

**GC**GC(43)/22  
26 August 1999

International Atomic Energy Agency

**GENERAL CONFERENCE**GENERAL Distr.  
Original: ENGLISHForty-third regular session  
Item 19 of the provisional agenda**STRENGTHENING THE EFFECTIVENESS AND IMPROVING THE  
EFFICIENCY OF THE SAFEGUARDS SYSTEM****INTRODUCTION**

1. In resolution GC(42)/RES/17(1998) on "Strengthening the Effectiveness and Improving the Efficiency of the Safeguards System and Application of the Model Protocol", the General Conference, inter alia requested the Secretariat:

- (a) "to pursue the implementation of Part 1 measures of Programme 93+2 as well as the additional protocols without delay as far as available resources permit"; and
- (b) "to continue its efforts to conceptualize and develop an integrated and cost-effective safeguards system";

The resolution affirmed:

- (c) "that strengthening the effectiveness and improving the efficiency of the safeguards system with a view to detecting undeclared nuclear activities must be implemented rapidly and universally by all concerned States and other Parties in compliance with their respective international commitments";

and supported:

- (d) "the Board's decision to request the Director General to use the Model Additional Protocol as the standard for additional protocols that are to be concluded by States and other Parties to comprehensive safeguards agreements with the Agency, which should contain all of the measures in the Model Additional Protocol".

The General Conference additionally supported the Board (of Governors of the International Atomic Energy Agency (IAEA) decisions to request the Director General:

- (e) "to negotiate additional protocols or other legally binding agreements with nuclear-weapon States incorporating those measures provided for in the Model Additional Protocol that each nuclear-weapon State has identified as capable of contributing to the non-proliferation and efficiency aims of the Protocol, when

For reasons of economy, this document has been printed in a limited number.  
Delegates are kindly requested to bring their copies of documents to meetings.

implemented with regard to that State, and as consistent with that State's obligations under Article 1 of the NPT"; and to

- (f) "negotiate additional protocols with other States that are prepared to accept measures provided for in the Model Additional Protocol in pursuance of safeguards effectiveness and efficiency objectives".

It also requested:

- (g) "all concerned States and other Parties to safeguards agreements which have not yet done so to sign additional protocols promptly"; and
- (h) "States and other Parties to safeguards agreements having signed additional protocols to ratify or accept them as soon as possible".

Finally, the General Conference requested the Director General:

- (i) "to report on the implementation of this resolution to the General Conference at its forty-third regular session."

This report is pursuant to that request.

2. Since the 42nd regular session of the General Conference, the Secretariat of the Agency has continued to work towards fulfilling the mandates conferred upon it at that time. Progress has been made towards implementing a more effective and efficient safeguards system (the Strengthened Safeguards System). The work falls into three broad categories:

- (a) implementing safeguards strengthening measures within the Agency's legal authority under INFCIRC/153(Corr.) safeguards agreements (previously referred to as "Programme 93+2 Part 1 measures", as mentioned in resolution GC(42)/RES/17/(1998));
- (b) work related to the implementation of measures contained in the Additional Protocol. These measures fall within the additional legal authority conferred upon the Agency by the Model Protocol Additional to Safeguards Agreements ("Model Additional Protocol") approved by the Board of Governors of the Agency in May 1997 (INFCIRC/540(Corr.)); and
- (c) work towards integrated safeguards, or, in other words, integrating the traditional, nuclear material verification activities with the more recent safeguards strengthening measures, in particular those pursuant to the Model Additional Protocol, in order to achieve maximum effectiveness and efficiency within available resources.

Within the first two categories, work has been based on the three main technical elements of the Strengthened Safeguards System: increased access to information about States' nuclear materials and activities, increased physical access and the use of new technology. The third

category, the development of an integrated and cost-effective safeguards system, is building on the work in the first two categories and is the prime focus of current and future work. A major factor in achieving an integrated cost-effective Strengthened Safeguards System will be universal adherence to the Model Additional Protocol.

