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May 20, 2005

MEMORANDUM TO: J. E. Dyer, Director  
Office of Nuclear Reactor Regulation

THRU: David B. Matthews, Director \RA\  
Division of Regulatory Improvement Programs  
Office of Nuclear Reactor Regulation

FROM: Thomas G. Hiltz, Senior Project Manager \RA\  
Policy and Rulemaking Program  
Division of Regulatory Improvement Programs  
Office of Nuclear Reactor Regulation

SUBJECT: TRIP REPORT FOR THE CONVENTION ON NUCLEAR SAFETY (CNS)  
THIRD REVIEW MEETING; APRIL 11-22, 2005; VIENNA, AUSTRIA

On April 11-22, 2005, twelve representatives from NRC headquarters attended the Convention on Nuclear Safety's Third National Report Review Meeting in Vienna, Austria. The CNS Team was led by Commissioner Merrifield and the Executive Director for Operations, Luis Reyes. R. William Borchardt, the Deputy Director of the Office of Nuclear Reactor Regulation, served as the Chairman for one of the six country groups that met throughout the first week of the review meeting. John Tappert, Chief of the Resource Management Branch in NRR, served as a Rapporteur (secretary) for another country group. Janice Dunn Lee, Director of the Office of International Programs, provided support for Commissioner Merrifield's bilateral meetings. The NRC Team covering the various country group sessions included Merrilee Banic of NRR, Thomas Hiltz of NRR, T. J. Kim of OEDO, Renee Li of NRR, Darrell Roberts of NRR, Dave Skeen of Commissioner Merrifield's staff, and Theresa Valentine of NRR. Jim Linville of OIP, who is currently serving as the Nuclear Safety Attache at the permanent US Mission in Vienna, provided support to the U. S. delegation. Two Department of State representatives supplemented the delegation.

The trip report from this activity is attached.

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May be exempt from public release under the Freedom of Information Act (5 U.S.C. 552)	
Exemption number	5
Nuclear Regulatory Commission review required before public release.	
\RA\ Catherine Haney, NRR/DRIP	
Name and organization of person making determination.	
Date of Determination	5/20/05

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The content of this report may be of interest to the Commission and it is recommended that the report be forwarded to the Commission.

Attachments: 1. CNS Third Review Meeting Trip Report  
2. Working Timetable of Third Review Meeting of CNS  
3. Summary Report: Third Review Meeting of the Contracting Parties to the  
Convention on Nuclear Safety  
4. CNS State Department Reporting Cable

cc: M.Cullingford, NRR  
J. Dunn Lee, OIP  
T. Rothchild, OIP  
W. Dean OEDO  
ONSIR/INFOSEC  
P. Magnanelli, NRR

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Package: ML051440505 Memo-ML051440745 Att 1: ML051440755  
Att. 2: ML051440763 Att. 3: ML051440794 Att. 4: ML051440806

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**ATTACHMENT 1: CNS THIRD REVIEW MEETING TRIP REPORT**

**Subject**

NRC delegation participation in the third review meeting of the Convention on Nuclear Safety.

**Dates of Travel and Countries/Organizations Visited**

April 11-22, 2005; International Atomic Energy Agency, Vienna, Austria

**Author, Title, and Agency Affiliation**

Thomas G. Hiltz, Senior Project Manager, NRR

**Other NRC Participants**

- Commissioner Jeffrey Merrifield
- Luis Reyes, Executive Director for Operations
- Janice Dunn-Lee, Director, Office of International Programs
- R. William Borchardt, Deputy Director, Office of Nuclear Reactor Regulation
- James Linville, Nuclear Safety Attache
- John R. Tappert, Branch Chief, NRR
- David L. Skeen, Technical Assistant for Reactors, Office of Commissioner Merrifield
- Merrilee Banic, Project Manager, NRR
- Tae (T.J.) Kim, Senior Technical Communications Assistant, OEDO
- Darrell Roberts, Section Chief, NRR
- Yueh-Li C. (Renee) Li, Senior Mechanical Engineer, NRR
- Theresa Valentine, Project Manager, NRR

**Sensitivity**

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**Background/Purpose**

To represent the United States (US) at the Convention on Nuclear Safety's Third National Report Review Meeting. To participate in the peer review process of other Contracting Parties' national reports and to present the United States National Report for peer review.

