

## **The Safeguards Statement for 2004**

**In 2004, safeguards were applied for 152 States with safeguards agreements in force with the Agency. The Agency's findings and conclusions for 2004 are reported below with regard to each type of safeguards agreement. These findings and conclusions are based upon an evaluation of all the information available to the Agency in exercising its rights and fulfilling its safeguards obligations for that year.**

**1. Safeguards activities were implemented for 61 States<sup>1</sup> with both comprehensive safeguards agreements in force and additional protocols in force or being otherwise applied. All declared nuclear material in these States has remained in peaceful nuclear activities or has been otherwise adequately accounted for. In addition:**

- (a) For 21 of the States, the Agency completed sufficient activities and evaluation and found no indication of undeclared nuclear material or activities for the State as a whole. On this basis, the Agency concluded that all nuclear material in these States remained in peaceful nuclear activities or was otherwise adequately accounted for.**
- (b) For 37 States, evaluations regarding the absence of undeclared nuclear material and activities remain in progress.**
- (c) Three States had been found to have been previously engaged in nuclear activities of varying significance which they had failed to report. Corrective actions are being taken by these States. Verification of the correctness and completeness of their respective declarations is ongoing.**

**2. Safeguards activities were implemented for 82 States with comprehensive safeguards agreements in force, but without additional protocols in force or being otherwise applied<sup>2</sup>. All declared nuclear material in these 82 States has remained in peaceful nuclear activities or has been otherwise adequately accounted for<sup>3</sup>. One State was found to have been previously engaged in nuclear activities which it had failed to report. Corrective actions are being taken by the State. Verification of the correctness and completeness of this State's declarations is ongoing.**

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<sup>1</sup> Safeguards, including the measures of the Model Additional Protocol, were also applied in Taiwan, China, which has significant nuclear activities. With regard to Taiwan, China, the Secretariat concluded that the nuclear material placed under safeguards remained in peaceful nuclear activities or was otherwise adequately accounted for, while the Secretariat's evaluation regarding the absence of undeclared nuclear material and activities was still ongoing.

<sup>2</sup> The Agency was not able to perform verification activities in the DPRK in 2004 and could not, therefore, draw any conclusions about the nuclear material or activities for that State.

<sup>3</sup> For the 55 States with operative small quantities protocols (SQPs), the Agency's verification capability is limited. The Agency is taking action to address this issue. It should be noted, however, that the Agency is not aware of any information that would contradict the conclusions drawn in respect of such States.

**3. As of the end of 2004, 40 non-nuclear-weapon States party to the NPT had not yet brought comprehensive safeguards agreements with the Agency into force as required by Article III of that Treaty. For these States, the Agency could not draw any safeguards conclusions.**

**4. Safeguards activities were implemented at a number of nuclear facilities in three States pursuant to INFCIRC/66/Rev.2-type safeguards agreements. All nuclear material and other items placed under safeguards remained in peaceful nuclear activities or have been otherwise adequately accounted for.**

**5. Safeguards activities were implemented in selected facilities in four of the five nuclear-weapon States with voluntary offer safeguards agreements in force. All nuclear material placed under safeguards in these facilities has remained in peaceful nuclear activities or has been otherwise adequately accounted for.**

# Background to the Safeguards Statement and Executive Summary

## 1. The Safeguards Conclusions

1. The Safeguards Statement for 2004 reflects the Agency's findings and safeguards conclusions for each State. These findings and conclusions are derived from an evaluation of the results of the Agency's verification activities and of all the safeguards relevant information available to it. Sections 1.1–1.11 provide background to the Safeguards Statement. Detailed explanation of the IAEA safeguards system can be found on the Agency's website: [http://www.iaea.org/OurWork/SV/Safeguards/safeg\\_system.pdf](http://www.iaea.org/OurWork/SV/Safeguards/safeg_system.pdf).