## **A. IMPLEMENTATION OF MEASURES UNDER INFCIRC/153(CORR.) SAFEGUARDS AGREEMENTS**

### Information Evaluation

3. The Director General explained in his report (GC(42)/12 of 16 September 1998) to last year's General Conference that, as a result of the specific safeguards strengthening measures of recent years, the Agency now has at its disposal more information on States' nuclear programmes than hitherto: information submitted by States; information generated by the Secretariat's verification activities; and information collected from other sources both external and internal. As more Additional Protocols enter into force, substantial further information will become available as a result of declarations made under Article 2. New software tools for storing, organizing, retrieving and analysing this information have been implemented. A broad-based process for evaluating the information has also been established and staff capability in evaluation has been strengthened. Analysing and assessing this information is a continuous process and evaluations are conducted regularly. A review and assessment group, consisting of senior Secretariat officials, reviews these evaluations and agrees on recommendations, where appropriate, for follow-up activities.

4. As a first step in this strengthened evaluation process, the nuclear programmes of all States with comprehensive safeguards agreements in force are being evaluated. As of mid-July 1999, evaluations on 22 States with nuclear programmes had been reviewed. In the second stage, these evaluations will provide a benchmark against which information later submitted pursuant to Article 2 of an Additional Protocol will be compared. This will enable the identification of areas where further amplification or clarification may be needed or where there are questions or inconsistencies to be resolved. The outcome and follow-up of these evaluations will be central to reaching conclusions as to whether there is credible assurance of the absence of undeclared nuclear material and activities in a State with an Additional Protocol in force, which in turn will be a key factor in implementing integrated safeguards. To date, one State which has submitted information under Article 2 of the Additional Protocol has become subject to this second stage of evaluation. To ensure continuing confidence in the conclusions of the evaluations, it is intended that they will be updated and reviewed annually, or as warranted by changing circumstances.

### Confidentiality

5. As last year's report to the General Conference explained, the Secretariat's regime for the protection of confidential information was initially put to the Board of Governors in March 1997 (GOV/2897 of 13 February 1997) and approved, as supplemented, in December 1997. Over and above the measures in the confidentiality regime, the Department of Safeguards commissioned a comprehensive assessment of the information security measures in place to ensure that they continue to provide the necessary degree of protection. The results, showing

the recommendations of the assessment and progress in their implementation, were reported to the Board at its December 1998 and June 1999 meetings (GOV/INF/1998/23 and GOV/INF/1999/7 respectively).

#### Access (Inspector Designations and Visas)

6. Lifting restrictions on inspector designations and granting inspectors long term multiple-entry visas enables more effective safeguards implementation and more efficient use of the Agency's inspection resources. Simplified inspector designation procedures have so far been accepted by 28 States. This has helped to reduce the average time for States' acceptance of designations from ten months in December 1993 to three months in December 1998 and, inter alia, facilitates inspection planning. The Secretariat has written to States requesting them to provide Agency inspectors, as a minimum, with one-year multiple-entry and/or transit visas. By the end of 1998, 26 States had provided designated inspectors with multiple-entry visas, 24 of which agreed to grant the visas for one year or more, and 22 States did not impose visa requirements on inspectors. Additionally, five States have Additional Protocols in force and one State is applying its Additional Protocol provisionally. The Additional Protocol provides as a matter of course for simplified inspector designation procedures and, where visas are required, for issuing multiple entry visas with a validity of at least one year.

#### Inspector Training

7. The strengthened safeguards system requires enhanced technical skills and abilities on the part of the inspector. The training curriculum for safeguards inspectors is therefore being expanded to address these requirements. Since the beginning of 1998, training sessions have been conducted on environmental sampling (four sessions), enhanced observational skills (four sessions), the nuclear fuel cycle and proliferation indicators (five sessions), enhanced design information review (one session) and information evaluation (three sessions). In addition, several seminars on topics related to the strengthened safeguards system have been held.