**Abstract: Summary of Pertinent Points/Issues**

The US Government delegation to the Third Review Meeting of Contracting Parties to the Convention on Nuclear Safety (CNS) was headed by Commissioner Merrifield. Approximately 100 representatives from over 25 Contracting Parties attended the US presentation given by

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Commissioner Merrifield and EDO Luis Reyes. R. William Borchardt, Deputy Director, Office of Nuclear Reactor Regulation, served as Chairman of Country Review Group VI. John Tappert, Branch Chief, Office of Nuclear Reactor Regulation, served as Rapporteur for Country Review Group IV. The agenda for the Third Review Meeting is contained as Attachment 2.

NRC's participation in the international Convention on Nuclear Safety is an important part of demonstrating how the US Government complies with the articles of the Convention, and provides an indication of our oversight and the extent of our regulatory openness to the international community. In addition, the US delegation gained insights about the status of nuclear safety in other countries. The team's reports from the six country group discussions will be used to shape NRC interaction with these countries and the review of the next CNS national reports.

A strong US presence at the CNS Review Meeting also reinforces the message that the US is keenly interested in nuclear safety worldwide, and that the US places high value on the CNS process commensurate with other major nuclear countries such as France, China, Japan, Russian Federation, Canada, and the United Kingdom. The US nuclear safety program is of keen interest to many Contracting Parties as evidenced by the 266 questions received on the US National Report (the most of any Contracting Party) and the large attendance at the US presentation.

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Pending Actions/Planned Next Steps for NRC

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The Fourth Review Meeting of the Contracting Parties under the CNS will begin on April 14, 2008. NRC efforts to prepare the National Report and participate in the peer review process for the Fourth Review Meeting will begin in mid-2006. Preparation of the National Report will build on previous years' reports and address the themes identified for further discussion at the Third Review Meeting. NRC will likely be called upon to discuss advancements in safety culture/management and risk-informed regulation and present the results of its IRRT self-assessment.

The CNS Team identified the following good practices that should be considered in preparation for the Fourth Review:

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- Including industry perspective in the presentation, potentially by adding an Institute of Nuclear Power Operations (INPO) representative to the delegation;
- Maintaining appropriate NRC representation in each of the six country groups to ask questions and actively participate in the peer review;
- Providing "take-home" materials to the Contracting Parties such as slide printouts, National Reports, Question and Answer reports, and CD-ROMs of reference documents;
- Discussing results of international activities, especially International Regulatory Review Team (IRRT) and Operational Safety Review Team (OSART) missions.

**Points for Commission Consideration/Items of Interest**

The Commission may be interested in all, or part of, the above discussions.

**Attachments**

As stated in the cover memorandum.

**"On the Margins"**

None.

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CNS-RM-2005/08 FINAL

**Convention on Nuclear Safety****Third Review Meeting of the Contracting Parties 11-22 April 2005****Vienna, Austria****SUMMARY REPORT**

This report summarizes the Third Review Meeting of the Convention on Nuclear Safety, which took place from April 11-22, 2005. The observations and conclusions of this report are the results of frank and open discussions based on the national reports and presentations during the peer review process, which were fostered by the incentive nature of the Convention on Nuclear Safety. Consequently, this report discusses the present state of nuclear safety, including existing good practices, challenges and areas for future improvement. An attachment to this summary report contains details on the review process.

Observations on Contextual Factors

It was noted that since the Second Review Meeting, there have been a number of internal and external changes that have impacted the nuclear industry, its regulatory bodies and nuclear safety. These observations are not specifically addressed in the subsequent observations on the Articles of the Convention.

1. The continuing economic deregulation of energy markets has brought significant changes in ownership and operating arrangements of some electrical utilities, including those utilities operating nuclear power plants. Some large companies have acquired plants from smaller companies both within their own country and in foreign countries, and some plant owners have contracted with specialized management companies to operate their facilities. There has been more consolidation and internationalization of the worldwide nuclear industry. Some companies acquiring or intending to build nuclear facilities are not experienced with the challenges of operating nuclear plants.
2. These changes in ownership and management, with pressures to generate profits and compete with other energy sources, bring the challenge of maintaining the priority to safety. However, changes in the structure of the industry can have positive, neutral or negative impacts on the state of safety. These impacts are dependent on the approach of industry and the regulators towards the objective of nuclear safety.
3. Moreover, as was discussed in a panel discussion during the Third Review Meeting, there are a series of challenges facing the nuclear safety leadership of both regulators and operators, including strong safety culture and safety management. The roots of the challenge lie in knowledge management, specifically in the retirement of experienced industry and regulatory executives combined with more executives with non-nuclear backgrounds taking the helm of operating nuclear utilities. This indicates the need for particular attention to leadership factors including specific regulatory frameworks. The panel stressed the need for open dialogue between regulators and industry chief executive officers (CEOs) on these issues.

