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IAEA Ministerial Conference on Nuclear Safety 20-24 June 2011

Report by the Director General

Summary

- In accordance with paragraphs 23 and 24 of the Declaration adopted by the Ministerial Conference on Nuclear Safety held on 20-24 June 2011, the Director General was requested to prepare and present to the Board of Governors and the General Conference at their September 2011 meetings a report on the Ministerial Conference and a draft Action Plan, building on the Ministerial Declaration, the conclusions and recommendations of the working sessions of the Ministerial Conference and the expertise and knowledge available therein. This report responds to the request contained in the Ministerial Declaration.
- This report on the Ministerial Conference includes a summary of issues raised at the Plenary Session and the three Working Sessions, together with annexes containing the adopted Ministerial Declaration, the summaries of the Chairpersons of the Working Sessions, the Ministerial Conference Programme and a list of the members of the IAEA Fact Finding Expert Mission.

IAEA Ministerial Conference on Nuclear Safety 20-24 June 2011

A. Introduction

1. On 11 March 2011, a nuclear accident took place at TEPCO's Fukushima Daiichi nuclear power station in Japan (hereinafter referred to generally as 'the Fukushima accident'), caused by a devastating earthquake and tsunami. The Agency responded to the accident with a number of actions in close collaboration with Member States. These were reported to the Board of Governors in document GOV/INF/2011/8.

2. In addition, the Director General — with broad support from Member States — called for a Ministerial Conference on Nuclear Safety. The overall objective of the Conference — which was held in Vienna from 20 to 24 June 2011 — was to draw on the lessons from the accident in order to strengthen nuclear safety throughout the world. The Conference provided an opportunity to undertake, at the ministerial and senior technical levels, a preliminary assessment of the accident, actions for safety improvements, issues regarding emergency preparedness and response, and implications for the global nuclear safety framework.

3. The Ministers requested the Director General to prepare — for submission to the Board of Governors at its meeting in September 2011 — a report on the Conference and a draft Action Plan, building on the Ministerial Declaration (Annex 1) and the conclusions and recommendations of the Working Sessions, and the expertise and knowledge made available during the deliberations of the Conference. The report provided here responds to that request.

4. In preparation for the Ministerial Conference the Government of Japan prepared an extensive report [1] summarizing the events, safety and engineering issues related to the accident and the major lessons learned. The report was made available to Member States and a summary of the report was presented during the Conference.

5. Following an agreement between the Government of Japan and the IAEA, the IAEA dispatched an IAEA International Fact Finding Expert Mission to ascertain factual information and to identify initial lessons to be learned from the accident. The results of the mission [2] were made available to Member States and reported to the Conference.

B. The Ministerial Conference

6. In preparation for the Conference the Director General held a series of consultations with Member States. He asked the Governor for Brazil to the IAEA Board of Governors, H.E. Ambassador Antonio Guerreiro, to act as coordinator and chairman for the informal open-ended consultations among Member States on the draft Ministerial Declaration and the draft Programme of the Conference. Five rounds of consultations were conducted among Member States, during which consensus was reached on the draft Ministerial Declaration. Member States also approved the Programme of the Conference and agreed to nominate Ambassador Antonio Guerreiro as President of the Conference.

7. The Conference opened with an address by the Director General and a message from the United Nations Secretary-General Ban Ki-moon. In subsequent Plenary Sessions, Ministers and heads of delegations delivered national statements.

8. The specific objectives of the conference were:

- To provide a preliminary assessment of the Fukushima accident;
- To assess national and international emergency preparedness and response levels in light of the accident, with a view to strengthening them;
- To discuss safety implications and identify those areas of the global nuclear safety framework that need strengthening, launching a process to that effect;
- To identify lessons learned and possible future actions.

9. These main objectives were discussed both in the Plenary Sessions and in greater depth during the three Working Sessions of the Conference.

10. The Director General, in his opening statement, made a number of concrete proposals to establish a realistic and enhanced post-Fukushima global nuclear safety framework. He focused on five main areas:

11. *First*, to strengthen IAEA Safety Standards and to ensure that they are universally applied. The Director General noted that the Safety Standards are an internationally agreed benchmark for what constitutes a high level of safety, and asked the Commission on Safety Standards to review the relevant standards and report within 12 months with recommendations for strengthening them.

12. *Second*, to systematically and regularly review the safety of all nuclear power plants; these reviews should be conducted nationally but additional reviews should be carried out by the Agency to add credibility and transparency and make the process more effective. The Director General called for national risk assessments to be made of all nuclear power plants, focusing on safety margins against extreme natural hazards (earthquakes, tsunamis and floods); this could be done within 12–18 months. He noted that the Agency had started developing a risk assessment methodology. He proposed that the peer reviews in three main areas — operational safety, emergency preparedness and response, and the effectiveness of the regulatory system — be expanded, with countries with nuclear power agreeing to systematic periodic peer reviews.

13. He proposed a system based on random selection: for example, the Agency could conduct a peer review of one nuclear power plant in ten throughout the world in, say, a three-year period. The system could be introduced without the need to formally amend existing legal instruments, by Member States giving their prior consent.

14. The Director General also proposed that the reports and recommendations of peer review missions should be made available to all Member States, with follow-up missions to ensure that recommendations are implemented.

15. *Third*, to enhance the effectiveness of national nuclear regulatory bodies and ensure their independence, as they play a crucial role in ensuring nuclear safety. All countries should ensure that these regulatory bodies are as effective as possible, genuinely independent, adequately funded and staffed by well trained personnel. The Director General called on Member States to make full use of the Integrated Regulatory Review Service (IRRS) missions of the Agency.

16. *Fourth*, to strengthen the global emergency preparedness and response system. The Director General made practical proposals, such as: operators pooling resources to establish stockpiles of emergency equipment (mobile diesel generators to be quickly delivered to a nuclear power plant hit by a total power blackout, with the Agency establishing an international register of special technical expertise — such as robotics or fire fighting); national accident response teams, already in place in some States, to be established in all States; mechanisms to be examined to establish regional emergency response arrangements through the Response and Assistance Network (RANET).

17. The Director General emphasized the need for: effective implementation of relevant international instruments such as the Convention on Early Notification of a Nuclear Accident (the Early Notification Convention) and the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency (the Assistance Convention) [3]; and a strengthened role of the Agency as coordinator of the Joint Radiation Emergency Management Plan of the International Organizations [4].

18. *Fifth*, to expand the Agency's role in receiving and disseminating information. In the case of the Fukushima accident, the Agency served as a useful point of reference. But its role in the event of an accident is largely limited to distributing information validated by the country concerned to all Member States. The Director General proposed to expand this role to include analysis and development of possible scenarios of how a crisis might develop and the associated radiological impact.

19. The Director General also asked the International Nuclear and Radiological Event Scale (INES) Advisory Committee to consider ways in which the scale might be improved, as the rating did not prove to be an effective communication tool in the case of the Fukushima accident.

20. These five proposals enjoyed broad support by Member State representatives attending the Conference, many of whom requested that they constitute the core of the Action Plan to be developed.

21. The Working Sessions each had two major parts: two keynote presentations, followed by panel presentations and extensive discussions. The results of the discussions were summarized by the chairpersons at the final plenary session of the Conference (Annex 2). Among the significant issues raised and discussed were the following:

- The Agency was encouraged to review and strengthen its Safety Standards in all relevant areas, and their wider and more consistent implementation by all Member States was urged.
- It was important for all Member States to systematically review the safety of all existing nuclear power plants, with special emphasis on external natural hazards and the regulatory frameworks. The Agency could take the lead in reviewing these national assessments (so called 'stress tests'). Member States were encouraged to report the results of these reviews to the extraordinary meeting of the Contracting Parties to the Convention on Nuclear Safety (CNS) in August 2012.

- Regular and systematic Agency peer reviews of both the safety of nuclear power plants and the regulatory framework should be undertaken — a number of innovative ideas were put forward in this regard.
- A number of priority issues were identified relating to the protection of nuclear power plants against extreme natural hazards. There is also a need to further study, through research and development, the underlying science of several issues.
- A broader Agency role was called for in the response to nuclear incidents and emergencies, with a widening of the scope of information and assessments shared with Member States, international organizations and the public.
- It is important to enhance the worldwide emergency preparedness and response framework, with a strengthened role for the Agency. National emergency preparedness and response should be appraised through independent international expert assessment.
- It is important that there be greater interaction between the major players in the nuclear arena — operators, regulators and vendors.
- The above endeavours will have resource implications for the Agency and others.

22. The Director General also requested the International Nuclear Safety Group (INSAG) to prepare a report on the conference and relevant recommendations for future actions. The INSAG letter report has been issued to Member States in document GOV/INF/2011/11.

23. An important achievement of the Conference was the unanimous adoption of the Ministerial Declaration (Annex 1). The Declaration outlined a number of measures to improve nuclear safety and expressed the firm commitment of Member States to ensure that these measures are implemented. It provided political commitment, and associated support and guidance, gave a mandate to the Director General for future work with concrete actions, and formally launched the process of strengthening post-Fukushima nuclear safety worldwide.

B.1. Working Session 1: Preliminary Assessment of the Accident at TEPCO's Fukushima Daiichi Nuclear Power Station and Actions for Safety Improvements

24. The objectives of Working Session 1 were to facilitate a forum for discussions on: a preliminary expert assessment of the accident and possible future actions for continuous improvement of the safety of nuclear installations. The Chairperson for the session was M. Weightman, Chief Inspector of Nuclear Installations, Office for Nuclear Regulation, United Kingdom.

25. Keynote speakers were invited from Japan and the IAEA International Fact Finding Expert Mission and relevant international organizations. They focused on an international summary of events, preliminary lessons learned and possible ways forward. Panellists from several Member States concentrated on the impact of the accident on their national nuclear safety practices.

