ADVANCING THE AGENDA

NEW ROLES EVOLVE FOR THE IAEA SAFEGUARDS SYSTEM

BY PIET DE KLERK

When they assemble in New York in April 2000, delegations of States Parties to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) will be assessing an important element of the world's nuclear security. The States will be meeting for the Sixth Review Conference of the NPT, which seeks to halt the further spread of nuclear weapons, to encourage good faith efforts for their eventual elimination, and to preserve the right of States Parties to cooperate in the peaceful use of nuclear technology. Altogether 187 States have joined the Treaty since it opened for signature in 1968. (See box, page 12.)

Among topics on the agenda will be the IAEA international safeguards system, which governments regard as a central component of the global non-proliferation regime. Member States of the IAEA have reshaped the 40-year-old safeguards system over the past decade, specifically strengthening the Agency's capabilities to verify declared nuclear material and to detect any *undeclared* nuclear material and activities. At the same time, in addition to the IAEA's verification responsibilities in the non-proliferation area, States are working with the Agency to lay the groundwork for a potential future role: the international verification of measures related to nuclear arms control.

How are these roles evolving as a new century unfolds? And as importantly, why are States willing to accept more extensive international safeguards, including more comprehensive on-site inspections, of their nuclear programmes?

Safeguards Developments & Trends. Responsibilities of the IAEA for safeguarding the atom's peaceful use are as old as the organization itself. The Agency's mandate under its Statute -- in line with the original "Atoms for Peace" concept -- is to seek to enlarge the contribution of atomic energy to peace, health and prosperity, and at the same time, to ensure, within its ability, that IAEA assistance is not used in such a way as to further any military purpose.

Like the nuclear non-proliferation regime itself, the IAEA safeguards system has developed through an evolutionary process.

In the 1960s, the basic concepts behind safeguards were formulated. The first IAEA safeguards inspection was carried out in 1962 (in Norway). Thereafter, the number of inspections and types of facilities inspected grew slowly, as States accepted a more detailed, albeit limited, system of safeguards that covered nuclear material, equipment, and facilities.

But the quantum jump came with the NPT's entry into force in 1970. The Treaty requires non-nuclear weapon States Parties to conclude comprehensive safeguards agreements with the IAEA that cover all the State's nuclear material in all peaceful nuclear activities. The nuclear-weapon States, all of whom are party to the NPT, each has a different category of safeguards agreement in force.

By late 1999, the IAEA had 223 safeguards agreements in force with 139 States. Nearly all of these States are NPT Parties, though it must be pointed out that not all NPT Parties have brought into force such safeguards agreements with the IAEA. (To date, 52 still have not done so.)

The past decade also has seen a growing acceptance of new

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safeguards measures. Since 1997, nearly 50 States, all of which except one are NPT Parties, have granted the IAEA greater inspection rights with respect to their nuclear programmes by concluding Additional Protocols to their safeguards agreements.

Factors Driving Change. In the 1990s, a series of events combined to change the nuclear non-proliferation landscape. They included the actions of two NPT Parties -- Iraq and the Democratic People's Republic of Korea (DPRK) -- that directly challenged the established regime. Iraq was discovered to have operated clandestine nuclear programmes in defiance of its NPT obligations, and the DPRK resisted IAEA efforts to verify compliance with its NPT safeguards agreement, resistance that continues today.

The discovery of Iraq's clandestine nuclear programme particularly made it clear that the international safeguards system needed to be overhauled. Working through the IAEA throughout much of the past decade, States studied different aspects of the system, identified deficiencies, and developed improvements.The work had to be done carefully because the rights and obligations of IAEA inspectors in the effective fulfilment of their job remains an issue that touches on sensitive matters like national sovereignty.

Fortunately, since the early 1970s, national acceptance of the notion of intrusive international inspections has grown. The move began in the bilateral sphere between the United States and the former USSR, as reflected in verification arrangements in a number of arms-control agreements between the two States.

