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Measures to Strengthen International Cooperation in Nuclear, Radiation, Transport and Waste Safety

Report by the Director General

Summary

Pursuant to resolution GC(59)/RES/9, a report covering the following subjects is submitted to the Board of Governors and the General Conference for their consideration:

- The Agency's safety standards programme
- Nuclear installation safety
- Radiation safety and environmental protection
- Transport safety
- The safety of spent fuel and radioactive waste management
- The safe decommissioning of nuclear facilities and other facilities using radioactive material
- Safety in uranium mining and processing and in the remediation of contaminated sites
- The safe management of radioactive sources
- Education, training and knowledge management in nuclear, radiation, transport and waste safety
- Nuclear and radiological incident and emergency preparedness and response
- Civil liability for nuclear damage

Recommended Action

- It is recommended that the Board of Governors and the General Conference consider and take note of this report.

Measures to Strengthen International Cooperation in Nuclear, Radiation, Transport and Waste Safety

Report by the Director General

A. Introduction

1. This report has been produced for the sixtieth regular session (2016) of the General Conference in response to resolution GC(59)/RES/9, in which the General Conference requested the Director General to report in detail on implementation of the resolution and on other relevant developments in the intervening period. This report covers the period 1 July 2015 to 30 June 2016.

2. The Agency continued to strengthen its efforts to maintain and strengthen nuclear, radiation, transport and waste safety, focusing, inter alia, on the technical areas and geographical regions where the need for such efforts is greatest. The Agency assisted in maintaining and enhancing legal and regulatory effectiveness, and provided assistance to regulatory bodies in newcomer countries, focusing on building capacity. The Agency also continued strengthening radiation protection in medicine.¹

3. Within the framework of the IAEA Action Plan on Nuclear Safety (the Action Plan) many activities were undertaken by the Secretariat, Member States and other relevant organizations to strengthen nuclear safety worldwide. The Secretariat delivered its final report on the Action Plan to the Board of Governors in September 2015. The Agency continues to implement the remaining projects related to the Action Plan through the relevant Agency Departments within the framework of its regular programme.²

4. In June 2016 a report by the IAEA Director General entitled *Measures to Strengthen International Cooperation in Nuclear, Radiation, Transport and Waste Safety; Building on the Action Plan* (GOV/INF/2016/10) was presented to the Member States. This report was prepared in response to operative paragraph 29 of GC(59)/RES 9.³

5. The Agency continued to encourage Member States to become Contracting Parties to the Convention on Nuclear Safety (CNS), the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (Joint Convention), the Convention on Early Notification of a Nuclear Accident (Early Notification Convention) and the Convention on Assistance

¹ This relates to operative paragraphs 1 and 2 of resolution GC(59)/RES/9.

² This relates to operative paragraphs 26 and 28 of resolution GC(59)/RES/9.

³ This relates to operative paragraphs 27, 28 and 29 of resolution GC(59)/RES/9.

in the Case of a Nuclear Accident or Radiological Emergency (Assistance Convention). Activities related to the Conventions are reported in detail in subsequent sections of this report: the CNS in Section C; the Joint Convention in Section F; and the Early Notification and Assistance Conventions in Section K.⁴

6. The Agency's fifth yearly Treaty Event took place during the 59th regular session of the General Conference in September 2015, and provided Member States with a further opportunity to deposit their instruments of ratification, acceptance or approval of, or accession to, the treaties deposited with the Director General, notably those related to nuclear safety, nuclear security and civil liability for nuclear damage.⁵

7. The Agency organized the International Conference on Effective Nuclear Regulatory Systems: Sustaining Improvements Globally in Vienna in April 2016, which was attended by senior nuclear safety and nuclear security regulators from 62 Member States and 8 international organizations. Regulatory lessons learned and challenges in regulating nuclear installations, radiation sources and radioactive waste were discussed. The conference acknowledged the ten years of experience with the Integrated Regulatory Review Service (IRRS) and the importance of strengthening international cooperation. The need for organizing a future conference focusing on the regulatory aspects of radiation sources was highlighted. During the conference, a side event was held on the Portuguese–Spanish protocol concluded in June 2015 to promote cooperation in nuclear and radiological emergencies and in environmental radiation protection. The protocol provides a framework for information exchange and actions in case of an emergency, and serves as a notable example of transparency and effective regional cooperation in this area.⁶

8. The Agency continued its cooperation with the Ibero-American Forum of Radiological and Nuclear Regulatory Agencies. A three-year joint project intended to strengthen regional capacity building programmes in line with the Agency's safety standards was concluded. An IAEA Technical Document (IAEA-TECDOC-1794) based on this work was prepared in Spanish and published in May 2016. The Agency also continued its cooperation with the European Nuclear Safety Regulators Group's (ENSREG's) Working Group on Nuclear Safety for the preparation, conduct and evaluation of the IRRS programme for European Union countries.⁷

9. The Agency supported the activities of regional safety forums and knowledge networks under the Global Nuclear Safety and Security Network (GNSSN)⁸. Fifteen events, including meetings and seminars, were carried out which focused on strengthening collaboration among national authorities, specialists, international organizations, forums and working groups. The Secretariat launched the

⁴ This relates to operative paragraphs 13, 14 and 15 of resolution GC(59)/RES/9.

⁵ This relates to operative paragraphs 13, 14, 15 and 16 of resolution GC(59)/RES/9.

⁶ This relates to operative paragraphs 8 and 20 of resolution GC(59)/RES/9.

⁷ This relates to operative paragraph 6 of resolution GC(59)/RES/9.

⁸ The GNSSN includes global networks such as, inter alia, the International Regulatory Network (RegNet), the Technical and Scientific Support Organization Forum (TSOF) and the Global Safety Assessment Network (GSAN); regional networks such as the Asian Nuclear Safety Network (ANSN), the Arab Network of Nuclear Regulators (ANNuR) and the Forum of Nuclear Regulatory Bodies in Africa (FNRBA); and thematic networks such as the Regulatory Cooperation Forum (RCF), the CANDU Senior Regulators Group (CSRG), the Forum of the State Nuclear Safety Authorities of the Countries Operating WWER Type Reactors (WWER Regulators' Forum), Small Modular Reactor Regulators' Forum (SMR Regulators' Forum) and the Control of Sources Network (CSN).

GNSSN Highlights as a new biennial publication. The GNSSN information technology platform was further restructured to improve its usability.⁹

10. A new Global Nuclear Safety and Security Communication Network, with the mission to support Agency Member States in communicating safety and security information effectively, was established. Terms of reference and a work plan were adopted. The Secretariat continued its support for the development of a new European and Central Asian Safety Network (EuCAS Network), in liaison with representatives from 21 Agency Member States, the European Commission and several relevant international associations. A Technical Meeting was held in Vienna in March 2016, during which terms of reference for the EuCAS Network were discussed and agreed by the participants in the meeting.¹⁰

B. The Agency's Safety Standards Programme

11. Twelve Agency safety standards were issued: *Site Evaluation for Nuclear Installations* (IAEA Safety Standards Series No. NS-R-3 (Rev. 1)), *Governmental, Legal and Regulatory Framework for Safety* (IAEA Safety Standards Series No. GSR Part 1 (Rev. 1)), *Safety Assessment for Facilities and Activities* (IAEA Safety Standards Series No. GSR Part 4 (Rev. 1)), *Safety of Nuclear Power Plants: Design* (IAEA Safety Standards Series No. SSR-2/1 (Rev. 1)), *Safety of Nuclear Power Plants: Commissioning and Operation* (IAEA Safety Standards Series No. SSR-2/2 (Rev. 1)), *Preparedness and Response for a Nuclear or Radiological Emergency* (IAEA Safety Standards Series No. GSR Part 7), *Radiation Safety for Consumer Products* (IAEA Safety Standards Series No. SSG-36), *Site Survey and Site Selection for Nuclear Installations* (IAEA Safety Standards Series No. SSG-35), *Construction for Nuclear Installations* (IAEA Safety Standards Series No. SSG-38), *Design of Electrical Power Systems for Nuclear Power Plants* (IAEA Safety Standards Series No. SSG-34), *Design of Instrumentation and Control Systems for Nuclear Power Plants* (IAEA Safety Standards Series No. SSG-39), *Predisposal Management of Radioactive Waste from Nuclear Power Plants and Research Reactors* (IAEA Safety Standards Series No. SSG-40).¹¹

12. In June 2016, the Board of Governors approved the following revised Safety Requirements publications: *Leadership and Management for Safety* (IAEA Safety Standards Series No. GSR Part 2) and *Safety of Research Reactors* (IAEA Safety Standards Series No. SSR-3). These drafts were endorsed by the Commission on Safety Standards (CSS) in April 2016.¹²

13. The Emergency Preparedness and Response Standards Committee (EPReSC) held two meetings and adopted Operating Guidelines. EPReSC established two working groups of Member State representatives in order to examine the revision of the Safety Guide *Arrangements for Preparedness for a Nuclear or Radiological Emergency* (IAEA Safety Standards Series No. GS-G-2.1), and to study how to communicate relevant aspects of safety to the public during an emergency. EPReSC has

⁹ This relates to operative paragraphs 5 and 12 of resolution GC(59)/RES/9.

¹⁰ This relates to operative paragraphs 5, 12 and 45 of resolution GC(59)/RES/9.

¹¹ This relates to operative paragraphs 30 and 32 of resolution GC(59)/RES/9.

¹² This relates to operative paragraphs 30, 32 and 51 of resolution GC(59)/RES/9.

representation from over 60 Member States and 14 international organizations, and comprises a total of over 110 members.¹³

14. The review and revision of relevant Safety Guides are being performed in accordance with a prioritization process established by the five Safety Standards Committees and the CSS. This prioritization process takes into account the request sent to the CSS by the Director General as a follow-up to the Vienna Declaration on Nuclear Safety, which was adopted by the Contracting Parties to the CNS at a Diplomatic Conference held in Vienna in February 2015.¹⁴

15. The CSS also endorsed the following draft Agency safety standards for publication: *Safety of Nuclear Fuel Reprocessing Facilities* (IAEA Safety Standards Series No. SSG-42), *Safety of Nuclear Fuel Cycle Research and Development Facilities* (IAEA Safety Standards Series No. SSG-43), *Communication and Consultation with Interested Parties by the Regulatory Body* (DS460), *Leadership and Management for Safety* (IAEA Safety Standards Series No. GSR Part 2), *Safety of Research Reactors* (IAEA Safety Standards Series No. SSR-3), *Radiation Protection and Safety in Medical Uses of Ionizing Radiation* (DS399), *Predisposal Management of Waste from the Use of Radioactive Materials in Medicine, Industry, Research, Agriculture and Education* (DS454) and *Establishing a National Radiation Safety Infrastructure* (DS455).¹⁵

16. The Agency follows the activities of the International Commission on Radiological Protection (ICRP) as an observer in the individual ICRP committees. The Agency is involved as an observer in the development of a report by the United Nations Scientific Committee on the Effects of Atomic Radiation entitled *Methodology for Estimating Human Exposures due to Radioactive Discharges*.¹⁶

17. A new term for the members of the CSS started in 2016 covering the period 2016–2019. The renewed Commission came together for its first meeting in April 2016. The five Safety Standards Committees each met twice.¹⁷

18. The Interface Group, which is responsible for dealing with safety–security interfaces among IAEA Safety Standards Series and IAEA Nuclear Security Series publications, established a dedicated members' web page to facilitate consultations between the experts involved. The Interface Group was consulted on safety–security interfaces in five documents following a recommendation from the Coordination Committee on Safety Standards and Nuclear Security Series Publications.¹⁸

C. Nuclear Installation Safety

19. The Agency continued to encourage its Member States, especially those planning, constructing, commissioning or operating nuclear power plants, or considering a nuclear power programme, to become Contracting Parties to the CNS. This was done through discussions with Member States' representatives during Agency conferences, meetings, peer review missions and visits of the Director

¹³ This relates to operative paragraph 31 of resolution GC(59)/RES/9.

¹⁴ This relates to operative paragraphs 27, 29 and 32 of resolution GC(59)/RES/9.

¹⁵ This relates to operative paragraphs 30, 32 and 45 of resolution GC(59)/RES/9.

¹⁶ This relates to operative paragraph 33 of resolution GC(59)/RES/9.

¹⁷ This relates to operative paragraph 35 of resolution GC(59)/RES/9.

¹⁸ This relates to operative paragraph 3 of resolution GC(59)/RES/9.

