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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(58)/RES/10, 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 remediation of contaminated sites
- The safe management of radioactive sources
- Education and 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 fifty-ninth regular session (2015) of the General Conference in response to resolution GC(58)/RES/10, 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 2014 to 30 June 2015.

2. The Agency continued to strengthen its efforts to maintain and improve 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 also assisted in maintaining and enhancing legal and regulatory effectiveness, encouraged the activities of regional safety forums and related networks, and provided assistance to regulatory bodies in newcomer countries, focusing on building capacity through its education and training programme for human resource development as well as on the development of safety regulations and the establishment of management systems. The Agency also continued strengthening radiation protection in medicine.[1]

3. 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 in the Case of a Nuclear Accident or Radiological Emergency (Assistance Convention). Activities related to the Conventions are reported in detail in the following 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.[2]

4. The Agency's fourth Treaty Event took place during the 58th regular session of the General Conference in September 2014, 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

[1] This relates to operative paragraphs 1 and 2 of resolution GC(58)/RES/10.

[2] This relates to operative paragraphs 13, 14 and 15 of resolution GC(58)/RES/10.

the Director General, notably those related to nuclear safety, nuclear security and civil liability for nuclear damage.[3]

5. The implementation of the IAEA Action Plan on Nuclear Safety (the Action Plan) continues to be one of the Secretariat's priority areas. Significant progress has been made in several of the 12 key areas under the Action Plan, such as strengthening the Agency safety standards and peer review services, improving emergency preparedness and response capabilities, and strengthening infrastructure development and capacity building. The progress made in these areas has contributed to strengthening the global nuclear safety framework.[4]

6. A Report by the Director General on the Fukushima Daiichi Accident was presented to the Board of Governors in June.[5] The Board of Governors took note of the Report for its release at the 59th regular session of the General Conference. The Report draws on five detailed technical volumes prepared by international experts and on the contributions of the many experts and international bodies involved. The Report is the result of an extensive international collaborative effort involving five working groups with about 180 experts from 42 Member States, with and without nuclear power programmes, and several international bodies. A Report by the Director General on progress made in the implementation of the Action Plan will be presented to the Board of Governors in September 2015 and to the 59th regular session of the General Conference.[6] The Secretariat will continue to share information with Member States on activities to implement the Action Plan using the Agency website.

7. The Secretariat continued to organize international experts' meetings (IEMs) to analyse all relevant technical aspects and learn the lessons from the Fukushima Daiichi nuclear accident. The International Experts' Meeting on Strengthening Research and Development Effectiveness in the Light of the Accident at the Fukushima Daiichi Nuclear Power Plant (IEM-8) took place in February 2015 and the International Experts' Meeting on Assessment and Prognosis in Response to a Nuclear or Radiological Emergency (IEM-9) in April 2015.[7]

8. The following IEM-related reports have been made available on the Agency website: *IAEA Report on Radiation Protection after the Fukushima Daiichi Accident: Promoting Confidence and Understanding*, *IAEA Report on Severe Accident Management in the Light of the Accident at the Fukushima Daiichi Nuclear Power Plant*, *IAEA Report on Strengthening Research and Development Effectiveness in the Light of the Accident at the Fukushima Daiichi Nuclear Power Plant*, and *IAEA Report on Assessment and Prognosis in Response to a Nuclear or Radiological Emergency and Capacity Building for Nuclear Safety*. The lessons learned, highlighted by Member States and relevant international organizations during the IEMs and widely shared through these reports, are being incorporated, where appropriate, into the Agency's programme of work. Activities related to lessons learned from the Fukushima Daiichi nuclear accident are presented in this report in the relevant sections, according to the thematic area under which the activities fall.[8]

9. Dedicated projects under the Action Plan that are to continue beyond 2015, in particular the lessons learned arising from the Report on the Fukushima Daiichi Accident and the IEMs, as well as the results of the completed Action Plan projects, will continue to be implemented by the respective

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[3] This relates to operative paragraphs 13, 14, 15 and 16 of resolution GC(58)/RES/10.

[4] This relates to operative paragraph 26 of resolution GC(58)/RES/10.

[5] See *The Fukushima Daiichi Accident* (document GOV/2015/26).

[6] This relates to operative paragraphs 27, 28 and 112 of resolution GC(58)/RES/10.

[7] This relates to operative paragraph 29 of resolution GC(58)/RES/10.

[8] This relates to operative paragraph 29 of resolution GC(58)/RES/10.

Departments/Divisions. The Department of Nuclear Safety and Security will be the focal point for supporting cross-Departmental activities aimed at strengthening nuclear safety.[9]

B. The Agency's Safety Standards Programme

10. Eleven Agency safety standards were issued in the reporting period: *Radiation Protection and Safety of Radiation Sources, International Basic Safety Standards* (IAEA Safety Standards Series No. GSR Part 3), *Decommissioning of Facilities* (IAEA Safety Standards Series No. GSR Part 6), *Safety of Nuclear Fuel Cycle Facilities* (IAEA Safety Standards Series No. NS-R-5 (Rev.1)), *Justification of Practices, Including Non-Medical Human Imaging* (IAEA Safety Standards Series No. GSG-5), *Advisory Material for the IAEA Regulations for the Safe Transport of Radioactive Material (2012 Edition)* (IAEA Safety Standards Series No. SSG-26), *Criticality Safety in the Handling of Fissile Material* (IAEA Safety Standards Series No. SSG-27), *Commissioning for Nuclear Power Plants* (IAEA Safety Standards Series No. SSG-28), *Near Surface Disposal Facilities for Radioactive Waste* (IAEA Safety Standards Series No. SSG-29), *Safety Classification of Structures, Systems and Components in Nuclear Power Plants* (IAEA Safety Standards Series No. SSG-30), *Monitoring and Surveillance of Radioactive Waste Disposal Facilitie*s (IAEA Safety Standards Series No. SSG-31), and *Schedules of Provisions of the IAEA Regulations for the Safe Transport of Radioactive Material (2012 Edition)* (IAEA Safety Standards Series No. SSG-33).[10]

11. In March 2015, the Board of Governors approved the following revised Safety Requirements publications: *Governmental, Legal and Regulatory Framework for Safety* (IAEA Safety Standards Series No. GSR Part 1), *Site Evaluation for Nuclear Installations* (IAEA Safety Standards Series No. NS-R-3), *Safety of Nuclear Power Plants: Design* (IAEA Safety Standards Series No. SSR-2/1), *Safety of Nuclear Power Plants: Commissioning and Operation* (IAEA Safety Standards Series No. SSR-2/2) and *Safety Assessment for Facilities and Activities* (IAEA Safety Standards Series No. GSR Part 4), as well as the revision of *Preparedness and Response for a Nuclear or Radiological Emergency* (IAEA Safety Standards Series No. GS-R-2), which will be issued as IAEA Safety Standard Series No. GSR Part 7. These drafts were endorsed by the Commission on Safety Standards (CSS) in November 2014.[11]

12. The review and revision of the relevant Safety Guides are being performed, in parallel with the revision of the Safety Requirements, in accordance with a prioritization process established by the four 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 adopted by the Contracting Parties to the CNS at a Diplomatic Conference held in Vienna, Austria, in February 2015.[12]

13. In the reporting period, the CSS also endorsed the following draft Agency safety standards for publication: *Design of Instrumentation and Control Systems for Nuclear Power Plants* (IAEA Safety Standards Series No. SSG-39), *Predisposal Management of Radioactive Waste from Nuclear Fuel*

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[9] This relates to operative paragraph 30 of resolution GC(58)/RES/10.

[10] This relates to operative paragraph 32 of resolution GC(58)/RES/10.

[11] This relates to operative paragraphs 22 and 32 of resolution GC(58)/RES/10.

[12] This relates to operative paragraph 32 of resolution GC(58)/RES/10.

Cycle Facilities (DS447), *Predisposal Management of Radioactive Waste from Nuclear Power Plants and Research Reactors* (DS448) and *Occupational Radiation Protection* (DS453).[13]

14. The new term for the members of the Safety Standards Committees started in 2014 and will cover the period 2014-2017. The newly reconstituted Committees met in July 2014 and November 2014.[14]

C. Nuclear Installation Safety

15. The Agency continued to encourage those of its Member States that are planning to embark on a nuclear power programme or continuing to build nuclear power plants (NPPs) 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 General to Member States, as well as through technical cooperation (TC) projects. During the reporting period, Paraguay became a Contracting Party.[15]

16. Following the decision taken by the Contracting Parties to the CNS during their Sixth Review Meeting held from 24 March to 4 April 2014, the Director General convened a Diplomatic Conference to consider a proposal by Switzerland to amend Article 18 of the Convention (the Swiss Proposal) addressing the design and construction of both existing and new nuclear power plants. Prior to the Diplomatic Conference, a consultation meeting open to all Contracting Parties was organized on 15 October 2014 to exchange views on the Swiss Proposal and to prepare for the adoption of the rules of procedure for the Diplomatic Conference. To facilitate preparation for the Conference, an informal working group had held a series of meetings (July 2014, August 2014, October 2014, December 2014, January 2015 and February 2015).[16]

17. The Diplomatic Conference was convened in Vienna, Austria, on 9 February 2015 and was attended by 71 Contracting Parties. The Contracting Parties thoroughly considered the Swiss Proposal and concluded that it would not be possible to reach consensus on the proposed amendment. Instead, in order to reach the same objective as the proposed amendment, the Contracting Parties unanimously recommended the adoption of the Vienna Declaration on Nuclear Safety, which includes principles for the implementation of the objectives of the Convention to prevent accidents and mitigate radiological consequences. Accordingly, the Contracting Parties at the Diplomatic Conference adopted the Vienna Declaration by consensus.[17]

18. The Agency continued to assist in developing and improving national safety infrastructure and adequate governmental and regulatory frameworks both in Member States with nuclear power programmes and in those expanding or planning to embark on such a programme. Guidance and information for embarking Member States are mainly based on the recommendations given in the

[13] This relates to operative paragraph 32 of resolution GC(58)/RES/10.

[14] This relates to operative paragraph 35 of resolution GC(58)/RES/10.

[15] This relates to operative paragraph 13 of resolution GC(58)/RES/10.

[16] This relates to operative paragraph 36 of resolution GC(58)/RES/10.

[17] This relates to operative paragraph 36 of resolution GC(58)/RES/10.

Specific Safety Guide *Establishing the Safety Infrastructure for a Nuclear Power Programme* (IAEA Safety Standards Series No. SSG-16).[18]

19. The Agency developed, through projects supported with extrabudgetary contributions, training material based on SSG-16 in support of workshops for strengthening the technical and managerial competence of staff at regulatory bodies. These workshops address core regulatory functions and feature relevant examples of national practices presented by international experts with solid nuclear safety knowledge and experience.[19]

20. Six activities in support of the development of the governmental, legal and regulatory framework for nuclear safety, including a training event on drafting safety regulations, namely the School on Drafting Regulations, based on the Agency's safety standards, were conducted in Austria (November 2014), the Republic of Korea (June 2015), the Republic of Moldova (June 2015), the Philippines (June 2015), Romania (January 2015) and Turkey (May 2015).[20]

21. Nine activities in support of the development and improvement of the national safety infrastructure of Member States expanding or planning to embark on a nuclear power programme, as well as in support of enhancing the regulatory effectiveness of those with established nuclear power programmes, were conducted in Belarus (December 2014 and March 2015), Egypt (June 2015), Indonesia (June 2015), Malaysia (November and December 2014), Thailand (March 2015), Turkey (July 2014) and the United States of America (USA) (October 2014).[21]

22. 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, advising them on their international obligations arising from treaties, and by training fellows in nuclear law. Legislative assistance missions were also dispatched to Costa Rica (May 2015) and Guatemala (June 2015). [22]

23. The Agency organized the fourth session of the Nuclear Law Institute in Baden, Austria, from 6 to 17 October 2014. This comprehensive two-week course, which is held every year, is designed to meet the increasing 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. Using modern teaching methods based on interaction and practice, all areas of nuclear law were comprehensively addressed. Sixty representatives from 51 Member States participated in the session.[23]

24. A Workshop on Nuclear Law for Member States in the Latin American Region was held in the Dominican Republic in December 2014 and attended by 27 participants from 16 Member States. The workshop created a forum for an exchange of views on topics relating to relevant international legal instruments and allowed for the planning of future legislative assistance activities in the participating Member States based on an assessment of their needs.[24]

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[18] This relates to operative paragraphs 2 and 12 of resolution GC(58)/RES/10.

