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Safeguards and nuclear security

Working paper submitted by the United States of America

1. The United States attaches a very high priority to the adoption by all NPT States parties of comprehensive safeguards agreements, as well as of the International Atomic Energy Agency (IAEA) Additional Protocol, which it strongly believes needs to become the new international safeguards standard. The United States also attaches a very high priority to promoting other strong and effective nuclear security measures and practices, including through IAEA, in order to ensure that nuclear materials do not fall into the wrong hands. The United States and IAEA also support activities that promote effective national control over and security of nuclear material, protecting it from acquisition by sub-national groups or other unauthorized parties.

Safeguards

2. The concept of international safeguards on nuclear material and activities predates the Nuclear Non-Proliferation Treaty (NPT) itself by more than a decade, having its origins in United States President Dwight Eisenhower's "Atoms for Peace" speech to the United Nations in 1953. In that speech, President Eisenhower called for the creation of an International Atomic Energy Agency, which would facilitate peaceful uses of nuclear technology around the world and help develop what he termed "special safe conditions" to make nuclear materials resistant to misuse. Since the creation of IAEA in 1957, it has applied various types of safeguards technologies and methods to help ensure that nuclear material is not diverted for improper uses.

3. Today, through a number of international, regional and bilateral instruments, States have undertaken to accept the application of safeguards to nuclear material and activities under their jurisdiction or control. Chief among the international instruments is the NPT itself, now adhered to by nearly 190 States.

4. Article III of the Treaty obliges all non-nuclear-weapon States parties "to accept safeguards, as set forth in an agreement" with IAEA for the "purpose of verification of the fulfilment of its obligations assumed under this Treaty with a view to preventing diversion of nuclear energy from peaceful uses to nuclear



weapons or other nuclear explosive devices”. In addition to the basic safeguards agreement countries conclude with the IAEA, as required by the NPT, an Additional Protocol has been developed in light of the challenges that emerged in the 1990s with respect to detecting undeclared nuclear activity.

5. The safeguards system needs to be sufficiently robust to provide the international community with a measure of confidence that diversion of nuclear material from safeguarded peaceful uses will be detected promptly. International nuclear cooperation and technology-sharing necessarily depend on compliance with safeguards obligations: without the assurance that material and technology will not be diverted to nuclear weapons or nuclear weapons-related activities, such cooperation could not safely continue.

6. While the assurances of peaceful use that safeguards provide cannot be absolute, it is vital that such safeguards be as robust and effective as possible, for the risk of detection makes diversion more difficult and helps deter the pursuit of illicit nuclear programmes. It is essential to the integrity and the objectives of the NPT regime that safeguards be able to provide timely warning of diversion, enabling the mounting of an effective international response.

Safeguards challenges

7. Recent history and current trends make clear that considerable challenges face the safeguards system today. There have been several serious cases of non-compliance with safeguards obligations. After the 1991 Gulf War, for instance, it was revealed that Iraq had an ambitious clandestine nuclear weapons programme with a number of undeclared installations, which had escaped detection despite years of IAEA inspections in Iraq before the war.

8. In 2002, North Korea expelled IAEA inspectors and disabled IAEA equipment. In 2003, the IAEA Board of Governors concluded that North Korea’s actions constituted non-compliance and reported the matter to the United Nations Security Council.

9. After Libya’s historic decision in December 2003 to renounce its weapons of mass destruction programmes, the safeguards violations that had been committed as part of its nuclear weapons programme were publicly documented. These violations were referred by the IAEA Board to the Security Council in March 2004, although in that case for “information purposes only” because Libya had by that time ended its weapons programme and had agreed to begin taking additional actions to remedy its non-compliance.

10. In 2002, an extensive and longstanding secret nuclear programme in Iran was revealed to the public for the first time, and was subsequently publicly documented in some detail as a result of work by IAEA inspectors. On the basis of this information, the IAEA Board of Governors adopted a unanimous resolution in November 2003 deploring Iran’s failures and breaches of its obligation to comply with its safeguards agreement. Several resolutions later, in February 2006, the IAEA Board adopted a resolution decrying Iran’s non-compliance and referring the matter to the Security Council. (The Council subsequently adopted a resolution requiring the suspension of Iran’s relevant nuclear activities, as well as two subsequent resolutions imposing sanctions on Iran.)

