

SAFEGUARDS

PROGRAMME OBJECTIVE

To determine, through the application of the Agency's safeguards system, whether States are complying with the undertakings in their safeguards agreements with the Agency.

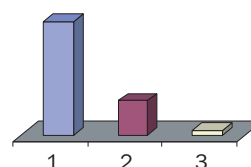
Regular budget expenditure: \$70 617 231

Extrabudgetary programme expenditure (not included in chart): \$10 311 459

Note: Verification activities in Iraq pursuant to UN Security Council resolutions included extrabudgetary expenditures of \$1 639 859

OVERVIEW

In fulfilling the safeguards obligations of the Agency in 2000, the Secretariat — having evaluated all the information acquired in implementing safeguards agreements and all other information available to the Agency — found no indication of diversion of nuclear material placed under safeguards or of misuse of facilities, equipment or non-nuclear material placed under safeguards. On this basis, the Secretariat concluded that the nuclear material and other items placed under safeguards remained in peaceful nuclear activities or were otherwise adequately accounted for.



1. Operations: \$52 532 674
2. Development and Support: \$15 972 980
3. Management: \$2 111 577

In 2000, in respect of seven States, the Secretariat — having evaluated all the information obtained through activities pursuant to these States' comprehensive safeguards agreements and additional protocols as well as all other information available to the Agency — found no indication either of diversion of nuclear material placed under safeguards or of the presence of undeclared nuclear material or activities in those States. On this basis, the Secretariat concluded that all nuclear material in those States had been placed under safeguards and remained in peaceful nuclear activities or was otherwise adequately accounted for. In the case of the 12 other States with comprehensive safeguards agreements and additional protocols in force, the Secretariat's evaluations had not yet reached the stage where such a conclusion could be drawn.

The Agency is still unable to verify the correctness and completeness of the initial report of nuclear material made by the Democratic People's Republic of Korea (DPRK) and is, therefore, unable to conclude that there has been no diversion of nuclear material in that State. The DPRK remains in non-compliance with its safeguards agreement. Although the safeguards agreement between the DPRK and the Agency remains binding and in force, the Agency is able to implement only some of the required safeguards measures in the DPRK. The Agency has, however, been able to monitor the "freeze" on the DPRK's graphite moderated reactors and related facilities, as requested by the United Nations Security Council and as foreseen in the "Agreed Framework" of October 1994 between the United States of America and the DPRK.

The Agency continued to implement protocols additional to safeguards agreements. The first steps of implementation in several Member States in 2000 have been to review initial State declarations and request any necessary clarifications or amplifications.

As of 31 December 2000, 224 safeguards agreements were in force with 140 States (and with Taiwan, China). At the end of 2000, safeguards agreements, which satisfy the requirements of the NPT, were in force with 128 States.

Safeguards agreements were signed with The Former Yugoslav Republic of Macedonia and with the Republic of Yemen. These agreements had not entered into force by the end of the year. A safeguards agreement with Andorra was approved by the Board of Governors.

By the end of 2000, protocols additional to safeguards agreements for 57 States had been approved by the Board of Governors and 53 had

“One of the Agency’s priorities in 2000 was the continued development of concepts for integrating traditional nuclear material verification activities with new safeguards strengthening measures ...”

been signed. Eighteen such protocols were in force with Australia, Azerbaijan, Bulgaria, Canada, Croatia, the Holy See, Hungary, Indonesia, Japan, Jordan, Lithuania, Monaco, New Zealand, Norway, Poland, Romania, Slovenia and Uzbekistan. Furthermore, an additional protocol with Ghana was being implemented provisionally pending entry into force.

One of the Agency’s priorities in 2000 was the continued development of concepts for integrating traditional nuclear material verification activities with new safeguards strengthening measures as foreseen in the Model Additional Protocol. Integrated safeguards will allow the redistribution of resources from inspection activities to other measures, such as State evaluations and complementary accesses, designed to detect undeclared nuclear material or activities, and thereby enhance the level of assurance the Agency provides to Member States with respect to nuclear non-proliferation. Substantial progress was made on developing an inte-

grated safeguards conceptual framework in 2000, as reported in two information papers prepared for the Board of Governors in March and December.