[19] This relates to operative paragraph 52 of resolution GC(58)/RES/10.

[20] This relates to operative paragraphs 2 and 20 of resolution GC(58)/RES/10.

[21] This relates to operative paragraphs 2, 12 and 19 of resolution GC(58)/RES/10.

[22] This relates to operative paragraph 2 of resolution GC(58)/RES/10.

[23] This relates to operative paragraph 2 of resolution GC(58)/RES/10.

[24] This relates to operative paragraph 2 of resolution GC(58)/RES/10.

25. The Secretariat also organized a Workshop for Diplomats on Nuclear Law in Vienna, Austria, on 15 June 2015 covering nuclear safety, nuclear security and safeguards, as well as civil liability for nuclear damage, in order to facilitate a broad understanding of all aspects of nuclear law among diplomats based in Vienna.[25]

26. Expert missions included, inter alia, missions to review specific regulations and assess the compliance of national legislation with international requirements in Jordan (September 2014), the Philippines (November 2014) and Turkey (July 2014). Expert missions also took place in Belarus (January 2015) and Nigeria (June 2015) on the preparation and updating of integrated work plans for the development of infrastructure for a nuclear power programme, including the identification of gaps and areas for improvements.[26]

27. More than 25 national TC projects, one interregional project and five regional projects in Africa, Asia and the Pacific, and Europe were implemented in the reporting period. These activities assisted Member States in establishing or enhancing their governmental, legal and regulatory framework and infrastructure for nuclear installations safety.[27]

28. The Agency supported Member States in exchanging regulatory information and sharing experience on the effectiveness of safety culture approaches, as well as in informing senior managers of best practices developed by organizations in the nuclear and related industries. Eight management workshops on leadership and safety culture were held in Austria (November 2014), Bangladesh (May 2015), Belarus (December 2014), Mexico (January, March and April 2015) and the Netherlands (October and November 2014), with the participation of senior managers from 25 Member States, including both operators and regulators. The Agency conducted three Technical Meetings on systemic approaches to safety, factors influencing safety and security culture, and on the integration of safety culture into regulatory processes, and is preparing guidelines for safety culture self-assessment based on the outcomes of these meetings.[28]

29. The Agency's Safety Culture Continuous Improvement Process (SCCIP) assists operating organizations and regulatory bodies to develop their programmes for the continuous improvement of safety culture and to conduct safety culture self-assessments. An SCCIP mission was implemented at the Pakistan Nuclear Regulatory Authority in April 2015, and another SCCIP mission began in Mexico in January 2015. Additionally, national and regional workshops on safety culture self-assessment for senior management, leadership and management for safety, and safety culture were conducted in Algeria (January 2015), Belarus (April 2015), Egypt (November 2014), Indonesia (June 2015), Malaysia (November 2014), the Netherlands (October 2014 and December 2014), Pakistan (November 2014), the Philippines (May 2015) and Uganda (October 2014).[29]

30. An interregional training course, held in Finland in September 2014, highlighted interactions between regulators and operators in defining and implementing national requirements, taking into account the safety, security and safeguards perspectives of countries embarking on a nuclear power programme. The third biennial workshop on managing the interface between safety and security of

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[25] This relates to operative paragraphs 13, 14, 15, 16 and 24 of resolution GC(58)/RES/10.

[26] This relates to operative paragraphs 2, 12 and 20 of resolution GC(58)/RES/10.

[27] This relates to operative paragraph 12 of resolution GC(58)/RES/10.

[28] This relates to operative paragraphs 2, 3, 12 and 47 of resolution GC(58)/RES/10.

[29] This relates to operative paragraphs 2, 12 and 47 of resolution GC(58)/RES/10.

research reactors was held in Vienna, Austria, in June 2015 and was attended by participants from 39 Member States. A draft Technical Document was finalized at this workshop.[30]

31. Integrated Regulatory Review Service (IRRS) missions were conducted in Armenia (June 2015), Cameroon (October 2014), Croatia (June 2015), France (November 2014), Hungary (May 2015), India (March 2015), Malta (February 2015), the Netherlands (November 2014) and Zimbabwe (November 2014). IRRS follow-up missions were implemented in Finland (June 2015), the Republic of Korea (December 2014), Slovakia (February 2015), Slovenia (September 2014), Switzerland (April 2015) and the United Arab Emirates (February 2015). The tailored module for countries embarking on a nuclear power programme was used in Viet Nam (September 2014). IRRS preparatory meetings took place in Armenia (September 2014), Chile (September 2014), Croatia (November 2014), Finland (January 2015), Hungary (September 2014), India (October 2014), Ireland (February 2015), the Republic of Korea (July 2014), Malaysia (May 2015), Malta (October 2014), Slovakia (September 2014), Switzerland (October 2014), the United Republic of Tanzania (February 2015) and the United Arab Emirates (September 2014). Member States from all regions have provided extensive support for the implementation of the IRRS with 313 experts from all regions participating in the IRRS missions. Member States are encouraged to extend their participation in the expert pool.[31]

32. Within the framework of the cooperation agreement between the Agency and the European Commission,[32] the results of IRRS missions were analysed for future enhancement of the IRRS programme. Relevant findings and lessons learned from the IRRS missions were summarized and published as working material in the following technical reports: *Lessons Learned from IRRS Missions to Countries with Operating NPPs, 2006–2013* and *Analysis of IRRS Missions in 2006–2013 to Countries with Operating NPPs*.[33] Another analysis, focusing on the radiation safety components of the IRRS programme, was also conducted and its results presented in a report entitled *IRRS Missions 2006–2013: Analysis from a Radiation Safety Perspective*. A workshop on lessons learned from IRRS missions was held in the Russian Federation (December 2014) with the participation of 47 senior regulators from 25 Member States that have hosted or are planning to host an IRRS mission. The workshop provided a forum for the exchange of experience and resulted in proposals for improvements to the IRRS programme. Additionally, a consultancy meeting involving 20 experienced IRRS reviewers was held in Vienna, Austria, in April 2015 to collect suggestions for enhancing the IRRS process.[34]

33. The second Basic IRRS Training course was organized in Austria (October 2014) with 63 participants from 39 Member States and the European Commission. An additional IRRS training course focusing on radiation safety was held in Austria (April 2015) and was attended by 60 participants from 47 Member States. National training courses were organized for the regulatory bodies of the United Kingdom (November 2014) and the USA (January 2015).[35]

34. The Agency and the European Nuclear Safety Regulators Group's (ENSREG's) Working Group on Nuclear Safety have actively cooperated in the preparation, conduct and evaluation of the IRRS

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[30] This relates to operative paragraph 3 of resolution GC(58)/RES/10.

[31] This relates to operative paragraphs 2, 9 and 39 of resolution GC(58)/RES/10.

[32] Contribution Agreement ENER/11/NUCL/SI2.588650 between the European Atomic Energy Community (represented by the European Commission) and the Agency.

[33] See http://gnssn.iaea.org/regnet/irrs/Pages/IRRS_pub_docs.aspx.

[34] This relates to operative paragraphs 9, 10, 11, 21 and 39 of resolution GC(58)/RES/10.

[35] This relates to operative paragraphs 10, 39 and 93 of resolution GC(58)/RES/10.

programme of European Union countries. In the reporting period, the status of the European IRRS programme was reviewed, the pool of European IRRS experts was extended and the memorandum of understanding between ENSREG and the Agency was revised.[36]

35. The Agency supported Member States in the self-assessment of their national regulatory infrastructure for radiation and nuclear safety, through the provision of the Self-Assessment of Regulatory Infrastructure for Safety (SARIS) methodology and tool. To enhance the use of SARIS, national seminars have been organized in preparation for IRRS missions, and a regional training course was held in Vienna, Austria, in January 2015 for Member States from the Asia and the Pacific region. Work is ongoing for further improving the question sets underlying the SARIS tool and for developing a variant of the tool that would facilitate self-assessment of national regulations. The SARIS tool was used for the regulatory self-assessment of national safety infrastructure by the 16 Member States that hosted IRRS missions during the reporting period.[37]

36. The publication entitled *IRIS Guidelines: 2014 Edition* (Services Series No. 28) was published in July 2014 and national workshops on the application of the Integrated Review of Infrastructure for Safety (IRIS) methodology for self-assessment were conducted in Belarus (March 2015) and Viet Nam (October 2014).[38]

37. The Agency participated in the following biannual working group meetings of the Committee on Nuclear Regulatory Activities of the Nuclear Energy Agency of the Organisation for Economic Co-operation and Development (OECD/NEA): the Working Group on Inspection Practices (France, October 2014), the Working Group on the Regulation of New Reactors (France, October 2014) and the Vendor Inspection Co-operation Working Group of the Multinational Design Evaluation Programme (France, November 2014). The aim was to develop common approaches for the training of inspectors, to disseminate information on inspection practices among Agency and OECD/NEA member countries, and to share regulatory practices and relevant experience.[39]

38. The sixth annual meeting of the Steering Committee on Competence of Human Resources for Regulatory Bodies took place in Vienna, Austria, in November 2014. New terms of reference with an extended scope were approved and the work programme was updated to encompass work areas in knowledge management and capacity building. The Steering Committee was renamed as Steering Committee on Regulatory Capacity Building and Knowledge Management.[40]

39. A regional workshop for Europe on public information and involvement in regulatory activities was held in Sofia, Bulgaria, in November 2014, and enabled participants to discuss relevant experience and good practices for interactions.[41]

40. The Agency initiated the establishment of the Small Modular Reactor Regulators' Forum in March 2015. The Forum will specifically address regulatory issues in the development, deployment and licensing of small modular reactors (SMRs).[42]

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[36] This relates to operative paragraph 6 of resolution GC(58)/RES/10.

[37] This relates to operative paragraphs 9 and 39 of resolution GC(58)/RES/10.

[38] This relates to operative paragraphs 9 and 39 of resolution GC(58)/RES/10.

[39] This relates to operative paragraph 5 of resolution GC(58)/RES/10.

[40] This relates to operative paragraphs 19 and 94 of resolution GC(58)/RES/10.

[41] This relates to operative paragraph 40 of resolution GC(58)/RES/10.