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4. With almost sixty-five percent of the world's operating nuclear power plants more than twenty years old, decisions are being made on their future status. Programs on ageing management and maintenance and motivation of the work force are important to maintain the safety of nuclear power plants throughout their entire life cycle.
5. In some countries, there have been decisions to close nuclear power programs or specific facilities due either to political decisions or concerns with the safety or economic viability of nuclear plants. In these cases, priority to the maintenance of safety and the motivation of the workforce are important, from the announcement of the closure date through to the end of decommissioning activities.
6. In other instances, energy security policies, opportunities for new energy markets and the need to replace ageing reactors have led to decisions or serious consideration of expansion of nuclear power programs. The priority of safety for new installations in their design, siting, construction and operations will be important.
7. Since the Second Review Meeting, which was held just after the tragic events of September 11, 2001, the security of nuclear installations has received more attention. The Convention on Nuclear Safety does not consider security and physical protection matters but the interface between safety and security at nuclear power plants has been given much attention by States. It should be noted that amendments to the Convention on the Physical Protection of Nuclear Material will be considered at a diplomatic conference in July 2005.
8. Since the Second Review Meeting, the Joint Convention on the Safety of Spent Fuel Management and the Safety of Radioactive Waste Management held its first Review Meeting in 2003. Recognizing the scope of the Joint Convention, the scope of the Convention on Nuclear Safety is limited to the "... storage, handling and treatment facilities for radioactive materials as are on the same site and are directly related to the operation of the nuclear power plant."
9. Also since the Second Review Meeting, Codes of Conduct on the Safety and Security of Radioactive Sources and on the Safety of Research Reactors were approved by the General Conference in 2003 and 2004 respectively. The Third Review Meeting, in clarifying the scope of the Convention on Nuclear Safety, requested that the Director General of the IAEA convene meetings to which all Member States would be invited. The objective of the meetings should be to discuss how best to assure the effective application of the 'Code of Conduct on the Safety of Research Reactors.'
10. Contracting Parties noted that there have been increased efforts by both industry and regulators between Review Meetings to exchange good practices and benchmark plant safety and programs.<sup>1</sup>

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<sup>1</sup> These include the activities of industry organizations such as the World Association of Nuclear Operators (WANO); the activities of regulators via international and regional associations (such as International Nuclear Regulators Association (INRA), Network of Regulators with Small Nuclear Programs (NERS), Western Europe Nuclear Regulators' Association (WENRA), and Nuclear Ibero-American Forum of Regulators (FORO)), and the ongoing activities of the Nuclear Energy Agency (NEA), the European Union (EU) and the International Atomic Energy Agency (IAEA), including its International Nuclear Safety Group (INSAG) and the Commission on Safety Standards (CSS) as well as through its missions such as OSART and IRRTs.

### Observations on Openness and Transparency

11. Contracting Parties agree that openness and transparency with all interested parties are important elements in maintaining confidence and trust in regulatory bodies and in the activities of the operating organizations.
12. Many Contracting Parties reported on good practices, including improved usage of the Internet for near real time communication and transmission of information, as well as for nuclear event databases (e.g., INES) that are open to the public. Others reported on the benefits of instituting low thresholds for informing the general public of information relating to nuclear safety.
13. Many Contracting Parties recognized that it is good practice for National Reports to be available through both the relevant national website of the Contracting Party and the IAEA's website.
14. There was also discussion of the merits of engaging the public, in both technical and licensing processes.

