

There is a clear link between illicit trafficking of nuclear materials² and the physical protection measures states apply to those materials. There is much less chance of illicit trafficking of nuclear materials if those materials are adequately protected.³ Dr. Mohamed ElBaradei, Director General of the International Atomic Energy Agency (IAEA), has stated that “The importance of having effective physical protection systems in place has been highlighted by the threat posed by the well publicized illicit trafficking incidents in the mid-1990s. These incidents pointed to the possibility of unauthorized access to direct use material and to potential weaknesses in the physical protection system.”⁴

However, despite the clear benefit of protection, there is currently no international legal agreement establishing *standards* of physical protection for nuclear materials for domestic use, storage, and transport, or for nuclear material used for other than peaceful purposes. International physical protection standards for nuclear material for peaceful purposes in international transport are established in the Convention on Physical Protection of Nuclear Materials (PPC).⁵ The Treaty on the Non-Proliferation of Nuclear Weapons (NPT)⁶ is designed to prevent the diversion by states of nuclear materials from peaceful to military uses, but it has no provisions dealing with physical protection standards. While IAEA safeguards provide sufficient accounting and control for nuclear material, they do not address issues of physical protection of nuclear materials. Finally, a newly negotiated Convention on Nuclear Safety⁷ is designed to promote the safety of nuclear energy in a “safe, well regulated and environmentally sound” international community, but it does not address the basic issues of physical protection of nuclear material.

The need for adequate physical protection of nuclear materials can be expected to increase for a number of reasons.⁸ First is the reduction in nuclear weapons by the United States and the Russian Federation. The anticipated dismantlement will result in more nuclear material stockpiles that must be protected. In addition, the United States and Russia together have identified over 100 met-

ric tons of plutonium that are in excess of their military requirements.⁹ Second, the growth in the international community’s reliance on nuclear energy will also create stocks of nuclear materials that must be protected from both inside and outside threats.¹⁰ These materials will

add to the tons of separated plutonium in storage for civilian uses around the world.¹¹ This amount is also expected to increase because reprocessing is outpacing fabrication of this material into mixed-oxide (MOX) fuel or disposition by other means.¹² All of the plutonium produced, stored, and transported should be under adequate physical protection at all times.

The degraded physical protection measures in the newly independent states of the former Soviet Union (NIS) point to the need for improvement. United States personnel visiting nuclear facilities in these regions have noted the following types of deficiencies in the physical protection of nuclear materials: inadequate defenses of buildings and facilities; inadequate central alarm stations, assessment, and display capabilities; inadequate detection of intrusion; poor access control; inadequate fences; lack of portal monitors to detect fissile materials or weapons leaving or entering a site; and inadequate protection of guards from small-arms fire.¹³ As a case in point, in 1993, two men broke into a Russian submarine fuel storage facility through an unprotected gate. One of the men climbed through a hole in the fence around the building where the fuel was stored. The two men obtained 4.5 kilograms of fresh 20 percent-enriched uranium fuel by sawing off a padlock.¹⁴

The old Soviet system relied heavily on internal secu-

**VIEWPOINT:
ESTABLISHING
INTERNATIONAL
STANDARDS FOR
PHYSICAL PROTECTION
OF NUCLEAR MATERIAL**

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rity forces to protect nuclear materials. However, with the economic conditions that followed the collapse of the Soviet Union, there has been a significant decrease in the number of guards at facilities, a general decline of state control over security since the fall of communism, and a lack of new technical measures for replacing the prior human-based system of controls. Also, many nuclear workers have not received wages for long periods of time increasing the incentives for insider theft for personal gain.¹⁵

The existence of nuclear material in regions where there is instability and a corresponding need for more transparent physical protection standards also should be addressed. There is little known about the standards of China, India, Pakistan, and Israel, for example. An international convention could be the vehicle to address this issue.

Each state possessing nuclear materials has a clear responsibility to ensure that such material cannot be stolen. George Bunn, a negotiator of the NPT, discussed the importance of physical protection succinctly: "If I had known when the NPT was being negotiated what I know now, I would have urged the addition of provisions requiring parties to adopt domestic legislation requiring national systems of physical protection and control over nuclear material and making illicit trafficking in such material a national crime."¹⁶

This essay argues that due to the increased importance of adequate physical protection standards for nuclear materials, the IAEA Recommendations for the Physical Protection of Nuclear Materials, INFCIRC/225 (INFCIRC/225), should be made internationally legally binding. First, it gives a brief overview and short history of the development of INFCIRC/225/Rev.3 and the PPC. Second, this essay focuses on why an international agreement on physical protection standards for nuclear materials, beyond those contained in the PPC, is needed. It then explores how some states have incorporated INFCIRC/225 physical protection standards into international and domestic agreements and legislation. Finally, it discusses some of the legal fora and frameworks that could provide the method and means for the negotiations and conclusion of a legally binding convention on physical protection of nuclear materials, based on the INFCIRC/225 standards. These include the current U.N. Sixth Committee negotiations for a Convention on Nuclear Terrorism, amending the PPC, negotiating a new convention to specifically provide for physical protection stan-

dards beyond those of the PPC, and a combination of an amended PPC and provisions on physical protection in the U.N. Convention on Nuclear Terrorism.¹⁷

HISTORY OF THE IAEA'S PHYSICAL PROTECTION RECOMMENDATIONS AND THE PPC

Physical protection of nuclear materials and facilities refers to methods that will "detect and delay any unauthorized penetration of barriers and portals...and are the most visible and pervasive components of a nuclear safeguards system."¹⁸ The goal is to protect nuclear materials from diversion from insiders, as well as theft from outsiders. These methods include alarms, fences, multiple barriers, limited access points, guards, detection devices, assessment cameras and lighting, barriers, and related technologies.

The responsibility for assuring physical protection of nuclear materials and facilities rests with individual states, which have responsibility for establishing and operating a physical protection oversight system. However, many in the international community have realized that what a state does to protect nuclear materials and facilities in its jurisdiction is of concern to other states as well.¹⁹ The IAEA became involved in the issue of physical protection of nuclear materials in 1972 when it developed recommendations for physical protection standards for nuclear materials. The standards apply to all nuclear materials in use, storage, and transport, both domestically and internationally, and without distinction between nuclear material intended for peaceful or military purposes. The IAEA published its "Recommendations for the Physical Protection of Nuclear Materials" in 1972, and these recommendations were later revised in the 1975 INFCIRC/225/Corrected. An Advisory Group met in 1977 to modify the recommendations, which later resulted in INFCIRC/225/Rev.2, completed in 1989.

In 1979, a parallel process culminated in the adoption of the PPC, although for many years it lacked the required number of state ratifications (21) to enter into force. At the time the PPC was negotiated, the United States had proposed that the standards for nuclear material apply to domestic use as well. However, this proposal was not acceptable to other states. The states agreed that establishing physical protection standards for international transport was most important at that time, and standards for domestic use, storage, and transport could be considered in the future. Additionally, the United States had

objected to language in the PPC that would have included standards for nuclear materials used for military purposes.²⁰ In both cases, a compromise was inserted into the “Preamble to the Convention.”