### 1.1. States with Comprehensive Safeguards Agreements and Additional Protocols in Force or being otherwise Applied

#### Status of Implementation

2. As of 31 December 2004, 61 States<sup>4</sup> — as compared with 40 States in 2003 — had both comprehensive safeguards agreements in force and additional protocols in force or being otherwise applied. Of these, 41 States had significant nuclear activities<sup>5</sup> and 19 States had operative 'small quantities protocols' (SQPs)<sup>6</sup>. During 2004, comprehensive safeguards agreements with additional protocols entered into force with Cuba, the Seychelles and Tajikistan. The Seychelles and Tajikistan also concluded SQPs. Additional protocols entered into force for Armenia, Austria, Belgium, Denmark, El Salvador, Finland, Germany, Ghana, Greece, Ireland, Italy, the Republic of Korea, Luxembourg, Netherlands, Paraguay, Portugal, Spain, Sweden and Uruguay<sup>7</sup>. Additional protocols were signed with Albania, Cameroon, Kazakhstan, Kiribati, the Libyan Arab Jamahiriya (Libya), Mauritius, Mexico, Morocco, Niger and the United Republic of Tanzania. Additional protocols continued to be applied, pending entry into force, in the Islamic Republic of Iran (Iran) and Libya.

3. Safeguards verification included verification activities in the field as well as evaluation activities. These activities encompassed the evaluation of States' accounting reports and declarations required under comprehensive safeguards agreements and additional protocols and the evaluation of information from other sources.

#### Deriving Conclusions

4. Under a comprehensive safeguards agreement, the Agency has the right and obligation to ensure that safeguards are applied, in accordance with the terms of the agreement, on all source or special fissionable material in all peaceful nuclear activities within the State, under its jurisdiction or carried

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<sup>4</sup> See footnote 1.

<sup>5</sup> In the context of this report, a State with 'significant nuclear activities' means a State having declared nuclear material in a facility or a location outside facilities (LOF).

<sup>6</sup> See paragraph 18.

<sup>7</sup> A safeguards agreement and an additional protocol entered into force for the United Republic of Tanzania on 7 February 2005, and additional protocols entered into force for Nicaragua on 18 February 2005 and for Switzerland on 1 February 2005.

out under its control anywhere, for the exclusive purpose of verifying that such material is not diverted to nuclear weapons or other nuclear explosive devices (paragraph 2 of INFCIRC/153 (Corrected)).

5. A comprehensive safeguards agreement provides that material which has not reached the stage of the nuclear fuel cycle where its composition and purity is suitable for fuel fabrication or for isotopic enrichment is subject only to limited reporting procedures regarding imports and exports. Nuclear material which has reached that stage of the fuel cycle, and material produced at a later stage, is subject to the other safeguards procedures specified in the agreement. An inventory of such nuclear material is established on the basis of an initial report by the State, verified by the Agency and maintained on the basis of subsequent reports by the State and Agency verification. This material is said to be placed under safeguards. Evaluation of accounting reports and verification of the inventory and of inventory changes allows the Agency to confirm that the nuclear material placed under safeguards has been adequately accounted for.

6. However, under a comprehensive safeguards agreement, there are limitations on Agency access to information and locations. The Model Additional Protocol<sup>8</sup> was approved by the Board of Governors in 1997 to address some of those limitations. For a State with a comprehensive safeguards agreement and an additional protocol in force, the measures provided under the additional protocol have significantly increased the Agency's ability to detect possible undeclared nuclear material and activities.

7. Collectively, implementation of verification measures under comprehensive safeguards agreements and additional protocols enables the Agency to draw a broader safeguards conclusion for a State as a whole. This broader conclusion relates not only to the nuclear material which has been placed under Agency safeguards, but to all nuclear material of a State. As indicated in paragraph 4 above, the purpose of Agency safeguards is to verify that such material is not diverted to nuclear weapons or other nuclear explosive devices. The Agency's authority to verify the absence of activities related to the development of nuclear weapons is very limited.

8. To enable the Agency to perform its verification activities effectively and efficiently, the State needs to have complied with the terms of its safeguards agreements and additional protocol, for example, to have:

- established a State system of accounting for and control of nuclear material (SSAC);
- submitted declarations completely and in a timely manner;
- provided access, as requested by the Agency, in accordance with the provisions of the agreement and the additional protocol; and
- cooperated in resolving, in a timely manner, any questions or inconsistencies identified by the Agency in the course of its verification and evaluation activities.