General to Member States, as well as through technical cooperation projects. Montenegro became a new Contracting Party to the CNS.¹⁹

20. In preparation for the Seventh Review Meeting of the Contracting Parties to the CNS (hereinafter referred to as the Seventh Review Meeting) to be held from 27 March to 7 April 2017, three meetings were organized in Vienna: the Organizational Meeting on 15 October 2015, the Officers' Turnover Meeting on 1 March 2016 and the Officers' Training from 2 to 3 March 2016. During the Organizational Meeting, seven Country Groups were established and the new Officers were elected for the Seventh Review Meeting. At the Officers' Turnover Meeting, incoming and outgoing officers met to share information and experience on the CNS review process. The Officers' Training meeting introduced new Officers to their respective roles.²⁰

21. An informal Technical Meeting to follow up on the Vienna Declaration on Nuclear Safety (Vienna Declaration) was convened by Argentina's Nuclear Regulatory Authority in Buenos Aires from 16 to 17 November 2015. At the meeting, discussions were held on technical criteria and national initiatives for implementing the Vienna Declaration. Participants exchanged views on how to reflect the principles of the Vienna Declaration in the National Reports and on how to integrate them into the regular CNS review process. Means to encourage a greater participation of the Contracting Parties in the CNS review process were also discussed.²¹

22. The Agency prepared, on request, a 'Generic Safety Observations Report' for the Organizational Meeting for the Seventh Review Meeting, held in Vienna in October 2015. This report summarizes major global trends and issues in nuclear safety, based on information gained from the Agency's safety review and expert missions, the Director General's report on the Fukushima Daiichi accident, International Nuclear Safety Group activities and reports, as well as from major international and regional conferences, meetings and workshops.²²

23. The Secretariat continued to support Member States under its legislative assistance programme. Country specific bilateral assistance was provided to 20 Member States, including several newcomer countries, in reviewing and developing national nuclear legislation. They were also advised on their international obligations arising from relevant treaties, and received training in nuclear law.²³

24. The fifth session of the Nuclear Law Institute was organized in Baden, Austria, from 28 September to 9 October 2015 and attended by 63 participants from 51 Member States. This two-week course, held annually, is designed to meet the demand by Member States for legislative assistance and to enable participants to acquire a solid understanding of all aspects of nuclear law, as well as to draft, amend or review their national nuclear legislation.²⁴

25. A Subregional Workshop on Nuclear Law for Member States in the Asia and Pacific Region was held in Singapore in June 2016 which was attended by 50 participants from 19 Member States. The workshop provided a forum for an exchange of views in all areas of nuclear law and allowed for the

¹⁹ This relates to operative paragraphs 11 and 13 of resolution GC(59)/RES/9.

²⁰ This relates to operative paragraph 36 of resolution GC(59)/RES/9.

²¹ This relates to operative paragraphs 36 and 37 of resolution GC(59)/RES/9.

²² This relates to operative paragraphs 13 and 36 of resolution GC(59)/RES/9.

²³ This relates to operative paragraphs 2 and 103 of resolution GC(59)/RES/9.

²⁴ This relates to operative paragraphs 2 and 103 of resolution GC(59)/RES/9.

planning of future legislative assistance activities in the participating Member States based on an assessment of their needs.²⁵

26. The Agency conducted awareness missions to inform senior officials about the importance of adhering to the international instruments in Koror, Palau, in February 2016, in Kathmandu, Nepal, in April 2016, and in Phnom Penh, Cambodia, in May 2016.

27. Member States submitted more than 100 reports to the International Reporting System for Operating Experience (IRS), jointly operated with the Nuclear Energy Agency of the Organisation for Economic Co-operation and Development (OECD/NEA); the Incident Reporting System for Research Reactors; and the Fuel Incident Notification and Analysis System.²⁶

28. The Agency conducted workshops on the effective management of operational experience feedback programmes in Austria in July and October 2015, and in the Netherlands in December 2015. Assistance missions for the improvement of the operational experience feedback programmes in Member States were conducted in the Czech Republic in December 2015, and in the Russian Federation in May 2016. Lessons learned from recent significant events were shared during a Technical Meeting of IRS Coordinators held in France in October 2015. A workshop was held in Austria in June 2016, to share lessons learned from recent human performance related events at nuclear power plants (NPPs) and to discuss performance improvement.²⁷

29. The draft revision of *A System for the Feedback of Experience from Events in Nuclear Installations* (IAEA Safety Standards Series No. NS-G-2.11) was approved for distribution to Member States for their comments, by the Nuclear Safety Standards Committee and the Waste Safety Standards Committee in April 2016. The revision was based on lessons learned from the Fukushima Daiichi accident as well as on recent developments in the area of operating experience feedback.²⁸

30. The Agency continued to support Member States in the self-assessment of their national regulatory infrastructure through the provision of the Self-Assessment of Regulatory Infrastructure for Safety (SARIS) tool. National seminars were organized in preparation for Integrated Regulatory Review Service (IRRS) missions and a regional training course was organized in Uruguay in July 2015 for States in the Latin America region.²⁹

31. The Agency completed its preliminary enhancement of the question sets of the SARIS tool used for IRRS missions. All question sets were updated and improved. A question set was developed in order to facilitate comparison of national regulations for radiation safety with relevant Agency safety standards, in particular with *Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards* (IAEA Safety Standards Series No. GSR Part 3). The Agency also further revised and enhanced its emergency preparedness and response (EPR) questionnaire in order to simplify the self-assessment process.³⁰

32. The Secretariat has established the Peer Review and Advisory Services Committee to assess the overall structure of all review services offered by the Department of Nuclear Safety and Security. The Committee is considering best methods for monitoring and improving the effectiveness and efficiency

²⁵ This relates to operative paragraphs 2 and 103 of resolution GC(59)/RES/9.

²⁶ This relates to operative paragraphs 5, 7 and 39 of resolution GC(59)/RES/9.

²⁷ This relates to operative paragraphs 8, 39 and 41 of resolution GC(59)/RES/9.

²⁸ This relates to operative paragraphs 32 and 39 of resolution GC(59)/RES/9.

²⁹ This relates to operative paragraphs 10, 20 and 42 of resolution GC(59)/RES/9.

³⁰ This relates to operative paragraphs 10, 20, 34, 42 and 44 of resolution GC(59)/RES/9.

of the services for reviewing Member States' application of Agency safety standards and security guidance documents.³¹

33. IRRS missions were conducted in Indonesia in August 2015, Ireland in September 2015, Japan in January 2016, Lithuania in April 2016, and the United Republic of Tanzania in October 2015. IRRS follow-up missions were implemented in Bulgaria in April 2016, China in June 2016, and Sweden in April 2016. IRRS preparatory meetings took place in Belarus in December 2015, Bulgaria in September 2015, China in February 2016, Estonia in February 2016, Italy in March 2016, Japan in July 2015, Kenya in February 2016, Lithuania in November 2015, Nigeria in June 2016, South Africa in June 2016, and Sweden in September 2015. The Agency continued to encourage those Member States that have not yet hosted or requested an IRRS mission, or a follow-up mission, to do so.³²

34. Around 110 recommendations and 100 suggestions were made as part of the IRRS missions, in relation to the demonstration of safety for the authorization of facilities and activities, regulations and guides, regulatory inspections, and integrated management systems. Approximately 80% of the recommendations and suggestions raised in initial IRRS missions were successfully addressed by the regulatory bodies. However, it was noted that some Member States are facing difficulties in addressing the IRRS findings related to the governmental framework and infrastructure for safety.³³

35. The IRRS guidelines are being updated to take into account experience, lessons learned and analyses of past IRRS missions, as well as revisions of the Agency's safety standards conducted in the light of the Fukushima Daiichi accident. These changes are being implemented to improve both the effectiveness and efficiency of IRRS missions. To expand the pool of experts for IRRS missions, a training course for future IRRS mission team members was organized in November 2015 in Vienna.³⁴

36. The Agency conducted Operational Safety Review Team (OSART) missions in Canada in December 2015, France in September 2015, Japan in July 2015, Pakistan in December 2015, the Russian Federation in November 2015 and the United Kingdom in October 2015. One OSART follow-up mission was carried out in the United States of America in October 2015. The Agency continued to encourage those Member States that have not hosted or requested an OSART mission since the Fukushima Daiichi nuclear accident to do so, in accordance with the commitments made by Member States under the IAEA Action Plan on Nuclear Safety.³⁵

37. Around 100 recommendations and suggestions for NPP operational safety improvements were made as part of the above-mentioned OSART missions, in particular calling for improvements to fire safety, EPR arrangements and use of operating experience feedback. OSART missions also identified good practices, such as effective processes to promote safety culture amongst contractors, substantial design modifications to address design extension conditions, and effective corporate support. Member States provided extensive support for the conduct of the OSART missions, ensuring the participation of more than 70 highly qualified experts.³⁶

38. A new revision of the OSART guidelines, including 15 review area modules, was published in February 2016. The revision takes into consideration lessons learned from recent OSART missions,

³¹ This relates to operative paragraphs 10 and 44 of resolution GC(59)/RES/9.

³² This relates to operative paragraphs 2, 9 and 43 of resolution GC(59)/RES/9.

³³ This relates to operative paragraphs 2 and 43 of resolution GC(59)/RES/9.

³⁴ This relates to operative paragraphs 9, 10, 21 and 44 of resolution GC(59)/RES/9.

³⁵ This relates to operative paragraphs 9 and 43 of resolution GC(59)/RES/9.

³⁶ This relates to operative paragraphs 9, 28, 43 and 47 of resolution GC(59)/RES/9.

relevant updates of the Agency's safety standards and lessons learned from the Fukushima Daiichi accident, and includes new review area modules on the transition from operation to decommissioning, individual–technology–organization interactions, and long term operation. The Agency also developed training tools to assist organizations in performing self-assessments of operational safety of NPPs.³⁷

39. Members taking part in the International Generic Ageing Lessons Learned (IGALL) Phase 2 programme contributed to three working group meetings in the Czech Republic in August 2015, the Republic of Korea in August 2015, and Sweden in July 2015. Representatives of 28 Member States attended the IGALL Phase 2 Steering Committee meeting held in Vienna in November 2015. Phase 3 of the IGALL programme was launched at the beginning of 2016. The IGALL Phase 3 working group met in Vienna in April, May and June 2016.³⁸

40. Following a request by Member States, the Agency conducted an analysis of experience and results from missions conducted under the Safety Aspects of Long Term Operation (SALTO) peer review service. Lessons learned from SALTO missions were discussed during a Technical Meeting held in Vienna in June 2016.³⁹

41. A draft revision of the Safety Guide *Ageing Management for Nuclear Power Plants* (IAEA Safety Standards Series No. NS-G-2.12) was sent to Member States for comments in August 2015, and a revised draft, incorporating Member States' comments, was put forward, in March 2016, to the Coordination Committee on Safety Standards and Nuclear Security Series Publications for approval.⁴⁰

42. Two Technical Meetings were held on ageing management in the United States of America in October 2015 and on the use of a graded approach in the application of the safety requirements for research reactors in Vienna in May 2016.⁴¹

43. The Agency held two workshops on the safety of nuclear fuel cycle facilities in Vienna in September 2015 and in April 2016. These workshops facilitated the exchange of information on national practices and experiences related to ageing management and safety reassessment. The workshop on safety reassessment discussed the document *Safety Reassessment for Nuclear Fuel Cycle Facilities in the Light of the Accident at the Fukushima Daiichi Nuclear Power Plant* (Safety Reports Series No. 88) which was published in 2016.⁴²

44. The Agency also finalized for publication a document entitled *Guidelines for Self-Assessment of Research Reactor Safety* to support Member States in performing self-assessments, including in preparation for receiving an Integrated Safety Assessment of Research Reactors (INSARR) mission.⁴³

45. An INSARR mission was conducted in Portugal, February 2016. Follow-up INSARR missions were conducted in Italy in December 2015 and Slovenia in November 2015. The Agency conducted a

³⁷ This relates to operative paragraphs 10, 44 and 92 of resolution GC(59)/RES/9 and operative paragraphs B.3.1 and B.3.4 of resolution GC(59)/RES/12.

³⁸ This relates to operative paragraph 46 of resolution GC(59)/RES/9.

³⁹ This relates to operative paragraphs 9, 10, 43, 44 and 46 of resolution GC(59)/RES/9.

⁴⁰ This relates to operative paragraphs 32 and 46 of resolution GC(59)/RES/9.

⁴¹ This relates to operative paragraphs 8 and 46 of resolution GC(59)/RES/9.

⁴² This relates to operative paragraphs 8, 9, 43, 46 and 49 of resolution GC(59)/RES/9.

⁴³ This relates to operative paragraphs 10, 42 and 44 of resolution GC(59)/RES/9.

Safety Evaluation of Fuel Cycle Facilities during Operation (SEDO) follow-up mission in Romania in 2015.⁴⁴

46. Two research reactor safety workshops were conducted in Vienna in February and in April 2016. These workshops dealt with self-assessment and establishing a periodic safety review process for research reactors.⁴⁵

47. Research reactor safety expert missions were conducted in Indonesia in June 2016, the Islamic Republic of Iran in July and October 2015, Jamaica in June 2016, Malaysia in April 2016, Pakistan in April 2016 and Peru in November 2015 and March 2016. These missions supported various safety areas, including ageing management, safety of core fuel conversion from high enriched uranium to low enriched uranium, operational radiation protection programmes, emergency planning, review and assessment of safety documents, and managing the transition from operation to decommissioning.⁴⁶

48. The International Conference on Research Reactors: Safe Management and Effective Utilization was held in Vienna in November 2015, with the participation of policymakers, senior managers and technical specialists representing 56 Member States and 3 international organizations. The conference recommended the continuation of Agency's activities, such as support to the application of the Code of Conduct on the Safety of Research Reactors, development and application of Agency safety standards, and safety reviews. The conference also facilitated the sharing of Member States' experience performing safety reassessments of research reactors and implementing safety improvements.⁴⁷

49. The Agency continued supporting Member States in the application of the Code of Conduct on the Safety of Research Reactors and the Agency's safety standards. In this connection, the Agency conducted regional workshops on regulatory inspection programmes in Africa, in Ghana in October 2015, on periodic safety review in Europe, in Portugal in November 2015 and application of the Code of Conduct (emphasizing operational radiation protection and waste management) in Asia and the Pacific, in the United States of America in December 2015.⁴⁸

50. The Agency continued supporting Member States in safely implementing projects to establish a new research reactor, including through conducting safety and peer review missions in Jordan in September 2015 and January 2016, Mongolia in April 2016 and the United Republic of Tanzania in July 2015. The Agency also held a national consultancy meeting with representatives of Nigeria in Vienna in August 2015 to assist with the technical aspects of their national safety regulations in support of a new research reactor project.⁴⁹

51. The Agency finalized for publication an IAEA Technical Document entitled *Management of the Interface between Nuclear Safety and Security for Research Reactors*, which provides considerations and practical information based on Member States' experiences with effectively managing the safety–security interface at research reactors.⁵⁰

⁴⁴ This relates to operative paragraphs 9 and 43 of resolution GC(59)/RES/9.