The PPC finally entered into force in 1987 and now has 60 states parties. It establishes physical protection standards for nuclear material used for peaceful purposes in international transport, thus making them much more limited in scope than INFCIRC/225 standards. The PPC also has no inspection provisions. In addition, although Article 14 obligates states to inform the depositary of its laws and regulations adopted to implement the PPC, most states have not complied. Therefore, there is no assurance that states are adhering to their international obligations undertaken in the PPC. The PPC also provides for international cooperation for the recovery and return of stolen nuclear material, in addition to the application of criminal sanctions against persons who commit criminal acts involving nuclear material. States are obligated to adopt statutes prohibiting the illicit trafficking of nuclear materials by individuals.²¹

In 1992, during the Review Conference of the States Parties to the PPC, members called on the IAEA for another review of INFCIRC/225 to focus on assuring the consistency of the nuclear material categories within INFCIRC/225 and the PPC. Following meetings in June 1993, a revised version of INFCIRC/225 was completed and published as INFCIRC/225/Rev.3 in September 1993.

The INFCIRC/225 guidelines are designed to prevent the theft of nuclear materials and the sabotage of nuclear materials and facilities. This is to be done by deterring threats or defeating such threats through a physical protection system that criminals and terrorists see as too difficult to defeat, and by physical protection measures that make the material or facility an unattractive target.²² The INFCIRC/225 guidelines are not legally binding, but provide requirements that states should meet when developing or updating their physical protection systems, and that operators need to follow for protecting nuclear material from theft, and the facility from sabotage. Each state develops its own specific physical protection requirements. There are no inspections to verify that standards of physical protection are being implemented in a particular state.

INFCIRC/225/Rev.3 also provides guidelines for the appropriate regulatory system that states should adopt. It requires states to maintain oversight responsibilities of

their physical protection standards, including adopting regulations to establish, implement, and maintain the physical protection system (including periodic reviews of licensed activities, quality assurance programs, and periodic audits of security procedure implementation)—licensing only those activities that comply with the state’s physical protection standards—and sanctions to enforce the state’s standards of physical protection. States should also inform each other of points of contact for matters related to physical protection of nuclear material and facilities.

Physical protection measures under INFCIRC/225 are determined according to the type and amount of the nuclear material used, stored, or transported (domestically or internationally).²³ Like the PPC, INFCIRC/225 has three categories of nuclear material.²⁴ Unlike the PPC, however, the standards in INFCIRC/225 for each category of nuclear material are more detailed. INFCIRC/225 incorporates a concept of layered or in-depth protection depending on the category into which the nuclear material falls.²⁵ Category I, which requires the highest security measures, includes facilities with two kilograms (kg) or more unirradiated plutonium. Category II, which requires mid-level security measures, includes facilities that contain less than two kg but more than 500 grams of plutonium. Category III,²⁶ which requires the least amount of physical protection measures, includes facilities with 15 to 500 grams of plutonium.²⁷

As an example of the types of requirements for each category, for stored nuclear materials, Category I material should be stored only within an *inner area or inner areas*.²⁸ Armed guards are strongly preferred, and special badges, strictly controlled access, and reliable physical barriers are required. Category II material must be stored within a *protected area or areas*, with access kept to the minimum necessary and requiring special passes. Category III material must be stored in a *controlled area*, and have a complete physical barrier and provision for appropriate action by guards or off-site response forces in case of attempted intrusions. There are also physical protection requirements for the transit of nuclear materials.

Next Steps for INFCIRC/225

In June 1996, the IAEA held a meeting of consultants to consider providing government authorities and operators with additional guidance as to how INFCIRC/225 could be properly implemented. More detailed explanations to assist state regulatory authorities and operators

in interpretation and implementation were developed and published as "IAEA TECDOC-967." The IAEA also plans to publish a lengthy handbook that will describe details of designing a physical protection system.

In the introduction of IAEA TECDOC-967, the recognition of state sovereignty over matters of physical protection of nuclear material is reaffirmed. However, the advantages of an international standard for physical protection of nuclear materials is also highlighted in the following statement: "...it is in the interest of all States to require the implementation of physical protection systems that are as compatible as possible with the recommendations of INFCIRC/225/Rev.3, which should be considered as a baseline for any physical protection system."²⁹

As a means to keep INFCIRC/225/Rev.3 up-to-date with technological changes and changes in threat assessments, experts met in June 1998 to update the recommendations. The IAEA plans to continue its work in assisting states in developing uniform standards of physical protection at the request of that state, and based on INFCIRC/225 guidelines. It also hopes to increase the exchange of information among states on physical protection standards.

The guidelines in INFCIRC/225 are minimum standards for what should be done by each state to protect its nuclear materials, and some have argued that the INFCIRC/225 standards should be more stringent. An example of a more stringent physical protection standard is that proposed by the U.S. National Academy of Sciences (NAS).³⁰ The NAS recommends a "stored weapons standards"³¹ for physical protection of all weapons-usable material (military or civilian). This standard would require weapons to be placed within highly secure vaults, with multiple layers of protection against insider or outsider theft, continuous monitoring, and a substantial armed guard. Another suggestion is to require that all weapons-usable material must have armed guards in addition to required technology for physical protection.³²

THE NEED FOR AN INTERNATIONAL AGREEMENT ON PHYSICAL PROTECTION OF NUCLEAR MATERIALS

The IAEA Director General has asserted that in some states, the level of physical protection does not meet minimum INFCIRC/225 standards and that national legisla-

tion and regulatory oversight are still in need of improvement.³³ The drafters of INFCIRC/225 recognized that states have different perceived threats, culture, legal systems, and history. Therefore, they accepted that there would be reasonable and necessary variations in the way physical protection would be applied among the states. However, even taking this recognition into account, an international agreement would, in the opinion of the IAEA, provide better assurance that all states are adequately protecting their nuclear materials, and would allow states to address a concern that was once believed to be a domestic issue but which clearly has an international dimension.

Many states have taken steps to incorporate INFCIRC/225 into their international agreements and domestic legislation. However, there still exists a wide disparity in the application of physical protection standards by states. A state's perception of what is required for adequate physical protection will be based on economic considerations (questions regarding how much funding is available for physical protection), other competing concerns, politics, and cultural differences.

Different countries have different physical protection and safeguards cultures, and these affect both how physical protection is implemented and the effectiveness of the resulting systems. [...] The United States' approach places heavy emphasis on both well-armed protection forces and modern technology. In Japan, by contrast, where possession of firearms by private citizens has been forbidden for centuries, nuclear facilities do not have armed guards.... Instead, reliance is placed on detection and barrier technologies to provide warning and then delay any attempted theft until nearby police forces could arrive.³⁴

Terrorist activities are becoming more global in nature, as the terrorist attacks on the New York World Trade Center, and the Tokyo subway by the Aum Shinrikyo cult demonstrate.³⁵ It is therefore important to make sure that differences in physical protection standards among states do not result in some physical protection systems being easier to penetrate than others. Adversaries and terrorists may be able to "identify the weakest link" and exploit that advantage by stealing nuclear materials from one of the least protected facilities.³⁶

REFERENCES TO INFCIRC/225 IN INTERNATIONAL AGREEMENTS

Several states have obligated themselves in international agreements to the standards of INFCIRC/225, thus demonstrating its importance as a guideline for designing physical protection standards. In both the "Agreement Between the Government of the United States of America and the Government of the Russian Federation Concerning the Disposition of Highly Enriched Uranium Extracted from Nuclear Weapons" (HEU Agreement)³⁷ and the "African Nuclear-Weapon Free Zone Treaty" (ANWFZ),³⁸ the parties adopted INFCIRC/225 as the proper minimum standard for nuclear materials.