In 2000, approaches under integrated safeguards were prepared for three generic facility types: LWRs without mixed oxide (MOX) fuel, research reactors and spent fuel storage facilities. In addition, the first State level approach under integrated safeguards was prepared for Australia — which has an additional protocol in force — for implementation in 2001.

The Agency used satellite imagery data to support the evaluation of both open source information and additional protocol declarations for several countries. Investigations continued on setting up an imagery unit to establish the Agency’s own analytical capabilities and expertise in this area, thereby lessening the dependence on Member State capabilities.

Important management measures were implemented during the year. The restructuring of two operational divisions resulted in greater work efficiencies, thus allowing better use of the experience of inspectors in particular types of facilities. Furthermore, the Agency’s safeguards technical services were restructured with an emphasis on project management. Through this re-organization, managers were given full control and responsibility over specific product lines which will be of benefit for inspectors as well as developers. Other important measures included upgrading of the regional offices in Tokyo and Toronto to section level.

Activities in nuclear weapon States were reviewed to ensure that the Agency is carrying out only essential activities in the most efficient manner. In addition, travel cost reductions were initiated by agreeing with Euratom to reduce by half the number of High Level Liaison Committee meetings and agreeing with Argentina, Brazil and ABACC to increase the number of meetings at Headquarters rather than in the respective countries.

The Agency continued to investigate the possibilities for further savings offered by the

creation of new regional offices and increased co-operation with State Systems of Accounting and Control. In preparing a results based programme for the 2002–2003 biennium, needs exceeding \$110 million were nevertheless identified to cover the Agency's mandated activities as compared with a zero real growth budget of \$82.1 million. It should be noted that under the constraints of a zero real growth budget, the costs of safeguards equipment required for the Rokkasho reprocessing plant (Japan) would not be covered.

OPERATIONS

Since 1997, the number of activities related to the negotiation and implementation of additional protocols has steadily increased. Additional protocols were signed by Azerbaijan, Estonia, Namibia, Peru, the Russian Federation, Switzerland, Turkey and Ukraine, and entered into force in Azerbaijan, Canada, Croatia, Bulgaria, Hungary, Lithuania, Norway, Poland, Romania and Slovenia, bringing the total number of additional protocols in force to 18 by the end of 2000.

Of the Euratom non-nuclear-weapon States, Finland, Germany, Greece and Sweden notified the Agency that additional protocols had been ratified by their respective governments, bringing the total number of European Union States having ratified additional protocols to six (Netherlands and Spain ratified in 1999). Ratification by all 15 member countries is required before any European Union additional protocol can enter into force. Pending entry into force, field trial preparatory activities began in Finland and in the Netherlands. The purpose of these trials is to test selected elements of the Model Additional Protocol, in particular site definition, Article 2 declaration submissions, complementary access, reporting of results and development of modalities for the division of responsibility between the Agency, Euratom and their respective Member States.

The Agency has maintained a continuous inspector presence in the Nyongbyon area since May 1994 and has been monitoring a "freeze" on the graphite moderated reactors

and related facilities in the Democratic People's Republic of Korea (DPRK) since November 1994.

Technical discussions and working group meetings were held in 2000 between the Agency and the DPRK. During the technical discussions, the Agency presented its generic requirements for the verification of the correctness and completeness of the DPRK's initial declaration. The Agency was permitted to identify some of the documents that need to be preserved; however no agreement could be reached on how to preserve the information.

The Agency also explained to DPRK representatives that the work required to verify that

“Since 1997, the number of activities related to the negotiation and implementation of additional protocols has steadily increased.”

all nuclear material subject to safeguards in the DPRK had been declared to the Agency and placed under safeguards would take three to four years, and would require full co-operation on the part of the DPRK, which at that stage was not forthcoming.