#### Environmental Sampling

8. In his report to last year's General Conference, the Director General recalled, inter alia, that among the new safeguards technical measures, priority had been given to the use of environmental sampling, and arrangements had been made to introduce it as a routine measure. By mid-1999, environmental samples had been collected at 12 enrichment facilities in seven States and at 73 hot cell complexes in 39 States and Taiwan, China. The initial baseline environmental signature has now been established at each of the enrichment facilities and environmental sampling is therefore being introduced into routine use at those facilities. Specialized laboratories in three Member States and within Euratom have been certified to perform analyses of environmental samples.

#### Remote Monitoring

9. Field trials of remote monitoring have been successfully completed at several types of nuclear facility. The techniques involve the transmission to Headquarters of data from

safeguards equipment, e.g. from cameras and electronic seals, without the presence of an inspector. A project which had been established to formulate policy, approaches and procedures, specify equipment, conduct field tests and develop an implementation scheme for remote monitoring was completed in December 1998. Negotiations have been initiated with Member States for its application. It is expected that the implementation of remote monitoring will improve the effectiveness and the efficiency of safeguards, for example by detecting, and responding to, a safeguards-significant event much earlier than previously. As part of the replacement programme for obsolete surveillance systems in the field, the Secretariat plans within the next two years to install containment/surveillance and other monitoring devices capable of remote transmission of data. However, remote monitoring is not yet being implemented as a routine measure because of the need for further discussions with the relevant Member States on procedures, delays in preparing the necessary arrangements for installation of equipment, and budgetary constraints. Furthermore, the role of remote monitoring in integrated safeguards is being studied.

## **B. PROGRESS IN IMPLEMENTATION OF THE ADDITIONAL PROTOCOL**

### **Conclusion of Additional Protocols**

10. Last year's report of the Director General to the General Conference recalled that, in approving the Model Additional Protocol in May 1997, the Board of Governors of the Agency had requested the Director General to proceed with the conclusion of Additional Protocols with States as set out in the Foreword to the Model. The report described the measures that the Secretariat had taken in order to respond to the Board's request, described, in general, how consultations requested by States were being conducted and also gave an account of the overall status with regard to Additional Protocols. In this regard, the report noted that as of 11 September 1998, Additional Protocols with 32 States had been approved by the Board of Governors or submitted for its approval. These covered 29 non-nuclear weapon States (NNWS) with comprehensive safeguards agreements in force or awaiting ratification, and three nuclear-weapon States (NWS). The report also said that all of these Additional Protocols had been signed, or were expected to be signed in the near future and that one Additional Protocol was in force.

11. The Secretariat has continued its efforts since last year's General Conference to encourage States to conclude Additional Protocols as a contribution to global non-proliferation objectives. Formal consultations about Additional Protocols have taken place in Vienna with ten States in the period since last year's General Conference until July. Additionally, the Secretariat has had a large number of informal contacts with other States.

12. A crucial first step towards universal acceptance of the Additional Protocol is that States which have not yet fulfilled their obligation to conclude a comprehensive safeguards agreement with the Agency should do so. Since the 42nd General Conference, one new safeguards agreement<sup>1</sup> has been approved by the Board of Governors. Nevertheless, 39 States party to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) have still not concluded the safeguards agreements required by the Treaty, despite frequent calls upon them

---

<sup>1</sup> Kuwait.

to do so, a further 12 agreements have been signed but are not yet in force, and one agreement approved by the Board has yet to be signed by the relevant State. Safeguards agreements outstanding must be concluded promptly if the full potential of the safeguards strengthening measures in the Model Additional Protocol is to be realized.

13. Since last year's General Conference, a further nine Additional Protocols have been approved by the Board, one with a NWS<sup>2</sup> and eight with NNWS<sup>3</sup>. All but three of the overall total of 41 Additional Protocols now approved by the Board have been signed. Five Additional Protocols<sup>4</sup> are now in force and one<sup>5</sup> is being applied provisionally pending ratification. At the request of the relevant State<sup>6</sup>, however, one Additional Protocol will be modified to no longer provide for provisional application.