11. The experiences of IAEA with Iran, North Korea and Iraq have shown that it is essential for safeguards to do more than merely track declared nuclear materials. The Agency must also seek to discover undeclared nuclear activities, the purpose for which the Additional Protocol was designed. As IAEA has itself pointed out, moreover, in some cases of wilful non-compliance by a sophisticated violator, it may be necessary for the Agency to have further investigative tools, even beyond those provided by the Protocol.

12. The challenges presented by the dangers of clandestine nuclear activity are made even more acute by the increasing spread of sophisticated nuclear technology, including fuel-cycle capabilities. Some years ago, the difficulty of obtaining and employing such technology was thought to be a very high barrier against proliferation. With the revelation of the existence of clandestine nuclear supply networks, such as that run by renegade nuclear weapons scientist A.Q. Khan, however — the network that supplied technology and weapons-related design information to both Libya and Iran — this technological barrier no longer seems so formidable. Even apart from such illicit networks, in fact, such technology is today more widespread than ever.

13. This has led many observers to become concerned about the proliferation of “latent” or “virtual” nuclear weapons programmes: a growing number of countries that might not currently possess nuclear weapons, but have an on-demand “nuclear option” by virtue of having acquired the capability to produce fissile material for weapons purposes.

14. Furthermore, requirements for IAEA safeguards and inspections are expected to increase dramatically over time. For example, countries seem likely to turn more and more to nuclear reactors as a power source in an energy-hungry world that would otherwise have to depend even more heavily upon scarce and environmentally damaging fossil fuel supplies.

15. The Agency may also be asked to take on additional safeguards burdens. India, for example, will bring a large (and increasing) proportion of its nuclear infrastructure under IAEA safeguards as a result of the recent United States-India Civil Nuclear Cooperation Initiative.

16. NPT parties should respond to these challenges by supporting efforts to strengthen safeguards agreements and increase the technical capabilities of the safeguards system to make it both more effective and efficient.

Safeguards and the additional protocol

17. Most NPT parties have concluded a comprehensive safeguards agreement with IAEA, imposing safeguards on all source or special fissionable material within their territories, but 30 have still to comply with the requirements of article III of the Treaty in this respect. While the number of non-compliant States has been shrinking — in 2000, the number of States parties lacking a safeguards agreement stood at 54 — the situation remains unsatisfactory. While no evidence is available that any of the 30 unsafeguarded States parties (which are mostly developing countries in Africa) harbour a secret nuclear programme, without safeguards agreements in place, the international community can have only limited confidence in such a judgement. The international community should continue to press those

States that have not fulfilled this most basic safeguards obligation to do so as soon as possible.

18. In a 2005 report to the IAEA Board of Governors, the Director General of the Agency pointed out that the existing “Small Quantity Protocol”, which had been a part of the comprehensive safeguards agreements in cases where nuclear activities are very limited or absent, constituted a weakness in the safeguards system. This protocol provided IAEA no authority to require the submission of early facility design information, perform verification activities in the field or determine the status of nuclear facilities. Accordingly, the Board agreed to modify the text of the Protocol to eliminate those problems, authorized the secretariat to conclude exchanges of letters to give effect to these modifications and encouraged States with “Small Quantity Protocol” agreements to take the necessary actions. Although a number of States have done so, nearly 80 still have not. The IAEA secretariat and member States must continue their outreach activities to bring about the completion of this process.

19. The comprehensive safeguards agreement required by NPT provides the minimum basis for modern safeguards. The IAEA Board of Governors, however, approved the Model Additional Protocol in May 1997. Negotiation of the Model Additional Protocol was, in part, prompted by the failure of safeguards to detect Iraq’s nuclear weapons programme. In States without an Additional Protocol in force, IAEA therefore has only limited tools to detect undeclared nuclear activities and cannot fully implement the strengthened safeguards measures that are now understood to be necessary. This is why the Additional Protocol now must be recognized as the new minimum standard for effective safeguards.