The Agency's safeguards activities in Iraq under the comprehensive safeguards agreement concluded pursuant to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) were implemented as part of the activities carried out by the Agency in Iraq pursuant to UN Security Council Resolution 687 (1991) and related resolutions between 1991 and 1998. However, since December 1998, and in spite of the adoption of Resolution 1284 (1999) which confirms the Agency's mandate in Iraq, the Agency has not been in a position to implement its mandate.

In the absence of any resumption of Security Council mandated activities, the Agency conducted a physical inventory verification in January 2000 (related to the 1999 programme) and in January 2001 (related to

the 2000 programme) under the safeguards agreement between Iraq and the Agency pursuant to the NPT. Agency inspectors were able to verify the presence of the nuclear material under safeguards at the Tuwaitha storage facility.

Activities of the Agency's Action Team for Iraq focused on improving its computer based inspection and analytical tools, as well as analysing the information accumulated during inspection activities, including those prior to 2000.

“Major developments with regard to the implementation of additional protocols included the conclusion of Subsidiary Arrangements ... with Indonesia and Japan.”

Further progress was made in the negotiation of Subsidiary Arrangements in connection with safeguard agreements: 21 new and 5 revised Facility Attachments entered into force, namely for facilities in Argentina (8), Brazil (8), Czech Republic (3), Hungary (1), Indonesia (1), Islamic Republic of Iran (1), Japan (1), Norway (1), Romania (1) and Spain (1). In addition, draft Facility Attachments for Ukrainian facilities were discussed with the State authorities.

Major developments with regard to the implementation of additional protocols included the conclusion of Subsidiary Arrangements for the implementation of these protocols with Indonesia and Japan. A proposal for Subsidiary Arrangements pursuant to an additional protocol for Poland was received and is being reviewed.

Initial declarations pursuant to additional protocols were received and evaluated by the Agency for Hungary, Indonesia, Japan, Jordan, Monaco, and Norway. The initial declarations from the remaining States for which additional protocols entered into force in 2000 are expected in the early part of 2001. Annual Article 2 declaration updates from

Australia, Ghana, New Zealand, Holy See and Uzbekistan were received and evaluated in 2000.

State evaluation reports were prepared by the Agency for review by the Information Review Committee (IRC) for 28 States compared with 18 in 1999 and 10 in 1998. Among the 28 States, the following have signed an additional protocol: Austria, Bulgaria, Canada, Denmark, Ghana, Greece, Hungary, Indonesia, Japan, Jordan, Lithuania, Netherlands, Monaco, Norway, Philippines, Poland, Slovenia, Turkey, Republic of Korea and Uruguay. Evaluations for Ghana, Jordan and Monaco considered information declared under Article 2.

The Agency conducted complementary access visits to confirm the absence of undeclared nuclear material and activities in Australia, Ghana, Indonesia, Japan and Uzbekistan. In addition, two visits were made to clarify certain aspects of past nuclear activities in Uzbekistan. Furthermore, a visit to New Zealand was carried out for the purpose of evaluating the content of nuclear material holdings at the Institute of Geological and Nuclear Sciences.

A report documenting the additional protocol implementation trial with Japan was published (EPR-66) and sent to all Member States.

In addition, the Agency implemented measures foreseen under the Model Additional Protocol in Taiwan, China. These included the receipt and review of declarations pursuant to Article 2 of the Model Additional Protocol and complementary access.

In November, a seminar was held in Minsk, Belarus, on technical, legal and policy aspects concerning the conclusion and implementation of additional protocols. The seminar was arranged by the Agency at the request of Belarus and other States in the region. Those participating in the seminar included Belarus, Estonia, Latvia, Lithuania and Ukraine.