Just as states have referred to INFCIRC/225 in international legal agreements as the proper minimum standard for physical protection of nuclear materials, they have also made similar references in political agreements.

Nuclear Suppliers Group Guidelines. The Nuclear Suppliers Group (NSG),³⁹ in 1977, adopted INFCIRC/254,⁴⁰ which contains guidelines for the export of nuclear material, equipment, or technology. In INFCIRC/254, the NSG agreed that all items on their Trigger List⁴¹ be placed under physical protection according to levels that take into account international recommendations. In addition, in Annex B to INFCIRC/254, which sets forth the criteria for levels of physical protection, paragraph 3 provides that INFCIRC/225 of the IAEA is "a useful basis for guiding recipient States in designing a system of physical protection measures and procedures."⁴²

Programme for Prevention and Combatting Illicit Trafficking. During the G-8 Moscow Nuclear Safety and Security Summit in April 1996, the P-8 states adopted the "Programme for Prevention and Combatting Illicit Trafficking in Nuclear Materials" (Programme).⁴³ The goal of the Programme is to seek international cooperation in areas of prevention, detection, exchange of information, investigation, and prosecution in cases of illicit trafficking of nuclear materials. In paragraph 24 of the Programme document, the states encourage the adoption of the IAEA recommendations on the physical protection of nuclear material by all states (during the P-8 summit in June 1997, the states confirmed their commitment to the Programme). In addition, the April 1996 summit participants agreed on the importance of INFCIRC/225 in its "Nuclear Material Accounting and Control and Physical Protection" document⁴⁴ and encouraged all states to apply the recommendations on

physical protection in the NSG INFCIRC/254/Rev.2 (the same recommendations as INFCIRC/254 noted above).

Guidelines for the Management of Plutonium. In 1997, the states of Belgium, China, Germany, Japan, the Russian Federation, Switzerland, the United Kingdom and the United States (countries with substantial civilian nuclear industries), adopted the Guidelines for the Management of Plutonium (GMP).⁴⁵ In response to concerns regarding increasing levels of plutonium worldwide,⁴⁶ these guidelines address issues of safeguards, radiological protection, physical protection, nuclear material accountability and control, international transfers, management policies, and transparency. On the issue of physical protection, the guidelines provide that the states will apply, as appropriate, the PPC, the levels of physical protection annexed to the guidelines,⁴⁷ and will take "account of the recommendations on the Physical Protection of Nuclear Material published by the IAEA as INFCIRC 225, Rev.3."⁴⁸

Unilateral and Bilateral Assistance Programs. There are a number of unilateral and multilateral efforts aimed at assisting states in upgrading their physical protection systems⁴⁹ that base the designs of these upgrades on INFCIRC/225. For example, the U. S. Department of Energy, through the Cooperative Threat Reduction Program and the Material Protection, Control and Accounting Program, is upgrading the physical protection system of many facilities in Russia, Ukraine, Belarus, Kazakhstan, Lithuania, and Latvia, and hopes to be completed with these upgrades by the year 2002.⁵⁰ In many of the upgrades, designs are developed according to the internationally recognized guidelines of INFCIRC/225.⁵¹

Domestic Standards of Physical Protection. National legislation in several countries has also drawn on INFCIRC/225. For example, the Czech Republic adopted on June 19, 1997, a "Regulation on Physical Protection of Nuclear Materials and Nuclear Facilities," which follows the basic recommendations of INFCIRC/225 and the PPC.⁵² Similarly, Turkey's "Regulation on Measures on Physical Protection of Special Nuclear Materials," which entered into force in 1979, is based on INFCIRC/225/Rev.1. This regulation specifies measures for physical protection of special nuclear material in use, transit, and storage, and also physical protection of nuclear facilities where in the nuclear material is in use or storage.⁵³

In November 1995, the Russian Federation approved

the "Law on the Utilization of Atomic Energy," and, pursuant to this law, in March 1997 adopted the "Regulations for the Physical Protection of Nuclear Materials, Nuclear Facilities and Nuclear Material Storage Sites." The physical protection measures in these regulations are actually stricter than those set forth in INFCIRC/225 and, in fact, are similar to those of the United States and other countries.⁵⁴ Ukraine is redesigning and upgrading its physical protection systems in order to be in compliance with its own "Regulations for Physical Protection of Nuclear Materials and Nuclear Facilities" and the provisions of PPC "and also the IAEA recommendations"⁵⁵

In addition, there are a number of states that have physical protection regulations that are equivalent to those in INFCIRC/225 (Japan),⁵⁶ categorize their nuclear material based on those categories set forth in INFCIRC/225 (China and Germany),⁵⁷ or have domestic physical protection standards that are more stringent than those in INFCIRC/225 (the United States, the United Kingdom, and France).⁵⁸

NEGOTIATIONS ON AN INTERNATIONAL CONVENTION ON PHYSICAL PROTECTION

Several states have used INFCIRC/225 standards to develop their regulations and agreements related to physical protection of nuclear materials. If this can be interpreted to mean that some states favor possible negotiations for an international convention on physical protection of nuclear materials incorporating INFCIRC/225 standards beyond those covered in the PPC, the question then becomes, what are the vehicles for such negotiations?

There are presently at least four options for pursuing an internationally binding agreement on physical protection standards that go beyond the scope of the PPC.

Option 1: The Draft Convention on the Suppression of Acts of Nuclear Terrorism

In 1996, the Russian representatives to the Sixth Committee of the United Nations made a proposal for an International Convention on Nuclear Terrorism (the Russian Federation submitted a draft text in January, 1997).⁵⁹ The purpose of the draft convention is to eliminate gaps in the international regime designed to suppress acts of nuclear terrorism.⁶⁰ This proposal followed on the heels of a proposal, also made in the Sixth Committee, for an

International Convention for the Suppression of Terrorist Bombing.

In December 1996, the U.N. General Assembly adopted a resolution calling for the establishment of an *Ad Hoc* Committee within the U.N. Sixth Committee to begin negotiations on the proposed Convention for the Suppression of Terrorist Bombing, and upon completion of that convention, to begin negotiations on the proposed Convention on the Suppression of Acts of Nuclear Terrorism.⁶¹ The Convention for Suppression of Terrorist Bombing was completed late in 1997 and was opened for signature early in 1998. Negotiations on the Russian proposed convention began in the Sixth Committee from February 27-March 7, 1998. Much of the text of the Russian draft convention is drawn from the PPC.

Article 4 of the draft Russian convention addresses the issue of physical protection of nuclear materials. Specifically, Article 4 provides that states shall adopt "all necessary legislative, administrative and technical measures to ensure the physical protection of nuclear material, nuclear fuel, radioactive products or waste, radioactive substances, nuclear installations and nuclear devices, as well as protection against illegal or unauthorized access to them by third parties."⁶²

There are three very important points to make regarding the Russian Article 4 proposed text on physical protection. First, the physical protection standards would cover more than nuclear materials.⁶³ Second, the proposed text is not limited to peaceful purposes but also includes nuclear material to be used for military purposes. Third, the text makes no distinction between international transport of materials and domestic transport, and will also apply to use and storage of nuclear material. Unfortunately, this text does not require states to adopt standards that are at least comparable to the INFCIRC/225 recommended standards.

