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**IMPLEMENTING THE AMENDED CONVENTION ON THE PHYSICAL  
PROTECTION OF NUCLEAR MATERIAL**

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**SYNOPSIS**

Drawing on Australia's recent experience, this paper examines the primary elements of the amended Convention on the Physical Protection of Nuclear Material (CPPNM)—referred to in this paper as the amended Convention—along with the legal and organisation steps needed for implementation. The paper discusses how Australia is implementing the amended Convention.

**THE CPPNM'S PLACE IN THE NUCLEAR NON-PROLIFERATION  
REGIME**

Beginning in the early 1950s the international community has systematically established a set of measures to deter the spread of nuclear weapons. More commonly these measures are now known as the nuclear non-proliferation regime, which is global in reach. This regime comprises an integrated network of bilateral, regional and multilateral treaties and other standard-setting arrangements. Taken together, these measures provide a framework which sets out how governments should act to prevent nuclear proliferation. The nuclear non-proliferation regime continues to evolve, for it must meet new threats—for example, theft and sabotage posed by terrorists (non-state groups); keep pace with emerging technologies and adapt to changing circumstances in the world, such as a renewed interest in nuclear energy as a counter to global warming.

The primary elements of the nuclear non-proliferation regime, developed over the last 50 years or so, are principally treaties and conventions that are legally binding on ratifying states in international law. The pre-eminent instrument is the Treaty on the Non-Proliferation of Nuclear Weapons (NPT). The NPT is complemented *inter alia* by the Convention on the Physical Protection of Nuclear Material (CPPNM, or the Physical Protection Convention). The CPPNM is included on the UN's list of counter-terrorism instruments.

**GENESIS OF THE AMENDED CPPNM**

By the late 1990s many states party to the CPPNM believed its scope, limited to nuclear material in international transport, was too narrow. In 1999 the IAEA as depository of the Convention convened an open-ended group of experts to consider whether there was a need to amend the CPPNM. The group of experts recommended in 2001 that the Convention should be amended and proposed a set of Physical

Protection Objectives and Fundamental Principles which were adopted by the IAEA Board of Governors in 2001 (GOV/2001/41 dated 15 August 2001). After 2001, the IAEA convened an open-ended group of legal and technical experts to draft an amendment to the CPPNM. This culminated in 2005 in a diplomatic conference which adopted by consensus an amendment significantly broadening and strengthening the Physical Protection Convention.

### **Primary elements of the 1980 CPPNM**

In its original form the CPPNM—signed on 3 March 1980 with entry into force on 8 February 1987—focused primarily on nuclear material being shipped internationally and required state parties to:

- make certain physical protection arrangements and ensure specific defined levels of physical protection for international shipments of nuclear material;
- cooperate in the recovery and subsequent protection of stolen nuclear material;
- make specific acts (for example, theft of nuclear materials and threats or attempts to use nuclear material to harm the public) punishable offences under domestic law; and
- prosecute or extradite those accused of committing such acts.

States party to the CPPNM are obligated to ensure they; have the necessary instruments in place to implement the Convention, usually be passing the required domestic legislation.

### **PRINCIPLE ELEMENTS OF THE AMENDED CPPNM**

The amended Convention embraces the protection of nuclear facilities and nuclear material while in domestic use, storage and transport; creates an obligation to criminalise acts of sabotage against nuclear facilities and materials including trafficking in nuclear materials; and integrates the *Physical Protection Objectives and Fundamental Principles*. It also requires States Parties to mitigate or minimise the radiological consequences of sabotage.

### **Entry into force of the amended CPPNM**

The amendments come into force 30 days after two thirds of all States Parties have deposited their instruments of ratification, acceptance or approval.

### **IMPLEMENTING THE AMENDED CONVENTION IN AUSTRALIA**

For Australia, there are two fundamental components to implementing the amended Convention. The first is implementing legislation to create new criminal offences; the second is to establish a national framework for the protection of nuclear material and nuclear facilities in accordance with the Physical Protection Objectives and Fundamental Principles (Art 2A). States party to the CPPNM, like Australia, would already have legislation in place to implement the original Convention, so only some modest amending legislation should

be necessary. States with nuclear facilities and significant quantities of nuclear material (regardless of whether they have signed the CPPNM) should already have in place organisational arrangements to manage physical protection and security, though some review and strengthening may be required.