The Agency implemented strengthened safeguards through a number of measures, includ-

ing the installation or replacement of equipment. In addition to already operating remote monitoring (RM) systems, RM is now in use at five facilities in South Africa, one facility in Switzerland and two LWR facilities in Japan, bringing the total number of RM systems in routine use to 21 at the end of 2000. In Ukraine, the installation of an unattended monitoring system at Chernobyl Unit 2 completed the safeguards approach for this facility. Replacement of analogue by digital surveillance systems was completed at a further 15 LWRs in Japan and at 12 LWRs and one on-load reactor (OLR) in the Republic of Korea. In the latter State, six LWRs have digital surveillance data remotely transmitted to the Agency. With regard to the implementation of safeguards in LWRs in the Republic of Korea, a working group concluded its final report. It contains a cost-benefit analysis of data transfers from LWRs to the Agency, showing significant savings in favour of a safeguard approach based on remote data transmission. The installation of RM devices was based on site specific cost-benefit analyses.

Unattended radiation monitoring (URM) systems were installed in two experimental prototype plutonium fuelled reactors in Japan to monitor flows into and out of areas that are difficult to access and verify. Also, URM systems were installed to monitor core loading and discharge of a fast breeder reactor in Japan. A URM system is now in routine use at the spent fuel dry store at Paks, Hungary.

Unattended non-destructive assay (NDA) measurement systems are now in routine use at two MOX fabrication plants in Belgium, this system being an essential component of the New Partnership Approach (NPA) arrangements with Euratom. In addition, an unattended NDA measurement system for the verification of spent fuel flow into transport containers for long term dry storage is in use at one reactor facility in Germany.

With regard to the verification of spent fuel transfers, tests were carried out on unattended monitoring systems for spent fuel transfers to medium term storage in Belgium and Germany. Furthermore, a new safeguards

approach for spent fuel transfer to dry storage from a CANDU type reactor was implemented in India. This approach is based on establishing a database for the fingerprints of canisters with spent fuel. In the same context, enhanced spent fuel measurements were also applied for the verification during spent fuel transfers to the dry storage of an Armenian nuclear power plant. In Ukraine, preparatory activities were carried out for the verification of spent fuel

“The safeguards approach for Japan Nuclear Fuel Ltd. (JNFL), which will be the largest reprocessing facility under Agency safeguards, was further developed.”

transfers from Zaporozhe. Spent fuel transfers to dry storage facilities continued for the greater part of the year in the Czech Republic, Hungary and Lithuania.

New techniques and procedures were used in the course of the Agency's verification activities related to the spent fuel canning campaign at the BN-350 fast breeder reactor in Kazakhstan. For example, a spent fuel Multi-Integrated Monitoring System enables inspectors to continuously maintain knowledge over movements of nuclear material in a complex environment. A Spent Fuel Coincidence Counter is used for quantitative (partial defects) verification of irradiated fuel and blanket items. The reactor core unloading activities were monitored throughout the campaign, and the canning of all core fuel was completed by mid-October 2000, bringing the total number of spent fuel assemblies conditioned into canisters to nearly 2800 items. The core emptiness was verified successfully by mid-November 2000. All canning activities for the BN-350 are planned for completion by May 2001.

The safeguards approach for Japan Nuclear Fuel Ltd. (JNFL), which will be the largest reprocessing facility under Agency safeguards, was further developed. Material Balance Area (MBA) boundaries and corre-

sponding Key Measurement Points were identified. The Agency participated in the planning and design of the on-site laboratory (OSL), which is under construction. A list of the equipment required for the facility and the OSL, together with their preliminary costs for a budgetary estimate, was established and conceptual specifications were prepared for the design, procurement, installation, testing and acceptance of the safeguards equipment hardware. In that context, a method for the determination of impurity elements in uranium materials using inductively coupled plasma mass spectrometry was validated. The total cost for the Agency's "removable" safeguards equipment to be purchased and installed during 2002–2005 for the reprocessing facility and the OSL is estimated to be in the order of \$9 million, out of a total of \$36 million.

