

## Convention on Nuclear Safety

First Review Meeting of the Contracting Parties 12-23 April 1999  
Vienna, Austria

### SUMMARY REPORT

#### General background

1. On April 12 1999, 50 states had ratified the Convention on Nuclear Safety, which had entered into force on October 24, 1996. The First Review Meeting pursuant to Article 20 of the Convention was held at the headquarters of the International Atomic Energy Agency (IAEA), being the Secretariat under the Convention, in Vienna, 12-23 April 1999. The meeting was chaired by Mr. Lars Högberg, Director General of the Swedish Nuclear Power Inspectorate (SKI).
2. 45 Contracting Parties participated, namely: Argentina, Armenia, Australia, Austria, Belarus, Belgium, Brazil, Bulgaria, Canada, Chile, China, Croatia, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan, Republic of Korea, Latvia, Lebanon, Lithuania, Luxembourg, Mexico, the Netherlands, Norway, Pakistan, Peru, Poland, Portugal, Romania, Russian Federation, Slovakia, Slovenia, South Africa, Spain, Sweden, Switzerland, Turkey, Ukraine and the United Kingdom. The United States of America, who ratified the Convention on April 9, 1999 and thus, pursuant to Article 31, could not participate as a full Contracting Party at this Review Meeting, was invited to attend the final plenary sessions. The Nuclear Energy Agency of the OECD was invited to attend as an observer.
3. Six months before the Review Meeting, Contracting Parties submitted National Reports on steps and measures taken to implement Convention obligations. In the following months the Contracting Parties reviewed each other's reports, and exchanged written questions and comments. At the Review Meeting, Contracting Parties organised themselves into six country groups, each group including countries with nuclear power programmes of different sizes, as well as countries not having nuclear power reactors. The country groups met for six days and discussed in depth each National Report, each Contracting Party receiving answers to the questions they had put, these answers providing additional information on the steps and measures taken in each country.
4. Three Contracting Parties, namely Bangladesh, Mali and the Republic of Moldova did not comply with the basic obligations of the Convention to submit a National Report and attend the Review Meeting. Singapore submitted a National Report but did not attend the meeting.

## **Observations on the achievement of the general objectives of the review process**

5. The Contracting Parties recalled that the main purpose of the meeting was to review the national nuclear safety programme of each Contracting Party; focusing on the steps and measures already taken and in progress to implement the obligations as stipulated in Chapter 2 of the Convention. The stated objective of the Convention is to achieve and maintain a high level of nuclear safety worldwide, through the enhancement of national measures and international co-operation.

6. The Contracting Parties noted that it was not their task to review the safety of individual nuclear installations. Also, the Contracting Parties noted that the review had to rely on the accuracy and completeness of the information provided by each country in its National Report and in its answers to the questions asked of it.

7. The Contracting Parties noted that this Convention entails two basic commitments by each Contracting Party:

- To prepare and make available a National Report including a self-assessment of steps and measures already taken and in progress to implement the Convention obligations; and
- To subject its National Report, and the nuclear safety programme it describes, to a peer review by the other Contracting Parties, and to take an active part in that review and in the review of the reports of other Contracting Parties.

Thus, in summary, being a Contracting Party to this Convention entails a commitment to a continuous learning and improving process, something which is a key element of a high-quality safety culture. As a part of this learning process, it was considered to be good practice to provide additional information in future reports on those topics and issues on which particular interest was expressed during the review process at this meeting.

8. The Contracting Parties noted that as a consequence of the incentive character of the Convention, an important objective of the review process would be to observe and take note of successive improvements, where appropriate, in the implementation of Convention obligations. Consequently, this first Review Meeting could be regarded as a base-line for such observations at future meetings, as well as providing an opportunity to improve review procedures for subsequent meetings, based on lessons learned.

9. The Contracting Parties observed that the National Reports submitted were in most cases of high quality and provided ample information on steps and measures taken and in progress to implement the obligations stipulated in Chapter 2 of the Convention. All questions asked by Contracting Parties in the review process were addressed by respondent Parties. The discussions in the Country Group sessions and the Plenary sessions were open and constructive, illuminating issues of special interest, providing additional insights with regard to national safety programmes, and generally demonstrating the strong commitment of each participating Contracting Party to the review process under the Convention and to its safety objectives.

10. The Contracting Parties noted that the reports, questions and answers exchanged in connection with this Meeting provided them with a unique worldwide overview of 45 national nuclear safety programmes.