20. Progress on bringing Additional Protocols into force has accelerated, but is still not satisfactory. At the time of writing, 112 States have signed Additional Protocols and 78 have brought them into force. Based upon a Japanese initiative at the 2000 NPT Review Conference and the 2000 IAEA General Conference, IAEA adopted an action plan to promote universal adherence to the Additional Protocol and safeguards agreements. With funding from Japan, and later from the United States, France, and others, IAEA has held a series of international and regional seminars on safeguards agreements and the Additional Protocol. The United States has been actively promoting adherence to the Additional Protocol through regional and global demarches. Efforts to promote such adherence, by all States parties, should continue until the Additional Protocol is universally applied.

Safeguards and verification committee

21. In his February 2004 speech at the National Defense University, President Bush proposed the creation of a committee to “strengthen the capability of IAEA to ensure that nations comply with their international obligations”. In June 2005, the IAEA Board of Governors decided to establish a Committee on Safeguards and Verification. This Committee met three times during 2006 to address 18 recommendations from the IAEA secretariat for strengthening the IAEA safeguards system.

22. While this represents a degree of progress, the Committee needs to achieve more substantive results in the form of agreed recommendations and proposals that can be placed before the Board. To achieve consensus, open-ended meetings of technical experts from interested States should be held on the recommendations that

have been identified, including: promoting universal adherence to required safeguard agreements; universalizing the Additional Protocol; modifying the annexes of the Additional Protocol to be consistent with the Part 1 control list of the Nuclear Suppliers Group; and taking initiatives to augment the technical capabilities and effectiveness of the IAEA's verification system.

United States safeguards

23. The United States has voluntarily agreed to accept IAEA safeguards at its civil nuclear facilities. Under the United States safeguards agreement, the United States accepts safeguards at civil nuclear facilities using comparable procedures as those used by IAEA in comparable circumstances elsewhere. The agreement excludes only activities, locations and information of direct national security significance. (This exclusion is necessary in part to fulfil United States non-proliferation obligations as a nuclear weapons State, under article I of the NPT, not to in any way assist any non-nuclear-weapons States to manufacture or otherwise acquire nuclear weapons or other explosive devices). The United States currently has over 200 civil nuclear facilities eligible for IAEA safeguards.

24. The United States is working hard to bring into force an Additional Protocol that includes all the measures of the Model Additional Protocol, but that will also include a national security exclusion that parallels that in the United States safeguards agreement. The United States Senate gave its advice and consent to ratification of the Additional Protocol in 2004, and President Bush signed the necessary implementing legislation into law in late 2006. The United States anticipates bringing an Additional Protocol into force in the near future.

Resources of the International Atomic Energy Agency

25. In the short term, IAEA faces increased safeguards costs associated with upgrading its information system and analytical laboratory and responding to new or increasing safeguards demands at plutonium facilities, enrichment plants and heavy water reactors. The United States has been a strong supporter of adequate IAEA safeguards funding. The United States, for instance, initiated and won support for recent additions to the IAEA's regular budget, which resulted in an approximately 20 per cent increase in safeguards funding. It will still be difficult for the Agency to obtain adequate funding. Although IAEA can be expected to achieve some efficiencies from its programme of "integrated safeguards", agency budget planning documents identify needed increases in both the regular safeguards budget and extrabudgetary funding.

26. The Agency continues to rely heavily upon voluntary, extrabudgetary resources to meet safeguards requirements for many activities, in particular for research and development and for equipment. In 2006, for example, IAEA received cash contributions of over \$12.6 million in extrabudgetary funds from all donors for safeguards work, representing roughly 9.8 per cent of the safeguards regular programme fund. The United States is proud of its role as the largest supporter of IAEA safeguards through this mechanism: it donated nearly \$9.6 million, or 76 per cent, of those extrabudgetary funds. United States assistance also includes equipment procurement needs that were not met in the initial year of the budget increase, and technical assistance provided by the United States support programme. When cash and in-kind contributions are combined, therefore, the United States

provided nearly \$18.6 million in extrabudgetary support to IAEA safeguards in 2005.

