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Nuclear Security Report 2009

Measures to Protect Against Nuclear Terrorism

Report by the Director General

Summary

- This report has been produced for the fifty-third regular session (2009) of the General Conference in response to resolution GC(52)/RES/10, in which the General Conference requested that the Director General submit an annual report on activities undertaken by the Agency in the area of nuclear security, highlighting significant accomplishments of the prior year and indicating programmatic goals and priorities for the year to come. This report covers the period July 2008–June 2009.

Recommended Action

- It is recommended that the Board of Governors:

  a. Take note of the Nuclear Security Report 2009;

  b. Transmit this Report to the General Conference with a recommendation that Member States continue to contribute on a voluntary basis to the Nuclear Security Fund;

  c. Call upon States to adhere to the Amendment to the Convention on the Physical Protection of Nuclear Material and to promote its early entry into force; encourage all States to act in accordance with the object and purpose of the Amendment until such time as it enters into force; implement the legally binding and non-binding international nuclear security related instruments; invite States to make full use of the assistance available for this purpose through participation in the Agency's nuclear security programme; and

  d. Encourage States to participate in the Illicit Trafficking Database programme.

Nuclear Security Report 2009

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Report by the Director General

A. Introduction

1. This report has been produced for the fifty-third regular session (2009) of the General Conference in response to resolution GC(52)/RES/10 (2008), in which the General Conference requested that the Secretariat submit an annual report on activities undertaken by the Agency in the area of nuclear security, highlighting significant accomplishments of the prior year and indicating programmatic goals and priorities for the year to come. The Agency has also produced an additional document entitled "Implementation of the IAEA Nuclear Security Plan 2006–2009: Progress Report" (available on http://www.iaea.org/About/Policy/GC/GC53/GC53Documents/English/gc53-16-att1_en.pdf and on GovAtom) setting out the main achievements and lessons learned in the implementation of the Nuclear Security Plan 2006-2009, with a short summary included in this report.

2. Recognizing that responsibility for nuclear security rests entirely with each State, the Agency provides assistance, upon request, to States in their efforts. Developing and sustaining an effective global nuclear security regime requires a variety of measures. During the reporting period, the Agency continued to assist States' efforts to build and develop a sustainable nuclear security capacity by; providing nuclear security guidance and helping States to establish comprehensive national security systems for protecting nuclear and other radioactive material, for detecting and responding to nuclear security events should such events occur, and for collecting and sharing relevant information, with due regard to the protection of confidential information.

3. International participation in data gathering and data sharing programmes through the Illicit Trafficking Database continued to increase and now involves the majority of the Agency's Member States. Participation in Agency training and educational programmes is widely sought, with nuclear security human resource development activities having reached thousands of individuals throughout the world; major public events are being protected against the threat of a malicious dispersal of radioactivity; and capabilities are being built for effective border control to guard against illicit import and export of nuclear or other radioactive material.

B. The Nuclear Security Framework

4. Adherence to the international legal instruments relevant to nuclear security continues to increase[1]. Between July 2008 and June 2009, four States, including three non-Member States, became Parties to the Convention on the Physical Protection of Nuclear Material (CPPNM), bringing the number of Parties to 141. During June 2008–July 2009, a further 10 States adhered to the Amendment

[1] Details of the nuclear security framework are set out in document "Implementation of the IAEA Nuclear Security Plan 2006–2009: Progress Report".

to the CPPNM bringing the number of adherents to 26. The Agency has highlighted on a number of occasions the importance of bringing about the early entry into force of the 2005 Amendment to the CPPNM and of acting in accordance with the Amendment's objective and purpose until such time as it enters into force. The Agency is also elaborating nuclear security guidance, in consultation with Member States, to be published in the IAEA Nuclear Security Series of publications. This guidance helps States implement a national nuclear security system.

5. The commitment to implementing the non-legally binding Code of Conduct on the Safety and Security of Radioactive Sources continues to grow, with 95 countries now having declared their intention to implement it. There has also been an increase in the implementation of the non-legally binding Supplementary Guidance on the Import and Export of Radioactive Sources. In June 2009, a technical meeting took place to share experience in implementation and to discuss related legal and technical issues.