Enhanced safeguards measures were introduced at the reprocessing facility in Tokai, Japan, to maintain the continuity of knowledge of safeguards samples from the time of

sample taking until receipt in the Agency's Safeguards Analytical Laboratory (SAL). Swipe samples were taken outside of cells to contribute to establishing a baseline for the facility. Routine inspection activities were introduced at Other Strategic Points to confirm operational status of the facility. Quarterly Design Information Verifications (DIV) were initiated in fulfillment of the agreed DIV Plan. Two short reprocessing test campaigns were completed under a continuous inspection regime. In this respect, 323 person-days of inspection (PDI) were spent. In addition, during 2000:

- Safeguards were implemented at a new 10 MW High Temperature Gas Cooled Reactor in Nankou, China;
- A dual containment/surveillance (C/S) safeguards approach was implemented for the receipt and storage of MOX scrap that will be used in the Solution Critical Facility in Japan;
- A Short Notice Random Inspection (SNRI) scheme was implemented at four low

TABLE I. VERIFICATION ACTIVITIES

	1998	1999	2000
Inspections performed	2507	2495	2467
Person-days of inspection	10 071	10 190	10 264
Seals applied to nuclear material or safeguards equipment, detached and subsequently verified (including seals applied jointly with EURATOM)	26 824	28 044	25 484
Optical surveillance films reviewed	932	1271	873
Video tapes reviewed	4884	5033	5226
Nuclear material samples analysed	645	664	626
Nuclear material analytical results reported	1610	1587	1401
Environmental samples analysed	497	511	246
Nuclear material under safeguards (tonnes)			
Plutonium contained in irradiated fuel	593	628	642.8
Separated plutonium outside reactor core	62.4	73.1	72.2
Recycled plutonium in fuel elements in reactor cores	7.2	8.0	10.7
High enriched uranium	21.4	21.2	21.8
Low enriched uranium	49 483	51 191	48 974
Source material	90 622	92 150	91 677

enriched uranium (LEU) fuel fabrication and conversion facilities in Japan and at one such facility in Spain;

- Rehearsals of the new unannounced inspection regime were conducted at Australian facilities.

The Agency's co-operation with regional or State authorities included two Safeguards Implementation Review Group (SIRG) meetings with Ukraine addressing safeguards implementation issues. Of particular importance, furthermore, was the ASEAN workshop held in Bangkok in August 2000 to discuss the Agency's role in implementation of the South East Asian Nuclear Weapons Free Zone Treaty.

The Agency's R&D co-operation with Euratom — within the framework of the NPA — resulted in the development of a new generation of electronic seals and, in the establishment of specifications for a new generation of digital multi-camera surveillance systems. Furthermore, a working group for material balance evaluations was established and began reviewing the accountancy procedures and quality of the operator and inspector measurement systems in bulk handling facilities. A common resource sharing approach focused on equipment purchase, analytical capabilities and training. In the sphere of training, a new training course for Agency and Euratom inspectors on the NPA safeguards arrangements for specific facility types was developed.

With regard to the Agency's safeguards activities in nuclear weapon States, nuclear material specified as no longer required for military purposes was inspected at plutonium and high enriched uranium (HEU) storage facilities placed by the USA under Agency safeguards (Table I). Technical discussions on a safeguards approach for the stabilization of safeguarded plutonium resulted in the planning of a stabilization campaign in 2001, after which plutonium will be stored at another long term storage under Agency safeguards. Unless and until an agreement between the USA and the Agency enters into force under the "Trilateral Initiative", it is envisaged to apply safeguards to plutonium at this facility, under the Voluntary Offer Agreement. In France, the continu-

ity of knowledge on MOX fuel from Belgium was maintained during its re-packing for shipment to Japan. The United Kingdom continued to provide voluntarily Article 2 declaration submissions throughout 2000, pending the entry into force of the Additional Protocol between it, the Agency and Euratom.

“In the sphere of training, a new training course for Agency and Euratom inspectors on the NPA safeguards arrangements for specific facility types was developed.”