9. To draw the safeguards conclusion regarding the non-diversion of nuclear material placed under safeguards, the Agency evaluates all information available to it, not only about declared nuclear material and facilities, but also about the nuclear activities in the State as a whole. This includes information on verification results, facility design features, facility operations, and all other information available about the State's nuclear and nuclear-related activities.

10. To draw a conclusion relating to the absence of undeclared nuclear material and activities for a State as a whole, the Agency also undertakes a comprehensive evaluation of the results of its

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<sup>8</sup> INFCIRC/540 (Corrected), Model Protocol Additional to the Agreement(s) between State(s) and the International Atomic Energy Agency for the Application of Safeguards.

verification activities under the relevant safeguards agreement and the additional protocol, as well as an evaluation of all information available on the State's nuclear and nuclear-related activities. In order to draw such a conclusion, the Agency needs to have:

- conducted a comprehensive State evaluation based on all information available to the Agency about the State's nuclear and nuclear-related activities (including declarations submitted under the additional protocol, and information collected by the Agency through its verification activities and other sources of information);
- implemented complementary access, as necessary, in accordance with the State's additional protocol; and
- addressed all questions and inconsistencies identified in the course of its verification and evaluation activities.

A conclusion relating to the absence of undeclared nuclear material and activities can be drawn for a State only when these activities have been completed and no indications have been found by the Agency that, in its judgement, would give rise to a proliferation concern.

11. Taken together, the two conclusions (regarding the non-diversion of declared nuclear material and the absence of undeclared nuclear material and activities) enable the Agency to draw the broader conclusion for the year in question that all nuclear material in a State remained in peaceful nuclear activities or was otherwise adequately accounted for.

12. In order to ensure consistency and quality of performance, the Agency evaluates its verification activities against performance targets. In those cases where integrated safeguards — which combines measures of comprehensive safeguards agreements and additional protocols — have not yet been implemented, the Safeguards Criteria<sup>9</sup> assume the role of performance targets. The Agency compares the verification activities performed with the requirements set out in the Safeguards Criteria, and determines the extent to which the quantity and timeliness components of the inspection goal have been attained. In cases of non- or partial attainment, the Agency extensively reviews the reason(s) for failure and takes or recommends corrective action. Under integrated safeguards, the performance targets are those set out in the integrated State level safeguards approach approved for each State<sup>10</sup>.

### **Overall Conclusions for 2004**

13. On the basis of the evaluations described in paragraphs 9–10, the Agency drew the conclusion in paragraph 1(a) of the Safeguards Statement for 2004 for 21 States — namely Australia, Bangladesh, Bulgaria, Croatia, Ecuador, Ghana, the Holy See, Hungary, Indonesia, Japan, Jordan, Latvia, Lithuania, Monaco, New Zealand, Norway, Peru, Poland, Romania, Slovenia and Uzbekistan. For two of these States — Bangladesh and Romania — this conclusion was drawn for the first time.

<sup>9</sup> The Safeguards Criteria specify the activities considered necessary by the Agency to provide a reasonable probability of detecting the diversion of a significant quantity of nuclear material placed under safeguards.

<sup>10</sup> A State level approach is based on safeguards verification objectives common to all States while taking into account the features of the State's nuclear fuel cycle and other relevant State specific factors.

14. As the evaluation process described in paragraph 10 has not yet been completed for 37 States<sup>11</sup>, the conclusion drawn for these States related only to declared nuclear material<sup>12</sup>.

## **1.2. States with Comprehensive Safeguards Agreements but no Additional Protocols in Force or otherwise Applied**

### **Status of Implementation**

15. As of 31 December 2004, safeguards were implemented for 82 States<sup>13</sup> in this category. Of these, 21 States had significant nuclear activities and 55 States had operative SQPs. During 2004, comprehensive safeguards agreements and SQPs entered into force for Cameroon and Kyrgyzstan.

