting period. Minor incident reports were received, each of which was reviewed and managed appropriately with permit holders and bilateral partners, with no ongoing security issues. These are described in Output 1.5.

Review of Permits to Possess and Transport Nuclear Material or Associated Items

ASNO keeps permits under ongoing review according to industry type or permit class, with major reviews done on a five-year cycle. All revised permits conform with relevant governance and risk management policies under the Government's regulatory reform agenda. During the reporting period, ASNO reviewed and updated the class U4 model permits that apply to ports and stevedores that facilitate the export of UOC in September 2023. ASNO continues regulatory oversight of permit holders' activities and reporting of the storage of associated technology.

Design Basis Threat Review

ASNO commenced a minor review of the Australian National Design Basis Threat (DBT). Major reviews are normally conducted every five years. However, I instructed the ASNO Nuclear Security team to work closely with relevant stakeholders on Australia's DBT over the next twelve months to make sure it remains fit-for-purpose given the naval nuclear propulsion optimal pathway.

Nuclear security at Lucas Heights (ANSTO)

Australia's OPAL reactor underwent a temporary shut down on 18 March 2024, primarily for the replacement of the cold neutron source.

ANSTO, as per their permit requirements, advised ASNO that the shutdown was not expected to adversely impact the nuclear physical protection measures of the facility. The reactor shutdown has provided a unique environment for safe access for new ASNO security personnel to visit areas that are not accessible for general inspections when the reactor is operating

ANSTO undertook several security related activities in 2023-24, including:

- a systematic upgrade of facility CCTV elements to improve picture resolution and assessment capabilities
- updating a security plan for Building 27, which ASNO has approved
- initiating mitigating measures to security elements that may have long lead times to repair
- in collaboration with Australian cyber related agencies and using international best practice, upgraded site computer networks to meet current DBT requirements.

As part of the OPAL reactor regulatory licensing requirements, ANSTO submitted an integrated Periodic Safety and Security Review (PSSR) to the CEO of the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) and myself as Director General ASNO. The PSSR examines individual aspects and synergies of security and safety factors in place for the OPAL reactor, following relevant ARPANSA and ASNO regulatory requirements. Launched in March 2018 and drawing on international best practice, the completed PSSR is a large scope of work. ASNO is continuing to review the document to ensure that security improvements are adopted in ongoing reactor operations.

The IAEA guidance document Nuclear Security Series No. 13 describes the DBT as the attributes and characteristics of potential insider and/or external adversaries who might attempt unauthorised removal or sabotage, against which a physical protection system is designed and evaluated.

SILEX enrichment technology

ASNO conducted a routine inspection of the laboratories and offices at Silex Systems Limited (SSL) in April 2024. SSL holds several ASNO permits, including to possess associated technology for research and development of the Silex process towards commercialisation.

Ubaryon enrichment technology

ASNO conducted a routine permit holder inspection of Ubaryon's laboratories located in April 2024. ASNO continues to work closely in supporting the company to mature their security measures and culture and reviewed a revision of Ubaryon security plans in September 2023.

ASNO official conducts a nuclear security inspection at an Australian university.

Inspection of locations outside of facilities

ASNO nuclear security inspectors conducted inspections to permit holders who are located outside of facilities and have been granted a class L permit, and radiographer companies who have Class R permits.

These inspections took place in December 2023 in and around Perth. In total, two Universities, two locations outside facilities and 6 radiographers were inspected.

Permits and Authorities System

Australian Nuclear Material Categories

The table below lists the permit holders for which physical protection or information security is required, categorised according to the materials or items held.

Table 8: Distribution of permits holders according to security category.

Nuclear Material Category	Type of 'Facility'	Number of Permit Holders
Category II[11]	Research reactor, storage	1
Category III	Storage, scientific research	1
Category IV[12]	Scientific research	1
Uncategorised[13]	LOFs, radiographers	107
Natural uranium (UOC)	Uranium mines and concentration plants	4
Transport of nuclear material	Transport companies, ports, shipping lines	19
Associated Items	**Type of 'Facility'**	**Number of Permit Holders**
Associated Equipment and Technology	Enrichment research, storage and archives	45
Associated Technology	Patent attorneys	54

[11] Nuclear material category is based on IAEA Nuclear Security Series No. 13.

[12] Category IV limits are 15g≥Pu>10g; 15g ≥(^{235}U≥20%)>10g; 1000g ≥(^{235}U<20%-10%)>10g; 10 000g ≥(^{235}U<10%)>10g; 15g ≥^{233}U>10g; unirradiated source material ≤5000kg. (%-enrichment).

[13] i.e. below Category IV quantities.

1.4

Nuclear propulsion

Performance Measures

Australia's naval nuclear propulsion program is compliant with Australia's obligations with the IAEA under our CSA and AP, including the future Article 14 Arrangement.

The provision of accurate and timely advice regarding Australia's domestic regulation and the issuing of permits to ensure nuclear safeguards and security measures meets Australia's international obligations.

Undertake, coordinate and facilitate research and development programs, under Verify, that invest in technologies and techniques to uplift sovereign and IAEA capabilities to apply safeguards for NNP.

Build upon and maintain ASNO's technical expertise to ensure a sustainable nuclear safeguards and security and regulatory governance capacity to meet the needs of NNP.

ASNO received a $21.9m budget supplementation and added 23 to its Average Staffing Levels (ASL) over two financial years starting in July 2023 to meet the significantly increased workload and responsibilities for the requisite regulatory oversight of the naval nuclear propulsion program. With this funding, ASNO is investing significantly in a workforce uplift of technical capabilities to deliver new safeguards and security measures to support this regulatory effort.

During the reporting period ASNO has delivered, and is continuing to actively work on, the following activities:

- Led multiple consultations (both in-person and secure video teleconferences) with the IAEA and AUKUS partners on developing the first-of-a-kind Article 14 nuclear safeguards arrangements for naval nuclear propulsion
- Completed declarations and reporting to the IAEA relevant to naval nuclear propulsion under Australia's CSA and AP
- Facilitated an IAEA inspection activity at HMAS Stirling, including implementing technical measures prior to the Submarine Tendered Maintenance Period (STMP), which will be the first maintenance activity of its type in Australia
- Facilitated practice safeguards inspection exercises and tabletop exercises for sites for the program
- Provided technical and regulatory input to the ASA-led negotiating team for the AUKUS Naval Nuclear Propulsion Agreement

- Provided regulatory advice to Australian stakeholders on the application of the Safeguards Act to proposed activities under the naval nuclear propulsion program, and began developing first-of-a-kind bespoke permits under the Safeguards Act
- Provided planning and advisory support for the Australian Naval Nuclear Power Safety Bill 2023
- Engagement in the heads of nuclear agency coordination group and the interagency strategic communications working group
- Developed regulatory advice to ensure that the construction of future nuclear facilities can adhere to safeguards-by-design principles to ensure IAEA safeguards measures can be effectively and efficiently applied
- Commenced work on the minor review and update of Australia's Design Basis Threat (DBT) – the foundational pillar of Australia's nuclear security framework – to ensure it is fit for purpose, and taken first steps with Australian stakeholders on determining regulatory requirements for nuclear security for the NPS program
- Launched Verify, a research and development program, supported by six different contracts with Australian universities and research institutions, aimed at delivering:
  - new technologies to meet emerging Australian safeguards challenges
  - innovative verification techniques and technologies for effective IAEA safeguards
  - building the next generation of Australian nuclear safeguards expertise and workforce to be able to support and assess future deployments.
- Invested in learning and development activities in safeguards and security disciplines to upskill ASNO's workforce to respond to the increased responsibilities and resource commitments required
- Developed tangible and practical strategic communications, including new products to better articulate ASNO's regulatory role and to support recruitment campaigns.

1.5

Nuclear Cooperation Agreements

Performance Measures

Security of nuclear material, technology and facilities meets Australia's obligations under the A/CPPNM, the ICSANT and bilateral NCAs and accords with relevant IAEA guidelines.

AONM is accounted for in accordance with the procedures and standards prescribed under relevant bilateral agreements and obligations under NCAs are effectively implemented.

Internationally agreed standards for the security of nuclear material are applied to all AONM.

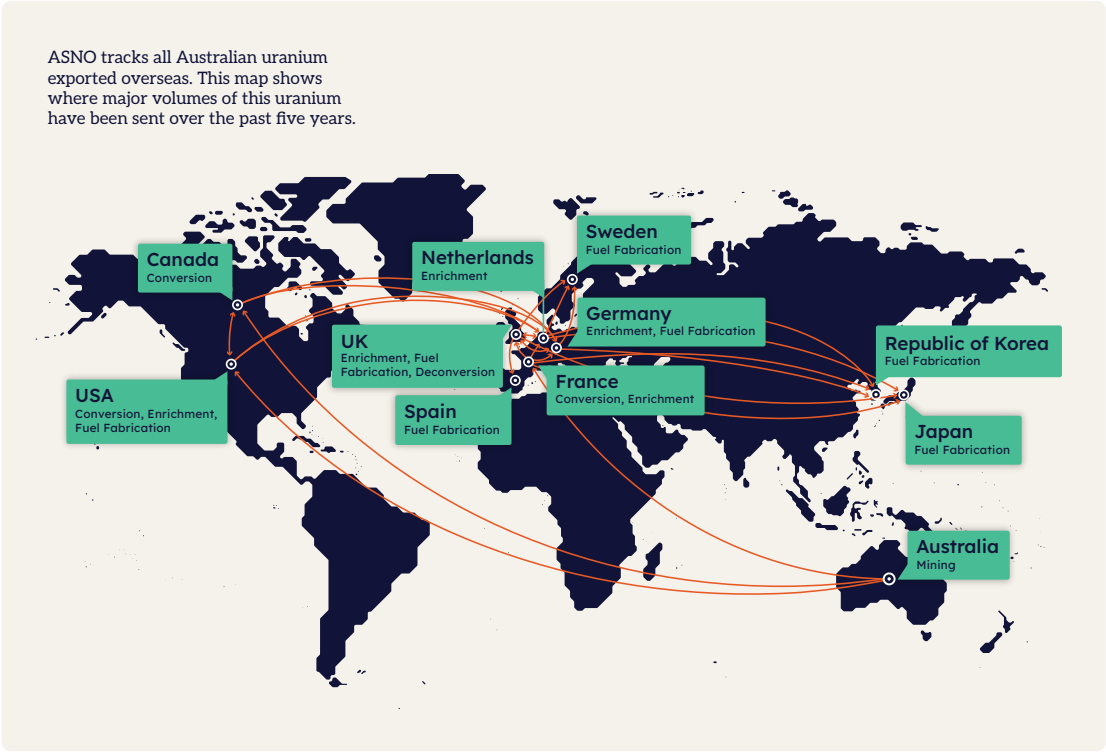
Foreign obligated nuclear material (v) is accounted for in accordance with the procedures and standards prescribed under relevant bilateral agreements.

Harmonisation of bilateral reporting

In 2023, ASNO commenced efforts to harmonise the bilateral reporting framework used across its network of Nuclear Cooperation Agreements (NCAs) by collaborating with several partners to develop a common, universal reporting format.

The intent is to gradually expand use of this template across Australia's network of NCA's and, by doing so, create a common format that will support future automation of an otherwise labour-intensive process. Standardisation, and future automation, is expected to reduce scope for human error while improving the accuracy and timeliness of reporting.

In parallel, ASNO is also working with several bilateral partners to develop and generalise a system for machine-readable reporting using Extensible Markup Language (XML). This will eventually bring bilateral reporting in line with modern formats used by States to report to the IAEA. Both streams of work will continue in the coming year.



AONM shipping routes.

Australian Obligated Nuclear Material

Table 9: Summary of net accumulated AONM by category, quantity and location as of 31 December 2023[15]

Category	Location	tonnes[16]
Depleted uranium	Canada, China, European Union[17], Japan, Republic of Korea, Russia, United Kingdom, United States	150,546
Natural uranium	Canada, China, European Union, India, Japan, Republic of Korea, United Kingdom, United Kingdom, United States	38,483
Uranium in enrichment plants	China, European Union, Japan, United Kingdom, United States	27,932
Low enriched uranium	Canada, China, European Union, Japan, Mexico, Republic of Korea, Switzerland, Taiwan, United Kingdom, United States, Ukraine	21,547
Irradiated plutonium	Canada, China, European Union, Japan, Mexico, Republic of Korea, Switzerland, Taiwan, United Kingdom, United States	232
Separated plutonium	European Union, Japan, United Kingdom	11.1
Total		**238,741**

[15] Figures are based on yearly reports to ASNO in accordance with Australia's bilateral agreements and other information held by ASNO.
[16] All quantities are given as tonnes weight of the element uranium or plutonium.
[17] Euratom is the European Atomic Energy Community. The Australian-Euratom NCA covers all 27 Members States of the European Union.

Exports of Australian uranium

The arrangements under Australia's bilateral nuclear cooperation agreements place responsibility on safeguards and security authorities in partner countries to ensure appropriate security is applied to Australian UOC exports. These arrangements complement ASNO's regulatory controls through domestic permits (outlined in Output 1.3) which allows ASNO to adapt requirements to changing international security circumstances, and to respond where requirements under permits or bilateral arrangements are not followed.

A case in point is the regional instability and ongoing attacks by Yemen-based Houthis on international shipping since October 2023 that has had significant implications for Australian UOC shipments.

ASNO, in collaboration with Australian uranium miners and shipping liners, responded quickly to the escalation of attacks on commercial and cargo vessels (see Current Topics).

Other issues managed by ASNO during the reporting period include the following:

- Unauthorised access to a shipment of UOC was reported in March 2024 en route to a destination abroad. The driver, after a routine break and conducting a compulsory inspection, found a seal broken and a shipping container door opened. There was no loss of AONM and no damage to the contents of the container
- ASNO worked with the regulatory authority to investigate the incident and we were assured that all nuclear material was accounted for
- In June 2024, a shipping container was damaged during storage incidental to transport at an approved location. Some of the contained UOC holding drums sustained some minor surface scratching and rubbing from contact with the container wall. No loss of UOC was reported, the shipping container was replaced, and the consignment repackaged as required.

