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Nuclear Security Report 2014

Report by the Director General

Summary

This report has been produced for the fifty-eighth regular session (2014) of the General Conference in response to resolution GC(57)/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, including on external users of the Incident and Trafficking Database and on past and planned activities of educational, training and collaborative networks as well as highlighting significant accomplishments of the prior year within the framework of the Nuclear Security Plan and indicating programmatic goals and priorities for the year to come. This report covers the period 1 July 2013-30 June 2014.

Recommended Action

It is recommended that the Board of Governors:

- Take note of the Nuclear Security Report 2014;
- 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;
- Note that, nine years after its adoption, the 2005 Amendment to the Convention on the Physical Protection of Nuclear Material has still not entered into force;
- Call upon States to adhere to the Amendment 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 and legislative assistance programmes;
- Encourage all States to participate in the Incident and Trafficking Database programme and in the Agency's Working Group on Radioactive Source Security;

- Encourage those States that have yet to do so to nominate representatives to the Nuclear Security Guidance Committee and, by so doing, to contribute to the establishment of internationally agreed nuclear security guidance.

Nuclear Security Report 2014

Report by the Director General

A. Introduction

1. This report has been produced for the fifty-eighth regular session (2014) of the General Conference in response to resolution GC(57)/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, including on external users of the Incident and Trafficking Database (ITDB) and on past and planned activities of educational, training and collaborative networks as well as highlighting significant accomplishments of the prior year within the framework of the Nuclear Security Plan and indicating programmatic goals and priorities for the year to come. This report covers the period 1 July 2013–30 June 2014.

2. Recognizing that responsibility for nuclear security rests entirely with each State, the Agency continued to provide assistance, upon request, to States in their national efforts to establish and maintain effective and sustainable nuclear security regimes. During the reporting period, the Agency continued to assist States' efforts to build and develop their nuclear security capacity by: establishing and providing for the application of nuclear security guidance; facilitating adherence to, and implementation of, the international legal instruments relevant for nuclear security, including facilitating the entry into force of the 2005 Amendment to the Convention on the Physical Protection of Nuclear Material (CPPNM); and helping States to establish effective and sustainable national nuclear security infrastructure. All activities were undertaken with due regard to the protection of confidential information.

3. Information on the Agency's goals and priorities for 2013–2014 was set out in paragraph 89 of the Nuclear Security Report 2013[1]. The Agency took action in the course of the reporting period to implement all the goals and priorities set out in that report.

B. The International Legal Framework

4. During the reporting period, adherence to the international legal instruments relevant to nuclear security has increased. One State became party to the CPPNM[2] and nine States adhered to the 2005

[1] Document GOV/2013/36-GC(57)/16.

Amendment to the CPPNM[3], bringing the number of Contracting States to the Amendment to 77. As of 30 June 2014, adherence by an additional 22 States was still required for the Amendment to enter into force[4].

5. The International Convention for the Suppression of Acts of Nuclear Terrorism gained seven adherents during the reporting period, bringing the number of States Parties to 94 as of 30 June 2014.

6. The Agency continued to facilitate adherence to, and implementation of, international instruments, not only through its regular activities within its legislative assistance programme, but also by holding a Treaty Event during the 57th session of the General Conference aimed at promoting universal adherence to the relevant multilateral treaties for which the Agency is depositary, including those relating to nuclear security.

7. In addition, the Agency has maintained an enhanced programme of activities to encourage States to ratify the 2005 Amendment to the CPPNM. As part of that programme, the Agency held a Seminar on the Promotion of the Entry into Force of the 2005 Amendment to the CPPNM in Vienna, Austria from 12 to 13 June 2014 to raise awareness of the Amendment among Contracting Parties to the Convention and to provide details of assistance available to facilitate their adherence to the Amendment, and its implementation. More than 60 participants from 27 States attended the Seminar. During the opening session, representatives of five States stated that they were in the final stages of adhering to the Amendment and they would shortly deposit the necessary instruments with the Agency.

8. Among other events held during the reporting period were two Regional Workshops on Facilitating Adherence to and Implementation of the 2005 Amendment to the CPPNM, in Belgium in November 2013 and in Mexico in April 2014, as well as a national workshop in Philippines on 11 March 2014. These workshops again aimed at increasing awareness of the Amendment, including its technical and legal requirements; providing a forum to exchange views and information for facilitating adherence to and implementation of the Amendment; and providing an understanding of the relevant Agency legislative assistance and technical activities available to States. The Agency also provided regulatory and technical support through the implementation of 54 Integrated Nuclear Security Support Plans (INSSPs) in all regions to help States' adherence to and implementation of the international legal instruments relevant to nuclear security.

9. The Code of Conduct on the Safety and Security of Radioactive Sources is a non-binding international legal instrument that provides guidance for ensuring the control of radioactive sources and for mitigating/minimizing any consequences should control measures fail. Also legally non-binding, the supplementary Guidance on the Import and Export of Radioactive Sources was developed in 2004 to support States' implementation of the Code. As of 30 June 2014, 122 States had informed the Agency's Director General of their intention to implement the Code of Conduct, and 89 States of their intention to implement the supplementary Guidance[5].

10. In October 2013, the Agency organized the International Conference on the Safety and Security of Radioactive Sources: Maintaining the Continuous Global Control of Sources throughout their Life Cycle, which coincided with the 10th anniversary of the approval of the Code of Conduct by the Board

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[2] http://www.iaea.org/Publications/Documents/Conventions/cppnm_status.pdf

[3] http://www.iaea.org/Publications/Documents/Conventions/cppnm_amend_status.pdf

[4] The Amendment will enter into force once it has been ratified by two-thirds of the States Parties to the CPPNM.

[5] http://www.iaea.org/Publications/Documents/Treaties/codeconduct_status.pdf

of Governors. The Conference served to highlight a number of key priorities[6], including the need for international guidance on the safe and secure long term management of disused sources, and the need for States to continue their efforts to implement the principles of both the Code and the supplementary Guidance.

C. Major Meetings and Coordination

11. The outcome of the International Conference on Nuclear Security: Enhancing Global Efforts, which took place from 1 to 5 July 2013, was reported to the Board of Governors in document GOV/INF/2013/9-GC(57)/INF/6. The Ministerial Declaration adopted by the International Conference on Nuclear Security[7] affirmed the central role of the Agency in strengthening the nuclear security framework globally and in leading the coordination of international activities in the field of nuclear security, while avoiding duplication and overlap. In addition, General Conference resolution GC(57)/RES/10 encouraged the Secretariat to continue, in coordination with Member States, to play a constructive and coordinated role in other nuclear security related initiatives. In pursuit of these objectives, the Agency continued to hold working-level discussions with intergovernmental and non-governmental organizations and initiatives involved in nuclear security, through the convening of Information Exchange Meetings. All exchanges of information were undertaken by the Agency in strict conformity with its confidentiality regime.

12. The Agency held meetings with other organizations and initiatives working in the area of nuclear security to exchange information on their planned events and projects in December 2013 and May 2014, each attended by more than ten such organizations and initiatives, to ensure effective use of limited resources and to eliminate any duplication of efforts. Participants in the meetings are developing, on a voluntary basis, two matrices to facilitate their common understanding of mandates and activities. The first matrix sets out the mandates, roles and working methods of the respective organization or initiative; the second maps the type of assistance available from each organization or initiative. The work aimed to facilitate understanding between participants and to enable them to better identify areas of cooperation.