⁴⁵ This relates to operative paragraph 42 of resolution GC(59)/RES/9.

⁴⁶ This relates to operative paragraphs 18, 47 and 49 of resolution GC(59)/RES/9.

⁴⁷ This relates to operative paragraphs 1, 8, 18, 38 and 49 of resolution GC(59)/RES/9.

⁴⁸ This relates to operative paragraphs 5, 18 and 20 of resolution GC(59)/RES/9.

⁴⁹ This relates to operative paragraphs 2, 18 and 20 of resolution GC(59)/RES/9.

⁵⁰ This relates to operative paragraph 3 of resolution GC(59)/RES/9.

52. The Agency conducted two Site and External Events Design (SEED) review service missions in Indonesia in December 2015 and May 2016 to assist in reviewing the site permit application for an experimental reactor. The Agency also conducted a SEED mission to Egypt in January 2016, to review the completeness of the documents submitted for a new NPP site permit and the related regulatory requirements; a SEED mission in Islamabad, Pakistan, in May 2016 to review the probabilistic seismic hazard assessment of the Chashma NPP site; a SEED meeting in Vienna in November 2015, to assist Jordan in the review of the siting requirements for a first NPP; a SEED mission to Poland in February 2016, to assist in the development of regulatory guidance documents for the site licensing process, and a SEED mission to Thailand in December 2015, for the revision of the national siting regulations. The Agency continued to encourage Member States, at international, regional and national forums, to request services conducted under the aegis of its International Seismic Safety Centre (ISSC).⁵¹

53. A pilot application of the Earthquake Notification System was completed in Canada, in November 2015. The system is now available to all Member States. It supports the Agency's Incident and Emergency Centre on a round-the-clock basis and assists the decision-making process for responding to earthquakes.⁵²

54. The Earthquake Notification System is being expanded to provide information on all potential sources of external hazards, such as floods, tsunamis, volcanic eruptions, landslides, fires, tropical storms and severe meteorological hazards. The new system will also compile information on the global occurrence of natural events. This information will serve as a technical basis for further development and validation of modern engineering methods and tools. The system, once fully developed, will be made available for use by Member States.⁵³

55. Within the scope of the ISSC extrabudgetary programme, the Agency is supporting Member States' implementation of the Agency's safety standards related to siting and design by developing 12 Safety Reports and 8 IAEA Technical Documents, conducting peer review services, and promoting capacity building in countries that are embarking on a nuclear power programme.⁵⁴

56. To support the implementation of *Seismic Hazards in Site Evaluation for Nuclear Installations* (IAEA Safety Standards Series No. SSG-9), the Agency published a Technical Document entitled *The Contribution of Palaeoseismology to Seismic Hazard Assessment in Site Evaluation for Nuclear Installations* (IAEA-TECDOC-1767) and a Safety Report entitled *Ground Motion Simulation Based on Fault Rupture Modelling for Seismic Hazard Assessment in Site Evaluation for Nuclear Installation* (Safety Reports Series No. 85). A further IAEA Technical Document, entitled *Ground Motion Prediction Equations (GMPEs) and Site Response in Seismic Hazard Assessment for Site Evaluation for Nuclear Installations*, and a Safety Report, entitled *Diffuse Seismicity in Seismic Hazard Assessment for Site Evaluation of Nuclear Installations*, are at the final stages of the publication process.⁵⁵

57. Three Safety Reports are at the final stages of the publication process: *Safety Aspects in the Protection of Nuclear Power Plants against Human Induced External Events: General Considerations*, *Safety Aspects in the Protection of Nuclear Power Plants against Human Induced*

⁵¹ This relates to operative paragraphs 1, 2 and 48 of resolution GC(59)/RES/9.

⁵² This relates to operative paragraph 50 of resolution GC(59)/RES/9.

⁵³ This relates to operative paragraph 50 of resolution GC(59)/RES/9.

⁵⁴ This relates to operative paragraph 40 of resolution GC(59)/RES/9.

⁵⁵ This relates to operative paragraphs 2, 32 and 40 of resolution GC(59)/RES/9.

External Events: Assessment of Structures, and Safety Aspects in the Protection of Nuclear Power Plants against Human Induced External Events: Margin Assessment. These will address the ability of NPPs to withstand human induced external events and the protection of NPPs against such events. The Agency is also at the final stages of preparing for publication an IAEA Technical Document provisionally entitled *Volcanic Hazard Assessments for Nuclear Installations: Methods and Examples in Site Evaluation*.⁵⁶

58. The ISSC organized a meeting in order to discuss Phase 2 of its extrabudgetary programme in Vienna in June 2016. The meeting discussed the results from Phase 1 and identified five areas for future work: external hazard assessment, design for protection against external hazards, safety assessment against external hazards, information systems, and capacity building. The future programme of work will also address challenges related to site safety, such as the uncertainties associated with external hazards' characterization and their implications for site and design safety.⁵⁷

59. The Agency continued to support the exchange of information among experts on the results of the projects conducted under the ISSC. The Agency conducted a workshop on good practices in physics-based fault rupture models for seismic hazard assessment of nuclear installations in Vienna in November 2015 based on the safety report entitled *Ground Motion Simulation Based on Fault Rupture Modelling for Seismic Hazard Assessment in site Evaluation for Nuclear Installation* (IAEA Safety Reports Series No. 85). This workshop was attended by representatives of 30 Member States.⁵⁸

60. The Agency conducted two Safety Culture Continuous Improvement Process (SCCIP) missions in Brazil in March 2016 and Mexico in September 2015. Another SCCIP mission was conducted at the Polish regulatory body in August 2015. The Agency organized national and regional workshops on safety culture self-assessment, leadership and culture for safety in Austria in November 2015, the Islamic Republic of Iran in November 2015, Jordan in August 2015, Mexico in February 2016, the Philippines in January 2016, Spain in November 2015 and Thailand in June 2016.⁵⁹

61. The Agency organized the International Conference on Human and Organizational Aspects of Assuring Nuclear Safety — Exploring 30 Years of Safety Culture in Vienna in February 2016, which was attended by representatives of 61 Member States and 7 international organizations. This conference facilitated the sharing of experience related to the role of human and organizational factors (HOF) in nuclear safety. The conference also reviewed safety culture experience over the past 30 years and considered future needs in this field.⁶⁰

62. A Technical Meeting on regulatory oversight of HOF was organized in Vienna in December 2015. The meeting report is being used as major input for the development of a new IAEA Technical Document on regulatory oversight of HOF. In connection with the work on this Technical Document, a consultancy meeting was organized in Vienna in April 2016 and a training course for regulatory inspectors on oversight of HOF was conducted in Lithuania in June 2016.⁶¹

⁵⁶ This relates to operative paragraphs 2, 40 and 50 of resolution GC(59)/RES/9.

⁵⁷ This relates to operative paragraphs 2, 40, 48 and 50 of resolution GC(59)/RES/9.

⁵⁸ This relates to operative paragraphs 2 and 40 of resolution GC(59)/RES/9.

⁵⁹ This relates to operative paragraphs 28 and 51 of resolution GC(59)/RES/9.

⁶⁰ This relates to operative paragraphs 1, 8 and 51 of resolution GC(59)/RES/9 and operative paragraph B3.2 of resolution GC(59)/RES/12.

⁶¹ This relates to operative paragraphs 2 and 51 of resolution GC(59)/RES/9.

63. The Agency facilitated six workshops on leadership and safety culture, which were attended by senior managers and held in Austria in April 2016, Belarus in November 2015, Brazil in March 2016, France in November 2015, Indonesia in June 2016 and Malaysia in April 2016. The Agency published *OSART Independent Safety Culture Assessment (ISCA) Guidelines* (IAEA Services Series No. 32) in March 2016. Additionally, a safety report entitled *Performing Safety Culture Self-Assessments* (Safety Report Series No. 83) is at the final stages of publication. In line with this safety report a consultancy meeting was held in Vienna in October 2015 to develop two sets of draft guidelines for safety culture self-assessment for facilities and activities as well as for regulatory bodies. Two additional consultancy meetings were held in Vienna in April and May 2016 in order to adapt SCCIP to regulatory bodies in Member States without nuclear power and to develop a specific questionnaire for self-assessment of safety culture for regulatory bodies of nuclear installations. A fourth consultancy meeting took place in Vienna in May–June 2016 to prepare a Technical Document for regulatory bodies to address both their internal safety culture programme as well as practices for safety culture oversight.⁶²

64. The Agency continues its efforts to update the guidance documentation for its technical safety review services. The updates to the guidance documentation for the generic reactor safety, severe accident, periodic safety and design safety review services incorporate lessons learned from previous reviews, feedback from the Fukushima Daiichi accident, and consideration of good practices. Two consultancy meetings were held in December 2015 in Vienna to review the final drafts.⁶³

65. The Agency published a Technical Document on the implementation of the design requirements contained in *Safety of Nuclear Power Plants: Design* (IAEA Safety Standards Series No. SSR-2/1), which is entitled *Considerations in the Application of the IAEA Safety Requirements for Design of Nuclear Power Plants* (IAEA-TECDOC-1791).⁶⁴

66. In April 2016, the Agency published *Design of Instrumentation and Control Systems for Nuclear Power Plants* (IAEA Safety Standards Series No. SSG-39), which provides guidance on good practices for the safety assessment of digital instrumentation and control systems.⁶⁵

67. The Agency organized a Technical Meeting on Topical Issues of Severe Accident Analysis and Management for Nuclear Power Plants in the Russian Federation in October 2015, which was attended by representatives of 12 Member States. The meeting provided a forum for the participants to exchange information on emergency operating procedures and severe accident management guidelines for NPPs and to share good practices in the development and implementation of accident management programmes.⁶⁶

68. Meetings of the Steering Committee of the Small Modular Reactor Regulators' Forum took place in Vienna in October 2015 and March 2016. The Steering Committee was briefed on progress made by each of the Forum's three Working Groups: the Emergency Planning Zone Size Working Group, the Defence-in-Depth Working Group, and the Graded Approach Working Group. The Working Groups are developing surveys on specific technical issues. They also reported on the progress made

⁶² This relates to operative paragraphs 2, 20, 28, 42 and 51 of resolution GC(59)/RES/9.

⁶³ This relates to operative paragraphs 10 and 44 of resolution GC(59)/RES/9.

⁶⁴ This relates to operative paragraph 52 of resolution GC(59)/RES/9.

⁶⁵ This relates to operative paragraph 53 of resolution GC(59)/RES/9.

⁶⁶ This relates to operative paragraphs 8 and 54 of resolution GC(59)/RES/9.

on defining the attributes of small modular reactors which differentiate them from conventional NPP reactors. The work plans of the Working Groups were formally approved by the Steering Committee.⁶⁷

69. In March 2016, the Agency completed a technical safety review (Generic Reactor Safety Review) for the CAP1400 and the ACP100 reactor designs. The Agency evaluated design safety documentation against its safety standards to support, in particular, the adequate application of the new design principles from *Safety of Nuclear Power Plants: Design* (IAEA Safety Standards Series No. SSR-2/1). During the evaluation of the ACP100, insights were gained that will benefit future reviews of transportable NPP designs.⁶⁸

70. Two consultancy meetings took place in Vienna in July 2015 and June 2016 to prepare an IAEA Technical Document to assist Member States in the collection, evaluation, use and dissemination of operating and regulatory experience to enhance their regulatory frameworks.⁶⁹

71. Two complementary draft Safety Guides entitled *Organization, Management and Staffing of a Regulatory Body for Safety* (DS472) and *Functions and Processes of the Regulatory Body for Safety* (DS473), intended to support the implementation of the safety requirements contained in *Governmental, Legal and Regulatory Framework for Safety* (IAEA Safety Standards Series No. GSR Part 1 (Rev. 1)), were approved by the Coordination Committee on Safety Standards and Nuclear Security Series Publications in March 2016.⁷⁰

72. Nineteen national and 20 regional activities and one interregional activity in support of technical cooperation projects were implemented in Africa, Asia and the Pacific, and Europe to assist Member States in establishing or enhancing their governmental, legal and regulatory framework and infrastructure for nuclear installation safety.⁷¹

73. The Agency continued to focus on supporting the national safety infrastructure and regulatory effectiveness of Member States that are expanding their existing nuclear power programmes or planning to embark on such a programme for the first time. National and regional workshops and training events were conducted in Austria in October 2015 and December 2015, Belarus in July and September 2015 as well as twice in November 2015, Bulgaria in July 2015, Indonesia in November and December 2015 as well as in February and June 2016, Japan in July 2015, the Republic of Korea in October and November 2015 as well as May 2016, Malaysia in September 2015, the Philippines in January 2016, Saudi Arabia in September 2015, Thailand in July 2015, Turkey in November 2015 and Viet Nam in November 2015.⁷²

74. The Agency organized expert assistance missions — including, inter alia, missions to coordinate work plans based on the assessment of regulatory needs — to Belarus in February 2016 and Jordan in October 2015 and February 2016. Expert missions also took place in Belarus in July 2015, Jordan in November 2015 and Poland in December 2015 on, respectively, the review of the regulatory body's

⁶⁷ This relates to operative paragraphs 5 and 20 of resolution GC(59)/RES/9 and operative paragraphs B.6.7 and B.6.8 of resolution GC(59)/RES/12.