### Observations on Legislative and Regulatory Framework (Article 4 and 7)

15. The establishment and maintenance of strong legislative and regulatory frameworks are essential for global nuclear safety. While many Contracting Parties reported on improvements that have been made in their national legislation or frameworks over the last three years, some countries still need to complete their nuclear legislation. Other Contracting Parties continue to improve their domestic rules and standards on nuclear safety or are in the process of modernizing them. Contracting Parties indicated that priority should be given to this activity.
16. While there was general agreement that legislation and domestic regulatory requirements should take due account of international standards, many Contracting Parties reported challenges in this area. For instance, some Contracting Parties had difficulties both in bringing consistency to their national regulations and codes and in harmonizing these with international standards.
17. Contracting Parties agreed that the IAEA safety standards are useful as a common reference. Many countries make extensive use of IAEA safety standards, which are considered to represent international good practice, in maintaining their domestic regulatory framework and regulations. To this end, many Contracting Parties reported on the progress that they have made over the last three years to harmonize their national requirements with IAEA safety standards.
18. A number of European Contracting Parties reported on their programs in the WENRA framework for upgrading and harmonizing their legislative and regulatory framework using the IAEA safety standards and national best practices as a basis for common reference levels. Reports on these developments from involved European Contracting Parties would be expected at the Fourth Review Meeting.
19. Contracting Parties have recognized the importance of international peer review and enhancing their self-assessment capabilities to identify strengths and weaknesses as well as indicate areas for improvement of the necessary legislative and regulatory frameworks. The IAEA's International Regulatory Review Team (IRRT) methodology has proven to be an effective tool

as reported by some Contracting Parties. Other Contracting Parties indicated that they have requested or are considering requesting IRRT missions, and will report on the experience at the Fourth Review Meeting.

#### Observations on Regulatory Body (Article 8)

20. Like previous Review Meetings, the structure and functioning of regulatory bodies featured prominently in the Third Review Meeting. Many Contracting Parties reported on restructuring of their regulatory bodies and increased authority through legislative changes. Some Contracting Parties reported on receiving increased financial and human resources, while others reported on resourcing difficulties.
21. Contracting Parties are responsible for assuring the maintenance of a competent workforce and for the provision of adequate financial and human resources for the regulatory body. Some regulatory bodies have been negatively impacted by government-wide spending reductions.
22. Some Contracting Parties have taken active steps to improve the human and financial situations of their regulatory bodies. Recruitment and retention successes include competitive salaries, succession planning programs and staff overlap, written guidance to successors, mentoring (or shadowing) of newcomers with experienced staff, and the development of systematic training programs.
23. Recognizing the importance of maintaining competence in nuclear safety, several Contracting Parties indicated that regulatory bodies, with the support of their governments, would be developing and undertaking systematic programs to compensate for expected retirements and loss of knowledge to include support for higher education and training programs as well as enhanced stronger national, regional and/or international research capacity.
24. In general, Contracting Parties are striving to develop new regulatory frameworks and approaches to improve effectiveness and efficiency. There were reports on four developments in this regard. First, in terms of frameworks, steps had been taken in several Contracting Parties to merge regulatory responsibilities, which had previously been separated amongst different agencies into one regulatory body. Second, within the regulatory bodies of some Contracting Parties, there was a convergence towards risk informed regulatory approaches. Third, several Contracting Parties reported on modern management systems being developed within regulatory organizations. Fourth, integrated safety oversight programs including the use of regulatory indicators are being developed.
25. While many Contracting Parties reported that they had begun the process of implementing quality management systems within their regulatory bodies, many also noted the challenges in these tasks. Accordingly, the implementation of quality management systems within regulatory bodies is expected to be reported upon at the Fourth Review Meeting.
26. Some Contracting Parties still face the challenge of clearly defining the responsibilities between more than one regulatory authority or governmental organization involved in the licensing process (e.g., relationships between nuclear and environmental authority).
27. Some Contracting Parties noted, as in previous Review Meetings, the important role of technical support organizations (TSOs) performing safety assessments at the request of

regulatory bodies. In some cases, Contracting Parties have concerns with regard to over-dependence on TSOs.

28. Many Contracting Parties stressed the importance of communication and dialogue between the regulator and the operator. This dialogue and communication, at both senior management and working levels, is important in addressing urgent as well as mid- and long-term safety issues and needs to be based on mutual trust and respect.
29. As was reported at the Second Review Meeting, questions remain as to the effective independence of regulatory bodies in some Contracting Parties. The effective independence of regulatory bodies is considered an essential element in nuclear safety. All Contracting Parties need robust means to ensure that there is no undue pressure or interference on their regulatory bodies. Many regulatory bodies of Contracting Parties appeared to act in a clearly independent way in a *de facto* sense, relying on well established management policies. Nevertheless it was noted that in several cases, it remains desirable to further improve the *de jure* independence of the regulatory body.

