M2.49-ROK/SSAC 99
Seminar on "IAEA Safeguards for the 21st Century"
18 - 20 October 1999
NTC/KAERI, Taejon, R.O.K.

L.6. The Basis for the Strengthening of Safeguards

Pierre Goldschmidt

Deputy Director General
Department of Safeguards
International Atomic Energy Agency

THE BASIS FOR THE STRENGTHENING OF SAFEGUARDS

P. Goldschmidt
Deputy Director General
Head of the Department of Safeguards
International Atomic Energy Agency

ABSTRACT

For the past 30 years, the International Atomic Energy Agency's safeguards system has contributed to the international non-proliferation regime, by providing, inter alia, assurances regarding the peaceful uses of declared nuclear material. However, the discovery of a clandestine nuclear weapons programme in Iraq in 1991 drew world-wide attention to the need to strengthen the system to address the absence of undeclared nuclear material and activities. Efforts to strengthen the IAEA's safeguards system began in 1991 and culminated in 1997 when the IAEA's Board of Governors approved a Model Protocol Additional to IAEA Safeguards Agreements which greatly expands the legal basis and scope of IAEA safeguards. Within this strengthened system it is expected that the IAEA be able to provide assurance not only of the absence of diversion of declared nuclear material but also on the absence of undeclared nuclear material and activities. This is to be done within a safeguards system that uses an optimal combination of all safeguards measures available, thereby achieving maximum effectiveness and efficiency within the available resources.

This paper will summarize the evolution of the safeguards system, describe strengthened safeguards, report on the status of implementing the strengthening measures, and outline plans for integrating all available safeguards measures.

INTRODUCTION

The nuclear non-proliferation regime has been and continues to be well served by nuclear material accountancy safeguards as it has evolved and been implemented for the past 30 years. However, since the end of the cold war a series of events have changed the circumstances and requirements of the safeguards systems. The discovery of a clandestine nuclear weapons programme in Iraq, the continuing difficulty in verifying the *Initial Report* (Art.62 INFCIRC/403) of the Democratic People's Republic of Korea (DPRK) upon entry into force of its safeguards agreement in 1992, and the decision of the South African Government to give up its nuclear weapons programme and join the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) in 1991 and finally the indefinite extension of the NPT in 1995, have all played a role in an ambitious effort by the IAEA Member States and the Secretariat to strengthen the safeguards system. A major milestone in this effort was reached in May 1997 when the Board of Governors approved a Model Protocol Additional to comprehensive Safeguards Agreements (published as document INFCIRC/540). On the basis of this model, individual States are invited to conclude a Protocol additional to their existing safeguards agreement. As of the end of September 1999, Protocols additional to safeguards agreements had been concluded with 45 States.

Ultimately the strength of the safeguards system depends, as we shall see, upon three interrelated elements:

- Broader access to information
  i.e. the extent to which the IAEA is aware of the nature and locations of States' nuclear and nuclear-related activities and the early and regular provision of this information;

- Increased physical access to location
  i.e. the extent to which IAEA inspectors have physical access to relevant locations for the purpose of providing independent verification of the exclusively peaceful intent of a State's nuclear programme; and

- Use of improved technology
  such as remote monitoring and environmental sampling.

TRADITIONAL SAFEGUARDS

The basic undertaking of each non-nuclear weapon State party to the NPT is to accept IAEA safeguards on *all* nuclear material within the State's territory or under its jurisdiction or control. Under a comprehensive safeguards agreement based on INFCIRC/153, a State is required to establish and maintain a system of accounting for and control of all nuclear material subject to safeguards. Material accountancy records, consistent with accepted accountancy procedures and practices, are maintained by operators for each facility under safeguards. Facility operators, through the cognizant State authorities, report to the Agency details of all receipts and shipments of nuclear material and periodically submit a detailed list of nuclear material that exists in the facility's inventory at a particular point in time based on a physical inventory taking. These data provide the basis for the Agency's independent verification activities.

Safeguards conclusions are based on an assessment that the facility material accountancy system is in conformity with accepted accounting principles and that there has been no nuclear material misstatement (through independent verification of nuclear material flows and inventories). However, the assurances provided by the safeguards system pertain mainly to the correctness of information provided by the State and very little to the completeness of that information. The reason is that the inspector's access under "comprehensive safeguards agreements" is limited under routine inspections to specified locations, called *Strategic Points*, in the declared facilities in order to conduct material accountancy verifications. With this limited access the Agency's ability to detect undeclared nuclear fuel cycle activities that make no use of safeguarded material or facilities is minimal. This was essentially the situation that came to light in Iraq following the Gulf War. This fundamental limitation was addressed at length through the Agency's development "Programme 93 + 2" which lead to strengthened safeguards and the negotiation of the Additional Protocol.