⁶⁸ This relates to operative paragraph 55 of resolution GC(59)/RES/9.

⁶⁹ This relates to operative paragraphs 2, 8, 21 and 56 of resolution GC(59)/RES/9.

⁷⁰ This relates to operative paragraphs 19 and 32 of resolution GC(59)/RES/9.

⁷¹ This relates to operative paragraphs 1, 2 and 11 of resolution GC(59)/RES/9.

⁷² This relates to operative paragraphs 2, 19 and 20 of resolution GC(59)/RES/9 and operative paragraphs B.5.3 of resolution GC(59)/RES/12.

inspection programme and procedures, on the self-assessment of the licensing process, and on the development of an integrated management system.⁷³

75. The Regulatory Cooperation Forum (RCF) annual plenary meeting took place in Vienna in September 2015 and it was attended by representatives of 27 Member States. RCF representatives visited Belarus, Jordan, Poland and Viet Nam in early 2016 and conducted a detailed review of their national action plans. The updated action plans were reported during the meeting between the RCF and the European Commission held in Brussels, Belgium, in June 2016 attended by representatives of 12 Member States within the framework of the Instrument for Nuclear Safety Cooperation.⁷⁴

76. The Agency's Nuclear Power Support Group, which is tasked with coordinating Agency activities in support of newcomer countries, met three times to exchange information on relevant Agency activities, to discuss and revise current needs of newcomer countries, and to oversee the Agency's coordinated actions in support of Member States' needs.⁷⁵

77. The Agency participated in the following biannual meetings of working groups of the OECD/NEA Committee on Nuclear Regulatory Activities: the 50th Meeting of the Working Group on Inspection Practices (WGIP) in France in October 2015 and the 51st Meeting of the WGIP held together with the 13th International Nuclear Regulatory Inspection Workshop in Belgium in April 2016, and the 15th Meeting of the Working Group on the Regulation of New Reactors in France in October 2015.⁷⁶

78. The 22nd annual meeting of the Forum of the State Nuclear Safety Authorities of the Countries Operating WWER Type Reactors (WWER Regulators' Forum) was held in September 2015 in Yerevan, Armenia. Representatives of several of the Forum's member countries (Armenia, Bulgaria, Finland, Hungary, the Islamic Republic of Iran, the Russian Federation, Slovakia and Ukraine) as well as observers from Belarus, Germany's Installation and Reactor Safety Company (GRS) and the Agency participated in the meeting. The Forum discussed, amongst other relevant issues, the results of its working groups and put forward for discussion and approval a proposal for a new working group on aging of water cooled, water moderated power reactors (WWERs).⁷⁷

79. A CANDU Senior Regulators' Meeting, hosted by the Canadian Nuclear Safety Commission, was held in November 2015 in Toronto, Canada. The representatives of the CANDU Senior Regulators Group discussed relevant operational experience feedback at a national level and made a proposal for setting up a new working group to discuss current practices on hydrogen management provisions within countries that operate Canada deuterium–uranium (CANDU) reactors.⁷⁸

⁷³ This relates to operative paragraphs 2, 19 and 20 of resolution GC(59)/RES/9.

⁷⁴ This relates to operative paragraphs 5, 20 and 52 of resolution GC(59)/RES/9.

⁷⁵ This relates to operative paragraphs 2 and 22 of resolution GC(59)/RES/9.

⁷⁶ This relates to operative paragraph 5 of resolution GC(59)/RES/9.

⁷⁷ This relates to operative paragraphs 5 and 12 of resolution GC(59)/RES/9.

⁷⁸ This relates to operative paragraphs 5 and 12 of resolution GC(59)/RES/9.

D. Radiation Safety and Environmental Protection

80. The cooperation of the Agency with the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) continued on the development of safety standards and technical guidance related to the control of exposures of the public and protection of the environment. The draft Safety Guides entitled *Occupational Radiation Protection* (DS453) and *Radiation Protection and Safety in Medical Uses of Ionizing Radiation* (DS399) have been endorsed by the CSS for publication. Three draft Safety Guides entitled *Radiation Protection of the Public and the Environment* (DS432), *A General Framework for Prospective Radiological Environmental Impact Assessment and Protection of the Public* (DS427) and *Regulatory Control of Radioactive Discharges to the Environment* (DS442) will be submitted to the CSS for endorsement at its meeting in November 2016.⁷⁹

81. A Second African Regional Workshop on Implementation of the International Basic Safety Standards was held in Ghana in November 2015 and attended by 43 participants from 16 Member States. The workshop was organized in cooperation with the World Health Organization (WHO). The main issues covered were radiation protection in the medical uses of radiation and the management of exposures from the use of naturally occurring radioactive materials (NORM).⁸⁰

82. A workshop on updating Romania's safety requirements in order to transpose the revised International Basic Safety Standards in national legislation was organized in Bucharest, Romania, in December 2015. The workshop was attended by 17 participants from national authorities, licensees and industry. The topics covered included the justification of medical exposures, optimization of protection and safety in medical exposures, the new dose limit for the lens of the eye, and non-medical imaging.⁸¹

83. A workshop on controlling public exposure in compliance with the International Basic Safety Standards was held in Cape Town, South Africa, in May 2016. The workshop was organized in cooperation with the WHO. The workshop was attended by 25 participants from 14 Member States. Issues addressed were the management of contaminated sites, control of radon in homes and international standards for food and drinking water in non-emergency situations.⁸²

84. A set of 21 factsheets covering various aspects of protection of workers, patients, the public and the environment have been developed jointly with the organizations that co-sponsored the International Basic Safety Standards. The factsheets have been published on the Agency's website and on the website of the Inter-Agency Committee on Radiation Safety (IACRS)⁸³. The IACRS met in Vienna in June 2016 and the co-sponsoring organizations agreed to use these factsheets in their promotional activities.⁸⁴

85. The Information System on Occupational Exposure (ISOE) is jointly operated by the OECD/NEA and the IAEA. The IAEA ISOE Technical Centre represents non-OECD countries with NPPs. A limited number of Member States in the process of embarking on a nuclear power

⁷⁹ This relates to operative paragraphs 33 and 57 of resolution GC(59)/RES/9.

⁸⁰ This relates to operative paragraph 57 of resolution GC(59)/RES/9.

⁸¹ This relates to operative paragraphs 57 and 60 of resolution GC(59)/RES/9.

⁸² This relates to operative paragraphs 57 and 67 of resolution GC(59)/RES/9.

⁸³ The IACRS consists of eight international organizations with responsibilities for different aspects of radiation protection and safety: the European Commission, the Food and Agriculture Organization of the United Nations, the IAEA, the International Labour Organization, the OECD/NEA, the Pan American Health Organization, UNSCEAR, and the WHO.

⁸⁴ This relates to operative paragraph 57 of resolution GC(59)/RES/9.

programme have been invited to become members of ISOE in 2015. The IAEA ISOE Technical Centre hosted the ISOE Bureau and Management Board Meeting in Vienna in November 2015. The 2016 ISOE International Symposium was held in Belgium in June 2016.⁸⁵

86. A web-based database for the module on industrial radiography in the Information System on Occupational Exposure in Medicine, Industry and Research (ISEMIR) has been developed and was released online in July 2015. Information has been sent to the end users and different stakeholders involved in radiation protection in industrial radiography for the promotion of the system. A consultancy meeting was held in November 2015 to discuss the approach for improving ISEMIR further.⁸⁶

87. Following the areas identified in the Call for Action of the International Conference on Occupational Radiation Protection: Enhancing the Protection of Workers — Gaps, Challenges, and Developments, held in Vienna in December 2014, a Safety Report entitled *Radiation Protection of Itinerant Workers* (Safety Reports Series No. 84) was published in December 2015 and guidance material on occupational radiation protection and risk management in the decommissioning of nuclear installations has been prepared.⁸⁷

88. An international workshop on occupational radiation protection in uranium mining and processing was held in Adelaide, Australia, in October 2015, to improve guidance material on the topic. A follow-up workshop was held in South Africa in May 2016 at which the guidance material was further developed. In addition, a regional training course on radiation protection for the use of NORM was held in the Czech Republic in September 2015.⁸⁸

89. A side event was held during the 59th regular session of the Agency's General Conference in September 2015, entitled 'Advancing Radiation Protection in the Light of the Revised Basic Safety Standards (BSS)'. The main issue addressed was the implementation in practice of the International BSS and the Euratom BSS, focusing on radiation protection in medicine, including the considerations for strengthening this area identified in the Bonn Call for Action.⁸⁹

90. A Technical Meeting on Justification of Medical Exposure in Diagnostic Imaging was held in Vienna in March 2016, and was attended by 56 representatives from 28 Member States. Representatives of the WHO and the European Commission were involved, as well as several professional organizations. During this meeting a draft document preparation profile (DPP) for a Safety Report on adopting, adapting and implementing referral guidelines in diagnostic imaging was prepared.⁹⁰

91. A training course on implementation of the draft Safety Guide on radiation protection and safety in medical uses of ionizing radiation was held in Vienna in November 2015. Fifty-three representatives of 26 Member States participated in the meeting to discuss how medical uses of ionizing radiation should be carried out safely within the framework of the International BSS, to

⁸⁵ This relates to operative paragraph 58 of resolution GC(59)/RES/9.

⁸⁶ This relates to operative paragraph 59 of resolution GC(59)/RES/9.

⁸⁷ This relates to operative paragraph 61 of resolution GC(59)/RES/9.

⁸⁸ This relates to operative paragraph 62 of resolution GC(59)/RES/9.

⁸⁹ This relates to operative paragraphs 57 and 63 of resolution GC(59)/RES/9.

⁹⁰ This relates to operative paragraph 64 of resolution GC(59)/RES/9.

exchange their experiences and implementation approaches, and to learn from shared good practices. Representatives of the WHO and the Pan American Health Organization were involved.⁹¹

92. A consultancy meeting on recording, tracking and management of patient exposure in diagnostic interventional radiology was held in Vienna in April 2016, in order to prepare a DPP for the development of a Safety Report on patient exposure tracking and diagnostic reference levels.⁹²

93. SAFRON ('Safety in Radiation Oncology') is a safety reporting and learning system for radiotherapy developed by the Agency. The number of reported events related to safety in radiotherapy in SAFRON is more than 1300. In the second half of 2015, SAFRON was further enhanced through the introduction of statistical tools that enable end users to analyse incidents included in the system.⁹³

94. A side event was held during the 59th regular session of the Agency's General Conference in September 2015, entitled 'The Key Role of the Medical Physicist in Providing Quality and Safety in Medical Uses of Ionizing Radiation'. Issues addressed were the key role of medical physicists, the potential consequences of a lack of clinically qualified medical physicists in medical facilities and practices, as well as actions to take if this is the case, and what the Agency can do to support Member States in this area.⁹⁴

95. The draft Safety Guide with the provisional title *Radiation Safety of X-Ray Generators and Radiation Sources Used for Inspection Purposes and for Non-Medical Imaging* (DS471) was submitted to Member States for comment in February 2016.⁹⁵

96. A regional meeting was held in Kuala Lumpur, Malaysia, in October 2015, on the review of initial radon measurements and the development of national radon action plans. The meeting was attended by 15 participants from 10 Member States. A regional workshop was held in Tallinn, Estonia, in May 2016, on radon in workplaces as an element of a national radon action plan. The workshop was attended by 28 participants from 22 Member States.⁹⁶

97. The Technical Document *Criteria for Radionuclide Activity Concentrations for Food and Drinking Water* (IAEA-TECDOC-1788) was published in April 2016. It considers the various international standards to be applied at the national level for the assessment of levels of radionuclides in food and in drinking water in different circumstances for purposes of control, other than in a nuclear or radiological emergency.⁹⁷

98. The Agency held a Technical Meeting in Vienna in April 2016 to discuss a draft Safety Report entitled *Model Regulations on the Control of Public Exposure for Facilities and Activities Involving Uranium and Naturally Occurring Radioactive Material*. The meeting was attended by 52 participants

⁹¹ This relates to operative paragraph 64 of resolution GC(59)/RES/9.

⁹² This relates to operative paragraph 64 of resolution GC(59)/RES/9.

