

## Annex IV

### Summary Report of the 5<sup>th</sup> Review Meeting of the Contracting Parties to the Convention on Nuclear Safety

**4-14 April 2011  
Vienna, Austria**

1. The 5<sup>th</sup> Review Meeting of the Contracting Parties pursuant to Article 20 of the Convention on Nuclear Safety (Convention) was held at the Headquarters of the International Atomic Energy Agency (IAEA) in Vienna, Austria from 4 to 14 April 2011. The President of the Review Meeting was Mr Li Ganjie of The People's Republic of China. This report summarizes the key issues and challenges, common to many Contracting Parties and identified during this Review Meeting. While as of today, all countries operating nuclear power plants are Contracting Parties to the Convention, the Contracting Parties encouraged countries that are embarking on, or are intending to embark on a nuclear power programme to become party to the Convention.
2. The observations and conclusions of this report are based on the discussions held in connection with the peer review of National Reports and presentations of Contracting Parties in their respective Country Groups.
3. The 5<sup>th</sup> Review Meeting was the first major international nuclear safety meeting following the events at the Fukushima Daiichi Nuclear Power Plant caused by the earthquake and tsunami on March 11, 2011 and accordingly discussions around this issue influenced the Meeting. More particularly, the President and the two Vice-Presidents identified several issues as being pertinent to the accident as set out in Section C below.
4. Further, Contracting Parties agreed to issue a statement also reproduced in Section C below, and to analyse the relevant issues of the accident, inter alia, at an Extraordinary Meeting of Contracting Parties to be held in 2012.
5. Finally, the Contracting Parties agreed that National Reports for future Review Meetings should include the response of the Contracting Parties to any lessons emerging from the Fukushima Daiichi accident, including any potential additional measures to help prevent a recurrence of such an accident. Any necessary changes to severe accident management or mitigation arrangements should also be included in future National Reports.

#### **A. Background**

6. As of 4 April 2011, 71 States and one regional organization of an integration or other nature have become Contracting Parties of the Convention, which entered into force on 24 October 1996. Sixty-one of the 72 Contracting Parties participated in the Review Meeting, these were: Argentina; Armenia; Australia; Austria; Belarus, Belgium; Brazil; Bulgaria; Canada; Chile; China; Croatia; Cyprus; Czech Republic; Denmark; Estonia; Finland; France; Germany; Greece; Hungary; Iceland; India; Indonesia; Ireland; Italy; Japan; Kazakhstan; Republic of Korea; Latvia; Lebanon; Lithuania; Luxembourg; Malta; Mexico; Netherlands; Nigeria; Norway; Pakistan; Peru; Poland; Portugal; Romania;

Russian Federation; Senegal; Singapore; Slovakia; Slovenia; South Africa; Spain; Sweden; Switzerland; The Former Yugoslav Republic of Macedonia; Tunisia; Turkey; Ukraine; United Arab Emirates; United Kingdom; United States of America; Vietnam; and EURATOM. Pursuant to Article 24.2 of the Convention, the OECD/NEA attended as an observer.

7. Seven and half months before the Review Meeting, Contracting Parties submitted National Reports containing details on how they meet the obligations of the Convention. The Contracting Parties subsequently reviewed each other's reports, and then posed written questions and comments. At the Organizational Meeting, held in September 2009, Contracting Parties organized themselves into six Country Groups, each group including countries with nuclear power programmes of different sizes, as well as countries not having any Nuclear Power Plants. Specific clarification was requested on certain issues identified by Contracting Parties during the 4<sup>th</sup> Review Meeting.
8. Eight Contracting Parties did not submit a National Report, namely Bahrain; Bosnia and Herzegovina; Jordan; Kazakhstan; Libyan Arab Jamahiriya; Mali; Saudi Arabia; Sri Lanka. Eleven Contracting Parties, namely Bahrain, Bangladesh, Bosnia and Herzegovina, Jordan, Kuwait, Libyan Arab Jamahiriya, Mali, Republic of Moldova, Saudi Arabia, Sri Lanka, Uruguay, did not attend the Review Meeting.