41. The Agency continued supporting Member States in the application of the Code of Conduct on the Safety of Research Reactors and the Agency safety standards. Two Technical Meetings were held on decommissioning planning (December 2014) and on the safety of research reactors under project and supply agreements (June 2015) in Vienna, Austria. Two regional workshops were conducted on regulatory inspection programmes for research reactors in Africa (Egypt, September 2014) and Asia and the Pacific (Malaysia, May 2015). An African regional workshop on the safety of utilization programmes was held in Algeria (December 2014) and an Asia and the Pacific regional workshop on systematic fire hazard analysis for research reactors was held in the USA (December 2014). The Agency also conducted a workshop on the implementation of integrated management systems at research reactors (Austria, November 2014) and a national workshop on research reactor ageing management (Bangladesh, October 2014), and held a meeting on finalizing Nigeria's safety regulations for research reactors (Austria, November 2015).[43]

42. Integrated Safety Assessment of Research Reactors (INSARR) missions were conducted in Malaysia (October 2014) and Turkey (March 2015) and provided recommendations and suggestions for further enhancing the safety of such facilities. Research reactor safety expert missions were conducted in China (January 2015), Egypt (September and November 2014), Ghana (July 2014), the Islamic Republic of Iran (February and April 2015), Jamaica (March 2015), Morocco (October 2014), Slovenia (September 2014), Turkey (December 2014), Uzbekistan (February 2015) and Viet Nam (February 2015). These missions helped to enhance safety in various areas, including the management and verification of safety, safety of core fuel conversions from high enriched uranium to low enriched uranium, safety of experiments, operational radiation protection programmes, and the review and assessment of safety documents.[44]

43. The Agency held a workshop on the development of technical requirements for the bidding specifications for research reactors in Vienna, Austria (September 2014) and another one on milestones and infrastructure for a new research reactor project in Egypt (May 2015). The Agency also conducted an expert mission on technical and safety infrastructure elements for a new research reactor project in the Sudan (January 2015).[45]

44. The Agency conducted an African regional workshop on safety reassessment for research reactors in Morocco, in March 2015, based on the publication *Safety Reassessment for Research Reactors in the Light of the Accident at the Fukushima Daiichi Nuclear Power Plant* (Safety Reports Series No. 80). Safety reassessments were also discussed at the meetings of regional advisory safety committees for research reactors in the Africa, Asia and the Pacific, and Europe regions. The Agency conducted a Technical Meeting on Safety Analysis and Safety Documents for Fuel Cycle Facilities in Vienna, Austria, in May 2015, and finalized a report on the safety reassessment of fuel cycle facilities to be published as part of the Safety Reports Series in late 2015.[46]

45. The Agency conducted five Operational Safety Review Team (OSART) missions in Hungary (October–November 2014), France (October 2014), the Netherlands (September 2014), the Russian Federation (November 2014) and the USA (August 2014); two OSART follow-up missions in the Czech Republic (May 2015) and France (June 2015); and a Corporate OSART mission for Électricité

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[42] This relates to operative paragraph 5 of resolution GC(58)/RES/10.

[43] This relates to operative paragraphs 18, 37 and 45 of resolution GC(58)/RES/10.

[44] This relates to operative paragraph 18 of resolution GC(58)/RES/10.

[45] This relates to operative paragraph 2 of resolution GC(58)/RES/10.

[46] This relates to operative paragraph 45 of resolution GC(58)/RES/10.

de France in France (November 2014). Member States provided extensive support for the conduct of these OSART missions, ensuring the participation of more than 60 highly qualified experts.[47]

46. Agency guidelines for OSART missions have been revised to take into consideration lessons learned from recent OSART missions, relevant revisions of the Agency safety standards, and lessons learned from the Fukushima Daiichi nuclear accident. Trial application of the new OSART guidelines (a revision of the 2005 edition) was performed during the six OSART missions conducted in 2014.[48]

47. The role of OSART missions in supporting Member States' efforts to improve nuclear safety was underlined during the International Conference on Operational Safety held in Vienna, Austria, in June 2015. The Agency is encouraging those Member States that have not requested an OSART mission in the past three years to do so in accordance with the IAEA Action Plan on Nuclear Safety. Eight good practices concerning research and development on severe accident management strategies for NPPs were identified through OSART missions and recorded in the OSART Mission Results (OSMIR) database during the reporting period.[49]

48. The Agency conducted three Safety Aspects of Long Term Operation (SALTO) peer review missions in Belgium (January 2015), the Czech Republic (November 2014) and Mexico (March 2015). Five SALTO workshops were held in the Czech Republic (August 2014), Mexico (June 2015), South Africa (November 2014 and April 2015) and Sweden (October 2014). Five other ageing management and long term operation related workshops and expert missions were held in Argentina (February and May 2015), Armenia (May 2015), China (October 2014) and the Netherlands (July 2014). Member States also provided extensive support for the implementation of the SALTO missions and related workshops, ensuring the participation of more than 30 experts.[50]

49. The *SALTO Peer Review Guidelines: Guidelines for Peer Review of Safety Aspects of Long Term Operation of Nuclear Power Plants* (Services Series No. 26), published in 2014, have been fully applied during the reporting period. A new optional review area on the management of human resources, competence and knowledge for long term operation was introduced and has been requested for almost all SALTO missions since January 2014. Following all OSART and SALTO missions, the experts' feedback is collected and analysed for continuous improvement of the review services.[51]

50. Phase 2 of the International Generic Ageing Lessons Learned (IGALL) programme was launched in 2014. Twenty-six Member States and international organizations participated in seven IGALL working group meetings in Austria (October 2014 and May 2015), Canada (November 2014), the Czech Republic (October 2014), Slovakia (February 2015), Sweden (June 2015) and the USA (November 2014), as well as in the IGALL Steering Committee meeting held in Vienna, Austria, in December 2014.[52]

51. The draft revision of the Safety Guide *Ageing Management for Nuclear Power Plants* (IAEA Safety Standards Series No. NS-G-2.12) was approved for distribution to Member States for their comments by the Nuclear Safety Standards Committee and the Waste Safety Standards Committee in June 2015. To complement the proposed new Safety Guide, the Agency published

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[47] This relates to operative paragraphs 9 and 10 of resolution GC(58)/RES/10.

[48] This relates to operative paragraphs 11 and 38 of resolution GC(58)/RES/10.

[49] This relates to operative paragraphs 26 and 50 of resolution GC(58)/RES/10.

[50] This relates to operative paragraphs 9, 10 and 41 of resolution GC(58)/RES/10.

[51] This relates to operative paragraph 11 of resolution GC(58)/RES/10.

[52] This relates to operative paragraph 41 of resolution GC(58)/RES/10.

Ageing Management for Nuclear Power Plants: International Generic Ageing Lessons Learned (IGALL) (Safety Reports Series No. 82) in May 2015.[53]

52. The Agency conducted regional workshops on the effective management of operational experience feedback programmes in Bulgaria (August 2014) and the Czech Republic (June 2015), a regional training course on root cause analysis in Bulgaria (December 2014), and a regional workshop on the analysis of safety significant events in China (July 2014).[54]

53. In December 2014, the Agency held a Technical Meeting on the revision of *A System for the Feedback of Experience from Events in Nuclear Installations* (IAEA Safety Standards Series No. NS- G-2.11) based on lessons learned from the Fukushima Daiichi nuclear accident as well as on recent developments in this area.[55]

54. The International Reporting System for Operating Experience (IRS), which is jointly operated by the Agency and the OECD/NEA, the Incident Reporting System for Research Reactors (IRSRR) and the Fuel Incident Notification and Analysis System (FINAS) support the reporting of nuclear incidents and accidents at nuclear installations and the dissemination of safety-related information and operating experience among Member States. During the reporting period, the Agency took measures to harmonize these web-based systems, including a revision of the guidelines for providing information to the systems and various other enhancements, in order to make them more user-friendly and transparent for Member States.[56]

55. In the reporting period, participation in the IRS rose to its highest level with 99 reports submitted and at least one report from every participating Member State. The Agency organized two IRS-related meetings in Austria (October 2014) and France (March 2015). The purpose of these meetings was to share assessments and lessons learned from recently reported incidents, to identify common trends in those incidents, and to consider ways of improving the operation of the IRS.[57]

56. The ninth Technical Meeting of the IRSRR National Coordinators was held in Sofia, Bulgaria, in March 2015, with the participation of 33 Member States, and a Technical Meeting of the FINAS National Coordinators was held in Vienna, Austria, in September 2014, with the participation of 20 Member States. The Agency published, in March 2015, the Operating experience from Events Reports to the IAEA Incident Reporting System for Research Reactors (IAEA-TECDOC-1762), and initiated the preparation of a Technical Document on operating experience feedback related to fuel cycle incidents.[58]

57. The Agency developed guidelines on the scope and objectives of the new Safety Assessment Advisory Programme (SAAP) module offered as part of the Design and Safety Assessment Review Service (DSARS), and on what is expected from a Member State hosting a SAAP mission. The guidelines also address the lessons learned from completed SAAP missions, and provide information on self-assessment and on how to request a follow-up mission to assist in addressing the findings of the initial mission. The Agency provided SAAP review services using these guidelines in Bangladesh

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[53] This relates to operative paragraph 41 of resolution GC(58)/RES/10.

[54] This relates to operative paragraph 38 of resolution GC(58)/RES/10.

[55] This relates to operative paragraph 38 of resolution GC(58)/RES/10.

[56] This relates to operative paragraph 7 of resolution GC(58)/RES/10.

[57] This relates to operative paragraphs 7 and 38 of resolution GC(58)/RES/10.

[58] This relates to operative paragraphs 7, 8 and 38 of resolution GC(58)/RES/10.

(November 2014) and Jordan (November 2014), both of which are planning to embark on nuclear power programmes.[59]

58. The Agency continues to be involved in ongoing efforts to update the guidance documentation for its Generic Reactor Safety Review (GRSR) and International Probabilistic Safety Assessment Review Team (IPSART) services. This year's update will incorporate lessons learned from previous reviews, feedback from the Fukushima Daiichi accident, and various best practices. The update of the GRSR service will also cover SMRs and provide Member States hosting a GRSR mission with an evaluation of the Safety Case for such reactors against the Agency's safety standards. Revised guidance for the IPSART service, which assists Member States in their safety assessments for beyond design basis events, was completed during the reporting period.[60]

59. In September 2014, the Agency initiated the preparation of 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).[61]

60. In April 2015, the Agency initiated a GRSR review for the ACP 100 SMR design. This review will be the first opportunity for the Agency to evaluate the safety standards against an SMR design. This will also benefit potential future reviews of transportable NPPs, which are a type of SMR design.[62]

61. The Agency's Periodic Safety Review Service (PSRS) assists Member States in the reassessment of NPP safety on a regular basis. The implementation status of periodic safety reviews is also evaluated by OSART and SALTO missions. In June 2015, the Agency initiated the update of guidance documentation for the PSRS to gather lessons learned and best practices on the conduct of periodic safety reviews.[63]

62. The revision of the Technical Document *Determining the quality of probabilistic safety assessment (PSA) for applications in nuclear power plants* (IAEA-TECDOC-1511) to include the consideration of extreme external events was finalized, and the updated text is in the publication process. The document is intended to assist Member States' safety assessments in accordance with international best practices.[64]

63. In November 2014 the CSS approved a draft Safety Guide on the design of instrumentation and control systems for NPPs (DS431), which provides guidance on best practices for the safety assessment of digital instrumentation and control systems.[65]

64. Within the scope of the Agency's extrabudgetary programme for the International Seismic Safety Centre (ISSC), about 20 Safety Reports and Technical Documents, supporting the

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[59] This relates to operative paragraphs 2 and 9 of resolution GC(58)/RES/10.

[60] This relates to operative paragraphs 11, 22 and 46 of resolution GC(58)/RES/10.

[61] This relates to operative paragraph 48 of resolution GC(58)/RES/10.

[62] This relates to operative paragraph 51 of resolution GC(58)/RES/10.

[63] This relates to operative paragraphs 42 and 43 of resolution GC(58)/RES/10.

[64] This relates to operative paragraph 44 of resolution GC(58)/RES/10.