⁹³ This relates to operative paragraphs 11 and 65 of resolution GC(59)/RES/9.

⁹⁴ This relates to operative paragraph 65 of resolution GC(59)/RES/9.

⁹⁵ This relates to operative paragraph 66 of resolution GC(59)/RES/9.

⁹⁶ This relates to operative paragraph 67 of resolution GC(59)/RES/9.

⁹⁷ This relates to operative paragraph 68 of resolution GC(59)/RES/9.

from 36 Member States. The meeting reviewed comments received from Member States in advance of the meeting.⁹⁸

99. Within the framework of the Modelling and Data for Radiological Impact Assessments (MODARIA) programme, the Agency has set up a working group on the assessment of radiological impacts from NORM and legacy sites. The objective of this working group is to assist in the development of capabilities for the realistic assessment of radiological impacts of material containing enhanced levels of NORM. The outputs from the working group will support the implementation of regulatory requirements with regard to radiation protection in the management of such materials.⁹⁹

100. The first phase of the MODARIA programme (MODARIA I) was concluded at the fourth Technical Meeting held under the programme, which took place in Vienna in November 2015. MODARIA I was dedicated to the enhancement of capabilities in Member States for environmental modelling and radiological assessment of radiation exposures to people and the environment in planned, existing and emergency exposure situations. The final Technical Meeting of MODARIA I was attended by about 150 participants from more than 40 Member States. A follow-up programme (MODARIA II) is currently being developed.¹⁰⁰

101. The possibility of closer cooperation with UNSCEAR on the use of the Agency's Database on Discharges of Radionuclides to the Atmosphere and the Aquatic Environment (DIRATA) as a basis for the assessment of exposures to the public is currently being discussed with the UNSCEAR Secretariat.¹⁰¹

102. The Technical Document *Inventory of Radioactive Material Resulting from Historical Dumping, Accidents and Losses at Sea — For the Purposes of the London Convention 1972 and London Protocol 1996* (IAEA-TECDOC-1776) was issued in October 2015. It compiles information on recorded waste dumping, accidents and losses at sea involving radioactive material since the 1940s. This publication responds to the request from the Contracting Parties to the 1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (London Convention) to establish and keep up to date a global inventory of radioactive material arising from dumping and accidents.¹⁰²

E. Transport Safety

103. The Transport Safety Standards Committee (TRANSSC), at its 31st meeting held in Vienna in November 2015, completed its review of the proposals to revise the *Regulations for the Safe Transport of Radioactive Material: 2012 Edition* (IAEA Safety Standards Series No. SSR-6) and the *Advisory Material for the Regulations for the Safe Transport of Radioactive Material (2012 Edition)* (IAEA Safety Standards Series No. SSG-26). TRANSSC concluded that a revision of both publications was

⁹⁸ This relates to operative paragraph 62 of resolution GC(59)/RES/9.

⁹⁹ This relates to operative paragraph 62 of resolution GC(59)/RES/9.

¹⁰⁰ This relates to operative paragraph 69 of resolution GC(59)/RES/9.

¹⁰¹ This relates to operative paragraph 70 of resolution GC(59)/RES/9.

¹⁰² This relates to operative paragraph 71 of resolution GC(59)/RES/9.

necessary and the revision process was initiated. The revised SSR-6 is planned to be published in 2018.¹⁰³

104. The Secretariat has issued a note verbale to a representative group of Member States covering all regions and relevant International Organizations seeking their input for updating the document GOV/1998/17, entitled *Safety of Transport of Radioactive Material*.¹⁰⁴

105. The Agency continues its efforts to support the regulatory framework for transport safety, in particular by developing regional networks of regulators. Regional meetings to prepare the organization of a School for Drafting Regulations on Transport Safety were held in Vienna in April 2016 and involved over 50 Member States.¹⁰⁵

106. The informal consultation mechanism known as the ‘Dialogue between Coastal and Shipping States’ continues to operate and is now being facilitated under the chairmanship of Japan. As part of these efforts a visit to a Pacific Nuclear Transport Limited ship in the United Kingdom was organised for July 2016.¹⁰⁶

107. The Agency’s regional capacity building approach with respect to regulatory oversight of transport continues in the Africa, Asia and the Pacific, and Mediterranean regions. The following transport safety training courses were conducted: Africa region: Morocco, in November 2015, Austria in December 2015, Kenya in February 2016, Austria in April 2016; Asia and the Pacific: Indonesia in September 2015, Fiji in December 2015, Austria in April 2016, Republic of Korea in June 2016; Mediterranean region: Turkey in October 2015, Austria in March 2016. National training workshops were also held in Jordan in September 2015 and Slovenia in December 2015. In total, over a hundred Member States have been involved in the various regional training activities. Two consultancy meetings took place in Vienna in December 2015 and May 2016 to revise the training material used for transport safety.¹⁰⁷

108. The Agency continues to include awareness of the issue of denials of shipment in its national and regional training courses and workshops to ensure that a consistent message reaches all participants in Agency training activities.¹⁰⁸

109. The Agency published a set of ten short films in English and Spanish on topics relating to transport safety. The films are intended for use in Agency training activities. They were made freely available to Member States in March 2016.¹⁰⁹ The Agency has launched a web page on the GNSSN website for easy access to relevant information for the regional transport communities.¹¹⁰

¹⁰³ This relates to operative paragraph 72 of resolution GC(59)/RES/9.

¹⁰⁴ This relates to operative paragraph 72 of resolution GC(59)/RES/9.

¹⁰⁵ This relates to operative paragraphs 73 and 81 of resolution GC(59)/RES/9.

¹⁰⁶ This relates to operative paragraphs 74, 75, 76, 77 and 78 of resolution GC(59)/RES/9.

¹⁰⁷ This relates to operative paragraph 83 of resolution GC(59)/RES/9.

¹⁰⁸ This relates to operative paragraphs 82 and 83 of resolution GC(59)/RES/9.

¹⁰⁹ See <https://www.youtube.com/channel/UCzFOGuMljWuIHADHFA1WXfQ/featured>.

¹¹⁰ This relates to operative paragraph 83 of resolution GC(59)/RES/9.

F. The Safety of Spent Fuel and Radioactive Waste Management

110. At their Fifth Review Meeting held in May 2015 the Contracting Parties to the Joint Convention decided to organize a topical meeting dealing with safety challenges and responsibility issues related to the disposal of spent fuel or radioactive waste in a country other than the one in which they were generated. The Topical Meeting, which is open to Contracting Parties to the Joint Convention, is planned to take place in Vienna in September 2016. The Secretariat provided support to the Organizational Committee established for the preparation of the Topical Meeting.¹¹¹

111. A national workshop to promote the Joint Convention was held in Malaysia in December 2015 at the request of the Malaysian authorities (Atomic Energy Licensing Board) and was attended by 23 participants. A similar workshop was held for the African region in Centurion, South Africa, in December 2015, and was attended by 16 delegates from Member States.¹¹²

112. The Agency has finalized a draft Technical Document on the management of large volumes of waste arising from a nuclear or radiological emergency. It was developed by the international working group established after the Fukushima Daiichi accident, and is one of a series of companion documents being prepared by the Agency to support Member States' efforts to improve preparedness for a nuclear or radiological emergency. The document aims to provide a technical basis for the predisposal management and disposal of waste, as well as a technical basis for remediation and decommissioning of an affected area or site.¹¹³

113. The Agency is analysing experience gained from the Chernobyl and Fukushima Daiichi accidents with the aim to prepare a Safety Report on situation-specific remediation strategies for contaminated urban and rural areas for a wide range of environmental conditions.¹¹⁴

114. The Agency organized a Technical Meeting on Remediation Techniques and Strategies in Post-Accident Situations, held in Vienna in June 2016. The purpose of the meeting was to share knowledge and experience on a wide spectrum of aspects related to the remediation and recovery of contaminated areas, addressing the requirements of the Agency's safety standards, and in particular those laid down in *Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards* (IAEA Safety Standards Series No. GSR Part 3).¹¹⁵

115. In 2015, a three-year cooperation project with Fukushima Prefecture concluded. This project was intended to assist Fukushima Prefecture on questions related to the remediation of affected areas, the safe management of waste collected during remediation activities, and radiation monitoring. Within the framework of this project, support was provided for the treatment of remediation waste in municipal incinerators, remediation activities in rivers and lakes, and radiation protection issues in forests. After an analysis of the results and the identification of further needs, a two-year extension of the project was approved and launched in January 2016.¹¹⁶

116. A topical session on remediation strategies after an emergency was held during the 40th meeting of the Waste Safety Standards Committee in November 2015. The discussions reinforced the need for

¹¹¹ This relates to operative paragraphs 84 and 85 of resolution GC(59)/RES/9.

¹¹² This relates to operative paragraphs 14 and 85 of resolution GC(59)/RES/9.

¹¹³ This relates to operative paragraphs 87 and 91 of resolution GC(59)/RES/9.

¹¹⁴ This relates to operative paragraph 87 of resolution GC(59)/RES/9.

¹¹⁵ This relates to operative paragraph 87 of resolution GC(59)/RES/9.

¹¹⁶ This relates to operative paragraphs 87 and 91 of resolution GC(59)/RES/9.

clear guidance on remediation, including on the concept of conditional clearance after an emergency and on the importance of communication with decision-makers in this respect. In July 2015, a project on the derivation of activity levels in material deemed to be suitable for disposal in landfills was launched. A second consultancy meeting on this project was held in March 2016.¹¹⁷

117. Following the last plenary meeting of the second phase of the international project on the safety of geological disposal for high level radioactive waste and spent fuel (GEOSAF Part II), three reports are being prepared to document the results of the project: a project report summarizing all activities since the inception of the project; a specific report on operational safety for geological disposal, intended to be published on the Agency website; and an IAEA Technical Document on the outcomes of the second phase of the project. A consultancy meeting was held in December 2015 in order to define the terms of reference for the continuation of the project. Future work under the project is expected to focus on implementation issues and experience from national programmes on developing safety cases for geological disposal of radioactive waste, covering both operational and long term safety aspects.¹¹⁸

118. The final Technical Meeting of the international working group on the consideration of inadvertent human intrusion scenarios for the demonstration of safety of disposal facilities, including geological disposal facilities, was held in January 2016 and attended by 24 participants from 16 Member States. The outcomes of the work of the working group are being finalized and will be published as an IAEA Technical Document.¹¹⁹

119. In order to promote the sharing of experience on the safety of geological disposal facilities for radioactive waste, the Agency, in cooperation with the OECD/NEA, organized a joint workshop on operational safety for geological disposal in Vienna from 29 June to 1 July 2016.¹²⁰

120. Four meetings of the Underground Research Facilities Network for Geological Disposal were organized. One meeting dealing with generic concepts for various host formation types, and with associated data and modelling needs for the development of a first iteration safety assessment, was held in Warsaw, Poland, in June 2015 and was attended by 17 participants. A second meeting dealing with the fundamentals of geological disposal concepts was held in Horonobe, Japan, in October 2015, and was attended by 16 participants. The annual meeting of the aforementioned Network took place in Brno, Czech Republic, in November 2015, and was attended by 22 participants. A Technical Meeting on the Roadmap for the Development of a Geological Disposal Programme was held in Vienna in April 2016.¹²¹

121. Consultancy meetings were held in 2015 and 2016 to develop draft guidelines for the Integrated Review Service for Radioactive Waste and Spent Fuel Management, Decommissioning and Remediation (ARTEMIS). Three requests for ARTEMIS reviews have been received from Member States.¹²²

¹¹⁷ This relates to operative paragraphs 45, 88 and 91 of resolution GC(59)/RES/9.

¹¹⁸ This relates to operative paragraph 89 of resolution GC(59)/RES/9.

¹¹⁹ This relates to operative paragraph 89 of resolution GC(59)/RES/9.

¹²⁰ This relates to operative paragraph 89 of resolution GC(59)/RES/9.

¹²¹ This relates to operative paragraph 89 of resolution GC(59)/RES/9.

¹²² This relates to operative paragraph 90 of resolution GC(59)/RES/9.