C. Major Achievements

6. In the framework of the Nuclear Security Plan 2006–2009, the Agency continued to provide nuclear security assistance to States. In implementing that Plan, full account was taken of activities undertaken in the Agency's nuclear safety and safeguards programmes and of the synergies between safety, security and the regulatory aspects of safeguards.

7. The major achievements in the July 2008–June 2009 time period included the following:

International Symposium on Nuclear Security

8. The Agency organized the International Symposium on Nuclear Security from 30 March to 3 April 2009 at the Agency's Headquarters in Vienna. Over 500 participants from 76 countries and international organizations discussed nuclear security, the present status and directions for the future. The progress achieved during the past five to ten years was recognized, as was the general need to continue the work towards more effective nuclear security. The high attendance indicated a broad awareness of the importance of the subjects of the symposium and the written papers and posters presented showed that nuclear security matters are worked on in an increasingly systematic manner. It was also noted, however, that this is only the beginning of establishing global, sustainable nuclear security. The result of the Symposium is summarized in the President's findings[2].

9. The Symposium was organized in cooperation with relevant international and non-governmental organizations. The Symposium was a further example of strengthened cooperation among and with these organizations for nuclear security.

IAEA Nuclear Security Series

10. The Agency developed guidance, published in the IAEA Nuclear Security Series, which assists States in establishing effective and sustainable nuclear security. In the reporting period, the number of publications in the series grew from six to ten with the issuance of Implementing Guides on: Nuclear Security Culture; Preventive and Protective Measures against Insider Threats; Security in the Transport of Radioactive Material; and Development, Use and Maintenance of the Design Basis

[2] http://www-pub.iaea.org/MTCD/Meetings/Announcements.asp?ConfID=36576.

Threat. The Nuclear Security Series now contains a basic set, although still incomplete, of nuclear security guidance documents which can be used by all States in the establishment of their national nuclear security systems. Progress is also noted on the drafting process for the more general documents in the Series, covering the *essential elements of nuclear security* and general *recommendations* with concepts and approaches for prevention, detection and response.

11. Facilitating the development of Recommendations for Physical Protection of Nuclear Material and Nuclear Facilities, a document that will become revision 5 of INFCIRC/225, continued to be a priority. In parallel, efforts were accelerated in developing Recommendations for the Physical Protection of Radioactive Material and Associated Facilities. It is expected that both these documents and the Recommendations for Detection and Response will be finalized during 2010. As noted above, the work to develop nuclear security fundamentals, outlining essential elements of a nuclear security system, has progressed and a draft document is ready to be discussed in an open-ended technical meeting to be convened by the Agency.

Illicit Trafficking Database (ITDB) Programme

12. The ITDB programme continued to expand both in terms of the number of participating States and the number of reported incidents. Since 1 July 2008, seven new States have joined the ITDB programme, bringing the total number of participants to 107, as of 30 June 2009. From 1 July 2008 to 30 June 2009, 215 incidents were reported to the ITDB; of these, 102 were reported to have occurred during the reporting period and the remaining 113 were reports of prior incidents.

13. Continuing reports about incidents of illegal possession, movement and attempted sales of nuclear and other radioactive material show a persistent picture of nuclear trafficking. Strengthening measures to detect such illicit trafficking and other potential nuclear security events involving such material continues to be of high priority. The recovery rate of radioactive material reported lost or stolen remains low. During the period under discussion, only about 40% of stolen or lost radioactive material have been subsequently reported as recovered. Reports of various contaminated metal products indicate a prevailing problem in control and the attempted unauthorized disposal of such products in some countries.