16. As indicated above, safeguards verification included verification activities in the field as well as evaluation activities. These activities encompassed the evaluation of States' accounting reports and declarations required under comprehensive safeguards agreements and the evaluation of open source information. In 2004, evaluation activities were performed for all States in this category. Verification activities in the field were conducted in the 21 States with significant nuclear activities. For the 55 States which had operative SQPs, and for six additional States with minimal or no nuclear activities, the Agency drew safeguards conclusions based only on the evaluation of information.

### **Deriving Conclusions**

17. For a State with a comprehensive safeguards agreement alone, the Agency's right and obligation remain as described in paragraph 4 above. Although safeguards strengthening measures under such an agreement have somewhat increased the Agency's ability to detect such undeclared nuclear material and activities, the activities that the Agency — under such authority — may conduct in this regard are limited. Thus, the conclusion that is drawn for a State with a comprehensive safeguards agreement alone relates to nuclear material that has been placed under safeguards.

18. For a State with an operative SQP, the implementation of most of the safeguards measures provided for in Part II of the comprehensive safeguards agreements is held in abeyance as long as the quantity of nuclear material subject to safeguards does not exceed the limits set out in paragraph 37 of INFCIRC/153 (Corr.) and there is no nuclear material in a facility. Such a State is not required to submit to the Agency an initial report of its nuclear material holdings or design information for nuclear facilities. In the absence of an additional protocol, the Agency cannot perform verification activities in the field to independently verify a State's statement that it initially meets the requirements for an SQP, or that the State subsequently continues to do so. In such cases, the Agency's verification activities are limited to the evaluation of open source information. The Agency is conducting consultations with States to explore ways and means of securing the information and access required.

19. The conclusion contained in paragraph 2 of the Safeguards Statement is reported collectively for all States that have a comprehensive safeguards agreement in force but no additional protocol in force or being otherwise applied. The conclusion is drawn for each State and relates to the non-diversion of nuclear material which has been placed under safeguards and to the absence of undeclared production or separation of direct-use<sup>14</sup> material at reactors, reprocessing facilities, hot cells and/or enrichment installations under safeguards. (The process of drawing such a conclusion is described in paragraph 9). In addition, the Agency's evaluation seeks to determine whether there are any indications of undeclared nuclear material or activities in the State which would need to be reflected in the

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<sup>11</sup> See footnote 1.

<sup>12</sup> The situations in respect of Iran, Libya and the Republic of Korea are discussed in paragraphs 28–37.

<sup>13</sup> The 82 States do not include the DPRK, as the Agency was not able to perform verification activities in that State.

<sup>14</sup> Direct-use material is nuclear material that can be used for the manufacture of nuclear explosive devices without transmutation or further enrichment (e.g. plutonium and high enriched uranium). There are two categories: unirradiated direct-use material (which requires less conversion time), and irradiated direct-use material.

Safeguards Statement. However, even if no such indications are found, in the absence of the measures provided for in the Model Additional Protocol, the Agency would not have a sufficient technical basis on which to draw a credible conclusion of the absence of undeclared nuclear material and activities for the State as a whole.

### **Overall Conclusions for 2004**

20. On the basis of the evaluation described in paragraph 9, the Agency concluded for 82 of these States that the nuclear material placed under safeguards in these States remained in peaceful nuclear activities or were otherwise adequately accounted for<sup>15</sup>.

#### **1.3. States with Safeguards Agreements based on INFCIRC/66/Rev.2**

##### **Status of Implementation**

21. As of 31 December 2004, safeguards agreements based on INFCIRC/66/Rev.2 were implemented at a number of nuclear facilities in India, Israel and Pakistan. None of these States had concluded an additional protocol with the Agency.

##### **Deriving Conclusions**

22. The conclusion described in paragraph 4 of the Safeguards Statement is reported collectively for these three States. The conclusion relates to the nuclear material, facilities and other items placed under safeguards. To draw a safeguards conclusion in respect of such States the Agency evaluates all safeguards relevant information available. This includes information on verification results, facility design features and facility operations.

### **Overall Conclusions for 2004**

23. On the basis of the results of its verification and evaluation activities, the Agency concluded that the nuclear material and other items placed under safeguards in these three States remained in peaceful nuclear activities or were otherwise adequately accounted for.