Some years later, in the 1990s, as the Cold War ideology faded and the traditional East-West dichotomy gave way to different degrees of openness, a whole range of treaties was negotiated in which on-site inspections became an essential feature. At the global level, the prime examples are the Chemical Weapons Convention and the Comprehensive Nuclear-Test-Ban Treaty. At the regional level, the features are seen in provisions of nuclear-weapon-free zones and in treaties such as the Open Skies agreement, and the Treaty on Conventional Forces in Europe, which has provisions for intrusive inspections among the parties at declared military sites and elsewhere.

In 1995, at the NPT Review and Extension Conference, States further signaled their readiness for accepting more effective IAEA safeguards. The Conference's agreed Principles and Objectives emphasized that "IAEA safeguards should be regularly assessed and evaluated" and that "decisions adopted by the Board of Governors aimed at further strengthening the effectiveness of IAEA safeguards should be supported and implemented and the IAEA's capability to detect undeclared nuclear activities should be increased."

The background to this statement is instructive. While safeguards under the NPT are "comprehensive" in nature, in practice the Agency's authority under NPT-type safeguards agreements is limited. That limitation surfaced in a dramatic way in 1991 in Iraq, which breached its NPT safeguards agreement with the IAEA.

NPT safeguards agreements principally focus on nuclear material as declared by the State. Under them, the State has an obligation to declare all nuclear material in all peaceful nuclear activities to the Agency, and the Agency has the right and obligation to ensure that safeguards are applied to all that material. In other words, the Agency has the right and obligation to ensure that the initial declaration is not only correct, but also complete.

But procedures for verifying completeness were never worked out. Moreover, the understanding of States, and tacitly acknowledged by the Agency, was always that the IAEA should not roam around the country to establish the completeness of the State's declaration. In practice, this means that once the application of safeguards has started, the Agency follows the declared material and confirms its continued peaceful use. In exceptional circumstances, in particular when the information made available by the State is not adequate for the Agency to fulfil its responsibilities under the agreement, the Agency has the right to carry out a special inspection, but after consultations with the State concerned.

Strengthened Safeguards Measures. The cummulative results of efforts to strengthen the effectiveness and improve

the efficiency of safeguards have come in two parts. The first part includes a set of strengthening measures under the existing legal authority of the model NPT-type safeguards agreement (issued as INFCIRC/153) and endorsed by the IAEA Board of Governors in 1995. This first set of strengthening measures is aimed at improving the Agency's capacity to verify declared nuclear activities.

The second part entails complementary authority that States accept by concluding a legal document known as the "Additional Protocol" with the IAEA. A Model Additional Protocol (issued as INFCIRC/540) was approved by the IAEA Board in May 1997. The Protocol incorporates the second set of safeguards strengthening measures. These measures seek to improve the Agency's capability to detect undeclared activities.

The Model Protocol has three important features. *(See the related article, page 14, for more detailed information.)*

■ States agree to provide the IAEA with more information through an expanded declaration of their nuclear programme. The expanded declaration covers a broad range of categories, going far beyond nuclear material and facilities containing nuclear material. For example, all buildings on a particular "site" have to be declared and identified regardless of their use. This provision incorporates one of the lessons from the Iraq case, where the Agency only had information about some of the buildings on the Tuwaitha site, namely the buildings where the safeguarded nuclear material was located.

■ States grant the IAEA and its inspectors greater rights of access. Access rights of safeguards inspectors under NPT-type safeguards agreements are limited. For routine inspections, they are confined to key measuring points in declared facilities. The Additional Protocol gives complementary access rights to the Agency and its inspectors. For example, access is possible to any place on a "site", or to mines, or to nuclear-related locations where no nuclear material is present, such as locations where related research and development or manufacturing activities are performed, in order to assure the absence of undeclared nuclear material and activities. Environmental sampling, either location-specific or under certain conditions wide-area, is permitted.

These types of activities will be vital to resolving questions regarding the correctness and completeness of the information provided in the State's expanded declaration, or to resolve an inconsistency relating to that information.