During the negotiation, other states made proposals for text on physical protection of nuclear materials to be inserted into the draft convention, either for insertion in the preamble or as an article in the draft text. While some suggested text would reaffirm that the responsibility for the establishment and implementation of physical protection systems rests with each state,⁶⁴ other suggested text would have the states take note of "recommendations of the International Atomic Energy Agency concerning physical protection of nuclear material...."⁶⁵

There are advantages to using the Russian draft as

the vehicle to set international standards for physical protection beyond those in the PPC. One advantage is the existence of a forum that discusses the issue of physical protection as part of an international legal document. Also, as the draft Article 4 indicates, the Russian draft does require the adoption of domestic laws to cover physical protection standards, not just for nuclear material, but for other types of materials as well. In addition, the draft convention would cover all transport of nuclear material (not just international transport), and lastly, there is no distinction made between peaceful purposes and military purposes. However, to adequately address physical protection issues, there would need to be in Article 4 a direct reference to the IAEA standards, at a minimum, as was agreed to in Article 10 of the ANWFZ. Without a reference to IAEA INFCIRC/225 standards, there would be a question regarding the uniformity of measures adopted by states in furtherance of implementation of Article 4 of the draft Russian convention. (The agreed text should also make clear that states are free to adopt physical protection standards more stringent than those in INFCIRC/225.) Of note, however, the draft convention contains no transparency measures, such as verification provisions, that would help confirm that states are adopting legislative, administrative, or technical measures for the physical protection of nuclear materials as required by Article 4 of the draft convention.

The negotiators of the Russian draft text could also decide to negotiate actual physical protection standards in the treaty itself. However, this avenue has a number of likely limitations. First, it is possible the negotiators would be unwilling to do this. The reference to physical protection in the draft text is a small part of a draft convention that has many other areas of focus (for example, extradition, apprehension, detention and prosecution of alleged offenders), and it is unlikely the negotiators would be willing to take the time or effort away from other equally important areas of the draft text to negotiate separate physical protection standards.⁶⁶ This is particularly true in light of the many concerns nuclear weapons states would have regarding any draft text that would deal with international legal standards for physical protection of military facilities. Second, there are questions as to the proper forum for the negotiations. The IAEA has a number of programs and activities dedicated to physical protection issues, and its knowledge in the area is current and continues to expand.⁶⁷ It might be preferable, therefore, to negotiate detailed issues of physical protection of nuclear materials in the IAEA forum in Vienna.⁶⁸

Option 2: Amend the Physical Protection Convention

Another option for developing an international legal agreement on physical protection standards that incorporates INFCIRC/225 is amending the PPC itself.⁶⁹

Prior to the 1992 Review Conference of States Parties to the PPC, there were discussions among some states regarding proposals for amending the PPC to expand the physical protection provisions to cover more than nuclear materials for physical protection in international transport.⁷⁰ However, a number of states did not agree to the idea of amendments to the PPC. In addition, at that time, the focus was on strengthening the NPT safeguards through the IAEA's 93+2 Programme; strengthening the PPC was not the priority.

At the September 1997 IAEA Board of Governors meeting, IAEA officials discussed the issue of a possible conference on expanding the scope of the PPC. The Board noted that, as depository, it would, in accordance with Article 20 of the PPC, call such a conference if requested by a majority of states parties.⁷¹

If a majority of states request a conference with the goal of expanding the scope of physical protection standards in the PPC, the following types of amendments, could be adopted (in addition to others):

1. the application of physical protection standards to nuclear material in domestic use, storage, and transport;
2. the application of standards to all nuclear material, regardless of its intended use;
3. the application of standards to other materials, as suggested in the Russian draft text (on this point, the IAEA believes it would be advantageous to extend coverage to the broadest possible range of radioactive material, as well as to nuclear facilities, explosives, and other devices);⁷²
4. the inclusion of an adequate reference to INFCIRC/225 in the PPC; and
5. the inclusion of enforcement provisions.

As noted earlier, the PPC has no enforcement provisions for its physical protection standards. One method to ensure compliance in the future is to require that states allow inspections of their facilities. However, this would cause a number of problems for nuclear weapons states regarding their military facilities. In addition, an international body would have to be identified to perform these inspections. From the IAEA point of view, the IAEA

could conduct the inspections as such inspections would be to prevent the material from being used for a non-peaceful purpose by terrorists or another state, and compliance with the IAEA statutory mandate could be possible.⁷³

An argument could be made that the existing statute is adequate, since what the IAEA would be doing is confirming at a military facility that the security was sufficient to prevent having the material stolen for unauthorized military uses; the IAEA would not be examining or verifying the military activity at the facility in any way.⁷⁴

An alternative to mandatory inspections would be to encourage states to accept peer reviews based on the peer review program established by the IAEA.⁷⁵ This program, developed under the International Physical Protection Advisory Service, is based on a request made by a state for expert advice on that state's physical protection system. Upon this request, the IAEA sends experts to the state to review that state's physical protection system and regulations. Donor states are then asked to provide financial assistance so that the state can upgrade its physical protection system. In 1996, peer reviews were done in Romania, Bulgaria, and Hungary, and in 1997, in Poland and Hungary. Three to five such reviews are planned in 1998 and such reviews will continue annually if adequate funding is maintained. It would also be advantageous if states such as the United States, Japan, Germany, the United Kingdom, and Russia, also requested peer reviews and continued to provide financial support for the IAEA to continue its work in this program.

States could also be required to submit reports on their domestic standards adopted in compliance with the amendments to the PPC. As noted earlier, in Article 14 of the PPC, states parties are only required to *inform* the depositary (the IAEA) of its laws and regulations that implement the provisions of the convention. However, a new requirement could be agreed to that would give more teeth to this provision. For example, an amended PPC could mandate when such reports must be provided (preferably on a periodic basis), provide that states give copies of the reports not just to the depositary but also to all other states parties, provide details of what should be included in the reports, and provide for a mechanism for discussion by states of the reports. In this respect, in Article 5 of the Convention on Nuclear Safety (CNS),⁷⁶ which was negotiated and concluded in 1994, each state party is obligated to submit a report on the steps it is taking to implement the obligations of the convention.

Meetings are to be held among the states parties to review the reports, and each state can discuss reports submitted by others for purposes of clarification. In addition, in the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (Joint Convention), which was opened for signature on October 6, 1997, and has not yet entered into force, Article 32 obligates states parties to provide national reports on how each state is implementing each obligation of the convention.⁷⁷ The Joint Convention also sets forth specific information that must be provided by the states. Both Article 32 of the Joint Convention and Article 5 of the CNS provide good examples of transparency measures that could be negotiated in an amended PPC.

It has also been suggested that the IAEA be given authority to allow IAEA inspectors to collect information related to physical protection observed while performing their safeguards inspections.⁷⁸ IAEA inspectors have on occasion, during a safeguards inspection, taken note of an obvious physical protection problem (for example, a door falling off its hinges).⁷⁹ Allowing the inspectors to collect such information might not raise issues that would be controversial for the nuclear weapons states because the IAEA would be in facilities they were permitted to visit.