[65] This relates to operative paragraph 49 of resolution GC(58)/RES/10.

implementation of the Agency safety standards related to siting and design as well as promoting capacity building in countries embarking on nuclear power programmes, are under development.[66]

65. To support the implementation of *Seismic Hazards in Site Evaluation for Nuclear Installations* (IAEA Safety Standards Series No. SSG-9), a Technical Document entitled *Assessment of Seismic Source Potential from Paleoseismological Data*, and two Safety Reports entitled *Fault Rupture Modelling for Seismic Hazard Assessment in Site Evaluation for Nuclear Installations* and *Impact of Diffuse Seismicity on Seismic Hazard Assessment in Site Evaluation for Nuclear Installations* have been completed in the reporting period.[67]

66. The Agency conducted a meeting on planning of ISSC extrabudgetary Phase 2 activities in Vienna, Austria, in March 2015. The meeting discussed the new framework of the programme and identified five work areas: external hazard assessment, designs against external hazards; safety assessments against external hazards, information systems, and capacity building.[68]

67. The Agency is finalizing Safety Reports on margin assessment of the ability of NPPs to withstand human induced external events and on the protection of NPPs against such events. A Safety Report on integrated tsunami design and probabilistic safety assessment (PSA) is also under development.[69]

68. A preliminary Site and External Events Design (SEED) review service mission was conducted in Uganda (February 2015) to assist in managing siting activities and sharing international experience. Under the SEED service, a new training approach on safety review simulation of external hazard characterization was piloted in Indonesia (August 2014) during which participants simulated a safety review of seismic and geotechnical hazard characterizations for two sites to enhance the use of the relevant Agency safety standards and prepare for hosting SEED safety review missions.[70]

69. The Agency continued to promote the use of the knowledge safety networks under the Global Nuclear Safety and Security Network (GNSSN) for sharing findings and lessons learned from Agency peer review services and activities. The GNSSN includes global networks such as the International Regulatory Network (RegNet), the Technical and Scientific Support Organization Forum and the Global Safety Assessment Network (GSAN); regional networks such as the Asian Nuclear Safety Network (ANSN), the Arab Network of Nuclear Regulators (ANNuR), the Forum of Nuclear Regulatory Bodies in Africa (FNRBA) and the Ibero-American Forum of Radiological and Nuclear Regulatory Agencies (FORO); and thematic networks such as the Regulatory Cooperation Forum (RCF), the CANDU Senior Regulators Group, the Forum of the State Nuclear Safety Authorities of the Countries Operating WWER Type Reactors (WWER Regulators' Forum) and the Control of Sources Network.[71]

70. The sixth meeting of the GNSSN Steering Committee took place in Vienna, Austria, in May 2015. The meeting discussed the National Nuclear Safety Knowledge Management Platforms, shared benefits and lessons learned on the use of such platforms. The GNSSN Communication Strategy was established in July 2014 with the aim of consistently and actively promoting the GNSSN

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[66] This relates to operative paragraphs 2, 32 and 44 of resolution GC(58)/RES/2, RES/26 and RES/32

[67] This relates to operative paragraph 32 of resolution GC(58)/RES/32.

[68] This relates to operative paragraphs 2 and 32 of resolution GC(58)/RES/32.

[69] This relates to operative paragraphs 32 and 42 of resolution GC(58)/RES/11 and RES/32.

[70] This relates to operative paragraphs 34, and 42 of resolution GC(58)/RES/32.

[71] This relates to operative paragraph 5 of resolution GC(58)/RES/10.

to its key audiences and stakeholders. Over 500 senior managers in 75 Member States recognized that GNSSN activities have influenced their work and their respective organizations' strategies. During the reporting period, 85 workshops were implemented within the GNSSN framework covering 12 nuclear safety and security thematic areas.[72]

71. The International Regulatory Network continued to contribute to the enhancement of regulatory body effectiveness by disseminating and sharing regulatory knowledge and practices among Member States through the IRRS platform, the RCF, the Embarking Countries Portal, and other forums, such as the CANDU Senior Regulators Group, the CANDU PSA Working Group, the Small Modular Reactor Regulators' Forum, and the WWER Regulators' Forum.[73]

72. With 27 members, including established nuclear power States and embarking countries, the RCF continued to assist in the development of effectively independent and robust nuclear regulatory bodies. The RCF annual plenary meeting took place on the margins of the 58th regular session of the IAEA General Conference in September 2014 and was attended by around 50 participants. New action plans for Belarus, Jordan, Poland and Viet Nam were established during the meeting between the RCF and the European Commission held in Brussels, Belgium, in May 2015 within the framework of the Instrument for Nuclear Safety Cooperation, and an action timetable has been posted on the RCF members' portal. A safety culture mission was conducted in December 2014 within the scope of the action plan for Belarus.[74]

73. The annual meeting of the CANDU Senior Regulators Group was held in India, in November 2014. In addition, two meetings of the CANDU PSA Working Group (CPWG) were conducted to discuss the progress achieved in implementing the CPWG work plan for 2013–2014 and to identify follow-up actions (Canada, July 2014), and to discuss the progress of activities being implemented (Austria, June 2015). During the reporting period, the development of a CANDU reactor-specific Safety Report was initiated.[75]

74. Two regional workshops, in Thailand (August 2014) and in Malaysia (October 2014), were organized by the ANSN's Topical Group on Communication and Consultation with Interested Parties. The workshops explored key aspects for effectively preparing to communicate with the public in a nuclear or radiological emergency and for exchanging information on national legal and regulatory provisions to ensure effective communication and consultation.[76]

75. With over 40 participating countries, 17 activities were implemented within the scope of ANNuR and FNRBA during the reporting period. The sixth annual plenary meeting of ANNuR was held in Tunisia (March 2015) with the participation of 14 Member States to share experience and lessons learned in the implementation of national activities. The terms of reference for ANNuR were reviewed and the Agency was requested to act as the technical secretariat for the network. The FNRBA plenary meeting was held in April 2015 with the objectives being to discuss the FNRBA action plan for 2015–2020 and the restructuring of the Steering Committee to facilitate the decision-making process.[77]

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[72] This relates to operative paragraphs 5 and 95 of resolution GC(58)/RES/10.

[73] This relates to operative paragraph 5 of resolution GC(58)/RES/10.

[74] This relates to operative paragraphs 5, 19 and 52 of resolution GC(58)/RES/10.

[75] This relates to operative paragraph 5 of resolution GC(58)/RES/10.

[76] This relates to operative paragraph 40 of resolution GC(58)/RES/10.

[77] This relates to operative paragraph 5 of resolution GC(58)/RES/10.

76. The Agency continued its cooperation with FORO aimed at achieving a high level of radiation and nuclear safety in a sustainable manner. The Agency organized two Steering Committee meetings in Uruguay (November 2014) and in Peru (June 2015) and eight additional meetings within the FORO extrabudgetary programme in the reporting period. The topics covered included: safety culture as applied to practices using radioactive sources; implementation of the clearance concept and criteria for small nuclear installations; application of the risk matrix to industrial installations; enhancements to the radiotherapy risk evaluation tool SEVRRA (System to Evaluate the Risk in Radiotherapy); and integrated information management in the Ibero-American region. In addition, a Latin American regional workshop on the impact of national programmes on radiological protection for medical exposure in certain FORO member countries was conducted in Santiago, Chile, in March 2015. In March 2014, during the Sixth Review Meeting of the Contracting Parties to the CNS, the Ibero-American Forum of Radiological and Nuclear Regulatory Agencies (FORO) held a special side event to present results of the stress test assessments conducted in FORO Member States. The publication *Regulatory Practices on Ageing Management and Long Term Operation of Nuclear Power Plants in the Ibero-American Region* was issued in September 2014.[78]

77. The Agency initiated the development of the Global Nuclear Safety and Security Communications Network (GNSCOM) in September 2014. The main mission and scope of the network were identified and the establishment of a Steering Committee for GNSCOM is planned for late 2015.[79]

78. The Agency also initiated the development of a Safety and Security Culture Network (ASCENT) to facilitate discussions among experts and professionals on topics such as human and organizational factors, leadership and management, safety and security culture, human reliability and competence management.[80]

D. Radiation Safety and Environmental Protection

79. Three draft Safety Guides on protection of the public and the environment have been submitted to Member States for comment: *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). The Radiation Safety Standards Committee (RASSC), in November 2014, has requested the development of a Safety Report on radiation protection in veterinary medicine.[81]

80. A national training course to assist with the implementation of *Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards* (IAEA Safety Standards Series No. GSR Part 3) was held in the United Arab Emirates in June 2015. The specific topics covered were control of occupational exposure in nuclear facilities and in the oil and gas industries, and radiation protection in relation to medical exposures.[82]

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[78] This relates to operative paragraphs 5 and 6 of resolution GC(58)/RES/10.

[79] This relates to operative paragraph 5 of resolution GC(58)/RES/10.

[80] This relates to operative paragraph 5 of resolution GC(58)/RES/10.

[81] This relates to operative paragraphs 33 and 53 of resolution GC(58)/RES/10.

[82] This relates to operative paragraphs 53, 55, 56, 58 and 60 of resolution GC(58)/RES/10.

81. The Agency and the OECD/NEA jointly operate the Information System on Occupational Exposure (ISOE). The system provides a forum for radiation protection optimization in NPPs. The 2015 ISOE International ALARA Symposium was held in Rio de Janeiro, Brazil, and was hosted by the Brazilian ISOE National Coordination Centre. About 70 participants from 15 Member States and 2 international organizations attended the Symposium, which provided a forum for participants to exchange experiences on occupational radiation protection in NPPs.[83]

82. The International Conference on Occupational Radiation Protection: Enhancing the Protection of Workers — Gaps, Challenges and Developments was held in December 2014 in Vienna, Austria. The conference was cosponsored by the International Labour Organization and organized in cooperation with 15 other international organizations. Four hundred and seventy participants from 79 countries and 21 international organizations attended the conference. The conference identified nine actions to enhance the protection of workers and these were included in the Statement of the President of the Conference.[84]

83. Two Technical Documents are under preparation to provide model regulations and corresponding guidelines for use by Member States in strengthening national regulatory infrastructure. One document addresses the regulation of naturally occurring radioactive material (NORM) for planned exposure situations, the other covers control of public exposure and radioactive discharge. Corresponding training material is also under preparation. The guidelines are being prepared in French and English to provide support to the Africa region.[85]

84. The Agency continued its cooperation with the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) in the development of safety standards and technical guidance related to the control of exposures of the public and protection of the environment. The application of the Agency's Database on Discharges of Radionuclides to the Atmosphere and Aquatic Environment, which provides information to the public on discharges of radionuclides from nuclear facilities, is being discussed with UNSCEAR within the framework of assessment of exposure of public in connection with discharges. The Agency continues to follow the activities of the International Commission on Radiological Protection (ICRP) as observers on the individual ICRP committees.[86]

85. The draft Safety Guide on radiation protection and safety in medical Uses of ionizing radiation (DS399) that was recently sent to Member States for comment includes guidance on the justification of medical exposures and optimization of protection. A Technical Meeting on Justification of Medical Exposure and the Use of Appropriateness Criteria was held in Vienna, Austria, in March 2015, and a Technical Document is under development based on the discussions at that meeting. A Technical Meeting on Tracking the Radiation Exposure of Patients was held in Vienna, Austria, in April 2015 to bring together those countries that already have systems in place for the tracking of radiation exposure history in medicine. The meeting aimed to prepare information material on the use of such tracking that could help other countries in the process of establishing a similar system, inter alia, to decrease unnecessary repeat examinations in diagnostic imaging.[87]

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[83] This relates to operative paragraph 54 of resolution GC(58)/RES/10.

[84] This relates to operative paragraphs 53 and 56 of resolution GC(58)/RES/10.

[85] This relates to operative paragraphs 53, 56 and 89 of resolution GC(58)/RES/10.

[86] This relates to operative paragraphs 33, 64 and 65 of resolution GC(58)/RES/10.

[87] This relates to operative paragraph 58 of resolution GC(58)/RES/10.