13. The Border Monitoring Working Group (BMWG), established by the Agency, has met regularly since 2006 to coordinate the activities of the Agency and that of major donors working in the area of effective border controls such as the United States of America and the European Commission. Coordination covered the areas of financial and technical support, human resource development and policy development relating to the detection of nuclear and other radioactive material out of regulatory control. During the reporting period, the BMWG met in July 2013 in Washington, DC, USA; in December 2013 in Vienna, Austria; and in June 2014 in Ispra, Italy. In addition, a BMWG technical subgroup met twice, once in Vienna in November 2013 and once in April 2014 in Washington, DC, to work on a 'best practice' document for mobile detection systems. The BMWG continued facilitating the implementation of programmes in Member States through the optimization of international

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[6] http://www-pub.iaea.org/iaeameetings/43047/International-Conference-on-the-Safety-and-Security-of-Radioactive-Sources-Maintaining-the-Continuous-Global-Control-of-Sources-throughout-their-Life-Cycle

[7] After the adoption of the Ministerial Declaration, one Member State made a statement to express reservations, but did not object to reaching consensus on the document. This statement is on the IAEA website at http://www-pub.iaea.org/iaeameetings/cn203p/RussianFederation-PDF.pdf.

assistance, including distribution of radiation detection equipment, development of related training programmes, and development of concepts of operation and standard operating procedures in Cambodia, Lebanon, Malaysia, Thailand and Viet Nam.

14. The Agency continued its coordinating role among Member States' programmes dedicated to the security of radioactive sources. The third meeting of the Working Group on Radioactive Source Security (WGRSS) was held in May 2014, with the participation of 48 representatives from 33 Member States and two observer organizations. Participants at the WGRSS reviewed progress and achievements in multilateral and bilateral initiatives, and provided input with respect to Member States' needs for future training and development of guidance by the Agency. At the meeting, technical topics relating to the security of radioactive sources throughout their life cycle were discussed, including the benefits and challenges associated with the use of alternative technologies, and implementation of IAEA Nuclear Security Series recommendations and guidance for meeting security objectives. The WGRSS also examined the issue of secure long term management of disused sources, with a view to identifying the main security considerations that will serve as input into the development of international guidance on this topic.

15. The Agency continued to participate as an official observer in relevant Global Initiative to Combat Nuclear Terrorism (GICNT) events during the period covered by this report, to ensure that the work of the GICNT and Agency continue to be complementary and avoid duplication.

16. The Agency supported the @TOMIC 2014 international exercise as an organizer and participant. @TOMIC 2014 was an international tabletop nuclear security/cybersecurity exercise sponsored by the Dutch National Coordinator for Counterterrorism and Security (NCTV), which was held in Maastricht in the Netherlands from 18 to 20 February 2014. Participation in the event enabled the Agency to demonstrate its capacity to assist in the development and support of nuclear security exercises and to provide technical support and access to specialist support in Member States in responding to nuclear security events. This was demonstrated in the complex scenario addressed at the event, which included components of illicit trafficking, nuclear forensics and cyberattack. The scenario highlighted the Agency's nuclear security areas of support and also the incident reporting system, in particular its use in providing support to emergency notification and assistance arrangements and in supporting participants in the area of communicating nuclear security issues to the public.

17. The Director General attended the Nuclear Security Summit, which took place on 24 and 25 March in The Hague in the Netherlands, as an observer. The Summit Communiqué reaffirmed the essential responsibility and the central role of the Agency in the international nuclear security architecture. The Summit also reaffirmed the Agency's ability to enhance political awareness and to address policy, technical and regulatory aspects of nuclear security.

D. Major Achievements

The following summarizes the major achievements, between 1 July 2013 and 30 June 2014, for each element of the Nuclear Security Plans 2010-2013 and 2014-2017.

D.1. Needs Assessment, Information Collation and Analysis

D.1.1. Incident and Trafficking Database Programme

18. Two States joined the ITDB, bringing the total number of participants to 126. By the end of the reporting period, States had reported — or otherwise confirmed to the ITDB programme — a total of 2556 incidents. States reported 149[8] incidents to the ITDB during the reporting period, 14 of which involved illegal possession of, and attempts to sell, nuclear material or radioactive sources, with four of these incidents involving nuclear material. There were 40 cases of reported theft or loss of radioactive sources, four of which involved the theft of Category 1 to 3 radioactive sources. In two of these four incidents, the radioactive sources have not been reported as being recovered.

19. The remaining 97 incidents reported involved unauthorized activities apparently unrelated to criminal activities. These included the detection of nuclear material or radioactive sources that had been disposed of in unauthorized ways, the detection of contaminated material, the recovery of radioactive material outside of regulatory control and the discovery of nuclear material or radioactive sources in unauthorized or undeclared storage. One of the reports involved high enriched uranium (HEU).

20. The external users[9] of the ITDB are the United Nations, the United Nations Office for Disarmament Affairs, the United Nations Office on Drugs and Crime, the United Nations Economic Commission for Europe, the International Civil Aviation Organization, the International Maritime Organization, the International Rail Transport Committee, the International Criminal Police Organization (INTERPOL), the Organisation for Cooperation between Railways, the Universal Postal Union, the World Customs Organization, the Police Community of the Americas (AMERIPOL), the European Commission, the Joint Research Centre of the European Commission, the European Atomic Energy Community, the European Police Office, the Institute for Transuranium Elements, and the Organization for Security and Co-operation in Europe. As is made clear in the ITDB Terms of Reference, these organizations receive the "unrestricted information" set out in Part I of the ITDB incident notification form. This information is also disseminated to Member States not participating in the ITDB programme.

D.1.2. Information Outreach for the Incident and Trafficking Database

21. Sub regional meetings on ITDB information exchange and coordination were held in Cambodia, Republic of Moldova and Turkey. The outcome of these meetings was a substantial improvement in the participants' understanding of ITDB processes and reporting and in improved reporting from States already taking part in the ITDB. As a result of ITDB outreach activities, two States joined the programme. In recent meetings, more emphasis was given to increasing the participation of front line officers, especially customs officials, in order to share experiences and challenges in detecting and reporting nuclear and other radioactive material.

D.1.3. Information Tools and Analysis

22. The production of biennial reports on the analysis of threats, trends and patterns in ITDB incidents resumed, and a report was made available to ITDB points of contact, through the Nuclear Security Information Portal (NUSEC), that covers a six year period (2007–2012) since the last

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[8] An incident may be categorized in more than one group — for example the theft and subsequent attempted sale of a radioactive source. Accordingly, the sum of the incidents in the groups can differ from the total number of incidents.

[9] Information requested in operative paragraph 31 of resolution GC(57)/RES/10.

biennial report was published (2005-2006). The report highlighted, inter alia, several reported incidents that involved the seizure of gram amounts of HEU and plutonium (from plutonium-beryllium sealed sources) in the possession of criminal groups. A further key point was the importance of police and related investigative operations in many seizures of radioactive material. Attention was drawn to the high average annual rate at which incidents were reported during 2007-2012, compared with the average annual rate during 1995–2006. Most of the observed increase was due to incidents that involved radioactively contaminated material and, to a much lesser extent, radioactive sources (approximately 700% and 15% respectively). The rate of reported incidents involving nuclear material remained fairly constant over both timeframes. Over half of reported incidents were associated with international borders (37% detected at borders and 8% after having crossed borders). It was emphasized that approximately half of the radioactive sources reported to the ITDB may not have been recovered and hence are still available for malicious use or may still be trafficked. Attention was drawn to the vulnerability to theft of portable highly radioactive sources. Variations in the levels of incident reporting by geographical regions showed that there may be lessons to be learnt in sharing information on detection and reporting. The next biennial (2013–2014) ITDB analysis report is planned to be issued to points of contact in 2015.