■ States accept certain improved and streamlined administrative procedures that are crucial for the effective implementation of safeguards. These include procedures for the designation of inspectors, for providing inspectors with multi-entry visas for at least a year, and for the use of methods for communicating between inspected sites and IAEA headquarters.

All in all, these measures strengthen the international safeguards system considerably. Important to note is that the State's acceptance of the measures is balanced by obligations and limitations placed upon the IAEA inspectorate that were carefully negotiated to protect States' interests. Complementary access provisions, for example, will not be applied in a mechanistic or systematic fashion, and the IAEA will provide the State with reports on such activities and the resulting conclusions. For sensitive facilities and locations, provisions call for managed access by the State. Provision also is made for the protection of proprietary and commercially sensitive information.

To date, the IAEA Board of Governors has approved 46 Additional Protocols: 41 with non-nuclear weapon States party to the NPT, one each with four declared nuclear-weapon States (China, France, United Kingdom, United States) and one with Cuba, the first with a State not party to the NPT.

That number is likely to increase in the run up to the NPT Review Conference in April 2000. However, the IAEA's goal of concluding Additional Protocols with all States having nuclear facilities before the Conference opens is not likely to be reached. Even so, close to 80% of all nuclear installations in the world are in States which have already concluded Additional Protocols with the IAEA.

One question now facing the international community is whether the progress to date constitutes a sufficient "critical mass" for another step. That

THE IAEA & THE NPT

Signed in 1968 and in force since 1970, the NPT has been hailed as one of the great success stories of multilateral arms control. Its main objectives are to halt the further spread of nuclear weapons; to provide security for non-nuclear-weapon States which have given up the nuclear option; to create a climate where cooperation in the peaceful uses of nuclear energy can be fostered; and to encourage good faith arms-control negotiations leading to the eventual elimination of nuclear weapons. While opinions differ among States as to how successful the NPT has been in achieving these goals, most are of the view that the world is a safer place with the Treaty than it would be without it.

Meeting in 1995 at the NPT Review and Extension Conference, Parties to the Treaty took a series of decisions. They indefinitely extended the Treaty; adopted Principles and Objectives for Nuclear Non-Proliferation and Disarmament; strengthened the Treaty's review process; and reaffirmed the importance of universal adherence to the NPT and called upon all States in the Middle East to accede to the Treaty and accept comprehensive IAEA safeguards.

As of December 1999, the NPT had 187 States Parties. Depositary governments are the Russian Federation, United Kingdom, and United States.

IAEA Roles & Responsibilities. Under the NPT, the IAEA has been entrusted with the specific role as the international safeguards inspectorate and is generally recognized as the multilateral channel for the transfer of technology for peaceful uses of nuclear energy. IAEA responsibilities emanate from Articles III and IV, respectively. In practical terms, the Agency has roles in connection with a number of other Articles. In practice, the IAEA has been entrusted with verification pursuant to Articles VII (nuclear-weapon-free zones) and to Article VI (in the context of safeguarding ex-weapon nuclear material).

Overall, the NPT is a rather simple document, consisting of only ten Articles, the longest of which is six paragraphs. The details of verification of the Treaty's obligations are left for negotiation in the framework of the IAEA's responsibilities and roles. The resulting safeguards agreements and subsidiary arrangements go into much greater detail and constitute the Treaty's verification system.

The full text of the Treaty, as well as the latest status list of Parties, is accessible in the "Documents" section of the IAEA's *WorldAtom* Internet site at www.iaea.org. For other related Internet sites in the nuclear non-proliferation field, see the box on page 8.

step would make the conclusion of an IAEA comprehensive safeguards agreement plus an Additional Protocol the new norm for non-nuclear weapon States under the NPT. The Agency has not made any assumptions in this regard, since such considerations are the responsibility of NPT Parties.