14. Universal adherence to the Additional Protocol by the year 2000 remains a high priority for the Secretariat. Action towards this end places particular emphasis on seeking to encourage States in which safeguards are currently implemented, but which have not yet concluded Additional Protocols, to do so. In addition to its bilateral consultations with States, the Secretariat continues to use other appropriate opportunities and fora to reiterate the significance of the Additional Protocol. With this objective in mind, the Secretariat gave an in-depth presentation about the Additional Protocol in the framework of the third NPT Preparatory Committee meeting in New York in May. It is also seeking to promote the Additional Protocol as appropriate in regional settings. The Secretariat's contacts with parties to Nuclear-Weapon-Free Zone (NWFZ) arrangements are proving to be useful conduits through which further to emphasize the potential impact of the Additional Protocol on the non-proliferation regime. The Secretariat will continue with such endeavours and also seek to formulate new ideas with a view to achieving universal adherence to the Additional Protocol by the year 2000. Of Additional Protocols so far approved by the Board, 31 are with States of the North American and European regions, and six with states of the Far East and Pacific regions. To date, only two Additional Protocols have been concluded with States of the Middle East and South Asian region, only one with a State of the Latin American region, and only one with a State of the African region.

### **Preparations for Implementation of the Additional Protocol**

15. Since last year's General Conference, the IAEA Secretariat has continued to prepare for implementation of Additional Protocols and has also gained some practical experience through actual implementation and through implementation trials of protocol measures. Key aspects of all this work include:

---

<sup>2</sup> China.

<sup>3</sup> Cyprus, Hungary, Japan, Monaco, Norway, the Republic of Korea, Romania and Slovenia.

<sup>4</sup> Australia, Holy See, Jordan, New Zealand and Uzbekistan.

<sup>5</sup> Ghana.

<sup>6</sup> Armenia.

- the development of simplified guidelines for submissions pursuant to Articles 2 and 3 of the Additional Protocol by States with Small Quantity Protocols (see para.16);
- the development of internal guidelines for complementary access (see para.17);
- the development of procedures and systems for information treatment (see para.18); and
- Additional Protocol implementation and implementation trials (see para.19).

#### Guidelines for Declarations under Articles 2 and 3 of the Additional Protocol from States whose Comprehensive Safeguards Agreement Includes a Small Quantities Protocol

16. Detailed guidelines for the submission of declarations under Articles 2 and 3 of the Additional Protocol were issued in 1997. These were designed essentially for States with substantial nuclear fuel cycles. Many States with comprehensive safeguards agreements have little or no declared nuclear material and/or nuclear activities. Such States have usually concluded a "Small Quantities Protocol" (SQP), which holds in abeyance most of the detailed provisions of Part II of a comprehensive safeguards agreement. The conclusion of Additional Protocols by such States is nevertheless important, because they will provide increased assurance of the absence of undeclared nuclear material and activities in such States. However, given the circumstances of SQP States, the Secretariat concluded that it would be better to formulate specific reporting guidance for such States rather than seek to adjust the detailed guidelines for submissions under Articles 2 and 3. A simplified set of guidelines for such submissions, for use by States whose comprehensive safeguards agreement includes a Small Quantities Protocol, was issued in April 1999.

#### Development of Internal Guidelines for Complementary Access

17. The Secretariat has continued to develop, for internal use, guidelines which seek to ensure that complementary access under the Additional Protocol will at all times be carried out in an efficient, technically effective and non-discriminatory manner. Guidelines for sites have been completed and are now in use; they include guidelines for selecting places for access within a site, to facilitate implementing one of the key provisions of the Additional Protocol, i.e. access to any place on a site on a selective basis in order to assure the absence of undeclared nuclear material and activities. The Secretariat has also developed guidelines for complementary access to decommissioned facilities and is now finalizing them. Guidelines for other locations declared as having nuclear material are under development. For locations other than sites and decommissioned facilities and which are declared as having no nuclear material, access will be on a case-by-case basis and, under most circumstances, will be preceded by consultations with the State. An information document summarizing all these guidelines will be distributed to States as soon as possible.