#### **B. Contracting Parties actions regarding the Fukushima Accident**

9. There was agreement among the Contracting Parties that a specific statement should be made by Contracting Parties in response to the Fukushima Daiichi accident. There was broad consensus that this statement should reaffirm the objectives of the Convention, include a commitment to identify and act on the lessons from the accident, support the IAEA's continuing role in the area of nuclear safety – specifically noting the June 2011 Ministerial Conference, and finally include a commitment to hold an Extraordinary Meeting in 2012 on the Fukushima Daiichi accident.
10. Accordingly, the Contracting Parties adopted the following statement:

*The Contracting Parties expressed their deepest condolences to the Japanese people for the losses they have suffered as a result of the devastating earthquake and tsunami. The Contracting Parties pay tribute to the countless acts of heroism and selflessness of the Japanese people in addressing the consequences of the Fukushima Daiichi nuclear accident.*

*Japan is not alone in its hour of need. The Contracting Parties affirm their solidarity with the Japanese people and continue to offer support to the Japanese in their efforts to respond to the nuclear accident at the Fukushima Daiichi power plant.*

*The international community recognizes the significance of the Fukushima nuclear accident, which highlights the need to consider new challenges and underlines the paramount importance of safety in the use of nuclear energy.*

*The Contracting Parties reaffirm their commitment to the objectives of the Convention on Nuclear Safety: to achieve and maintain a high level of nuclear safety worldwide through the enhancement of national measures and international*

*co-operation; to establish and maintain effective defences in nuclear installations against potential radiological hazards; and to prevent accidents with radiological consequences and to mitigate such consequences should they occur.*

*The Contracting Parties are committed to draw and act upon the lessons of the Fukushima accident. In line with their national responsibilities, all Contracting Parties are already carrying out reviews to ensure the continued safety of their existing and planned nuclear power plants and are committed to taking prompt actions as lessons are learned. It is understood that the lessons learned process cannot be completed until sufficient additional information is known and fully analysed. Japan has committed to provide this information as soon as possible.*

*The IAEA has a statutory function to establish safety standards. Upon request, the IAEA also facilitates the provision of international assistance to a State facing a nuclear or radiological emergency. While recognizing their national responsibilities, the Contracting Parties are committed to the continuing important role of the IAEA in the area of nuclear safety. The Contracting Parties welcome the initiative by the Director General of the IAEA to convene a Ministerial Conference on Nuclear Safety from June 20 to 24 2011 in Vienna. The Contracting Parties support the Director General's aims of the conference that "will provide an opportunity to make an initial assessment of the Fukushima accident, consider lessons that need to be learned, help launch a process to strengthen global nuclear safety and consider ways to further strengthen the response to nuclear accidents and emergencies." The Contracting Parties are committed to actively contribute to this process.*

*The Contracting Parties will hold a dedicated meeting in 2012 on the Fukushima accident. The aim of the meeting is to enhance safety through reviewing and sharing lessons learned and actions taken by Contracting Parties in response to events of Fukushima and to reviewing the effectiveness and, if necessary, the continued suitability of the provisions of the Convention on Nuclear Safety.*

11. The Extraordinary Meeting will be conducted as a focused review meeting. All officers from the 5<sup>th</sup> Review Meeting will serve in their current capacity for this Extraordinary Meeting, utilizing the same Country Groups. Also, to support this Extraordinary Meeting, a short and concise National Report will be developed by each Contracting Party. This report shall be submitted three months prior to the meeting to the Secretariat via the Convention secured website for peer review by other Contracting Parties.
12. In addition, in order to stimulate discussion on the Fukushima Daiichi accident, the President of the 5<sup>th</sup> Review Meeting requested that the following nine topics be addressed in the Review Meeting, as far as possible, in the Country Group presentations:
  1. Nuclear power plant design against external events;
  2. Offsite response to emergency situations (e.g. station blackout);
  3. Emergency management and preparedness following worst case accident scenarios;
  4. Safety consideration for operation of multi-units at the same Nuclear Power Plant site;
  5. Cooling of spent fuel storage in severe accident scenarios;
  6. Training of Nuclear Power Plant operators for severe accident scenarios;

7. Radiological monitoring following Nuclear Power Plant accident involving radiological release;
  8. Public protection emergency actions; and
  9. Communications in emergency situations.
13. These topics and several others concerning accident mitigation were discussed to varying degrees among the Contracting Parties in the Country Group presentations, based on available information. The importance of provisions and procedures to cope with severe accidents was confirmed, for example, several Contracting Parties with operating Nuclear Power Plants reported that they have hydrogen mitigation, additional backup emergency power supply systems and residual heat removal means installed in their plants or are in the process of doing so.
14. Many Contracting Parties reported on their plans and initial actions based on the available information from Japan on the accident progression, radiological measurements and environmental data. Japan affirmed that it would provide thorough information as it becomes available.
15. Several Contracting Parties started immediately to assess the implications for their facilities with the information that is currently available. A range of early actions were reported to re-examine the safety margins for Nuclear Power Plants when subjected to extreme external events and any resultant postulated severe accidents.
16. Many Contracting Parties reported difficulties to provide the media and the public with prompt and reliable information. Accurate factual information needs a timespan to be thoroughly analysed which often led to speculation and unbalanced reporting.