STRENGTHENED SAFEGUARDS SYSTEM

In February 1992, the scope of a comprehensive safeguards agreement was firmly re-iterated by the Board as not limited only to nuclear material declared to the Agency but also including all nuclear material in the State subject to safeguards under the agreement. The requirement that the safeguards system provides assurances that a State's nuclear material declarations are correct and complete is at the core of strengthened safeguards.

The conceptual approach for strengthened safeguards derives from the fact that a State's nuclear programme (present and future) involves an interrelated set of nuclear activities that require, and/or are indicated by, the existence of certain equipment, a particular infrastructure, tell-tale traces in the environment, and a predictable use of nuclear materials. In other words, a set of relevant indicators could be used as to provide the IAEA with the basis for a conceptual assessment of the absence or presence of clandestine activities. This assessment is founded on an Expanded Declaration by the State designed to cover all aspects of its nuclear activities and on an enhanced inspection access.

The strengthened safeguards system encompasses three elements:

- The traditional nuclear material verification measures, which were described in the previous section.

- The strengthening measures within the legal authority under comprehensive safeguards agreements. They are known as the "(93+2) Part I " measures, and were approved by the Board between 1992 and 1995. They are described in the next paragraph.

- The strengthening measures, known as "(93+2) Part II ", which were approved by the Board in May 1997 in the Model Protocol Additional to Safeguards Agreements.

Measures Approved Prior to May 1997 [1] *" More Access"*

The process of strengthening and otherwise improving the safeguards systems has been underway for some time. During 1991 the Board considered, and in 1992 confirmed, *the right of the Agency to use special inspections* as provided for in "comprehensive safeguards agreements". In 1992 the Board took decisions regarding *the early provision of design information* as to allow effective planing of the safeguard implementation, and in February 1993 the Board endorsed a State *Voluntary Reporting* scheme on imports and exports of nuclear material and exports of specified equipment and non-nuclear material.

In June 1995 following a two and a half year programme for development and testing of measures for strengthening safeguards and improving their cost effectiveness (Programme 93+2), the Board agreed to the Director General's plan to proceed immediately with the implementation of those measures deemed to be within the legal authority provided by

[1] Often referred to as (93 + 2) Part I.

existing comprehensive safeguards agreements. Measures being implemented under such legal authority, in addition to the expanded use of unannounced inspections, include:

Additional information and Co-operation from States

Design Information and fuel cycle operations

Early provision of Design Information is incorporated in all new and most existing Subsidiary Arrangements.

States have to provide information on nuclear fuel cycle operations, particularly those prior to the starting point of safeguards, and on certain closed-down or decommissioned nuclear facilities which: (i) were built but where nuclear material was never introduced or (ii) where the facilities were closed down and the nuclear material was removed prior to the entry-into-force of the "comprehensive safeguards agreement".

Voluntary Reporting Scheme

The Voluntary Reporting Scheme now includes 52 Member States, including the main nuclear suppliers. By the end of 1998, a total of 2590 reports on the production of source material or the export of pre-safeguards[2] nuclear material intended for non-nuclear uses and 435 reports on the export of equipment and non-nuclear materials had been received.

Increased co-operation with SSAC

In the '93+2' Part I strengthened safeguards system, increased co-operation with State systems of accounting and control of nuclear material (SSACs) is an important element in allowing the Agency to improve its efficiency, while maintaining or enhancing safeguards effectiveness. An SSAC questionnaire dealing with the legal basis and technical capabilities of SSACs was sent during 1996 to 59 States and two regional systems (EURATOM and ABACC). The Secretariat is analyzing the information received and assessing the capabilities of the SSACs with a view to expanded co-operation while preserving the IAEA requirement to be able to draw its own independent conclusions.

Environmental sampling

Among the new safeguards technical measures, emphasis is being given to the use of environmental sampling, and arrangements have been made to introduce it as a routine measure for the detection of undeclared nuclear material and activities at the Strategic Points of the facility. Implementation of environmental sampling has so far focused on enrichment facilities and selected facilities with hot cells. By mid-1999 baseline sample collections (giving a reference date of the nuclear activities status in a facility to be compared with any future modification) had been carried out in 12 enrichment facilities in 7 States and 73 hot cell complexes in 39 States and Taiwan, China. The IAEA Clean Laboratory for Safeguards for the handling, screening, analysis, and archiving of environmental samples has been fully operational since July 1996. The IAEA Network of Analytical Laboratories has been extended to include laboratories with specialized capabilities for the analysis of environmental samples. The extended network now includes laboratories in three Member States and within Euratom with more expected in the near future.