In implementing the CPPNM, even before the amendment, Australia took a broad view of its obligation under the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) to protect nuclear material and nuclear facilities from proliferation, theft or sabotage. Consequently, many of the provisions of the amended Convention apply already in Australia through the *Nuclear Non-Proliferation (Safeguards) Act 1987*—The Safeguards Act.

With regard to offences in the amended Convention, the Safeguards Act has been extended to include:

- trafficking in nuclear material, and
- sabotage or threat of sabotage—that is, “An act directed against a nuclear facility, or an act interfering with the operation of a nuclear facility, where the offender intentionally causes, or where he knows that the act is likely to cause, death or serious injury to any person, or substantial damage to property or to the environment by exposure to radiation or release of radioactive substances”.

To ensure it fully implements and can ratify the amended Convention the Australia Parliament passed the Non-Proliferation Legislation Amendment Act 2007 (March 2007) to amend the Safeguards Act. Australia expects to ratify the amended Convention in late May or June 2007. Further, Australia has brought into force these new provisions, or offences, ahead of entry-into-force of the amended Convention to strengthen nuclear security in Australia with immediate effect.

Similarly, with regard to implementation of the Physical Protection Objectives and Fundamental Principles, Australia has mature organisational arrangements. There are 12 principles (A to L) which address:

- Responsibilities of the State;
- Responsibilities during international transport;
- Legislative and regulatory frameworks;
- Competent authorities;
- Responsibilities of license holders;
- Security culture;
- Threats;
- A graded approach;
- Defence in depth;

- Quality Assurance;
- Contingency plans;
- Confidentiality.

While all States Parties are expected to apply these principles to develop a national framework to ensure the physical protection of nuclear material and nuclear facilities, clearly the extent to which each is taken will depend on national circumstances. This is recognised in the amended Convention by the chapeau to Article 2A which states, “Each State shall... apply insofar as is reasonable and practicable the following Fundamental Principles of Physical Protection...”. These principles<sup>1</sup> are examined below and Australia’s implementation of each is explained.

**A: Responsibility of the State.** This principle states clearly that responsibility for the establishment, implementation and maintenance of a physical protection regime within a State rests entirely with that State. Australia has exercised this responsibility through the *Nuclear Non-Proliferation (Safeguards) Act 1987* (the Safeguards Act) This Act establishes and empowers the Australian Safeguards and Non-Proliferation Office (ASNO) as the national authority responsible for the regime of physical protection for nuclear facilities and nuclear material.

**B: Responsibilities during International Transport** It is important that when nuclear material is transported between countries and approved users there is an appropriate chain of custody with concomitant security. Under this principle, the shipping state is responsible for ensuring that nuclear material is adequately protected while in international transport until that responsibility has been properly transferred to another State. Under the Safeguards Act, ASNO is responsible for ensuring that this principle is implemented.

**C: Legislative and Regulatory Framework.** Under this principle, the State is responsible for establishing and maintaining a legislative and regulatory framework to govern physical protection. This framework should provide for the establishment of applicable physical protection requirements and include a system of evaluation and licensing or other procedures to grant authorisation. This framework should include a system of inspection of nuclear facilities and transport to verify compliance with applicable requirements and conditions of the license or other authorizing document, and to establish a means to enforce applicable requirements and conditions, including effective sanctions. Australia has exercised this responsibility through the Safeguards Act.

**D: Competent Authority.** The State is required to establish or designate a competent authority responsible for the implementation of the legislative and regulatory framework, and is provided with

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<sup>1</sup> See IAEA document GOV/2001/41 dated 15 August 2001

adequate authority, competence and financial and human resources to fulfil its assigned responsibilities. The State is expected to take steps to ensure an effective independence between the functions of the State's competent authority and those of any other body in charge of the promotion or utilisation of nuclear energy. Effective independence means that organisational units, which are responsible for licensing and supervisory activities, are protected by regulatory or organisational means against any undue influence by other units or bodies on the execution of their tasks. Under the Safeguards Act, ASNO has carriage of these responsibilities. Further, under the Safeguards Act, the Director General ASNO (formerly known as the Director of Safeguards) is a statutory official with regulatory independence.