#### **1.4. States with Voluntary Offer Agreements**

##### **Status of Implementation**

24. Under four of the five voluntary offer safeguards agreements in force, safeguards were implemented in 2004 at facilities selected by the Agency in four States: China, France, the United Kingdom and the United States of America. Safeguards activities in the Russian Federation were limited to the evaluation of accounting reports on the export and import of nuclear material as no facilities were selected in 2004 for inspection from the State's list of eligible facilities. All five of these States have signed additional protocols with the Agency. Although these protocols are based on the Model Additional Protocol, they vary in terms of coverage and scope.

##### **Deriving Conclusions**

25. The conclusion contained in paragraph 5 of the Safeguards Statement is reported collectively for the four nuclear-weapon States in which safeguards were applied to nuclear material in selected facilities. The conclusion is drawn for each State and relates to the nuclear material placed under safeguards at those facilities. To draw the safeguards conclusion, the Agency evaluates all relevant

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<sup>15</sup> The situation in respect of Egypt is discussed in paragraph 38.

information, including verification results and information about facility design features and operations.

## **Overall Conclusions for 2004**

26. On the basis of the results of its verification and evaluation activities, the Agency concluded that the nuclear material placed under safeguards in these four States remained in peaceful nuclear activities or were otherwise adequately accounted for.

### **1.5. States with no Safeguards Agreements in Force**

27. As of 31 December 2004, 40 non-nuclear-weapon States party to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) had yet to bring comprehensive safeguards agreements into force pursuant to the Treaty<sup>16</sup>.

### **1.6. Islamic Republic of Iran**

28. During 2004, the Director General submitted four reports to the Board of Governors on the implementation of the comprehensive safeguards agreement in the Islamic Republic of Iran<sup>17</sup>, and the Board adopted four resolutions on the subject<sup>18</sup>.

29. At the end of 2003, Iran signed an additional protocol and agreed to cooperate with the Agency in accordance with the provisions of the protocol pending its entry into force. Though Iran's cooperation improved, information — particularly that related to its past uranium gas centrifuge enrichment activities — continued to be slow in coming and was provided in reaction to Agency requests. In April 2004, Iran committed itself to a joint action plan with the Agency and to a timetable for dealing with outstanding issues regarding the verification of Iran's nuclear programme. Corrective actions are being taken by Iran. In May 2004, Iran delivered to the Agency its initial declarations under the additional protocol.

30. Verification of the correctness and completeness of Iran's declarations is ongoing. There are two major issues of direct relevance to these efforts: the origin of low enriched uranium (LEU) and high enriched uranium (HEU) particle contamination found at various locations in Iran; and the extent of Iran's enrichment programme.

31. In addition to its implementation of the comprehensive safeguards agreement and additional protocol with Iran, in 2004 the Agency performed verification activities related to Iran's voluntary suspension of enrichment-related and reprocessing activities. In November 2003, the Board had endorsed the Director General's acceptance of Iran's invitation to verify implementation of Iran's decision to voluntarily suspend such activities. In November 2004, Iran informed the Agency that it had extended the suspension to include all enrichment-related (including uranium conversion) and reprocessing activities throughout Iran. Subsequently, as endorsed by the Board<sup>19</sup>, the Agency began its verification of the extended suspension.

### **1.7. Libyan Arab Jamahiriya**

32. During 2004, the Director General submitted three reports to the Board of Governors on the implementation of the comprehensive safeguards agreements in the Libyan Arab Jamahiriya<sup>20</sup>.

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<sup>16</sup> See the Agency's website: [http://www.iaea.org/OurWork/SV/Safeguards/sir\\_table.pdf](http://www.iaea.org/OurWork/SV/Safeguards/sir_table.pdf).

<sup>17</sup> GOV/2004/11, 34, 60 and 83.

<sup>18</sup> GOV/2004/21, 49, 79 and 90.

<sup>19</sup> GOV/2004/90.

<sup>20</sup> GOV/2004/12, 33 and 59.