26. The preliminary report by the Government of Japan on the accident was presented to the Conference and made publicly available [1]. It represents a summary of the evaluation of the accident and of the lessons learned to date, focusing on technical issues related to nuclear safety, and nuclear emergency preparedness and response, covering the following topics:

- State of nuclear safety regulations and of the regulatory framework in Japan before the accident;
- Impact of earthquake and tsunamis;

- Occurrence and development of the accident;
- Response to the nuclear emergency;
- Discharge of radioactive materials to the environment;
- Situation regarding radiation exposure;
- Cooperation with the international community;
- Communication regarding the accident;
- Future efforts to settle the situation regarding the accident;
- Responses at other nuclear power stations.

27. Following an agreement between the Government of Japan and the Agency, as noted in paragraph 5 above, an IAEA International Fact Finding Expert Mission, comprising 18 senior experts from Member States and the Agency, visited Japan from 24 May to 2 June 2011. The mission conducted fact finding activities for a preliminary assessment of the accident (in particular at the Fukushima Daiichi nuclear power station). It also collected information on the Fukushima Daini and Tokai Daini nuclear power station sites located in Fukushima Prefecture and in Ibaraki Prefecture, in order to make a preliminary assessment of the generic safety issues associated with the natural events, identify issues that needed further exploration or assessment based on IAEA Safety Standards, and share this information across the world nuclear community. The Mission received information on the progress reached to date on the Japanese assessment of the accident and discussed specific technical issues to develop an informed assessment.

28. The Mission focused on the following specific areas:

- External events of natural origin;
- Plant safety assessment and defence in depth;
- Plant response after an earthquake and tsunami;
- Severe accident management;
- Spent fuel management under severe facility degradation;
- Emergency preparedness and response;
- Radiological consequences.

29. The results of the Mission were reported to the Conference and made publicly available [2]. In the report, the Mission identified 15 conclusions and 16 lessons that the international nuclear community was urged to consider to help improve worldwide safety.

30. Working Session 1 discussed the IAEA Safety Standards in connection with safety and engineering issues arising from the Fukushima accident. Although the full exploration of most of these matters will need to await a more complete understanding of the events in Japan, it was agreed that the Agency should lead the way in formulating the regulatory implications of the accident and thereby provide a template for action by national regulators. Some of the key points discussed are noted below.

31. Participants considered it important that IAEA Safety Standards be reviewed and strengthened, as appropriate, in all areas related to design requirements, with particular emphasis on defence in depth, low probability beyond design basis accidents, singly and in combination, and severe accident management for single-unit and, more especially, multiple-unit sites, including extended loss of ultimate heat sink and essential supplies, hydrogen risk and hydrogen management, post-accident monitoring and safety of spent fuel storage. Further topics might include, but not be limited to, the use

of hardened emergency response centres on sites, and the availability and capability of site staff to work under severe accident conditions.

32. It was recognized by a number of participants that nuclear safety and nuclear technology could be improved worldwide in the context of enhanced protection against external hazards. In particular:

- The site selection, site evaluation and design of nuclear plants should include sufficient protection against infrequent and complex combinations of external events and these should be considered in the plant design basis and safety analysis — specifically those that can cause site flooding and which may have longer term impacts;
- Plant layout should be based on maintaining a 'dry site concept', where practicable, as a defence-in-depth measure against site flooding as well as redundancy, diversity and physical separation of multiple barriers;
- Common cause failures should be particularly considered in multiple-unit sites and multiple plant sites. The availability of additional external mitigation features allowing extra recovery options, and the possibility of utilizing all available on-site resources for any one of the units have proven to be essential;
- Alternative power supply sources should be available to secure essential safety functionality in severe situations;
- Passive system designs to cope with a total station blackout would be important for future designs;
- Spent fuel pool issues should be given consideration: physical and chemical phenomena, validity of design basis, spent fuel storage strategies, structural strength issues, cooling and make-up systems, and mitigation technology.

33. It was suggested that Member States should consider systematically reviewing the safety of all nuclear power plants, including the safety margins and design basis assumptions for both proposed and existing plants. It was necessary to take into account site specific characteristics and features, including low probability extreme events previously not included in original design and engineering considerations.

34. Many Member States have already started, at their own initiative, a safety review focused on the weaknesses revealed by the Fukushima accident. It would be in the interest of global safety that internationally harmonized safety review methodologies (e.g. stress tests) be fully developed and implemented at the plant and regulatory levels by all Member States with nuclear power plants and by those embarking on a nuclear power programme. The Agency could play a leading role in the development of these methodologies. Member States were strongly encouraged to report the results of safety reviews and their responses to lessons learned at the Extraordinary Meeting of the Contracting Parties to the Convention on Nuclear Safety to be held in 2012.

35. It was suggested that Member States planning to embark on a nuclear programme or constructing their first nuclear power plant create an appropriate nuclear infrastructure based on IAEA Safety Standards and other relevant guidance, and be prepared to operate their nuclear power plant in a safe and effective manner. An Integrated Nuclear Infrastructure Review (INIR) which takes into account the results of several institution-based or topical reviews could be a useful tool for demonstrating preparedness.

36. In spite of recent progress, it was noted by some participants that there is still room for improvement in understanding the concept of safety culture and implementing it effectively worldwide in the management of all nuclear power plants. All organizations involved with nuclear energy should apply universal safety culture principles, as defined in IAEA Safety Standards.

37. Operators play a crucial role in the first response to, and in the management of, any accident. Participants noted that the Fukushima accident had made it apparent that the operator must have effective procedures to manage severe accidents. Some participants felt it was necessary to increase the basic qualification requirements for operators of nuclear power plants and their ability to act in the event of beyond design basis accidents. It was considered important that the management of the operating organization maintains the capability to manage severe accidents, including those in conjunction with severe external hazards, with particular emphasis on the availability of necessary human resources and potential isolation from external resources. This issue also should be taken into account in the regulatory oversight process.

38. It was important that essential plant staff be able to work under severe accident conditions, especially considering emotional stress exacerbated by concerns about personal physical safety, radiation levels and the safety of families in the case of external events.

39. It was recognized that in the event of a major nuclear accident, remediation measures may be needed in order to reduce exposures to acceptable levels. Experience in this area is available in a number of Member States, which would be ready to help identify the most effective situation-specific countermeasures. Member States were encouraged to utilize existing experience in the application of remediation techniques and make it available to Japan. This could be coordinated by the Agency. Some participants noted that the Fukushima accident will provide a stimulus for safety research on fuel performance and accident progression, among other matters. This research should be undertaken and the results widely shared so that the necessary adjustments to safety requirements can be made by all. Research on severe accidents could be carried out internationally — facilitated, as appropriate, by the Agency — involving operators, vendors, technical support organizations and regulatory bodies. Each technology in use should be supported by a robust knowledge base. All research and development activities conducted during technology development, design, pre-licensing, commissioning and operation should be available to all plants whose design is based on that technology. The Fukushima accident has suggested the necessity of broadening the scientific knowledge base of all technologies to encompass the integrity and behaviour of systems, structures and components, including fuel elements, in all configurations, including severe accident conditions with prolonged loss of essential services. It was noted that this knowledge base is key in responding to complex and extreme emergency conditions. Member States were encouraged to utilize more effectively research and development in these areas and in those of nuclear safety, and emergency preparedness and response. Increased efforts could be undertaken to advance international cooperation on research and development related to the safety performance of nuclear power plants.

40. Review and improvement of INES was needed to make the scale more effective from a communications point of view.

41. All Member States and the IAEA, WANO, WNA and other national and international organizations were encouraged to improve public information on nuclear energy, radiation and other nuclear issues. This would help avoid unnecessary misunderstanding, fear and resistance against the peaceful utilization of nuclear energy, and build trust in the global nuclear community.

B.2. Working Session 2: Emergency Preparedness and Response

42. The objectives of Working Session 2 were to facilitate discussions on: the international response to the accident; the lessons identified in the response to the accident; and the way forward. The Chairperson for the session was A. Dela Rosa, Director, Philippine Nuclear Research Institute.

43. Keynote speakers were invited from relevant international organizations (FAO, WHO and WMO). They focused on international emergency preparedness and response and implications for the

inter-agency coordination mechanism. Panellists from a number of Member States concentrated on national emergency response and the implications of the lessons identified so far for the IAEA Safety Standards and Safety Guides.

44. It was noted that the responsibility for response to a nuclear or radiological incident or emergency and for the protection of workers, the public, property and the environment rests with the operating organization at the level of the facility concerned, and with the State at the local, regional and national level.[1] Proper management of nuclear or radiological emergencies requires prompt actions to mitigate the effects. States were responsible for establishing appropriate emergency management programmes, deciding upon and taking effective response actions, and ensuring that resources are available for preparedness and response. However, the resources and capabilities of States, individually or collectively, could be exceeded in an emergency. Thus, effective emergency preparedness and response also requires communication and cooperation amongst States and international intergovernmental organizations to ensure a harmonized worldwide response to nuclear or radiological emergencies.

45. The participants discussed the international framework for emergency preparedness and response. The Early Notification Convention[2] and the Assistance Convention[3] are the primary legal instruments that establish an international emergency preparedness and response framework. These are supplemented by a number of Safety Standards, tools, protocols and operational arrangements established by the Agency's Secretariat and Policy-making Organs and the meetings of competent authorities under the Conventions. Together, these instruments establish the Agency's emergency preparedness and response framework for nuclear and radiological incidents and emergencies.[4] In addition, a well developed international system for dealing with radiation events relies on the central coordinating role and responsibilities of the Agency and on an inter-agency mechanism: the Inter-Agency Committee on Radiological and Nuclear Emergencies (IACRNE).[5]

46. It was pointed out that legal instruments for the international emergency preparedness and response framework were adopted 25 years ago and inevitably reflect the prevailing concerns at that time, and possible ways to strengthen these instruments should be considered.