The Agency took environmental samples to complete baselines, implement routine sampling, and as part of complementary access activities under additional protocols. It also initiated discussions with two Member States for hosting environmental sampling field trials to test elements of sampling, analysis and evaluation that would be applicable to both location specific and wide area environmental sampling. The environmental sampling database became operational.

In SAL and the Network of Analytical Laboratories (NWAL), 635 samples of nuclear materials and heavy water were analysed, and 1401 results for the material accountancy verification of facility operators' declarations were provided. An additional 17 samples were measured for other safeguards purposes. SAL staff received and carried out gamma spectrometry and X ray fluorescence (XRF) screening measurements on 538 environmental samples taken by Agency inspectors to allow conclusions on the absence of undeclared nuclear activities. Both bulk and particle analyses for environmental samples were performed at the Clean Laboratory and the NWAL. Approximately 420 clean swipe sampling kits for use in routine environmental sampling were also prepared at SAL.

Improved techniques for analysing microscopic particles taken from environmental samples were developed using the secondary ion mass spectrometry (SIMS) and scanning

electron microscopy techniques. A 'fast track' method for SIMS analysis was worked out which streamlines the analysis of samples from enrichment facilities. A new XRF spectrometer system was constructed to screen environmental swipe samples for the presence of uranium with sensitivity ten times greater than the earlier system. In a related activity, laboratory space was leased from the Austrian Research Centre Seibersdorf for the ashing and chemical preparation of radioactive environmental swipe samples taken from hot cell facilities. And a highlight in the area of quality assurance was the attainment of ISO 9002 certification for the Agency's Clean Laboratory.

DEVELOPMENT AND SUPPORT

With regard to the support and development of unattended monitoring systems, RM equipment was installed and tested with positive results at storage facilities in Ukraine and Belarus. For both facilities satellite transmission of data is used; however, some aspects need clarification prior to routine transmission of data to Agency Headquarters. Under a joint support programme, field trials of a complex RM system for verification of CANDU spent fuel transfer to dry storage were undertaken in Argentina. Feasibility studies were carried out for application of RM involving a fresh fuel (HEU) store at a research reactor facility in Poland. RM tests were carried out in co-operation with Euratom at one reactor facility in Sweden and one storage facility in Germany in the framework of the Swedish and German Member State Support Programmes. The results of the tests are considered important for the development of future safeguards approaches as potential problems with seals were identified and corrected.

Three on-line enrichment monitors have been installed in a down-blending facility in the USA to provide accurate information on the enrichment and concentration of uranium. In the same facility, a flow monitor was installed to measure the flow volume of the input and product outputs and a Near-Real-Time

Accountancy System for on-site evaluations was implemented.

By the end of 2000, the Agency had installed digital image surveillance systems in 24 countries. More specifically, 138 systems operating 208 cameras were in use, including 38 systems capable of operating in a remote monitoring mode. A further 53 systems were purchased for installation in 2001. Testing began of a portable surveillance system and a multiple camera system based on the same technology. New hardware is being developed to improve the robustness of the camera module in radiation environments. In addition, 24 unattended radiation monitoring systems operating 65 detector assemblies were transmitting data to the Agency.

The Agency inaugurated a Safeguards Equipment Support Facility at its Headquarters where evaluation, testing and support of surveillance systems, radiation monitoring

“And a highlight in the area of quality assurance was the attainment of ISO 9002 certification for the Agency's Clean Laboratory.”

systems and RM systems will be carried out. This facility also allows for the safe storage of safeguards equipment.

In an effort to ensure secure communications, a standard procedure was developed for processing nuclear material accounting reports received as encrypted e-mail attachments. This procedure is also used for processing data received via e-mail from ABACC, Euratom and Canada. In this context, enabling inspectors in the field to remotely access computing facilities at headquarters has long been an Agency goal. Consequently, a 'Virtual Private Network' (VPN) was developed that provides a secure,

cost effective and reliable link between inspectors in the field and the Agency. VPN allows inspectors to immediately access the Agency's local area network in Vienna for the retrieval of information. To date, over 50 inspectors have been trained in the technical and security aspects of this technology and are using the service.