33. For many years, Libya pursued a clandestine programme that had been aimed at converting and enriching uranium. In December 2003, Libya informed the Agency about its clandestine programme. Libya also acknowledged that it had obtained nuclear weapon design and fabrication documents from a foreign source. The Agency initiated verification of Libya's declarations in December 2003. Corrective actions are being taken by Libya. On 10 March 2004, Libya signed an additional protocol and, pending entry into force, reiterated its earlier undertaking to act in accordance with the provisions of the additional protocol.

34. The Agency's assessment to date is that Libya's declaration regarding its uranium conversion programme, enrichment programme and other past nuclear related activities appears to be consistent with the information available to and verified by the Agency. Verification of the correctness and completeness of Libya's declarations is ongoing.

## **1.8. Republic of Korea**

35. In November 2004, the Director General submitted a report<sup>21</sup> to the Board of Governors on the implementation of the comprehensive safeguards agreement in the Republic of Korea (ROK). The additional protocol to the safeguards agreement between the Agency and the ROK entered into force in February 2004, and in August 2004 the ROK submitted its initial declarations pursuant to its additional protocol. At the same time, the ROK informed the Agency that, on a number of occasions in the past, experiments which involved uranium conversion and enrichment had been conducted. Earlier in 2004, the ROK had acknowledged, in response to Agency's enquiry, that a laboratory scale experiment had been conducted in the early 80s to irradiate a mini-fuel assembly and to study the separation of uranium and plutonium. These activities had not been previously reported to the Agency as required under the comprehensive safeguards agreement.

36. The Agency has been working with the ROK to clarify the extent of these past unreported activities. The ROK has actively cooperated with the Agency, providing information and timely access to personnel and locations. Corrective actions are being taken by the ROK.

37. On the basis of the information provided by the ROK and the verification activities carried out by the Agency, there is currently no indication that the undeclared experiments have continued. Verification of the correctness and completeness of the ROK's declarations is ongoing.

## **1.9. Egypt**

38. The comprehensive safeguards agreement between Egypt and the Agency entered into force on 30 June 1982. During the preparation of the State evaluation update for Egypt in 2004, the Agency noted a number of open source documents that indicated the possibility of unreported nuclear material, activities and facilities in Egypt. In December 2004, Egypt acknowledged that between 1990 and 2003 it has conducted experiments, which had not previously been reported to the Agency, involving the irradiation of small amounts of uranium and thorium and their subsequent dissolution. Egypt also acknowledged that it had failed to include laboratories and some imported and domestically produced nuclear material in its initial declaration. Corrective actions are being taken by Egypt, which has cooperated with the Agency and provided information and access to personnel and locations. The Agency's verification of the correctness and completeness of Egypt's declarations is ongoing.

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<sup>21</sup> GOV/2004/84.

## **1.10. Iraq**

39 On 3 and 4 August 2004, the Agency carried out a physical inventory verification of the remaining nuclear material in Iraq located at Tuwaitha and placed it under Agency seal.

40. Since 17 March 2003, the Agency has not been in a position to implement its mandate in Iraq under the relevant United Nations Security Council resolutions. Resolution 1546 (2004) reaffirmed the Security Council's intention to revisit the Agency's mandate in Iraq.

## **1.11. Democratic People's Republic of Korea**

41. Since December 2002, Agency has not been able to perform any verification activities in the Democratic People's Republic of Korea (DPRK). The Agency is therefore unable to draw any conclusions about that State's nuclear material or activities.

## **1.12. Verification Capabilities under Comprehensive Safeguards Agreements and Additional Protocols**

### **Small Quantities Protocols**

42. As described in paragraph 18, for a State with an operative SQP, the implementation of most of the safeguards measures provided for in Part II of the safeguards agreement is held in abeyance, including inspections and access for design information verification. The Agency is conducting consultations with States to address this issue.

### **Export and Import of Non-Nuclear Material and Equipment**

43. Information on the export and import of nuclear-related equipment and non-nuclear material is essential for the Agency to evaluate the nuclear and nuclear-related activities of States. Information with regard to the export of certain specified equipment and non-nuclear material is required to be provided by a number of States under an additional protocol. In order to increase the effectiveness of the Agency's evaluation of transfers of nuclear-related equipment and non-nuclear material, it is essential that all States commit themselves, by bringing additional protocols into force, to provide such information to the Agency.