D.1.4. Integrated Nuclear Security Support Plans

23. The Agency gives high priority to the development and implementation of INSSPs for assisting Member States, upon request, to apply a structured and holistic approach to nuclear security capacity building as well as for enabling increased coordination between the Agency, the State concerned and potential donors. With increased numbers of States having established INSSPs, the Agency is able to gain an improved and more comprehensive understanding of nuclear security priorities on the national, regional and global levels. This allows the Agency to plan and prioritize its nuclear security support in addressing the real nuclear security needs of Member States in a systematic, prioritized and sustainable manner.

24. Seven Member States approved their INSSPs during the reporting period, bringing the total number approved to 54. In cooperation with the relevant State authorities, 13 further INSSPs were finalized during the reporting period and are awaiting formal approval. In addition, the Agency has prepared another 21 INSSPs, which are at various stages of finalization.

25. Several Member States asked the Agency to conduct meetings to review the progress of implementation as well as to plan future activities covered by INSSPs. During the reporting period, five INSSPs were reviewed and brought up to date.

26. In implementing or planning activities in each of the Member States covered by INSSPs, efforts were also made to organize events for sharing experience and best practices on their development and implementation. In this connection, regional workshops were held in Botswana in August 2013 for anglophone Member States in Africa, and in Morocco in December 2013 for francophone Member States in Africa. These workshops were attended by participants from 32 Member States, and led to the initiation of 10 new INSSPs in Africa. This increased the total percentage of African Member States with INSSPs in various stages of development from 64% to 86%.

D.1.5. Nuclear Security Information Portal

27. The Agency has continued to develop NUSEC. A major upgrade was performed on NUSEC in December 2013 to achieve better stability and performance. The NUSEC portal currently has over 1800 registered users from 130 Member States and 16 international organizations. New user groups established on NUSEC include groups focusing on the International Physical Protection Advisory

Service (IPPAS), radiological crime scene management, the uranium industry, research reactors, radioactive material and transport security.

28. The Agency has strengthened its efforts to develop the NUSEC nuclear forensics user group as the single point of resources for Member States on nuclear forensics activities. Access to and use of the portal has become an integral part of all meeting and training activities relating to nuclear forensics.

D.1.6. Nuclear Security Information Management System

29. The Agency worked to further develop the Nuclear Security Information Management System (NUSIMS) web-based platform for States to perform self-assessment, and to collect, manage and maintain country-specific information relevant to nuclear security on a voluntary basis. The structure of the self-assessment system has been derived from the Fundamentals and Recommendations in the IAEA Nuclear Security Series. The system is designed to assist States in reviewing their nuclear security infrastructure and tracking their progress; it also facilitates the systematic identification and prioritization of needs and allows the Agency to provide, upon request, a more tailored approach to meeting particular States' requests.

30. A pilot workshop was held in August 2013 to review, revise and provide feedback on the system and ultimately validate its structure and confirm its viability, stability and usability by real users. NUSIMS was demonstrated at the International Conference on Nuclear Security in July 2013 and was officially launched at the General Conference in 2013. A note verbale requesting nomination of NUSIMS Points of Contact was sent to all Member States in January 2014 and a Topical Meeting was held on 21 January 2014 to familiarize Member States with NUSIMS. As of June 2014, 45 Member States have nominated points of contact for NUSIMS. Two meetings to introduce NUSIMS to points of contact or candidate points of contact took place in Chile and Malaysia in 2014. The Secretariat uses these opportunities to collect feedback and recommendations on improvements of the system.

D.2. Enhancing the Global Nuclear Security Framework

D.2.1. Nuclear Security Guidance Committee

31. The Nuclear Security Guidance Committee (NSGC) is a standing body of senior representatives in the area of nuclear security, open to all Member States. The purpose of the NSGC is to make recommendations to the Deputy Director General, Head of the Department of Nuclear Safety and Security, on the development and review of IAEA Nuclear Security Series publications. The objective is to contribute to greater transparency, consensus, quality, coherence and consistency by engaging more Member States in the development of international publications for nuclear security. To date, 55 Member States have nominated members for the NSGC.

32. Two meetings of the NSGC were held during the reporting period, from 28 to 31 October 2013 and from 16 to 20 June 2014. The NSGC for the first time had a joint session with the Radiation Safety Standards Committee to review and approve draft publications and publication proposals with interfaces between the two groups' respective subject areas. As well as reviewing and approving drafts of, and proposals for, nuclear security guidance publications, and reviewing safety standards on subjects in which there are identified safety–security interfaces, the NSGC agreed with the Secretariat on a plan for publications in the IAEA Nuclear Security Series.

33. Six Implementing Guides were approved for publication during the reporting period covering:

- Security of information in nuclear security;
- Use of nuclear material accounting and control for nuclear security purposes at facilities;
- Security of nuclear material in transport;
- Threat assessment and risk informed approach for the implementation of nuclear security measures for nuclear and other radioactive material out of regulatory control;
- Radiological crime scene management;
- Nuclear forensics in support of investigations (to replace IAEA Nuclear Security Series No. 2[10]);

34. Consistent with the above publications plan, Implementing Guides on the following subjects are in preparation:

- Regulations and associated administrative arrangements for nuclear security;
- Sustaining a nuclear security regime;
- Capacity building for nuclear security;
- A framework for international cooperation and assistance for nuclear security;
- Physical protection of nuclear material and nuclear facilities;
- Security of radioactive material in use and storage and of associated facilities (revision of IAEA Nuclear Security Series No. 11[11]);
- Preventive and protective measures against insider threats (revision of IAEA Nuclear Security Series No. 8[12]);
- Security of radioactive material in transport (revision of IAEA Nuclear Security Series No. 9[13]);
- Developing a national framework for managing nuclear security events;
- Preventive measures for nuclear and other radioactive material out of regulatory control;
- Detection of and response to radioactive material out of regulatory control at designated points of entry and exit.

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[10] INTERNATIONAL ATOMIC ENERGY AGENCY, Nuclear Forensics Support, IAEA Nuclear Security Series No. 2, IAEA, Vienna (2006).

[11] INTERNATIONAL ATOMIC ENERGY AGENCY, Security of Radioactive Sources, IAEA Nuclear Security Series No. 11, IAEA, Vienna (2009).

[12] INTERNATIONAL ATOMIC ENERGY AGENCY, Preventive and Protective Measures Against Insider Threats, IAEA Nuclear Security Series No. 8, IAEA, Vienna (2008).

[13] INTERNATIONAL ATOMIC ENERGY AGENCY, Security in the Transport of Radioactive Material, IAEA Nuclear Security Series No. 9, IAEA, Vienna (2008).

D.2.2. Research and Development

35. The Agency carried out coordinated research projects (CRPs) to support the implementation and maintenance of up to date guidance. The CRPs under way during the reporting period are:

- A CRP on nuclear security assessment methodologies for regulated facilities, which has as its objective the provision of a methodological framework for the security assessment of nuclear material and nuclear facilities and radioactive material and associated facilities, including the performance of physical protection systems;
- A CRP on the identification of high confidence nuclear forensics signatures for the development of a national nuclear forensics library, which will address the data requirements of a national forensics library for each stage of the nuclear fuel cycle and for the manufacture of radioactive sources, as well as promote research into novel signatures;
- A CRP on systems and measures to improve the assessment of initial alarms from radiation detection instruments, which will provide peer reviewed and validated methodologies and guidelines for assessing primary and secondary alarms and for providing confidence that nuclear and other radioactive material out of regulatory control is detected and response actions are initiated.