### **C. Overview of the Review Process**

17. The primary objective of the Convention is to achieve and maintain a high level of nuclear safety worldwide, through the enhancement of national measures and international cooperation. The Review Meeting is one of the principal means by which this objective is achieved.
18. The Convention sets down three main obligations on Contracting Parties:
- a. Prepare and submit a National Report for peer review by other Contracting Parties and to respond to the written questions submitted by other Contracting Parties;
  - b. Attend the meetings of Contracting Parties and be represented at least by one delegate; and
  - c. Participate actively in the review process in order to allow other Contracting Parties to discuss the National Report and seek further clarification.
19. The main purpose of the Review Meeting is to review nuclear safety matters relevant to each Contracting Party. This was done by considering the steps and measures taken, those

that are in progress and those that are planned to implement the obligations on Contracting Parties as stipulated in Chapter 2 of the Convention.

20. The Contracting Parties noted the review process was not intended to review the safety of individual nuclear installations. Furthermore, the Contracting Parties also noted that they had to rely on the accuracy and completeness of the information provided in the National Reports and in the responses provided to the questions and comments raised.
21. For the purpose of the Review Meeting, the Contracting Parties were organized into predetermined Country Groups. During the 5<sup>th</sup> Review Meeting, these Country Groups met for four and one half days to discuss each National Report within that Group. Each Contracting Party was obliged to provide answers to the questions raised in the discussion from both the Contracting Parties within that Group and from other interested Contracting Parties.

#### **D. General Observations**

22. A high degree of compliance with the provisions of the Convention was reported by the Contracting Parties in the National Reports.
23. The Contracting Parties dedication to further enhancement of nuclear safety worldwide through actions to evaluate the Fukushima accident in Japan, identify lessons, and take appropriate actions, is consistent with these obligations under the Convention.
24. During the Review Meeting, each Country Group review identified multiple observations, good practices, challenges and suggestions as summarized in Section F. below.

#### **E. Matters arising during the Review Meeting**

##### **Regulatory Framework**

25. Many Contracting Parties expressed concern regarding the human and financial resources available and their ability to recruit and train sufficient numbers of staff to meet the needs of the regulatory body. This is a challenge that will continue to grow, particularly for those Contracting Parties who foresee an expansion of their nuclear programme, for those with existing ageing Nuclear Power Plants, as well as for those embarking on nuclear programmes. In response to these challenges, some Contracting Parties reported enhanced recruitment policies to attract a new generation of experts and also reported on the implementation of enhanced knowledge management systems.
26. Several Contracting Parties reported on ongoing work for the establishment of a legislative framework that provides for the de jure independence of the regulatory body.
27. Contracting Parties constructing new Nuclear Power Plants reported on the challenges of providing regulatory assessment of new designs and oversight of construction and commissioning of Nuclear Power Plants.
28. Several Contracting Parties reported a trend towards harmonization of their national safety standards with the IAEA safety standards.

29. Several Contracting Parties reported on the challenges associated with assessing the safety of digital instrumentation and control systems and the need to exchange knowledge and experience among regulators on this issue.

### **Nuclear Power Plant Designs**

30. Some Contracting Parties have focused on ensuring that Nuclear Power Plant design information and the necessary technical expertise is retained in the country for both domestic and non-domestic suppliers of Nuclear Power Plants. The establishment of a design organization to achieve this aim was identified as a good practice.
31. Some Contracting Parties are actively keeping in contact with foreign operators and suppliers, with an objective to improve the imported technology and to implement improvements also at the operating Nuclear Power Plants.

### **Peer Reviews**

32. Many Contracting Parties have conducted or are requesting peer reviews of the effectiveness of their regulatory framework under the auspices of the IAEA Integrated Regulatory Review Service (IRRS). Contracting Parties from the European Union have reported on their intention to invite IRRS missions in fulfilment of an obligation for periodic peer reviews under the European Directive on Nuclear Safety.
33. Many Contracting Parties reported on the extensive use of reviews by peers from independent organizations and experts as a part of their practice to support the objectives of the Convention and reflect operating experience, including good practices. The results of these reviews have been reported in National Reports and discussed during the Country Group sessions.
34. It was recognized that such voluntary external peer reviews, both at Nuclear Power Plants and of the regulatory framework, provide valuable findings by which safety can be improved. The reviews also serve as a means of exchanging information between peers on a range of issues relevant to safety. In addition, Contracting Parties reported on the value of the self-assessments carried out in preparation for the peer reviews. These external peer reviews are entirely in accord with the objectives of the Convention and were encouraged.

