Safeguards

Objective

To provide credible assurance to the international community that nuclear material and other items placed under safeguards are not diverted or misused; for States with comprehensive safeguards agreements, to provide credible assurance that all nuclear material remains in peaceful activities; and to support the efforts of the international community in connection with nuclear disarmament.

Safeguards Conclusion for 2006

At the end of each year, the Agency draws a *safeguards conclusion* for each State with a safeguards agreement in force, based upon the evaluation of all information available to it for that year. With regard to States with comprehensive safeguards agreements (CSAs), the Agency seeks to conclude that all nuclear material remained in peaceful activities. To draw such a conclusion, the Secretariat must conclude: (i) that there is no indication of diversion of declared nuclear material from peaceful activities (including no misuse of declared facilities or other locations to produce undeclared nuclear material); and (ii) that there is no indication of undeclared nuclear material and activities for the State as a whole.

In order to conclude that there is no indication of undeclared nuclear material and activities for the State as a whole, and ultimately to be able to draw the broader conclusion that all nuclear material remained in peaceful activities, the Secretariat considers the results of its verification and evaluation activities under CSAs *and* the results of its verification and evaluation activities under additional protocols (APs). Therefore, for the Agency to draw such a broader conclusion, both a CSA and an AP must be in force, *and* the Agency must have been able to conduct all necessary verification and evaluation activities. For States that have CSAs in force but no APs, the Agency does not have sufficient tools to draw safeguards conclusions regarding the absence of undeclared nuclear material and activities for the State as a whole. For such States, the Agency draws conclusions, for a given year, with respect to whether *declared* nuclear material remained in peaceful activities.

In 2006, safeguards were applied for 162 States with safeguards agreements in force with the Agency. Seventy-five States had both CSAs and APs in force. For 32 of these States, the Agency concluded that all nuclear material remained in peaceful activities. For 43 of the States, the Agency had not yet completed all the necessary evaluations and could therefore only conclude that the declared nuclear material remained in peaceful activities. Similarly, for 78 States with CSAs in force but without APs, the Agency was only able to draw that conclusion.

Three States had in force item specific safeguards agreements which require the application of safeguards to specified nuclear material, facilities and other items or material. For these States, the Secretariat concluded that nuclear material, facilities or other items to which safeguards were applied remained in peaceful activities. Five nuclear weapon States had voluntary offer safeguards agreements in force. Safeguards were implemented with regard to declared nuclear material in selected facilities in four of the five States. For these four States, the Agency concluded that nuclear material to which safeguards were applied in selected facilities was not withdrawn, except as provided for in the agreements, and remained in peaceful activities.

"In 2006, safeguards were applied for 162 States with safeguards agreements in force with the Agency."

As of 31 December 2006, 31 non-nuclear-weapon States party to the NPT had yet to bring CSAs into force pursuant to the Treaty. For these States, the Secretariat could not draw any safeguards conclusions.

A broader conclusion was drawn for the first time for Austria, Chile, the Czech Republic, Greece, Ireland, Luxembourg, Mali and Portugal, and was reaffirmed for 24 States.

Safeguards Implementation Issues

Democratic People's Republic of Korea (DPRK)

Since December 2002, the Agency has remained unable to perform any verification activities in

the DPRK, and could not, therefore, draw any safeguards conclusion.

Islamic Republic of Iran (Iran)

During 2006, the Director General submitted five reports to the Board of Governors on the implementation of the NPT safeguards agreement in Iran. The Board adopted one resolution on the subject.

"... the number of States party to the NPT that had yet to conclude CSAs decreased from 36 to 31."

Iran continued to implement its CSA and, until 6 February 2006, implemented the AP on a voluntary basis. In a letter dated 6 February 2006, Iran informed the Agency that its voluntary commitment to implement the AP had been suspended as of that date and that the implementation of safeguards measures would be based only on its CSA.

On 4 February 2006, the Board of Governors adopted a resolution in which it, inter alia, underlined that outstanding questions can best be resolved and confidence built in the exclusively peaceful nature of Iran's nuclear programme by Iran responding positively to the calls for confidence building measures deemed necessary by the Board. The Board also requested the Director General to report on the implementation of that resolution and the previous ones to the UNSC.

During 2006, the clarification of certain aspects of the scope and nature of Iran's nuclear programme remained unresolved. The issue of the source(s) of low enriched uranium (LEU) and high enriched uranium (HEU) particles found at locations where Iran declared that centrifuge components had been manufactured, used and/or stored remains unresolved. Iran did not make any new information available to the Agency concerning its P-1 or P-2 centrifuge programmes. Iran has not provided a copy of a 15 page document describing the procedures for the reduction of UF_6 to uranium metal and the casting and machining of enriched and depleted uranium metal into hemispheres. The issue of plutonium experiments has not yet been resolved satisfactorily.

