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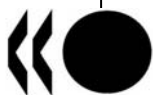
**NUCLEAR ENERGY AGENCY
COMMITTEE ON NUCLEAR REGULATORY ACTIVITIES**

OVERVIEW OF THE COMMITTEE ON NUCLEAR REGULATORY ACTIVITIES (1989-2008)

Updates and Replaces NEA/CNRA/R(2004)2

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ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

Pursuant to Article 1 of the Convention signed in Paris on 14th December 1960, and which came into force on 30th September 1961, the Organisation for Economic Co-operation and Development (OECD) shall promote policies designed:

- to achieve the highest sustainable economic growth and employment and a rising standard of living in Member countries, while maintaining financial stability, and thus to contribute to the development of the world economy;
- to contribute to sound economic expansion in Member as well as non-member countries in the process of economic development; and
- to contribute to the expansion of world trade on a multilateral, non-discriminatory basis in accordance with international obligations.

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NUCLEAR ENERGY AGENCY

The OECD Nuclear Energy Agency (NEA) was established on 1st February 1958 under the name of the OEEC European Nuclear Energy Agency. It received its present designation on 20th April 1972, when Japan became its first non-European full Member. NEA membership today consists of 28 OECD Member countries: Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Luxembourg, Mexico, the Netherlands, Norway, Portugal, Republic of Korea, Slovak Republic, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. The Commission of the European Communities also takes part in the work of the Agency.

The mission of the NEA is:

- to assist its Member countries in maintaining and further developing, through international co-operation, the scientific, technological and legal bases required for a safe, environmentally friendly and economical use of nuclear energy for peaceful purposes, as well as
- to provide authoritative assessments and to forge common understandings on key issues, as input to government decisions on nuclear energy policy and to broader OECD policy analyses in areas such as energy and sustainable development.

Specific areas of competence of the NEA include safety and regulation of nuclear activities, radioactive waste management, radiological protection, nuclear science, economic and technical analyses of the nuclear fuel cycle, nuclear law and liability, and public information. The NEA Data Bank provides nuclear data and computer program services for participating countries.

In these and related tasks, the NEA works in close collaboration with the International Atomic Energy Agency in Vienna, with which it has a Co-operation Agreement, as well as with other international organisations in the nuclear field.

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COMMITTEE ON NUCLEAR REGULATORY ACTIVITIES

The Committee on Nuclear Regulatory Activities (CNRA) of the OECD Nuclear Energy Agency (NEA) is an international committee made up primarily of senior nuclear regulators. It was set up in 1989 as a forum for the exchange of information and experience among regulatory organisations.

The committee is responsible for the programme of the NEA, concerning the regulation, licensing and inspection of nuclear installations with regard to safety. The committee's purpose is to promote cooperation among member countries to feedback the experience to safety improving measures, enhance efficiency and effectiveness in the regulatory process and to maintain adequate infrastructure and competence in the nuclear safety field. The CNRA's main tasks are to review developments which could affect regulatory requirements with the objective of providing members with an understanding of the motivation for new regulatory requirements under consideration and an opportunity to offer suggestions that might improve them or avoid disparities among member countries. In particular, the committee reviews current management strategies and safety management practices and operating experiences at nuclear facilities with a view to disseminating lessons learned.

The committee focuses primarily on existing power reactors and other nuclear installations; it may also consider the regulatory implications of new designs of power reactors and other types of nuclear installations.

In implementing its programme, the CNRA establishes cooperative mechanisms with the Committee on the Safety of Nuclear Installations (CSNI) responsible for the programme of the Agency concerning the technical aspects of the design, construction and operation of nuclear installations. The committee also co-operates with NEA's Committee on Radiation Protection and Public Health (CRPPH) and NEA's Radioactive Waste Management Committee (RWMC) on matters of common interest.

FOREWORD

The NEA Standing Committee on Nuclear Regulatory Activities was created in 1989 to guide the Agencies programme regarding regulation, licensing and inspection of nuclear installations. However, in actuality, the Committee began its work in 1973 as the Committee on the Safety of Nuclear Installations (CSNI) Sub-Committee on Licensing.

