

REGULATION OF URANIUM EXPLORATION / MINING IN WESTERN AUSTRALIA

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Physical Protection (Security) and Safeguards Requirements for Uranium Mines and Transport

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AUSTRALIAN SAFEGUARDS AND NON-PROLIFERATION OFFICE (ASNO)

- **Specialist nuclear regulatory and advisory authority**
 - ~16 positions
 - DG ASNO responsible to Minister for Foreign Affairs
- **Operation of WMD treaties and arrangements**
 - fulfilment of Australia's treaty commitments
 - cooperation with treaty organisations
 - contribution to, and assessment of, effectiveness of treaty regimes
- **Administration of permits for possession and transport of nuclear material – safeguards (i.e. nuclear accountancy & control) and physical protection.**



ASNO's Regulatory Scope

- **OPAL**: operating 20 MW_{th} research reactor
- **HIFAR**: shutdown 10 MW_{th} research reactor
- **Moata**: shutdown 100 kW_{th} research reactor
- **Silex**: decommissioned laser enrichment research facility
- **3 × operating uranium mines**
- **Miscellaneous**



WHY REGULATE URANIUM?

Australia views uranium as more than a tradable commodity
– it has a distinctly different profile and risks

National Interest

- Australia, in deciding appropriate levels of protection applied to uranium mines and UOC considers its **national interest** best served by applying **effective controls**

Industry Interest

- Also in the **interest of the uranium mining industry** – given the profile of uranium, maintaining public confidences is served by having robust and effective security infrastructure and systems

Treaty obligations

- e.g. international **Convention for the Physical Protection of Nuclear Materials (CPPNM)**, **IAEA Safeguards Agreement**



AUSTRALIA'S TREATY OBLIGATIONS

NPT

- Accept IAEA safeguards on all nuclear material
- Export of nuclear material to NNWS covered by IAEA safeguards

IAEA Comprehensive Safeguards Agreement

- National system of accountancy & control of nuclear material
- Report all nuclear material inventory and transactions to IAEA
- Allow IAEA inspections (does not include mines)

IAEA Additional Protocol

- Report mine details
- Allow IAEA complementary access inspections (includes mines)

CPPNM

- ensure that nuclear material within Australia, or during international transport, or in vessel under Australia's jurisdiction, is protected

Others: e.g. SPNWFZ, bilateral safeguards agreements, etc



IAEA SAFEGUARDS

Key element in international action against spread of nuclear weapons.

Safeguards are designed to ensure nuclear material in a state remains in peaceful use.

‘Trust but verify’

Verification framework:

- Key factors for determining types and frequencies of IAEA verification activities are **timeliness** and **significant quantity**
- States’ declarations, operators’ records
- Verification activities, including:
 - inspections
 - measurement and sampling
 - containment/surveillance
 - environmental sampling, satellite imagery
 - Information collection and analysis (including open-source)



PHYSICAL PROTECTION AND CONTROL – INTERNATIONAL CONVENTIONS AND GUIDELINES

- The primary treaty convention is the: **Convention for the Physical Protection of Nuclear Materials (CPPNM)** and its recent amendment.
- Complemented by the IAEA guidance document (**INFCIRC/225**) – The Physical Protection of Nuclear Materials and Nuclear Facilities
- NPT Safeguards Agreement: Art 1 of the Australia-IAEA safeguards agreement requires Australia to ensure that **no nuclear material** under its jurisdiction be **diverted from permitted uses**
 - i.e. application of “**effective controls**”



AUSTRALIA'S URANIUM EXPORT POLICY

Key elements

- **NPT + bilateral nuclear safeguards agreement**
- **only for peaceful, non-military purposes**
- **IAEA safeguards applicable to country + Additional Protocol**
- **prior consent: 3rd party transfers, enrichment \geq 20%, reprocessing**
- **international standards of physical protection**



BILATERAL SAFEGUARDS AGREEMENTS

| Country | Entry into Force |
|---|-------------------|
| Republic of Korea | 2 May 1979 |
| United Kingdom | 24 July 1979 |
| Finland | 9 February 1980 |
| United States | 16 January 1981 |
| Canada | 9 March 1981 |
| Sweden | 22 May 1981 |
| France | 12 September 1981 |
| Euratom | 15 January 1982 |
| Philippines | 11 May 1982 |
| Japan | 17 August 1982 |
| Switzerland | 27 July 1988 |
| Egypt | 2 June 1989 |
| Russia | 24 December 1990 |
| Mexico | 17 July 1992 |
| New Zealand | 1 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 | 3 February 2007 |