47. It was noted that the Agency's central role under the emergency preparedness and response framework includes: prompt notification of the emergency to Member States and international organizations; exchange and/or provision of official (authenticated and verified)[6] information to Member States and international organizations; coordination of international assistance, upon request

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[1] The roles of government, regulator and operating organization, especially in the event of an emergency, should be clearly defined, including responsibilities, constraints and reporting, in order to effectively mobilize national resources in emergency situations.

[2] The Early Notification Convention aims to strengthen international cooperation in order to provide relevant information about a nuclear accident or radiological emergency as early as possible in order that transboundary radiological consequences can be minimized.

[3] The Assistance Convention requires that States Parties cooperate between themselves and with the IAEA to facilitate prompt assistance in the event of a nuclear accident or radiological emergency to minimize its consequences and to protect life, property and the environment.

[4] This framework is implemented by the Agency independently of whether or not the Early Notification and Assistance Conventions are invoked. In the Fukushima accident, the Assistance Convention was not invoked by Japan, while Japan provided information in accordance with Article 3 of the Early Notification Convention.

[5] IACRNE was established following the Chernobyl accident and currently includes 15 international organizations: UNEP, UN OCHA, UN OOSA, UNSCEAR, FAO, IAEA, ICAO, IMO, EC, Europol, ICPO-INTERPOL, OECD/NEA, PAHO, WHO and WMO.

[6] In this context, authentication is the process of confirming that the message received originates from an official contact point. Verification is the process of confirming that a message received is clear, consistent and understood.

of the State concerned; and provision and/or coordination of public information that is timely, accurate and appropriate. The Agency discharges its role through its Incident and Emergency System (IES), consisting of a 24 hour a day contact point and an operational focal point, the Incident and Emergency Centre (IEC)[7]. The internal arrangements for the implementation of the IES are defined in the IAEA's Response Plan for Incidents and Emergencies [4].

48. The importance of information provided by the Agency through the Early Notification and Assistance Convention web site (ENAC) during the response to the Fukushima accident was noted in keynote and panel presentations. The Status Summary Updates provided through ENAC since 11 March were widely used by national authorities to prepare national briefs for both technical and public audiences.

49. It was noted that the Agency's existing role in sharing of information is largely limited to distributing information validated by the State concerned. Proposals have been made to broaden the Agency's responsibilities in emergency preparedness and response to include the conduct of analyses of emergency conditions, the progression (possible scenarios of crisis development), consequences and associated radiological impact, and response actions during the course of an emergency, and to expand information sharing with Member States, including the results of those analyses.

50. The impact of any nuclear or radiological incident or emergency with off-site consequences rapidly becomes of regional and global concern. It was noted that it is important to ensure that there are local arrangements in place for sharing information, and that reliable information related to protection reaches personnel (possibly international) responding to any simultaneous conventional emergency. The responsibility of Member States to provide prompt, factual, transparent and continuous information during the course of an emergency was emphasized.

51. It was also pointed out that for the provision of efficient assistance upon request the Agency has established RANET, which forms an operational mechanism to provide assistance in different technical areas with the help of national capabilities registered under RANET. These capabilities for assistance cover specific areas such as radiation survey, environmental sampling and analysis, assessment and advice, decontamination, medical support, dose assessment, source search and recovery, and advice on emergency response actions [6].

52. It was pointed out that universal implementation of the IAEA Safety Standards on emergency preparedness and response at the national level helps to improve preparedness and response, facilitates communication in an emergency and contributes to harmonization of national criteria for protective and other actions. Strengthening the emergency preparedness and response framework through strengthening instruments, universal implementation of the IAEA Safety Standards and enhanced cooperation among States and international organizations is key. It was noted that the IAEA Safety Requirements GS-R-2, Preparedness and Response for a Nuclear or Radiological Emergency [7], jointly sponsored by the FAO, IAEA, ILO, OECD/NEA, PAHO, OCHA and WHO, establishes the requirements for an adequate level of preparedness and response to a nuclear or radiological emergency in any State. In the panel presentations it was noted that national systems of emergency

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[7] The IEC operates in three operational modes: Normal/Ready Mode, Basic Response Mode and Full Response Mode. In Normal/Ready Mode, the IEC is the focal point for incoming messages and operates systems that serve as a 24-hour a day warning point through which incoming messages are received and acted on. The following on-call officers are available to facilitate and coordinate a timely and adequate response: emergency response manager, nuclear installation specialist, radiation safety specialist, nuclear security specialist, external event specialist and logistic support officer. Each event is classified according to the extent of its actual or potential radiological consequences. The response actions vary according to the actual or potential magnitude and seriousness of the event. The on-call emergency response manager determines whether the IEC activates into Basic Response Mode or Full Response Mode.

preparedness and response are utilizing the requirements set out in GS-R-2. Recommendations provided on the size of emergency planning zones are used to set the site specific distances.

53. Two Safety Guides support implementation of the GS-R-2 Requirements, namely: Arrangements for Preparedness for a Nuclear or Radiological Emergency (GS-G-2.1), jointly sponsored by the FAO, IAEA, ILO, PAHO, OCHA and WHO [8], and Criteria for Use in Preparedness and Response for a Nuclear or Radiological Emergency (GSG-2), jointly sponsored by the FAO, IAEA, ILO, PAHO and WHO [8]. These provide guidance on different elements of the GS-R-2 Requirements, including concepts of operations for different types of emergencies, recommended sizes of emergency planning zones, generic and operational criteria for protective and other actions, along with a 'plain language explanation'. In addition, technical guidance and operational manuals are developed to support the implementation of IAEA Safety Standards. They cover a wide range of technical issues addressing the needs of emergency planners and responders. Through regional and national training events using standardized training materials, the Agency effectively makes information available to Member States and assists them in applying guidance. In the panel presentations, special reference was made to the implementation of the IAEA Safety Standards in response to the Fukushima accident.

54. It was noted that improvements in response can only be achieved by commitments to increased preparedness, including training and exercises. Emergency response exercises are a key component of a good emergency preparedness programme and a powerful tool for verifying and improving the quality of emergency response arrangements and capabilities. Therefore the Agency prepares and conducts regular communication drills and exercises called ConvEx (Conventions Exercises) at three levels of complexity, covering mostly the response in an early phase of a severe nuclear or radiological emergency.

55. While each Member State is responsible for conducting a periodic appraisal of its emergency preparedness and response capabilities, the Agency can also conduct, at the request of the Member State, an independent Emergency Preparedness Review (EPREV). This provides an opportunity for a Member State to have its emergency preparedness and response programme and capabilities independently assessed and evaluated against international standards. Such an independent review could often be useful to identify in an objective and unbiased manner the areas where improvements may be required and to maintain or enhance the credibility of the emergency preparedness programme. As a secondary benefit, an EPREV allows information on best practices from the host country to be made available to other Member States.

56. Participants considered that effective national response capabilities and arrangements are essential to minimize the impacts of nuclear and radiological incidents and emergencies. However, it was also noted that emergency preparedness and response should not replace robust safety arrangements but should be considered an additional measure of safety to minimize risk.

57. It was pointed out that safety in the operation of a nuclear power plant is an element of foremost importance for the protection of people (individually and collectively), society and the environment in all States including those considering embarking on a nuclear power programme as well as those considering extending an existing programme. One of the challenges for the governments of those countries is to provide for robust emergency preparedness and response arrangements and capabilities to enable a timely and effective response in a radiation emergency. Many response arrangements currently assume that there will not be a need to respond to more than one nuclear accident or other emergency at the same time. Countries need to review emergency response arrangements for challenges related to extreme weather events, earthquakes and other events that may impact the response to multiple hazards.

58. The central role of the Agency in the coordination of the inter-agency response to a nuclear emergency was stressed. Keynote speakers from international organizations noted the effective joint efforts in response to the Fukushima accident performed under the Agency's coordination within IACRNE and under JPLAN [4]. The plan identifies the inter-agency framework for emergency preparedness and response, provides a practical mechanism for coordination[8] and clarifies the roles and capabilities of the participating international organizations in preparing for and responding to nuclear and radiological incidents and emergencies. It was activated and effectively used in response to the Fukushima accident.

59. The existence of IACRNE, and its related JPLAN, demonstrated that there is already a well established interagency mechanism in place that can provide coordination and facilitate clarity with regard to the roles and capabilities of the participating international organizations in preparing for and responding to nuclear or radiological emergencies.

60. While discussing the further strengthening of the international framework of emergency preparedness and response, keynote speakers, panellists and Working Session participants noted the importance of taking into account the recommendations from the final report of the International Action Plan for Strengthening the International Preparedness and Response System for Nuclear and Radiological Emergencies, approved by the Board of Governors in 2004 and completed in 2010.[9]

61. Real time, on-line radiation monitoring systems are operational or planned in States worldwide. While the purposes of such systems may vary, the data from them could be useful in emergency situations related to atmospheric radioactive releases. An integrated, worldwide monitoring and display system using radiation monitoring data from available national and international early warning systems could benefit all States and relevant international organizations.

62. Timely estimates of exposure of the general public from accidental releases were noted to be important for both the planning and implementation of protective and other actions in local and regional areas, and for the dissemination of information on the radiological impact of the accident at greater distances, including the impact on neighbouring countries.

63. Participants noted that joint international studies to assess the possible long term implications and full consequences of a nuclear accident and associated radioactive releases to the environment at the local, regional and global levels were important. Such studies could include an assessment of the impacts on health, land use, agriculture, fishery, tourism, the environment and industry.

B.3. Working Session 3: The Global Nuclear Safety Framework

64. The objectives of Working Session 3 were to facilitate discussions on review of the existing framework of international arrangements and possible ways for strengthening the global nuclear safety framework. The Chairperson for the session was R. Meserve, Chairperson, International Nuclear Safety Group (INSAG).