---

[2] nuclear material of composition and purity not suitable for fuel fabrication or for being isotopically enriched, they are involved in the fuel cycle before the starting point of safeguards.

Use of advanced technology

Field trials of remote monitoring have been successfully completed at several types of nuclear facilities. 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 was 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 hitherto. As part of the replacement programme for obsolete surveillance systems in the field, the Secretariat will, within the next two years, install containment/surveillance and other monitoring devices capable of remote transmission of data.

However, the implementation of the remote monitoring as a routine measure is pending further discussions with the relevant Member States regarding procedures and arrangements for field installation of equipment, and because of budgetary constraints. Furthermore, the role of remote monitoring in integrated safeguards is being studied and the cost benefit of its usage appears to be dependent on its specific application .

Information evaluation

The information available to the IAEA through its traditional safeguards activities, augmented by the '93+2' Part I components (e.g. additional information from States, results from environmental sampling, information collected from open sources and information from data bases available elsewhere in the IAEA,) is systematically evaluated in "comprehensive safeguards agreement" States, for indications of nuclear activities which may not be known to the IAEA otherwise.

This process of broader information evaluation demands the availability of new software computer for storing, organizing, retrieving and analysing this information. 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.

As a first step in the '93+2' Part I 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, and for States that have an Additional Protocol in force, the above evaluations will provide a benchmark against which an expanded declaration submitted pursuant to Article 2 of an Additional Protocol described below, 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.

Training of new skills
The '93+2' Part I strengthened safeguards system (and similarly the '93+2' Part II described below in this paper) requires new skills and abilities on the part of the inspector. Training courses dealing with the collection and handling of environmental samples; enhanced observational skills; the nuclear fuel cycle and proliferation indicators; and the performance of State evaluations are now part of the Department of Safeguards regular training programme. In addition, several seminars on the strengthened safeguards system have been held. Modules of the Department's Introductory Course on Agency Safeguards for new inspectors are being added or modified to reflect the new implementation initiatives. Similar changes are being made in the training course for SSAC personnel.

Measures Contained in the Additional Protocol INFCIRC/540 [3] *"Further Access"*

The '93+2' Part I strengthening measures being implemented under "comprehensive safeguards agreements" provide greater IAEA access to information. However to better meet the objectives of a strengthened safeguards system, *further* information and *wider* access, far beyond the Strategic Points within the declared nuclear facilities, is required.

Measures provided for in the Protocol Additional to Safeguards Agreements approved by the Board in May 1997 include:

- information about, and inspector access to, all aspects of a State's nuclear fuel cycle from uranium mines to nuclear waste and any other location where nuclear material intended for non-nuclear use is present;
- information on, and short-notice inspector access to, all buildings on a nuclear site;
- information about, and inspection mechanisms for, fuel cycle-related research and development;
- information on the manufacture and export of sensitive nuclear-related technologies and inspection mechanisms for manufacturing and import locations;
- the collection of environmental samples, when deemed necessary by the IAEA, beyond declared locations (*wide-area environmental sampling*); and
- administrative arrangements that improve the process of designating inspectors, the issuance of multi-entry visas (necessary for unannounced inspections) and IAEA access to modern means of communications.

A selection of these measures are worth concentrating on further:

Increased Provision of information *(Art. 2 and 3)*
The Additional Protocol in combination with the Safeguards Agreement provides for as complete a picture as practicable of a State's production and holdings of nuclear source material, the activities for further processing of nuclear material (for both nuclear and non-nuclear application), and of specified elements of the infrastructure that directly support the State's current or planned nuclear fuel cycle. Elements of the *Voluntary Reporting* scheme are incorporated in the Additional Protocol as a legal obligation.

---

[3] previously referred to as "93+2" Part II.

Complementary access rights *(Art. 4 and 5)*
Increased access for inspectors is provided to help assure that undeclared nuclear activities are not concealed within declared nuclear sites or at other locations where nuclear material is present. Inspection mechanisms are also provided for instances where there appear to be inconsistencies between all information available to the IAEA and the declaration made by a State regarding the whole of its nuclear programme or where there are questions relating to that declaration.