Security and preventing terrorism

27. The United States also supports a number of IAEA efforts related to strengthening security for nuclear materials and reducing the risk that such materials will fall into the hands of non-State actors such as criminal or terrorist organizations.

(a) **IAEA Nuclear Security Plan:** Since 11 September 2001, IAEA has accelerated its counter-terrorism assistance to States. Its first nuclear security plan was successfully completed and implementation of its Nuclear Security Plan for 2006-2009 has now begun. The plan is funded largely through the voluntary Nuclear Security Fund, to which the United States has been a principal contributor. Through implementation of the plan, IAEA seeks to strengthen nuclear security worldwide. The Agency provides advice to IAEA member States through the conduct of missions to strengthen nuclear security, including the International Physical Protection Advisory Service, the International Nuclear Security Advisory Service, the Model Project on Upgrading the Radiation Protection Infrastructure and the Radiation Safety and Security of Radioactive Sources Infrastructure Appraisal. To help States plan their nuclear counter-terrorism activities, integrated nuclear security support plans were created. These various efforts conducted numerous missions during 2006, and United States experts have participated in most such missions.

(b) **Training courses, workshops and curricula:** The Nuclear Non-Proliferation Act of 1978 mandated that the United States Department of Energy establish and operate safeguards and physical security training programmes for persons from States having or expecting to have programmes using nuclear material and equipment for peaceful purposes. Accordingly, the Department of Energy and IAEA, with State Department funding support, have jointly been presenting, in alternating years, both an International Training Course on the Physical Protection of Nuclear Materials and Facilities and an International Training Course on State Systems of Accounting for and Control of Nuclear Materials. A Physical Protection course was held in 2006 in Albuquerque, New Mexico, and the United States and IAEA co-sponsored numerous international, regional and national nuclear security training courses and workshops in 2006. In addition, the United States has been working in collaboration with IAEA and other IAEA member States to develop technical guidance and training modules on specialized nuclear material security topics, including the security of nuclear material transportation.

(c) **Illicit trafficking database programme:** The United States continues to actively support the work of the IAEA's Illicit Trafficking Database programme. In this voluntary programme, 90 member States have agreed to notify each other of illicit trafficking incidents. (Notable new member States include Iraq, India and Pakistan, all of which joined in 2006). Notification by government authorities of such incidents provides a valuable source of information that helps IAEA and member States better understand illicit movements of nuclear and radioactive material. By providing timely notification of incidents that meet the reporting threshold, stronger participation in this programme from member States, including the United States, can help present a more complete picture of how to better secure these materials against possible use by terrorists.

(d) **Nuclear security publications:** As part of its Nuclear Security Plan for 2006-2009, IAEA is developing a series of publications on nuclear security to provide IAEA member States with recommendations and guidance on best practices for developing, implementing, and maintaining effective programmes for the physical protection of nuclear material and nuclear facilities and for ensuring the security of other radioactive materials and associated facilities. Guidance is also being prepared to assist States in gaining better control of radioactive materials at their borders. Throughout 2006, United States experts worked closely with IAEA to ensure that documents produced as part of the series provide, among other things, adequate guidance to member States on effective and appropriate implementation of key legal and policy instruments of the international nuclear security regime, including the 1980 Convention on the Physical Protection of Nuclear Material and its 2005 Amendment, the International Convention for the Suppression of Acts of Nuclear Terrorism, United Nations Security Council resolution 1540 (2004) and the Code of Conduct on the Safety and Security of Radioactive Sources.

Conclusion

28. Effective measures to uphold nuclear safeguards and strengthen nuclear security are vital to the success of the non-proliferation regime. Through its support for strengthening IAEA safeguards, establishing the Additional Protocol as the new safeguards standard and promoting worldwide efforts to improve nuclear security, the United States has contributed in important ways to strengthening the NPT system. During the current Treaty review cycle, States parties to the NPT should make further such work a very high priority.