Table 10: Supply of Australian uranium by region during 2023[18]

Region	tonnes UOC (U_3O_8)	Percentage of Total
Canada	2,007	38%
Europe	1,211	23%
United States	2,119	40%
Total	**5,338**	**100%**

This is the first reporting period that has included deconversion as a fuel cycle stage in the summary of AONM transfers. Deconversion is the process of reducing UF_6 to UF_4 or UO_2 which is more stable for long-term storage.

Uranium is converted into the chemical form UF_6 for enrichment and the depleted UF_6 is de-converted back to UF_4 or UO_2 for storage and the recovery of fluorine for re-use.

Previously these transfers were regarded as internal transfers within Euratom, as the United Kingdom fell under the Australia-Euratom NCA until 31 December 2020. Details are listed in Table 11.

Table 11: Summary of AONM Transfers during 2023[19]

Fuel Cycle Stage	Destination	U (tonnes)
Conversion	Canada	1,969
	European Union	1,263
	United States	1,662
Enrichment	European Union	463
	United Kingdom	675
	United States	443
Fuel fabrication	European Union	115
	Japan	1
	Republic of Korea	30
	United Kingdom	41
	United States	163
Reactor	European Union	24
	Switzerland	18
	Ukraine	166
	United Kingdom	6

[18] Export destinations for Australian uranium are decided by commercial factors including the availability of conversion capacity and customer preference.

[19] Figures are for transfers completed between jurisdictions from 1 January to 31 December 2023.

Foreign Obligated Nuclear Material

Table 12: The total quantity of FONM in Australia (by category) from all partner countries as of 31 December 2023

Category	Quantity
Source Material	**kilograms**
Natural Uranium (other than UOC)	49
Depleted Uranium	2,579
Thorium (other than Thorium Ore Residues)	739
Associated or non-nuclear material	**kilograms**
Heavy water and deuterium	10,655
Special Fissionable Material	**grams**
^{235}U – low enriched	251,279
^{235}U – high enriched	721
^{233}U	3.7
Plutonium (other than ^{238}Pu)	1,196

1.6

Chemical Weapons Convention implementation

Performance Measures

- Australia's obligations under the CWC are met.
- Effective regulation of CWC-related activities in Australia.
- Contribute to strengthening CWC verification and implementation, including through cooperation with the OPCW and with CWC States Parties.
- Contribute to enhancing regional CWC implementation through targeted outreach.

Australia's obligations under the CWC are met.

Table 13: Permits for CWC Scheduled Chemical Facilities.

CWC-Scheduled	CWP Art	Permit type	Permits at 30 June	New permits	Re-issued permits	Permits cancelled
Chemicals	1994		2024[14]	2023–24	2023–24	2023–24
Schedule 1	s19(4)	Production (Protective)	1	0	1	0
	s19(5)	Production (Research)	8	0	3	0
	s19(6)	Consumption	11	0	3	0
Schedule 2	s18(1)	Processing	5	0	2	1
Schedule 3	s18(1)	Production	2	0	0	0

[14] Permit numbers include new, existing and renewed permits.

To maintain Australia's long-standing reputation in the field of chemical weapons disarmament and non-proliferation, ASNO continued to ensure all CWC obligations are fully met.

Comprehensive and timely annual declarations, amendments and notifications were provided to the OPCW, maintaining our strong record of performance in meeting our CWC obligations:

- Article VI declaration of imports and exports of CWC-Scheduled chemicals and of past activities at 35 facilities with CWC-relevant chemical production, processing or consumption activities during 2023 (declared in March 2024)
- Article VI declaration of anticipated activities at 8 CWC-Scheduled chemical facilities for 2024 (declared in September and October 2023)
- Article X, paragraph 4, declaration of Australia's national programs for protection against chemical weapons during 2023 (declared in April 2024)
- responses to OPCW Third Person Notes regarding clarification of the operational status of declared chemical plants
- responses to OPCW notifications and amendments/corrections to inspector details and deletions or additions to the OPCW inspectorate.

Online reporting by regulated chemical facilities and import permit holders, in accordance with statutory obligations, enabled ASNO's preparation of Australia's annual declaration of past and anticipated chemical activities to the OPCW. ASNO continues to work with other entities, including DFAT's Information Management and Technology Division, to develop a fit-for-purpose updated chemical database system with an industry access online portal. These improvements to the database are critical to improve the end-user stakeholder experience and the efficiency of ASNO's regulatory function.

ASNO officials in the Hague for the annual meeting of National Authorities and the Conference of the States Parties to the CWC, 20 November-1 December 2023.

OPCW inspections

OPCW inspections have occurred at declared chemical plants in accordance with the provisions of Article VI of the CWC since its entry into force in 1997. Australia was one of the first States Parties to the CWC to trial OPCW sequential inspections at two declared facilities, and currently accepts up to 4 sequential inspections in a row.

In the current reporting period, ASNO facilitated sequential OPCW inspections at 4 facilities. One at a Schedule 2 processing facility in Victoria and three at 'Other Chemical Production Facilities' (OCPFs) in Victoria and Western Australia from 13–23 May 2024.

All inspections proceeded smoothly and received excellent support and cooperation from the chemical industry. The OPCW inspection team were able to successfully verify the accuracy of Australia's declarations, including the absence of any undeclared CWC Schedule 1 chemical production, in accordance with their inspection mandates.

Effective regulation of CWC-related activities in Australia

To assist with meeting CWC reporting obligations and ensure compliance with CWC-relevant legislation, ASNO strengthened engagement with its constituency in industry, research and trade, including with non-government agencies and associations, including the Royal Australian Chemical Institute, the CSIRO, and Chemistry Australia – the peak chemical industry body.

ASNO conducted industry outreach visits to 24 import and facility permit holders – 10 in New South Wales, 4 in Western Australia, one in Northern Territory and 9 in Victoria.

ASNO continued its close cooperation on CWC implementation issues with relevant Australian Government departments and agencies. For example, ASNO works closely with the Australian Border Force to ensure the effective monitoring and regulation of trade in Australia.

ASNO officials conducting domestic inspection.

ASNO's chemical regulatory system

Under the CWC Act ASNO administers a system of permits for anyone who — in any calendar year:

- produces Schedule 1 chemicals for research, medical, pharmaceutical, or protective purposes
- produces, processes or consumes above permit threshold quantities of any Schedule 2 chemical
- produces above permit threshold quantities of any Schedule 3 chemical.

In addition, ASNO requires annual notification for anyone who — in any calendar year:

- produces unscheduled discrete organic chemicals above specified threshold quantities at other chemical production facilities.

Permit holders must:

- report twice a year to ASNO on past and anticipated activities with Schedule 1, 2 or 3 chemicals
- facilitate compliance checks by OPCW and ASNO inspectors, including inspections.

Under Regulation 5J of the Customs (Prohibited Imports) Regulations 1956, ASNO administers a system of permits for anyone who:

- imports Schedule 1 chemicals (an individual permit is required per shipment)
- imports Schedule 2 or 3 chemicals (a permit covers all such imports for up to one year).

Import permit holders must report within one month of receipt of Schedule 1 chemicals imported or retrospectively all imports of Schedule 2 and 3 chemicals from the previous calendar year.

OPCW inspections under the CWC

Under the CWC, the OPCW conducts on-site inspections in Australia at:

- Scheduled chemical facilities
- Other chemical production facilities which produce discrete organic chemicals.

ASNO provides twice-yearly reporting to the OPCW on chemical activities at Scheduled chemical facilities (past and anticipated) and once-yearly reporting of past production of discrete organic chemicals at other chemical production facilities.

Declared facilities become inspectable when they exceed verification threshold quantities for chemical activities as defined under the CWC.

The purpose of OPCW inspections is specified to verify that chemical activities at inspectable facilities are consistent with ASNO's declarations to the OPCW and the absence of undeclared Schedule 1 chemicals (which could be used to make chemical weapons).

ASNO-led domestic compliance inspections

ASNO conducts its own domestic inspections separate from those done by the OPCW to:

- ensure existing permit holders are complying with the *Chemical Weapons (Prohibition) Act 1994* and their permits or notification requirements
- determine whether potentially regulated entities have the necessary arrangements in place to meet obligations under the Act
- identify and resolve compliance issues, such as inconsistencies in reporting by regulated entities to ASNO
- work with regulated entities to ensure that they know and are meeting their compliance requirements. Sometimes ASNO staff assist by characterising scheduled chemicals and discrete organic chemicals
- encourage facilities to have adequate physical security in place for storage and use of highly toxic chemicals (especially Schedule 1) to prevent, detect and respond to chemical security threats.

Chemical schedules

Chemical	Declarable activities	Applications
Schedule 1 High risk chemicals with limited use. Includes chemical warfare agents.	• Production • Consumption • Acquisition, retention and/or domestic transfers • Import • Export	• Medical, research or pharmaceutical uses • Defence research purposes (e.g. testing protective clothing)
Schedule 2 Medium risk chemicals with industrial uses. Includes key chemical weapon precursors.	• Production • Processing • Consumption • Import • Export	• Textiles and polyurethane foam (flame retardants) • Agriculture (pesticides, herbicides) • Antifreeze additives
Schedule 3 Lower risk chemicals with wide industrial use.	• Production • Import • Export	• Cosmetics (surfactants, buffers) • Pharmaceuticals (active ingredients, surfactants) • Agriculture (pesticides) • Mining (natural gas treatment, ore-extraction processes) • Automotive products • Cement additives
Discrete Organic Chemicals (DOCs), including those containing phosphorus, sulphur and fluorine (PSF-DOCs)	• Production	• Agricultural (pesticides, herbicides, fertilisers) • Cosmetics (surfactants, buffers) • Inks and dyes • Plastics (synthesis of monomers for polymerisation)

ASNO official supports the OPCW at an inspection.

> “Australia’s long-standing and continued engagement with the OPCW is a testimony to its dedication to a world free of chemical weapons. I thank Australia for its continued support to the work of the OPCW.”

H.E. Mr Fernando Arias
OPCW Director-General

> “Australia is committed to working with Director-General Arias, the Organisation for the Prohibition of Chemical Weapons and States Parties, particularly our regional partners, to strengthen implementation and enhance chemical security.”

Dr Geoffrey Shaw
ASNO Director General

DG ASNO meets Fernando Arias, Director-General OPCW.

1.7

Comprehensive Nuclear-Test-Ban Treaty implementation

Performance Measures

- Australia's obligations under the 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 CTBTO Preparatory Commission.

As Australia's national authority for the CTBT, ASNO reported that Australia met its obligations under the CTBT. A key component was reporting that Australia's International Monitoring System (IMS) stations continue to operate properly.

Australia is host to 20 monitoring stations and one laboratory as part of the CTBT IMS, and all stations operate to CTBTO technical specifications.

Australia has the third largest number of monitoring facilities in the IMS and these stations include hydroacoustic, infrasound, seismic and radionuclide sensors located at various points across the breadth of Australia and offshore territories, with our vast geography providing unique challenges to their upkeep. During the reporting period, ASNO has provided practical support and ensured Australia continued to meet our national and international obligations.

ASNO has provided advice regarding Australia's obligation and commitment to the CTBT to a Senate inquiry into securing the future of Australia's presence on Macquarie Island for the purpose of preserving one of Australia's IMS radionuclide stations located on the island.

In addition, working with the Australian Antarctic Division (AAD), ASNO assisted the government in determining appropriate arrangements to have the station relocated to ensure the safety and continuity of Australian operators working on the Island, including the sustained maintenance of the IMS station.

ASNO works closely with trusted colleagues from Geoscience Australia (GA), the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) and the Australian National University (ANU) who monitor and operate Australia's IMS stations. GA, ARPANSA and ANU have separate contracts with the CTBTO for the operation and maintenance of their stations. GA coordinates Australia's national data centre, and has an additional agreement with ASNO to provide seismic and radionuclide analysis on events of interest. In the reporting period, GA, ARPANSA and ANU were fully compliant, and data reflected exceedingly high performance of all Australia's IMS stations, and operators, against CTBT benchmarks.

Throughout the last year, ASNO has joined a select committee of experts to contribute to the CTBT On-Site Inspection (OSI) Scenario Taskforce.

The Taskforce, led by retired ASNO Officer Malcolm Coxhead, has been meeting quarterly in preparation for the next OSI Integrated Field Exercise to be held in Sri Lanka in May 2025. The Taskforce has been developing a robust scenario to test the deployable technical verification technology and field logistics needed to confirm a nuclear test has occurred in a CTBT member state.

Through CTBT Working Group B, ASNO is contributing to the planning and sustainability of the IMS. As IMS technology and infrastructure begins to age, CTBT member states need to ensure the CTBTO is resourced to maintained and replaced these stations in a timely manner. ASNO is contributing Australia's experience as the third largest IMS station manager to the assessment and planning for the long-term sustainment of the network of IMS.

Legal and administrative mechanisms that support Australia's commitments related to the CTBT are effective.

Compliance and performance

On Tuesday 21 November 2023 an MOU was signed between ASNO and Geoscience Australia for the provision of nuclear weapons testing monitoring services. This five year MOU reaffirms a 30 year partnership since the first nuclear monitoring MOU in 1993, a demonstration of Australia's commitment to non-proliferation and the CTBT.

DG ASNO and Dr James Johnson, CEO of Geoscience Australia sign a MOU between the two organisations. November 2023.