Extended Environmental sampling *(Art. 5,6 and9)*
The collection of environmental samples is a new technical measure available to the Agency under the '93+2 Part I strengthened safeguards system. However, the Additional Protocol greatly adds to the value of this measure by extending its application beyond the narrow area of the Strategic Points defined within a facility, to any location and building in the nuclear Site. In addition to the so-called location-specific application of environmental sampling, the Additional Protocol also provides for the future application of environmental sampling in a wide-area mode. Procedures to implement wide-area environmental sampling require, however, the approval by the Board of Governors.

Improved Inspector designation process - Multi-entry Visas - Access to Communication systems *(Art. 11,12 and 14)*
The Additional Protocol also contains measures that address three long-term administrative problems. States will be obliged to provide inspectors with multi-entry visas covering at least a time period of one year and to accept simplified inspector designation procedures, whereby an inspector approved by the Board is automatically designated to a State party to the Additional Protocol unless the State objects within three months of notification of the Board's action. Further, the Agency is assured of access to modern means of communication (i.e., satellite) existing in a State or, if satisfactory means do not exist, the State is obliged to consult with the Agency regarding other ways to meet Agency communication needs.

Protecting Confidentiality *(Art. 15)*
State's concerns regarding the confidentiality of sensitive information to be provided to the IAEA under the Additional Protocol were addressed through requirements that the IAEA maintain a stringent regime for the protection of such information and that the regime be periodically reviewed and approved by the Board of Governors.

Finally, it is useful to recall that the relationship between the Additional Protocol and the Safeguards Agreement is specified in Article 1 of the Additional Protocol. The Safeguards Agreement and the Additional Protocol - once concluded - are to be read as a single document with, in cases of conflict, the provisions of the Additional Protocol prevailing.

IMPLEMENTING THE ADDITIONAL PROTOCOL

By the end of September 1999, Protocols additional to safeguards agreements have been concluded with 45 States. They cover 40 non-nuclear-weapon States with "comprehensive safeguards agreements" in force or awaiting ratification (including seven States that have concluded a "Small Quantities Protocol" (SQP) with their safeguards

agreement), four nuclear-weapon States and one State with an INFCIRC/66-type agreement. Five such protocols have entered into force (three in SQP States) and one protocol is being implemented provisionally pending formal entry into force. The Secretariat is continuing actively to encourage States to conclude Additional Protocols as a contribution to global nuclear non-proliferation objectives.

The work involved in preparation for and actual implementation of the Additional Protocol includes:

- the development of guidelines for submissions of the specific Information required pursuant to Articles 2 and 3 of the Additional Protocol;
- the development of model language for Subsidiary Arrangements;
- the development of IAEA internal guidelines for complementary access;
- the development of procedures and systems for information processing; and
- the development of operational procedures for protocol implementation on a State-by-State basis.

Information Guidelines
Specific guidelines have been developed by the Secretariat defining the additional, largely qualitative, information to be provided by States to the IAEA under Articles 2 and 3 of the Additional Protocol. The guidelines will help States formulate internal procedures and regulations to ensure that the necessary information can be made available to the Secretariat. The guidelines document was sent out to States in 1997. A simplified version of the guidelines has been prepared in April 1999 for SQP States (States whose safeguards agreements have a protocol suspending certain provisions of those agreements due to the small quantities of nuclear material in their territory). Most of the information sought under Articles 2 and 3 of the Additional Protocol is new to IAEA safeguards. Accordingly, these "Guidelines" documents will be subject to revision on the basis of the experiences of the IAEA and the State.

Subsidiary Arrangements
Under the Model Additional Protocol, subsidiary arrangements may be requested by the State or the IAEA to incorporate additional details about implementation. The Secretariat has developed model language which can be drawn upon, as required, to address such matters as communication channels between the State and the IAEA, general modalities relating to complementary access, modalities relating to locations where the State anticipates a continuing need for managed access and the implementation of measures relating to communications systems.

Complementary Access Guidelines
Guidelines have been developed for performing complementary access both for access to buildings at sites and for access to locations where nuclear material is situated or nuclear fuel cycle-related activities are performed. These guidelines will ensure that complementary access is carried out in an efficient, technically effective and non-discriminatory manner. The use of managed access is an important provision of the Additional Protocol; guidelines for managed access are also being prepared.