36. The Agency published *Application of Nuclear Forensics in Combating Illicit Trafficking of Nuclear and Other Radioactive Material* (IAEA-TECDOC-1730)[14] in January 2014, which compiles the outcomes of a CRP on nuclear forensics that served as a technical forum for sharing international experience in the field of nuclear forensics, with a focus on improved procedures and techniques, optimization of nuclear forensics analysis, preservation of evidence and provision of support to Member States.

D.3. Nuclear Security Services

D.3.1. Nuclear Security Evaluation Missions and Advisory Services

International Nuclear Security Advisory Service

37. The International Nuclear Security Advisory Service (INSServ) assists a requesting State to review the status of its nuclear security infrastructure, to identify capabilities, to determine shortcomings and to identify needs for additional functional and infrastructure elements, and has as its purpose the support of sustainable nuclear security regimes in Member States.

38. Since 2010, INSServ has been revised and is now in a modular format that allows States to select modules depending on their needs and facilitates more targeted assistance to States. Currently the available modules address nuclear security infrastructure, detection and response systems and measures, and nuclear security at major public events. Modules on radiological crime scene management and nuclear forensics assessment will be established as soon as the relevant IAEA Nuclear Security Series publications are issued.

39. In addition, in 2013 a preparatory mission was added to the INSServ process to ensure that the mission team has access to the most relevant and up to date documents, including legislation and regulations, and policy and strategy documents, and obtains a clear understanding of the roles and responsibilities of the competent authorities involved in nuclear security prior to the mission, and to

[14] http://www-pub.iaea.org/MTCD/Publications/PDF/TE-1730_web.pdf

clarify the expectations of the requesting State. Key documents discussed during this preparatory mission include the terms of reference for the mission.

40. The Agency completed an INSServ mission to Romania focusing on detection and response systems and measures, INSServ missions to Cameroon and the Lao People's Democratic Republic focusing on nuclear security infrastructure and INSServ missions to Belarus, Brazil, Cambodia, Malaysia and Sri Lanka focusing on nuclear security at major public events. A preparatory meeting took place for an INSServ mission to Viet Nam focusing on nuclear security infrastructure. In addition, one official request for an INSServ mission focusing on nuclear security infrastructure was received from Qatar. By 30 June 2014, the Agency had conducted a total of 74 INSServ missions in 63 Member States.

International Physical Protection Advisory Service

41. The Agency also provides, on request, an IPPAS mission to focus on a State's nuclear security infrastructure associated with nuclear facilities and associated activities, as well as the nuclear security infrastructure for facilities and activities involving radioactive material, including transport of nuclear and other radioactive material.

42. The Agency completed an update of the IPPAS guidelines implementing a modular approach in order to ensure that the service represents current best practice and incorporates experience gained during the conduct of the most recent IPPAS missions to Member States with large nuclear power programmes. This update consisted of a general part and five modules, including a module on information and computer security. This module was used in all three IPPAS missions conducted during the reporting period.

43. The Agency also concluded efforts to finalize additional updates of the IPPAS module dedicated to radioactive material. As a result, the Agency is now in a position to conduct IPPAS missions specifically dedicated to facilities and activities involving radioactive material, including transport, for those States not possessing nuclear material or nuclear facilities.

44. During the reporting period, the Agency conducted IPPAS missions to Australia, the Republic of Korea and the United States of America. The missions resulted in the identification of areas for improvement as well as of good practices which, if shared, could be beneficial to other States in establishing and maintaining effective nuclear security regimes. Three more missions to Armenia, Belgium, and Indonesia will be conducted in 2014. During the reporting period, requests were also received from Canada and Japan for IPPAS missions and from Norway and the United Kingdom for IPPAS follow-up missions to be conducted in 2015,

45. By 30 June 2014, the Agency had conducted a total of 62 IPPAS missions in 39 Member States and in one Non-Member State, including 15 follow-up IPPAS missions to 14 Member States. More than 140 experts from 34 Member States have participated in the conduct of IPPAS missions as team members or team leaders.

46. The first international seminar on IPPAS experience and lessons learned was conducted from 4 to 5 December 2013 in France with 127 participants from 43 Member States. Seminar participants provided proposals to the Agency regarding further enhancements of IPPAS, such as to establish a mechanism for sharing, between Member States, good practices identified during IPPAS missions; to develop and maintain a pool of skilled experts that can provide the host country with valuable advice and contribute to experience-sharing; and to develop a self-assessment methodology based on the IPPAS guidelines. It was also recommended that the Agency organize such seminars every 3 to 4 years. Based on the seminar findings, the Agency has developed a comprehensive IPPAS

strategy and an action plan for its implementation as well as an additional update of the IPPAS guidelines.

47. In order to meet requests for detailed IPPAS information from Member States, the Agency held IPPAS workshops in China, Japan, and the Republic of Korea, where comprehensive information on the purpose, preparation, organization, conduct and output of an IPPAS mission, as well as on the benefits of such a mission, was provided to the participants. Such workshops are a preparatory step prior to an IPPAS mission.

Integrated Nuclear Infrastructure Review Missions

48. The Division of Nuclear Security provided support to Integrated Nuclear Infrastructure Review (INIR) missions led by the Agency's Department of Nuclear Energy. This included the provision of experts for an INIR mission to Turkey. Support was also provided for a range of other INIR activities including revision of *Milestones in the Development of a National Infrastructure for Nuclear Power* [15] and the supporting evaluation methodology for INIR missions. Awareness raising activities and training in nuclear security infrastructure were conducted for States considering a nuclear power programme including Egypt, Kazakhstan, Kenya and Saudi Arabia. The Division of Nuclear Security also supported key bilateral meetings held between the Agency and countries considering nuclear power programmes, including Jordan, Malaysia, Turkey and the United Arab Emirates, to discuss nuclear security related aspects of infrastructure supporting their nuclear power programmes.

D.3.2. Nuclear Security Training

49. The Agency provided nuclear security training to nearly 3000 individuals, an increase of 37% over the previous reporting period. Of the 111 training courses and workshops that took place, 60 were in the area of prevention and 42 in the area of detection and response. The Agency implemented national training courses and workshops in 36 States that have agreed INSSPs.

50. The training courses conducted by the Agency covered a wide variety of nuclear security topics, including threat management and assessment, vulnerability analysis, protection against sabotage, physical protection of nuclear material and facilities, insider threats, training for States embarking on nuclear power programmes, security of radioactive sources, security in the transport of nuclear and other radioactive material, nuclear security culture, nuclear forensics, radiological crime scene management, radiation detection techniques and cybersecurity. A new training course, for delivery at regional and national levels, was developed highlighting nuclear security infrastructure awareness for senior officials. In some instances, training courses were conducted as part of programmes of assistance for major public events, such as a seminar for senior officials on threat analysis, trends and patterns in illicit trafficking and other unauthorized activities involving nuclear and other radioactive material; a train the trainers course on radiation detection techniques; an in-depth training course on expert support for major public events; a coordination workshop on malicious acts involving radioactive material at a major public event; and field exercises on detection, interdiction and response for a criminal act involving radioactive material.

51. Training material was developed or reviewed for the following areas:

- Preventive and protective measures against insider threats: the purpose of the course is to provide technical information on the implementation and evaluation of nuclear security

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[15] INTERNATIONAL ATOMIC ENERGY AGENCY, Milestones in the Development of a National Infrastructure for Nuclear Power, IAEA Nuclear Energy Series No. NG-G-3.1, IAEA. Vienna (2007).

measures to address insider threats, including unauthorized removal of nuclear material (theft), sabotage and cybersecurity at facilities containing nuclear material.

- Design basis threat (DBT): workshop material was revised to promote an increased understanding of a threat based approach to the regulation, design, evaluation and implementation of physical protection systems. Guidance and examples were included on the use of a DBT to define design requirements, the decision making process to determine whether to use an alternate threat statement or DBT and the application of a threat based approach for radioactive material and associated facilities. The revised workshop material is applicable to nuclear material and nuclear facilities as well as to radioactive material and associated facilities.