86. The Safety Guide *Justification of Practices, Including Non-Medical Imaging* (IAEA Safety Standards Series No. GSG-5) was published in October 2014. A Safety Guide on the radiation safety of X-ray generators and radiation sources used for inspection purposes and for non-medical imaging (DS471), which provides radiation safety guidance for using human imaging techniques that are deemed to be justified, is currently under development.[88]

87. The Safety Guide *Protection of the Public against Exposure Indoors due to Radon and Other Natural Sources of Radiation* (IAEA Safety Standards Series No. SSG-32), which is cosponsored by the World Health Organization (WHO) was published in May 2015.[89]

88. A Regional Training Course on Reducing the Risks from Indoor Radon: Establishing a National Radon Strategy was organized, in cooperation with the WHO, in Argentina in November 2014. The course was attended by 24 participants from regulatory bodies, research centres and Ministries of Health from 14 Member States.[90]

89. A regional TC project entitled "Establishing Enhanced Approaches to the Control of Public Exposure to Radon" is being implemented in Europe in cooperation with the WHO, with the participation of 31 Member States. Three workshops were held during the reporting period: on the development of national strategies to control radon exposure in homes (Bulgaria, October 2014), on methods to reduce radon levels in buildings and building codes for new homes (Czech Republic, June 2015), and on radon risk communication (Estonia, March 2015).[91]

90. A Technical Meeting on Harmonization of Reference Levels for Foodstuffs and Drinking Water Contaminated Following a Nuclear Accident was held in Vienna, Austria, in September 2014. The meeting was attended by 45 experts from 37 Member States along with observers from the Food and Agriculture Organization of the United Nations and the WHO. The meeting specifically considered the longer term issues related to the control of food and drinking water once a nuclear or radiological emergency has been declared to have ended. A Technical Document based on the discussions at the meeting is in the publication process.[92]

91. An electronic working group to advise the Secretariat on the development of guidance on the control of non-food commodities with surface contamination was established by RASSC at its 37th meeting in November 2014.[93]

92. The third Technical Meeting of the Modelling and Data for Radiological Impact Assessments (MODARIA) programme was held in Vienna, Austria, in November 2014. The programme continued to enhance 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 current MODARIA programme will conclude at the end of 2015 and a follow-up programme will be developed in due course.[94]

93. Within the framework of the MODARIA programme, a draft Technical Report entitled *Remediation Strategies and Decision Aiding Techniques* is under development. The report summarizes

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[88] This relates to operative paragraphs 58 and 60 of resolution GC(58)/RES/10.

[89] This relates to operative paragraph 58 of resolution GC(58)/RES/10.

[90] This relates to operative paragraph 58 of resolution GC(58)/RES/10.

[91] This relates to operative paragraphs 53 and 61 of resolution GC(58)/RES/10.

[92] This relates to operative paragraph 62 of resolution GC(58)/RES/10.

[93] This relates to operative paragraph 63 of resolution GC(58)/RES/10.

[94] This relates to operative paragraph 64 of resolution GC(58)/RES/10.

international experience and lessons learned from the perspectives of regulatory bodies and licensees, and provides an evaluation of approaches and decision aiding tools being applied internationally to select and prioritize possible remediation options.[95]

94. The Agency's advisory work related to the Convention for the Protection of the Marine Environment of the North-East Atlantic and the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (London Convention) focused on the development of a radiological assessment procedure to evaluate the suitability of materials for dumping at sea in accordance with Agency safety standards and on the preparation of a report containing an inventory of human-made radioactive materials dumped at sea. In this connection, the Technical Document *Determining the Suitability of Materials for Disposal at Sea under the London Convention 1972 and London Protocol 1996: A Radiological Assessment Procedure* (IAEA-TECDOC-1759) was issued in 2015. A report entitled *Inventory of waste disposals, accidents and losses at sea involving radioactive materials for the purpose of the London Convention*, which was elaborated in cooperation with the International Maritime Organization (IMO) and with contributions from several Agency Member States, is in the process of publication.[96]

E. Transport Safety

95. The Transport Safety Standards Committee (TRANSSC), at its 30th meeting held in Vienna, Austria, in June 2015, completed its initial review of the proposals to change the 2012 edition of the *Regulations for the Safe Transport of Radioactive Material* (IAEA Safety Standards Series No. SSR-6) and the 2014 edition of the *Advisory Material for the Regulations for the Safe Transport of Radioactive Material* (IAEA Safety Standards Series No. SSG-26). The Safety Guide *Schedules of Provisions of the IAEA Regulations for the Safe Transport of Radioactive Material (2012 Edition)* (IAEA Safety Standards Series No. SSG-33) was published in 2015.[97]

96. In October 2014, the Agency held a Technical Meeting on transport accident data to evaluate the appropriateness of the accident performance criteria cited in SSG-26. The meeting concluded that there was no reason to revise the accident criteria based upon the data available and recommended that Member States should be requested to collect data on accidents involving dangerous goods, which would include radioactive material, to inform a future review of this matter. A Working Group on Package Stowage and Retention Systems during Transport, formed in 2014 to evaluate routine conditions of transport, met in February 2015, to determine whether proposals to amend SSR-6 and SSG-26 as part of the 2015 review cycle were necessary.[98]

97. A regional School for Drafting Regulations on Radiation Safety, held in Vienna, Austria, in December 2014, featured a session on Transport regulations that included participants from eight Arab-speaking States from the Africa and the Middle East and South Asia.[99]

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[95] This relates to operative paragraphs 53, 56, 64, 81, 82, 84 and 92 of resolution GC(58)/RES/10.

[96] This relates to operative paragraph 66 of resolution GC(58)/RES/10.

[97] This relates to operative paragraphs 34 and 67 of resolution GC(58)/RES/10.

[98] This relates to operative paragraph 67 of resolution GC(58)/RES/10.

[99] This relates to operative paragraphs 34 and 67 of resolution GC(58)/RES/10.

98. Agency staff continued collaboration with United Nations modal bodies, including the International Civil Aviation Organization (ICAO), the IMO, and the United Nations Economic Commission for Europe's Sub-Committee of Experts on the Transport of Dangerous Goods, on issues related to the transport of Class 7 (radioactive) materials in order to contribute to the harmonization of international transport regulations.[100]

99. Work has begun on the development of an addendum to the Safety Guide *Compliance Assurance for the Safe Transport of Radioactive Material* (IAEA Safety Standards Series No. TS-G-1.5) which will provide details of the scope and content of a Safety Report on transport package designs for radioactive material scheduled for publication in 2018.[101]

100. The fourth Technical Meeting to follow up on the findings and recommendations of the 2011 International Conference on the Safe and Secure Transport of Radioactive Material: The Next Fifty Years of Transport — Creating a Safe, Secure and Sustainable Framework was held in Vienna, Austria, in March 2015. The meeting addressed the conference's findings related to the basis of the regulatory provisions, regulatory implementation and compliance, emergency response, and regional considerations. The participants of the meeting considered the outcomes of the previous three follow-up meetings and produced a report which provided concluding recommendations on the Agency's future work programmes in the area of transport safety.[102]

101. With the support of the Agency, the Working Group on Best Practice Guidelines for Voluntary and Confidential Government-to-Government Communications on the Transport of MOX Fuel, High Level Radioactive Waste and, as appropriate, Irradiated Nuclear Fuel by Sea, chaired by Norway and made up of members from both coastal and shipping States, released its report to all Member States in May 2014 as Agency document INFCIRC/863.[103, 104]

102. The ad-hoc Working Group on Air and Maritime Transportation of the Inter-Agency Committee on Radiological and Nuclear Emergencies, led by ICAO, held four teleconferences during the reporting period which led to the establishment of a contact list of public information officers for communication between the media and the governmental communication departments of the members of the Working Group as well as of a standard operating procedure for approval of media releases by the members of the Working Group.[105]

103. The Agency continues to include awareness of the issue of denials of shipment in its national and regional training courses and workshops to ensure a consistent message for all participants in Agency training activities. The Transport Facilitation Working Group reported to an ad-hoc inter-agency working group on transport of radioactive material (formed by United Nations organizations involved in regulations for the transport of radioactive material) on the current status of the denials of shipment issue to inform discussions between the parties regarding future activities on this matter.[106]

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[100] This relates to operative paragraphs 34 and 67 of resolution GC(58)/RES/10.

[101] This relates to operative paragraph 67 of resolution GC(58)/RES/10.

[102] This relates to operative paragraph 68 of resolution GC(58)/RES/10.

[103] See https://www.iaea.org/sites/default/files/publications/documents/infcircs/infcirc863.pdf.

[104] This relates to operative paragraphs 71, 72 and 73 of resolution GC(58)/RES/10.

[105] This relates to operative paragraph 75 of resolution GC(58)/RES/10.

[106] This relates to operative paragraphs 77 and 78 of resolution GC(58)/RES/10.

104. The following regional transport safety training courses were conducted during the reporting period: Africa (Mauritius, July 2014), Asia (Vienna, Austria, November 2014), Caribbean Islands (Panama, June 2014), Latin America (Chile, August 2014), Mediterranean countries (Greece, February 2015 and Monaco, May 2014) and the Pacific Islands (Palau, December 2014). A national training workshop for the transport of sealed sources was held in South Africa in October 2014. In total, over a hundred Member States have been involved in the various regional activities, and plans have been made for additional regional activities. The Agency has intensified its efforts to assist Member States in building competencies in transport security. One international, one regional and eight national training courses on security in the transport of nuclear and radioactive material were held in the reporting period.[107]

105. The Agency initiated the production of a set of ten short films in both English and Spanish on topics relating to transport safety. The films target the general public and are intended for use in Agency training initiatives. They will be freely available to Member States. The Agency has launched a web page on the GNSSN website[108] to allow easy access to relevant information for the regional transport communities.[109]

F. The Safety of Spent Fuel and Radioactive Waste Management

106. The Agency continued to encourage Member States to become Contracting Parties to the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (Joint Convention). A regional workshop to promote the Joint Convention in Latin America was organized in Buenos Aires, Argentina, in December 2014. The workshop was attended by around 20 participants from five Member States that are not Contracting Parties to the Joint Convention.[110]

107. The fifth Review Meeting of the Contracting Parties to the Joint Convention took place in May 2015 in Vienna, Austria and was attended by 61 of the 69 Contracting Parties. The Contracting Parties discussed the progress made since the fourth Review Meeting with regard to the management of disused sealed sources, the safety implications of very long storage periods and delayed disposal of spent fuel and radioactive waste, and international cooperation in finding solutions for the long term management and disposal of different types of radioactive waste and/or spent fuel, and identified some overarching issues. The Contracting Parties decided on a number of actions with a view to, inter alia, encourage adherence to the Joint Convention, for the active participation in the peer review process, and to increase the effectiveness of the review process for Contracting Parties without a nuclear power programme. An Extraordinary Meeting will be held in 2017 prior to the Organisational Meeting for the Sixth Review Meeting to address some of these issues.[111]

108. A Topical Session on “Progress on Lessons Learnt from the Fukushima Daiichi Accident” was also organised during the Review Meeting, focusing on spent fuel and radioactive waste management and also on related issues such as the relevance of the Fukushima Daiichi Accident for non-nuclear

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[107] This relates to operative paragraph 78 of resolution GC(58)/RES/10.

[108] See http://gnssn.iaea.org/sites/auth/NSRW/RITS/transport/SitePages/SafTranspRadioMat.aspx.

[109] This relates to operative paragraph 78 of resolution GC(58)/RES/10.

[110] This relates to operative paragraph 14 of resolution GC(58)/RES/10.

[111] This relates to operative paragraph 14 of resolution GC(58)/RES/10.

power Contracting Parties, the management of large volumes of accident waste and lessons learnt from decontamination following a radiological accident.

109. The Agency has initiated the development of a Technical Document on management of large volumes of waste arising from a nuclear or radiological emergency as part of the arrangements in the Emergency Preparedness and Response Plan.[112]

110. Progress has been made in the revision of the Safety Guide entitled *Storage of Spent Nuclear Fuel* (IAEA Safety Standards Series No. SSG-15) in the light of lessons learned from the Fukushima Daiichi accident.[113]

111. The International Project on Demonstration of the Operational and Long-Term Safety of Geological Disposal Facilities for Radioactive Waste addresses both long term safety aspects of geological disposal and the interface between the period of operation of a disposal facility and the period after its closure. Five meetings have been organized during the reporting period to develop a Technical Document. Agreement was made in October 2014 with the OECD/NEA to organize a joint international workshop related to the operational safety of geological disposal facilities for high level radioactive waste to be held in early 2016.

112. The International Project on Human Intrusion in the Context of Disposal of Radioactive Waste met three times during the reporting period to develop and finalize a Technical Document.

113. Two Technical Meetings were organized within the framework of the Underground Research Facilities Network to address the need for and use of generic and site-specific underground research laboratories to support siting, design and safety assessment developments, as well as the generic concept, data and modelling needs to develop a safety assessment. The meetings were held in the Republic of Korea (November 2014) and in the USA (October 2014). The Technical Document entitled *Planning and Design Considerations for Geological Repository Programmes of Radioactive Waste* (IAEA-TECDOC-1755) was published in November 2014.