Information Processing

Under the Additional Protocol the Secretariat will receive much more information than previously about State's nuclear programmes and there is a need to deal with the receipt, quality control, storage and use of that information for evaluation purposes. A computerised Protocol Data Information System (PDIS) has been developed to meet this need. Specific features are being included to ensure the confidentiality of information. The PDIS is now being used to process declarations by States pursuant to Articles 2 and 3 of the Additional Protocol. 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 States, as well as the Agency, as it will allow the consolidated collection of data in the State, its maintenance and 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.

Implementation Procedures

Progress has been made in preparing the procedures necessary for the initial implementation of the Additional Protocol in the relevant States. Such preparations include defining procedures for evaluating Article 2 declarations, for planning and carrying out complementary access under the Additional Protocol and for the issuance of reports by the Agency under Article 10. 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.

INTEGRATING ALL SAFEGUARDS MEASURES

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 highest priority. The aim is to optimize the combination of all safeguards measures available to the IAEA in order to meet the IAEA'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 being developed will involve a "State-level" approach, on a non-discriminatory basis, through which the IAEA 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.

The Secretariat is working on integrated safeguards, specifically, 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 while minimizing the costs to each of the IAEA, the State and the facility Operators. It will be necessary for the Secretariat to gain experience in implementing the Additional Protocol to better assess the effectiveness and efficiency of integrated safeguards.

IAEA Safeguards for the 21st Century

Nuclear Training Center, Korea Atomic Energy Research Institute
Taejon, Republic of Korea, 18-20 October 1999

The Basis for the Strengthening of Safeguards

P. Goldschmidt
Deputy Director General
Head of the Department of Safeguards

International Atomic Energy Agency

Outline

- Summarize evolution of the safeguards system
- Describe strengthened safeguards
- Report on status of implementation
- Outline plans for integration

International Atomic Energy Agency

A Changing Political Framework

- The dissolution of the former Soviet Union
- Iraq, South Africa, DPRK
- Other disarmament initiatives
- Indefinite extension of NPT

And IAEA Member States interest in strengthened and more cost-effective safeguards

IAEA Safeguards

- A technical verification system imbedded in a political and legal framework
- Traditional Safeguards based on nuclear material accountancy
- Involves independent verification activities (e.g., measurements, observations, book audits) on a selected portion of the inventory
- A helpful analogy - the independent audit of financial accounting systems

Limitations of Traditional Safeguards

- Only partial coverage which is not continuous
- Focus is on declared materials
- Assumes a State declares everything
- Does not prevent a State from under-declaring its initial inventory
- Does not prevent a State from building secret facilities

IAEA Board of Governors March 1995

"...the safeguards system for implementing comprehensive safeguards agreements should be designed to provide for verification by the Agency of the correctness and completeness of States' declarations, so that there is credible assurance of the non-diversion of nuclear material from declared activities and of the absence of undeclared nuclear activities."

Strengthened Safeguards - Conceptual Approach

The whole of a State's nuclear programme (present and future) involves an interrelated set of nuclear activities that require or are indicated by the existence of:

- Certain equipment
- Infrastructure
- Tell-tale traces in the environment, and
- A predictable use of nuclear material

Strengthened Safeguards - Conceptual Approach

This provides the basis for a conceptual assessment involving:

- An expanded declaration
- Information evaluation
- New technical measures, and
- Enhanced inspector access

as integrated parts of an additional kind of audit function.

Strengthened Safeguards - Conceptual Approach

An audit function that involves:

- detailed technical evaluation of internal consistency of State's declaration
- point-by-point comparison between indications of activities from all information available to Agency and what State says it is doing or plans to do.

Elements of Strengthened Safeguards

- Traditional nuclear material verification activities
- Strengthening measures within legal authority under INFCIRC/153 safeguards agreements
- New measures contained in the Model Additional Protocol

Measures Before May 1997

- Early Provision of Design Information
- Voluntary Reporting Scheme
- Use of Unannounced Inspections
- Environmental Sampling
- Remote Monitoring
- Information Evaluation