The organisations, structures and processes of regulatory authorities have evolved over the past 50 or so years. Major changes have taken place following events such as Three Mile Island and Chernobyl and more recent events will provide the impetus for further reviews and changes. An event is not the only factor that impacts the regulatory authority, changes in economic factors, deregulation, technological advances, etc., also can lead to changes. As the nuclear industry enters the second half of its first century, it begins to face another issue, maintaining or retaining knowledge. This issue faces not only national authorities but international organisations. Many workshops and conferences have been held in recent years to determine a common understanding toward this issue. The CNRA has held its own workshop and has had several discussions focused on knowledge management topics.

Recognising that this is also a concern of its own work, the CNRA, upon the proposal of the Secretariat endorsed this report, CNRA Historical Perspective. Accordingly, one of the main objectives of this report as stated in the introduction is to serve as a ‘corporate memory’ and provide reference to both current and new CNRA members.

The update of the report has been compiled by Barry Kaufer, Deputy Head, NEA Nuclear Safety Division.

IMPORTANT NOTES:

Readers should be aware of the following:

- It is important to note that the information contained in this report represents information available as of *30th June 2008*. Since this information is subject to changes, due to re-organisations, advancements, etc., the reader should take these types of occurrences into account.
- In regard to the reference documents, there are 3 basic types. Readers should be aware of the following concerning these documents as follows:
 - CNRA Green Booklets – These have a four (4) digit reference number or an ISBN number and are unclassified documents available to the public.
 - CNRA Reports – These normally are referenced as NEA/CNRA/R(year)# and are unclassified documents available to the public.
 - CNRA Summary Records – These normally are referenced as NEA/SEN/NRA(year)# and are CLASSIFIED OR RESTRICTED and are NOT AVAILABLE to the public.

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1. EXECUTIVE SUMMARY

1.1 Introduction

This revision of the CNRA Historical Record represents an up-to-date accounting of the work performed by the Committee since its conception in 1989. As noted during the 2004 review of the CNRA, “This overview demonstrates the important role played by the CNRA in sharing knowledge among member organisations and the wealth of regulatory experience made available. Thus, the overview can serve as a valuable introduction to CNRA work for new delegates to the CNRA and its working groups.”

The original report was endorsed by CNRA members in June 1993 based on the concept of putting together a historical report that looked at the issues CNRA has handled since it was organised as a separate Standing Committee. While the report is entitled historical perspectives, it serves several purposes. The main objective of the report is to be a reference document for CNRA members to enable better information in formulating future programmes.

Other objectives include:

- provide a listing and categorisation of CNRA topics worked;
- for the use of CNRA members in reviewing and determining the programme of work;
- to serve as a basis for overall evaluation of CNRA’s achievements;
- to serve as a 'corporate memory' and provide a reference to new CNRA members;
- to provide an overview of the work performed by CNRA to its stakeholders, which are primarily nuclear safety regulators, but also government authorities, nuclear power plant operators and the general public.

1.2 Report Structure

The report has been structured to give the reader a good overall perspective on what has been accomplished as well as what is planned for the future. Chapter 2 provides a brief overview of the current organisational structure of the CNRA including its mandate and those of its working groups. Chapter 3 gives a brief history of regulatory activities at NEA, including the precursor of CNRA the CSNI Sub-Committee on Licensing.

Chapter 4 through 9 look at the many issues CNRA has dealt with over the past 15 years or so. In order to provide a means for easily referencing these topics, this report will in general¹ utilise the structure employed in the report on Future Nuclear Regulatory Challenges (FNRC). Accordingly the following

¹. A few minor changes have been made to reflect specific areas of work for easier reference.

chapters provide a complete history of the issues covered by CNRA since its conception in 1989. The topics that have been covered by CNRA have been categorised or placed into 'subject fields' as follows:

- Chapter 4: Technical Issues with Potential Regulatory Impact (Plant Ageing, Increasing Operational Flexibility, Safety Margins during more exacting operating modes, Backfitting and Safety Upgrading Programmes and Requirements for Future Plants).
- Chapter 5: Socio-Economic and Political Issues with Potential Regulatory Impact (De-regulation, De-manning and Contractorisations, Research, Emergency Arrangements, Managerial Changes, Safety Culture and Emerging Issues).
- Chapter 6: Organisational, Management and Human Issues with Potential Regulatory Impact (Regulatory Effectiveness and Changes, Operator Responsibility, Staff Training and Preserving a Critical Mass of Knowledge and Interface between Regulatory Authorities and the Public).
- Chapter 7: International Issues with Potential Regulatory Impact (Global Industry, Co-operation between Safety Authorities and Co-operation with and Assistance to Safety Authorities in Countries where Regulatory Organisations need to be strengthened).
- Chapter 8: Decommissioning and the Management, Storage and Disposal of High-Level Radioactive Waste and Spent Fuel.
- Chapter 9: Miscellaneous Regulatory Topics
- Appendix: Provides brief highlights of CNRA meetings over the past 15 years.

The tables provide in Chapters 3 through 9 provide information on topics covered by the CNRA, reference material, dates information was released or took place and a brief description of what took place or the actual product. Readers should note the following:

- The Secretariat has attempted to assign the various topics based on the categories defined in the FNRC report along with appropriate cross references to other topics. It is not intended to be a definitive listing, but one that assists the reader in understanding the work of CNRA.
- Most of the publications and reports referenced are available for downloading through the NEA web site under CNRA reports. Summary Records of meetings are proprietary documents which are available to Committee members.
- Summary Records normally provide an overview of the discussions or decisions made by the CNRA. For recent years, copies of tabled documents (providing more detailed information) are available and can be requested from the Secretariat.

2. CNRA FACTS

Date of creation

3rd October 1989

CNRA Bureau (December 2007)

Chairman:	Dr. Mike Weightman (United Kingdom)
Vice Chairs:	Dr. J.-C. Niel (France)
	Mr. E. Leeds (United States)
Bureau Members:	Mr. M. Herttrich (Germany)
	Mr. T. Yamada (Japan)
	Mr. I. Grant (Canada)
	Ms. Marta Ziaková (Slovak Republic)

Past Chairmen include:

Eduardo Gonazalez Gomez, Spain (1989- 1994), Lars Högberg, Sweden (1994-1997), Christopher Willby, United Kingdom (1998), Jukka Laaksonen, Finland (1999 – 2007).

Past Bureau Members include:

Michel Lavérie (France), Roland Naegelin (Switzerland), Giovanni Naschi (Italy), Thomas Murley (United States), William Russell (United States), Christopher Willby (United Kingdom), Ashok Thadani (United States), Serge Prêtre (Switzerland), Kazuhiko Hombu (Japan), Michel Asty (France), Masaki Hirano (Japan), Samuel Collins (United States), Jim Furness (United Kingdom), Christer Viktorsson (Sweden), Jean-Jacques Van Binnebeek (Belgium), Kiyoharu Abe (Japan), Alain Schmitt (France), Lennart Carlsson (Sweden) and Jim Dyer (United States).

Members and Observers:

Members: All Member countries of NEA.

Observers: IAEA, Russian Federation, Slovenia.

3. CNRA HISTORY

In the 1950's international co-operation efforts were aimed mainly on radiological protection concerns. ENEA (European Nuclear Energy Agency) contributed through its Health and Safety Sub-Committee, which was established in 1958. The first multilateral safety committee set-up in ENEA was the Committee on Reactor Safety Technology (CREST), which was created in 1965. The responsibility for regulatory questions was retained under the mandate of Health and Safety Committee. The Committee on the Safety of Nuclear Installations (CSNI) was set-up in 1973 to replace CREST, and within its structure was the **Sub-Committee on Licensing**. In turn the Health and Safety Committee was reconstituted as the Committee on Radiation Protection and Public Health (CRPPH).