While the Agency was able to verify the non-diversion of declared nuclear material in the State in 2006, Iran's decision to suspend its voluntary commitment to implement the provisions of the AP and its insufficient cooperation and transparency limited the Agency's ability to clarify outstanding issues with a view to drawing a conclusion regarding the absence of undeclared nuclear material and activities in Iran.[1]

On 31 July 2006, the UNSC adopted resolution 1696 (2006), inter alia, demanding that Iran suspend all enrichment related and reprocessing activities, including R&D, to be verified by the Agency; and requesting that the Director General report to the Council by 31 August 2006 on whether Iran had established full and sustained suspension of all activities mentioned in the resolution and on the process of Iranian compliance with all the steps required by the Board. The Director General submitted a report to the Board of Governors on that date, and in parallel to the UNSC. On 23 December 2006, the UNSC adopted resolution 1737 (2006) in which it decided, inter alia, that Iran "shall provide such access and cooperation as the Agency requests" to verify the suspension of nuclear activities as outlined in the resolution and to resolve all outstanding issues identified in Agency reports and requested a report from the Director General of the IAEA within 60 days.

Conclusion of Safeguards Agreements and Additional Protocols

The Agency continued to facilitate the conclusion of safeguards agreements and APs. As a result of these and other activities, the number of States party to the NPT that had yet to conclude CSAs decreased from 36 to 31. APs entered into force for seven States during 2006, so that by the end of 2006, 78 States had APs in force (Fig. 1). Four States signed APs in 2006, and five States had APs approved by the Board of Governors.

Small Quantities Protocols (SQPs)

Following a decision by the Board of Governors in 2005, the Agency initiated exchanges of letters with all States having SQPs in order to give effect to the modifications in the standard text and the

[1] In a letter dated 27 April 2006, Iran "…declare[d] its preparedness to resolve the remaining issues providing timetable, within next three weeks, provided that the nuclear dossier is returned back in full in the framework of the Agency".

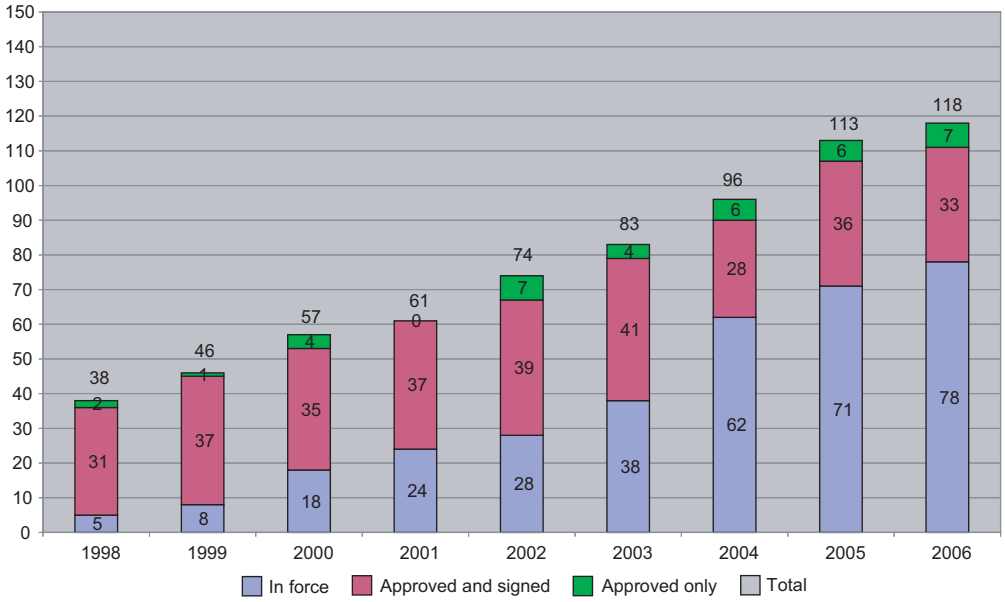

FIG. 1. Number of APs in force and approved by the Board of Governors at the end of 2006.

change in the SQP criteria. During 2006, the SQPs were amended to reflect the modified text for nine States. An SQP was rescinded and one became non-operational. By the end of 2006, there were 73 States with operative SQPs requiring modification in accordance with the Board's decision.

Implementation of Integrated Safeguards

Integrated safeguards (IS) were implemented throughout 2006 in Australia, Bulgaria, Hungary, Indonesia, Japan, Norway, Peru, Slovenia and Uzbekistan, and implementation was initiated in Latvia and Poland. Preparations were being made for implementing the approved IS approach for Canada. In addition, IS approaches were developed and approved for Bangladesh and Ghana.

Technical meetings took place between the Agency and the EC to discuss implementation of safeguards in the EU non-nuclear-weapon States, with particular regard to IS. The Secretariat, the EC and the EU Member States will continue consultations on safeguards implementation.

Significant Safeguards Projects

Japan Nuclear Fuel Limited Project

At the Rokkasho reprocessing plant (RRP), active commissioning involving the reprocessing of irradiated fuel started in March 2006. The inspection regime, which requires the continuous presence of inspectors during normal operation, was implemented at that time.