- Nuclear material accountancy and control (NMAC) at facilities: training material was updated for a joint training course with the Department of Safeguards. The purpose of the course is to provide participants with an understanding of how NMAC can be used for both safeguards purposes and nuclear security purposes. An interregional course is scheduled to be held in Indonesia later in 2014.

- Computer security assessments for nuclear facilities: the purpose of the training course is to provide discussion on a methodology for conducting computer security assessments at nuclear facilities. The training focuses on assessment methodology and process, preparatory activities, evaluation methodology, assessment guidance, evaluation and post-assessment activities.

- Information and computer security advanced practices for nuclear security: the purpose of the course is to provide a forum for discussion on advanced topics in information and computer security for policy development and programme implementation at facilities that handle nuclear and other radioactive material. The training course includes a two-day tabletop exercise in which participants are faced with a cyberattack against control networks at a simulated nuclear facility

- Radiological crime scene management: the aim of the training is to strengthen a State's ability to ensure safe, effective and efficient operations at a crime scene where nuclear or other radioactive material is known to be or is suspected to be present.

52. The Agency published a revised catalogue of its training courses on NUSEC . Member States can use the catalogue, which also contains learning objectives and intended audiences for each course, when requesting training courses at the national, regional or international level.

53. Following the introduction of the first e-learning module on nuclear security in 2010 on radiation detection instruments, the Agency has sought to expand the scope of its online and e-learning courses made available to States. To that end, the Agency is developing five additional introductory nuclear security e-learning modules covering: the physical protection of nuclear and other radioactive material and their associated facilities and activities; transport security; computer security for nuclear facilities; radiological crime scene management; and NMAC for nuclear security. Two modules have been completed during the reporting period, while three are still subject to review within the Secretariat. All modules are based on current Agency guidance publications. In addition, one Member State offered to provide an introductory course on nuclear security in the form of three e-learning modules for use by the Agency. This module, while not developed by the Secretariat itself, has been reviewed extensively by relevant technical officers and will reflect Agency guidance on nuclear security. The module is expected to be completed in mid-2014.

D.3.3. International Network for Nuclear Security Training and Support Centres

54. The Agency assisted States that wish to establish Nuclear Security Support Centres (NSSCs) or centres of excellence as a key tool in ensuring the sustainability of national nuclear security regimes.

55. In 2012, the Agency established an international network for NSSCs in order to share lessons learned and to promote regional and interregional cooperation between such centres. The NSSC Network held two meetings during the period covered by this report:

- A Working Group meeting, which took place at Agency Headquarters, Vienna, from 19 to 21 August 2013, with 35 participants from 29 Member States, as well as attendees from several international and non-governmental organizations. The meeting participants reviewed the activities of the Working Groups and had an initial discussion on the criteria to define a Centre of Excellence and the draft Terms of Reference for the network.
- The annual meeting of the NSSC Network, which took place at Agency Headquarters from 19 to 21 February 2014, with 57 participants from 29 Member States, as well as attendees from several international and nongovernmental organizations. The meeting participants reviewed the draft terms of reference for the NSSC Network, discussed the status of the Working Groups' action plans, and exchanged information on activities being undertaken by the NSSCs. The Chair's report of the meeting is available on the Agency's website[16].
- The NSSC Network worked to enhance its coordination and cooperation with the International Nuclear Security Education Network (INSEN) primarily through the establishment of a common database of organizations that offer education, training and other human resource development and capacity building services to Member States, represented on an interactive map. Other coordinated activities included the attendance of the leadership of each network at the annual meetings and working group meetings of the other networks as well as intersectional and information exchange.

D.3.4. Nuclear Security Education

56. The Agency continued to provide support for the development of global nuclear security education, primarily through INSEN, which held its third annual meeting from 14 to 16 August 2013.

57. The annual meeting enabled INSEN to review progress, update action plans and brief INSEN members on the ongoing and future activities undertaken by its working groups. The annual meeting was attended by 56 participants from 29 Member States and as well as representatives from international and non-governmental organizations. The annual meeting resulted in each working group providing action plans for the next six months, which included specific, prioritized tasks with assigned responsibilities and deadlines. The meeting also considered draft terms of reference to better reflect INSEN's growing membership and diverse portfolio of activities. The Chair's report of the meeting is available on the Agency's website.[17]

58. The 2014 meeting of INSEN working groups, which took place from 24 to 26 February 2014, was attended by 64 participants from educational institutions in 32 Member States as well as international organizations and other stakeholders and observers. The working groups met to review progress on the actions decided on at the previous annual meeting, to make any adjustments, and to discuss the draft terms of reference for the network. Items for discussion also included the proposed

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[16] Available at http://www-ns.iaea.org/downloads/security/chairman-report_nssc%20.pdf

[17] Available at http://www-ns.iaea.org/downloads/security/annual-iinsens-meeting-2013-chairman-report.pdf

revision of the educational programme for nuclear security set out in *Educational Programme in Nuclear Security* (IAEA Nuclear Security Series No. 12)[18] to reflect feedback from teaching practice as well as from new and updated Agency guidance on various aspects of nuclear security. A survey of INSEN membership was distributed at the meeting, aiming to capture members' assessment and use of INSEN teaching materials and textbooks, and their teaching practice in nuclear security, including estimated numbers of students, ongoing courses and plans for the future. The survey results show a considerable increase in the level of student interest in nuclear security, which is reflected in faculty member comments provided through the survey, as well as in the greater number of courses, modules and degree programmes offered by INSEN member institutions.

59. INSEN members completed a textbook on cybersecurity for nuclear professionals, which was made available on NUSEC in 2013, and finalized the manuscript of a textbook on introduction to nuclear security, which is currently being prepared for publication.

60. In addition, teaching materials comprising an agenda, PowerPoint presentations and related session plans, practical and laboratory exercises as well as evaluation exercises have been developed and peer reviewed for academic courses. Teaching materials are available for INSEN members on NUSEC/INSEN website. A consortium of universities in Austria, Germany, the Netherlands, Norway and the United Kingdom continued to implement the first comprehensive Master of Science degree programme in nuclear security, using teaching materials produced by INSEN. The first class from the programme is expected to graduate in late 2014. Similarly, in October 2013, Chulalongkorn University in Bangkok, Thailand, with assistance from the European Union, launched a pilot Master of Science degree programme in safeguards and nuclear security, in which the security component is based on IAEA Nuclear Security Series No. 12 and INSEN material. Support from the EU through the Chemical, Biological, Radiological and Nuclear Risk Mitigation Centres of Excellence programme allowed 25 students from member States of the Association of Southeast Asian Nations (ASEAN) to attend the courses at Chulalongkorn University.

61. In order to help INSEN member institutions teach the aforementioned material, two professional development courses (PDCs) for faculty members were held at Brandenburg University of Applied Sciences, Germany, on IT and cybersecurity in September and November 2013, and March and May 2014, with 28 overall faculty participants from 16 Member States. King's College London, United Kingdom, continued to offer support to INSEN faculty members through a series of PDCs on introduction to nuclear security held in London in September 2013 and January 2014. Following that, King's College London partnered with the University of Witwatersrand in Johannesburg, South Africa, to offer, on a regional basis, a series of PDCs on introduction to nuclear security, nuclear security culture and other topics as part of the ongoing 'mentor-protégé' programme designed to enable faculties in the regions to teach courses on these topics, as well as to conduct similar PDCs for their peers in other regional institutions.