Integrated Nuclear Security Support Plans (INSSPs)

14. Many States are in the process of establishing national nuclear security systems. A global nuclear security approach builds on the implementation of such national systems in a comprehensive manner and in which technical measures are combined with corresponding human resource development and the establishment of effective regulatory systems. To achieve an effective national system, work-plans are established that convey the steps to take, the work to be carried out and a timeline for projected achievements. In many cases, assistance and support is required. The Agency has responded to expressed needs of countries by establishing a process of developing *Integrated Nuclear Security Support Plans (INSSPs),* to consolidate the nuclear security needs of individual States into integrated plans for nuclear security improvements and assistance. By 30 June 2009, a total of 49 INSSPs were developed interactively by respective States and the Agency. These Plans enable the Agency, the State concerned and potential donors that could help finance the work, to coordinate activities, optimize the use of resources and avoid duplication. Experience gained in the first phases of implementation of the INSSPs, indicates that the availability of resources is fundamental for achieving the projected results.

Nuclear Security Missions

15. The Agency offers services to evaluate and assess nuclear security arrangements in States. Recognized experts from Member States participate in the mission team. Through the Nuclear Security Fund, 14 evaluation and advisory nuclear security missions were carried out between mid-

2008 and mid-2009. Of these, five were International Nuclear Security Advisory Service missions, one an International Team of Experts mission, three International Physical Protection Advisory Service missions, two International SSAC[3] Advisory Service missions and six Integrated Regulatory Review Service missions. Since 2003, about 180 evaluation and advisory missions have been carried out. Recommendations generated during these missions have assisted States in targeting national efforts to strengthen nuclear security. A large number of follow-up actions, based on the mission outcomes, have taken place, at the request of the host Government. Such actions are integrated in the INSSP, if available. These missions and follow-up actions are essential for coherent and consistent approaches guided by objectivity and Agency nuclear security guidance. Assistance with technical improvements is, as a rule, based on recommendations made in evaluation and assessment missions.

Nuclear Security Education and Training

16. The Agency continued to give high priority to human resource development for assisting States in establishing and sustaining improvements in nuclear security, which are highly dependent on having available qualified staff. In the course of the year, the Agency organized 57 training events worldwide, which involved the development of human resources in more than 105 countries in all areas of nuclear security. More than 1400 participants were trained in most areas of an effective nuclear security system; physical protection, nuclear material accounting and control, registry of radioactive sources, regulatory systems, measures to combat illicit nuclear trafficking, response to nuclear security events and in maintaining confidentiality of sensitive information. Since 2003, when the Agency accelerated its efforts in the area of nuclear security training under the first nuclear security plan, more than 300 training events have been conducted in which about 8000 participants from approximately 125 countries have been trained. Important steps have been taken to make the training self-sustained; by supporting national efforts to establish nuclear security support centres that can support national and regional training and by the implementation of academic programmes at universities in three countries.

Technical Improvements

17. Effective nuclear security requires human resources *and* technical systems. To the extent possible, because of limitations in the availability of resources, the Agency provides assistance, upon request, to States for improving technical systems at facilities or locations where nuclear and other radioactive material is used, stored or transported, establishing effective border controls or implementing nuclear security at major public events. The need for urgent technical assistance in the form of equipment and services is identified with the help of recognized international experts:

- Physical protection upgrades were made, or are in the process of being made, in 22 States to 50 facilities housing nuclear or other radioactive material. Fifteen of these locations were nuclear sites, twenty were hospitals, nine were research institutes and six were waste storage facilities. By these actions, vulnerability is reduced as is the risk for a nuclear security event involving the material.

- The Agency completed a large project of upgrading the nuclear security training facilities at the Interdepartmental Special Training Centre (ISTC) in Obninsk, Russian Federation, which has been made available for international training by the Russian Federation. Thereby, two training laboratories were equipped and three outdoor training areas were constructed. This is the first training centre with these capabilities that is open to an international audience. The ISTC's new nuclear security training facilities were inaugurated in May 2009.

[3] State system of accounting for and control of nuclear material.

- Between mid-2008 and mid-2009, the Agency provided technical assistance to 27 States to help establish effective border control. In this regard, radiation monitoring instruments are essential for being able to detect any undeclared radioactive substance in cargo or in personal luggage. The assistance included a total of 985 pieces of equipment for detecting radioactive material and the associated staff training.