Maintenance of Australia's CTBT IMS stations

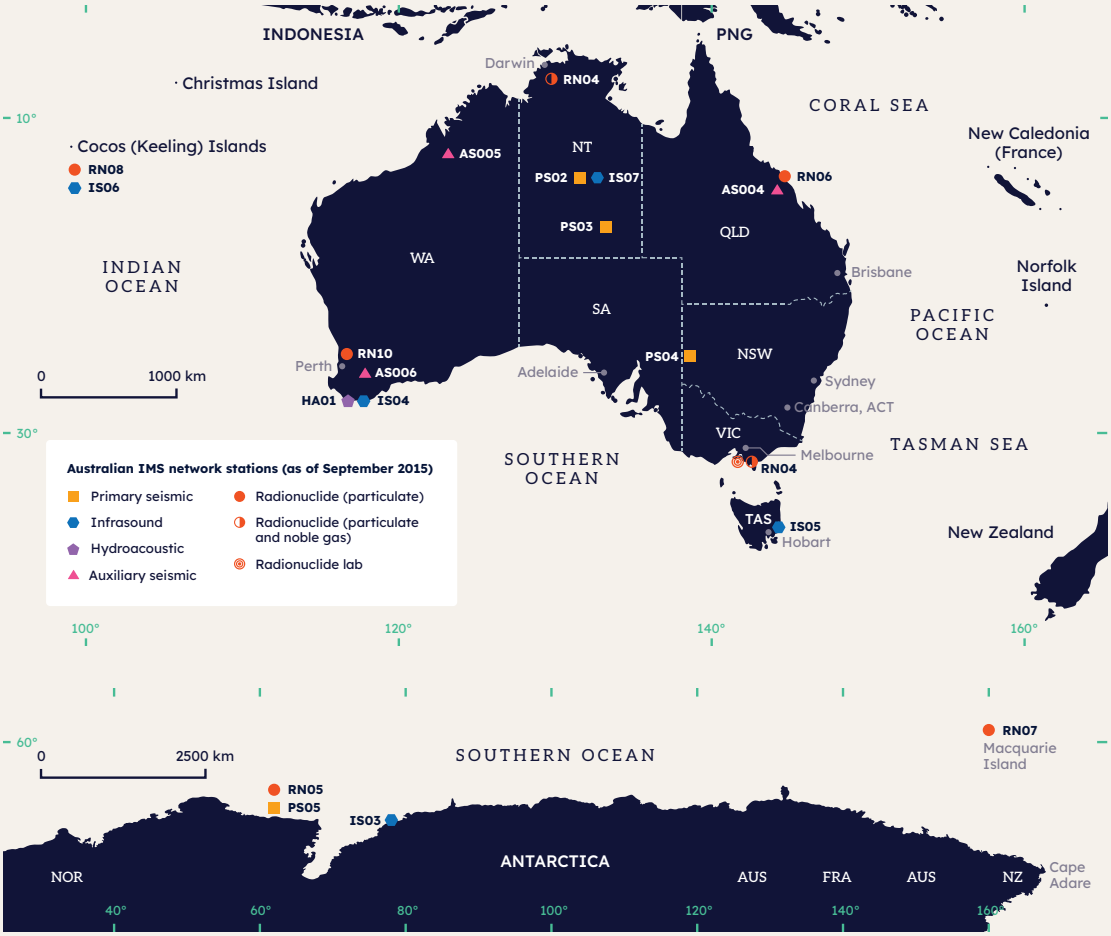
In December 2023, ASNO conducted a review of the operational performance of the Warramunga Seismic and Infrasound Research Station located near Tennant Creek in the Northern Territory. This station listens 24 hours a day, 7 days a week for underground and atmospheric nuclear tests. Through this visit, ASNO ensured adequate repair and maintenance processes were regularly performed, an integral part of Australia's commitment to support IMS preservation. ASNO developed actionable recommendations to improve the station's efficiency to maintain Australia's strong track record for hosting well-performing IMS stations.

Other significant maintenance work on Australian IMS stations included the following activities:

- GA's upgrade of the power systems and electronics at the Shannon infrasound station (IS04) in Western Australia was completed after 18 years of continuous operation. This work involved upgrading the power system at the central facility and remote elements of IS04 to provide more stable and reliable power sources. This upgrade is expected to enable IS04 to operate continuously for a further 20 years.
- GA replaced the borehole seismometer at the auxiliary station (NWAO, AS06) located at Narrogin in WA.
- The installation of a new wind noise reduction system at element H6 of the Buckland infrasound station (IS05) located near Hobart, Tasmania.

ASNO staff travelled to the Northern Territory for site inspections of the IMS stations.

IMS network stations managed by ASNO in Australia and Antarctica.



Pillar two

Support regional non-proliferation implementation

2.1

Regional nuclear safeguards

Performance Measures

Cooperate with counterparts in other countries to strengthen international safeguards and improve safeguards implementation.

Hosting ASNO's first Safeguards Masterclass for mid-career professionals

ASNO funded the IAEA to deliver a Masterclass on Advanced Safeguards for seven countries from the APSN in June 2024. Thirteen mid-career safeguards professionals joined three representatives from ASNO, ARPANSA and ANSTO for exposure to IAEA's techniques and best practices on advanced safeguards. ASNO plans to make this, the only course of its type in the region, an annual event.

> Australia recognises the importance of regional cooperation and our shared commitment to work together, as an important platform achieving the greatest benefits for our region.

Participants at ASNO's first Safeguards Masterclass for regional mid-career professionals.

Supporting regional outreach with NNSA

ASNO and the US Department of Energy (DoE) have had an MOU in place since 1998. The MOU is concerned with research and development in nuclear material control accountancy, verification, physical protection of nuclear material and advanced containment and surveillance technologies for international safeguards.

One of the core pillars of our engagement is the support we provide to the US DoE's National Nuclear Security Administration (NNSA) International Nuclear Safeguards Engagement Program, particularly when it is focused in the Indo-Pacific region.

Over the reporting period the NNSA led a series of workshops as part of their engagement program and ASNO provided technical presentations on the importance of safeguards. The countries that ASNO visited have different nuclear footprints, and so each of the activities were tailored to the country's specific needs, their non-proliferation ambitions, and the types of nuclear materials they have.

Over the reporting period ASNO joined NNSA in training activities in Papua New Guinea (29-31 August), Timor-Leste (7-9 November), Fiji (4-7 December) and Lao PDR (10-14 January).

ASNO official joins staff from US NNSA at a training activity for PNG's – National Institute of Standards and Industrial Technology.

Supporting Timor-Leste to meet its international nuclear safeguards obligations

As part of our efforts to support our regional partners to make informed, sovereign decisions in implementing their non-proliferation commitments, ASNO is engaging bilaterally with Timor-Leste to provide practical training and support activities.

Timor-Leste has supported the principles of non-proliferation since its creation, with accession to the NPT and CWC in 2003, and ratification of the CTBT in 2022.

Timor-Leste has signed three agreements with the IAEA in 2009 (a CSA, a modified Small Quantities Protocol and the Additional Protocol) and is working towards bringing these agreements into force. The Timorese Government is exploring implementation within their national legal and regulatory frameworks.

In November 2023, the US Department of Energy, supported by ASNO, hosted a workshop in Dili on nuclear safeguards implementation. The event brought together participants from 14 Timorese government departments and covered how to implement IAEA safeguards, as well as the potential benefits of doing so.

Senior government officials from Timor-Leste visit an Australian nuclear medicine facility.

Chief among these benefits are IAEA Technical Cooperation programs which may be able to assist Timor-Leste in accessing support from a range of development programs in agriculture, medicine, industry, mosquito sterilisation, and food safety. In addition, ratifying the safeguards agreements would make Timor-Leste eligible to join the Southeast Asia Nuclear Weapon-Free Zone, assisting Timor-Leste's bid to join ASEAN.

At the conclusion of the workshop, a participant engaged with ASNO on opportunities for additional training and support, due to Australia's expertise in safeguarding nuclear science and technology.

As a first step in supporting that interest, in May 2024 ASNO hosted a Timor-Leste delegation of 8 to visit Australia to build knowledge and understanding of IAEA safeguards, practical applications of the peaceful uses of nuclear material and how they are enabled through IAEA safeguards and regulation.

ASNO organised for the delegation to visit a variety of nuclear related organisations and regulators in Australia, including the Environmental Research Institute of the Supervising Scientist in Darwin, ANSTO and ARPANSA in Sydney, and Geoscience Australia in Canberra. The visits focused on the technical benefits of engaging with nuclear science and technology underpinned by robust safeguards and nuclear security regulation.

Topics of particular interest included better management of fish stocks, protecting the environment during mining, developing and maintaining water quality guidelines and nuclear medicine.

ASNO looks forward to supporting Timor-Leste in the coming years to develop their nuclear safeguards expertise, be this on a one-on-one arrangement, by supporting programs run by the US, or through collectives such as the Asia Pacific Safeguards Network.

Following the success of the May visit, ASNO is exploring similar bespoke visits for other countries to share knowledge and practical solutions to safeguards challenges.

Asia-Pacific Safeguards Network (APSN)

The 14th Annual General Meeting (AGM) of APSN was held in November 2023 in Bangkok, hosted by the Government of Thailand and organised by Office of Atoms for Peace (OAP). The AGM was followed by an IAEA–APSN Safeguards Workshop. ASNO joined representatives from 15 States, the IAEA, the Institute of Nuclear Materials Management and the European Safeguards Research and Development Association.

The meeting was an opportunity for the participants to hear from the IAEA Department of Safeguards directly about the IAEA's activities and priorities. ASNO also presented best practice advice during practical workshops led by the IAEA on permit holder outreach, challenges countries are facing and good practices together with State's obligations under the Additional Protocol.

At the AGM, time was carved out for participants to exchange experiences on their recent activities and challenges in their respective countries relevant to IAEA safeguards.

In the lead up to the AGM, ASNO, in consultation with member states, led the work on the updating of the APSN Statement of Principles and Terms of References, which hadn't been updated since the APSN was established.

ASNO's role as the technical lead for the Safeguards Infrastructure Implementation Working Group provides an opportunity for my team to work closely with members of APSN. At this year's meeting both ASNO and our Indonesian regulator counterpart, BAPETEN, delivered presentations that focused on the inspections to support IAEA verification activities.

ASNO officials lead a workshop at the IAEA-APSN safeguards workshop November 2023.

The Asia-Pacific Safeguards Network's role in strengthening the safeguards architecture

From the mid-2000s, the concept of a regional safeguards association was developed out of a series of ASNO-led meetings with nuclear regulatory counterparts from Indonesia, Japan and Republic of Korea and more formally at meeting of the APEC Energy Working Group in 2006.

In 2009, these efforts culminated in the creation of the Asia-Pacific Safeguards Network (APSN) to facilitate the exchange of information, knowledge and practical experience between safeguards practitioners. Membership has now grown to 15 countries plus several observers.

Members of APSN have varied nuclear footprints ranging from States with small amounts of nuclear material used at hospitals and industrial radiography companies to States that possess large and sophisticated nuclear industries.

A key success of APSN has been the creation of a community of safeguards practitioners supported by peer-to-peer networks that enable members to seek assistance from counterparts on initiatives intended to advance shared non-proliferation objectives.

Assistance often ranges from informal requests for peer review on safeguards implementation legislation to requesting the delivery of in-country workshops on technical matters such as techniques to identify nuclear material or the processes used to report inventories of nuclear material to the IAEA.

ASNO, as the facilitator for APSN's "Working Group 1 – Safeguards infrastructure implementation and awareness", has led sessions with members to discuss challenges, practical experiences and lessons learned from safeguards implementation.

This work has strengthened the global safeguards architecture, with several members bringing into force with the IAEA, the Additional Protocol, and Modified Small Quantities Protocol, after joining APSN. Many countries, including Australia, also use participation at APSN to develop the nuclear safeguards expertise of mid-career level professionals. Australia continues to welcome participation in APSN by countries from the Pacific region.

DG ASNO and ASNO officials visit to a low and immediate level waste storage facility in South Korea, June 2024.

Bilateral visits to Asia

Throughout the reporting period I visited Indonesia, Singapore, Malaysia and the Republic of Korea. At each visit I met with senior officials and I was able to solidify relationships with counterparts and progress several collaborative opportunities between our countries.

Areas of particular interest included the strengthening regional safeguards training and development and Chemical Weapons Convention (CWC) implementation activities.

During my visits to Indonesia, RoK and Malaysia I discussed the importance of our collective participation in APSN and Australia's vision for its direction.

While in the RoK I was able to visit various nuclear facilities, from power reactors to waste storage facilities.

I was pleased to note that Australia's leadership in non-proliferation, safeguards systems, CWC activities and our role in supporting non-proliferation treaty implementation across the region was recognised throughout the visits.

APSN-IAEA Safeguards & Executive Roundtable.

Other notable regional safeguards developments

During the reporting period, Nauru and Fiji both revised their Small Quantities Protocol, an agreement with the IAEA to implement safeguards in countries that possess minimal quantities of nuclear material.

ASNO, in partnership with the IAEA and the United States' NNSA, supported Fiji and Nauru to meet contemporary safeguards standards through facilitating a series of structured workshops.

2.2

Regional nuclear security

Performance Measure

Proactive and professional contributions are made to the development and effective implementation of nuclear security worldwide.

The Australian Government, via ASNO, hosted an IAEA workshop on nuclear security and how it contributes to peaceful uses of nuclear and radiological technology in Melbourne in April.

Forty participants from 20 countries worked collectively on understanding issues and improving nuclear security in the Indo-Pacific. The workshop was structured to explore the nuclear security needs of Pacific island countries and designed to raise awareness of why nuclear security matters for the region.

The workshop highlighted to participants the value of the Integrated Nuclear Security Sustainability Plan (INSSP) mechanism that the IAEA offers. The INSSP is intended to provide a comprehensive framework for reviewing their nuclear security regimes and identifying areas where they could be strengthened. An INSSP also highlights any areas where external assistance could support the development of a sustainable nuclear security regime for that country.

ASNO and the IAEA are following up with countries who have expressed interest in developing or improving their INSSP and taking up IAEA membership. The IAEA have requested Australia host another event based on its success.

> The workshop highlighted to participants the value of the Integrated Nuclear Security Sustainability Plan (INSSP) mechanism that the IAEA offers.

Participants in the INSSP course visit ARPANSA, April 2024.

2.3

Regional CWC implementation

Performance Measure

Contribute to enhancing regional CWC implementation through targeted outreach.

In contributing to international peace and security efforts, ASNO continues to engage with the OPCW, as well as Indo-Pacific nations, in promoting and building capabilities in comprehensive and effective national implementation of the CWC.