62. The Agency conducted the fourth annual two-week intensive school for young professionals in nuclear security at the International Centre for Theoretical Physics in Trieste, Italy, from 28 April to 9 May 2014. A total of 46 participants from 33 Member States attended from regulatory authorities, universities, research institutions, government ministries, operators using radioactive sources and law enforcement agencies. The school provided the participants with a comprehensive introduction to nuclear security topics reinforced by practical exercises and a technical visit to observe border monitoring equipment at a working seaport. Preparations are under way for the implementation of the

[18] INTERNATIONAL ATOMIC ENERGY AGENCY, Educational Programme in Nuclear Security, IAEA Nuclear Security Series No. 12, IAEA, Vienna (2010).

first regional school on nuclear security in Jakarta, Indonesia, for Member States of the Asia and the Pacific region, based on the same curriculum, which is planned for the fourth quarter of 2014.

D.4. Risk Reduction

D.4.1. Threat Characterization and Assessment

63. The characterization of nuclear security threats, DBTs, vulnerability analysis and the assessment of security systems of facilities and associated activities are essential elements of a sustainable nuclear security regime. In order to assist Member States in applying these elements, the Agency advised States on formal threat characterization and assessment, the development, use and maintenance of DBTs, vulnerability analysis and the development of methodologies for performance assessment of physical protection systems. Four national workshops on DBT were delivered in Poland, South Africa and twice in Viet Nam.

64. The Agency held an International Workshop on the Lessons Learned from Design Basis Threat Workshops and the Use of a Threat-Based Approach for the Regulation of Nuclear Material and Facilities from 30 June to 4 July 2014. The purpose of the workshop was to offer Member States a forum to share their experiences, and to discuss how Agency activities on the subject helped them to improve nuclear security in their respective countries.

D.4.2. Nuclear Security Culture in Practice

65. During the reporting period, the Agency finalized the self-assessment methodology for evaluation and enhancement of nuclear security culture at facilities and within organizations. At the request of Bulgaria, the Agency provided support for the implementation of a trial of the nuclear security culture self-assessment methodology at the Kozloduy nuclear power plant using this methodology.

66. An international seminar on nuclear security culture was held from 8 to 10 October 2013 in Finland to discuss the experience of various organizations in enhancing the nuclear security culture within their organization and the measures taken to sustain their nuclear security activities. This workshop was attended by 54 participants from 26 Member States. Another international seminar on nuclear security culture was jointly organized by the Agency and the Russian Federation in Obninsk, in December 2013, and was attended by 45 participants from 14 Member States. These seminars provided a forum for the exchange of experience and good practices in developing, maintaining and enhancing nuclear security culture by practical means. The Agency also worked to promote nuclear security culture by conducting regional workshops in Hungary and the Republic of Korea and national workshops in Jordan, Kazakhstan and the Bolivarian Republic of Venezuela.

D.4.3. Nuclear Security for Nuclear Fuel Cycle Facilities and Associated Activities

67. The main priority of activities directed at improving security in fuel cycle facilities is to assist Member States with the implementation of the *Nuclear Security Recommendations for Physical Protection of Nuclear Material and Nuclear Facilities (INFCIRC/225/Rev.5)*, IAEA Nuclear Security Series No. 13. A draft Implementing Guide was developed and discussed with a Technical Meeting of experts from 38 Member States. The NSGC approved the draft (and the relevant Safety Standards Committees cleared it) for submission to Member States for comment.

68. The following activities relevant to specific types of facilities were carried out:

Nuclear security regulatory requirements for licensing the siting, construction and operation of nuclear power plants: At the request of Viet Nam, the Agency arranged an expert mission to assist

the regulatory body in the licensing of Viet Nam's first nuclear power plant from a nuclear security perspective. The mission was successful in developing a comprehensive programme for the review and assessment of the licensing process.

Uranium industry: The Agency's activities in this area aim to upgrade security practices used in the processing and control of uranium ore concentrate. They include the drafting of technical documents and related training materials for security, and assistance with security upgrades. Draft technical guidance on nuclear security in the uranium extraction industry was approved by the NSGC for submission to Member States for comment. A pilot training course on nuclear security for the uranium industry was delivered in Zambia in September 2013, and a follow-up technical visit was held to assist the Zambian authorities in drafting an action plan to address nuclear security for uranium mining. A second training course was delivered in the United Republic of Tanzania in April 2014.

Research reactors: Activities included the preparation of a comprehensive model security plan and related training materials for security management for research reactor operators. Assistance provided by the Agency includes the provision of evaluation and assessment missions to Member States (research reactor IPPAS missions), assistance visits for facility self-assessment, technical meetings/missions, assistance in risk reduction (HEU repatriation) and assistance with security upgrades at facilities. An IAEA Technical Document on nuclear security management for research reactor operators was finalized in June 2014 and will be issued later this year.

Nuclear fuel cycle waste: Activities to develop nuclear security approaches and to identify priorities for this activity were initiated during the reporting period.

D.4.4. Nuclear Material Accountancy and Control Relevant to Nuclear Security at Facilities

69. In the reporting period a draft Implementing Guide on enhancing nuclear security at the nuclear facility level through use of its NMAC system was finalized. New criteria for assessing a facility's use of an NMAC system for nuclear security purposes have also been developed. New draft Technical Guidance, *Establishing a System for Control of Nuclear Material at a Nuclear Facility during Storage, Use and Movement*, was approved by the NSGC for submission to Member States for comment. Guidance on NMAC related aspects was newly incorporated into the draft Implementing Guide on protective and preventive measures against insider threats (which will replace IAEA Nuclear Security Series No. 8).

70. The State System of Accounting for and Control of Nuclear Material Advisory Service (ISSAS) is jointly supported by specialists in nuclear security and safeguards, and missions took place in Kyrgyzstan, the Republic of Moldova, Tajikistan and the United Arab Emirates during the reporting period.

D.4.5. Securing Radioactive Sources

71. The Agency's programme on the security of radioactive material and associated facilities is based on the *Nuclear Security Recommendations on Radioactive Material and Associated Facilities* (IAEA Nuclear Security Series No. 14). In October 2013, the NSGC approved the initiation of a revision of *Security of Radioactive Sources* (IAEA Nuclear Security Series No. 11) and recommended that the scope be expanded to all radioactive material in use and storage, as well as associated facilities. The revised version of IAEA Nuclear Security Series No. 11 is intended to be the lead Implementing Guide for radioactive material in use and storage, parallel to the Implementing Guide for nuclear material and nuclear facilities that supports IAEA Nuclear Security Series No. 13, and to form the basis of all assistance provided by the Agency for the security of radioactive material.

72. The Agency participated in the fourth Regional e Radiological Security Partnership Review Meeting in Phuket, Thailand, in February 2014 and in the World Institute of Nuclear Security workshops in Mexico in August 2013 and in Jordan in December 2013. The Agency is collaborating with the European Commission's Joint Research Centre to support ongoing efforts to improve the security of radioactive sources in South East Asia.

73. The Agency worked with States to ensure that all high activity sources are appropriately secured at all stages of the life cycle. During the reporting period, a mobile hot cell mission was conducted in Costa Rica, where five high activity disused sources were conditioned and removed from Costa Rica for recycling. In addition, 15 Category 1 to 3 disused sources from Bosnia and Herzegovina, Honduras, Morocco and Sudan were returned to supplier countries or exported for recycling. Several fact-finding missions were completed (in Cameroon, the Islamic Republic of Iran and Nicaragua) and others are ongoing to obtain information on inventories of disused high activity radioactive sources, and to assist States in the development of comprehensive strategies for the secure management of high activity sources at the end of their useful lives.