The mandate of newly created CSNI stated that it was responsible for technical aspects of nuclear installations and to establish a dialogue between regulators and research organisations with the dual purpose to assist in the definition of research objectives and the **feedback of research results to nuclear regulation**. The Sub-Committee on Licensing was to provide a forum for licensing authorities covering aspects that were not strictly technical and scientific in nature. In the early 1980's, the structure of CSNI was changed to create five (5) Principal Working Groups in the technical areas of: Operating Experience (PWG1); Coolant System Behaviour (PWG2); Structural Integrity (PWG3); Confinement of Accidental Radioactive Releases (PWG4) and Risk Assessment (PWG5).

By the end of the 1980's it became evident that public attention was increasingly focusing on regulatory practices. In response, there was a growing appreciation among the regulators in the member countries to demonstrate that differences in regulatory practices were more apparent than real and in fact, the practices had a consistent technical basis that led to uniformly high standards. In addition, the expanding body of operational experience and lessons learned could be applied to regulatory practices, and that the accumulation of regulatory experience provided a strong basis for exchanging information and understanding on national approaches.

Recognising that NEA member countries regulate close to 90% of the operating nuclear power reactors in the world, it was evident that there was a need to have an enhanced network for international professional exchange of information on regulatory approaches and regulatory experience.

3.1.1 Reports by the CSNI Sub-Committee on Licensing

While this report focuses on the history of CNRA from 1989 to the present, it is important to note that the CSNI Sub-Committee on Licensing issued a number of reports between 1973 and 1988. These are provided for reference in the following table.

Topic / Title	Reference	Year
Licensing Systems and Inspection of Nuclear Installations in NEA Member Countries	NEA/CSNI-24	1977
Proceedings from Specialists Meeting on Regulatory Inspection Practices in Nuclear Power Plants	NEA/CSNI-27	1977
Regulatory Inspection of Nuclear Power Plants	NEA/CSNI-36	1978
Safety and Siting of Nuclear Installations Near International Borders in NEA Member Countries	NEA/CSNI-35	1979
Proceedings of Specialists Meeting on the Regulatory Review in the Licensing Process	NEA/CSNI-43	1980
Proceedings of Specialists Meeting on Operator Training and Qualifications	NEA/CSNI-63	1982
Design and Implementation of Emergency Operating Procedures	NEA/CSNI-81	1985
Approaches to Training Programmes in NEA Member Countries	NEA/CSNI-128	1986
Comparison of Regulations and Licensing of Fuel Cycle Facilities particularly with regard to External Hazards (CSNI Working Group on Fuel Cycle Safety)	NEA/CSNI-134	1986

3.2 The Committee on Nuclear Regulatory Activities (CNRA) 1989 to present

Through the discussions of the CSNI and other NEA Committees (CRPPH and RWMC²) along with the NEA Steering Committee agreement, the Committee on Nuclear Regulatory Activities was created in 1989 to guide NEA's programme regarding regulation, licensing and inspection of nuclear installation with regard to safety. Main tasks derived from the mandate include:

- continuing exchange of information and experience among regulatory organisations;
- review of developments which could affect regulatory requirements with the objective of providing better understanding of motivation for making changes and improvements; and
- to review current practices and operating experiences in the Member countries.

The Committee has undergone several evolutions since its creation. In 1996-1997 and then again in 2004-2005 the Committee conducted an independent Review of the Role, Activities and Working Methods of the CNRA. While both of these reviews concluded that the role and mandate were functioning well, the conclusions and recommendations provided means for improved effectiveness and efficiency in how the Committee works. These are briefly described in the following sections.

² Radioactive Waste Management Committee

3.2.1 1997 to 2003

Based on the recommendations in the 1997 review report [ref: NEA/SEN/NRA(1997)4], the CNRA:

- The CNRA Bureau was expanded to provide better guidance. The 2005 report noted that this change was extremely beneficial and enhanced the effectiveness of the Committee.
- The Committee set up the Working Party on Future Nuclear Regulatory Challenges which published its findings in 1998. In addition to providing highly useful information, the results of this report provided the main foundation for planning the programme of work of the CNRA until 2005. The outline of the report also provides, as noted earlier, the structure of this report.