11. The Contracting Parties noted that they were all given reasonable opportunity to discuss the National Reports submitted by other Contracting Parties, and to seek clarification of such reports, as stipulated in Article 20.3 of the Convention.

12. The Contracting Parties noted that the Convention and the Review Meeting had also proved to be of value to Contracting Parties without nuclear power reactors, for reasons such as having reactors near their borders, or planning a nuclear programme, or wishing to convince themselves of the safe use of exported nuclear material.

13. The Contracting Parties furthermore observed that the self-assessment process, starting with ratifying the Convention and preparing a National Report, had already initiated steps and measures by many Contracting Parties to improve implementation of their obligations.

14. The Review Meeting agreed on the following observations with regard to steps taken and in progress to implement specific obligations of the Convention:

### **Observations on external factors of special interest**

15. Contracting Parties took note of trends in several countries with regard to factors and circumstances external to the nuclear safety programme as such, but which still could have a significant impact on nuclear safety if not counteracted by appropriate actions. Such factors included:

- Deregulation of electricity markets and associated ownership changes and increased competition;
- Maintaining competence in industry, regulators and research institutions, especially in countries with small nuclear programmes, or where phasing out nuclear power is part of the national energy policy, or where the use of nuclear power is reduced for other reasons;
- Lack of sufficient economic resources in some countries.

It was noted that several Contracting Parties had taken action to meet the challenges created by such factors. Contracting Parties were invited to provide further information in their next National Reports on developments with regard to these factors and circumstances.

### **Observations on the legislative and regulatory framework (Articles 4, 7, 9-10)**

16. The legislative framework is well established in most countries.

17. After political changes in some countries, the new Governments had taken steps to implement new national systems. In these cases, Contracting Parties would welcome information in the next National Report, demonstrating that there are no gaps as a result of this transition and that the new system is complete and consistent.

18. Some countries who started their nuclear programme some decades ago have found that their legislation now needs updating. Some countries also have to update their regulations to include new developments such as ICRP60. For the next Review Meeting, information on these updatings would be welcomed.

## Observations on the regulatory body (Article 8)

19. All Contracting Parties had established regulatory bodies. For some countries questions were raised as to the effective independence, administrative position, and the human and financial resources of their Regulatory Bodies.

20. The effective independence of regulatory bodies is considered an essential element in nuclear safety. Generally, the regulatory bodies of Contracting Parties appeared to act in a clearly independent way in a "de facto" sense, relying on a well established management policy of the regulatory body. It was noted that in several cases, it would be desirable, and in some cases even necessary, to improve the "de jure" independence of the regulatory body as a complement to its "de facto" status, inter alia to facilitate future evolution of the regulatory body.

21. The status and position of the regulatory bodies remains an important topic to be dealt with in future National Reports and Review Meetings. Special attention should be given to the development of assured human and financial resources. This focus is especially needed in those countries where the level of salaries that the regulatory body can offer to its staff is very low as compared to the salaries offered to staff of equivalent levels in the industry.

22. Contracting Parties reported on their national regulatory strategies. The advantages and limitations of regulations of a detailed prescriptive nature as compared to less prescriptive, goal oriented approaches and the complementary use of risk based assessments were discussed. Although no preferable approach was identified, some countries have agreed to review their experience and report at the next Review Meeting.

23. It was noted that there is an interest in continuing an exchange of experience on the regulatory actions to be taken to address management issues relevant to nuclear safety.

24. The importance of international co-operation between regulatory bodies for the enhancement of nuclear safety through bilateral and multilateral mechanisms was emphasized by all Contracting Parties. In particular, international peer reviews were considered as very effective tools for the support of regulatory improvement programmes. The importance of international co-operation was emphasized as a way to share common experiences and exchange of information. Regulatory bodies in countries having nuclear programmes of limited size found international co-operation particularly beneficial. International co-operation will also enable the regulatory body to decide, when considered useful, on whether and how to contract technical support from foreign organisations. It was stressed that countries phasing out nuclear energy should nevertheless continue their support for maintaining and improving safety in other countries.

25. It was noted that some Contracting Parties are implementing quality assurance systems in relation to the activities performed by the regulatory body. An interest in continuing an exchange of experience on this topic was expressed.

26. Even if this subject is not formally addressed in the Convention, some countries emphasized how a clear, open and proactive policy of providing information to the public on regulatory requirements, decisions and opinions, contributes to the establishment of an independent, competent and credible regulatory body.