Some of the advantages of using the PPC as the method for making INFCIRC/225 legally binding internationally were mentioned above in the review of the Russian draft. Other advantages are that the PPC is an existing international agreement,⁸⁰ has an established mechanism for amendments, and currently has 60 parties to it (though an effort should be made to increase the number of parties to the PPC).⁸¹

In April 1998, the United States concluded a review of the PPC, and decided that a "substantial" expansion of the PPC would benefit U.S. national security interests. Specifically, the United States supports amending the PPC to require physical protection of nuclear material for peaceful purposes (at levels set forth in the IAEA guidelines) while in domestic use, storage, and transport. The United States is contacting other parties to the PPC to obtain their views on amending the PPC and to generate enough interest among states parties for the convening of a conference to discuss these types of amendments to the PPC.⁸²

At the NPT Preparatory Committee II meetings held

in Geneva from April 27 to May 8, 1998, the United States, in an intervention, stated that the use of "sound physical protection measures" would help prevent theft of nuclear materials as well as reduce the likelihood of illicit trafficking in nuclear material.⁸³ The United States recalled its proposal, noted above, to substantially expand the scope of the PPC to incorporate specific standards for physical protection measures for nuclear material in domestic peaceful use, transport and storage.⁸⁴ Australia, Canada and Turkey supported the idea of a review of the PPC to determine whether the PPC should be expanded.

At the conclusion of the NPT Preparatory Committee meeting, a Chairman's Working Paper dated May 8, 1998 was drafted that references INFCIRC/225 and which received general agreement by the states, but was not adopted by the Preparatory Committee (for reasons other than the reference to INFCIRC/225). Paragraph 22 of the Chairman's Working Paper provides that the states parties urge all states to implement the physical protection measures set forth in INFCIRC/225/Rev.3, and also, that all states parties examine ways to strengthen the current regime.⁸⁵

Option 3: A Separate Convention

A third option for an international legal agreement on physical protection standards is to negotiate a new text that will capture all nuclear materials, as in INFCIRC/225, and which would supercede the PPC. This option is the preferred one for those who do not believe it is worth trying to fix a treaty that is not adequate to address the types of concerns faced by the international community today. This might be the preferred option for getting the attention of some higher level politicians who will make the final decision on their nation's position. It might be easier politically to sell to those leaders the idea of a brand new treaty, rather than an updated old treaty.

However, the prospects for a new treaty focused on physical protection of nuclear materials are uncertain because such an approach raises many problems. For example, why would states be interested in a new treaty when negotiations at the United Nations on nuclear terrorism are going on, and there is a possibility that the PPC may be amended to address this issue? It would be difficult to convince states that this option is preferable to either of the first two.

Option 4: A Combination of Options 1 and 2

Options 1 and 2 above do not have to be mutually exclusive. Another option is to address physical protection in the Russian convention and also have an amendment to the PPC. For example, the provisions on physical protection in the Russian Convention (which do not reference INFCIRC/225) can be agreed to as proposed by the Russian Federation, and the parties to the PPC could call a conference to amend the PPC to require states to apply INFCIRC/225 standards to all nuclear material in use, storage, and transport. However, if there are states that are party to the Russian convention and not the PPC, they can apply whatever standards they see fit, and the uniformity desired for physical standards among all states would be lost. States can also agree to draft text in the Russian convention that obligates states to adopt standards at least comparable to INFCIRC/225 and still amend the PPC as a means to capture as many states as possible. Third, states negotiating the Russian convention could agree to make INFCIRC/225 a protocol to that convention.

In the IAEA comments on the Russian draft convention, the IAEA suggested that the proposed convention simply refer to the IAEA standards or that the draft convention provide that the parties commit themselves to pursue the issue of physical protection of nuclear materials in another treaty. Any event, provisions regarding physical protection in both conventions would need to be carefully drafted so as to not be contradictory.

CONCLUSION

There are a number of reasons why states should pursue internationally legally binding physical protection standards for all nuclear materials using INFCIRC/225 as the basis for such standards. Negotiations for a legally binding commitment for protection standards for all nuclear material beyond the scope of the PPC can be conducted in at least one of the four fora and/or formats outlined above.

The conclusion and entry into force of an international legal convention on physical protection would be an important step in adequately securing nuclear material. If in fact a protocol to the PPC does not address nuclear material used for military purposes, as envisaged by the United States, methods to upgrade and maintain physical protection of nuclear materials in those facilities should nevertheless continue. In particular, the upgrade of fa-

cilities in the NIS and funding for these upgrades must continue until their completion.

States should recognize that expertise in many areas of nuclear materials lie at the IAEA. It is therefore logical that the IAEA negotiate a protocol to the PPC (as noted earlier), issues dealing with physical protection should be addressed by that body. The United States has decided that an amendment to the PPC is the next step in expanding the international commitments in physical protection of nuclear materials. This avenue should be pursued. However, states will also have to note the affects of that decision on the current negotiations of the Russian draft convention. As noted earlier, it may be possible to pursue negotiations on the Russian draft convention in New York and also commence negotiations on a protocol to the PPC that will expand the obligations of that Convention. However, if it becomes apparent that states are not willing to pursue the negotiations for a protocol to the PPC, states should then attempt to have adequate provisions in the Russian draft convention to address the issue of physical protection of nuclear materials. In that respect, states must act quickly as the negotiations on the Russian draft convention have already begun.

ing refers to systems that confirm that nuclear material, that has been inventoried, has not been lost and is accounted for, while material control refers to systems designed to limit both the access to and use of nuclear material and to detect diversion of nuclear material.

⁴ Mohamed ElBaradei, Keynote Speech, IAEA "International Conference on Physical Protection of Nuclear Materials: Experience in Regulation, Implementation and Operations," IAEA-CN-68, November 1997, Vienna.

⁵ "Convention on the Physical Protection of Nuclear Materials," 18 I.L.M. 1419 (1979). The IAEA is the Depository of the Convention.

⁶ "The Treaty on Non-Proliferation of Nuclear Weapons," 7 I.L.M. 809 (1968).

⁷ "Convention on Nuclear Safety," 33 I.L.M. 1514 (1994).

⁸ The importance the United States places on adequate physical protection is reflected in the MPC&A programs it has instituted in the newly independent states. The total MPC&A expenditures through 2002 are estimated to be \$800 million. See, U.S. Department of Energy (DOE), *Partnership for Nuclear Security: MPC&A Program Strategic Plan* (Washington, D.C.: January 1998) [hereinafter *Partnership for Nuclear Security*].

⁹ In addition, if the two states eventually agree on a START III and agree to reductions down to between 2,000 and 2,500 strategic warheads for each party, there will be a clear need for tight physical protection standards for the increase in nuclear materials.

¹⁰ For a further discussion of these issues, see James Goodby, "Protection of Fissile Materials: Policy Context and Issues for Consideration," paper delivered at the Workshop on Comparative Analysis of Approaches to the Protection of Fissile Material, July 28-30, 1997, Stanford University.

¹¹ For example, there has been increased concern in the international community regarding the continued stockpiling of plutonium in Japan. Japan has invested heavily in nuclear power as a means to address its lack of indigenous energy resources, including uranium, and heavy dependency on foreign oil supplies. As a means to become more energy independent, it has worked to establish a self-supporting and independent closed nuclear cycle. This, however, has resulted in the accumulation of large quantities of plutonium in various forms, and it has been estimated that by the year 2000, Japan will have approximately 140 MT of plutonium. This plutonium must be adequately protected.

¹² Matthew Bunn, "Security for Weapons-Usable Nuclear Materials: Expanding International Cooperation, Strengthening International Standards" [hereinafter "Expanding International Cooperation"], paper delivered at the Workshop on Comparative Approaches to Fissile Material Protection held at Stanford University, July 28-30, 1997.

¹³ DOE, *Partnership for Nuclear Security*, p. 3. See also, Matthew Bunn, "Expanding International Cooperation," where he notes that many fences at the facilities had holes, were overgrown with vegetation, and there was little effective detection equipment.