The Agency has conducted exhaustive studies to ascertain the potential of the limited use of commercial satellite imagery as one tool of a strengthened safeguards regime. In 2000, the Agency established an imagery database of nuclear sites. Also, an international team of Member State supplied imagery analysts and consultants provided substantial assistance to the Agency.

A new software tool has been developed which supports the organization of open source information. The tool will bring about significant advantages for the State evaluation process, such as assistance in analysis and the creation and storage of electronic State files.

Regarding the development of concepts for integrated safeguards, the Agency prepared guidelines defining the conditions to be met by a State and activities to be performed by the Agency considered adequate for drawing a conclusion of the absence of undeclared nuclear material and activities in a State. These guidelines were reviewed by the Standing Advisory Group on Safeguards Implementation (SAGSI) and are in provisional use. Further to integrated safeguards, the Agency developed approaches for three generic facility types: LWRs without MOX fuel; research reactors; and spent fuel storage facilities. In addition, requirements were identified that must be met in order for unannounced inspections to be successfully undertaken. The Agency received support in integrated safeguards development from several Member State Support Programmes and a Group of Experts designated by the Director General.

The necessary infrastructure for implementing complementary access was further developed through the establishment of internal guidelines for all types of locations specified in additional protocols. These guidelines are

being implemented on a provisional basis. Also, the Agency issued guidelines for the processing of complementary access data packages and established a database on complementary access activities.

Based on experience previously gained in reviewing State declarations, the Agency prepared guidelines for these reviews that are now in use. In support of the declaration review and State evaluation process, new elements were added to the Physical Model.

“The Agency received support in integrated safeguards development from several Member State Support Programmes and a Group of Experts designated by the Director General.”

Moreover, a report was issued on the optimum use of the Physical Model and, a new chapter on spent fuel storage and disposal was released for use in the Agency. Additional chapters on hot cell facilities and waste management facilities were prepared with the assistance of Member State Support Programmes. Two meetings were held for consultation with Member States on safeguards for geological repositories and conditioning plants for spent fuel disposal.

The quality of the seals verification system was monitored through the inclusion of deliberately altered examples (blind seals) in the seals supplied to inspectors. In addition, the quality of surveillance review was monitored through repeated reviewing of randomly selected recording media and checking of the pertinent surveillance review records.

The safeguards training curriculum was further enhanced with new training courses that addressed the need for increased skills and knowledge of safeguards staff and Member State personnel. In addition to courses for inspectors on 'traditional' safeguards, training in the implementation of

strengthened safeguards was conducted, particularly in:

- Conducting environmental sampling;
- Evaluating information and preparing State Evaluation Reports;
- Protecting confidential information through the use of encrypted e-mail and the use of the VPN;
- Conducting complementary access and fulfilling security requirements for information;
- Updating and upgrading inspector knowledge of strengthened safeguards principles and practices;
- Enhancing inspector knowledge of nuclear fuel cycle and proliferation indicators. On this topic, the first course specifically designed for Agency country officers was organized and conducted in co-operation with the United Kingdom Support Programme.

The Agency provided training to Member State personnel to assist States in fulfilling their safeguards obligations. International and regional training courses were conducted for personnel involved in the State System for Accounting and Control (SSAC). Topics included: nuclear material accounting; basic safeguards activities; strengthened safeguards with a focus on the Model Additional Protocol; Member State requirements arising from Articles 2 and 3 of the Model Additional Protocol; and other related subjects.

Finally, the Agency conducted the Safeguards Traineeship Programme, which is designed to give young professionals from Member States with limited nuclear infrastructure the opportunity to gain adequate experience to be considered for positions in the Agency. Of the six participants who completed the nine month course, four have been offered positions as safeguards inspectors.