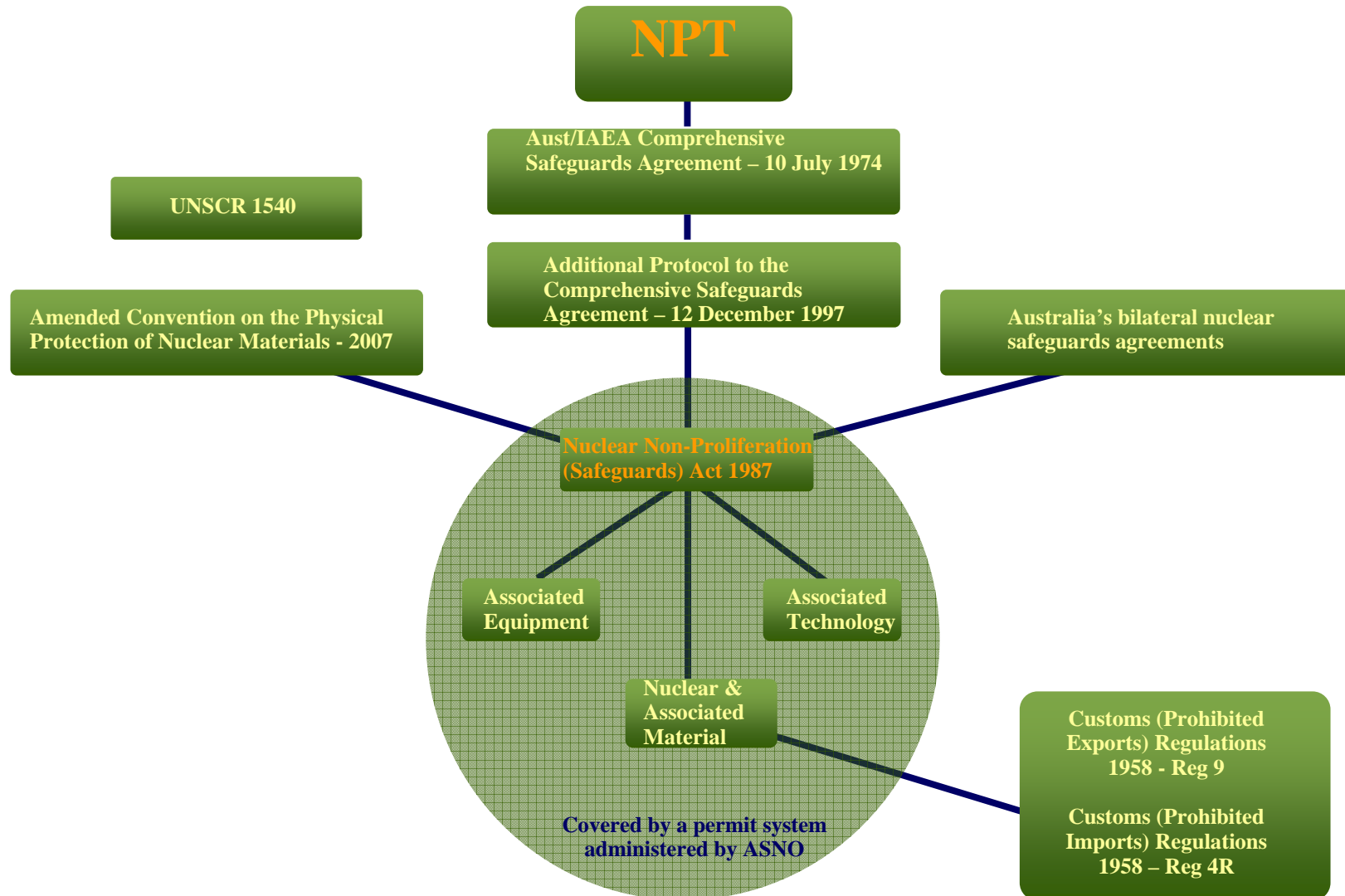
CATEGORIES OF NUCLEAR MATERIAL – INTERNATIONAL CONVENTIONS & GUIDELINES

- **Category I:** e.g. > 2 kg Pu, > 5 kg high enriched uranium
- **Category II:** e.g. > 500 g Pu, > 10 kg 10-20% low enriched uranium
- **Category III:** e.g. > 10 kg 0.711-10% low enriched uranium
- **UOC – less than Category III: “...should be protected at least in accordance with prudent management practices”**

Australia takes a robust interpretation of “prudent management practices” to ensure effective control



FEDERAL REGULATORY STRUCTURE RELEVANT TO URANIUM MINING AND EXPORT



SAFEGUARDS ACT – URANIUM MINES

- **Uranium mines:** permit to possess nuclear material
 - Minister for Foreign Affairs approves permits for new mines
 - permits apply safeguards and physical protection conditions
 - “nuclear material” is UOC, not ores or residues
 - permit required once over 10 kg of uranium produced
- **Uranium transport (truck, train, ship):** permit to transport nuclear material
 - permits primarily for physical protection
 - permits apply to approved routes
- **Uranium storage & handling (e.g. stevedoring):** permit to possess nuclear material