**E: Responsibility of the License Holders.** The responsibilities for implementing the various elements of physical protection within a State must be clearly identified. The State must ensure that the prime responsibility for the implementation of physical protection of nuclear material or of nuclear facilities rests with the holders of the relevant licenses or of other authorising documents (e.g. operators or shippers). In Australia, the Safeguards Act establishes a system of permits to possess, use, transport nuclear material and to "operate" nuclear facilities. These permits cover, *inter alia*, safeguards and security requirements, and the permit system is administered by ASNO.

**F: Security Culture.** Security culture embraces characteristics and attitudes in organisations and individuals which should establish, or are designed to ensure, that physical protection issues are accorded an appropriate level of significance in the State. All organizations involved in implementing physical protection are required to give due priority to the security culture, to its development and maintenance necessary to ensure its effective implementation in the entire organisation. Without a good security culture physical security measures will be undermined and may be rendered ineffective. In Australia a security culture is nurtured through training, education and organisation structures. This is achieved through close inter-agency cooperation.

**G: Threat.** Physical protection measures will only be effective and cost effective if the threat against nuclear facilities and nuclear material is thoroughly understood. Therefore, the State's physical protection system needs to be based on the State's current evaluation of the threat. Australia takes a rigorous approach to threat evaluation using the methodology set out in INFCIRC/225.Rev4, including use of a design basis threat. The threat is reviewed regularly.

**H: Graded Approach<sup>2</sup>.** Physical protection requirements are expected to be based on a graded approach, taking into account the current

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<sup>2</sup> See INFCIRC/225/Rev. 4 (Corrected), Section 4.2.5.1

evaluation of the threat, the relative attractiveness, the nature of the material and potential consequences associated with the unauthorised removal of nuclear material and sabotage against nuclear facilities or nuclear material. Australia takes a rigorous approach to threat evaluation using the methodology set out in INFCIRC/225.Rev4, including use of a graded approach. The continuing relevance of measures arising from a graded approach are reviewed regularly and adjusted in the light of circumstances and the perceived threat.

**I: Defence in Depth.** The State's requirements for physical protection is expected to reflect a concept of several layers and methods of protection (structural or other technical, personnel and organisational) that have to be overcome or circumvented by an adversary in order to achieve their objectives—in this case theft or sabotage. Clearly the defences required will depend on the type of facility and material to be protected and the likely consequences of sabotage or theft. Australia has implemented defence in depth principles and measures at its permit holders and enforced this through the permit system.

**J: Quality Assurance.** A quality assurance policy and quality assurance programmes is required to be established and implemented with a view to providing confidence that specified requirements for all activities important to physical protection are satisfied. The Australian Nuclear Science and Technology Organisation, ANSTO—the operator of Australia's research reactor—implements its physical security system under international standard ISO9000.

**K: Contingency Plans.** Contingency or emergency plans to respond to unauthorized removal of nuclear material or sabotage of nuclear facilities or nuclear material—or attempted theft or sabotage—are required to be prepared and appropriately exercised by all license holders and authorities concerned. Australia has contingency plans in place to facilitate a whole of government response.

**L: Confidentiality.** The State is required to establish requirements for protecting the confidentiality of information, the unauthorized disclosure of which could compromise the physical protection of nuclear material and nuclear facilities. Australia has a rigorous national system for protecting information and ensuring that only suitably cleared people have access to classified or sensitive information. This extends to IT systems.

## **SUMMARY**

Widespread ratification and implementation of the amended Convention will enhance international security by protecting against theft and sabotage of nuclear material and facilities. Effective implementation will require: a legal base covering offences, permits and authorisations; an independent implementing and enforcement authority; and a disciplined approach to the physical protection system embracing the principles of threat assessment, defence in

depth, a graded approach plus maintenance of quality systems and a good security culture. This is in force in Australia today. Australia should ratify the amended Convention by mid-year.