27. Contracting Parties would welcome additional information in the next National Reports regarding:

- “De jure” and “de facto” status of regulatory bodies;
- Experience gained in implementing different regulatory strategies;
- Actions taken to monitor safety management;
- Implementation of modern quality assurance systems for regulatory activities;
- International co-operation on a bilateral and multilateral basis among regulatory bodies.

## **Observations on the safety of nuclear installations**

### **Existing nuclear installations (Article 6 and others)**

28. Many countries have carried out or are carrying out detailed assessments of the safety status of their existing nuclear power plants, particularly older plants designed and constructed to earlier standards. These assessments can be in the form of critical self-assessments with outside assistance, peer reviews, or in-depth evaluations involving experts from other countries or international bodies. Some countries require periodic safety reviews as part of their regulatory process. Further information on safety assessments is contained in the following sections of the report.

29. These assessments have been used to identify safety upgrades which improve the safety of the installations. Probabilistic analysis has been used in several countries to identify and prioritise safety upgrades. In many countries substantial upgrades have been completed. Nevertheless, several countries have significant safety improvements still to be implemented. Special attention should be given to the safety level reached after the improvements, and the subsequent assessment for licensing of continued operation.

30. Measures for severe accident management are in various stages of development and implementation in many countries. It was noted that different approaches are used, e.g. with regard to improving the capability of the containment to cope with severe accidents. Further information on these programmes in the next National Reports would be welcomed.

31. The availability of financial resources varied between the countries with safety improvement programmes under way. Some countries had adequate financing provisions in place, while others indicated that difficulties existed in obtaining the required financial resources.

32. It was observed that several safety improvement programmes used technology imported from sources different than those which provided the original design, and that in such cases, special attention to compatibility was required.

33. It was noted that some plants designed to earlier standards, if not upgraded would have safety levels significantly lower than those designed to present standards. In this connection, it was pointed out that it would be necessary to adopt the measures provided for in Article 6, namely that the Contracting Party shall ensure that all reasonable practicable improvements are made as a matter of urgency to upgrade the safety of the nuclear installation. If such upgrading cannot be achieved, plans should be implemented to shut down the nuclear installations as soon as practically possible. The timing of the shut-down may take into account the whole energy context and possible alternatives as well as the social, environmental and economic impact.

34. Further and more detailed information on the status of the safety improvement programmes would be welcomed in the next National Reports, with demonstration of progress achieved by safety assessments of the improved installations. A statement on whether the original workplan and schedule have been implemented, with reasons why this has not been possible, if that is the case, would also be appreciated.

#### **Financial and human resources - national infrastructure (Article 11)**

35. It was noted that a sound economic basis of the nuclear utility owning and operating the plant is a prerequisite for financing an effective safety programme. In the present changing energy market in many countries, it is important that utility management as well as regulatory bodies understand the potential effects on safety of severe financial constraints.

36. For countries with an expanding nuclear programme, adequate planning for human resources at the utility and the regulatory body must take place, observing appropriate lead times, especially if there is a diversity of reactor designs.

37. Potential safety issues linked to the stagnation or shrinking of nuclear programmes in several countries were identified, such as:

- Decrease of the global national nuclear technology knowledge base will require increased international collaboration;
- Special measures that may be required to maintain critical competence within the industry due to retirement of many people who contributed to the design and start up of nuclear power plants and the difficulty of attracting young people into the nuclear energy field;
- Changes in national energy policy, may also require special measures to counteract loss of motivation and loss of personnel;
- Obsolescence of equipment will require new technological solutions;
- Decrease in the number of certified manufacturers will require special measures with regard to equivalence of industry codes and standards; and
- Decrease of capacity to support nuclear safety internationally.

#### **Assessment and verification of safety (Articles 12-14 and 17-19)**

38. In their review with regard to this section of the Convention, the Contracting Parties identified a number of significant developments and trends. The following areas were considered of particular interest.

39. In addition to traditional deterministic assessment methods, Probabilistic Safety Analyses (PSA) are increasingly being used. The Meeting noted that a proper balance between both approaches is essential.

40. In many countries Periodic Safety Reviews (PSR) are conducted on a regular basis, ten years being a typical interval. The PSR often includes a re-evaluation of the site characterisation, a seismic re-evaluation, consideration of other external factors and an ageing management programme, in addition to the usual update of the safety analysis and a review of operating experience.