#### Observations on Financial and Human Resources (Article 11)

30. Having been identified as an issue for improvement at the Second Review Meeting, some countries who had previously reported difficulties in their operating organizations having the necessary financial resources, had taken active steps and were reporting improvements in these organizations' financial situation.
31. Some Contracting Parties also identified specific good practices, by operating organizations, to maintain competence and to transfer knowledge. These included recruitment and retention of qualified staff, well-defined succession planning and overlap between out-going and incoming staff, quality procedural guidance, mentoring (or shadowing) of newcomers with experienced staff, and the implementation of "systematic approach to training (SAT)."
32. However, with an ageing workforce and increasing international demand for specialized skill sets in nuclear safety, many Contracting Parties identified maintaining and building competence as a serious concern.
33. In maintaining competence, some Contracting Parties described the benefits of attracting expertise and learning lessons from other technical fields.
34. Recognizing the importance of maintaining competence in nuclear safety, several Contracting Parties indicated that their operators would be developing and undertaking systematic programs to compensate for expected retirements and loss of knowledge to include supporting worldwide industry research initiatives. In some cases, the Contracting Parties are assisting through support for higher education and training programs as well as enhanced stronger national, regional and/or international research capacity.

#### Observations on Priority to Safety (Articles 10 and 13)

35. The safe operation of nuclear power plants around the world depends upon a strong and vibrant safety culture that encourages a learning organization and working environments where questioning attitudes are encouraged and real safety issues are communicated and addressed.

36. Contracting Parties recalled the emphasis from the Second Review Meeting to place greater priority on the concepts of quality assurance, safety management, safety culture and long-term operations. Therefore, during the Third Review Meeting the Contracting Parties expanded the more specific concepts of quality assurance and safety culture into the broader concept of safety management systems.
37. Contracting Parties noted that the IAEA, through its safety standards and review missions, is contributing to the coherent translation of these concepts into management guidance that is needed to assure safety.
38. Additionally, it was recognized that safety management programs, more so within operating organizations than regulatory bodies, are essential in ensuring nuclear safety throughout the life cycle of nuclear power plants. In support of this premise, the Contracting Parties recognized the need to incorporate safety management systems into national safety requirements and that these systems should be based on best practice.
39. Many countries described their increased attention, both by the operator and the regulatory body, to safety management issues. Voluntary self-assessments by operators were proving useful as were international assessments (OSART and WANO missions) and seminars in highlighting areas for improvement.
40. Contracting Parties underline that any uncertainty with regard to plant safety arising from new findings need to be handled without delay, according to clearly defined safety management principles and taking into account the estimated risk impact.
41. While much progress was reported in this area, many Contracting Parties highlighted the need to enhance safety culture. In some instances, it was noted that safety culture in nuclear power plants should be strengthened as deficiencies were reported in areas of decision-making, event management and internal communications.
42. Regulatory bodies expressed challenges in securing appropriate attention to safety culture, and other safety management areas (e.g., organizational structure). Most regulatory bodies were of the opinion that efforts should continue to be made to find early warning signs, inferential indicators and ways to promote programs that enhance safety culture and detect the degradation of safety management within operating organizations. In some Contracting Parties, efforts have also been made to address safety culture in regulatory bodies.
43. Into the future, the Contracting Parties are committed to ensuring that comprehensive safety management processes and self-assessments are undertaken by operating organizations. Many safety culture assessment tools and safety management systems, which will be reported at the Fourth Review Meeting, remain under development.

#### Observations on Human Factors (Article 12)

44. As recent operating experience continues to show, human performance and the interface between humans and machines/equipment/components and instrumentation (also known as "man-machine" interface) as well as the interaction between humans play an important role in

nuclear safety. Therefore, it continues to be an area of focus under the Convention on Nuclear Safety.

45. Some Contracting Parties reported on their methodologies for analyzing human factor events, and their acquiring of resources specializing in human factors and organizational assessment. Others reported on the establishment of human performance improvement programs and the sharing of information between operators to enhance human factors understanding and experience base.
46. The operators have principal responsibility for managing human performance. While progress has been made in this area since the Second Review Meeting, operators need to strive to maintain learning environments and operate in an environment which curtails punishment for all but flagrant or deliberate errors. The benefit is the timely identification of human performance errors and the implementation of corrective actions to minimize human factors as a contributor to operating events.
47. Methodologies for analyzing human factor events are being further improved and reports on these improvements may be expected at the Fourth Review Meeting.