65. Keynote speakers were invited from national, regional and international organizations and other bodies (OECD/NEA, INSAG, INLA, WENRA and CSS). They focused on the global nuclear safety framework. Panellists from a number of Member States concentrated on identifying the current issues in the global nuclear safety framework and proposing possible ways for improvement.

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[8] That includes regular meetings and consultations, together with small and full scale exercises.
[9] GOV/2004/40 (Corrected) .

66. In the light of the Fukushima accident, strengthening the global nuclear safety framework was considered necessary to ensure the highest level of nuclear safety in every State that uses nuclear energy. The prime responsibility for safety rests with the operating organizations, subject to appropriate scrutiny by the national regulators. Various international bodies, operating within the international nuclear safety framework, monitor and support their efforts. The Agency should support the efforts of the operators of nuclear installations at the international level to promote safety.

67. In response to the Fukushima accident, some Member States noted that they expected an ambitious large scope Agency work programme that stressed the need for enhanced consistency, new interactions and effective transparency through:

- Changes to conventions;
- Improvement to and greater use of IAEA Safety Standards;
- Extensive use of Agency review services such as IRRS and OSART.

68. The international framework for safety encompasses a variety of organizations, including intergovernmental organizations, multinational regulator networks, multinational operator networks, an increasingly international nuclear industry, non-governmental organizations, standard setting organizations, scientific and engineering societies, and others. All have an important role to play and must take responsibility for enhancing nuclear safety. These organizations and networks are linked with each other by a number of conventions and other arrangements that are designed to achieve common safety objectives.

69. The Agency was considered to play a central role in the global nuclear safety framework and to be the appropriate international focal point for strengthening it.

70. Continuous improvement is a foundation stone of nuclear safety and there is a need for the nuclear community to continue to learn lessons from incidents and events in order to guard against complacency. The Agency was encouraged to play a leading role in collecting all the lessons to be learned from the Fukushima accident and communicating them to Member States. This role would also serve as important input for the review and updating of IAEA Safety Standards. To this end, consideration could be given to Agency review missions, looking in more detail at specific areas such as external hazard assessment, controlling public exposure and remediation of evacuated areas.

71. Participants noted that the realization of the recommendations in this report would require a significant enhancement of the Agency's budget dedicated to safety. Only about 10% of the most recent regular budget was allocated to safety and security. The importance of the various activities pursued by the Agency was not to be disputed; however, the budget for safety needs to grow significantly to meet the expanded needs that the Agency must satisfy following the Fukushima accident. This growth was necessary not only to allow a timely and effective response to the lessons from the Fukushima accident, but also to reflect the need for substantial international assistance to countries embarking on nuclear power.

72. The IAEA Safety Standards were seen to provide a benchmark that reflects an international consensus on what constitutes a high level of safety for protecting people and the environment from harmful effects of ionizing radiation. The importance of implementing enhanced national and international measures was emphasised to ensure the highest and most robust levels of safety are in place based on the IAEA Safety Standards, which should be continuously reviewed, strengthened and implemented as broadly and effectively as possible. Commitment should be made to increase bilateral, regional and international cooperation to that effect.

73. It was suggested that there was a need to consider the periodic alignment of national regulations and guidance with IAEA Safety Standards and other internationally established standards and

guidance for inclusion, in particular, of new lessons learned from global experience of the impact of external hazards.

74. CNS Contracting Parties were encouraged to initiate a review of the Convention in the light of the Fukushima accident. For example, the CNS could be enhanced by taking into greater account areas such as transparency, the effective independence of regulatory bodies, emergency preparedness and response, and the peer review process; stronger requirements in these areas could be incorporated. However, the response to the Fukushima accident was of a pressing concern and this should not await any amendment of the Convention.

75. The Agency's safety review services are currently being carried out in Member States on a voluntary basis. While safety review services are requested by some Member States, they have not been sought by all. Moreover, there are instances where reviews have been carried out without follow-up to monitor implementation of previous recommendations. Member States should take advantage of the review services and respond promptly to the results. The Agency does not have the authority to automatically publish the results of its reviews. It was proposed that Member States with nuclear power programmes consider giving prior consent to the Agency to perform systematic, regular international peer reviews of regulatory effectiveness, operational safety and emergency preparedness along with follow-up reviews to monitor the implementation of recommendations.

76. The results of the Agency safety review services could also be used to improve the effectiveness of the CNS review meetings. The peer review services could be accorded a higher profile to enhance public confidence in national and international arrangements for safety. It was suggested that, in order to enhance transparency, reports of peer reviews should be made publicly available with the consent of the State concerned, and summary information be provided on where and when such reviews have taken place. Those Member States with a nuclear power programme that have participated in the Agency peer review process could be identified, along with those that have yet to participate.

77. The important role of independent international peer reviews of national regulatory frameworks and nuclear installations could be reinforced as part of the process of ensuring that there is continuous improvement of safety and proper regulation of nuclear installations. It was noted that these peer reviews provide recommendations to improve safety and regulation and serve to exert peer pressure to ensure that every State with nuclear installations recognizes its safety responsibility and is able and committed to meet the IAEA Safety Standards.

78. It was suggested that consideration be given to making the Agency's plant specific safety review services (OSART, EPREV) and its IRRS mandatory for all countries operating and constructing nuclear power plants and to making the results publicly available. Moreover, some participants called on the Agency to include in its plant specific safety review services and IRRS missions the implications of the Fukushima accident and to share the lessons learned and good practices drawn from Member States.

79. It was proposed that Member States with nuclear power programmes receive a peer review of regulatory effectiveness (IRRS) every ten years. The results of these reviews should be disseminated to Member States.

80. It is also suggested that the Agency conduct international safety reviews in nuclear power plants in the areas of operational safety, design review and site evaluation. The mechanism for selection of the particular nuclear power plants to be reviewed could be a choice of one nuclear power plant in ten over a period of three years, since reviewing all 440 operating nuclear reactors around the world in a short period of time is not realistic. The results of these reviews should be disseminated to Member States.

81. There was a suggestion that the Agency develop a specific service that focuses on the assessment of: (a) safety margins against extreme natural hazards, such as earthquakes, tsunamis and floods; and (b) the regulatory implications of the Fukushima accident. Such assessments and reviews could be carried out within the next 12–18 months. The lessons learned, including an assessment of the regulatory responses to the Fukushima accident, should also be incorporated into existing services.

82. While recognizing that the operator has prime responsibility for nuclear safety, all parties (governments, operating organizations, regulatory bodies, technical support organizations, research organizations, WANO, OECD/NEA, etc.) which have a role to play in nuclear safety should work together, while respecting their different roles and responsibilities, to maximize the benefits of the lessons learned. The international nuclear community should take advantage of the data and information generated from the Fukushima accident to improve and refine the existing methods and models to determine the source term involved in a nuclear accident and refine emergency planning arrangements.

83. Member States were encouraged to recognize the importance of international cooperation and collaboration in enhancing safety and regulation. Member State expert participation was also considered to be vital for the effective performance of the Agency's peer review services and for the further development of the IAEA Safety Standards.

84. It was noted by some participants that an effective regulatory body is an essential component of national nuclear infrastructure [10]. Member States should ensure that regulatory independence and clarity of roles are preserved in all circumstances in line with the IAEA Safety Standards. Member States should continue to increase regulatory effectiveness and to share findings and lessons learned in their regulatory area, including cooperation and coordination among regulatory bodies, particularly with regard to new nuclear power plant designs and design certification. All countries were encouraged to reinforce their regulatory bodies and ensure that they are genuinely independent, with clarity of roles and appropriate authority in all circumstances, and that they are staffed by well trained, experienced personnel.

85. Participants noted that there was a need to enhance the support provided by the Agency for strengthening the capability of national regulatory bodies and ensuring their effective independence in the context of political, legislative, financial, competence and international aspects.

86. It was stressed that national nuclear institutions, including nuclear safety regulators, should be accountable for their actions and transparent in nuclear safety communications so that they deserve and receive the trust of the public. It is necessary to ensure that national nuclear safety regulators in all countries are fully independent in their decision making on nuclear safety and that their competence, resources and enforcement powers are assured.

87. Participants urged that nuclear regulatory systems should address extreme external events adequately, including periodic review, and should ensure that regulatory independence and clarity of roles are preserved in all circumstances in line with IAEA Safety Standards. Regulatory bodies should update related guides and safety requirements, including assessment methods for external hazards. In particular, methodologies for assessing tsunamis should be reviewed in the light of the Fukushima accident, and possible generalizations to other extreme external hazards should be pursued.

88. It was noted that severe long term combinations of external events should be adequately covered in design, operation, resourcing and emergency arrangements; this approach should be reviewed as appropriate by the regulatory body. The use of probabilistic safety analysis would need further consideration, including its status in national safety regulations.

89. Some participants suggested that it was imperative for countries embarking on nuclear programmes to fully implement IAEA Safety Standards, to integrate lessons learned from the

Fukushima accident into the development of their programmes and to demonstrate complete preparedness to operate nuclear power plants before commissioning the first reactor.

90. There was a need to enhance regulatory programmes and requirements for existing and new designs, and to enhance the basis for regulatory decision making. The implications of the Fukushima accident on regulatory programmes, such as periodic safety reviews, licence renewal and long term operation should be considered. In this process, a proper balance between the use of deterministic and probabilistic safety goals and the use of probabilistic risk assessment in regulatory decision making should be achieved.

91. It was emphasized that countries embarking on nuclear power programmes need to participate fully in the global nuclear safety framework. They should become contracting parties to the relevant international legal instruments, apply the IAEA Safety Standards, and make use of the associated Agency review services. These activities would contribute to building the necessary national infrastructure that is essential for safety. The newcomer countries need to have an emergency preparedness and response programme in place and the capability to manage severe accidents before startup of the first nuclear installation.

92. Sharing operating experience feedback is a vital tool for guarding against complacency and for learning lessons from incidents and events. The Agency could strengthen its role in the consolidation of operator and regulatory experience and foster interaction with industry and other international institutions that support the safety of operations.