41. Operational experience feedback systems, incorporating information on international experience, are present in all countries.

42. External peer reviews of operational performance (IAEA, WANO, etc.) are widely used and the implementation of their recommendations is in some cases monitored by the regulatory body.

43. Most countries make efforts to continuously review and update the safety case (safety analysis report, procedures and other relevant technical documentation). For older generation nuclear power plants the scope of the initial safety analysis was limited by national regulatory requirements in force at the time the plants were built. In some countries, work on a more comprehensive safety analysis should be accelerated, and reports on results would be welcomed in the next National Reports. For some of these plants, safety analysis reports according to modern standards do not exist and efforts are underway to complete them in accordance to international practice, with the help of foreign countries.

44. Activities are taking place in most countries to improve safety culture at different levels of the organizations. Special initiatives in some countries to promote safety culture at all levels were reported.

45. Many countries are revising their Quality Assurance programmes based on best international practices.

46. New subjects for safety assessment are emerging, such as the introduction of software based safety systems, etc., requiring new assessment tools.

47. It was noted that in some cases the containment function at existing nuclear power plants would not meet current standards. Therefore, additional information would be welcomed in the next National Reports regarding evaluation of the performance and efficiency of the confinement function at existing nuclear power plants. Such information should cover evaluation of the original design basis, impact of ageing, modifications with regards to the original design, and, finally, evaluation of its capability to cope with events beyond the design basis, including severe accidents.

48. Other topics on which additional information would be welcomed in the next National Reports include Probabilistic Safety Assessments, Periodic Safety Reviews and updating of safety analysis reports.

### **Radiation protection (Article 15 and 19 (viii))**

49. The ALARA principle (As Low As Reasonably Achievable) is implemented in all countries with regard to doses and releases. The Radiation Protection System recommended in ICRP 60 is already applied or is planned to be applied by all countries. Data provided show a general reduction in the collective doses and in releases.

50. Contracting Parties would welcome additional data in the next National Reports on the evolution of trends in collective doses and effluent releases.

### **Observations on emergency preparedness (Article 16 and 17 (iv))**

51. Integrated emergency response plans are in place in all countries with a nuclear power programme. Response plans are tested at varying frequencies. International exercises are performed on a regular basis. Many countries without nuclear power plants have also developed extensive monitoring and response capabilities. It was observed that bilateral agreements with neighbouring countries regarding emergency preparedness should be completed, in those cases where nuclear installations are located in the vicinity of national borders and such a mechanism is not in place. In the next National Reports, information would be welcomed on improvements made from the results of national and international exercises.

### **Final conclusions**

52. The Contracting Parties concluded that the review process had proven to be of great value to their national nuclear safety programmes, starting with the self-assessment involved in producing the national reports followed by the review of national reports by other Contracting Parties, with exchange of questions and comments, and finally the very open discussions at the Review Meeting. The review process thus truly provided learning through international co-operation. Although the review process thus was very successful, especially considering that it was the first of its kind, the Contracting Parties, based on observations made, decided on certain improvements and amendments to the procedural documents providing guidance for the review process. These decisions are recorded in a separate document, the Report of the President of the First Review Meeting.

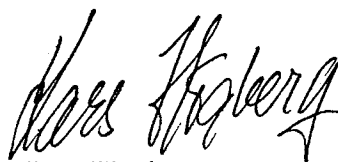
53. The Contracting Parties concluded that the review process had demonstrated the strong commitment by all Contracting Parties to the safety objectives of the Convention. At the same time it was noted that there were variations among Contracting Parties with regard to the levels from which they started implementation of Convention obligations as well as in the resources available nationally for improvement programmes in progress. Even though additional steps are required in order to reach the principal objective of the Convention - to achieve and maintain a high level of safety at all nuclear installations - it is nevertheless noted that all Contracting Parties participating in the Meeting are taking steps in the right direction.

54. The Contracting Parties noted that the review process represented a substantial investment in working time of highly qualified experts. To obtain the most effective benefit from that investment, each Contracting Party would need to evaluate the lessons learned from the review



process. Several Contracting Parties announced that they had already decided to perform such evaluations.

55. Finally, the Contracting Parties reconfirmed their commitment to the objectives and obligations of the Convention, and their commitment to make all reasonable efforts to provide the additional information called for in the next National Reports.

A handwritten signature in black ink, appearing to read 'Lars Högberg', written in a cursive style.

Lars Högberg  
President