#### Observations on Emergency Preparedness (Article 16)

48. Emergency response plans are integral to the safety of workers, the public living in the vicinity of the nuclear power plant and neighbouring border countries, as well as countries that might be affected, in the event of a nuclear event or incident with off-site consequences. Accordingly, Contracting Parties continue to maintain and test, with varying frequencies, emergency response plans. The relevant Contracting Parties also took note of their commitments under the Convention on Early Notification of a Nuclear Accident (1986) and the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency (1986).
49. It is standard practice to develop response plans that are tested on a systematic basis. In some cases, Contracting Parties reported that their emergency programs had been recently modernized or that new legislation had been enacted in this area.
50. Bilateral arrangements, in some cases enshrined into treaties between countries with nuclear power plants and neighboring countries, were recognized as good practices.
51. Contracting Parties continue to improve their emergency preparedness programs as well as the associated exercises. They are striving to make these exercises as realistic as possible, by including all organizations that would be involved in a real event. Contracting Parties are conducting more international exercises and extending the scope of their exercises to other phases of the emergency management cycle, including recovery.
52. Some Contracting Parties continue to find it difficult to enhance their emergency preparedness programs for out-of-country events. Provisions for communicating timely and comprehensive information to neighbouring countries in the case of an accident is the essence of successful implementation of emergency countermeasures in potentially affected countries.
53. Many Contracting Parties reported on further measures that they will be undertaking to enhance their emergency preparedness programs, including modernizing emergency

management centres and conducting broader emergency exercises. Contracting Parties were also encouraged to include in their National Reports to the Fourth Review Meeting how, in case of an emergency, information is transmitted in an expeditious manner to neighbouring and potentially affected countries.

#### Observations on Radiation Protection (Article 15)

54. The ALARA (As Low As Reasonably Achievable) principle and/or recommendations of ICRP 60 continue to be applied by Contracting Parties for controlling occupational doses and releases to the environment. In general, the information provided by Contracting Parties does show a reduction in collective doses and in releases to the environment. However, full implementation of the ICRP 60 recommendations remains to be completed in some Contracting Parties.
55. Many Contracting Parties reported on changes in their legislation and regulatory frameworks to improve their regulatory oversight over radiation protection. In some instances, this meant the amalgamation of radiation protection and nuclear safety regulatory bodies.
56. Some Contracting Parties did report relatively high collective doses. In most instances, these were connected with intensive inspection programs, maintenance or extensive backfits to older nuclear power plants. These Contracting Parties undertook to reduce the collective doses arising from long periodic inspections and extensive maintenance activities. This remains an important area for reporting at future Review Meetings, particularly as Contracting Parties continue to upgrade their nuclear power plants.

#### Observations on Assessment and Verification (Article 14)

57. In the period following the last Review Meeting, most Contracting Parties have increasingly used periodic safety reviews (PSR) as part of their regulatory processes.
58. As reported at the Second Review Meeting, most Contracting Parties conduct PSRs regularly, and the typical interval is 10 years. PSR is considered to be in a mature state and has benefits in confirming the adequacy of the safety case, in making decisions on continued operation, in evaluating safety upgrades and improvements and in obtaining operating experience feedback. PSRs are mandatory in many countries.
59. Contracting Parties reported the increasing use of risk-informed decision making as a tool by regulators and by operators, and its application to key areas.
60. Several Contracting Parties reported on the challenges posed by the introduction of risk-informed decision making. Experience with the implementation of risk-informed decision-making can be expected at the Fourth Review Meeting.
61. Probabilistic safety assessments (PSA) are also being used as tools in the assessment and verification of the safety of nuclear power plants. They are used as one element of risk-informed decision making to augment or supplement the deterministic approach.
62. Contracting Parties provided further information on the use of PSAs, as discussed at the Second Review Meeting. Risk monitors are sometimes used as a tool for the optimisation of configuration and maintenance management.

63. Some Contracting Parties reported on plans to update PSAs for nuclear power plants in operation, and to upgrade them to include complete level 1 and level 2 PSAs
64. Contracting Parties concluded that a PSA of an appropriate quality can be used as a complementary tool in evaluating operational and regulatory activities. For example, PSAs can be used to identify the significance of changes that occur to plant safety as a result of operational or component changes (i.e., configuration management).
65. Contracting Parties will report on their experience with PSAs at the Fourth Review Meeting.