93. There are now about 14 000 reactor-years of experience with nuclear power plants around the globe. This wealth of operating experience should be made available in a user friendly form so that all participants in the nuclear enterprise can benefit. The efforts undertaken by WANO in this regard are important for operators, and there should be parallel and substantive efforts by regulators to enhance the knowledge basis from operating experience. The Agency was encouraged to give enhanced support to operating organizations, which have the prime responsibility for nuclear safety. This could include improving communication between the Agency and the representatives of the operators and establishing a forum for enhanced communication between the various parties. The Agency and WANO were encouraged to establish a mechanism to improve their cooperation in sharing experience, and in particular to learn lessons from the Fukushima accident, while respecting each other's roles and responsibilities and recognizing their limitations.

C. Closing session

94. In the closing session, the Director General noted that the Conference had been successful in meeting the original objectives: to provide a preliminary assessment of the Fukushima accident; in the light of that accident to re-assess national and international emergency preparedness and response levels; to discuss safety implications and identify those areas of the global nuclear safety framework that need strengthening and to identify lessons learned and possible future actions.

95. The President of the Conference and the Director General — in their concluding remarks — referred to the main ideas and proposals that had emerged: to strengthen the IAEA Safety Standards; to systematically review the safety of all nuclear power plants, including by expanding the Agency's programme of expert peer reviews; to enhance the effectiveness of national nuclear regulatory bodies and ensure their independence; to strengthen the global emergency preparedness and response system; and to expand the Agency's role in receiving and disseminating information.

D. Way forward

96. In accordance with paragraphs 23 and 24 of the Ministerial Declaration, the Director General was requested to prepare — for submission to the Board of Governors and the General Conference at their September 2011 meetings — a report on the Conference and a draft Action Plan, building on the Ministerial Declaration, the conclusions and recommendations of the Working Sessions and the expertise and knowledge available therein.

97. The draft Action Plan was circulated to Member States through a Note by the Secretariat (2011/Note 58) on 11 August 2011, inviting them to informal open-ended consultations, which took place on 18 and 25 August 2011.

98. This report and the draft Action Plan submitted to the Board of Governors respond to the request in the Ministerial Declaration.

E. References

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[9] FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS, INTERNATIONAL ATOMIC ENERGY AGENCY, INTERNATIONAL LABOUR OFFICE, PAN AMERICAN HEALTH ORGANIZATION, WORLD HEALTH ORGANIZATION, Criteria for Use in Preparedness and Response for a Nuclear or Radiological Emergency, IAEA Safety Standards Series No. GSG-2, IAEA, Vienna (2011).

[10] INTERNATIONAL ATOMIC ENERGY AGENCY, Governmental, Legal and Regulatory Framework for Safety, IAEA Safety Standards Series No. GSR Part 1, IAEA, Vienna (2010).

Abbreviations and Acronyms

ConvEx	Code word for Convention Exercises
CSS	Commission on Safety Standards
EC	European Commission
ENAC	Emergency Notification and Assistance Convention web site
EUROPOL	European Police Office
EPREV	Emergency Preparedness Review
FAO	Food and Agriculture Organization of the United Nations
IACRNE	Inter-Agency Committee on Radiological and Nuclear Emergencies
ICAO	International Civil Aviation Organization
IEC	Incident and Emergency Centre (IAEA)
IES	Incident and Emergency System (IAEA)
ILO	International Labour Organization
IMO	International Maritime Organization
INLA	International Nuclear Law Association
INSAG	International Nuclear Safety Group
ICPO-INTERPOL	International Criminal Police Organization-INTERPOL
IRRS	Integrated Regulatory Review Service
JPLAN	Joint Radiation Emergency Management Plan of the International Organizations
OCHA	United Nations Office for the Co-ordination of Humanitarian Affairs
OECD/NEA	Nuclear Energy Agency of the Organization for Economic Co-operation and Development
OSART	Operational Safety Review Team (IAEA)
PAHO	Pan American Health Organization
RANET	Response and Assistance Network
UNEP	United Nations Environment Programme
UN OOSA	United Nations Office for Outer Space Affairs
UNSCEAR	United Nations Scientific Committee on the Effects of Atomic Radiation
WANO	World Association of Nuclear Operators
WENRA	Western European Nuclear Regulators' Association
WHO	World Health Organization
WMO	World Meteorological Organization
WNA	World Nuclear Association

Annex 1

Declaration by the IAEA Ministerial Conference on Nuclear Safety in Vienna on 20 June 2011

We, the Ministers of the Member States of the International Atomic Energy Agency (IAEA), gathered in Vienna in light of the serious consequences of the nuclear accident at the Fukushima Daiichi Nuclear Power Station caused by the Great East Japan Earthquake and Tsunami to direct, under the leading role of the IAEA, the process of learning and acting upon lessons to strengthen nuclear safety, emergency preparedness and radiation protection of people and the environment worldwide,

1. Express sympathy for and solidarity with Japan in connection with the unprecedented earthquake and tsunami of 11 March 2011, which caused much loss of life and severe damage, and the accident at the Fukushima Daiichi Nuclear Power Station; and emphasize the resolve of the international community to continue to assist Japan in its efforts to mitigate and overcome the consequences of the disaster and the accident;

2. Recognize the efforts of the international community to enhance knowledge in nuclear safety and radiation protection and strengthen international standards in nuclear safety, emergency preparedness and response and radiation protection of people and the environment and the need to draw the lessons from the accident at the Fukushima Daiichi Nuclear Power Station;

3. Recognize that some States consider nuclear power as a viable option in meeting their energy needs, while other States have decided not to use or to phase out nuclear energy;

4. Recognize that nuclear accidents may have transboundary effects and raise the concerns of the public about the safety of nuclear energy and the radiological effects on people and the environment; and emphasize the importance of adequate responses based on scientific knowledge and full transparency, should a nuclear accident occur;

5. Underline that States with nuclear power programmes have a central role in ensuring the application of the highest standards of nuclear safety; and emphasize the responsibility of these States for providing a timely, transparent and adequate response to nuclear accidents in order to minimize their consequences;

6. Emphasize the importance of implementing enhanced national and international measures to ensure that the highest and most robust levels of nuclear safety are in place, based on IAEA safety standards, which should be continuously reviewed, strengthened and implemented as broadly and effectively as possible and commit to increase bilateral, regional and international cooperation to that effect;

7. Commit to strengthening the central role of the IAEA in promoting international cooperation and in coordinating international efforts to strengthen global nuclear safety, in providing expertise and advice in this field and in promoting nuclear safety culture worldwide;

8. Encourage the close cooperation and coordination among the relevant intergovernmental and non-governmental organizations on nuclear safety related matters;

9. Stress the importance that the IAEA should be further enabled to meet the high level of public expectation to provide timely, factually correct and objective information and assessments of nuclear accidents and their radiological consequences;

Welcome the reports submitted by Japan and the IAEA International Fact-Finding Mission to Japan, which include preliminary assessments of the accident at the Fukushima Daiichi Nuclear Power Station;

11. Stress the need to receive from Japan and the IAEA a comprehensive and fully transparent assessment of the Fukushima Daiichi Nuclear Power Station accident in order for the international

community to be able to draw and act upon the lessons learned, including a review of IAEA safety standards that are relevant to the accident, in particular those pertaining to multiple severe hazards;

12. Underline the benefits of strengthened and high quality independent international safety expert assessments, in particular within the established IAEA framework, through periodic reviews and evaluation missions assessing national regulatory frameworks, emergency preparedness and response and nuclear power plant operation in order to ensure continuous improvement of the safety of nuclear installations on the basis of internationally agreed rules and procedures;

13. Encourage States with operating nuclear power plants to conduct, as a response to the accident at the Fukushima Daiichi Nuclear Power Station, comprehensive risk and safety assessments of their nuclear power plants in a transparent manner;

14. Emphasize the responsibility of the nuclear industry and operators in the implementation of nuclear safety measures and call upon them and their associations to fully support and actively contribute to international efforts to enhance nuclear safety by, inter alia, furthering transparency and prioritizing safety considerations;

15. Commit to further strengthening the authority, competence and resources of national regulatory authorities, including through appropriate technical and scientific support and to continuously ensure their effective independence;

16. Reiterate the importance of universal adherence to and the effective implementation and continuous review of the relevant international instruments on nuclear safety, consider the possibility of strengthening the international legal framework in this area; and recognize the IAEA's enhanced efforts to that effect;

17. Underline further the importance of adequate, prompt and continuous information sharing in the case of an accident, transparency and exchange of best practices among States in all aspects of nuclear safety;

18. Underline that the freest possible flow and wide dissemination of safety related technical and technological information enhances nuclear safety, which is essentially technical in nature and of global concern; and note the role that innovative technologies can play in improving nuclear safety;

19. Emphasize the need to improve national, regional and international emergency preparedness and response to nuclear accidents, including through the possible creation of rapid reaction capacity and the development of training in the field of crisis management at the regional and international levels, as well as to strengthen cooperation among national authorities, technical safety organizations, operators and among relevant intergovernmental and non-governmental organizations; and call for a strengthened role of the IAEA in emergency preparedness and response by promoting and possibly expanding existing IAEA response and assistance capabilities;

20. Underline the need for States operating nuclear power programmes and the IAEA to promote capacity building, including education and training for both regulators and operators;

21. Underline the need for States planning to embark on a nuclear power programme to create an appropriate nuclear safety infrastructure based on IAEA safety standards and relevant guidance and assistance, using, among others, effective IAEA technical cooperation mechanisms for supporting the safe and secure use of nuclear technologies;

Recognize the need for a global nuclear liability regime that addresses the concerns of all States that might be affected by a nuclear accident with a view to providing appropriate compensation for nuclear damage;

23. Request the IAEA Director General to prepare a report on the June 2011 IAEA Ministerial Conference on Nuclear Safety and a draft Action Plan, building on this Declaration and the conclusions and recommendations of the three Working Sessions, and the expertise and knowledge available therein; and to promote coordination and cooperation, as appropriate, with other relevant international organizations to follow up on the outcomes of the Conference, as well as facilitate consultations among Member States on the draft Action Plan;

24. Request the IAEA Director General to present this report and the draft Action Plan covering all the relevant aspects relating to nuclear safety, emergency preparedness and response and radiation

protection of people and the environment, as well as the relevant international legal framework, to the IAEA Board of Governors and General Conference at their forthcoming meetings in 2011;

25. Call upon the IAEA Board of Governors and the General Conference to reflect the outcome of this Conference in their decisions and to support the effective, prompt and adequately resourced implementation of the Action Plan.