Treatment of Information under the Additional Protocol: Protocol Data Information System

18. As noted in the report to the 1998 General Conference, a computerized system is being developed to process the information submitted by States pursuant to Articles 2 and 3 of the Additional Protocol. The Protocol Data Information System (PDIS) has been further developed during the year and is now being used to process such declarations. In addition, development has started on a stand-alone system for State use, known as the PDIS Reporter, which will enable the input of information under Articles 2 and 3 of the Additional Protocol, the merging of such data from various sources within the State and the preparation of computerized declarations for submission to the Agency. The use of this system by States will benefit the Agency, as well as the States, as it will allow the direct import of quality-controlled information into the Protocol Data Information System. The PDIS Reporter is currently being finalized; after trials in a few States the Secretariat plans to make it generally available.

Additional Protocol Implementation and Implementation Trials

19. As noted above, five States have so far brought Additional Protocols into force and one State is applying the Additional Protocol provisionally. Article 2 declarations have been received from all of these States and complementary access has been implemented in one State. These declarations either have been or are in the process of being evaluated and any necessary amplifications or clarifications sought. In addition, implementation trials are underway in a State with a large nuclear fuel cycle; these are aimed primarily at gaining practical experience in complementary access on complex nuclear sites, including logistical aspects, managed access and environmental sampling.

**C. INTEGRATED SAFEGUARDS**

20. The most important area of current and future work on the Strengthened Safeguards System is that on integrating the traditional nuclear material verification activities with the new strengthening measures. Accordingly, this is being given the highest priority. The aim is to optimize the combination of all safeguards measures available to the Agency in order to meet the Agency's safeguards objectives with maximum effectiveness and efficiency within available resources. For example, new measures to improve the assurance of the absence of undeclared nuclear material and activities in a State as a whole, in particular those contained in the Model Additional Protocol, together with new technology, may lead to the relaxation of certain traditional measures on less sensitive nuclear material and thus a reduction in the costs associated with such activities. The concept will involve a "State-level" approach through which the Agency would develop a comprehensive understanding of the nuclear activities in States, with the goal of being able to draw safeguards conclusions about the completeness and correctness of States' declarations on nuclear materials and activities. The scope for integration is expected to be greatest in States where both Comprehensive Safeguards Agreements and Additional Protocols are in force. The work on integration is focused on such situations.



21. The Secretariat has elaborated a plan for the development of integrated safeguards that reflects advice provided by the Standing Advisory Group on Safeguards Implementation (SAGSI) and takes into account the results of a consultants meeting on integrated safeguards held in December 1998. The plan includes the development and evaluation of a generic State-level approach and its application to specific fuel cycles, a re-examination of some basic safeguards implementation parameters, an examination of the relative importance of various diversion scenarios, the possibilities for further co-operation with State or Regional systems of accounting and control of nuclear material, and the formulation and reporting of safeguards conclusions for a State as a whole. The development programme is being undertaken within the Secretariat together with the assistance of a group of experts, with advice from SAGSI and with the help of a number of Member State Support Programmes. The programme is being co-ordinated by the Department of Safeguards.

22. The Secretariat's work on integrated safeguards is currently aimed at the further detailed development and evaluation of the concept of the State-level approach and on means for evaluating such an approach once developed. The work includes: (a) specifying in detail the process by which credible assurance of the absence of undeclared nuclear material and activities in a State will be achieved and maintained; and (b) having achieved that assurance, considering what measures would be appropriate to be applied to declared nuclear material to provide credible assurance of its non-diversion from declared nuclear activities.