G. The Safe Decommissioning of Nuclear Facilities and Other Facilities Using Radioactive Material

122. The work of the International Project on Decommissioning Risk Management (DRiMa) was concluded in 2015, in accordance with the project's terms of reference and work plan. The fourth and final annual meeting of the DRiMa project was held in Vienna from 2 to 6 November 2015, and was attended by 31 participants from 21 Member States. A consultancy meeting was organized in February 2016, which prepared the draft project report to be shared with the project participants and to be finalized during 2016.¹²³

123. The Agency continued to support decommissioning activities of Member States by assisting in the revision of related safety regulations and by implementing training events organized by the International Decommissioning Network (IDN) and by the Agency's technical cooperation programme. The draft Safety Guide *Decommissioning of Nuclear Power Plants, Research Reactors and Other Nuclear Fuel Cycle Facilities* (DS452) will be submitted to the CSS for endorsement at its meeting in November 2016. The draft Safety Guide *Decommissioning of Medical, Industrial and Research Facilities* (DS403) has been finalized and Member States' comments have been incorporated.¹²⁴

124. The Agency continued its support to Member States in the area of the decommissioning by organising a number of training events and workshops, in particular, the International Workshop on Preparation for and Management of Decommissioning for Ageing Nuclear Power Plants, which was held in Seoul, Republic of Korea, in September 2015.¹²⁵

125. In order to strengthen Member States' capabilities to regulate the implementation of a safe and efficient decommissioning programme, the Agency has developed a Technical Document entitled *Model Regulations for Decommissioning*. This document is based on the Agency's safety standards and aims to serve as a reference point in developing national regulations for decommissioning. After a final Technical Meeting in April 2015, the document was finalized in the second half of 2015 and is being reviewed internally for publication in 2016.¹²⁶

126. The Agency provided assistance in the area of decommissioning of research reactors through several projects. The Research Reactor Decommissioning Demonstration Project (R²D²P), launched in 2006, was concluded with a final workshop on the release of buildings and sites from regulatory control, held in Eureka, California, USA, in September 2015. A workshop on planning and cost estimates for the decommissioning of research reactors in Africa was held in Vienna in October 2015. The first phase of the Data Analysis and Collection for Costing of Research Reactor Decommissioning (DACCORD) project was completed with a Technical Meeting held in Vienna in December 2015. The second phase of the DACCORD project is being finalized.¹²⁷

127. The Agency organized an International Conference on Advancing the Global Implementation of Decommissioning and Environmental Remediation Programmes that was held in Madrid, Spain, in May 2016. The conference was attended by more than 540 participants from 54 Member States. The

¹²³ This relates to operative paragraph 92 of resolution GC(59)/RES/9.

¹²⁴ This relates to operative paragraphs 5 and 93 of resolution GC(59)/RES/9.

¹²⁵ This relates to operative paragraph 93 of resolution GC(59)/RES/9.

¹²⁶ This relates to operative paragraphs 34 and 93 of resolution GC(59)/RES/9.

¹²⁷ This relates to operative paragraph 93 of resolution GC(59)/RES/9.

conference provided a forum to share and review challenges, achievements and lessons learned related to decommissioning and environmental remediation programmes that have been implemented over the past decade. It raised awareness of the importance of addressing the legacies from past activities, identified current priority needs, and provided recommendations on the strategies and approaches that can enable and enhance safe, secure and cost-effective implementation of national and international programmes during the next one to two decades.¹²⁸

128. The IDN continued to provide a platform and mechanisms for exchange of experiences, promotion of good practices and training in decommissioning. The DACCORD and DRiMa projects as well as the Constraints to Implementing Decommissioning and Environmental Remediation (CIDER) Project, all of which were organized within the IDN framework, were concluded in 2015 and early 2016 with several technical and consultancy meetings. The project reports will be finalized in 2016. Follow-up activities for the DACCORD and CIDER projects are planned in 2016. In addition, the IDN supported the organization of numerous workshops and training courses, as well as the development of the Decommissioning Wiki.¹²⁹

129. The International Project on Decommissioning and Remediation of Damaged Nuclear Facilities (DAROD Project), which was launched in January 2015 in connection with the IAEA Action Plan on Nuclear Safety, continued its activities in 2015 and 2016. Two meetings of the DAROD Project were held in Vienna in September 2015 and in January 2016, during which the participants shared and discussed experiences with the decommissioning and remediation of damaged nuclear facilities, and identified gaps and needs for additional guidance to address problematic issues related to strategic planning, technical and regulatory aspects.¹³⁰

H. Safety in Uranium Mining and Processing and in the Remediation of Contaminated Sites

130. The management of radioactive residues from NORM activities is addressed in the draft Safety Guide *Management of Radioactive Residues from Mining, Mineral Processing and Other NORM Related Activities* (DS459). This draft safety standard was reviewed by the Waste Safety Standards Committee and the Radiation Safety Standards Committee at their joint meeting in June 2016.¹³¹

131. A new Safety Report entitled *Safety Infrastructure for Uranium Production* is now at the final drafting stage and a workshop to review and obtain Member States' feedback is planned to take place in Vienna, in August–September 2016. Meetings were organized in Vienna, Austria, in February–March and in Washington, USA, in June–July 2016 for the development of a new Safety Report entitled *Safety of In-Situ Leaching for Uranium Production*. In relation to this latter report, the Agency is planning a Technical Meeting for the end of 2016.¹³²

132. The Coordination Group for Uranium Legacy Sites (CGULS) continues to facilitate preparatory work for the remediation of former uranium production sites in Central Asia. At a consultancy meeting

¹²⁸ This relates to operative paragraphs 94 and 99 of resolution GC(59)/RES/9.

¹²⁹ This relates to operative paragraphs 5, 94 and 99 of resolution GC(59)/RES/9.

¹³⁰ This relates to operative paragraphs 95 and 99 of resolution GC(59)/RES/9.

¹³¹ This relates to operative paragraphs 62 and 96 of resolution GC(59)/RES/9.

¹³² This relates to operative paragraph 96 of resolution GC(59)/RES/9.

held in Brussels, Belgium, in August 2015, it was decided to produce a Strategic Master Plan (SMP) for the remediation of uranium legacy sites in Central Asia. A meeting to begin the development of the SMP was held in Brussels, Belgium, in March 2016.¹³³

133. During the 59th regular session of the Agency's General Conference a side event provided information on the uranium legacy in Central Asia and the work carried out by CGULS. The second of two missions to evaluate and make recommendations concerning the state of former uranium production sites in Kazakhstan was carried out in October 2015, and the findings and recommendations of this mission were reported to the country's Minister for Energy. The CGULS annual meeting was held in Vienna in June–July 2016. Regulatory guidelines for the remediation of uranium legacy sites were further developed in draft form and distributed to CGULS participants for feedback.¹³⁴

134. A draft IAEA Technical Document entitled *Review of Remediation Plans and Activities for Uranium Mining and Milling Sites* was completed and submitted for publication. This document is part of a package of training materials that have been piloted at three regional training events for Member States from Africa. Regional Training Workshops on the Review of Remediation Plans and Activities for Uranium Mining and Milling Sites were held in Malawi, in September 2015; in Morocco, in October 2015; and in Vienna in June 2016.¹³⁵

135. A draft IAEA Technical Document entitled *Practical Intervention Techniques to Reduce Public Doses at Uranium Mining and Milling Legacy Sites* was completed and has been submitted for publication. This document is part of an extensive package of training materials developed to assist African Member States. Regional Training Workshops on Practical Intervention Techniques to Reduce Public Doses at Uranium Mining and Milling Legacy Sites were held in Vienna in September 2015 for Portuguese-speaking African countries; and in Rabat, Morocco, in October 2015 and in Vienna in March 2016 for French-speaking African countries.¹³⁶

136. A Regional Meeting on the Prevention of Future Legacy Sites in Uranium Mining and Processing took place in Vienna in December 2015. The meeting was attended by representatives from nuclear regulatory bodies and other national competent authorities in African countries that have uranium mining and milling facilities, either in planning or in operation. The purpose of the meeting was to provide senior governmental decision-makers with the information needed for establishing sound policies, regulatory frameworks and infrastructures to achieve sustainable levels of safety in line with the Agency's safety requirement and with the objective of preventing future legacy sites.¹³⁷

137. An international workshop organized under the International Working Forum on Regulatory Supervision of Legacy Sites (RSLS) was held in Sibiu, Romania, from 7 to 10 September 2015. This workshop provided participants with an effective platform for sharing knowledge and practical experiences related to legacy site management by providing a focus on issues at specific legacy sites. An IAEA Technical Document that summarizes the work of the RSLS during its first three-year period from 2012 to 2015 is being prepared.¹³⁸

¹³³ This relates to operative paragraph 97 of resolution GC(59)/RES/9.

¹³⁴ This relates to operative paragraph 97 of resolution GC(59)/RES/9.

¹³⁵ This relates to operative paragraph 97 of resolution GC(59)/RES/9.

¹³⁶ This relates to operative paragraph 97 of resolution GC(59)/RES/9.

¹³⁷ This relates to operative paragraph 97 of resolution GC(59)/RES/9.

¹³⁸ This relates to operative paragraph 98 of resolution GC(59)/RES/9.

I. Safe Management of Radioactive Sources

138. Important infrastructure (system or database server) upgrades were implemented to improve RASIMS responsiveness and user experience, and an updated version of the quiz in the Radiation Safety Information Management System (RASIMS) e-learning module was released. Five Member States nominated a new national coordinator for RASIMS.¹³⁹

139. A workshop for RASIMS coordinators from the Europe region took place in Vienna in April 2016. The workshop was attended by representatives of 20 Member States.¹⁴⁰

140. A total of 100 Member States accessed RASIMS to update their radiation safety infrastructure profiles, and 528 profile elements under various Thematic Safety Areas were assessed by designated Technical Officers. Advisory missions on the regulatory infrastructure for radiation safety and the control of sources were organized in Antigua and Barbuda, Ecuador, El Salvador, Fiji, the Lao People's Democratic Republic, Madagascar, Papua New Guinea, Sri Lanka, Uruguay and Vanuatu. The national radiation safety infrastructure was reviewed during imPACT missions ('integrated missions of the Programme of Action for Cancer Therapy') to Honduras and Myanmar.¹⁴¹

141. The Secretariat continued to offer support to Member States for the establishment or upgrade of national source registers, though the Regulatory Authority Information System (RAIS). National expert missions on the use and customization of RAIS took place in Algeria, Cameroon, Chad, Colombia, Cuba, the Democratic Republic of the Congo, Egypt, Jordan, Madagascar, Mauritius, Oman, Qatar and South Africa. Equipment was provided to Algeria, Brunei Darussalam, Egypt, Jordan, Madagascar and Oman. The next version of RAIS (RAIS 4.0) is being developed, based on feedback from users and the identification of required technical upgrades.¹⁴²

142. As of 30 June 2016, 131 States, including 6 States in the reporting period, have made a political commitment to implement the Code of Conduct on the Safety and Security of Radioactive Sources, of which 104, including 10 States in the reporting period, have also notified the Director General of their intention to act in a harmonized manner in accordance with the Code's supplementary Guidance on the Import and Export of Radioactive Sources. A total of 136 States have nominated points of contact for the purpose of facilitating the export and import of radioactive sources and have provided their details to the Agency.¹⁴³

143. A regional workshop to share experiences related to the implementation of the Guidance on the Import and Export of Radioactive Sources was organized in the Sudan in November 2015. An International Meeting on Facilitation of States' Political Commitment to, and Implementation of, the Code of Conduct on the Safety and Security of Radioactive Sources was organized in Vienna in November 2015. The Code of Conduct and its supplementary Guidance are being presented in regional technical cooperation events and other legal forums such as the Agency's Nuclear Law Institute and the OECD/NEA International School of Nuclear Law.¹⁴⁴

¹³⁹ This relates to operative paragraph 4 of resolution GC(59)/RES/9.

¹⁴⁰ This relates to operative paragraph 4 of resolution GC(59)/RES/9.

¹⁴¹ This relates to operative paragraphs 2, 4, 19, 20 and 34 of resolution GC(59)/RES/9.

¹⁴² This relates to operative paragraph 106 of resolution GC(59)/RES/9.

¹⁴³ This relates to operative paragraphs 16, 17 and 107 of resolution GC(59)/RES/9.

¹⁴⁴ This relates to operative paragraphs 8, 16, 17, 107 of resolution GC(59)/RES/9.

144. The Fourth Open-ended Meeting of Technical and Legal Experts to Share Information on States' Implementation of the Code of Conduct on the Safety and Security of Radioactive Sources and Its Supplementary Guidance on the Import and Export of Radioactive Sources was held in Vienna in May–June 2016. The meeting was attended by 190 experts from 102 Member States and two non-Member States. Seventy-six States shared information on their national implementation of the Code and the Guidance. The meeting took note of the development of Guidelines for preparation of national papers for the next such Open-ended Meeting, foreseen for 2019.¹⁴⁵

145. The Agency held a second Open-ended Meeting of Legal and Technical Experts to Develop Internationally Harmonized Guidance for Implementing the Recommendations of the Code of Conduct on the Safety and Security of Radioactive Sources in Relation to the Management of Disused Radioactive Sources in Vienna in December 2015. The meeting was attended by 128 experts from 66 Member States and two international organizations. The meeting produced a draft supplementary guidance document which was submitted to Member States for comments in February 2016. A third open-ended meeting was held in Vienna in June 2016 to finalize the document by addressing the comments received from Member States. The meeting was attended by 108 experts from 69 Member States, one non Member State and one international organization. The meeting produced a revised document but no consensus was reached on whether this document should be submitted to the Board of Governors as supplementary guidance to the Code of Conduct. The Chairman recommended that the Secretariat engage in consultations with Member States with a view to finalizing the document.¹⁴⁶

146. To facilitate information exchange between interested Member States on radiation safety aspects of the management of movement of scrap metal or materials produced from scrap metal that may inadvertently contain radioactive material, a standard package of presentations and case studies for national or regional workshops was developed and used during a national workshop, organized in South Africa in October 2015.¹⁴⁷

J. Education, Training and Knowledge Management in Nuclear, Radiation, Transport and Waste Safety

147. The Secretariat continued with the implementation of the Strategic Approach to Education and Training in Nuclear Safety 2013–2020¹⁴⁸ in cooperation with Member States. In particular, the Secretariat conducted an assessment of the implementation of the Strategic Approach based on feedback received from Member States and an analysis of Agency training activities in nuclear installation safety.¹⁴⁹

148. A Consultative Meeting of Policy-Decision Makers on the Establishment of a National Strategy for Education and Training in Radiation, Transport and Waste Safety was held in Vienna in December 2015 to help strengthen Member States' commitment to building competence in radiation

¹⁴⁵ This relates to operative paragraphs 8, 16, 17, 107, 103 and 108 of resolution GC(59)/RES/9.