### **Transparency and Communication**

35. Many Contracting Parties reported on their policies of openness and transparency and effective engagement with the public and other stakeholders.

### **Periodic Safety Review and Long Term Operation**

36. The adoption of Periodic Safety Reviews is a common tool used by many Contracting Parties. The need to make safety improvements on the basis of the Periodic Safety Review results was also prevalent, although there were differing approaches reported in identifying necessary safety improvements. Several Contracting Parties reported on programmes aimed at verifying safety for long term operation.

37. Several Contracting Parties reported on their often extensive programmes for Nuclear Power Plant safety upgrades and ageing management programmes. Some Contracting Parties have required back fitting Nuclear Power Plants to the latest technology, when technically feasible.

### **Siting**

38. Issues were discussed related to consulting Contracting Parties in the vicinity of a proposed Nuclear Power Plant, notably on the provision of necessary information upon their request. The transmission of such information is necessary in order to facilitate management of emergency preparedness and response and for the Contracting Parties to make their own assessment of the likely safety impact on their own territory.
39. With many Contracting Parties planning new Nuclear Power Plants, there is a need to review the adequacy of site selection requirements according to IAEA Safety Standards, as appropriate. In particular Contracting Parties should better take into account natural disasters. This should also include the likely safety impact of a proposed nuclear installation on individuals, society and the environment.

### **Countries embarking on Nuclear Power Plant Programmes**

40. Several Contracting Parties are planning to embark on building Nuclear Power Plants for the first time. The challenge identified for these Contracting Parties was to establish the necessary legal, regulatory and other infrastructural elements and personnel numbers and competences in all areas related to siting, constructing, operating, and decommissioning and regulating any proposed Nuclear Power Plants. In particular, the importance of strong early governmental support was emphasized in connection with the establishment of the regulatory body. Some Contracting Parties reported on a comprehensive approach for the development of nuclear regulatory infrastructure and power programme.

### **Emergency Preparedness and Response**

41. Several Contracting Parties reported on multilateral and bilateral agreements and coordination of emergency preparedness measures with neighbouring countries. Some Contracting Parties without Nuclear Power Plants reported on the need to develop or strengthen national emergency plans, including radiation monitoring and protection to respond to events outside their national borders but also noted that this, in turn, would require complete and transparent sharing of information by neighboring countries.
42. Some Contracting Parties proposed to harmonize the approach for decision making in emergency situations, including with their neighbors.

### **Operating Experience**

43. Many Contracting Parties reported that they considered the use of operational feedback as a key issue for maintaining nuclear safety. Several Contracting Parties reported the review of national and international operational experience to inform decisions concerning design changes and plant modifications to Nuclear Power Plants. Some

Contracting Parties reported that operational experience training programmes have been implemented to improve knowledge and skills in event investigation and root cause analysis. Some Contracting Parties reported that operational experience feedback has been incorporated into national legislation.

44. Many Contracting Parties have conducted or are requesting peer reviews of operational safety at their operating Nuclear Power Plants such as the IAEA's Operational Safety Review Team as well as those conducted by WANO and INPO. The results of these reviews have been reported in national reports and discussed during the country group sessions.

### **Human and Organizational Factors**

45. There was general agreement on the nuclear safety importance of continuing to promote an effective safety culture, including human and organizational factors. Several Contracting Parties reported on their programmes regarding safety culture, including enhancing evaluation and developing approaches for regulatory oversight.
46. Several Contracting Parties reported on human performance improvement programmes to further promote nuclear safety. These programmes include, staff training, error prevention tools and human-machine interface considerations.
47. Some Contracting Parties reported on how their continuing efforts to:
  - a) Analyze the underlying trends for events of low safety significance; and
  - b) Performance indicators can help improve human performance.

### **Other Issues**

48. Some Contracting Parties reported increased attention to information security issues including updating of legislation, and an increased number of personnel in the area of information security.
49. A few Contracting Parties reported, with due consideration to enhance safety, on the evaluation and response to other issues such as cyber security threats and airplane crashes, including the implementation of new policies and regulations promulgated.