Annex 2

Chairpersons' Summaries

The attached texts are the Chairpersons' summaries of the main proposals that emerged from the Working Sessions and the issues that were discussed. Where appropriate, points raised at the Plenary Sessions are also reflected in the texts.

1. Preliminary Assessment of the Accident at TEPCO's Fukushima Daiichi Nuclear Power Stations and Actions for Safety Improvements

Strengthening the IAEA Safety Standards

1. The IAEA was encouraged to review and strengthen, as appropriate, its Safety Standards in all areas related to: design requirements, with particular emphasis on defence in depth, low probability beyond design basis accidents, singly and in combination, and severe accident management for single-unit and, more especially, multi-unit sites, including extended loss of ultimate heat sink and essential supplies, hydrogen management, post-accident monitoring and safety of spent fuel storage. Further topics include, but are not limited to, the use of hardened emergency response centres on sites, and the availability and capability of site staff to work under severe accident conditions.

2. The IAEA was encouraged to play a leading role in collecting the results of all relevant analyses of lessons learned in the assessment, management and communication of all the consequences of the accident. This could serve as important input for the review and updating of IAEA Safety Standards. To this end, consideration could be given to IAEA missions to look in more detail at specific areas such as external hazard assessment, controlling public exposure and remediation of evacuated areas.

3. All Member States were encouraged to make a firm commitment to apply the IAEA Safety Standards in their national arrangements for ensuring nuclear safety in a transparent and open way. This could ensure that the highest and most robust levels of nuclear safety are in place in all Member States.

4. It is imperative for new countries embarking on nuclear programmes to fully implement IAEA Safety Standards, to integrate lessons learned from the Fukushima accident into the development of their programmes and to demonstrate complete preparedness to operate nuclear power plants before commissioning the first reactor.

5. Contracting parties to international conventions were encouraged to initiate an update of the conventions in the light of the Fukushima accident. For example, the Convention on Nuclear Safety (CNS) can be enhanced by taking into account areas such as transparency, the independence of regulatory bodies, emergency preparedness and the peer review process.

Safety Reviews

6. It is important for all Member States to systematically review the safety of all nuclear power plants, including the safety margins and design basis assumptions for both new and operating plants. It is important to take into account site specific characteristics and features, including low probability extreme events previously not included in original design and engineering considerations.

7. It was suggested that internationally harmonized review methodologies (e.g. stress tests) be implemented by all Member States. The IAEA could play a leading role in the development of these methodologies on a coordinated basis.

8. Member States were strongly encouraged to report the results of safety reviews and their responses to lessons learned at the Extraordinary Meeting of the Contracting Parties to the CNS in 2012.

9. It was suggested that the IAEA could assist in carrying out peer reviews of national safety reviews, using the services of international expert teams and make the results publicly available. This could enhance the openness and credibility of national safety reviews.

10. It was suggested that consideration be given to making the IAEA's plant specific safety review services (OSART, EPREV) and its Integrated Regulatory Review Service (IRRS) mandatory for all countries operating and constructing nuclear power plants and make the results publicly available. The IAEA was asked to include in its plant specific safety review services and IRRS missions the implications of the Fukushima accident and share the lessons learned and good practices drawn from Member States.

11. A mechanism could be developed to select the particular nuclear power plants to be reviewed by the IAEA expert team and make the results publicly available. This may be a random process, but the initial focus should probably be put on older nuclear power plants.

12. The IAEA was encouraged to establish a design peer review service based on commonly accepted methodologies and criteria.

Role of Organizations in Nuclear Safety

13. While recognizing that the operator has prime responsibility for nuclear safety, all parties (governments, operating organizations, regulatory bodies, technical support organizations, research organizations, WANO, OECD/NEA, etc.) which have a role to play in nuclear safety should work together, respecting their different roles and responsibilities, to maximize the benefits of the lessons learned. The IAEA was encouraged to facilitate the dialogue and interaction between the various stakeholders.

14. The IAEA was encouraged to give enhanced support to operating organizations, which have the prime responsibility for nuclear safety. This could include improving communication between the IAEA and the representatives of the operators and establishing a forum for enhanced communication between the various parties.

15. In spite of all recent efforts there is still room for improvement in understanding the concept of safety culture and implementing it effectively worldwide in the management of all nuclear power plants.

16. Mechanisms for responding to and managing a nuclear accident need to be enhanced, both within and between countries. The mechanisms could include the sharing of information, resources and emergency equipment, if necessary.

17. The existence of credible, competent and independent regulators is an essential element of nuclear safety. All countries were encouraged to reinforce their regulatory bodies and ensure that they are genuinely independent, with clarity of role and appropriate authority, in all circumstances, and staffed by well trained, experienced personnel.

18. Full scientific knowledge of the technology, including the integrity and behaviour of systems, structures and components, including fuel elements, is key in responding to an emergency. All Member States were encouraged to utilize more effectively research and development in these areas and in those of nuclear safety, emergency preparedness and response.

19. In the event of a major nuclear accident, remediation measures may be needed in order to reduce exposures to acceptable levels. Member States are encouraged to utilize existing experience in the application of remediation techniques and make it available to Japan. This could be coordinated by the IAEA. Such experience is available in a number of Member States, which would be ready to help identify the most effective situation-specific countermeasures.

Receiving and Disseminating Information

20. Continuous improvement is a foundation stone of nuclear safety. Sharing operational experience feedback is a vital tool for guarding against complacency and for learning lessons from incidents and events. The IAEA should strengthen its role in the consolidation of operator and regulatory experience

and foster interaction with industry and other international institutions that support the safety of operations.

21. In this regard, the IAEA and WANO were encouraged to establish a mechanism to improve their cooperation in sharing experience, and in particular to learn lessons from the Fukushima accident, while respecting each other's roles and limitations.

22. Review and improvement of the International Nuclear and Radiological Event Scale (INES) are needed to make the scale more effective from a communications point of view.

23. The IAEA was encouraged to institutionalize the practice of 'fact finding missions', in the case of nuclear incidents/accidents. The criteria for invoking such missions could be linked to INES.

24. All Member States and the IAEA, WANO, WNA and other national and international organizations were encouraged to improve public information on nuclear energy, radiation and other nuclear issues. This will help to avoid unnecessary misunderstanding, fear and resistance against the peaceful utilization of nuclear energy and help to build trust in the global nuclear community.

25. Japan was encouraged to continue sharing the results, in the open way they already have, of evaluations of the accident and lessons learned. This, together with the comprehensive report already provided by Japan[10] to the IAEA, and the results of the fact finding mission[11], will enable a uniform understanding of the facts. It is also important that Japan keep the international community informed about the implementation of major actions, including progress in the actions defined in TEPCO's 'Road Map'.

26. It was suggested that in response to an emergency the IAEA should expand its role to include engineering analysis, simulation of technological processes and prediction of how systems, structures and components will behave. This could be achieved by increasing the IAEA's existing capacity or with the involvement of national and international engineering and research institutions. This information should be shared on a timely basis with all Member States.

2. Emergency Preparedness and Response

International Emergency Preparedness and Response Framework

1. Legal instruments for the international emergency preparedness and response framework were adopted 25 years ago and inevitably reflect the prevailing concerns at that time. Possible ways to strengthen these instruments should be considered.

2. The IAEA's role in response to a radiation emergency should be broadened to enable it to conduct analysis of emergency conditions, progression, possible scenarios for emergency development, consequences, associated radiological impact and response actions, and to share this analysis with Member States. To fulfill this function effectively, a broader scope of information (data, analysis and other information) should be provided to the IAEA. The responsibility of States to promptly and continuously provide information needs to be emphasized.

3. A preliminary examination of the IAEA Safety Standards on preparedness and response related to severe reactor emergencies such as occurred at the Fukushima Daiichi nuclear power plant indicates that the relevant standards address the issues adequately. However, these standards need to be carefully reviewed and enhanced, as appropriate, as understanding of the Fukushima accident develops. Additional guidance on taking protective and other actions based on environmental data analysis and assessment following a release to ensure public safety should be developed.

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[10] Report of the Japanese Government: http://www.kantei.go.jp/foreign/kan/topics/201106/iaea_houkokusho_e.html

[11] Fact Finding Mission Report:
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4. To better cope with serious emergencies, international assistance arrangements and capabilities should be strengthened by enhancing the IAEA's Response and Assistance Network (RANET) and by implementing its improved guidelines to ensure assistance compatibility and effectiveness. States may wish to extend national capabilities registered under RANET to cover special technical capabilities (e.g. remotely controlled equipment, robots) and expertise in different areas (crisis management, nuclear power plant designs, etc.), thus establishing an international pool of experts. Regional RANET coverage needs to be extended. Registered RANET capabilities and arrangements should be appraised through regular review missions and through regional and international emergency exercises.

5. There is scope for reinforcement of emergency notification, reporting and information sharing arrangements and capabilities. In addition, the newly developed protected web site of the IAEA's Unified System for Information Exchange in Incidents and Emergencies, which replaces the Early Notification and Assistance Convention web site, needs to be fully implemented to ensure efficient and effective information sharing and to enable effective activation of international assistance.