¹⁴⁶ This relates to operative paragraphs 3, 17, 104 and 105 of resolution GC(59)/RES/9.

¹⁴⁷ This relates to operative paragraph 109 of resolution GC(59)/RES/9.

¹⁴⁸ Note by the Secretariat 2013/9. Available online at: <https://www-ns.iaea.org/downloads/ni/training/strategy2013-2020.pdf>.

¹⁴⁹ This relates to operative paragraph 100 of resolution GC(59)/RES/9.

protection in a timely and sustainable manner through the development of a national strategy for education and training. The meeting was attended by 56 delegates from 49 Member States.¹⁵⁰

149. The Agency's Steering Committee on Education and Training in Radiation, Transport and Waste Safety met in December 2015 to advise the Secretariat on the implementation of the Strategic Approach to Education and Training in Radiation, Transport and Waste Safety 2011–2020¹⁵¹. The Steering Committee revised approaches and methodologies adopted by the Agency to support Member States through education and training, and issued recommendations.¹⁵²

150. The Steering Committee on Regulatory Capacity Building and Knowledge Management held its seventh annual meeting in Vienna, December 2015, which was attended by delegates from 28 Agency Member States and the European Commission. The Steering Committee discussed the implementation of the Strategic Approach to Educating and Training in Nuclear Safety 2013–2020. It also addressed other matters relevant to education and training, such as knowledge management, the methodology for Systematic Assessment of Regulatory Competence Needs (SARCoN), and training on safety leadership and safety culture.¹⁵³

151. Two Education and Training Review Service (ETReS) missions were conducted in the Philippines in August 2015 and in Thailand in September 2015. A preliminary ETReS mission took place in Kenya in April 2016 and a Regional Workshop on Integrated Capacity Building, which included information on the ETReS process and self-assessment as well as on knowledge management and education and training strategies, was held in Tunisia in October 2015 for member countries of the Arab Network of Nuclear Regulators and the Forum of Nuclear Regulatory Bodies in Africa.¹⁵⁴

152. The Agency conducted expert missions to provide advice to national stakeholders on how to establish a national strategy for education and training in Ecuador in February 2016, Nicaragua in September 2015 and the former Yugoslav Republic of Macedonia in September 2015. Education and Training Appraisal (EduTA) missions to assess education and training in radiation safety were conducted in Greece in October 2015 (follow-up mission), Lithuania in November 2015 and Peru in June 2016. The tenth anniversary of supporting Agency Member States through EduTA missions was celebrated.¹⁵⁵

153. The Secretariat is assisting Member States in the area of knowledge management by developing national nuclear safety knowledge platforms. These platforms are intended to facilitate the organization, management and sharing of nuclear safety knowledge. A draft guidance document to help Member States to complete their national platforms was endorsed by the seventh GNSSN Steering Committee meeting in November 2015. Ten national platforms have already been completed by Member States, four of them during the reporting period. Another 18 national platforms are under development.¹⁵⁶

¹⁵⁰ This relates to operative paragraph 100 of resolution GC(59)/RES/9.

¹⁵¹ Note by the Secretariat 2010/44. Available online at:

<https://www-ns.iaea.org/downloads/rw/training/strategic-approach2011-2020.pdf>.

¹⁵² This relates to operative paragraphs 100 and 101 of resolution GC(59)/RES/9.

¹⁵³ This relates to operative paragraphs 5, 19, 100 and 102 of resolution GC(59)/RES/9.

¹⁵⁴ This relates to operative paragraphs 5, 9, 10, 19, 100 and 101 of resolution GC(59)/RES/9.

¹⁵⁵ This relates to operative paragraphs 9, 10 and 100 of resolution GC(59)/RES/9.

¹⁵⁶ This relates to operative paragraphs 5, 100 and 102 of resolution GC(59)/RES/9.

154. The Agency continued its work for the development of a Technical Document on knowledge management for regulatory bodies. Three consultancy meetings were held, in Vienna in November 2015 and June 2016, and in Moscow, Russian Federation, in July 2015.¹⁵⁷

155. In the area of radiation safety, Member States continued to revise and update their national information within RASIMS under Thematic Safety Area 6 (TSA 6), which deals with education and training. The TSA 6 profiles of 40 Member States were updated.¹⁵⁸

156. The Secretariat is working with the Member States to map education and training resources on a global level. A first consultancy meeting held in Vienna in April 2016 identified the taxonomy that will be used to categorize the training activities. These efforts are also in line with the cooperation between the Agency and the European Commission to identify and map available ‘off-the-shelf’ nuclear safety training courses.¹⁵⁹

157. An updated Training Course Series document entitled *Regulatory Control of Nuclear Installations* was completed and presented to the Publications Committee in April 2016. The full course materials and a train-the-trainers package for the Basic Professional Training Course on Nuclear Safety (BPTC) were completed, made available through the GNSSN platform, and presented at a regional workshop in Vienna in September 2015. The new BPTC material was piloted during a two-week course in Egypt in November 2015.¹⁶⁰

158. The Postgraduate Educational Course in Radiation Protection and the Safety of Radiation Sources (PGEC), which has a nominal duration of six months, was conducted in Argentina, Ghana, Malaysia and Morocco. Train-the-trainers courses for radiation protection officers took place in Morocco and Namibia in November 2015 as well as in the United Arab Emirates in October 2015. Initiatives were undertaken to evaluate the impact of the PGEC by collecting feedback through questionnaires posted on the PGEC e-learning platform. Representatives of the Agency’s regional training centres for radiation protection in Algeria, Argentina, Brazil, Belarus, Ghana, Greece, Malaysia, Morocco and the Syrian Arab Republic met in Vienna in August 2015 in order to support the PGEC assessment process. The Agency continued to publish its periodic *Education and Training in Radiation, Transport and Waste Safety Newsletter* in order to share knowledge, expertise, and experience.¹⁶¹

159. A range of specific training courses were conducted in different regions including, inter alia, train-the-trainers courses on transport safety and compliance assurance in the Philippines in August 2015, and courses dealing with occupational radiation protection for activities using NORM in the Czech Republic in September 2015, radiation protection in diagnostic and interventional radiology in the Russian Federation in September 2015, quality management systems in the assessment and control of occupational exposure in Botswana in October 2015, and implementation of the draft Safety Guide on radiation protection and safety in medical uses of ionizing radiation in Austria in November 2015.¹⁶²

¹⁵⁷ This relates to operative paragraphs 19 and 100 of resolution GC(59)/RES/9.

¹⁵⁸ This relates to operative paragraphs 4, 100 and 102 of resolution GC(59)/RES/9.

¹⁵⁹ This relates to operative paragraphs 5, 100 and 101 of resolution GC(59)/RES/9.

¹⁶⁰ This relates to operative paragraph 101 of resolution GC(59)/RES/9.

¹⁶¹ This relates to operative paragraph 101 of resolution GC(59)/RES/9.

¹⁶² This relates to operative paragraphs 34 and 101 of resolution GC(59)/RES/9.

160. Through the technical cooperation programme, and complementary projects such as the Regulatory Infrastructure Development Project, the Agency organized several national and regional training courses for staff of radiation safety regulatory bodies, addressing various topics, including: authorization and inspection of storage facilities for disused sources in Jordan in October 2015, authorization and inspection of isotope production facilities in Jordan in November 2015), radiation safety for customs officers in Belgium in November 2015, authorization and inspection of uranium mining and milling activities in Namibia in August 2015, and the control of radioactive sources for French-speaking regulators in France in July 2015. The Agency also held Schools for Drafting Regulations on Radiation Safety for participants from Europe in Vienna in October 2015) and Asia and the Pacific in Vienna in November 2015).¹⁶³

161. A new project was launched in December 2015 to update the existing basic training material on the safety of decommissioning and to develop additional specialized training modules covering areas such as planning and project management, characterization, and safety assessment. Each of the additional modules will include an overview, lecture plans, lecture presentations, speaker notes, practical exercises, training effectiveness evaluation forms, references and a bibliography. Two consultancy meetings were organized in December 2015 and in June 2016 to develop this training material.¹⁶⁴

162. A hands-on inspector training course on regulatory inspection and enforcement was held at the Zwentendorf NPP, Austria, in September 2015. As a supplement to this training, a new IAEA Technical Document is under development to provide inspectors with guidance and methods for gathering information and specific technical and observation skills required for the inspection of NPPs. Further specific training on the regulatory aspects of nuclear installations, including the School on Drafting Regulations on Nuclear Safety and workshops based on the Agency's safety standards, were also conducted in Austria in October 2015 and February 2016, Belarus in February 2016, the Czech Republic in August 2015, Jordan in October 2015 and February 2016, Pakistan in March 2016 and Viet Nam in June 2016.¹⁶⁵

163. The Agency continued to provide support for safety assessment capacity building to countries embarking on nuclear power programmes. The Agency's activities in this area included two workshops on the practical application of thermal hydraulic codes held in Jordan in July and August 2015 and four workshops on essential knowledge for safety assessments conducted in Malaysia in August and December 2015 and January 2016 and in Poland in November 2015. A national workshop on computer codes for deterministic safety assessment and on severe accident analysis was conducted in Egypt in March 2016.¹⁶⁶

164. The Agency has developed a course for future managers of emergency preparedness programmes called the School of Radiation Emergency Management. This course was held on two occasions. The Agency has also developed training performance indicators to enhance the training programme for emergency preparedness and response.¹⁶⁷

165. The Agency supported regulatory capacity building in Member States by holding a Regional Workshop on Human Resource Development, Including Systematic Assessment of Regulatory

¹⁶³ This relates to operative paragraphs 2, 11, 19, 20, 101 and 103 of resolution GC(59)/RES/9.

¹⁶⁴ This relates to operative paragraphs 94 and 101 of resolution GC(59)/RES/9.

¹⁶⁵ This relates to operative paragraphs 2, 20 and 101 of resolution GC(59)/RES/9.

¹⁶⁶ This relates to operative paragraphs 2, 41 and 101 of resolution GC(59)/RES/9.

¹⁶⁷ This relates to operative paragraph 101 of resolution GC(59)/RES/9.

Competence Needs (SARCoN) in the Philippines in November 2015. The Agency is also analysing Member States' experiences with the use of the SARCoN methodology. Two consultancy meetings and a survey intended to analyse the usability and operational capacities of the SARCoN guidelines were conducted in Vienna in November 2015. Based on the survey results, an IAEA Technical Document on experiences using the SARCoN guidelines is under preparation.¹⁶⁸

166. The Agency continued supporting the safety of research reactors through education and training, in particular by organizing a Training Workshop on Research Reactor Related Modelling: from Core Optimization to Safety Analysis and Various Applications, which was held in Vienna in October 2015 and was attended by 43 participants from 27 Member States. The Agency also supported a meeting of the Regional Advisory Safety Committee for Research Reactors in Africa in Ghana in October 2015 and a meeting of the Regional Advisory Safety Committee for Research Reactors in Asia and the Pacific in Indonesia in August 2015. These meetings provided a forum to share experiences related to utilization and safety management of research reactors and focused on regional strategies for strengthening the safety committees of research reactor operating organizations. The Agency published training curricula for operational radiological protection programmes for research reactors, which will be used as the basis for regional training activities.¹⁶⁹

167. The GNSSN Plenary Meeting took place during the 59th regular session of the Agency's General Conference, on 16 September 2015. The plenary was attended by over 100 participants and focused on the establishment of a sustainable national capacity building framework. The Secretariat continued its efforts to monitor nuclear safety activities carried out by the Agency's Departments by further developing the Integrated Nuclear Safety Capacity Building Plan. Information on around 400 activities implemented and planned since 2012 for regulatory organizations in Belarus, Jordan, Poland, Tunisia and Viet Nam have been entered into the database.¹⁷⁰

168. The Secretariat continued to support the Asian Nuclear Safety Network (ANSN) and assisted in developing new guidelines for self-assessment in line with *Establishing the Safety Infrastructure for a Nuclear Power Programme* (IAEA Safety Standards Series No. SSG-16). Also within the ANSN framework, 43 national and regional training activities involving over 500 participants were implemented.¹⁷¹

169. The Agency continued its cooperation with the Ibero-American Forum of Radiological and Nuclear Regulatory Agencies (FORO). The Agency organized two FORO Steering Committee meetings in Mexico City, Mexico in November–December 2015, and in Montevideo, Uruguay in June 2016, and eight additional meetings within the FORO extrabudgetary programme. The topics covered included information technology management; application of a risk matrix to industrial installations; integrated information management; regulatory practices for ageing management and long term operation of NPPs in Ibero-American countries; implementation of the clearance concept and criteria for small nuclear installations handling radioactive waste; implementation of the results of the FORO Emergency and Preparedness Group; maintenance of the FORO web-based information technology platform (RED); and ventilation for cyclotrons.¹⁷²

¹⁶⁸ This relates to operative paragraph 101 of resolution GC(59)/RES/9.