International Atomic Energy Agency

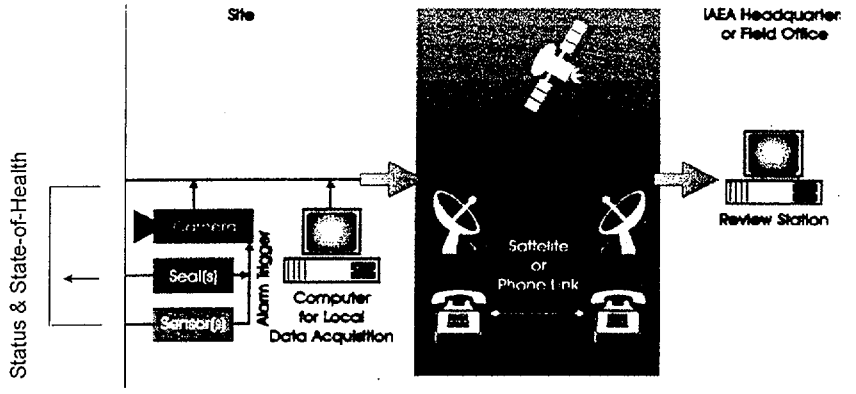
Environmental Sampling

Current Status (7/99)

- Baseline swipe sample collections in
  - 12 enrichment facilities
  - 73 hot cell complexes
- IAEA Clean Laboratory
- Network Laboratories in 3 Member States and within Euratom

International Atomic Energy Agency

Remote Monitoring



International Atomic Energy Agency

Analysis of Information

- traditional safeguards activities
- environmental sampling
- open sources
- other data bases available at the IAEA

→ overall picture of State's nuclear fuel cycle

International Atomic Energy Agency

Expanded Inspector Training

- Collection and handling of environmental samples
- Enhanced observational skills
- Nuclear fuel cycles and proliferation indicators
- Conducting State evaluations
- Others

International Atomic Energy Agency

Measures Contained in the Additional Protocol

- Information About, and Inspector Access to, All Aspects of a State's Nuclear Fuel Cycle

  - From Mines to Nuclear Waste -
- Information on, and Short-Notice-Inspector Access to, All Buildings on a Nuclear Site
- Information About, and Inspector Access to, Other Locations Where Nuclear Material for Non-Nuclear Uses is Present
- Information About, and Inspection Mechanisms for, Fuel Cycle-Related R&D

International Atomic Energy Agency

Measures Contained
(continued)

- Information on the Manufacture and Export of Specified Equipment and Non-Nuclear Materials - Inspection Mechanisms for Manufacturing and Import locations
- Collection of Environmental Samples Beyond Declared Locations
- Administrative Arrangements
  - Visas
  - Inspector designation
  - Access to communication means

International Atomic Energy Agency

The Additional Protocol and Comprehensive Safeguards Agreement

= as complete a picture as practicable of State's nuclear fuel cycle, but never 100% assurance

International Atomic Energy Agency

Status of Implementation September 1999

- 45 States have concluded Additional Protocols; Additional Protocols have entered into force in 5 States plus in one State provisionally
- Universality issue: Additional Protocols concluded with US, UK, France, China and Cuba; under negotiation with Russia
- NNWSs with Small Quantity Protocols (SQPs) concluding Additional Protocols (7 SQP States have concluded Additional Protocols with 3 in force)

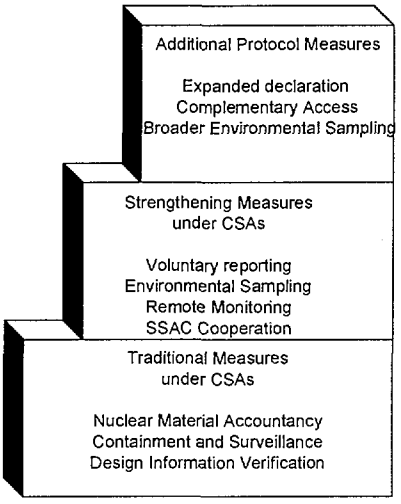
International Atomic Energy Agency

Internal Arrangements and Procedures

- Guidelines for provision of information
- Model language for Subsidiary Arrangements
- Guidelines for complementary access to sites
- Protocol data information system (PDIS) and PDIS Reporter (for States' use)
- Procedures for Protocol implementation

International Atomic Energy Agency

Strengthened Safeguards System



Integrated Safeguards

To optimize combination of all measures available to achieve maximum effectiveness and efficiency within available resources

International Atomic Energy Agency

Page 21/Basis for Strength.SG/Goldschmidt/Korea/Oct.99

Summary
Integrated Safeguards

- **Based on "State-Level" approach where State evaluation plays key role.**
- **Must be non-discriminatory.**
- **As Agency develops ability to provide credible assurance of absence of undeclared activities, reductions should be possible in some traditional safeguards activities, particularly on less sensitive material.**

International Atomic Energy Agency

Page 22/Basis for Strength.SG/Goldschmidt/Korea/Oct.99