- Effective nuclear security also includes measures to detect any attempt to use radioactive material for malicious purposes at a major event involving large numbers of people or high-level meetings. Specific preparedness is required as well as supplementary security arrangements. Since July 2008, thirty-nine instruments were provided in support of activities to help States ensuring the nuclear security of major public events. Nine portal monitors were provided to States in Africa, three to a State in Europe and one to a State in West Asia. Extensive training programmes were provided for preparation of staff having related responsibilities for these events.

- In some cases, effectiveness and efficiency is increased by having a central point to receive detection alarms. Such arrangements then become effective technical components of nuclear security. Remote monitoring systems were provided to four nuclear facilities housing nuclear material, one radioactive waste storage facility and one location with a high activity radioactive source (gamma irradiator).

Recovery, Conditioning and Repatriation of Disused Dangerous Radioactive Sources

18. Moving radioactive material from a vulnerable situation to secure circumstances is an important contribution for risk reduction. The Agency conducted operations to improve the security of a total of 575 radioactive sources in seven States. Thirty-one of these sources were repatriated to the supplier State. Technical arrangements for increased security were applied to 539 radioactive sources in different countries. In addition, mobile hot cell technology developed as part of the Nuclear Security Plan 2002–2005 was successfully employed for the conditioning and recovery of high activity radioactive sources (Categories 1 and 2) in remote locations without the necessary infrastructure.

Repatriation of HEU

19. The Agency assists in the repatriation of high enriched uranium (HEU) research reactor fuel, at the request of States. In August 2008, the Agency prepared and managed the arrangements for the repatriation of 7 kg of HEU spent fuel to the USA. Between mid-2008 and mid-2009, the Agency was also involved, in an auxiliary capacity, in the repatriation of four additional shipments of HEU fuel, totalling more than 40 kg, to the USA; four shipments totalling 258 kg of spent fuel to the Russian Federation; and one additional shipment of 30 kg fresh fuel to the Russian Federation. In June 2009, the Agency assisted in activities to repatriate HEU spent fuel from Romania to the Russian Federation by air, which was the first time that spent nuclear fuel has been transported in this manner.

Major Public Events

20. The Agency provided support to the Government of Peru in connection with its efforts to ensure the nuclear security of the APEC[4] CEO Summit in November 2008.

21. The Agency began preparations for projects associated with two other major public events to be held in 2010, three events in 2012 and one event in 2014.

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[4] Asia-Pacific Economic Cooperation.

Emergency Preparedness and Response

22. In July 2008, an emergency exercise, ConvEx3 (hosted by Mexico), tested the international response to a simulated accident at a nuclear power plant. The Agency used its Incident and Emergency Centre (IEC) as the global focal point for international communication and response during the exercise. One outcome was confirmation that, in order to successfully fulfil its obligations under the Early Notification and Assistance Conventions, in the event of a large nuclear accident with dispersal of radioactivity, additional human resource development as well as up to date equipment and technology will be needed by the IEC.

D. Management Issues

D.1. Funding

23. The implementation of the Nuclear Security Plan 2006–2009 continued to be heavily dependent on extrabudgetary, voluntary contributions from Member States and others to the NSF. Between July 2008 and June 2009, contributions were received from Australia, Canada, the Czech Republic, Denmark, the European Community, Finland, Ireland, Japan, the Republic of Korea, the Netherlands, New Zealand, Pakistan, Romania, Spain, Sweden, the United Kingdom and the USA. Member States continued to provide valuable assistance through 'in kind' contributions such as donations of equipment, cost free experts, the use of facilities and the hosting of meetings and training activities.

24. The table below shows NSF disbursements and expenditures for the period 2002 to the present.

NSF Disbursements and Expenditures		
2002–2003	Disbursements	US $ 5 746 043
2004	Disbursements	US $ 7 662 548
2005	Disbursements	US $ 8 828 591
2006	Disbursements	US $ 15 451 894
2007	Disbursements	US $ 15 712 282
2008	Disbursements	US $ 19 181 128
2009	Disbursements plus unliquidated obligations as of 23 July	US $ 20 130 465

25. Conditions on the use of contributions continued to affect programme implementation, in particular the determination of overall programme priorities. The Agency discusses, prior to the contribution, the conditions and planned use of the pledges to ensure, as far possible, that the priorities established in the Plan are implemented. At the start of 2009, programme implementation was further affected by delays in the acceptance of a number of contributions. As a result, a number of activities were delayed or cancelled. The underlying issues leading to the delay in accepting contributions have been addressed and programme implementation has resumed at previous levels.