Observations on Safety of Nuclear Power Plants: Siting, Design and Construction (Articles 17 and 18)

66. As at previous Review Meetings, Contracting Parties with nuclear power plants under construction reported on the measures that were being undertaken to ensure safety with respect to the siting, design and construction of these installations. In instances where decisions on new construction seemed imminent, the Contracting Parties reported on their preparations for such decisions.
67. At the Third Review Meeting, some Contracting Parties reported on major design features, including the inherent safety aspects, in advanced nuclear power plant designs.
68. While particular challenges, especially in regulation, are still faced in countries with multiple designs of nuclear power plants, some Contracting Parties also noted advantages in operating multiple designs of nuclear power plants (e.g., the opportunity to make safety improvements based on operating experience feedback from the different designs).
69. Some Contracting Parties reported on the benefits of sharing experiences amongst their regulatory bodies regarding new nuclear power plant designs and licensing.
70. Contracting Parties with nuclear power plants reported on the successful implementation of upgrades and safety enhancements at existing nuclear power plants and on plant life extensions.

Observations on Safety of Nuclear Power Plants: Operation (Article 19)

71. All Contracting Parties with nuclear power plants reported on the operating experience of their existing nuclear power plants.
72. Several Contracting Parties reported on more widespread use of peer reviews, such as the IAEA's Operational Safety Review Team (OSART) and related services, and those offered by World Association of Nuclear Operators (WANO), to enhance operational effectiveness and better management of safety.
73. Contracting Parties found that operational experience feedback (OEF) programs had proven useful in improving nuclear safety and may be further enhanced. Typical issues include: human factor related events; corrective action follow-ups; near misses and industrial safety problems; and deviations that occurred during inspection, maintenance and surveillance activities.

74. Some Contracting Parties expressed the view that, in some important cases, the use of international OEF has not been effective. Therefore, there is a need to improve the sharing and use of international experience in this area.
75. Progress on operational experience feedback can be expected at the Fourth Review Meeting.
76. Programs for severe accident management are in various stages of development and implementation in many Contracting Parties. It was noted that different approaches are being considered to respond and mitigate beyond design basis events. Further information on the development and implementation of severe accident management programs (SAMP) would be welcomed at the Fourth Review Meeting.
77. Some Contracting Parties reported on the construction and licensing of new spent fuel storage facilities at sites.
78. Further and more detailed information on the status of safety improvement programs would be expected at the Fourth Review Meeting.

#### Final Conclusions and Recommendations

87. The purpose of the Convention on Nuclear Safety is improving worldwide nuclear safety through peer review. The Third Review Meeting, through a vigorous process, has provided all Contracting Parties with feedback to improve their approach to nuclear safety. All Contracting Parties committed to a process of continuous improvement and to learning from their peers. The Fourth Review Meeting will offer the opportunity for assessment of these improvements against the context of 2008.
88. In terms of collective progress in ensuring worldwide nuclear safety, Contracting Parties have improved their safety regimes, even as the challenges have increased in terms of ageing reactors, economic pressures and other challenges. For some Contracting Parties, the positive change has been large, as they addressed serious issues over the last three years. For other Contracting Parties, the change has been a case of incremental improvement to already good programs.
89. The Contracting Parties viewed that the initial objectives of the Convention were being accomplished in many Contracting Parties and there was a shift toward more thematic discussions. Contracting Parties would welcome the contribution of INSAG in preparing important topical issues in nuclear safety.
90. In terms of the process used to conduct the Third Review Meeting, the Contracting Parties concluded that, after 10 years and three Review Meetings, there was a need for renewal. The Contracting Parties adopted recommendations of the Open Ended Working Group (OEWG) at the Third Review Meeting and this has resulted in some improvements to the process. These results will be applied to future review processes. The President of the Review Meeting also undertook to contribute to the continuity process.
91. Some Contracting Parties made a proposal to convene an extraordinary meeting. One Contracting Party undertook to develop a written request, according to Article 23(ii) of the Convention on Nuclear Safety and the new Rule 45 of the Rules of Procedure and Financial

Rules, relating to an extraordinary meeting. This meeting would discuss procedural matters to reform the structure of the review process, so that it is more open and transparent as well as more effective and efficient.