D.4.6. Transport Security

74. The Agency has developed model exercises for nuclear transport security to assist Member States in the practical implementation of the transport security recommendations established in IAEA Nuclear Security Series No. 13 (INFCIRC/225/Rev.5) and to help them to determine the need for exercises, and the types, nature and scope of exercises, and to experience one or more example exercises. The exercise material is ready to be used and tested by a Member State, with the assistance of the Agency in the planning and conduct of a pilot tabletop exercise followed by a field exercise.

75. The Agency participated in a transport security tabletop exercise organized in November 2013 in Tokyo by the Government of Japan. The aim of the exercise was to share experiences and good practices, to strengthen existing collaboration, and to promote continuous improvement of nuclear security in transport operations. Participants agreed that the implementation of the Agency's recommendations provides confidence in the level of nuclear security. The participants confirmed their support for the Agency's activities in the development of transport security guidance to assist Member States in establishing a legislative and regulatory framework.

76. A Technical Meeting on the Practical Application of the IAEA's Nuclear Security Recommendations and Guidance for the Domestic and International Transport of Nuclear and Other Radioactive Material was held in Vienna from 10 to 13 June 2014. Almost 70 participants from 48 Member States, representing international organizations, regulatory authorities, shippers and carriers, law enforcement agencies and industry organizations, shared experiences, good practices and lessons learned. The meeting resulted in a strong recognition of, and recommendations on how to further develop and improve, the Agency's transport security activities, including the need for additional practical technical guidance and assistance, training and education, and the development of transport security model exercises. The meeting concluded that the Agency should consider more closely and continuously coordinate its transport security recommendations and guidance with the Model Regulations on the Transport of Dangerous Goods contained in the United Nations Recommendations on the Transport of Dangerous Goods (the Orange Book).

D.4.7. Physical Protection Upgrades and Remote Monitoring

77. States' use of remote monitoring systems for physical protection at facilities housing nuclear or other radioactive material enables the early detection of security events at facilities and the timely dispatch of off-site response. During the reporting period, the Agency assisted States in the installation of three new systems to secure gamma irradiators and the upgrading of two existing systems with

additional monitors for disused source storage areas. The Agency provided technical assistance in maintaining 21 systems in Member States, and 10 sites were visited for regular maintenance or upgrades.

78. The Agency has provided assistance to Armenia in upgrading its nuclear power plant security through the provision of equipment to enhance access control systems. In addition, the Agency completed physical protection upgrades at three medical centres in Pakistan, and reached agreement on next steps in the upgrade of physical protection at the Karachi nuclear power plant. A technical visit to Egypt was held in May 2014 to review the required physical protection upgrades for Egypt's two research reactors.

D.4.8. Repatriation of High Enriched Uranium

79. At the request of Member States, the Agency has continued to be involved in the repatriation of HEU research reactor fuel. Within the framework of the Russian Research Reactor Fuel Return Programme, the Agency assisted in the return to the Russian Federation more than 60 kg of spent HEU fuel from Hungary and Viet Nam. The annual 'lessons learned' meeting to share experience of conducting HEU repatriation projects and to prepare possible future HEU removals took place in Dalat, Viet Nam, in June 2014.

D.4.9. Establishing Effective Detection Architecture

80. The Agency developed a self-assessment tool to enable Member States to assess their detection architecture and ensure that any request for assistance and support is focused on areas where support is most needed. This approach aligns assistance to Member States with the guidance in *Nuclear Security Systems and Measures for the Detection of Nuclear and Other Radioactive Material out of Regulatory Control* (IAEA Nuclear Security Series No. 21)[19], upon which the self-assessment tool is based, resulting, over time, in more effective and sustainable detection architectures.

81. An important component of effective detection architecture is the development and maintenance of the human resources involved in implementing the detection systems. During the reporting period, several different types of technical and operational training were provided to Member States. The training focused on training the trainers to develop indigenous capacity to maintain training programmes. The Agency delivered regional training courses based on the guidance for nuclear security systems and measures for detection published in IAEA Nuclear Security Series No. 21 in Jordan and South Africa, with a total of 30 participants from 13 Member States.

82. During the reporting period, the Agency donated 215 personal radiation detectors, 42 radionuclide identification devices, three neutron search devices and 15 portable radiation scanners to seven Member States. Prior to donation, all equipment underwent performance testing at Agency Headquarters. In addition, the Agency contributed to the sustainability of donated equipment by providing help desk support for the repair of 43 instruments in the possession of Member States.

83. Border monitoring upgrade projects involving the deployment of 14 radiation portal monitors and integrated nuclear security networks, including the refurbishment of existing detection instruments, were carried out during the reporting period. The Agency is leading the development of a simulator of a central alarm station and national data analysis centre for training centres in Member States, to provide a training tool for operators of fixed-installed border control equipment.

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[19] INTERNATIONAL ATOMIC ENERGY AGENCY, Nuclear Security Systems and Measures for the Detection of Nuclear and Other Radioactive Material out of Regulatory Control, IAEA Nuclear Security Series No. 21, IAEA, Vienna (2013).

84. The Agency keeps a pool of 354 handheld instruments available, upon request, to enable Member States in establishing a temporary nuclear security regime during major public events. A team of nuclear security experts from the Agency carried out performance testing of all the equipment supplied to Member States prior to its delivery. The team also conducted performance tests for high resolution spectrometry systems, mobile detection systems (backpacks), radioisotope identification devices, neutron search devices and personal radiation detectors.

D.4.10. Nuclear Security Response Architecture

85. The Agency assisted Member States to develop effective and efficient nuclear security response architecture through the development of national nuclear security preparedness and response plans, the evaluation and prioritization of national response capabilities and the development of human resources through training and exercises.

D.4.11. Major Public Events

86. Member States holding major public events request assistance to strengthen the implementation of nuclear security measures before and during the event. Such assistance is normally provided under a joint action plan that may include the conduct of an INSServ/Major Public Event mission; a train the trainers course on radiation detection at venues and strategic locations; on the job training for experts from mobile expert teams; seminars and exercises; development and/or revision of specific technical procedures; selection, provision, loan and deployment of radiation detection equipment; exchanges of information; consultation on emergency preparedness and response; and technical meetings to prepare outreach reports. During the period covered by this report, the Agency provided assistance to Member States hosting the following major public events:

- Brazil: support for the nuclear security of the World Youth Day in July 2013 and the FIFA World Cup 2014 in June–July 2014.
- Zambia and Zimbabwe: support for the nuclear security of the 20th UN World Tourism Organization General Assembly in August 2013.
- Sri Lanka: support for the Commonwealth Heads of Government Meeting 2013 in November 2013.
- Belarus: support for the nuclear security of the Ice Hockey Federation World Championship in May 2014.

87. In February 2014, based on the good practices and lessons learned, the Agency, in cooperation with Mexico, published an outreach report on nuclear security measures at the XVI Pan American Games and IV Parapan American Games, Guadalajara 2011, to share experience with States implementing nuclear security measures in similar settings.

88. In March 2013, the Agency organized a topical meeting on major public events for representatives of Ministries of Foreign Affairs of its Member States. The objective of this meeting was to share experiences and good practices in implementing nuclear security measures at major public events. The meeting addressed the experiences from Mexico at the XVI Pan American Games and from Poland at the UEFA European Football Championships 2012 and the assistance provided by the Agency to the relevant Member States in this area.

D.4.12. Radiological Crime Scene Management

89. As mentioned in Section D.2.1 above, an Implementing Guide on radiological crime scene management was approved for publication by the NSGC. The objective of this Implementing Guide is

to provide law enforcement officials, national policymakers, decision makers, local authorities and technical support personnel with guidance on the framework and the main functional elements for radiological crime scene management so that they may be adopted or adapted to meet the needs of the various jurisdictions and competent authorities within each Member State.