Meeting with regional counterparts

ASNO met with counterparts in Singapore and Malaysia in March 2024 to discuss the importance of customs regulations and its intersection with the CWC, plus other issues regarding CWC implementation. Our counterpart organisations in both countries expressed their interest in continuing our practical bilateral collaboration and their support in strengthening regional architecture to strengthen implementation of the CWC across the region.

ASNO's work on twinning program with Malaysia

ASNO continued to work with the OPCW to formalise Australia's trilateral arrangement for a twinning program with Malaysia. Work continues while the agreement is being finalised between scientists from Malaysia and Australia's Defence Science and Technology Group (DSTG) in Melbourne, focused on strengthening regional capabilities to analyse authentic environmental samples, while assisting the OPCW in its efforts to expand its network of designated laboratories globally.

Australia is well placed to act as a partner in the region, due to our specialist capabilities in this area. Among the 193 States Parties, there are just 25 States operating 30 designated laboratories for the analysis of environmental samples. DSTG laboratory is also one of 15 OPCW designated laboratories certified for analysis of both environmental and biomedical samples.

Supporting Pacific nations to adopt CWC related legislation

Article VII of the CWC requires State Parties to adopt laws that prohibit individuals or companies from undertaking any activities that are prohibited by the CWC, such as making or using chemical weapons.

Latest available figures show 128 of the 193 States Parties have adopted legislation that covers all key areas of the CWC. To assist in improving these results, ASNO presented in March at an OPCW workshop in Suva, Fiji. The workshop focused on strengthening CWC implementation legislation for Pacific island countries and Timor-Leste. ASNO's contribution was to share its experiences and allay misconceptions related to the CWC through panel discussions including on the benefits of sub-regional cooperation on the implementation of the CWC.

DG ASNO and ASNO officials visit Malaysian chemical laboratories.

Resolving discrepancies in CWC declarations of chemical trade

To further the development of Asian countries to be more effective in implementing controls of CWC relevant chemicals and their precursors, ASNO contributed to an OPCW subregional pilot workshop hosted by the Republic of Korea in April 2024.

ASNO presented, and led a panel discussion, on best practices in resolving discrepancies between States Parties declarations of trade of CWC-Scheduled chemicals.

The workshop was attended by participants from 11 Asian countries and representatives from the World Customs Organisation. ASNO officials held bilateral discussions with countries that had transfer discrepancies with Australia in the past, which led to further opportunities for future collaboration.

Supporting CWC implementation in Asia

ASNO presented on “Identification of Declarable Industry” at the OPCW’s 21st Regional Meeting of National Authorities of States Parties in Asia, hosted in Cambodia from 29-31 August 2023. States Parties have declaration obligations under Article VI of the CWC which can only be fully met if all declarable activities involving CWC scheduled chemicals are identified and captured by national legislation. While Australia is not a member of the Asian Group, ASNO’s pro-active participation at annual Regional Meetings of National Authorities is a demonstration of its commitment to full and effective CWC implementation. These annual meetings serve as a forum for States Parties to share experiences, priorities, challenges, and build capacity for implementation of the Convention within the region.

2.4

Regional CTBT implementation

Performance Measure

Contribute to Australia's CTBT outreach efforts and support regional CTBT implementation.

Regular bilateral and multilateral engagement continued with strong momentum amongst like minded partners to advance Australia's CTBT outreach efforts. Much of this engagement has been focused on training and capability uplift, to ensure all member states can contribute to the success of the CTBT.

Building a sovereign National Data Centre in our region

A particular focal point during the reporting period was working with Pacific partners to explore the idea of building a sovereign National Data Centre (NDC) capability in our region. NDCs are national technical organisations that play an important role in the CTBT's verification structure.

ASNO recognises that all State Signatories should have fair and equal access to CTBT data, which can be used for civil and scientific purposes, and have used workshops to educate, upskill and support countries who desire to do so.

In June 2024, ASNO hosted a CTBT National Data Centre Workshop with 9 Pacific counterparts and a range of international experts. This workshop encouraged collaboration between delegates to implement a NDC in the region, a crucial element of successful CTBT verification and monitoring. The workshop achieved its clear objectives and agreed to maintain continued momentum in this space. It was an opportunity to raise awareness for the civil and scientific benefits of IMS data, including mitigating natural disasters and tracking the impact of climate change, both major issues being tackled in the Pacific region.

Signing a Practical Arrangement with Malaysia

In March 2024, on behalf of the Australian Government, I signed a Practical Arrangement with the Malaysian Government, underpinning ASNO's support of partner's CTBT commitments. The arrangement is an overarching agreement for Australia to support Malaysia in capacity-building for a sovereign NDC. It also provides a platform for continued cooperation in the application of science and technology to global monitoring for nuclear explosions, the development of other elements of the CTBT's verification regime, and civil and scientific uses of IMS data.

DG ASNO signs a Practical Arrangement with Malaysian counterpart Director General of the Malaysian Nuclear Agency Dr Rosli Bin Darmawan.

Australian NDC staff provided a CTBT Seismic Data Analysis training course to Malaysian government agencies to provide an introduction to the tools and data provided by the CTBTO for States Parties to use for their national verification requirements.

CTBT National Data Centre Implementation Workshop in June 2024.

Pillar three

Shaping and strengthening the global non-proliferation and disarmament verification mechanisms

3.1

Shaping and strengthening WMD verification and implementation

Performance Measures

- Contribute to technical developments in the field of nuclear disarmament, in particular through the International Partnership for Nuclear Disarmament Verification (IPNDV).
- Contribute to the IAEA's Standing Advisory Group on Safeguards Implementation (SAGSI).
- Support Australia's missions to the UN, particularly the IAEA and the OPCW.

Our international reputation for technical excellence has supported Australia's ability to shape the development of the global non-proliferation governance architecture for WMD.

Meeting with heads of non-proliferation UN agencies

I had the privilege to meet with Rafael Grossi, the IAEA's Director-General, and Robert Floyd, the CTBTO Executive Secretary, several times during the reporting period.

I also met the Director-General of the OPCW, Ambassador Fernando Arias, in June 2024 to reflect on the successes of the CWC in achieving the destruction of the world's declared chemical weapons stockpiles last year.

We also discussed recent allegations of chemical weapons use and emerging challenges including the potential use of AI and advances in biotechnology to design new chemical agents.

Technical advisory support to the IAEA and OPCW

IAEA's Standing Advisory Group on Safeguards Implementation (SAGSI)

The IAEA's Standing Advisory Group on Safeguards Implementation (SAGSI) provides recommendations to the IAEA Director General on safeguards implementation issues. SAGSI currently comprises international experts from 18 Member States, with members serving on SAGSI in a personal capacity. Dr Stephan Bayer, Director Safeguards and Policy Section, is Australia's current representative.

During the reporting period, SAGSI provided advice on safeguards aspects of the IAEA's State-level safeguards approach, the IAEA's Comprehensive Capacity-Building Initiative (COMPASS), artificial intelligence and machine learning, geological repositories, difficult-to-access nuclear material, and the safeguards implementation report.

SAGSI met in Finland to familiarise with the world's first encapsulation plant and geological repository at Onkalo.

IAEA's Nuclear Security Guidance Committee (NSGC)

The primary role of the Nuclear Security Guidance Committee (NSGC) is to manage the production of guidance documents in the IAEA Nuclear Security Series (NSS). The NSGC comprises over 50 IAEA Member States and Australia (ASNO) has been a member since its inception in 2012. During the reporting period, ASNO actively participated in NSGC meetings regarding the continued development of nuclear security guidance and the nuclear safety and security interface as well as the revision and drafting of global nuclear security publications.

Other ways ASNO contributed to strengthening the non-proliferation and disarmament systems

ASNO continued to provide technical advice to DFAT's broader work in non-proliferation, disarmament and arms control forums including the IAEA Board of Governors, and the General Conference. ASNO actively contributed to Working Group B of the CTBTO and its efforts to develop on-site inspections.

ASNO played a facilitator role at the OPCW's first chemical counter-terrorism desk-top exercise and provided technical advice to meetings of the OPCW Executive Council, industry cluster meetings, and informal consultations. ASNO also actively participated in the Annual Meeting for National Authorities and the Conference of the States Parties in November 2023.

ASNO presented on its experiences in receiving sequential inspections at the 25th Annual meeting of National Authorities of CWC States Parties held in The Hague in November 2023, to promote cost savings and efficiencies for all involved.

Australia's delegation to ICONS was headed by Assistant Foreign Minister, Tim Watts.

During the reporting period ASNO officials met with bilateral counterparts with whom we have Nuclear Cooperation Agreements to exchange information about safeguards best practice activities and measures.

Highlights during the last 12 months included:

- technical exchanges in Finland regarding the development and implementation of safeguards at the world's first Encapsulation Plant and Geological Repository where spent fuel containing AONM will be permanently disposed
- hosting a technical exchange from the Swedish Radiation Safety Authority to discuss the regulatory and safeguards approaches Australia applies at its research reactor and nuclear medicine production facility in Sydney as well as two active uranium mines in South Australia
- participation at the US-led Advanced Reactor International Safeguards Engagement event in support of industry outreach intended to encourage the implementation 'safeguards-by-design' principles to ensure that future reactor designs don't create additional proliferation risks
- discussions with the United Arab Emirates regarding the practicalities of implementing safeguards at the Barakah nuclear power plant in challenging climatic conditions.

Advancing international disarmament verification mechanisms through IPNDV

ASNO is an active participant in IPNDV, continuing its leadership role as the Australian co-chair of one of the task groups throughout the year and engaging in meetings on a monthly basis. In 2023-24, IPNDV met in person three times to continue building international understanding of multilateral nuclear disarmament verification and the importance of establishing the processes, procedures, techniques, and technologies for possible declarations and inspections in advance of prospective treaties or agreements that would serve to manage global nuclear disarmament.

During this period, ASNO representatives participated in a series of 'information barrier' workshops, designed to develop and test a lexicon for the imposed or intrinsic measures designed to protect sensitive information about nuclear weapons during the verification process. Run by the US Sandia National Laboratories, these workshops culminated in a technology negotiation exercise in Geneva in June 2024, where IPNDV participants had to negotiate a verification process with appropriate information barriers when both hosts and inspectors had different levels of information and knowledge.

This tabletop exercise was informative for future verification technology development.

ASNO official presents at IPNDV meeting in Budapest.

3.2

Development of new safeguards and verification technologies, methodologies and capabilities

Performance Measures

- Manage the Australian Safeguards Support Program (ASSP).
- Develop and up-skill Australia's sovereign safeguards capacities through Verify.
- Contribute to and manage the development of the next generation of safeguards technologies and techniques through Verify.

In an increasingly volatile global environment, it is important that the IAEA continues to strengthen its safeguards capabilities, including through developing the next generation of safeguards technologies and techniques. ASNO has stepped-up its support of the IAEA to do this.

Verify – strengthening nuclear safeguards in a complex world

In the last 12 months, ASNO established a safeguards research and development program for Australia – called Verify – via $10 million worth of contracts over two years. This program will enhance Australia's sovereign safeguards capability and ensure Australia can effectively facilitate and assess the development of the next generation of IAEA safeguards techniques and technologies.

Verify – activity snapshot

ASNO worked with Australia's Nuclear Science and Technology Organisation (ANSTO) to develop new radiation imaging technologies to address future national and international safeguards verification challenges. These efforts include investment in the development of an In-core Nuclear Fuel Absence Verification System (INFAVS) that will build upon ANSTO's existing imaging technology to produce an effective, advanced safeguards system.

ASNO granted funding to the Australian National University and Charles Sturt University to cooperatively design and implement a structured academic pathway and scholarship program for a formal post-graduate qualification in nuclear safeguards. This first of its kind initiative in Australia will foster interest and develop sovereign expertise in nuclear safeguards, ensuring that Australia has a highly skilled pipeline of candidates that can meet future workforce requirements and meet our non-proliferation obligations, especially in roles related to the regulation of Australia's naval nuclear propulsion.

ASNO worked closely with University of Western Australia, Curtin University and ANSTO and funded particle analysis research to improve the processes, analytics and techniques used by the IAEA's Network of Analytical Laboratories (NWAL). The IAEA's use of environmental sampling is one of the primary mechanisms it employs to verify compliance with its safeguards agreements with member states. These samples are then processed by the NWAL to detect and identify any undeclared use of fissile material in the sample.

The IAEA's demand for this highly accurate verification method has increased exponentially in the last 10 years, stressing the capacity of NWAL facilities. ASNO's funding of Australia's world-class analysis and research laboratories to develop more sophisticated or efficient analytical processes directly supports the IAEA's research mobilisation priorities and boosts NWAL capacity. This investment in Australian research institutions also supports the growth of nuclear-related expertise in Australia.

> “Safeguards professionals must be equipped with the knowledge, skills, capabilities, and tools to navigate the complexities of a rapidly changing nuclear verification environment”,

> “I would like to express my appreciation to ASNO for their valuable support. Training efforts, such as the Masterclass on Advanced Safeguards, help to broaden awareness of what is required for effective and efficient safeguards implementation in States. At the same time, such IAEA Member State Support Programme financial and in-kind contributions play an important role in strengthening and sustaining IAEA safeguards.”

Massimo Aparo
IAEA Deputy Director General and Head of the Department of Safeguards

Australian Safeguards Support Program

The Australian Safeguards Support Program (ASSP) was one of the first Member State Support Programs established with the IAEA. Over 40 years, Australia has made niche contributions to the IAEA's safeguards mission in areas such as developing safeguards technology and approaches, delivering safeguards training and providing technical services.

During the reporting period, ASNO used the Verify program to invest in the research and development of innovative safeguards technology and methodologies to ensure that the IAEA can continue to meet its safeguards mandate into the future as the use of nuclear energy and the amount of nuclear material under safeguards continues to grow, and new and advanced nuclear technology is deployed. This investment will support the IAEA's efforts to safeguard Australia's naval nuclear propulsion program.

Under Verify, this investment in the ASSP included a funding boost of $7.3 million (comprising $3.3 million from ASNO and $4 million from DFAT) to prioritise innovation in verification and analysis technologies at the IAEA and to increase the IAEA's access to Australian scientific expertise.