¹⁴ See, Kevin O'Neill, *Securing Former Soviet Nuclear Assets: Many Worries, Little Progress*, ISIS Report (Washington, D.C.: Institute for Science and International Security, May 1996). It has been noted that about four kilograms of plutonium is potentially enough to develop a nuclear weapon. About three times as much weapon-grade highly enriched uranium is potentially enough for a nuclear weapon. See, Matthew Bunn, "Expanding International Cooperation" and National Academy of Sciences, Committee on International Security and Arms Control, *Management and Disposition of Excess Weapons Plutonium* (Washington, D.C.: National Academy Press, 1994).

¹⁵ DOD, *Partnership for Nuclear Security*, p. 2. Approximately one ton of weapons-grade material is separated annually in Russia from plutonium production. In addition, Russia possesses approximately 28 tons of civil plutonium, and the civil nuclear industry continues to separate 700 kilograms of material annually. O'Neill, *Securing Former Soviet Nuclear Assets: Many Worries, Little Progress*, p. 3.

¹⁶ George Bunn, "International Cooperation on Combating Illicit Trafficking in Nuclear Material: How to Strengthen International Norms Against Stealing or Smuggling of Nuclear Material?" paper delivered at

¹The author wishes to thank George Bunn of the Center for International Security and Arms Control at Stanford University for his assistance throughout the research and preparation of this study, Emily Ewell from the Center for Nonproliferation Studies at the Monterey Institute of International Studies for her assistance in research, and Ambassador James Goodby from the Brookings Institute, Kevin O'Neill from the Institute for Science and International Security, Mary Alice Hayward from the Department of Energy's Russia/NIS Nuclear Material Security Task Force, Matthew Bunn from the Center for Science and International Affairs at Harvard University, Doug Shaw of the Lawyers Alliance for World Security, and Bernard Weiss of the IAEA, for useful comments on this study. Interpretations, opinions, or conclusions in this report are those of the author, and do not reflect those of any government agency or department.

²"Nuclear material" as used in this paper is plutonium except that with isotopic concentration exceeding 80 percent in Plutonium-238; Uranium-233; uranium enriched in the isotopes 235 or 233; uranium containing the mixture of isotopes as occurring in nature other than in the form of ore or ore-residue; and any material containing one or more of the foregoing.

³It should be noted that, in addition to adequate physical protection for nuclear materials, each state should have adequate material accounting and control to secure nuclear material from inside and outside threats. Material account-

the Workshop on Comparative Analysis of Approaches to the Protection of Fissile Material, July 28-30, 1997, held at Stanford University.

¹⁷ This paper does not provide an analysis of the costs associated with the upgrade of a state's physical protection standards to those of INFCIRC/225. However, the issues related to cost will play an important role in the decision of a state to upgrade its standards for physical protection of nuclear material. The availability of funding for implementing physical protection measures on nuclear material will be an important factor in whether a state can apply some or all of the measures deemed adequate for the protection of nuclear materials.

¹⁸ DOE, *Partnership for Nuclear Security*.

¹⁹ Hans Blix, former Director General of the IAEA, states in the Preface to INFCIRC/225/Rev.3 "The need for international co-operation becomes evident in situations where the effectiveness of physical protection in one State depends on the taking by other States also of adequate measures to deter or defeat hostile actions against nuclear facilities and materials..." See, International Atomic Energy Agency, *The Physical Protection of Nuclear Material*, INFCIRC/225/Rev.3, September 1993 [hereinafter INFCIRC/225/Rev.3]. During the negotiations on the Russian draft convention on Nuclear Terrorism, held at the United Nations' Sixth Committee from February 17-27 1998, the United States representative stated that the international community has a legitimate interest in making sure that all states are fulfilling their physical protection responsibilities. See, U.N. Press Release L/2854, February 17, 1998, "Ad Hoc Committee Begins Considering Draft Convention To Suppress Nuclear Terrorism," available on the Internet at <http://www.un.org>, February 17, 1998.

²⁰ George Bunn, "Physical Protection of Nuclear Materials: Strengthening Global Norms," paper delivered at the IAEA Conference, November 10-14, 1997. In both cases, a compromise was inserted into the Preamble to the Convention. The first compromise text notes the "importance" of physical protection of materials in domestic use and storage, and the other notes the importance of effective physical protection of nuclear materials for military purposes.

²¹ For more information on the provisions of the PPC, see, "The Convention on the Physical Protection of Nuclear Material," 18 I.L.M. 1419 (1979).

²² See International Atomic Energy Agency, *Guidance and Consideration for Implementation of INFCIRC/225/Rev.3, The Physical Protection of Nuclear Material*, IAEA-TECDOC-967, September 1997 [hereinafter TECDOC-967], p. 17. TECDOC-967 provides that a physical protection system will counter a threat to steal nuclear material or sabotage or nuclear material or activities if it performs the

²³ INFCIRC/225 lists the types of protections required for nuclear materials, however, it does not prioritize the types of measures needed for physical protection of nuclear materials. This would be important for states that do not have the funds to immediately apply all the physical protections measures to their nuclear materials.

²⁴ The categories in INFCIRC/225 are the same as the PPC.

²⁵ See Russel Hibbs and Mark Soo Hoo, "Variations on Achieving An Effective Physical Protection System," paper delivered at the International Conference on Physical Protection on Nuclear Materials: Experience in Regulation, Implementation and Operations," November 10-14, 1997, held at the IAEA in Vienna, Austria [hereinafter "International Conference on Physical Protection on Nuclear Materials"].

²⁶ INFCIRC/225 provides that quantities not falling in Category III and natural uranium, depleted uranium and thorium should be protected at least in accordance with prudent management practice.

²⁷ See INFCIRC/225/Rev.3 for more details on the categorization of nuclear materials.

²⁸ The "inner area" is to be within a "protected area," thereby giving an added layer of access control.

²⁹ TECDOC-967, Introduction, p. 7.

³⁰ United States National Academy of Sciences, Committee on International Security and Arms Control, *Management and Disposition of Excess Weapons Plutonium* (Washington, D.C.: National Academy Press, 1994).

³¹ An actual definition of a "stored weapons standard" is not, however, provided in the report.

³² Bunn, "Expanding International Cooperation."

³³ *Measures Against Illicit Trafficking in Nuclear Materials and Other Radioactive Sources—Report by the Director General*, International Atomic Energy Agency, Board of Governors, GOV/INF/818, September 3, 1997.

³⁴ Bunn, "Expanding International Cooperation." For a good discussion on the impact of culture on the way states may address and view internal security, see, Peter Katzenstein, "Coping with Terrorism: Norms and Internal Security in Germany and Japan," in Judith Goldstein and Robert Keohane, eds., *Ideas and Foreign Policy: Beliefs, Institutions, and Political Change* (Ithaca, N.Y.: Cornell University Press, 1993).

³⁵ Aum Shinrikyo is a Japanese sect, which also operates in other countries, that tried to purchase a nuclear weapon, and experimented with anthrax (a biological weapon). It used nerve gas, a chemical weapon, in a Tokyo subway attack in 1995. Twelve people died and about 5500 people were injured from the attack. See, Bunn, "Expanding International Cooperation."