A primary focus of the IAEA's present efforts is to obtain an optimal combination of the traditional and the new safeguards measures. The new measures should not simply form a new layer on top of the old ones. Indeed, as our confidence in the absence of undeclared nuclear activities in a State grows, the more leeway there may be to reduce some of the traditional measures. This is, however, not an easy task. Conceptually it is not easy because the traditional measures are based on declared installations and the accounting of nuclear material. The new measures are geared towards obtaining credible assurances about the absence of undeclared nuclear material and activities. It is not evident how these two quantitative and qualitative components can be best integrated. For the next few years, the issue of integration is the IAEA's highest priority, and the first step will be to come up with guidelines for drawing conclusions about the absence of undeclared nuclear activities.

Safeguards Assistance to States. Implementing safeguards is not the only IAEA activity to promote nuclear non-proliferation. Within its mandate and Statute, the Agency has provided assistance to States in the negotiation and implementation of nuclear-weapon-free zones (NWFZs). Since 1995, one more NWFZ (Bangkok) has entered into force, another (Pelindaba) has

been concluded, and another (Central Asia) is under negotiation. The Agency's role here is to ensure that these treaties contain adequate verification provisions which are compatible with and, if possible, enhance the NPT commitments of States party to the Treaty.

The Agency also has been active in promoting international norms for the physical protection and safe transport of nuclear material. Late in 1999, the Parties to the Convention on the Physical Protection of Nuclear Material met to consider the need to revise the Convention. *(See related article, page 32.)* Additionally, the IAEA is working with other international organizations to develop new measures against illicit trafficking in nuclear material and other radioactive sources.

Nuclear Arms Control. Progress towards nuclear disarmament has slowed down in recent years, and the balance sheet shows both positives and negatives.

One positive development is that more than 10,000 nuclear weapons have been retired and dismantled in the United States alone and the START-I targets (1600 delivery vehicles, 6000 warheads by 2001) have nearly been reached. But START-II has not been ratified and the planned START-III process is stalled.

The picture is compounded by the 1998 nuclear tests of India and Pakistan.

In line with the Principles and Objectives agreed upon at the 1995 NPT Review and Extension Conference, States adopted in 1996 the Comprehensive Nuclear-Test-Ban Treaty, though the US Senate's recent rejection of ratification has been a major setback. Moreover, since that Treaty's negotiations, the Conference on Disarmament has not made much progress on other nuclear issues.

For the IAEA, some opportunities have opened for applying its verification expertise in new areas. Since 1996, the Agency has been engaged in a joint initiative with the Russian Federation and the United States to consider practical measures for IAEA verification of weapon-origin fissile material designated by these two States as no longer required for military purposes. Substantial progress has been made in the past three years in addressing the technical, legal and financial issues associated with this joint initiative. The first priority has been to ascertain that technical solutions exist which would allow the Agency to draw independent and credible conclusions, while ensuring that no classified information could be acquired by the inspectors. Prototype inspection systems have now been developed. *(See article, page 36.)*

In the longer term, it is possible that States may call upon the Agency to verify other nuclear arms control agreements. UN General Assembly resolution 48/75 of December 1993, *inter alia,* called upon the IAEA to provide assistance to the Conference on Disarmament, if requested, with regard to development of an appropriate verification regime for a ban on the production of fissile material for nuclear weapons or other nuclear explosive devices. While the current impasse on the Conference of Disarmament's negotiations in Geneva underline the difficult political issues which remain to be resolved, the Agency's four decades of expertise in the application of safeguards may prove useful in developing the techniques and technologies required to verify a production ban on fissile material.

ADVANCING THE GLOBAL AGENDA

In summary, States have reaffirmed their view that the IAEA has an important role to play in moving forward the international agenda for nuclear non-proliferation and disarmament. They have reaffirmed their high regard for the Agency's work and responsibilities for the implementation of safeguards pursuant to State's bilateral and multilateralcommitments. As importantly, they have supported efforts to strengthen the IAEA international safeguards system, particularly through the adoption of the Model Additional Protocol. The steps have given further credence to the value placed upon the IAEA's competence and effectiveness.

As States examine how to build on this foundation in other important areas of nuclear arms verification, the IAEA's role will be extended as an effective multilateral mechanism for the realization of the world's aspirations for safe and peaceful nuclear development. ❐