114. Following the launch of the Integrated Review Service for Radioactive Waste and Spent Fuel Management, Decommissioning and Remediation, two consultancy meetings were organized in Luxemburg (December 2014) and in Vienna, Austria (March 2015) to develop the guidelines for the safety, technical and administrative aspects of the review service and to plan and prepare for the implementation of the first peer review. Some Member States have already expressed interest in the peer review on radioactive waste management programmes.[114]

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

115. *Decommissioning of Facilities* (IAEA Safety Standards Series No. GSR Part 6) was issued in July 2014. The draft Safety Guide on decommissioning of nuclear power plants, research reactors and other nuclear fuel cycle facilities (DS452) has been submitted to Member States for comment. The

[112] This relates to operative paragraph 14 of resolution GC(58)/RES/10.

[113] This relates to operative paragraphs 80 and 81 of resolution GC(58)/RES/10.

[114] This relates to operative paragraph 11 of resolution GC(58)/RES/10

draft Safety Guide on decommissioning of medical, industrial and research facilities (DS403) was presented to the Safety Standards Committees in June 2015.[115]

116. In April 2015, the Agency completed the development of training material on decommissioning to be used as Module 18 for the Basic Professional Training Course on Nuclear Safety (BPTC). The training material addresses the decommissioning process, applicable regulatory requirements, responsibilities for decommissioning, aspects of planning and safety assessment for decommissioning, implementation of decommissioning actions, and completion of decommissioning with termination of decommissioning authorization. It includes lecture notes and slides, case studies and evaluation questions.[116]

117. The International Decommissioning Network (IDN) continued to provide a platform and mechanisms for the exchange of experiences, promotion of good practices and training in decommissioning. The Data Analysis and Collection for Costing of Research Reactor Decommissioning project, the International Project on Decommissioning Risk Management and the Constraints to Implementing Decommissioning and Environmental Remediation (CIDER) Project progressed with two meetings held for each project and two meetings held for each coordination group in the reporting period. In addition, the IDN supported the organization of workshops and training courses under the TC programme and the development of a decommissioning wiki.[117]

118. The International Project on Managing the Decommissioning and Remediation of Damaged Nuclear Facilities (DAROD Project) was launched at a Technical Meeting held in Vienna, Austria, in January 2015, with the participation of 35 experts from 19 Member States. The project aims to share and discuss experiences in the decommissioning and remediation of damaged nuclear facilities, and to identify gaps and needs for additional guidance to address issues related to strategic planning, as well as technical and regulatory aspects.[118]

119. *Experiences and Lessons Learned Worldwide in the Cleanup and Decommissioning of Nuclear Facilities in the Aftermath of Accidents* (IAEA Nuclear Energy Series No. NW-T-2.7) was issued in 2014. This publication reviews experiences in Member States relevant to the cleanup and decommissioning of nuclear facilities in the aftermath of accidents and provides an overview of lessons learned worldwide.[119]

120. The Agency conducted a third review of Japan's efforts to plan and implement the decommissioning of the Tokyo Electric Power Company's (TEPCO's) Fukushima Daiichi NPP. The international peer review of Japan's Mid-and-Long-Term Roadmap towards the Decommissioning of TEPCO's Fukushima Daiichi Nuclear Power Station Units 1–4 took place in February 2015. The review team examined a wide variety of issues related to the decommissioning of the damaged plant, focusing particularly on the safety and technological aspects of decommissioning, management of radioactive waste, control of underground water and accumulation of contaminated water at the site, and the planning and implementation of pre-decommissioning and decommissioning activities, including removal of spent and damaged fuel. The mission also reviewed progress achieved since two earlier missions (April 2013 and November to December 2013). A preliminary summary report was

[115] This relates to operative paragraph 85 of resolution GC(58)/RES/10.

[116] This relates to operative paragraph 85 of resolution GC(58)/RES/10.

[117] This relates to operative paragraph 86 of resolution GC(58)/RES/10.

[118] This relates to operative paragraph 87 of resolution GC(58)/RES/10.

[119] This relates to operative paragraph 87 of resolution GC(58)/RES/10.

delivered to the Government of Japan at the end of the mission, while the final report was delivered in April 2015.[120]

121. The Agency prepared a draft position paper on the challenges associated with planning, licensing and implementing the entombment option for decommissioning. The draft position paper discusses the applicability of the Agency's safety standards for decommissioning, remediation and radioactive waste management to entombment; relevant technical and safety considerations; the limited entombment experience worldwide; and lessons learned with entombment. A Technical Meeting to obtain Member State feedback on key safety issues and on justification for the entombment option for decommissioning was held in Vienna, Austria, in March 2015. The meeting reviewed the draft position paper, discussed additional experiences provided by the representatives of the participating Member States, and identified issues for further clarification.[121]

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

122. Meetings were held in September 2014 and April 2015 to further develop the draft Safety Guide on management of radioactive residues from uranium production and other NORM related activities (DS459), which will supersede *Management of Radioactive Waste from the Mining and Milling of Ores* (IAEA Safety Standards Series No. WS-G-1.2) issued in 2002.[122]

123. Four consultancy meetings and one Technical Meeting were held in the reporting period to advance the revision of the Safety Guide entitled *Remediation Process for Areas Affected by Past Activities and Accidents* (IAEA Safety Standards Series No. WS-G-3.1). The revision will include guidance on the application of the principles of justification and optimization of protection and safety, and on the management of large volumes of radioactive waste in the planning and implementation of remediation.[123]

124. Within the framework of the IAEA Action Plan on Nuclear Safety, the Agency is developing a Safety Report on situation-specific remediation strategies for contaminated urban and rural areas for a wide range of environmental conditions, integrating past experiences gained from the Chernobyl and Fukushima Daiichi accidents.[124]

125. During the reporting period, the Agency developed a set of modules for two training courses on practical intervention techniques to reduce public doses and on the review of remediation plans at uranium mining and processing legacy sites. The training material covers simple techniques to reduce public exposure and various aspects of the planning and implementation of remediation.[125]

126. The Agency is developing a new Safety Report on the safety infrastructure for uranium production, which will provide a 'road map' outlining Agency safety standards applicable to uranium

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[120] This relates to operative paragraph 87 of resolution GC(58)/RES/10.

[121] This relates to operative paragraph 88 of resolution GC(58)/RES/10.

[122] This relates to operative paragraph 89 of resolution GC(58)/RES/10.

[123] This relates to operative paragraphs 53, 80, 81, 82, 84 and 92 of resolution GC(58)/RES/10.

[124] This relates to operative paragraphs 26, 30 and 92 of resolution GC(58)/RES/10.

[125] This relates to operative paragraph 89 of resolution GC(58)/RES/10.

production and a cohesive and comprehensive reference to other pertinent documents, with a target audience of government policymakers and decision-makers.[126]

127. The annual meeting of the International Working Forum on Regulatory Supervision of Legacy Sites (RSLS) was held in Vienna, Austria, in February 2015. The meeting was devoted to examining uranium legacy site work carried out during the first three year period of the forum (2012-2015), and to preparation of a plan of activities for the next three years of the International Working Forum. In addition, the RSLS summary report for the 2012-2015 period was presented and reviewed. The International Workshop on Regulatory Control of Nuclear Legacy Sites and Radioactive Waste Management, organized under RSLS, was held in Russian Federation in November 2014. The workshop discussed challenges and solutions for managing legacy sites in the Russian Federation. Country reports were given by nine other Member States were presented.[127]

128. The Coordination Group for Uranium Legacy Sites (CGULS) provides international coordination for activities and expert advice to countries in the Central Asia region that are planning to remediate former uranium production sites. The annual CGULS Technical Meeting was held in Dushanbe, Tajikistan, in June 2015. The meeting was hosted by the Academy of Sciences of the Republic of Tajikistan and attended by 48 experts from 18 Member States including 4 international organizations. At this meeting a decision was taken to revise the baseline document that describes priorities for remediation of uranium legacy sites in the Central Asia region. In addition, a comprehensive set of working documents were presented and distributed to participants that outline a regulatory basis for remediation of uranium legacy sites; these working documents were prepared by the Agency for countries participating in CGULS. The meeting provided a forum for information exchange on uranium legacy sites in Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan.[128, 129]

129. A CGULS coordination meeting between the Agency, the European Commission, the Eurasian Economic Union and the Kyrgyz authorities was held in Bishkek (April 2015) and specifically focused on remediation options for two legacy sites in Kyrgyzstan (Mailuu-Suu and Min-Kush). At the time, a mission to evaluate the distribution and installation of analytical equipment procured with CGULS assistance was also completed.[130]

130. Under CGULS, and at the request of the Government of Kazakhstan, a mission was carried out to evaluate the state of uranium legacy sites remediated under a state-funded programme between 2001 and 2010; the site visits took place from 28 September to 3 October 2014. An evaluation report with results, conclusions and recommendations has been submitted to the Minister of Energy of the Government of Kazakhstan in April 2015.[131]

131. An analysis of the global situation is being carried out under the CIDER Project to identify constraints for the implementation of decommissioning and environmental remediation projects in the context of policy, regulatory, technical and societal aspects, and to propose solutions to overcome the

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[126] This relates to operative paragraph 89 of resolution GC(58)/RES/10.

[127] This relates to operative paragraph 91 of resolution GC(58)/RES/10.

[128] This related to operative paragraph 64 of resolution GC(56)/RES/9 and operative paragraph 86 of GC(57)/RES/9.

[129] This relates to operative paragraph 90 of resolution GC(58)/RES/10.

[130] This relates to operative paragraph 90 of resolution GC(58)/RES/10.

[131] This relates to operative paragraph 90 of resolution GC(58)/RES/10.

identified constraints. The CIDER Project is a collaborative initiative under the Network on Environmental Management and Remediation and the IDN.[132]

I. The Safe Management of Radioactive Sources

132. The Radiation Safety Information Management System (RASIMS) was improved and now includes a comprehensive and up-to-date e-learning platform to enable users to better understand 'thematic safety areas'. It also includes new instructional videos about how to use the system more effectively to monitor both the status and progress of strengthening their national radiation safety infrastructure. A workshop for RASIMS coordinators from the Asia and the Pacific region took place in Vienna, Austria, in December 2014. The workshop was attended by 22 representatives from 18 Member States of the region.[133]

133. Advisory missions on the regulatory infrastructure for radiation safety and the control of sources were organized in Bosnia and Herzegovina, Colombia, Cuba, Dominica, Honduras, Nicaragua, Paraguay, and Trinidad and Tobago in the reporting period. The national radiation safety infrastructure was reviewed during integrated missions of the Programme of Action for Cancer Therapy (imPACT) missions to Algeria, El Salvador and Mozambique. It was also addressed in the imPACT mission reports for Bangladesh, Costa Rica, Croatia, Dominica, Georgia, the Lao People's Democratic Republic, Pakistan, Panama, Peru, Rwanda and Uzbekistan. Through the TC programme as well as 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 the organization, staffing and competency of the regulatory body in Ethiopia (April 2015); effective and sustainable regulatory control of radiation sources in Guatemala (February 2015) and Tunisia (December 2014); enforcement of regulatory decisions in Qatar (October 2014) and the Sudan (August 2014); authorization and inspection of uranium mining and milling activities in the United Republic of Tanzania (July 2014); and the Control of Sources Network and use of RASIMS in Ghana (November 2014).[134]

134. The Agency continues to offer support to Member States for the establishment or upgrade of national source registers, though the Regulatory Authority Information System (RAIS). Regional training courses were organized in Mongolia (August 2014) and the Niger (October 2014). National expert missions on the use and customization of RAIS took place in Latvia (February 2015), the former Yugoslav Republic of Macedonia (December 2014), Malawi (December 2014) and South Africa (December 2014 and May 2015).[135]

135. As of 30 June 2015, 125 States, including three 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 94, including five 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 130 States have nominated

[132] This relates to operative paragraphs 85 and 92 of resolution GC(58)/RES/10.