Coupled with in-kind technical assistance, these efforts will ensure the IAEA can exploit advances in robotics, Artificial Intelligence and advanced physics to address future non-proliferation challenges.

DG ASNO and Mr. Massimo Aparo, IAEA Deputy Director-General and Head of the Department of Safeguards sign the agreement to provide funding to the ASSP as part of Verify.

Providing advice managing emerging threats in nuclear security

In May 2024, I supported Assistant Foreign Minister, The Hon Tim Watts MP in his role as the co-president of ICONS. I spoke at a plenary panel on the threats and benefits of emerging technologies. Artificial Intelligence (AI), autonomous systems and quantum technologies are three vectors that may lead to new or evolved threats to nuclear security. These threats will have a broad range of impacts and it will be challenging to realise the benefits of emerging technologies while mitigating the risks, with effective mitigation requiring global cooperation to establish rules and norms to manage these complex and evolving challenges.

My nuclear security team will continue to work with the IAEA and Member States to assist with this process, providing expert contributions to the development of international nuclear security recommendations and guidance, including on emerging technologies. This will be progressed through the IAEA Nuclear Security Guidance Committee where ASNO's Director Nuclear Security is Australia's representative. The event successfully promoted Australia's nuclear security expertise and reinforced our support for the IAEA's work in this field.

Over the next year, my nuclear security team will also implement risk-informed nuclear security regulation domestically, continuing our oversight of the security and secure transport of nuclear materials, equipment, and technology at permit holder premises.

Advancing international disarmament verification mechanisms through IPNDV

ASNO is an active participant in IPNDV, continuing its leadership role as the Australian co-chair of one of the task groups throughout the year and engaging in meetings on a monthly basis. In 2023-24, IPNDV met in person three times to continue building international understanding of multilateral nuclear disarmament verification and the importance of establishing the processes, procedures, techniques, and technologies for possible declarations and inspections in advance of prospective treaties or agreements that would serve to manage global nuclear disarmament.

DG ASNO joins with other subject area experts on a panel discussing emerging technologies at ICONS.

DG ASNO joins a panel of Australia's nuclear agencies at ICONS 2024.

Section 5
Management and accountability

Corporate Governance

Portfolio Minister

Responsibility for administration of the legislation under which ASNO operates – the *Nuclear Non-Proliferation (Safeguards) Act 1987*, *Chemical Weapons (Prohibition) Act 1994* and *Comprehensive Nuclear Test-Ban Treaty Act 1998* – rests with the Minister for Foreign Affairs.

Director General

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

I report 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 CWC, as established by the *Chemical Weapons (Prohibition) Act 1994*
- Director of the national authority for the CTBT, as established by the *Comprehensive Nuclear-Test-Ban Treaty Act 1998.*

I was appointed to the position of Director General ASNO on 9 December 2021.

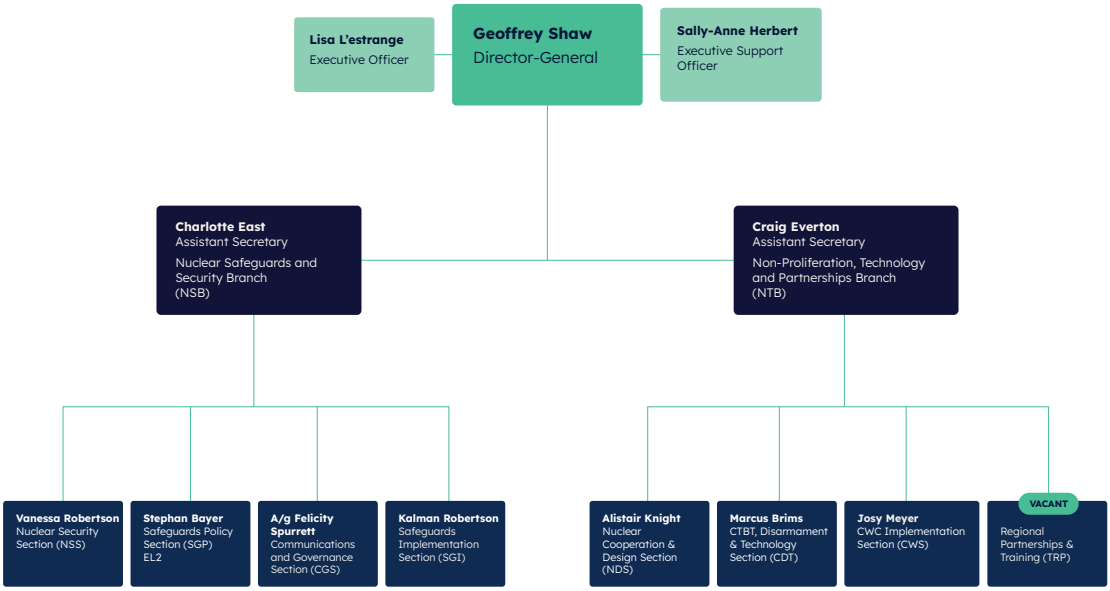
ASNO Staff

ASNO staff, other than myself, are employed under the *Public Service Act 1999* as a division within DFAT and subject to the DFAT Enterprise Agreement. At 30 June 2024, ASNO's allocated staff level was 31.5 FTE.

Table 14: ASNO staff at 30 June 2024

	Male	Female	Total
Director General	1	0	**1**
SES B1	1	1	**2**
Executive Level 2	2	4	**6**
Executive Level 1	6	5	**11**
APS Level 6	2	4	**6**
APS Level 5	1	3	**4**
Total	**13**	**17**	**30**

Figure 3: ASNO's Organisational Structure at 30 June 2024



Launching a career in global security at ASNO.

ASNO comprises a small but dynamic team of professionals with expertise in science, physics, chemistry, engineering, mathematics, diplomacy, strategic communications, and policy. United by a shared commitment to prevent the spread of weapons of mass destruction, ASNO is Australia's sole regulator focused on non-proliferation with domestic regulation responsibilities.

Driven by our nation's international treaty obligations, ASNO stands out as a unique workplace. Many of ASNO's team members return after gaining experience elsewhere, drawn back by its clear sense of purpose and impactful work in both international and domestic arenas.

DG ASNO visits Chem Tech Center, 2024.

Meet Annaliese

Annaliese joined the ASNO as a DFAT graduate. After completing her graduate rotation, she returned to ASNO to take up a permanent role in the CWC Implementation Section in 2023.

Kickstarting a career in Science Diplomacy

Annaliese describes ASNO as an excellent place to begin a career in science diplomacy, leveraging STEM skills to contribute to global security. She highlights the unique opportunities provided by ASNO's blend of domestic regulations and international obligations.

International exposure in The Hague

Recently, Annaliese spent a month in The Hague in The Netherlands, embedded within the Australian Embassy. This experience was aimed at enhancing her multilateral skills as a policy officer, building on her previous experience in chemical regulation back in Canberra, at ASNO.

She supported the Australian Embassy's work with the OPCW, an international body dedicated to eliminating the threat of chemical weapons.

A highlight of her trip was a visit the OPCW Centre for Chemistry and Technology, which is at the forefront of research to prevent the re-emergence of chemical weapons.

Annaliese joined her Embassy colleagues in attending scientific briefings, gaining insights into the evolving risks and challenges associated with new and emerging technologies and their implications for the CWC.

Upon her return, Annaliese developed a newfound appreciation for the work Australians do overseas to advance Australia's national interests. She now has a better understanding of how diplomacy operates on the ground and how ASNO's domestic work integrates into the larger goal of preventing the re-emergence of chemical weapons.

Annaliese's journey with ASNO illustrates the unique and impactful opportunities available within the organisation. Her experiences demonstrate how a role at ASNO can provide a solid foundation in science diplomacy, offering both domestic and international exposure that contributes to global security.

What are ASNO's obligations to the permit holders?

In accordance with the Australian Government's principles of regulator best practice, as outlined in the Department of Finance's resource management guide on regulatory performance (RMG128) ASNO implements the three principles of best practice in the following ways to ensure that we meet the government and the permit holder's expectations:

1. **Continuous improvement and building trust:**
   - identify ways to improve the online nuclear and chemical portals to assist regulated entities submitting information to ASNO and implement these when possible
   - not unnecessarily impede the activities of regulated entities.
2. **Risk based and data driven:**
   - ensure regulatory practices and permit conditions are fit for purpose for the types of material and/or activities
   - work with the regulated entity to protect sensitive or confidential information, including preventing unauthorised communication of any associated technology.
3. **Collaboration and engagement:**
   - ensure all IAEA/OPCW requests are reasonable and within Australia's agreements with the IAEA/OPCW
   - provide support, education and reminders to assist regulated entities with meeting their permit conditions and other regulatory requirements
   - respond promptly to (reasonable) requests for regulatory advice from regulated entities or prospective permit holders.

Public Outreach

During the reporting period ASNO has strengthened collaboration with a range of government partners, regulatory counterparts, industry, academia, and regulatory associations.

Significant engagement took place with:

- The Department of Defence and other nuclear agencies on a range of issues, including regulatory best practices and alignment, strategic communications, workforce planning, IAEA safeguards, the operation of the Australian safeguards system, and nuclear security
- the Department of Industry, Science and Resources and the Department of Home Affairs to strengthen regulatory oversight of controlled ore exports. 'Controlled ores' are minerals that contain uranium and thorium volumes above 500 parts per million
- the Department of Defence and the Department of Home Affairs on the regulatory requirements for importing and exporting CWC-scheduled chemicals
- the Department of Defence, ASA, ARPANSA and ANPSSR to support planning within the Australian Government for the proposed new regulator for nuclear safety for naval nuclear propulsion, pursuant to the Australian Naval Nuclear Power Safety Bill 2023, particularly on issues of nuclear security, regulatory best practices and training
- permit holders from government, industry and academia regarding Australia's obligations under international agreements, including the Comprehensive Safeguards Agreement, Additional Protocol, nuclear cooperation agreements, and the CWC.

As a standing member of the Counter Proliferation Strategy Group (CPSG), ASNO actively participated in the coordination and direction of the CP efforts of the Australian Intelligence Community (AIC). In some instances, ASNO also provided direct support and advice to AIC agencies, particularly regarding issues relevant to nuclear and chemical weapon proliferation.

ASNO strategic communication officials engaged regularly with other nuclear agencies to raise awareness of ASNO's regulatory safeguards and nuclear security role for Australia's naval nuclear propulsion program. These engagements provided opportunities to explore:

- better ways of communicating the nuclear regulatory and operational landscape and Australia's commitment to effective nuclear stewardship
- how to attract, build and retain a specialist nuclear workforce for Australia
- how to effectively communicate Australia's commitment to the NPT and its IAEA safeguards agreements.

A highlight of the meetings was a two-day activity hosted by ASNO where nuclear agency communication officials focused on interactive educational tools that provided better insights on our work, particularly ASNO's inspections activities.

DG ASNO meets with strategic communications professionals from other nuclear agencies.

Enhanced communication to meet increased regulatory responsibilities

ASNO commenced an uplift of our strategic communications capability to:

- remove barriers and enhance our communications with current and future permit holders
- retain our reputation as a trusted, equitable, collaborative and knowledgeable partner
- build awareness of ASNO's role, and its reputation as an employer of choice.

This work included the development of a new visual identity for ASNO including logo and associated branding guidelines.

ASNO's X channel was reinstated, and a LinkedIn channel launched to meet recruitment communication objectives.

ASNO's website was given a refresh to ensure it was more relevant to ASNO audiences, and a larger project is underway to redesign the website so that it is better fit-for-purpose to meet the increased scrutiny of ASNO's work.

The ASNO brandmark.

Educational outreach

ASNO continued to be invited to present at Australian universities and institutes, international conferences, workshops and other events, Australian and international think tanks, peak industry bodies and other organisations.

ASNO progressed efforts to raise local community awareness of the CTBT hydroacoustic station located at Cape Leeuwin, through the development of a unique poster competition among high schools in the region. In May 2024, ASNO staff visited two high school science classes in the Margaret River region to give presentations to the students about the CTBT and the importance of the Cape Leeuwin hydroacoustic station. This competition has begun to enhance community awareness of the civil and scientific support that the station provides as well as the importance of protecting the station's underwater cable.

ASNO enlisted the support of the WA Department of Transport to help implement measures that bring broader community awareness to the presence of the underwater cable component to prevent damage to it from local boat anchors. These measures include a geo-fencing application to warn boats approaching the cable's location, updating signage at the nearby boat ramp to reflect the presence of the cable, and cable location posts on social media.

These efforts have proven to be a novel method of fulfilling ASNO's commitment to supporting the CTBTO's sustainment work for IMS stations.

ASNO officials visit Margaret River Senior High School to discuss local school poster competition.

Financial Management

The *Public 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.

Operating budget

Table 15: ASNO administrative costs

	2022–23	2023-24
Salaries	2,558,094	4,732,965
Running Costs		
(DFAT general)	439,117	862,519
(DFAT/AUKUS general)	1,085,200	2,256,800
Seismic monitoring[20]	562,633	
Sub-total	2,086,950	3,119,319
Total	**$4,645,044**	**$7,852,284**

[20] Undertaken by Geoscience Australia.

Administered budget

Table 16: ASNO administered costs

	2023-24
Salaries	0
Running Costs	
(AUKUS R&D)	4,813,000
Seismic monitoring[21]	900,000
Sub-total	5,713,000
Total	**$5,713,000**

Regulatory performance measures

Previously, ASNO has reported its Regulatory Performance in a stand-alone product available on the ASNO and DFAT websites. This reporting is now in the ASNO Annual Report.

Continuous improvement and building of trust

Performance Measures	
Continuous improvement in the chemical and nuclear database and associated portal (see Outputs 1.1 and 1.5)	Met

Risk-based and data-driven

Performance Measures	
Processing of permits and approvals	
Continuous improvement in the chemical and nuclear database and associated portal (see Outputs 1.1 and 1.5)	Met
95% approvals for the transfer of UOC internationally are within 7 calendar days (see Output 1.3)	Met
95% of Schedules 2 or 3 chemical import permit applications are processed within 7 calendar days (see Output 1.5)	Met
95% of Schedule 1 chemical import permit applications are processed within 43 calendar days (see Output 1.5)	Met
95% of chemical facility permit applications are processed within 21 calendar days (see Output 1.5)	Met

[21] Undertaken by Geoscience Australia.