90. Based on this Implementing Guide, in collaboration with experts from Member States and INTERPOL, the Agency developed a curriculum for a training course on radiological crime scene management. The aim of the training course is to strengthen the ability of Member States to ensure safe, effective and efficient operations at a crime scene where nuclear or other radioactive material is known to be or is suspected to be present. A pilot training course on the subject was held in the Czech Republic in November 2013 for 24 individuals from various organizations in the Czech Republic.

91. In August 2013, the Agency organized a topical meeting on radiological crime scene management for participants from Member States, including representatives from the Vienna based Permanent Missions. The purpose of the topical meeting was to increase the awareness of participants about challenges imposed on the management of crime scenes where nuclear and other radioactive material and/or evidence contaminated with radionuclides are known to be or are suspected to be present. The topical meeting addressed the experience of some Member States, and provided general information on the Agency's activities in this area.

D.4.13. Nuclear Forensics

92. Nuclear forensics supports States in their responsibility to ensure the security of nuclear and other radioactive material. Nuclear forensics is increasingly recognized as an important tool in law enforcement investigations as well as in assessments of potential security vulnerabilities associated with the use, production and storage of such materials. During the reporting period, the Agency worked closely with Member States to improve their nuclear forensics state of practice, through outreach to promote awareness and understanding of nuclear forensics, introductory training and applied training, the arranging of experts' visits to leading international nuclear forensics laboratories, and support to international nuclear forensics initiatives, including the Nuclear Forensics Working Group of the Global Initiative to Combat Nuclear Terrorism.

93. The Agency arranged a nuclear forensics coordination meeting hosted by the Mexican Federal Police in Mexico City in September and October 2013 for AMERIPOL and Member States in Latin America to discuss their arrangements for preparedness and response to a nuclear security incident as well as to determine how best to utilize existing technical capabilities for nuclear forensics within the Latin America region. A visit by a scientific delegation from Pakistan to the nuclear forensics laboratory at the European Commission's Institute for Transuranium Elements (ITU) and the Agency's Safeguards Analytical Laboratories was arranged in September and October 2013. In March 2014, the Agency convened a topical meeting in Vienna to discuss the role of a nuclear forensics laboratory within a national nuclear security infrastructure, including provision of technical assistance by the Agency, upon request, to ensure nuclear forensic analytical measurements of the highest confidence. In partnership with the European Commission and the United States of America, the Agency participated in nuclear forensics workshops in Thailand in September 2013 and Viet Nam in June 2014 to share best practices, examine national capabilities and determine opportunities for regional cooperation and capacity building in nuclear forensics.

94. The Agency was invited to provide nuclear forensics outreach and to assist in scenario based exercises in advance of the 2014 Nuclear Security Summit at expert meetings and workshops hosted by the Netherlands, the United Kingdom, the United States of America and the European Commission (at the ITU in Karlsruhe, Germany) during January and February 2014.

95. The International Conference on Advances in Nuclear Forensics: Countering the Evolving Threat of Nuclear and Other Radioactive Material out of Regulatory Control was held from 7 to 10 July 2014 in Vienna.

D.4.14. Computer and Information Security

96. Member States request assistance to counter new computer system vulnerabilities and associated attacks that could impact nuclear security. Additionally, the use of computers and other digital electronic equipment for safety purposes, physical protection systems, instrumentation, information processing and communication systems at nuclear facilities and in related activities continues to grow and such systems present an increasing target for possible attack. Furthermore, the computer security at facilities handling nuclear and other radioactive material, as well as for the associated activities like transport, represents a unique set of challenges.

97. During the reporting period, the Agency conducted a number of activities, including the development of guidance, training materials and outreach materials for Member States. All activities were in line with the Nuclear Security Plans 2010-2013 and 2014-2017, as well as the relevant General Conference resolutions.

98. Additionally, the initial programme committee meeting was conducted for the International Conference on Nuclear Security in a Computer World: Prevention, Detection and Resistance to Emerging Cyberthreats scheduled to be held in Vienna from 1 to 5 June 2015. Among its objectives, the conference will provide a forum for discussion of nuclear security efforts to date within the area of computer security and consideration of possible objectives and priorities for nuclear security efforts in computer security and how current approaches may evolve to address these and to meet future challenges.

E. Management Issues

E.1. Funding

99. Expenditure in the period 1 July 2013 to 30 June 2014 was €20.9 million. This expenditure comprised disbursements (€14.8 million) plus unliquidated obligations (€6.1 million)[20]. Although increases in the Regular Budget have facilitated programme implementation, the Agency continues to have a high reliance on extrabudgetary contributions to the Nuclear Security Fund. This reliance has an impact on the planning and prioritization of activities as well as overall programme management.

100. In the course of the reporting period, the Agency accepted pledges to the Nuclear Security Fund from Australia, Belgium, Canada, Estonia, Finland, France, Italy, Japan, Kazakhstan, the Republic of Korea, the Netherlands, Romania, the Russian Federation, Spain, the United Kingdom, the United States of America and the European Commission.

E.2. AdSec

101. The Advisory Group on Nuclear Security (AdSec) met once in the course of the reporting period (in November 2013). The group continued its core work of advising the Director General on

[20] Unliquidated obligations represented financial engagements involving claims against resources for which expenditure authority has been given but which have not yet been paid.

priorities for and implementation of the Agency's nuclear security programme, but modified its working methods to hold, in the first half of the year, a number of meetings of small subgroups of AdSec members, each reviewing in detail a particular element of the programme and reporting to a plenary meeting of AdSec in the second part of the year that would formulate recommendations from AdSec as a whole. Three such small subgroup meetings were held in the first half of 2014 and two more are planned, before all of the subgroups report to the next full AdSec meeting in October 2014.

F. Goals and Priorities for 2014–2015

102. The main nuclear security programmatic goals and priorities for 2014–2015 are the following:

- To organize the International Conference on Advances in Nuclear Forensics: Countering the Evolving Threat of Nuclear and Other Radioactive Materials out of Regulatory Control, to be held in July 2014.
- To organize the International Conference on Computer Security in a Nuclear World: Expert Discussion and Exchange, to be held in 2015.
- To start planning for the Nuclear Security Conference to be held in 2016 in accordance with the General Conference resolution. It is envisaged that the conference will be held in the fourth quarter of 2016.
- To promote the entry into force of the 2005 Amendment to the CPPNM and to organize a meeting of CPPNM points of contact to make them aware of the enhanced information exchange requirements of the Amendment.
- To ensure that in-depth analysis is provided to points of contact to the ITDB through biennial reports (2013–2014) and the timely issuance of quarterly summaries of incidents, along with rapid access to information on incidents through a streamlined online version of the ITDB (Web-INF) and the ability to report incidents online (Web-ITDB).
- To complete INSSPs for all States which request them and to strengthen the implementation of the INSSPs and the monitoring of their implementation.
- To familiarize Member States with NUSIMS through subregional meetings and national workshops to expedite the implementation of NUSIMS within the framework of INSSPs. In addition, to collect feedback and recommendations on potential improvements of the NUSIMS system as well as to further integrate NUSIMS with INSSPs.
- To encourage States to participate actively in the Working Group on Radioactive Source Security.
- To develop guidance in the IAEA Nuclear Security Series in accordance with the publications plan endorsed by the NSGC and provide for their use and application through, inter alia, education and training, advisory services and peer reviews.
- To further promote CRPs in the effective use of NMAC for nuclear security, nuclear security culture at facilities, nuclear security detection, nuclear forensics, research reactor security, security assessment methodologies, and transport security.