[133] This relates to operative paragraphs 1, 2, and 4 of resolution GC(58)/RES/10.

[134] This relates to operative paragraphs 2, 19, 20 and 97 of resolution GC(58)/RES/10.

[135] This relates to operative paragraph 98 of resolution GC(58)/RES/10.

points of contact for the purpose of facilitating the export and import of radioactive sources and have provided the details to the Agency.

136. A regional workshop on experience sharing in the implementation of the Code of Conduct and its supplementary guidance was organized in Zimbabwe in August 2014 and an Interregional Meeting to Share Experiences on the Implementation of the IAEA Guidance on the Import and Export of Radioactive Sources in the Mediterranean Region was organized in Vienna, Austria, in March 2015. The Code of Conduct and its supplementary guidance are being presented, together with the process by which States can express their political commitment to these instruments, in various forums, such as regional technical cooperation events and other meetings, as well as in legal forums such as the Agency's Nuclear Law Institute and the OECD/NEA International School of Nuclear Law.[136]

137. The proceedings of the International Conference on the Safety and Security of Radioactive Sources: Maintaining the Continuous Global Control of Sources throughout their Life Cycle held in October 2013, in Abu Dhabi, United Arab Emirates, were published in March 2015.[137]

138. The Agency is developing detailed guidelines and a report template to facilitate the preparation of States' national reports for the next international review meeting to be organized under the formalized process for the sharing of information as to States' implementation of the Code of Conduct on the Safety and Security of Radioactive Sources and its associated Guidance on the Import and Export of Radioactive Sources. The meeting will take place in Vienna in 30 May to 3 June 2016.[138]

139. In October 2014, the Agency held an 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 Long Term Management of Disused Radioactive Sources in Vienna, Austria. The meeting was attended by 162 experts from 73 Member States, one non-Member State and four international organizations. The Chairman's report supported the initiative to develop guidance on the management of disused sources as supplementary guidance under the Code of Conduct.[139]

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

140. The Agency's Steering Committee on Education and Training in Radiation, Transport and Waste Safety met in December 2014 to advise the Secretariat on the implementation of the Strategic Approach to Education and Training in Radiation, Transport and Waste Safety 2011–2020. The Steering Committee explored approaches and methodologies to monitor the efficiency and effectiveness of education and training programmes on radiation protection and safety in Member States, and issued recommendations on areas such as the development of guidance for the organization and conduct of train the trainers courses for radiation protection officers; the finalization of the master's degree syllabus in radiation protection and safety; and the organization of an interregional

[136] This relates to operative paragraphs 16 and 99 of resolution GC(58)/RES/10.

[137] This relates to operative paragraphs 16 and 99 of resolution GC(58)/RES/10.

[138] This relates to operative paragraph 100 of resolution GC(58)/RES/10.

[139] This relates to operative paragraphs 3, 17, 96 and 97 of resolution GC(58)/RES/10.

event for policymakers to follow up on the initiatives taken by Member States to establish a national strategy for education and training in radiation, transport and waste safety.[140]

141. Over the reporting period, the Agency continued to support Member States in building competence in radiation safety by organizing the Postgraduate Educational Course in Radiation Protection and the Safety of Radiation Sources (which has a nominal duration of six months) and short term training events covering a wide range of topics. Initiatives have also been taken by the representatives of the Agency's regional training centres for radiation protection in Algeria, Argentina, Brazil, Belarus, Ghana, Greece, Malaysia and Morocco to harmonize their assessment and evaluation mechanisms for the course.[141]

142. Participants in Agency regional workshops held for Asia and the Pacific (Malaysia, November 2014), Europe (Bosnia and Herzegovina, November 2014) and Latin America (Nicaragua, September 2014) were briefed on the Agency's methodology to establish a national strategy for education and training in radiation, transport and waste safety, and developed and discussed a template for the establishment of a policy in this area. The Agency also conducted expert missions to provide advice to national stakeholders on how to establish a national strategy for education and training in Cuba and Mauritania (both October 2014). An Education and Training Appraisal mission to assess the education and training infrastructure in radiation protection and safety was conducted in Israel in May 2015.[142]

143. Train the trainers courses for radiation protection officers were conducted in Tunisia (September 2014) and Zimbabwe (November 2014) and a train the trainers course on authorization and inspection of uranium mining and milling activities was conducted in the United Republic of Tanzania (July 2014). Training workshops were conducted on occupational exposure due to external sources of radiation in Poland (September 2014), on reducing the risks from indoor and occupational exposure to radon in Argentina (November 2014), on radiation protection for medical doctors who apply interventional procedures (non-radiologists and non-cardiologists) in Mexico (November 2014), and on radiation protection for vascular surgeons in Slovenia (March 2015). The Agency continued to publish the Education and Training in Radiation, Transport and Waste Safety Newsletter to share knowledge, expertise, and experience.[143]

144. The Agency's activities in supporting capacity building focus on the implementation of the Strategic Approach to Education and Training in Nuclear Safety 2013–2020, the establishment of a process for sharing relevant training information, the revision of the BPTC and the development of an e-learning module based on *Establishing the Safety Infrastructure for a Nuclear Power Programme* (IAEA Safety Standards Series No. SSG-16). In the reporting period, 173 activities were conducted in support of safety capacity building, including workshops, training and expert missions in all thematic areas of nuclear installation safety.[144]

145. The Agency developed a self-assessment methodology for assessing capacity building that was adopted by the ANSN and endorsed by the GNSSN Steering Committee. The methodology is underpinned by specific review services on each of the four capacity building elements. Workshops and expert missions to disseminate practical hands-on experience on the use of this methodology were

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[140] This relates to operative paragraph 94 of resolution GC(58)/RES/10.

[141] This relates to operative paragraph 93 of resolution GC(58)/RES/10.

[142] This relates to operative paragraph 93 of resolution GC(58)/RES/10.

[143] This relates to operative paragraphs 93 and 94 of resolution GC(58)/RES/10.

[144] This relates to operative paragraphs 93, 94 and 95 of resolution GC(58)/RES/10.

conducted in Cameroon (June 2015), Tunisia (June 2015) and the United Arab Emirates (May 2015).[145]

146. Two regional workshops on the Education and Training Review Service (ETRES) programme were held in Vienna, Austria: one for ANSN member countries (July 2014) and one for European countries (April 2015). In preparation for the ETRES mission conducted in Malaysia (December 2015), the Agency also conducted an assistance mission to support the counterparts in the self-assessment of the nuclear safety education and training programmes in the country in September 2014.[146]

147. The BPTC was revised and training material for the train the trainer's package developed. Tunisia hosted the first BPTC for members of the FNRBA and ANNuR in May 2015 in collaboration with the Korea Institute of Nuclear Safety.[147]

148. The education and training platform[148] offers over 80 different safety-related video lectures, online training materials and other capacity building resources. With the support of extrabudgetary funds, a complete set of video lectures on the Agency's Safety Requirements for nuclear installation safety was developed.[149]

149. In October 2014, the Agency started drafting a Technical Document on knowledge management for regulatory bodies. The document will provide general guidance on regulatory knowledge management and provide examples from regulatory knowledge management programmes in Member States.[150]

150. In the reporting period, the Agency initiated the update of the publication *Regulatory control of nuclear power plants Part A (Textbook) + Part B (Workbook)* (Training Course Series No. 15) published in 2002 to cover the global nuclear safety framework, including the safety conventions and Agency peer review services; the organizational and managerial aspects of the regulatory body; and the specific regulatory functions.[151]

151. The Agency finalized training curricula for operational safety and operational radiological protection programmes for research reactors. The material will be used as the basis for regional training workshops. The Agency supported meetings of three regional safety committees in Africa (December 2014), Asia and the Pacific (September 2014) and Europe (June 2015) which provided forums to share experiences on safety in the utilization and ageing management of research reactors.[152]

152. The Global Safety Assessment Network continues to be relied upon as both a repository of the Agency's safety assessment education and training knowledge and a system for online collaborative

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[145] This relates to operative paragraphs 5, 93, 94 and 95 of resolution GC(58)/RES/10.

[146] This relates to operative paragraphs 5 and 94 of resolution GC(58)/RES/10.

[147] This relates to operative paragraphs 5, 93, 94 and 95 of resolution GC(58)/RES/10.

[148] See http://www-ns.iaea.org/training/ni/materials.asp?s=100&l=75.

[149] This relates to operative paragraphs 5 and 94 of resolution GC(58)/RES/10.

[150] This relates to operative paragraphs 94 of resolution GC(58)/RES/10.

[151] This relates to operative paragraphs 94 of resolution GC(58)/RES/10.

[152] This relates to operative paragraphs 94 and 95 of resolution GC(58)/RES/10.

education. The safety assessment education and training component also includes material specifically related to severe accident management.[153]

153. The Agency published *Methodology for the Systematic Assessment of the Regulatory Competence Needs (SARCoN) for Regulatory Bodies of Nuclear Installation* (IAEA-TECDOC-1757) in March 2015. This publication includes comprehensive questionnaires for self-assessment, complemented by a software tool. A SARCoN seminar was conducted in Saudi Arabia (May 2015) and a SARCoN follow-up mission was conducted in Turkey (October 2014). The Agency has also further developed the web pages for regulatory competence management under the International Regulatory Network (RegNet) to promote regional and interregional sharing of knowledge. The regulatory competence management web pages include areas for the Steering Committee on Regulatory Capacity Building and Knowledge Management and specific web spaces for projects such as the Regulatory Control Book update and the SARCoN tool development.[154]

154. The Agency conducted regional and national workshops on knowledge safety networks in Belarus (January 2015) and China (March 2015) to assist in the development of the National Nuclear Regulatory Portals (NNRP) under the GNSSN. The NNRPs are interfaces among national stakeholders and the international nuclear safety and security community at large, and harmonization mechanisms for national, regional and global nuclear safety and security knowledge management.[155]

155. The national Nuclear Safety Knowledge Management Platforms, hosted under the GNSSN as a sub-level of the NNRPs, provide Member States with the technology to address and implement a national nuclear safety knowledge management programme and/or to establish a national safety centre. China has implemented the platform in March 2015 and Cameroon in June 2015.[156]

156. The Seventh Meeting of the Steering Committee of the Technical and Scientific Support Organization Forum was held in Vienna, Austria, in March 2015. The meeting discussed the conclusions of the International Experts' Meeting on Strengthening Research and Development Effectiveness in the Light of the Accident at the Fukushima Daiichi Nuclear Power Plant, and addressed progress made on key aspects identified at the previous Steering Committee meeting, including the role of technical and scientific support organizations during emergency situations, and the interface between safety and security.[157]

157. At its 20th meeting in November 2014, the ANSN Steering Committee agreed on the importance of developing regional self-assessment guidelines according to ANSN structure. The self-assessment guidelines will be developed based on the publication *Establishing the Safety Infrastructure for a Nuclear Power Programme* (IAEA Safety Standards Series No. SSG-16) and the related IRIS tool.[158]

158. The Agency continued to support the work of the ANSN topical groups. Annual meetings took place for the Topical Group on Governmental and Regulatory Infrastructure in October 2014, the Topical Group on Education and Training in October 2014, the Topical Group on Communication and

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[153] This relates to operative paragraph 94 of resolution GC(58)/RES/10.

[154] This relates to operative paragraph 95 of resolution GC(58)/RES/10.

[155] This relates to operative paragraphs 5, 93 and 95 of resolution GC(58)/RES/10.

[156] This relates to operative paragraphs 5, 93 and 95 of resolution GC(58)/RES/10.

[157] This relates to operative paragraphs 5, 93 and 95 of resolution GC(58)/RES/10.

[158] This relates to operative paragraphs 5 and 95 of resolution GC(58)/RES/10.