### **Nuclear Related Research and Development Activities**

44. Experience has shown that a State can advance its nuclear capabilities even with very small amounts of nuclear material. The Agency, therefore, not only evaluates whether a State may have diverted material in significant quantities, but also evaluates the State's research and development (R&D) activities, including its use of small quantities of nuclear material in such activities. However, in the absence of additional protocols, there are limits to the access, information and activities available to the Agency for assessing States' R&D programmes and the uses of small quantities of nuclear material, particularly if the material is exempted from safeguards.

45. If a State has an additional protocol in force, it is required to declare its plans for the succeeding ten-year period for developing its nuclear fuel-cycle and its current nuclear fuel cycle-related R&D activities that do not involve nuclear material. Under an additional protocol, the quantities, uses and locations of certain nuclear material which has been exempted from safeguards are also required to be declared and the Agency provided with access to those locations to ensure the absence of undeclared nuclear material and activities. In addition, information on the past nuclear activities made available to the Agency considerably facilitates its verification and evaluation activities.

## 2. Strengthening the Effectiveness and Improving the Efficiency of the Safeguards System

46. In 2004, further progress was made in strengthening the effectiveness and improving the efficiency of the Agency's safeguards system through developments in several areas, such as the implementation of integrated safeguards, safeguards approaches, procedures and technology and cooperation with State and regional systems of accounting for and control of nuclear material (SSACs/RSACs).

47. During 2004, integrated safeguards, which represent the optimum combination of all safeguards measures available to the Agency, continued to be implemented in Australia, Indonesia and Norway and were initiated in Japan, Hungary and Uzbekistan.

48. The Agency continued to replace obsolete analogue surveillance systems with digital systems, the installation of unattended monitoring systems and the expansion of remote monitoring (RM) capabilities. During 2004, 69 new digital surveillance systems with 149 video cameras were installed in the field. All CANDU reactors in States with comprehensive safeguards agreements are now equipped with core discharge monitors. Furthermore, the number of systems operating with RM capabilities almost doubled during the year. By the end of the year, there were 86 surveillance and unattended fuel flow monitoring systems operating in RM mode in 11 States<sup>22</sup>.

49. Following the revelations about extensive covert networks for the supply of sensitive nuclear technology in 2004, the Agency has undertaken to strengthen its capabilities to investigate and analyse such networks. The main objective of this is to accumulate knowledge and maintain institutional memory regarding all information available on covert nuclear trade activities, and to do so in such a way as to enable pertinent analysis. This information will be used to support the State evaluation process.

50. The effectiveness and efficiency of Agency safeguards depend to a large extent on the effectiveness of SSACs and RSACs, and on the level of their cooperation with the Agency. In 2004, the Agency continued to liaise with SSACs and RSACs on safeguards implementation issues such as the quality of operators' measurement systems for nuclear material, the timeliness and accuracy of State reports and declarations and support for the Agency's verification activities.

51. The Agency has continued to consult with States on the issue of visas for designated inspectors. Almost all States with significant nuclear activities — and all States with additional protocols — have undertaken to provide designated Agency inspectors with multiple-entry visas valid for at least one year upon request by the Agency. A few States have not yet implemented this provision fully and the Agency continues to urge these States to do so.

52. The Standing Advisory Group on Safeguards Implementation (SAGSI) met several times in 2004. The main focus of its agenda was to carry out a comprehensive review of the Safeguards Criteria. SAGSI found that the Safeguards Criteria were basically sound, but that a key priority is the wider implementation of integrated safeguards. The Agency agreed with this analysis and is devoting considerable effort to developing integrated safeguards approaches. The results of that review, together with the results of a separate review of the safeguards programme by a panel of external evaluators, were presented to the Board in GOV/2004/86 dated 2 November 2004. The panel provided a generally positive assessment of the Agency's work in implementing safeguards strengthening measures given the resource constraints under which it had been working.

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<sup>22</sup> And in Taiwan, China.