International inspections	
100% of IAEA inspections in Australia are facilitated by ASNO staff (see Output 1.1)	Met
100% of OPCW inspections in Australia are facilitated by ASNO staff (see Output 1.5)	Met
Domestic outreach/ASNO inspections	
Conduct outreach visits/ASNO inspections to 10 or more permit holders (see Outputs 1.1, 1.2 and 1.5)	Met

Collaborations and Engagement

Performance Measures	
Transparent implementation of Regulations	
ASNO Annual Report (https://www.dfat.gov.au/international-relations/security/asno/annual-reports)	Met
Publish Cost Recovery Implementation Statement for the Uranium Producers Charge (https://www.dfat.gov.au/sites/default/files/uranium-producers-charge-cost-recovery-implementation-statement.pdf)	Met
International reporting	
Australia meets all its reporting requirements to the IAEA and the IAEA maintains the 'broader conclusion' for Australia that all nuclear material in Australia remains in peaceful use (see Output 1.1, Appendix D, Appendix E)	Met
All exported AONM and FONM are satisfactorily accounted for (see Output 1.3)	Met
Australia implements best practice for nuclear security in Australia and maintains high standing as a world leader in nuclear security (see Output 1.2)	Met
Australia meets all of its reporting requirements to the OPCW (see Output 1.5)	Met

Uranium producers charge

ASNO is responsible for the Uranium Producers Charge. This charge is payable to Consolidated Revenue on each kilogram of uranium ore concentrate production (set on 1 November 2023 at 15.1953 cents per kilogram). Previously, the charge rate was 18.7839 cents per kilogram UOC produced, set in 2022.

ASNO official presents at IPNDV meeting in Geneva in June 2024.

Section 6
Appendices

Appendix A: Australia's Nuclear Cooperation Agreements

Australia's NCAs at 30 June 2024[22]

Country/region	Date of entry into force
Republic of Korea (ROK)	2 May 1979
Finland	9 February 1980
Canada	9 March 1981
Sweden	22 May 1981
France	12 September 1981
Philippines	11 May 1982
Japan	17 August 1982
Switzerland	27 July 1988
Egypt	2 June 1989
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[23]	3 February 2007
Russian Federation	11 November 2010
United States	22 December 2010
Euratom[24]	1 January 2012
United Arab Emirates	14 April 2014
India	13 November 2015
Ukraine	15 June 2017
United Kingdom	1 January 2021

Note: The above list does not include Australia's Comprehensive Safeguards Agreement with the IAEA, concluded on 10 July 1974, or the Additional Protocol to that Safeguards Agreement, concluded on 23 September 1997. In addition to the above Agreements, Australia has an Exchange of Notes constituting an Agreement with Singapore Concerning Cooperation on the Physical Protection of Nuclear Materials, which entered into force on 15 December 1989.

[22] Several NCAs have been renegotiated over the years to keep them up to date. This list only includes the most recent NCAs for each country/region.

[23] Australia has two agreements with China: one covering nuclear material transfers and one covering nuclear cooperation.

[24] Euratom is the European Atomic Energy Community. The Australia–Euratom NCA covers all 27 Member States of the European Union.

Appendix B: Australia Uranium Export Policies

Australia's Nuclear Safeguards Policy

The Australian Government's uranium policy limits the export of Australian uranium to countries that: are a party to the Treaty on the NPT[25]; have a Safeguards Agreement and Additional Protocol with the IAEA in force; and are within Australia's network of bilateral NCAs. Nuclear material subject to the provisions of an Australian NCA is known as Australian Obligated Nuclear Material (AONM). These NCAs are designed to ensure IAEA safeguards and appropriate nuclear security measures are applied to AONM exported overseas, in addition to several supplementary conditions. The obligations of Australia's agreements apply to uranium as it moves through the different stages of the nuclear fuel cycle and to nuclear material generated using that uranium.

All of Australia's NCAs contain treaty-level assurances that AONM will be used exclusively for peaceful purposes and will be covered by safeguards arrangements under each country's safeguards agreement with the IAEA. In the case of NNWSs, it is a minimum requirement that IAEA safeguards apply to all existing and future nuclear material and activities in that country. In the case of nuclear-weapon States, AONM must be covered by safeguards arrangements under that country's safeguards agreement with the IAEA and is limited to use for civil (that is, non-military) purposes.

The principal conditions for the use of AONM set out in Australia's NCAs are:

- AONM will be used only for peaceful purposes and will not be diverted to military or explosive purposes (here 'military purpose' includes: nuclear weapons; any nuclear explosive device; military nuclear reactors; military propulsion; depleted uranium munitions; and tritium production for nuclear weapons)
- IAEA safeguards will apply
- Australia's prior consent will be sought for transfers of AONM to third parties, enrichment to 20 per cent or more in the isotope ^{235}U and reprocessing[26]
- fall-back safeguards or contingency arrangements will apply if, for any reason, NPT or IAEA safeguards cease to apply in the country concerned
- internationally agreed standards of physical security will be applied to AONM in the country concerned
- detailed administrative arrangements will apply between ASNO and its counterpart organisation, setting out the procedures to apply in accounting for AONM
- regular consultations on the operation of the agreement will be undertaken
- provision will be made for the removal of AONM in the event of a breach of the agreement.

Australia currently has 25 bilateral NCAs in force, covering 43 countries plus Taiwan.[27]

[25] On October 2012, the Australian Government announced that it would exempt India from its policy allowing supply of Australian uranium only to those States that are Parties to the NPT.

[26] Australia has given reprocessing consent on a programmatic basis to EURATOM and Japan. Separated Australian-obligated plutonium is intended for blending with uranium into mixed oxide fuel (MOX) for further use for nuclear power generation.

[27] Euratom is the European Atomic Energy Community. The Australia–Euratom NCA covers all 27 Member States of the European Union.

Accounting for Australian Uranium

Australia's bilateral partners holding AONM are required to maintain detailed records of transactions involving AONM. In addition, counterpart organisations in bilateral partner countries are required to submit regular reports, consent requests, and transfer and receipt documentation to ASNO.

ASNO accounts for AONM on the basis of information and knowledge including:

- reports from each bilateral partner
- shipping and transfer documentation
- calculations of process losses, nuclear consumption and nuclear production
- knowledge of the fuel cycle in each country
- regular liaison with, reconciliation and bilateral visits to, counterpart organisations
- regular liaison with industry
- IAEA safeguards activities and IAEA conclusions on each country.

Australia's Uranium Transshipment Security Policy

For States with which Australia does not have a bilateral nuclear cooperation agreement in force, but through which Australian UOC is transshipped, there must be arrangements in place with those States to ensure the security of UOC during transshipment.

If the State:

- is a party to the Convention on the Physical Protection of Nuclear Material (CPPNM)
- has a safeguards agreement and has adopted the IAEA's Additional Protocol on strengthened safeguards
- acts in accordance with these agreements

then arrangements on appropriate security can be set out in an instrument with less than treaty status[28]. Any arrangements of this kind are subject to risk assessments of port security. For States that do not meet the above requirements, treaty-level arrangements on appropriate security may be required.

[28] See page 26 of ASNO's 2008–09 Annual Report for more details on the establishment of this policy.

Appendix C: The International 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 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 UK.

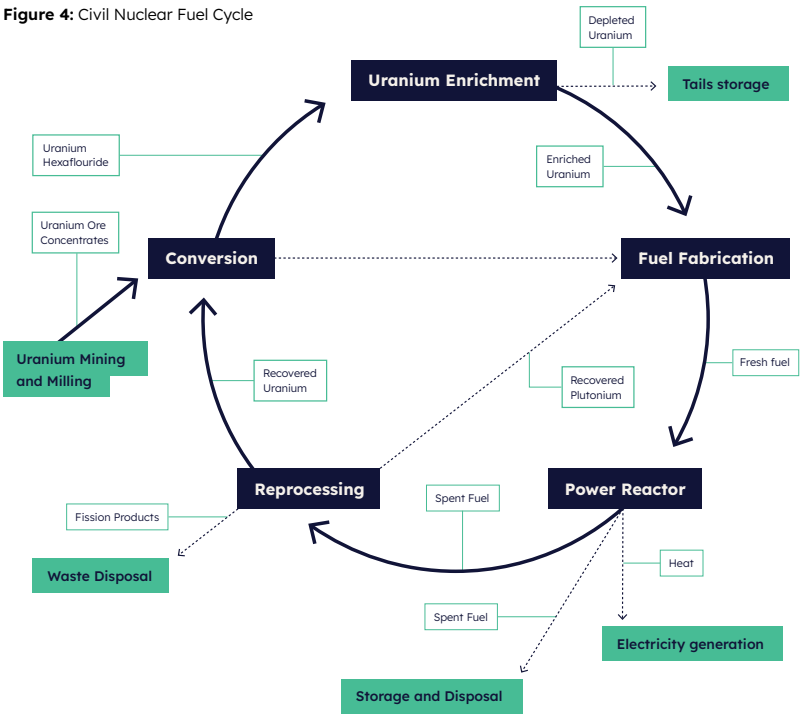
The international flow of nuclear material means that nuclear materials are routinely mixed during processes such as conversion and enrichment and as such, cannot be separated by origin thereafter. Therefore, tracking of individual uranium atoms is impossible. Since nuclear material is fungible – that is, any given atom is the same as any other – a uranium exporter can 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 (for example, 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.

Figure 4: Civil Nuclear Fuel Cycle



Appendix D: IAEA Statements of Conclusions and Other Inspection Findings for Australia in 2023–24

IAEA Inspection Regime in Australia

The IAEA conducts verification activities (under different names, but all essentially inspections) in Australia under the Comprehensive Safeguards Agreement[29] and under the Additional Protocol,[30] with the scope and focus differing between these two agreements.

Under the Comprehensive Safeguards Agreement the IAEA conducts inspections to verify nuclear material inventory and facility design features. There are four types of inspection conducted in Australia each year under the Comprehensive Safeguards Agreement:

- **Physical inventory verification (PIV):** a scheduled inspection in a selected material balance area (MBA)[31] to verify the stocktake of physical inventory (known as a physical inventory taking) of nuclear material for that MBA. PIVs involve a more complete verification of inventory than random interim inspections (RII,[32] see below). The frequency of PIVs depends on the types and quantities of nuclear material held in each MBA. In Australia's case, PIVs are scheduled annually for the OPAL reactor (AS-F) and ANSTO's R&D laboratories (AS-C). ANSTO's storage areas (AS-D) have previously been subject to annual inspection, but in 2023 the IAEA chose not to conduct a PIV at AS-D pursuant to its state-level approach for Australia. PIVs for each MBA may be scheduled together each year so the IAEA can complete all with one visit to Australia. In total these usually take six days to complete in conjunction with DIVs (see below). For MBAs AS-E, ASE1, ASE2 and AS-I, the IAEA schedules PIVs periodically for AS-E/ASE1/ASE2 combined, selecting a few locations (such as universities) as a representative sample of all such locations; and similarly for one of CSIRO's locations in MBA AS-I. Each of these PIVs is usually conducted in one day.
- **Interim inventory verification (IIV):** an inspection in a selected MBA to verify specific types of nuclear material, scheduled at a time other than the PIV. The IAEA conducted an IIV at ANSTO's R&D laboratories (AS-C) in October 2022 to measure the uranium content in solid waste from molybdenum-99 (Mo-99) radiopharmaceutical production using an active well coincidence counter (AWCC). It is anticipated that the IAEA will schedule an IIV approximately once every two years for AS-C.
- **Random interim inspection (RII):** an inspection called by the IAEA at a random time with limited notice. The IAEA calls an RII once or twice each year at the OPAL reactor and/or at buildings with hot cells at ANSTO. An RII takes place with three hours' notice to ASNO and ANSTO. It usually lasts for one or two days.
- **Design information verification (DIV):** an inspection to verify the correctness and completeness of information provided by Australia on the design features of a facility relevant to the application of safeguards. The IAEA typically conducts a few DIVs together with annual PIVs.

[29] See Schedule 3 of the *Nuclear Non-Proliferation (Safeguards) Act 1987.*

[30] Published in IAEA document INFCIRC/217/Add.1 based on the model in INFCIRC/540 (corrected).

[31] Australia's material balance areas for IAEA safeguards are described in Table 2 in Output 1.1.

[32] In previous years random interim inspections have been referred to as 'short notice random inspections' (SNRIs).

Under the Additional Protocol the IAEA has the right to conduct verification activities (essentially inspections) known as **complementary access**. A complementary access may have four purposes:

1. assuring the absence of undeclared nuclear material or activities in Australia (Article 4.a.i);
2. resolving any questions or inconsistencies related to the correctness and completeness of Australia's declarations under the Additional Protocol (Article 4.a.ii);
3. confirming the decommissioned status of a facility (Article 4.a.iii); or
4. where Australia offers additional access or requests, conducting additional verification activities at particular locations (Article 8).

The IAEA has conducted a total of 102 complementary accesses in Australia since 1998.

Article 4.a.i complementary accesses are the most common. Since 1998 the IAEA has conducted only three complementary accesses under article 4.a.ii, and one under Article 4.a.iii. Complementary access activities called while IAEA inspectors are already on the Lucas Heights site for other inspections (e.g. at ANSTO) can be conducted at any building on site with two hours' notice. Complementary access activities for locations outside Lucas Heights (e.g. universities, uranium mines) require a minimum of 24 hours' notice, however given the considerable distances in Australia are often issued with several days' notice. The IAEA typically conducts two to three complementary access activities in Australia each year, including at least one for buildings at Lucas Heights and at least one outside of Lucas Heights.