6. Strengthening of the international emergency preparedness and response framework should take into account recommendations given in the International Action Plan for Strengthening the International Preparedness and Response System for Nuclear and Radiological Emergencies.

7. Member States should consider making use of systematic and regular Emergency Preparedness Review (EPREV) and follow-up missions to appraise national emergency preparedness and response arrangements and capabilities to ensure their continuous improvement.

8. Real time on-line radiation monitoring systems are operational or planned in States worldwide. While the purposes of such systems may vary, the data from them could be useful in emergency situations related to atmospheric radioactive releases. An integrated, worldwide monitoring and display system using available national and international early warning systems as the global radiation monitoring platform for displaying real time data on radioactive releases would benefit all States and relevant international organizations.

National and Regional Emergency Preparedness and Response

9. Universal implementation of the IAEA Safety Standards on emergency preparedness and response at the national level would improve preparedness and response, facilitate communication in an emergency and contribute to harmonization of national criteria for protective and other actions. It was also noted that cooperation among national authorities, utilities and technical support organizations could be strengthened. The capabilities and arrangements of national authorities to communicate risk to the public should be strengthened. States may wish to consider establishing national rapid response teams that could also be available internationally.

10. It would be helpful for standardized and reliable methodologies to be put in place in all IAEA Member States to estimate the source term[12], to analyse and evaluate radiological monitoring data, and to assess radiological impacts to the population in affected areas via all exposure pathways.

11. Timely estimates of exposure of the general public from accidental releases are important for both the planning and implementation of protective and other actions in local and regional areas, and for the dissemination of information on the radiological impact of the accident at greater distances, including the impact on neighbouring countries.

12. It would be helpful for knowledge and experience gained concerning the effectiveness of protective and other actions, as well as the interaction of national and local authorities with the public, to be shared by an 'Accident State' with the IAEA and neighbouring countries.

13. Joint international studies to assess the possible long term implications and full consequences of a nuclear accident and associated radioactive releases to the environment at the local, regional and

[12] The amount and isotopic composition of radioactive material released (or postulated to be released) from a facility during an accident.

global levels are important. Such studies should include an assessment of the impacts on health, land use, agriculture, fishery, tourism, the environment and industry.

14. Training and emergency response exercises are a key component of a good emergency preparedness programme and provide a powerful tool for verifying and improving the quality of emergency arrangements and capabilities. All Member States are encouraged to enhance training programmes and to participate in the international Convention Exercises (ConvEx).

Inter-agency Emergency Preparedness and Response

15. Experience from the Fukushima accident has shown the Inter-Agency Committee on Radiological and Nuclear Emergencies (IACRNE) to be an effective and useful mechanism. However, it should now be carefully reviewed and enhanced, and relevant organizations that are not yet members of IACRNE should be encouraged to become members.

16. The Joint Radiation Emergency Management Plan of the International Organizations (JPLAN) also demonstrated its usefulness. However, additional operational procedures and bilateral protocols to support its implementation and reduce the response times should be developed.

17. The existing ConvEx regime should be regularly used to test the level of preparedness of relevant international organizations and to help ensure efficient and coordinated interagency responses.

3. The Global Nuclear Safety Framework

1. In the light of the Fukushima accident, the strengthening of the global nuclear safety framework is necessary to ensure the highest level of nuclear safety in every State that uses nuclear energy. The prime responsibility for safety rests with the operators, subject to scrutiny by national regulators. Various international bodies, operating within an international nuclear safety framework, monitor and reinforce their efforts.

2. The international framework for safety encompasses a variety of organizations, including intergovernmental organizations, multinational networks among regulators, multinational networks among operators, an increasingly international nuclear industry, non-governmental organizations, standard setting organizations, scientific and engineering societies, and others. All must take responsibility for enhancing safety. These entities are linked with each other by a cluster of conventions and other arrangements to achieve common safety objectives.

Role of the IAEA

3. The IAEA plays a central role and is the appropriate international focal point for strengthening the global nuclear safety framework.

4. Improvements to the global nuclear safety framework will require a significant enhancement of the IAEA's budget dedicated to safety in order to respond to the Fukushima accident and to help prevent future accidents.

IAEA Safety Standards

5. The IAEA Safety Standards represent the common reference for nuclear safety. However, not all Member States apply them, and those States that do apply them may not always implement them fully. All Member States were encouraged to commit to making national safety standards consistent with those of the IAEA.

6. The details of the Fukushima accident will become clearer over time. The IAEA should review and update its Safety Standards, as necessary, to incorporate the lessons learned from the Fukushima accident. Special attention needs to be paid to those standards pertaining to multiple severe hazards, such as tsunamis and earthquakes, and their impact on single-unit and multi-unit sites. Standards that deal with preparedness for prolonged power blackouts and with cooling of both reactors and spent fuel storage facilities under severe accident conditions should also be reviewed.

Convention on Nuclear Safety

7. In order to ensure that all safety issues are fully considered, it was suggested that there be a review of the effectiveness of the Convention on Nuclear Safety and its associated review mechanisms, both of which form an important part of the global nuclear safety framework. A proposal to amend the Convention has already been submitted to the IAEA by a Member State for circulation to Contracting Parties. If an amendment to the Convention is undertaken, it might appropriately incorporate, among other matters, stronger requirements related to the concept of effective regulatory independence. However, the response to the Fukushima accident should not await the amendment of the Convention.

International Peer Reviews

8. The important role of independent international peer reviews of national regulatory frameworks and nuclear installations should be reinforced as part of the process of ensuring that there is continuous improvement of safety and proper regulation of nuclear installations. These peer reviews provide recommendations to improve safety and serve to exert peer pressure to ensure that every State with nuclear installations recognizes its safety responsibility and is able and committed to meet the IAEA Safety Standards. The IAEA should include consideration of the implications of the Fukushima accident in its peer reviews of regulatory frameworks and nuclear installations, and should seek to ensure that the lessons learned from the accident and resulting good practices developed by the Member States are widely shared.

9. In addition, the IAEA's safety review services are currently being carried out in Member States on a purely voluntary basis. While safety review services are requested by some Member States, they have not been sought by all. Moreover, there are instances where reviews have been carried out without follow-up to monitor implementation of previous recommendations. Member States should take advantage of the review services and respond promptly to the results.

10. It was felt that the IAEA peer review services needed to be accorded a greater profile to enhance public confidence in the national and international arrangements for safety. It was suggested that the schedule of planned peer review missions should be published along with the respective mission results and, if applicable, the associated follow-up results. Those Member States with a nuclear power programme that have participated in the IAEA peer review process could be identified, along with those that have yet to participate.

11. It was proposed that Member States with nuclear power programmes consider giving prior consent to the IAEA to perform systematic, regular international peer reviews of regulatory effectiveness, operational safety and emergency preparedness. There should also be follow-up to review the implementation of previous recommendations.

12. The Fukushima accident has highlighted the need for thorough and transparent national safety assessments (or 'stress tests') of nuclear power plants. Many licensees and national regulators are undertaking these assessments. The Extraordinary Meeting of the Contracting Parties to the Convention on Nuclear Safety in August 2012 provides an opportunity for the international sharing of the lessons from these activities. There was a suggestion that the IAEA develop a service that focuses on (a) safety margins against extreme natural hazards, such as earthquakes, tsunamis and floods, and (b) the regulatory implications of the Fukushima accident. Such assessments could be carried out within the next 12–18 months. The lessons learned, including an assessment of the regulatory responses to the Fukushima accident, should also be incorporated into existing services.

13. It was proposed that Member States with nuclear power programmes receive a peer review of regulatory effectiveness (e.g. the IAEA's Integrated Regulatory Review Service) every 10 years. It was also suggested that, with some reinforcement of its present capabilities, the IAEA could conduct an international safety review of one nuclear power plant in 10 over a period of three years, since reviewing all 440 operating nuclear reactors around the world in a short period of time is not realistic. The results of these assessments, which would include operational safety peer reviews of nuclear power plants (e.g. OSART missions and site/design reviews), could then be disseminated to Member States.

International Cooperation

14. Member States were encouraged to recognize the importance of international cooperation and collaboration in enhancing safety and regulation. Member State expert participation was considered vital for the IAEA's peer review services and for the further development of the IAEA Safety Standards.

Regulatory Independence

15. There is a need to strengthen national regulatory systems so that they have the necessary competence and power to ensure that there is a proper response to any safety concerns, and to ensure their effective independence. Regulatory systems need to operate in an environment without political influence and undue financial constraints, and regulators should be empowered to make timely safety decisions. It was recognized that effective regulatory independence is one of the main pillars for strengthening nuclear safety.

Newcomer Countries

16. Countries embarking on nuclear power programmes need to participate fully in the global nuclear safety framework. They should become contracting parties to the relevant international legal instruments, apply the IAEA Safety Standards, and make use of the associated IAEA review services. These activities will contribute to building the necessary national infrastructure that is essential for safety. The newcomer countries need to demonstrate that an emergency preparedness and response programme is in place and that they have the capability to manage severe accidents before startup of the first nuclear installation.

Research

17. The Fukushima accident will provide the opportunity for safety research on fuel performance and accident progression, among other matters. This research should be undertaken and the results should be widely shared so that the necessary adjustments to safety requirements can be made by all.

Operating Experience

18. There is now about 14 000 reactor-years of experience with nuclear power plants around the globe. This wealth of operational experience should be made available in a user friendly form so that all participants in the nuclear enterprise can benefit. The efforts undertaken by the World Association of Nuclear Operators (WANO) in this regard are important for operators, and there should be parallel and substantive efforts by regulators to enhance the knowledge basis from operating experience.

Remediation

19. Japan confronts a major challenge in the remediation of contaminated land areas. It should obtain the benefit of knowledge from international experts and, in turn, the lessons from experience should be made available to the international community.

Transparency

20. The Fukushima accident has understandably shaken public confidence in the safety of nuclear activities. These concerns should be publicly acknowledged and confronted honestly. Transparency in dealing with safety related issues is an important component in building public confidence.