Initial design information examination and verification were completed with the final verification of the cells immediately prior to their sealing. The active commissioning period enabled the Agency to confirm the performance of safeguards systems in key areas.

The Integrated Inspection Information System (I3S), which collects safeguards data, and the partly automated system used to evaluate such data have been installed at RRP and are routinely used by inspectors. New releases of I3S have expanded its functionalities.

The On-Site Laboratory (OSL), jointly operated by the Agency and the Japanese authorities, has demonstrated its usefulness in treating and analysing a significant number of nuclear material samples in a timely manner. At the same time it has helped to reduce costs in comparison with the shipment of samples to the Agency's Safeguards Analytical Laboratory (SAL), which would have been required without the OSL.

Strengthening of Safeguards in States

Republic of Korea

A less labour intensive safeguards approach for verifying transfers of spent fuel to dry storage installations will substantially reduce the number

of inspector-days required during transfers. Implementation of unattended radiation and surveillance systems to monitor transfers of spent fuel from an on-load refuelled reactor to interim dry storage has started at some reactors in the Republic of Korea, resulting in considerable savings of inspection efforts in 2006.

China

Two flow and enrichment monitors were installed at the Shaanxi enrichment plant. They will provide continuous unattended monitoring of enrichment levels and the quantity of the product.

Chernobyl

The installation of the equipment required by the safeguards approach for the Chernobyl shelter continued. Installation of the gate monitor system at the shelter's personnel access points was successfully completed. The system (comprising neutron/gamma detectors and digital video surveillance) ensures that no undeclared movements of nuclear material take place.

Detecting Undeclared Nuclear Material and Activities

Improved Technological Capabilities and Methodologies

As part of the Agency's project for the identification and development of effective and appropriate advanced techniques, three new tasks were initiated to provide enhanced on-site inspection and verification methods and instruments. Further task proposals, covering semiconductor sensors and equipment for sampling airborne gases, are currently under consideration by two States. In addition, the project received support from 12 Member States and the EC through the acceptance by their respective support programmes of an umbrella task arrangement to facilitate the pursuit of novel technological solutions to meet safeguards needs. Further contact with R&D organizations and experts was supported by Member State support programmes. Recognizing the growing use of laser methods for the rapid on-site analysis of materials, elements and isotopes, a technical meeting was convened on laser spectrometry through the novel technologies project. The experts agreed that laser spectrometry was an effective and cost effective alternative to some existing inspection methods, as well as a novel solution for emerging safeguards verification and detection needs.

Environmental Sampling

Environmental sampling continues to be used extensively to confirm the absence of undeclared nuclear material and activities in facilities and locations subject to inspections and complementary access. In 2006, SAL completed the installation of a new room for the chemical treatment of radioactive environmental samples prior to mass spectrometry measurements. The 14 laboratories of the Network of Analytical Laboratories performing environmental sample analysis, including SAL, were used at full capacity in 2006.

Information Analysis and Remote Monitoring

The Agency's project to re-engineer the safeguards information system continued in 2006. By the end of 2006, phase I of the project, on physical architecture and standards, was completed, and phase II, dealing with the installation of the architecture and development of common building blocks, was halfway to completion.

A new approach for the secure transmittal of sensitive correspondence between the Republic of Korea and the Agency was implemented in October 2006.

"... the Agency implemented an innovative mechanism to diversify the sources of safeguards relevant data."

In 2006, the Agency's Nuclear Trade Analysis Unit analysed available information on covert nuclear procurements. In response to General Conference resolutions, the Agency implemented an innovative mechanism to diversify the sources of safeguards relevant data. Pursuant to this mechanism, a number of Member States have agreed to facilitate the provision of safeguards relevant information to the Agency by their nuclear related industries.

By the end of 2006, there were 130 surveillance and radiation monitoring systems operating in remote monitoring mode in 14 States.[2] The application of this technology has resulted in

[2] And in Taiwan, China.

enhanced effectiveness and efficiency of safeguards implementation.

Assistance to State Systems of Accounting for and Control of Nuclear Material

State systems of accounting for and control of nuclear material (SSACs) are fundamental to effective and efficient safeguards implementation. To help States establish and strengthen their SSACs, IAEA SSAC Advisory Service (ISSAS) missions were conducted in Serbia and Singapore during 2006. An invitation from Switzerland to conduct an ISSAS mission in 2007 was accepted by the Agency.

Ten national, regional and international training courses were conducted for State personnel where assistance was provided to enable States to fulfil their obligations under safeguards agreements and APs.

Tenth Safeguards Symposium

A symposium on international safeguards, the tenth since 1965, was held in Vienna in October. More than 500 experts from over 60 countries addressed safeguards issues in sessions organized under five topics: current challenges to the safeguards system; further strengthening of safeguards practices and approaches; improving the collection and analysis of safeguards information; advances in safeguards techniques and technology; and future challenges. Participants emphasized the importance of strengthening the overall framework of safeguards, including inter alia: encouraging States to bring APs into force; developing tools to help identify clandestine transfers of sensitive nuclear technology; and fostering greater understanding of safeguards through better education. ■