³⁶ See Bunn, "Expanding International Cooperation." Also, although an international agreement among states that sets forth minimum standards for nuclear materials would go a long way towards guaranteeing that all nuclear material is being adequately protected, states should be free to apply more stringent domestic physical protection standards to their nuclear material (and some states have standards that are already more stringent than those of INFCIRC/225).

³⁷ "Agreement Between the Government of the United States of America and the Government of the Russian Federation Concerning the Disposition of Highly Enriched Uranium Extracted from Nuclear Weapons," (1993). The Preamble and Article I to the HEU Agreement set forth affirmations of the parties' commitments to comply with applicable physical protection requirements and to establish appropriate measures to fulfill those requirements. Most importantly, in Article V of the HEU Agreement, the parties specifically agree to maintain physical protection of nuclear materials subject to the agreement "at a minimum... comparable to the recommendation set forth in IAEA document INFCIRC/225/REV.2 concerning the physical protection of nuclear material." The obligation to apply physical protection standards comparable to INFCIRC/225 applies to the 500 metric tons of highly enriched uranium covered by the agreement.

³⁸ "African Nuclear-Weapon-Free Zone Treaty," 35 I.L.M. 698 (1995). In Article 10 of the ANWFZ Treaty, the parties agree to apply to the covered nuclear materials "measures of physical protection equivalent to those provided for in the Convention on Physical Protection of Nuclear Material and in recommendations and guidelines developed by IAEA for that purpose." Even though there is no specific reference to INFCIRC/225 in Article 10, INFCIRC/225 contains the only IAEA guidelines and recommendations for physical protection of nuclear materials.

³⁹ The Nuclear Suppliers Group has a current membership of 34 states, and its goal is to ensure that suppliers of nuclear materials uniformly apply comprehensive guidelines towards nuclear cooperation that will not contribute to proliferation of nuclear weapons.

⁴⁰ *Guidelines for Nuclear Transfers*, INFCIRC/254, Appendix, February 1978.

⁴¹ "Trigger List" items are those items that if exported, would trigger IAEA safeguards. If misused, they could contribute to a nuclear explosive program.

⁴² INFCIRC/254 Annex B, para. 3. These guidelines are repeated in INFCIRC/254/Rev.1 dated July 1992, and INFCIRC/254/Rev.2 dated October 1995.

⁴³ The P-8 consists of Canada, France, Germany, Italy, Japan, Russia, the United Kingdom, the United States. The P-8 called on other states to join them in implementing this Programme.

⁴⁴ That document provides that the IAEA recommendations on Physical Protection of Nuclear Materials "...provide useful guidance on measures for the physical protection of nuclear materials in use, transit and

storage. The application of these recommendations, adapted as appropriate to national circumstances, would ensure a consistent and high level of security for both nuclear facilities and nuclear materials.”

⁴⁵ *Communication Received From Certain Member States Concerning Their Policies Regarding the Management of Plutonium, INFCIRC/549*, March 16, 1998.

⁴⁶ See Annette Schaper, “The Case for Universal Full-Scope Safeguards on Nuclear Material,” *The Nonproliferation Review* 5 (Winter 1998), p. 69-80.

⁴⁷ The Annex provides similar text to that in the Annex to INFCIRC/254, specifically, that INFCIRC/225 is “a useful basis for guiding States in designing a system of physical protection measures and procedures.”

⁴⁸ See, INFCIRC/549.

⁴⁹ Germany and Russia are working jointly on upgrading the Bochvar Institute in Moscow, where INFCIRC/225 category I and II nuclear fuel is handled; Japan and Sweden, later joined by the United States, jointly worked on the Sosny Research Center in Belarus “in particular, to provide protection equivalent to the level described in IAEA INFCIRC/225...”; and Norway, Sweden, and the United States are working on upgrading the physical protection of the nuclear material located at the Murmansk Shipping Company located in Russia. For more information on these programs, see, Department of Energy, *United States/Former Soviet Union Program of Cooperation on Nuclear Material Protection, Control and Accounting* (Washington, D.C.: 1997) [hereinafter *United States/Former Soviet Union*].

⁵⁰ See DOE, *United States/Former Soviet Union Program*. The programs for upgrades include material accounting and control, or MPC&A, at these facilities as well as physical protection. Other states are assisting in these upgrades (e.g., Japan, Norway, and Sweden). There are a projected 53 total sites that will receive MPC&A cooperation. See also, DOE, *Partnership for Nuclear Security*, p. 8.

⁵¹ For example, the upgrades at the South Ukraine Nuclear Power Plant at Yuzhnoukrainsk, Ukraine, “are intended to completely satisfy the requirements of the IAEA INFCIRC/225/Rev.3... the upgrades completed will be directly applicable to meeting the IAEA requirement.” (DOE, *United States/Former Soviet Union Program*, U.S./Russian MPC&A Upgrades at the Institute of Theoretical and Experimental Physics; South Ukraine Nuclear Power Plant Yuzhnoukrainsk, Ukraine, p. 57.) In addition, the U.S./Russian improvements of the physical protection system at the Russian Institute of Theoretical and Experimental Physics are designed according to “internationally recognized guidelines established in INFCIRC/225/Rev.3.” *Ibid.* See DOE, *Partnership for Nuclear Security*, p. 8.

⁵² L. Bartak, and J. Sedlacek, “Prevention and Combating Illicit Trafficking in Nuclear Materials in the Czech Republic,” State Office for Nuclear Safety, Prague, Czech Republic, paper presented at the International Conference on Physical Protection of Nuclear Materials, sponsored by the IAEA, November 10-14, 1997.

⁵³ A. Yucel, “Physical Protection Philosophy, Strengthening National Regulatory Programmes for Physical Protection and Combating Illicit Trafficking in Turkey,” Turkish Atomic Energy Authority, Ankara, Turkey, paper presented at the International Conference on Physical Protection of Nuclear Materials, sponsored by the IAEA, November 10-14, 1997.

⁵⁴ K. Kovalev, “Strengthening of National Regulatory Programmes Aimed At Ensuring Physical Protection, Russian Federation,” paper presented at the International Conference on Physical Protection of Nuclear Materials, sponsored by the IAEA, November 10-14, 1997.

⁵⁵ V.D. Kokhan, P.A. Ivanov, and Yu.I. Kuchmij, “Concept for the redesign of the physical protection equipment and systems of Goskomatom nuclear power facilities,” Goskomatom, Kiev, Ukraine, paper presented at the International Conference on Physical Protection of Nuclear Materials, sponsored by the IAEA, November 10-14, 1997.

⁵⁶ *Ibid.*

⁵⁷ *Ibid.* See also, Christian Gotz, “Physical Protection During Shipments of Nuclear Materials in Germany, Ministry for Environment, Nature Conservation and Nuclear Safety,” paper delivered at the International

Conference on Physical Protection of Nuclear Materials, sponsored by the IAEA, November 10-14, 1997.

⁵⁸ Bernard Weiss, Department of Safeguards, IAEA, discussions with author, April 1998.

⁵⁹ See, *Explanatory Note to the Draft Convention on Suppression of Acts of Nuclear Terrorism*, U.N. General Assembly, A/AC.252/L.3, January 28, 1997.