Consultation with Interested Parties in October 2014, and the Topical Group on Leadership and Management for Safety of the Regulatory Bodies in November 2014.[159]

159. The Agency conducted a meeting to discuss the feasibility of establishing a European safety knowledge network in February 2015. Regulatory bodies of six Member States from the Europe region agreed to proceed with the project and to reconvene with the attendance of representatives of other countries to prepare its terms of reference and address other organizational aspects.[160]

160. The Agency's International Conference on Human Resource Development for Nuclear Power Programmes: Building and Sustaining Capacity (Austria, May 2014) underlined the importance of continuing efforts related to the four elements of capacity building: education and training, human resource development, knowledge management, and knowledge networks. The Agency developed a report on capacity building for nuclear safety as part of a series of reports on lessons learned from the Fukushima Daiichi accident. The report is in the publication process.[161]

K. Nuclear and Radiological Incident and Emergency Preparedness and Response

161. Currently, 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). During the reporting period, Burkina Faso and Venezuela deposited their respective instruments to join the Early Notification Convention. Burkina Faso also deposited its instrument to join the Assistance Convention.[162]

162. The arrangements for reporting incidents and emergencies have been further harmonized through the provision of five training courses on notification, reporting and requesting assistance. The training courses were conducted in Austria (April 2015), Japan (November 2014), Kenya (September 2014), Oman (February 2015) and the United Arab Emirates (December 2014), and were attended by representatives from 37 Member States.[163]

163. The Agency prepared and shared the calendar of exercises with Member States in January 2015. Member States were encouraged to host and participate in the more complex exercises such as the ConvEx-2 exercises. In November 2014, bilateral exercises with Bulgaria, Finland, Hungary, Slovakia, Slovenia and the USA were carried out to test the coordination of activities in relation to the assessment and prognosis process.[164]

164. The Agency has worked in close collaboration with Member States and relevant international organizations on the revision of the Agency's Safety Requirements publication entitled *Preparedness and Response for a Nuclear or Radiological Emergency* (IAEA Safety Standards Series No. GS-R-2). The revision was approved by the Board of Governors in March 2015 as IAEA Safety Standards

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[159] This relates to operative paragraphs 5, 93 and 95 of resolution GC(58)/RES/10.

[160] This relates to operative paragraphs 93 and 95 of resolution GC(58)/RES/10.

[161] This relates to operative paragraphs 93 and 94 of resolution GC(58)/RES/10.

[162] This relates to operative paragraph 15 of resolution GC(58)/RES/10.

[163] This relates to operative paragraphs 7 and 107 of resolution GC(58)/RES/10.

[164] This relates to operative paragraphs 101 and 103 of resolution GC(58)/RES/10.

Series No. GSR Part 7. The publication is jointly sponsored by 13 international intergovernmental organizations.[165]

165. In close cooperation with relevant international organizations, the Agency continued the development of two Safety Guides on arrangements for the termination of a nuclear or radiological emergency (DS474) and arrangements for public communications in preparedness and response for a nuclear or radiological emergency (DS475) in the reporting period. Two ad hoc working groups of the Inter-Agency Committee on Radiological and Nuclear Emergencies were formed to assist the Agency in the development of these two Safety Guides.[166]

166. The regulatory review module on emergency preparedness and response (EPR) that is part of the Integrated Regulatory Review Service was revised and enhanced during the reporting period to focus on the consistency of national regulations with the Agency's safety standards on EPR. This includes the development of a revised self-assessment questionnaire and of a reviewer checklist focused on this aspect. The Agency also assisted the Islamic Republic of Iran and Romania in the development of EPR regulations that are consistent with the Agency's safety standards on this subject.[167]

167. The Agency has initiated the development of a technical guidance document on EPR during transport activities, including maritime events. The Agency held two meetings for the preparation of the document in the reporting period.[168]

168. The Agency held a meeting in Vienna, Austria, in March 2015 to discuss the assessment and prognosis tools and procedures that have been developed for the Agency's use. The Agency has continued to seek Member States' support in developing additional (or enhancing existing) tools and sought Member States' suggestions for improvements to existing systems and tools.[169]

169. In March 2015, the Agency demonstrated the Reactor Assessment Tool, which provides the basis for information requested during an NPP emergency and which is used in conjunction with dynamic data. Comments were provided on the assessment process, reports and supporting material governing which type of data is requested during an emergency. The Agency is also developing a version of this tool for Member States' use.[170]

170. The Agency held an International Experts' Meeting on Assessment and Prognosis in Response to a Nuclear or Radiological Emergency in Vienna, Austria, in April 2015, at which gaps and recommendations for further improvements at the national level were identified.[171]

171. The Agency has developed the School of Radiation Emergency Management, which is a two or three week intensive course for the next generation of senior planners for nuclear and radiological

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[165] This relates to operative paragraphs 33 and 63 of resolution GC(58)/RES/10.

[166] This relates to operative paragraphs 33 and 102 of resolution GC(58)/RES/10.

[167] This relates to operative paragraphs 34 and 102 of resolution GC(58)/RES/10.

[168] This relates to operative paragraphs 69 and 75 of resolution GC(58)/RES/10.

[169] This relates to operative paragraph 103 of resolution GC(58)/RES/10.

[170] This relates to operative paragraph 104 of resolution GC(58)/RES/10.

[171] This relates to operative paragraphs 29 and 103 of resolution GC(58)/RES/10.

emergencies. The first pilot School of Radiation Emergency Management will be held in Italy in the last quarter of 2015.[172]

172. The Agency conducted ten Emergency Preparedness Review (EPREV) and EPREV preparatory missions. Two EPREV reports have been derestricted in the reporting period and made available to all Member States.[173]

173. The Agency launched the Emergency Preparedness and Response Information Management System (EPRIMS), a new web-based EPR self-assessment tool in July 2014. EPRIMS allows Member States to manage their own self-assessment through multi-user interfaces, without the need for requesting an EPREV mission, and to share knowledge with the Agency and with other Member States of their choice.[174]

174. In the reporting period, the Agency has launched two additional initiatives that will contribute to knowledge sharing on a regional and a global scale: the Emergency Preparedness Network (EPnet) and capacity building centres. EPnet is a web-based forum for EPR professionals to share knowledge and experience on real-life issues, challenges and solutions for the implementation of international safety standards on EPR. Capacity building centres will improve dissemination of information and knowledge on EPR in all regions and will actively engage regions in the identification of needs and the delivery of training.[175]

175. In July 2014, the Agency held a Technical Meeting for Member States that had hosted or were planning to host EPREV missions, to exchange views on lessons learned during the past ten years of EPREV missions, and to make recommendations on the improvement of the EPREV process.[176]

176. EPREV guidelines were revised and sent for review to a selected number of Member States that have already had an EPREV mission. New guidance was developed on the self-assessment process and incorporated into EPRIMS. A new checklist for reviewers was produced to enhance the efficiency of the missions. A new home-based training package and test for reviewers were implemented. The roster of EPREV experts was expanded through the recruitment of senior experts with operational and management experience in EPR.[177]

177. A Response and Assistance Network (RANET) workshop was conducted in Fukushima, Japan, in November 2014. The workshop was attended by 25 participants from nine Member States which have registered radiation survey capabilities as Field Assistance Teams in RANET. The event aimed to enhance the international assistance framework through the exchange of information and experiences, and the conduct of field monitoring activities within the restricted area surrounding the Fukushima Daiichi NPP. The RANET workshop also provided an opportunity to field test some elements of the draft guidelines for technical compatibility of response and assistance activities and the associated products. Improvements were identified as a result of the field testing and comments

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[172] This relates to operative paragraph 94 of resolution GC(58)/RES/10.

[173] This relates to operative paragraphs 9 and 110 of resolution GC(58)/RES/10.

[174] This relates to operative paragraphs 103 and 104 of resolution GC(58)/RES/10.

[175] This relates to operative paragraphs 5, 93 and 94 of resolution GC(58)/RES/10.

[176] This relates to operative paragraphs 9, 11 and 110 of resolution GC(58)/RES/10.

[177] This relates to operative paragraphs 10 and 110 of resolution GC(58)/RES/10.

received from Member States and relevant international organizations, and they will be incorporated into the draft guidelines.[178]

178. The Agency's Unified System for Information Exchange in Incidents and Emergencies (USIE) has been enhanced with new features to facilitate the communication processes for requesting, offering and providing assistance and to allow contact points to interface their national systems with USIE.[179]

179. In the reporting period, the Agency conducted 12 Convention Exercises (ConvEx) with the contact points established under the relevant conventions to test various procedures and arrangements for urgent information exchange and the provision of assistance. In addition, the Agency followed up with the contact points to ensure compliance with the *Operations Manual for Incident and Emergency Communication* (EPR-IEComm 2012) and to minimize communication failures. In particular, the Agency conducted the yearly ConvEx-1c exercise in September 2014 aimed to ensure that contact details and user registrations were up to date. The Agency contacted 365 USIE Administrators representing 165 Emergency Contact Points, 71 International Nuclear and Radiological Event Scale (INES) National Officers and 58 Permanent Missions and requested confirmation of their contact details, registered users and alert settings on USIE.[180]

180. 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 October 2014 and June 2015, in Vienna, Austria.[181]

L. Civil Liability for Nuclear Damage

181. In November 2014, the Board of Governors adopted a resolution establishing new maximum limits for the exclusion of small quantities of nuclear material from the application of the Vienna Conventions on Civil Liability for Nuclear Damage in line with the latest edition (2012) of the Agency's *Regulations for the Safe Transport of Nuclear Material*.[182]

182. The Convention on Supplementary Compensation for Nuclear Damage entered into force on 15 April 2015. Pursuant to Article XX, the Convention "shall come into force on the ninetieth day following the date on which at least 5 States with a minimum of 400,000 units of installed nuclear capacity have deposited an instrument referred to in Article XVIII", i.e. an instrument of ratification, acceptance or approval. On 15 January 2015, Japan signed and at the same time deposited an instrument of acceptance of the Convention, in accordance with Articles XVII and XVIII thereof. With the acceptance of the Convention by Japan, the conditions for its entry into force under Article XX were met. With Montenegro acceding to the Convention on 17 April 2015, the Convention will have seven Contracting Parties[183] as of 16 July 2015.

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[178] This relates to operative paragraphs 105 and 106 of resolution GC(58)/RES/10.

[179] This relates to operative paragraph 106 of resolution GC(58)/RES/10.

[180] This relates to operative paragraphs 106, 107 and 109 of resolution GC(58)/RES/10.

[181] This relates to operative paragraph 108 of resolution GC(58)/RES/10.

[182] This relates to operative paragraph 25 of resolution GC(58)/RES/10.

[183] Argentina, Japan, Montenegro, Morocco, Romania, the United Arab Emirates and the United States of America.

183. The Fourth Workshop on Civil Liability for Nuclear Damage was held in Vienna on 27 April 2015. The workshop was attended by 65 diplomats and experts from 38 Member States. It provided participants with an introduction to the international legal regime of civil liability for nuclear damage.[184]

184. The 15th regular meeting of the International Expert Group on Nuclear Liability (INLEX) was held in Vienna, Austria, from 28 to 30 April 2015. The Group discussed, inter alia, whether there was a need to establish a special liability regime covering radioactive sources; the implications of the entry into force of the Convention on Supplementary Compensation for Nuclear Damage; a proposal to revise the paper issued by INLEX in 2013 on the benefits of joining the international nuclear liability regime and corresponding key messages; the revision of the model provisions on nuclear liability in *Handbook on Nuclear Law: Implementing Legislation*; and Agency/INLEX outreach activities.[185]

185. A Subregional Workshop for Caribbean Countries on Civil Liability for Nuclear Damage was held in Panama City, Panama in June 2015. The workshop, which was attended by 31 participants from 14 States, provided participants with information on the international nuclear liability regime and advice on the development of national implementing legislation. In addition, a joint Agency–INLEX mission was conducted in Mexico in June 2015 in order to raise awareness of the international legal instruments relevant for achieving a global nuclear liability regime.[186]

[184] This relates to operative paragraphs 23, 24, 25 and 74 of resolution GC(58)/RES/10.

[185] This relates to operative paragraphs 23, 24, 25 and 74 of resolution GC(58)/RES/10.

[186] This relates to operative paragraphs 23, 24, 25 and 74 of resolution GC(58)/RES/10.