Safeguards Act – Permits for Possession of Nuclear Material

Legally a permit for possession of nuclear material not required until uranium production commences

BUT

A new mine does not want to have to retrofit security infrastructure and systems

SO

Consult with ASNO on design phase



PERMIT PROVISIONS – GENERAL

- **Establish plans and procedures in order to comply with the permit**
- **Nominate designated individuals with responsibility for permit obligations**
- **Ensure personnel with accountancy and security functions are appropriately trained**
- **Transfer of UOC within Australia only to other permit holders**
- **ASNO's approval required for each export (NB: this is not an approval wrt Customs Export Regs)**



PERMIT PROVISIONS – SAFEGUARDS

The system of accountancy must:

- **enable timely and accurate preparation of accountancy reports**
- **account for and record all uranium inventory and changes**
- **conduct inventory stock-take every 6 months – reported to ASNO**
- **Minimise shipper/receiver differences**



PERMIT PROVISIONS - INSPECTIONS

The Permit Holder must:

- provide entry by any inspector (ASNO or IAEA) – and allow the exercise by that inspector of relevant powers
- provide inspectors necessary health and safety procedure information and equipment
- make relevant personnel available
- provide records where requested

Inspection frequency

- ASNO inspections usually arranged with mine to fit in with operations schedules
- IAEA inspections can be called with as little as 24 hours notice – **no flexibility on access!**
 - in practice IAEA gives a few days notice



PERMIT PROVISIONS – PHYSICAL PROTECTION

IAEA security guidelines and ASIO T4 review of 2006

Basic principles:

- more performance-based than prescriptive
- require facilities to develop a plan for the physical protection which is approved before a full permit is issued
- scalable physical protection measures
 - standardised physical protection measures for wide range of threats
 - based on ASIO **National Security Threat Assessment levels** set for uranium mines, associated infrastructure and transport – low, medium, high, extreme



PERMIT PROVISIONS – PHYSICAL PROTECTION

- Basic principle is a system to detect and/or hinder unauthorised activities
- Permits define a “**secure compound**” as a compound protected by a barrier (e.g. building fabric, fence) and:
 - access controls
 - security-incident detection, assessment and verification
- Drum-filling areas and drum storage areas protected as “**secure compounds**” with two segregated access-controlled barriers



TRANSPORT PHYSICAL PROTECTION

Mine to port

- Transport plan (i.e. security procedures, routes) approved by ASNO

Port facilities

- storage facilities must meet definition of “secure compound”

Shipping and trans-shipment ports

- Shipping companies require a transport permit
- ASNO approves routes and vessels
- ASNO makes notifications to trans-shipment ports

Destination country

- International standards of physical protection

The robust maritime transport security regime generally meets ASNO’s requirements for UOC maritime handling



CONCLUDING REMARKS



THE PERMIT SYSTEM

- Setting standards in **permits** (rather than regulations) provides necessary **flexibility** to set **tailored security requirements** and be **responsiveness** to legislative and **policy changes**
 - performance-based approaches accommodates changes in miners operational requirements
- Beneficial to arrive at adequate security standards though **consultative** rather than a prescriptive process



Australia's Uranium Export Policy – What does it mean for uranium producers?

- **Can only supply to NPT parties with a bilateral safeguards agreement with Australia**
 - Australia's bilateral safeguards agreement network covers the majority of nuclear power countries
- **For some countries, there may be limitations on which reactors can be supplied**
- **The Government reviews uranium supply contracts**
- **Exports approved by DRET – taking advice from ASNO on safeguards and security risks**
- **ASNO approves shipping routes and vessels**
 - approval is generally on an on-going basis



Nuclear Safeguards (Producers of Uranium Ore Concentrates) Charge Act 1993

- **All producers of uranium ore concentrates pay an annual charge proportional to production**
- **Charge: currently 5.6012 cents per kg of U production**
 - in 2007-08 yielded \$455,315 for consolidated revenue.
- **Maximum for one mine: \$500,000**



CONCLUSION – KEY POINTS

- **All new mines will require a possession permit**
 - **consult with ASNO early and often**
 - physical protection in design phase preferable to retrofitting
 - ASNO inspections during construction and prior to production
 - Likely IAEA inspections prior to production
- **Transport companies will require a permit to transport**
 - must include a transport security plan, which ASNO must review and accept prior to commencing transport
 - routes require a security review
- **Port storage facility will require a permit**
 - storage facility should meet definition of “secure compound”
 - will require a security review