Annex 3

IAEA Ministerial Conference on Nuclear Safety

20–24 June 2011
Vienna, Austria

PROGRAMME

President of the Conference:	H.E. Mr Antonio Guerreiro, Resident Representative of Brazil to the IAEA and Governor for Brazil on the IAEA's Board of Governors

Conference Venue:

Plenary Sessions:
Austria Center Vienna
Hall D
Level U2
Bruno-Kreisky-Platz 1
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Tel.: +43-1- 260 69-0
Fax: -+43-1-260 69-303
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Working Sessions 1, 2 and 3:
Vienna International Centre:
Board Room A, M building
IAEA
Wagramer Strasse 5
1400 Vienna
Tel.: +43 1 2600 0
Fax: +43 1 2600 7
E-mail: official.mail@iaea.org

The working languages of the Conference will be Arabic, Chinese, English, French, Russian and Spanish, and statements made in any one of these languages during the meetings of the Conference will be interpreted simultaneously into the others. In order to assist the interpreters, delegates are kindly asked to provide the Conference Secretariat with a written text of their statements in advance.

Sunday, 19 June 2011

15:00 -19:00	Registration of delegates, Austria Center Vienna (ACV), Main Entrance

Monday, 20 June 2011

08.00	Registration of delegates, Austria Center Vienna (ACV), Main Entrance
10.00 - 13.00	Plenary Session: Hall D, ACV Opening addresses: Mr Antonio Guerreiro, Conference President Mr Yukiya Amano, Director General, IAEA Mr Sergio Duarte, High Representative for Disarmament: Message from the Secretary-General of the United Nations followed by Statements by Ministers/Heads of Delegations
13.00 - 15.00	Lunch break
15.00 -18:30	Plenary Session (continued): Hall D, ACV

Adoption of the Ministerial Declaration at the end of the Plenary Session, 20 June 2011.

Monday, 20 June 2011

15:00	Working Session 1: Board Room A, M Building, VIC Preliminary Assessment of the Accident at TEPCO's Fukushima Nuclear Power Stations (NPSs) and Actions for Safety Improvements
Chairperson:	M. Weightman, Chief Inspector of Nuclear Installations, Office for Nuclear Regulation, United Kingdom
Scientific Secretary:	P. Vincze, Nuclear Power Engineering Section, Department of Nuclear Energy, IAEA
15:00–18:00	Preliminary Expert Assessment of the Accident at TEPCO's Fukushima Nuclear Power Stations (NPSs)
15:00	Opening remarks by the Chairperson
15:10 – 15:30	K. Hirose, Special Advisor to the Cabinet Office and Former Director-General of the Nuclear and Industrial Safety Agency, Japan
15:30 – 15:50	M. Weightman, Chief Inspector of Nuclear Installations, Office for Nuclear Regulation, United Kingdom
15:50 – 18:00	Panel 1: S. LEE, Executive Director, Division of Policy and Planning, Korea Institute of Nuclear Safety (KINS), Republic of Korea S.S. Bajaj, Chairperson, Atomic Energy Regulatory Authority, India J. Lyons, Director, Division of Nuclear Installation Safety, IAEA
16.15 – 18.00	Discussion followed by Chairperson's summary
19:00 – 20:30	Joint reception, M Building, Ground Floor Hosted by the IAEA Director General and the Conference President

Tuesday, 21 June 2011

10:00 - 18:00	Plenary Session (cont'd): Hall D, ACV
	Statements by Ministers/Heads of Delegations
10:00	Working Session 1 (cont'd): Board Room A, M Building, VIC
10:00 – 13:00	Future Actions for Continuous Improvements of Nuclear Installations Safety
10:00 – 10:20	L. Stricker, Chairperson, World Association of Nuclear Operators (WANO)
10:20 – 10:40	J.B. Ritch, Director General, World Nuclear Association (WNA)
10:45 – 13:00	Panel 2:
	G. Jaczko, Chairperson, Nuclear Regulatory Commission, USA N.I.S. Kutin, Federal Environmental, Industrial and Nuclear Supervision Service of Russian (Rostechnadzor)
	F.P. Weiss, ESTON representative, European TSO Network (ETSON)
11:10 – 13:00	Discussion followed by Chairperson's summary
13:00 - 15:00	Lunch break
15:00 - 18:00	Plenary Session (cont'd): Hall D, ACV
	Statements by Ministers/Heads of Delegations

Tuesday, 21 June 2011

15:00	Working Session 2: Board Room A, M Building, VIC
	Emergency Preparedness and Response
Chairperson:	A. Dela Rosa, Director, Philippine Nuclear Research Institute
Scientific Secretary:	E. Buglova, Acting Head, Incident and Emergency Centre,
	Department of Nuclear Safety & Security, IAEA
15:00 -18:00	The Initial Response to the Accident at TEPCO'S Fukushima Nuclear
	Power Plant Stations (NPSs)
15:00	Opening remarks by the Chairperson
15:10 – 15.30	Q. Liang, Director, Joint FAO/IAEA Division of Nuclear Techniques in Food and
	Agriculture
15:30 – 15:50	M. Neira, Director, Department of Public Health and the Environment,
	World Health Organization (WHO)
15:50 – 18:00	Panel 1
	J.C. Lentijo, General Director for Radiation Protection, Nuclear Safety Council, Spain D. Sumargo, Head of Subdirectorate of Nuclear Energy Preparedness, Nuclear Energy Regulatory Agency (BAPETEN), Indonesia J Eibenshutz, Director General,
	National Commission of Nuclear Security and Safeguards (CNSNS), Mexico
16:15 – 18:00	Discussion followed by Chairperson's summary

Wednesday, 22 June 2011

10:00 – 13:00	(Possible) Plenary Session Plenary may meet if the speakers' list has not been completed
10:00	Working Session 2 (cont'd): Board Room A, M Building, VIC
10:00 – 13:00	Lessons Identified/Learned in Response to the Accident at TEPCO's Fukushima Nuclear Power Stations (NPSs): The Way Forward
10:00 – 10:20	E. Buglova, Acting Head, Incident and Emergency Centre, Department of Nuclear Safety & Security, IAEA
10:20 – 10:45	G. Love, Director, Department for the Weather and Disaster Risk Reduction Services, World Meteorological Organization (WMO)
10:45 – 13:00	Panel 2: K. Hirose, Special Advisor to the Cabinet Office and Former Director-General of the Nuclear and Industrial Safety Agency, Japan S. Itimad, Director of Safety and Security, National Center for Energy Sciences and Nuclear Techniques (CNESTEN), Morocco J. Salas, Executive Director, Nuclear Energy Commission, Chile
11:10 – 13:00	Discussion followed by Chairperson's summary
13:00 – 15:00	Lunch break
15:00	Working Session 3: Board Room A, M Building, VIC The Global Nuclear Safety Framework
Chairperson: Scientific Secretary:	R. Meserve, Chairperson, International Nuclear Safety Group (INSAG) G. Caruso, Division of Nuclear Installation Safety, Department of Nuclear Safety & Security, IAEA
15:00	Opening remarks by the Chairperson
15:00 – 18:00	Review of the Existing Framework of International Arrangements
15:10 – 15:30	A.–C. Lacoste, President, Nuclear Safety Authority, France
15:30 – 15:50	L. Echávarri, Director General, OECD/NEA
15:50 – 18:00	Panel 1: R. Jammal, Executive Vice President and Chief Regulatory Officer, Canadian Nuclear Safety Commission, Canada B. Mackeson Mkhize, Chief Executive Officer, National Nuclear Regulator, South Africa

	Liu Hua, Director General, National Nuclear Safety Administration, China
16.15 – 18.00	Discussion followed by Chairperson's summary

Thursday, 23 June 2011

10.00 – 13.00	Working Session 3 (cont'd): Board Room A, M Building, VIC Possible Ways for Strengthening the Global Nuclear Safety Framework
10.00 – 10:20	R. Meserve, Chairperson, International Nuclear Safety Group (INSAG)
10.20 – 10:40	J. Laaksonen, Chairperson, Western European Nuclear Regulators' Association
10.45 – 13:00	Panel 2: N. Pelzer, Honorary President of the International Nuclear Law Association (INLA) O. Mykolaichuk, Chairperson, State Nuclear Regulatory Committee, Ukraine P. Jamet, Commissioner, Nuclear Safety Authority, France
11.10 – 13.00	Discussion followed by the Chairperson's summary
13.00 - 15.00	Lunch break
Afternoon:	Preparation of the Working Sessions' Summaries

Friday, 24 June 2011

10.00-12.00 Plenary Session

- Presentation of the summaries of the Working Sessions by the Chairpersons
- Closing Statement by the Director General
- Closing remarks by the President of the Conference

2011-06-17

Annex IV

IAEA FACT FINDING EXPERT MISSION

Mr WEIGHTMAN, Michael William Team Leader	United Kingdom
Mr JAMET, Philippe Deputy Team Leader	France
Mr GODOY, Antonio	Argentina
Mr GUERPINAR, Aybars	Turkey
Mr GORYACHEV, Alexander Valentinovich	Russian Federation
Mr CHAI, Guohan	People's Republic of China
Ms UHLE, Jennifer	United States of America
Mr SUNG, Key Yong	Republic of Korea
Mr CHANDE, S. K.	India
Mr LUX Ivan	Hungary
Mr SUMARGO, Dedik Eko	Indonesia
Mr LENTIJO, Juan Carlos	Spain
Mr LYONS, James Edward	IAEA
Mr SAMADDAR, Sujit Kumar	IAEA
Mr BRADLEY Jr, Edward Eugene	IAEA
Ms NAMMARI, Nadia	IAEA
Mr WEBB, Gregory Paul	IAEA
Mr PAVLICEK, Petr	IAEA
Mr MORITA, Shin	IAEA