### **3. Safeguards Implementation and Evaluation**

#### **3.1. At the State Level**

53. By the end of 2004, the Agency had comprehensive safeguards agreements in force with 144 States<sup>23</sup>. Additional protocols were in force or otherwise applied in 61 of them. The Agency carried out 2154 inspections and 126 complementary accesses in 63 States utilizing 14 141 calendar-days in the field (CDFs).

54. By the end of 2004, the Agency had voluntary-offer safeguards agreements in force with the five nuclear-weapon States party to the NPT. Additional protocols were implemented in China, France and the United Kingdom. Verification activities in the field were carried out in four States. The Agency carried out 103 safeguards inspections utilizing 1065 CDFs in order to verify nuclear material placed under safeguards in these States.

55. During 2004, the Agency implemented INFCIRC/66-type safeguards agreements in three States. The Agency carried out 45 inspections utilizing 403 CDFs in order to verify facilities, nuclear material, non-nuclear material and other items placed under safeguards in these States.

#### **3.2. At the Facility Level**

56. At the end of 2004, a total of 923 facilities and locations outside facilities (LOFs) were under safeguards. Agency safeguards were applied to approximately 164 000 tonnes of nuclear material, including 15 tonnes of fresh HEU and 89 tonnes of separated plutonium, and to 450 tonnes of heavy water. During 2004, 2302 safeguards inspections were performed in 598 facilities and LOFs.

### **4. Safeguards Expenditure and Resources**

57. The safeguards programme operated with an increased Regular Budget allocation following the 47<sup>th</sup> IAEA General Conference's approval of an increase of 12.4% for the Safeguards Regular Budget for 2004 (GC(47)/INF/7). In 2004, safeguards expenditure from the Safeguards Regular Budget was \$104.9 million. In addition, \$16.3 million was spent from voluntary contributions from Member States (extrabudgetary funding) on equipment, services and staff training. Safeguards expenditure in 2004 was below the expected level due to delays in the implementation of several major projects such as the ISIS Re-engineering Project (IRP) to redesign the IAEA Safeguards Information System; the Japan Nuclear Fuel Limited (JNFL) project to implement safeguards at the Rokkasho reprocessing plant; the Japanese MOX (JMOX) project to design a safeguards approach for the proposed mixed oxide (MOX) fuel facility at Rokkasho; and the Chernobyl project to implement safeguards at spent fuel conditioning and dry storage facilities at Chernobyl NPP in Ukraine. Also, the Agency was unable to carry out verification activities in the DPRK. Most of the funds for the delayed activities will be committed in 2005.

### **5. Further Activities Supporting the Nuclear Non-Proliferation Regime**

58. There are three additional important areas of Agency work which are relevant to its verification tasks: monitoring neptunium and americium; strengthening the security of nuclear material; and developing proliferation resistant nuclear energy systems.

59. The Agency continues to experience difficulties in obtaining information from States under the monitoring scheme approved by the Board of Governors in 1999 regarding separated neptunium and americium. This undermines the Agency's ability to sustain its earlier assessment regarding the

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<sup>23</sup> See footnote 1.

associated proliferation risk. An approach for neptunium verification was implemented at a European Commission laboratory. A similar approach was agreed with the Japanese authorities for the new reprocessing plant but still needs to be agreed for the existing reprocessing plant.

60. The Agency continues to provide support to States in the area of nuclear security. In 2004, the Agency continued to receive reports from Member States on events involving trafficking in nuclear and other radioactive material. The number of events involving nuclear material reported in 2004 increased as compared to those of 2003. One case of trafficking in HEU involved approximately 170 g of material and none involved plutonium in other than trace quantities.

61. Determining the proliferation resistance of future nuclear systems continued to be an important component of the Agency's International Project on Innovative Reactors and Fuel Cycles (INPRO). In addition to its work with INPRO, the Agency continued to participate in the Proliferation Resistance and Physical Protection Evaluation Methodology Expert Group of the Generation IV International Forum (GIF). Proliferation resistance became an important area of collaboration between INPRO and GIF, and further developments in these areas are expected in 2005.