⁶⁰ In the explanatory notes to the draft convention submitted by the Russian Federation to the *Ad Hoc* Committee, it is noted that: “The need for a new international legal instrument is prompted by the fact that the Convention on the Physical Protection of Nuclear Material of 1980 has a number of significant gaps as regards the issues of counteracting terrorist acts involving the use of nuclear weapon or materials...it is obvious that this instrument is not sufficient to remove the danger of nuclear terrorism in all its manifestations.” *Explanatory Note to the Draft Convention on Suppression of Acts of Nuclear Terrorism*, U.N. document A/AC.252/L.3, January 28, 1997. For example, Article 7 of the PPC provides that the receipt, possession, use, transfer, alteration, disposal or dispersal of nuclear material and which causes or is likely to cause death or serious injury to a person or substantial damage to property is to be made punishable by each state under its domestic laws. A issue of discontent by those who want to adequately address the issue of nuclear terrorism is that the clause “causes or is likely to cause death or serious injury” is too restrictive, as the mere possession of stolen nuclear material, regardless of how it was obtained, should be enough to constitute a criminal act. This is one of the gaps the draft Russian convention hopes to address. Also of importance, the UNGA resolution establishing the *Ad Hoc* Committee states that the final convention is to supplement existing international instruments. Therefore, the final agreed text cannot contradict obligations arising from existing international agreements, including the PPC. See, United Nations General Assembly Resolution, A/RES/51/210, December 17, 1997.

⁶¹ U.N. General Assembly Resolution, A/RES/51/210, December 17, 1997.

⁶² *Ibid.*

⁶³ Nearly half of the reported illicit nuclear trafficking cases involved radioactive sources. The use of these sources by a terrorist to contaminate an area could result in significant societal panic and disturbance. Kevin O’Neill, Deputy Director, ISIS, discussions with author, April 1998.

⁶⁴ See, United Nations, submitted by the Republic of Iran, A/AC.252/1998/W.P.38, 26 February 1998.

⁶⁵ See, United Nations, submitted by Syrian Arab Republic, A/AC.252/1998/W.P.24/Corr.1, 26 February 1998.

⁶⁶ On this point, Russian U.N. Representative Alexander Zmeyerovskiy stated, at the time the Russian text was tabled, that “The Agreement should be addressed not so much to problems of physical protection of nuclear material as effective counteraction of nuclear terrorism, including thwarting terrorist acts and elimination of their consequences.” See, ITAR-TASS, October 4, 1996; in “Russia Proposes Convention to Combat Nuclear Terrorism,” FBIS-SOV-96-194.

⁶⁷ Some of these activities include training programs on physical protection, fellowships (awarded to experts from the NIS and Eastern Europe to visit facilities in other countries and observe how physical protection systems are being implemented there), sponsoring conferences and organizing training courses on physical protection. The IAEA has also set up “peer reviews,” developed under the International Physical Protection Advisory Service, which provide requesting states with expert advice on that state’s physical protection system.

⁶⁸ The Japanese representative to the negotiations on the Russian draft convention noted that the *Ad Hoc* Committee should consider the proper forum for discussions of the draft convention because the IAEA is competent in the field of nuclear material. U.N. Press Release L/2854, February 17, 1998, “Ad Hoc Committee Begins Considering Draft Convention To Suppress Nuclear Terrorism,” available on the Internet at <http://www.un.org>, February 17, 1998. The U.S. representative noted that it was possible the *Ad Hoc* Committee was not the best body to

identify and evaluate the provisions of the Russian draft convention dealing with physical protection of nuclear materials, and the committee should concentrate on those provisions of the draft dealing with terrorism. See U.N. Press Release L/2854, February 17, 1998, "Ad Hoc Committee Concludes General Discussion of Draft Convention to Suppress Acts of Nuclear Terrorism," available on the Internet at <http://www.un.org>, February 18, 1998.

⁶⁹ During the negotiations on the Russian draft convention, some states registered their preference for an amendment to the PPC rather than a new convention for addressing physical protection issues. For example, the representative from the Netherlands stated that if there are gaps in the PPC on physical protection issues, the method to address those gaps would be through a protocol to the PPC. The representative of Syria went further and noted that the way to address terrorism in all its forms is probably an amendment to the PPC in the form of a protocol. In addition, Japan registered its concern about another regime in the field of nuclear materials, and in duplication of the PPC, as another regime may create problems. The representative pointed to Article 16 of the PPC which addresses review conferences of the PPC. See U.N. Press Release L/2854, February 17, 1998, "Ad Hoc Committee Begins Considering Draft Convention To Suppress Nuclear Terrorism," available on the Internet at <http://www.un.org>, February 17, 1998.

⁷⁰ Information based on author's interviews with Bernard Weiss of the IAEA, and George Bunn of the Center for Arms Control and International Security at Stanford University.

⁷¹ The IAEA is the depositary and not a party to the treaty. It therefore cannot call for a conference unless requested by the states parties to do so.

⁷² *Comments of the Secretariat of the International Atomic Energy Agency to the Ad Hoc Committee Established by the General Assembly Resolution 51/210 of 17 December 1996*, December 17, 1996.

⁷³ See, George Bunn, "Strengthening International Norms for Physical Protection of Nuclear Materials," paper presented at the International Conference on Physical Protection of Nuclear Materials," sponsored by the IAEA, November 10-14, 1997.

⁷⁴ Matthew Bunn, discussion with author, May 8, 1998.

⁷⁵ Making these reviews mandatory is also an option, but that idea will likely run into objections by nuclear weapons states.

⁷⁶ "Convention on Nuclear Safety," 33 I.L.M. 1514 (1994).

⁷⁷ The reports should address the state's spent fuel management policy, spent fuel management practices, radioactive waste management policy, etc.

⁷⁸ Bunn, "Expanding International Cooperation."

⁷⁹ This is neither a formal nor usual procedure for the IAEA.

⁸⁰ This is also a disadvantage in that often parties to a treaty are comfortable with the agreement, often meet in review conferences where they make no changes to the treaty, and are reluctant to make radical adjustments to the treaty. Matthew Bunn, discussion with author, May 8, 1998.

⁸¹ All but about a dozen states that have relevant nuclear activity are parties to the convention.

⁸² Letter from the Jerome J. Bosken, Counsellor for Nuclear Policy United States Mission to the United Nations System Organization in Vienna, to Ms. Anita Nilsson, Senior Coordinator, Office of the Deputy Director General, Department of Safeguards, IAEA, April 15, 1998. Note that there is no suggestion to extend physical protection standards to nuclear material used for military purposes. In a speech at the Henry L. Stimson Center on June 10, 1998, U.S. Secretary of State Madeline Albright remarked that a conference should be convened in 1998 to amend the PPC to "increase accountability, enhance protections, and complement our efforts to strengthen IAEA safeguards." U.S. Department of State, Office of the Spokesman, "Secretary's Remarks to the Stimson Center," June 10, 1998.

⁸³ Statement made on May 1, 1998, by U.S. representative to the NPT Preparatory Committee meeting in Geneva, April 27-May 8, 1998.

⁸⁴ *Ibid.*

⁸⁵ It is important to note that the May 8 Chairman's Working Paper

(CWP) does not define what is to be considered the "current regime." "Current regime" may, therefore, also refer to the PPC. In an earlier draft of the CWP, dated May 6, 1998, which was not a formal conference document but served as the reference for the May 8, 1998 CWP, a reference was made to the PPC, specifically that states parties to the PPC would undertake a review of the Convention with the goal of determining the adequacy of the current regime and extending the Convention if required. Though the specific reference to the PPC was dropped from the May 6 version of the CWP, the reference to "current regime" in the May 8 later version may be interpreted by some to in fact refer to the PPC, as well as other possible regimes.