IAEA Conclusions on Australia's Compliance

The IAEA's conclusions for Australia are provided at two levels: the IAEA's overarching summary of findings and conclusions published in the IAEA's Safeguards Statement for 2023 (see Appendix E) for all States with safeguards agreements with the IAEA, including Australia; and the statements of conclusions of inspections in Australia.

The highest level conclusion the IAEA draws, known as the 'broader conclusion', is in paragraph 1(a) of the Safeguards Statement:

'the Secretariat found no indication of the diversion of declared nuclear material from peaceful nuclear activities, no indication of undeclared production or processing of nuclear material at declared facilities and LOFs, 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.'

Australia is on the list of countries covered by the IAEA's broader conclusion in the Safeguards Statement for 2023. Australia was the first country to receive the 'broader conclusion' in 2000 and has received it every year since.

The IAEA's statements of conclusions related to inspections in Australia are provided in several ways:

- **Article 91(a)** of Australia's Comprehensive Safeguards Agreement: the results of inspections at individual material balance areas (MBAs).
- **Article 91(b)** of Australia's Comprehensive Safeguards Agreement: the conclusions the IAEA has drawn from all its verification activities (headquarters analysis and inspections) in Australia for each individual MBA.[33]
- Statement of results of design information verification activities (DIVs).
- **Article 10.a** of the Additional Protocol: Statement on complementary access activities undertaken.
- **Article 10.b** of the Additional Protocol: Statement of results of activities in respect of any questions or inconsistencies the IAEA has raised with Australia.
- **Article 10.c** of the Additional Protocol: Statement on the conclusions the IAEA has drawn from all complementary access activities in a year.

[33] Note: under the standard NPT safeguards agreement printed in IAEA document INFCIRC/153 these provisions are in paragraphs 90(a) and 90(b). Australia's Comprehensive Safeguards Agreement has an additional paragraph that is not in INFCIRC/153.

IAEA Conclusions and Findings for Each Material Balance Area

Material balance area: AS-C (research and development laboratories)
Material balance period: 6 June 2023 – 10 May 2024

Inspection activity	Date(s) of inspection	Inspection location	Statement of results	Date statement provided
Random Interim Inspection of Hot Cells	28 August 2023	ANSTO	"Based on the activities conducted and the information available to date in connection with such activities, the results from this inspection were satisfactory"	18 September 2023
Random Interim Inspection of Hot Cells	20 March 2024	ANSTO	"Based on the activities conducted and the information available to date in connection with such activities, the results from this inspection were satisfactory".	18 May 2024
Physical Inventory Verification	15–17 and 20 May 2024	ANSTO	"Based on the activities conducted and the information available to date in connection with such activities, the results from this inspection were satisfactory."	22 July 2024
Design Information Verification	15–17 and 20 May 2024	ANSTO	"Based on the activities conducted and the information available to date in connection with such activities, the results of the DIV were satisfactory."	22 July 2024
91(b) Statement of Conclusions	Not available at time of publication of this Annual Report.			

Material balance area: AS-D (vault storage)
Material balance period: 18 May 2022–13 May 2024

Inspection activity	Date(s) of inspection	Inspection location	Statement of results	Date statement provided
Physical Inventory Verification	14 May 2024	ANSTO	"Based on the activities conducted and the information available to date in connection with such activities, the results from this inspection were satisfactory."	8 July 2024
Design Information Verification	14 May 2024	ANSTO	"Based on the activities conducted and the information available to date in connection with such activities, the results of the DIV were satisfactory."	8 July 2024
91(b) Statement of Conclusions (18 July 2024)	"The IAEA has concluded from its verification activities carried out at AS-D during the material balance period from 18 May 2022 to 13 May 2024, and based on the information available to date in connection with such activities, that all declared nuclear material has been accounted for and that there were no indications of the undeclared presence, production or processing of nuclear material."			

NOTE: Neither a physical inventory verification nor a design information verification was undertaking by the IAEA for MBA AS-D during FY2022-2023.

Material balance area: AS-E, ASE1 and ASE2 (other locations)
Material balance period: 1 July 2022 to 30 June 2023 (AS-E, ASE1, ASE2)

Inspection activity	Date(s) of inspection	Inspection location	Statement of results	Date statement provided
Physical Inventory Verification	1 September 2023	UNSW Canberra	"Based on the activities conducted and the information available to date in connection with such activities, the results from this inspection were satisfactory."	19 December 2023
Physical Inventory Verification	4 September 2023	ARPANSA	"Based on the activities conducted and the information available to date in connection with such activities, the results from this inspection were satisfactory."	19 December 2023
Physical Inventory Verification	6 November 2023	University of South Australia	"Based on the activities conducted and the information available to date in connection with such activities, the results from this inspection were satisfactory."	19 December 2023
Physical Inventory Verification	7 November 2023	EPA, South Australia	"Based on the activities conducted and the information available to date in connection with such activities, the results from this inspection were satisfactory."	19 December 2023
91(b) Statement of Conclusions (16 January 2024)	**Material balance areas AS-E, ASE1, ASE2:** "The IAEA has concluded from its verification activities carried out at AS-E, ASE1 and ASE2 during the material balance period from 1 July 2022 to 30 June 2023, and based on the information available to date in connection with such activities, that all declared nuclear material has been accounted for and that there were no indications of the undeclared presence, production or processing of nuclear material."			

Material balance area: AS-F (OPAL)
Material balance period: 4 June 2023 –4 June 2024

Inspection activity	Date(s) of inspection	Inspection location	Statement of results	Date statement provided
Random Interim Inspection of OPAL Reactor	28 August 2023	ANSTO	"Based on the activities conducted and the information available to date in connection with such activities, the results from this inspection were satisfactory."	28 September 2023
Physical Inventory Verification	10 May 2024	ANSTO	"Based on the activities conducted and the information available to date in connection with such activities, the results from this inspection were satisfactory."	4 July 2024
Design Information Verification	10 and 13 May 2024	ANSTO	"Based on the activities conducted and the information available to date in connection with such activities, the results of the DIV were satisfactory."	4 July 2024
91(b) Statement of Conclusions	Not available at time of publication of this Annual Report.			

Material balance area: AS-H (SyMo)
Material balance period: N/A (nil nuclear material present)

Inspection activity	Date(s) of inspection	Inspection location	Statement of results	Date statement provided
Design Information Verification	19 March 2024	ANSTO	"Based on the activities conducted and the information available to date in connection with such activities, the results of the DIV were satisfactory."	15 May 2024

Material balance area: AS-I (CSIRO)
Material balance period: 1 July 2022 to continues

Inspection activity	Date(s) of inspection	Inspection location	Statement of results	Date statement provided
			No inspection activity to report	
91(b) Statement of Conclusions	No conclusions to report.			

NOTE: A physical inventory verification was not undertaken by the IAEA for MBA AS-I (CSIRO) during FY2023-2024.

Material balance area: N/A (Defence)
Material balance period: N/A (nil nuclear material present

Inspection activity	Date(s) of inspection	Inspection location	Statement of results	Date statement provided
Design Information Verification	8 May 2023	Osborne	"Based on the activities conducted and the information available to date in connection with such activities, the results of the DIV were satisfactory."	26 February 2024

Additional Protocol Assessment Period:
1 January 2023 – 31 December 2023

Date of Complementary Access (CA)	Location	10(a) Statement of activities	Date statement provided
21 March 2023	University of Melbourne	"The IAEA was able to carry out all planned activities during the CA."	15 June 2023
23 March 2023	ANSTO	"The IAEA was able to carry out all planned activities during the CA."	15 June 2023
13 June 2023	Ranger Mine	"The IAEA was able to carry out all planned activities during the CA."	14 July 2023
15 June 2023	CSIRO	"The IAEA was able to carry out all planned activities during the CA."	5 July 2023
29 August 2023	Ubaryon	"The IAEA was able to carry out all planned activities during the CA."	13 October 2023
30 August 2023	ANSTO	"The IAEA was able to carry out all planned activities during the CA."	13 October 2023
7 November 2023	Private company involved in laser-based systems	"The IAEA was able to carry out all planned activities during the CA."	15 December 2023
10 November 2023	Sandy Ridge PT	"The IAEA was able to carry out all planned activities during the CA."	15 December 2023
91(b) Statement of Conclusions (16 January 2024)	The IAEA has concluded from its activities carried out during this period, and based on the information available to date in connection with such activities that access pursuant to Article 4.a.(i) did not indicate the presence of undeclared nuclear material or activities at: • Lucas Heights Science and Technology Centre • PN140 - University of Melbourne • PN004 - Ranger • PN013 - CSIRO-Floreat • ANSTO - Lucas Heights Centre, New lllawarra Rd, Lucas Heights, NSW * • PN001 ANSTO and others - Lucas Heights Centre • [Private company involved in laser-based systems] * • PN261 - Sandy Ridge PT Pty Ltd * Note that conclusions for sites/locations marked with an asterisk (*) are pending the results and evaluation of environmental samples.		

Additional Protocol Assessment Period:
1 January 2024– 31 December 2024

Date of Complementary Access (CA)	Location	10(a) Statement of activities	Date statement provided
19 March 2024	ANSTO	"The IAEA was able to carry out all planned activities during the CA."	28 May 2024
22 March 2024	AJJA Technologies	"The IAEA was able to carry out all planned activities during the CA."	30 May 2024
10 May 2024	Silex	"The IAEA was able to carry out all planned activities during the CA."	5 July 2024
18 June 2024	Defence	"The IAEA was able to carry out all planned activities during the CA."	2 August 2024
10(c) Statement of Conclusions	Not available at time of publication of this Annual Report.		

Appendix E: IAEA Safeguards Statement for 2023[34, 35]

This Statement plus further details on safeguards implementation is available at: www.iaea.org/sites/default/files/24/06/20240607_sir_2024_part_ab.pdf

This statement is copied verbatim from the IAEA's publication, including footnotes.

In 2023, safeguards were applied for 189 States[36, 37], with safeguards agreements in force with the Agency. The Secretariat's findings and conclusions for 2023 are reported below with regard to each type of safeguards agreement. These findings and conclusions are based upon an evaluation of all safeguards relevant information available to the Agency in exercising its rights and fulfilling its safeguards obligations for that year[38].

1. One hundred and thirty-six States had both comprehensive safeguards agreements and additional protocols in force:

(a) For 74 of these States[37], the Secretariat found no indication of the diversion of declared nuclear material from peaceful nuclear activities, no indication of undeclared production or processing of nuclear material at declared facilities and LOFs, 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 62 of these States, the Secretariat found no indication of the diversion of declared nuclear material from peaceful nuclear activities and no indication of undeclared production or processing of nuclear material at declared facilities and LOFs. 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 45 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 and no indication of undeclared production or processing of nuclear material at declared facilities and LOFs. On this basis, the Secretariat concluded that, for these States, declared nuclear material remained in peaceful activities.

3. As of the end of 2023, four States Parties to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) had yet to bring into force comprehensive safeguards agreements with the Agency as required by Article III of that Treaty. For these States Parties, the Secretariat could not draw any safeguards conclusions.

4. Three States had safeguards agreements based on INFCIRC/66/Rev.2 in force, requiring the application of safeguards to nuclear material, facilities and other items specified in the relevant safeguards agreement. One of these States, India, had an additional protocol in force. 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 agreements and additional protocols in force. Safeguards were implemented with regard to declared nuclear material in selected facilities in all five States. For these States, the Secretariat found no indication of the undeclared withdrawal from safeguards of nuclear material to which safeguards had been applied. On this basis, the Secretariat concluded that, for these States, nuclear material in selected facilities to which safeguards had been applied remained in peaceful activities or had been withdrawn from safeguards as provided for in the agreements.

[34] The designations employed and the presentation of material in this report, including the numbers cited, do not imply the expression of any opinion whatsoever on the part of the Agency or its Member States concerning the legal status of any country or territory or of its authorities, or concerning the delimitation of its frontiers.

[35] The referenced number of States Parties to the NPT is based on the number of instruments of ratification, accession or succession that have been deposited.

[36] These States do not include the Democratic People's Republic of Korea (DPRK), where the Agency did not implement safeguards and, therefore, could not draw any conclusion.

[37] And Taiwan, China.

[38] For States with a comprehensive safeguards agreement (CSA) in force with an operative small quantities protocol (SQP) based on the original standard text, the Agency's ability to draw a credible and soundly-based annual safeguards conclusion is significantly affected. This is due, inter alia, to the fact that the original standard text of the SQP holds in abeyance the requirement for these States to provide to the Agency an initial report on all nuclear material as well as the Agency's right to perform verification activities in these States. In light of such limitations, and given the significant lapse of time since the decision of the Board of Governors in 2005 authorising the Director General to conclude with each State with an SQP based on the original standard text an exchange of letters giving effect to the revised standardised text and the modified criteria, the Agency will no longer be able to continue to draw a safeguards conclusion for such States.

Appendix F: Information Publication Scheme Statement

Agencies subject to the *Freedom of Information Act 1982* (FOI Act) are required to publish information for the public as part of the Information Publication Scheme (IPS). This requirement is in Part II of the FOI Act and has replaced the former requirement to publish a section 8 statement in an annual report. Each agency must display on its website a plan showing what information it publishes in accordance with the IPS requirements.