26. In response to a recommendation from a panel of external experts, a Programme Support Group was established in the Office of Nuclear Security to further strengthen programme management and internal coordination.

D.2. AdSec

27. The Advisory Group on Nuclear Security (AdSec), which was established in 2002 by the Director General to advise him on the Agency's activities related to nuclear security, met twice during the reporting period and considered and made recommendations to the Director General. AdSec and the Commission on Safety Standards (CSS) agreed to establish a joint task force, to be co-chaired by the Chair of AdSec and the Chair of CSS, to discuss safety and security synergies and interfaces. The first meeting of this task force is scheduled to take place in the last quarter of 2009.

D.3. Nuclear Security Series Committee

28. In order to further enhance Member State involvement in the production of the IAEA Nuclear Security Series, the Director General decided to establish a Nuclear Security Series Committee. The objectives of the Committee will be to review proposals for new guidance documents, drafts, and final texts to ensure coherence and consistency in the development of international publications for nuclear security, and ensure their quality. Establishing a nuclear security series committee will contribute towards synchronizing the processes implemented for developing safety standards and security guidance.

E. Goals and Priorities for 2010

29. The goals and priorities for 2010 are set out in the Nuclear Security Plan 2010–2013 (circulated as document GOV/2009/54-GC(53)/18). Pursuant to that Plan, the Agency will give priority: to the completion of a comprehensive set of guidance, published in the IAEA Nuclear Security Series; to expanding the quality and completeness of the information platform; facilitating adherence to and implementation of the legal framework; and to the provision of advisory services and human resource development to underpin establishment of and sustainable improvements in nuclear security. Special attention will be given to providing assistance to newcomer States planning to use nuclear power in their energy mix.

F. Progress in implementation of the Nuclear Security Plan 2006–2009

30. The Agency has produced an additional document entitled "Implementation of the IAEA Nuclear Security Plan 2006–2009; Progress Report" (available on GovAtom and on http://www.iaea.org/About/Policy/GC/GC53/GC53Documents/English/gc53-16-att1_en.pdf). The following paragraphs provide a very brief summary the results obtained and the lessons learned during that period.

31. In the course of the implementation of the 2006-2009 Plan, the Agency published ten guidance documents, which were developed with the assistance of Member State experts.

32. Since the human resource programme started in 2002 nearly 8000 persons (5000 since 2006) from all regions have been trained, significantly contributing to capacity building and to improved nuclear security systems in these States. Risk reduction activities were also undertaken. A large number of vulnerable radioactive sources were brought into safe and secure storage, some of them repatriated to the supplying State. Physical protection arrangements were strengthened at 64 locations in 25 States. Improvements were made towards establishing effective border control functions at crossing points in 56 States. A major programme of support to ensure nuclear security at major public events — including the 2006 World Cup Final and the 2008 Olympic Games — was developed and deployed in five States. During the 2006–2009 period, the Agency directly facilitated the repatriation of a total of about 331 kg of highly enriched research reactor fuel to the supplying States.

33. Implementation of the Nuclear Security Plan 2006–2009 involved all relevant areas of the Secretariat. The mechanism established for the technical cooperation programme was used to deliver human resource development activities, primarily regional training courses.

34. The Agency has learned a number of important lessons, some applicable to States, others applicable at the regional and international levels and to the Agency. Details of lessons learned are set out in the in the Implementation of the IAEA Nuclear Security Plan 2006–2009: Progress report. The primary conclusion is that while activities carried out under the NSP have contributed significantly to national efforts to improve nuclear security, meeting the goals for global nuclear security requires further sustained efforts. For the coming years, important work will be devoted to *sustaining* the improvement of national security systems and of implementing new nuclear security guidance.