92. The Summary Report identifies good practices and where progress has been made since the last Review Meeting. However, complacency is not an option as this Summary Report identifies specific areas for continuous improvement into the future where collective effort is needed to secure further improvements in worldwide nuclear safety. Specific issues for reporting at the Fourth Review Meeting are noted throughout the Summary Report and will receive particular attention at that time.



Linda J. Keen  
President of the Third Review Meeting  
of the Convention on Nuclear Safety

*Attachment 1 to Summary Report***General background**

1. As of 11 April 2005, 56 States and one regional organization of an integration or other nature had ratified the Convention on Nuclear Safety, which had entered into force on 24 October 1996. The Third 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, from 11 to 22 April 2005. The President of the Review Meeting was Ms Linda J. Keen, President and Chief Executive Officer of the Canadian Nuclear Safety Commission.
2. Fifty out of fifty-five Contracting Parties participated, namely: Argentina; Armenia; Australia; Austria; Belarus; Belgium; Brazil; Bulgaria; Canada; Chile; China; Croatia; Cyprus; Czech Republic; Denmark; Finland; France; Germany; Greece; Hungary; Indonesia; Ireland; Italy; Japan; Korea, Republic of; Latvia; Lithuania; Luxembourg; Mexico; Netherlands; Norway; Pakistan; Peru; Poland; Portugal; Romania; Russian Federation; Singapore; Slovakia; Slovenia; South Africa; Spain; Sri Lanka; Sweden; Switzerland; Turkey; Ukraine; United Kingdom; United States of America; and EURATOM. Pursuant to Article 24.2 of the Convention on Nuclear Safety, the OECD/NEA attended as observer.
3. It was noted that India had deposited its instrument of ratification with the depositary on 31 March 2005. The President noted, with pleasure, that a milestone in the history of the Convention had been achieved with India's ratification, as all countries with operating nuclear power plants were now parties to the Convention.
4. 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 Organizational Meeting, held in September 2004, Contracting Parties organized themselves into six Country Groups, each group including countries with nuclear power programs of different sizes, as well as countries not having nuclear power reactors. The Country Groups met for five days and discussed in depth each National Report, with each Contracting Party receiving answers to the questions they had put. These answers provided additional information on the steps and measures taken in each country.
5. Three Contracting Parties did not submit a National Report, namely Mali, Republic of Moldova and Uruguay. Five Contracting Parties, namely Bangladesh, Lebanon, Mali, Republic of Moldova and Uruguay, did not attend the Review Meeting. A number of Contracting Parties submitted their reports later than the deadline, and in a few cases the submissions were too late to allow the preparation of written questions by other Contracting Parties.

**Overview of the Review Process**

6. The Contracting Parties recalled that the main purpose of the Review Meeting was to review the nuclear safety status 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 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 co-operation.

7. The Contracting Parties noted that it was not their task in this review process to review the safety of individual nuclear installations. The Contracting Parties also noted that they had to rely on the accuracy and completeness of the information provided by each Contracting Party in its National Report and in its answers to the questions asked of it. Additional clarification was provided by the Contracting Parties on issues raised during the meeting. Specific clarification was offered on certain issues identified by Contracting Parties during the Second Review Meeting.
8. The Contracting Parties noted that adherence to this Convention entails two basic commitments by each Contracting Party:
  - To prepare and make available a National Report for review; and
  - To subject its National Report to a peer review by the other Contracting Parties.

Thus, being a Contracting Party to this Convention implies:

- Including in the National Report a self-assessment of steps and measures already taken and in progress to implement the Convention obligations;
  - Taking an active part in an open and transparent review of its National Report and the Reports of other Contracting Parties; and
  - A commitment to a continuous learning and improving process, something which is a key element of a strong safety culture.
9. 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.
  10. 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. It was observed that Contracting Parties should continue to clearly identify the actual changes that had taken place in response to the issues identified at the previous Review Meeting in the production of National Reports.
  11. All questions asked by Contracting Parties in the review process were addressed by the respondent Parties and written answers were provided to written questions. 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 programs, and generally demonstrating the strong commitment of each participating Contracting Party to the review process under the Convention and to the safety objectives of the Convention.
  12. The peer review of reports, questions and answers that were exchanged in connection with this Meeting provided a unique worldwide overview of the status of nuclear safety.







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