An Agency plan showing what information is published in accordance with IPS requirements is accessible from:

www.dfat.gov.au/about-us/corporate/freedom-of-information/information-publications-scheme

Glossary

Term	Description
Additional Protocol (AP)	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 (Corrected).
Asia-Pacific Safeguards Network (APSN)	A professional network that draws upon safeguards expertise in the Asia-Pacific to facilitate the exchange of safeguards information, knowledge and practical experience among Members in order to strengthen safeguards capabilities in the region.
AUKUS	A trilateral enhanced security partnership between Australia, the UK and US. AUKUS aims to build on the three countries' longstanding and ongoing bilateral ties to enable the countries to significantly deepen cooperation on a range of emerging security and defence capabilities.
Australian Nuclear Science and Technology Organisation (ANSTO)	ANSTO is the Australian public research organisation focused on nuclear science and technology with applications in health including radiopharmaceutical production, engineering, materials science, the environment and the nuclear fuel cycle. ANSTO's operations include the OPAL research reactor and ANSTO Nuclear Medicine (ANM).
Australian Obligated Nuclear Material (AONM)	Nuclear material exported from Australia and nuclear material derived therefrom, which is subject to obligations pursuant to Australia's bilateral NCAs.
Australian Radiation Protection and Nuclear Safety Agency (ARPANSA)	The Australian Government's primary authority on radiation protection and nuclear safety. ARPANSA regulates Commonwealth entities that use radiation with the objective of protecting people and the environment.
Australian Safeguards Support Program (ASSP)	ASSP is one of 21 programs established by Member States and the European Commission to assist the IAEA in safeguards research and development and is coordinated by ASNO.
Broader Conclusion (Nuclear)	The IAEA can draw the 'broader conclusion' for a State as a whole that 'all nuclear material remains in peaceful activities'. This is a more fulsome assessment for a State than 'declared nuclear material remain in peaceful activities'.
Central Nervous System-Acting Chemicals (CNSACs)	Toxic (and potentially lethal) chemicals that target the central nervous system.
Chemical Weapon Production Facility (CWPF)	Provisions for dealing with chemical weapon production facilities are addressed in Article V of the CWC.
Chemical Weapons Convention (CWC)	Commonly used name given to the Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction.
Complementary Access (CA)	The right of the IAEA, pursuant to the Additional Protocol, for access to a site or location to carry out verification activities.
Comprehensive Nuclear-Test-Ban Treaty (CTBT)	The CTBT bans all nuclear explosions – everywhere, by everyone. While there is almost universal adoption of the Treaty, it will not enter into force until the 44 States specified in Annex 2 have signed and ratified the Treaty.
Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO)	The Vienna-based international organisation established at entry into force of the CTBT to ensure the implementation of its provisions.
Comprehensive Safeguards Agreement (CSA)	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 (corrected).
Convention on the Physical Protection of Nuclear Material (CPPNM)	CPPNM establishes physical protection measures that must be applied to nuclear material in international transport, as well as measures related to criminal offenses related to nuclear material.

Term	Description
Amended Convention on the Physical Protection of Nuclear Material (A/CPPNM)	The amended CPPNM additionally requires physical protection measures for nuclear facilities and material in domestic use, storage and transport. It also requires States to criminalise malicious acts involving nuclear facilities and material and expands State-to-State cooperation in responding to such acts.
Conversion	Purification of UOC or recycled nuclear material and conversion to a chemical form suitable for isotopic enrichment or fuel fabrication.
Conventionally armed	Are weapons other than weapons of mass destruction
CWC-Scheduled Chemicals	Chemicals listed in the Annex on Chemicals 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.
Defence Science and Technology Group (DSTG)	The Australian Government's lead agency responsible for applying science and technology to Defence and national security.
Democratic People's Republic of Korea (DPRK)	Also known as North Korea.
Depleted Uranium (DU)	Uranium with a ^{235}U content less than that found in nature, (for example, the uranium contains less than 0.711% ^{235}U). Depleted uranium is usually the waste product of the uranium enrichment processes.
Direct-Use Material	Nuclear material defined for safeguards purposes as being usable for nuclear explosives without transmutation or further enrichment, for example, plutonium, high enriched uranium (HEU) and ^{233}U.
Discrete Organic Chemical	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. DOCs are produced at Other Chemical Production Facilities (OCPFs).
Enrichment	A physical or chemical process for increasing the proportion of a particular isotope. Uranium enrichment involves increasing the proportion of ^{235}U from its level in natural uranium, 0.711%. For low enriched uranium (LEU) fuel used in a power reactor the proportion of ^{235}U (the enrichment level) is typically increased to between 3% and 5%.
Euratom	Atomic Energy Agency of the European Union. Euratom's safeguards office, called the Directorate-General of Energy E – Nuclear Safeguards, is responsible for the application of safeguards to all nuclear material in Austria, Belgium, Bulgaria, Croatia, 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.
Facility	(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.
Fissile	Referring to a nuclide capable of undergoing fission by neutrons of any energy, including 'thermal' neutrons (for example, ^{233}U, ^{235}U, ^{239}Pu and ^{241}Pu).
Fissile Material Cut-off Treaty	A proposed international treaty to prohibit production of fissile material for nuclear weapons.

Term	Description
Fission	The splitting of an atomic nucleus into roughly equal parts, often triggered by a bombarding neutron. In a nuclear reactor, a neutron collides with a fissile nuclide (for example, ^{235}U) that then splits, releasing energy and further neutrons. Some of these neutrons go on to collide with other fissile nuclei, setting up a nuclear chain reaction.
Fissionable	Referring to a nuclide capable of undergoing fission by 'fast' neutrons (for example, ^{233}U, ^{235}U, ^{238}U, ^{239}Pu, ^{240}Pu, ^{241}Pu and ^{242}Pu).
Geoscience Australia (GA)	Geoscience Australia is Australia's leading public sector geoscience organisation. GA conducts nuclear monitoring activities on behalf of the Australian Government agreed through a Letter of Understanding between ASNO and GA. GA is also involved in the installation and maintenance of some of the CTBT IMS stations in Australia and its territories.
Heavy Water (D_2O)	Water enriched in the 'heavy' hydrogen isotope deuterium (^2H) which consists of a proton and a neutron. D_2O occurs naturally as about one part in 6,000 of ordinary water. D_2O is a very efficient moderator, enabling the use of natural uranium in a nuclear reactor.
High Flux Australian Reactor (HIFAR)	The 10 MWt research reactor located at ANSTO, Lucas Heights. Currently undergoing decommissioning.
High Enriched Uranium (HEU)	Uranium enriched to 20% or more in ^{235}U. Weapons-grade HEU is enriched to over 90% ^{235}U.
Hydroacoustic	The study and application of sound in water. One category of CTBT IMS station monitoring changes in water pressure generated by sound waves in the water.
Indirect-Use Material	Nuclear material that cannot be used for a nuclear explosive without transmutation or further enrichment (for example, depleted uranium, natural uranium, LEU and thorium).
INFCIRC/153 (Corrected)	The model agreement used by the IAEA as a basis for comprehensive safeguards agreements with NNWS Parties to the NPT.
INFCIRC/225 Rev.5 (Corrected)	The IAEA document *Nuclear Security Recommendations on Physical Protection of Nuclear Materials 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.
INFCIRC/540 (Corrected)	The model text of the IAEA's Additional Protocol.
INFCIRC/66 Rev.2	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.
Infrasound	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 5,000 km.
Integrated Safeguards	The optimum combination of all safeguards measures under comprehensive safeguards agreements and the Additional Protocol to achieve maximum effectiveness and efficiency.
International Atomic Energy Agency (IAEA)	The IAEA is the world's centre for cooperation in the nuclear field and seeks to promote the safe, secure and peaceful use of nuclear technologies.
International Data Centre (IDC)	Data gathered by monitoring stations in the CTBT IMS network are compiled, analysed to identify events and archived by the Vienna-based IDC. IDC products giving the data about events are made available to CTBT signatories.

Term	Description
International Monitoring System (IMS)	A network of 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 nuclear explosion.
International Partnership of Nuclear Disarmament Verification (IPNDV)	IPNDV is an ongoing initiative of more than 25 countries with and without nuclear weapons. The Partners are identifying challenges associated with nuclear disarmament verification and developing potential approaches and technologies to address those challenges.
Isotopes	Atoms of the same element with the same number of protons, but different numbers of neutrons, for example, ^{235}U (92 protons and 143 neutrons) and ^{238}U (92 protons and 146 neutrons). While different isotopes of the same element behave the same in a chemical reaction, they behave differently in a nuclear reactions.
Light Water	H_2O. Ordinary water.
Light Water Reactor (LWR)	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).
Low Enriched Uranium (LEU)	Low enriched uranium. Uranium enriched to less than 20% ^{235}U. Commonly, LEU used as fuel in light water reactors is enriched to between 3% and 5% ^{235}U.
Material Balance Area (MBA)	A delineation for nuclear accounting purposes as required under comprehensive safeguards agreements. It is a defined and delineated area in or outside of a facility such that: (a) the quantity of nuclear material in each transfer into or out of the MBA can be determined; and (b) The physical inventory of nuclear material in the MBA can be determined, in order that the nuclear material balance can be established for IAEA safeguards purposes.
Material Balance Report (MBR)	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.
Material Unaccounted For (MUF)	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.
Mixed Oxide Fuel (MOX)	Mixed oxide reactor fuel, consisting of a mixture of uranium and plutonium oxides. The plutonium content of fresh MOX fuel for an LWR is typically around 5–7%.
Moderator	A material used to slow fast neutrons to thermal speeds where they can readily be absorbed by ^{235}U or plutonium nuclei and initiate a fission reaction. The most commonly used moderator materials are light water, heavy water or graphite.
Natural Uranium	In nature, uranium consists predominantly of the isotope ^{238}U (approximately 99.3%), with the fissile isotope ^{235}U comprising only 0.711%.
Naval Nuclear Propulsion	Naval nuclear propulsion reactors use method of propulsion that uses nuclear reactions to generate high amounts of energy, allowing for the ejection of large amounts of gases at very high velocities. It offers a significantly higher specific energy compared to conventional reactions.
Non-Nuclear-Weapon State(s) (NNWS)	States not recognised by the NPT as having nuclear weapons at 1 January 1967 when the Treaty was negotiated.
Nuclear Material	Any source material or special fissionable material as defined in Article XX of the IAEA Statute (in practice, this means uranium, thorium and plutonium).
Nuclear-Weapon State(s) (NWS)	States recognised by the NPT as having nuclear weapons at 1 January 1967 when the Treaty was negotiated, namely the US, Russia, the UK, France and China.

Term	Description
Nuclear-powered submarine (NPS)	A submarine that is powered by a nuclear reactor but isn't necessarily nuclear-armed.
Nuclear Powered Submarine Program	See AUKUS
NUMBAT	Nuclear Material Balances and Tracking – ASNO's custom-built nuclear database used to fulfil reporting requirements under Australia's safeguards agreements with the IAEA, track Australian AONM overseas and maintain a register of permit holders, as required under the *Nuclear Non-Proliferation (Safeguards) Act 1987*.
Old Chemical Weapons (OCW)	Defined under the CWC as: • chemical weapons produced before 1925; or • chemical weapons produced between 1925 and 1946 that have deteriorated to such extent that they can no longer be used as chemical weapons.
On-Site Inspection (OSI)	A short-notice, challenge-type inspection provided for in the CTBT as a means for investigating concerns about non-compliance with the prohibition on nuclear explosions.
Open Pool Australian Light-Water Reactor (OPAL)	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.
Organisation for the Prohibition of Chemical Weapons (OPCW)	OPCW is an intergovernmental organisation and the implementing body for the CWC based in The Hague, Netherlands. It oversees the global endeavour for the permanent and verifiable elimination of chemical weapons.
Other Chemical Production Facility (OCPF)	Defined under the CWC as all plant sites that: • produced by synthesis during the previous calendar year more than 200 tonnes of unscheduled discrete organic chemicals; or • comprised one or more plants which produced by synthesis during the previous calendar year more than 30 tonnes of an unscheduled discrete organic chemical containing the elements phosphorus, sulphur or fluorine.
Physical Inventory Listing (PIL)	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).
Production	(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. (For safeguards purposes) Nuclear Production is the generation of special fissionable material through irradiation of fertile material in a reactor.
Provisional Technical Secretariat (PTS)	The PTS assists the CTBTO Preparatory Commission in the establishment of a global verification regime to monitor compliance with the CTBT.
^{239}Pu	An isotope of plutonium with atomic mass 239 (94 protons and 145 neutrons). ^{239}Pu is the fissile isotope of plutonium most suitable for nuclear weapons.
Radionuclide	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 is used to detect radionuclide particles in the air. Other IMS stations are equipped with radionuclide noble gas technology to detect the abundance of the noble gas xenon in the air.

Term	Description
Reprocessing	Processing of spent nuclear fuel to separate uranium and plutonium from highly radioactive fission products.
Safeguards Inspector	For domestic purposes, a 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 IAEA inspections and complementary access in Australia.
Seismic	Referring to the movements of the earth and its crust that can be generated by, among other things, earthquakes, explosions and large impacts (for example, meteors). The seismic component of the CTBT's IMS is a network of 50 primary stations and 120 auxiliary stations. Analysis of seismic waves can be used to distinguish between earthquakes and explosive events.
Small Quantities Protocol (SQP)	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.
Source Material	Uranium containing the mixture of isotopes occurring in nature; uranium depleted in the isotope ^{235}U; thorium; or any of the foregoing in the form of metal, alloy, chemical compound or concentrates.
Special Fissionable Material (SFM)	^{239}Pu; ^{233}U; uranium enriched in the isotopes 235 or 233; any material containing one or more of the foregoing.
Standing Advisory Group on Safeguards Implementation (SAGSI)	An international group of experts appointed by, and advising, the IAEA Director General on safeguards implementation matters.
Treaty on the Non-Proliferation of Nuclear Weapons (NPT)	The Treaty on the Non-Proliferation of Nuclear Weapons, commonly referred to as the NPT, is an international treaty with the objectives of preventing the spread of nuclear weapons and weapons technology, promoting cooperation in the peaceful uses of nuclear energy and to further the goal of nuclear disarmament.
^{232}Th	The only naturally occurring isotope of thorium, having an atomic mass of 232 (90 protons and 142 neutrons).
^{233}U	An isotope of uranium containing 233 nucleons, usually produced through neutron irradiation of ^{232}Th.
^{235}U	An isotope of uranium containing 235 nucleons (92 protons and 143 neutrons) which occurs as 0.711% of natural uranium.
^{238}U	An isotope of uranium containing 238 nucleons (92 protons and 146 neutrons) which occurs as about 99.3% of natural uranium.
Uranium ore concentrate (UOC)	A commercial product of a uranium mining and milling operation usually containing a high proportion (greater than 90%) of uranium oxide.
Weapons of Mass Destruction (WMD)	Refers to nuclear, chemical, biological and occasionally radiological weapons.

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