¹⁶⁹ This relates to operative paragraphs 100, 101 and 102 of resolution GC(59)/RES/9.

¹⁷⁰ This relates to operative paragraphs 5 and 102 of resolution GC(59)/RES/9.

¹⁷¹ This relates to operative paragraphs 5 and 102 of resolution GC(59)/RES/9.

¹⁷² This relates to operative paragraphs 5, 6 and 102 of resolution GC(59)/RES/9.

170. A side event was organized during the 59th regular session of the Agency's General Conference in Vienna with the title *Exchange of Regulatory Experiences among Ibero-American Forum of Radiological and Nuclear Regulatory Agencies (FORO) and Other Regional Regulatory Associations and Networks*.¹⁷³

171. The curriculum of the Safety Assessment Education and Training (SAET) Programme was expanded to include additional information on transient and accident analyses and severe accident phenomena. In October 2015, the Agency, in cooperation with the International Centre for Theoretical Physics, held a workshop on essential knowledge related to the SAET Programme.¹⁷⁴

K. Nuclear and Radiological Incident and Emergency Preparedness and Response

172. As of 30 June 2016 there are 119 parties to the Convention on Early Notification of a Nuclear Accident (Early Notification Convention) and 112 parties to the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency (Assistance Convention).¹⁷⁵

173. The arrangements for reporting incidents and emergencies have been further harmonized through the provision of training courses on notification, reporting and requesting assistance. Seven workshops were held on the *Operations Manual for Incident and Emergency Communication* (Emergency Preparedness and Response Series, EPR-IEComm 2012). These workshops were attended by 99 participants from 56 countries. The Agency's Unified System for Information Exchange in Incidents and Emergencies (USIE) was revised to improve its usability. The Agency's Incident and Emergency Centre made available to Member States an off-line version of the USIE reporting forms. These forms utilize the International Radiological Information Exchange (IRIX) automated exchange mechanism that was introduced in 2015, which can be incorporated into existing national systems. The future introduction of an automated connection between the USIE website and the Agency's Incident and Trafficking Database will minimize requests for duplicate reporting.¹⁷⁶

174. The Agency conducted ten Convention Exercises (ConvEx) with the contact points established under the relevant Conventions to test various procedures and arrangements for information exchange and the provision of assistance. In addition, the Agency participated in nine exercises which were run by Member States that had asked for the Secretariat's involvement, giving them the possibility to practise the international information exchange procedures. A Technical Meeting on Information Exchange during Nuclear or Radiological Incidents and Emergencies was held in Vienna in April 2016.¹⁷⁷

175. In August 2015, the Secretariat conducted a ConvEx-2b exercise focusing on the international processes for requesting and offering assistance; in December 2015, a ConvEx-2d exercise was conducted with the support of Mexico, to test the international response to a radiological emergency; and, in February 2016, a ConvEx-2a exercise allowed Member States to practise the notification of

¹⁷³ This relates to operative paragraphs 5, 6 and 102 of resolution GC(59)/RES/9.

¹⁷⁴ This relates to operative paragraphs 100, 101 and 102 of resolution GC(59)/RES/9.

¹⁷⁵ This relates to operative paragraph 15 of resolution GC(59)/RES/9.

¹⁷⁶ This relates to operative paragraphs 7 and 112 of resolution GC(59)/RES/9.

¹⁷⁷ This relates to operative paragraphs 112, 115 and 117 of resolution GC(59)/RES/9.

nuclear or radiological emergencies and the submission of requests for assistance. Bilateral exercises with Canada, France and Switzerland were carried out to test the coordination of activities in relation to the assessment and prognosis process in September and November 2015. In addition, a ConvEx-2c exercise was hosted by Bulgaria in December 2015 with more than 55 Member States participating. This exercise included assessment and prognosis aspects.¹⁷⁸

176. The Agency updated the Emergency Preparedness Review (EPREV) guidelines, which are now being prepared for publication, in order to incorporate the results of lessons learned from consultancy meetings involving experts from Member States as well as from a Technical Meeting that took place in 2014. Performance indicators were developed and a pilot project was initiated to test these during EPREV missions to be conducted in 2016.¹⁷⁹

177. Two EPREV missions were conducted in Jamaica in July 2015 and Hungary in June 2016 and five EPREV mission reports were made available to all Member States. A follow-up mission to the original Advisory Mission on Medical Aspects of Preparedness and Response to Radiation Emergencies was held in Kuwait in November 2015.¹⁸⁰

178. The Agency has added new experts to its roster of peer reviewers, with the help of Member States in all regions. This expands the scope of expertise available for safety peer review missions covering hands-on operational and strategic areas, facility operations and first response.¹⁸¹

179. The Agency organized an interregional workshop on the implementation of the newly issued General Safety Requirements publication *Preparedness and Response for a Nuclear or Radiological Emergency* (IAEA Safety Standards Series No. GSR Part 7) in Vienna in November 2015. Among the major updates, GSR Part 7 establishes a comprehensive framework for the protection of emergency workers as well as helpers in an emergency. It also provides generic criteria for food, milk and drinking water, as well as for non-food commodities, and establishes the requirements for safe and effective management of waste arising from a nuclear or radiological emergency.¹⁸²

180. The Agency is continuing to develop the draft Safety Guide *Arrangements for the Termination of a Nuclear or Radiological Emergency* (DS474), which will provide extensive guidance on preparedness for the transition phase of a nuclear or radiological emergency. The draft Safety Guide includes recommendations on waste management following an emergency, on adapting and lifting protective actions (including those related to food, milk and drinking water as well as other non-food commodities), and on procedures to establish when it is safe for people to return to affected areas considering both radiological and non-radiological factors. The ICRP participated in the Technical Meeting to review the draft Safety Guide that was held in Vienna in September–October 2015.¹⁸³

181. The Agency is updating the Safety Guide *Planning and Preparing for Emergency Response to Transport Accidents Involving Radioactive Material* (IAEA Safety Standards Series No. TS-G-1.2

¹⁷⁸ This relates to operative paragraphs 110, 111 and 115 of resolution GC(59)/RES/9.

¹⁷⁹ This relates to operative paragraphs 10 and 44 of resolution GC(59)/RES/9.

¹⁸⁰ This relates to operative paragraphs 43 and 118 of resolution GC(59)/RES/9.

¹⁸¹ This relates to operative paragraph 9 of resolution GC(59)/RES/9.

¹⁸² This relates to operative paragraphs 34, 61, 68, 86 and 110 of resolution GC(59)/RES/9.

¹⁸³ This relates to operative paragraphs 33, 68, 86 and 88 of resolution GC(59)/RES/9.

(ST-3)). The revised Safety Guide will reflect the latest safety requirements for EPR and for transport safety, as well as Member States' experiences with the application of TS-G-1.2.¹⁸⁴

182. Two meetings were held on the preparation of a Safety Guide on arrangements for public communication in preparedness and response for a nuclear or radiological emergency (DS475) in April and May 2016. A meeting to define the scope of a briefing package for emergency communicators to provide the public with background information on radiation emergencies in plain language was held in March 2016.¹⁸⁵

183. The Agency held a Technical Meeting on Information Exchange during Nuclear or Radiological Incidents and Emergencies in Vienna in April 2016. This meeting addressed how technical information needed for the assessment and prognosis process will be shared among Member States. The Agency's assessment and prognosis tools and procedures were reviewed during a meeting held in Vienna in June 2016.¹⁸⁶

184. The Agency continued to encourage all States Parties to the Assistance Convention to identify and register their national assistance capabilities in the Response and Assistance Network (RANET). A RANET workshop was conducted in Fukushima, Japan, in November 2015. The workshop was attended by 20 participants from eight Member States which have registered their capabilities in RANET. The event provided for the conduct of field monitoring activities within the restricted area surrounding the Fukushima Daiichi NPP. The Secretariat conducted the fourth regular RANET meeting in June 2016, as part of the Eighth Meeting of the Representatives of Competent Authorities Identified under the Early Notification Convention and the Assistance Convention. Recommendations from the meeting underlined the importance of implementing the Agency safety standards, in particular the safety requirement entitled *Preparedness and Response for a Nuclear or Radiological Emergency* (IAEA Safety Standards Series No. GSR Part 7) as well as improving communication with the public, enhancing EPR training programmes, establishing specialised capacity building centres and sharing lessons learned from EPR exercises.¹⁸⁷

185. In September 2015, the Emergency Preparedness and Response Information Management System (EPRIMS), a new web-based EPR self-assessment tool for Member States, became fully operational. EPRIMS allows sharing of EPR self-assessment information between countries on a regional and global level. It incorporates the new Agency safety standards relevant to EPR. Six web-based training sessions were conducted, and a video of the training course is available to all EPRIMS users. EPRIMS now contains information on the majority of Member States and allows for the generation of regional and global reports on the consistency of national arrangements and regulations in EPR with regard to the Agency's safety standards.¹⁸⁸

186. The Agency has continued to refine its Reactor Assessment Tool, which provides basic information during an emergency at an NPP. In May 2016 a meeting was held to demonstrate the tool to Member States. In addition, EPRIMS includes the capability for Member States to share (during

¹⁸⁴ This relates to operative paragraphs 74, 75, 77 and 78 of resolution GC(59)/RES/9.

¹⁸⁵ This relates to operative paragraph 116 of resolution GC(59)/RES/9.

¹⁸⁶ This relates to operative paragraph 111 of resolution GC(59)/RES/9.

¹⁸⁷ This relates to operative paragraphs 5, 12, 80, 102 and 114 of resolution GC(59)/RES/9.

¹⁸⁸ This relates to operative paragraph 42 of resolution GC(59)/RES/9.

preparedness activities) detailed static technical data on NPPs. This data can be used as a reference by the Agency during an emergency.¹⁸⁹

187. After the pilot phase in 2015, the International Radiation Monitoring Information System (IRMIS) was launched to Member States in 2016 as a system to facilitate the reporting and visualization of large volumes of radiation monitoring data during a nuclear or radiological emergency. All Member States were informed of the availability of the system and those Member States that operate networks of fixed dose rate monitoring stations were invited to provide the data to IRMIS.¹⁹⁰

188. The Agency continued to support the active work of regional forums and networks by conducting five regional EPR workshops in Asia and the Pacific, Africa, and Latin America and the Caribbean. Membership of the Emergency Preparedness Network, the collaborative workspace for EPR professionals reached a total of over 300 registrants by June 2016. In addition, the Agency conducted 18 regional and interregional training events aimed at knowledge transfer and knowledge sharing. The Agency has also been participating regularly in meetings of the Heads of the European Radiological Protection Competent Authorities' Working Group on Emergencies.¹⁹¹

L. Civil Liability for Nuclear Damage

189. The 16th regular meeting of the International Expert Group on Nuclear Liability (INLEX) was held in Vienna from 25 to 27 May 2016. The Group finalized its discussion on the legal regime applicable to liability for damage caused by radioactive sources and reiterated its recommendation that, although there was no need for a specific international liability regime covering radioactive sources, licenses for at least Categories 1 and 2 sources should include a requirement that the licensee take out insurance, or other financial security, to cover its potential third-party liability. The Group also discussed, inter alia, liability issues relating to long-term storage and disposal facilities and to the transport of nuclear material, as well the scope of application of the IAEA nuclear liability conventions, in particular as regards fusion installations. In this respect, the Group concluded that the low risks involved by fusion installations, the limited potential transboundary damage, and the status of development of the technology did not justify their inclusion within the scope of the nuclear liability conventions. The Group also discussed liability issues relating to small and medium-sized reactors and concluded that such reactors fall under the international nuclear liability conventions.¹⁹²

190. The Fifth Workshop on Civil Liability for Nuclear Damage was held in Vienna on 23 May 2016 and was attended by 45 diplomats and experts from 31 Member States. The workshop provided participants with an introduction to the international legal regime of civil liability for nuclear damage.¹⁹³

191. A Subregional Workshop on Civil Liability for Nuclear Damage for Pacific Island States was held in Sydney, Australia, in March 2016 and was attended by 23 senior governmental officials from

¹⁸⁹ This relates to operative paragraph 113 of resolution GC(59)/RES/9.

¹⁹⁰ This relates to operative paragraph 119 of resolution GC(59)/RES/9.

¹⁹¹ This relates to operative paragraphs 5, 102 and 110 of resolution GC(59)/RES/9.

¹⁹² This relates to operative paragraphs 23, 24, 25 and 79 of resolution GC(59)/RES/9.

¹⁹³ This relates to operative paragraphs 23, 24, 25 and 79 of resolution GC(59)/RES/9.

12 States, both members and non-members of the Agency. The workshop provided participants with information on the existing international nuclear liability regime and with advice on the development of national implementing legislation.¹⁹⁴

192. In addition, two joint Agency–INLEX missions were conducted, in Jordan in December 2015 and in China in March 2016, in order to raise awareness of the international legal instruments relevant for achieving a global nuclear liability regime.¹⁹⁵

¹⁹⁴ This relates to operative paragraphs 23, 24, 25 and 79 of resolution GC(59)/RES/9.

¹⁹⁵ This relates to operative paragraphs 23, 24, 25 and 79 of resolution GC(59)/RES/9.