In late 1996, the Working Party on Future Regulatory Challenges initiated its' work which led to the publication of a widely read report identifying challenges over the subsequent 10 years as well as proposing recommendations to address them. The recommendations in this report led to the development of a series of 'little green booklets' and to many of the senior level Task Groups over the past years. In addition, CNRA made this into a living document, which was constantly reviewed and updated into its current programme of work until the development of the CNRA Operating Plan.

In 2000 the NEA Safety Committees, CNRA and CSNI, following a request from the NEA Steering Committee developed Strategic Plans and review their programmes of work and means towards achieving it. Within the CSNI the strategic plan included a major restructuring of its' working groups, while the CNRA reviewed their main goals and set forward a list of main objectives.

At the end of 2000, recognising the importance of public communication as one of the keys to the future of nuclear power a workshop on regulatory public communication was organised in Paris. Based on the results and in recognition of the significance of this area, the CNRA set up the Working Group on Public Communication of nuclear regulatory organisations (WGPC) in 2001.

3.2.1 2004 to present

Following issuance of the NEA Strategic Plan for 2005-2009, the 2 safety committees (CNRA and CSNI) recognising many common areas of interest (along with the long standing close interrelationship) decided to develop a joint strategic plan. In addition, as previously noted the CNRA undertook a full review [ref: ISBN 92-64-01062-9]. This was a significant undertaking and among the main conclusions were the following recommendations:

- To develop a five (5) year Operating Plan which provided clearer definition to the programme of work, and the resources required to carry it out.
- To develop Operating Guidelines which set down for the first time procedures on how CNRA conducts out its work.
- Provided an assessment and the basis for shifting the main responsibility for operating experience feedback in the Safety Committees from the CSNI to the CNRA, which took place later that year.
- The Review Group concludes (The importance to regulators of the efficient and effective review and dissemination of operating experience, derived from both incident analysis and inspection findings) that, in order to enhance the short-term evaluation and consideration of regulatory action and achieve alignment on longer-term studies needed, it would be more appropriate that the WGOE belongs to the CNRA, while continuing to serve also the CSNI.

Following discussions with the CSNI it was agreed to move the Working Group on Operating Experience from the CSNI to the CNRA beginning in the fall of 2005.

The change in the nuclear environment over the next years showed a large increase by member countries in approaching new build. This changing environment led to discussions in the CNRA and the agreement in June 2007 to create a Working Group on the Regulation of New Reactors.

3.2.1 Working Methods

Note: The Operating Guidelines referenced in the previous section provide a detailed description of the CNRA Working Methods.

Since its conception CNRA has held its annual meeting in late November / early December each year. Each summer (mid-June) the CNRA convenes a more focused meeting relating to a regulatory issue of concern. Historically these have taken one of two approaches; in-depth discussions, which are focused on a specific issue (Special Issues Meeting) or, more recently, high-level international forums related to nuclear regulatory challenges. CNRA, as previously noted has created four (4) working groups to assist it in meeting its objectives. These are described further under Section 3.3.

In addition, from time to time, CNRA has created senior level Task Groups on specific regulatory issues.

3.2.2 Co-operation and Co-ordination

As stated in its mandate, the CNRA co-ordinates its works with other NEA Standing Committees and other International Organisations on matters of common interest, to promote sharing of information and resources avoiding unnecessary duplication. For example, the CNRA regularly receives reports from CRPPH and RWMC (including specific information on the activities of the RWMC Regulator's Forum) at its annual meeting. CNRA also receives regular reports from the IAEA and the EC and from other international organisations (e.g., INRA, WENRA, etc.) when appropriate.

CNRA maintains a special relationship with the CSNI. The 2 Committees form the NEA's Nuclear Safety Division. Together their shared goal is to assist member countries in maintaining and further developing the scientific, technical and regulatory knowledge base required to assess the safety of nuclear reactors and fuel cycle facilities. This special relationship is evidenced in several ways, including:

- Chairman of both Committees report on their respective activities at each other meetings twice a year. CNRA makes requests to CSNI to perform studies or prepare reports on issues of regulatory concern.
- Joint workshops and forums are held on topics of mutual interest.
- Joint Bureau meetings on a regular basis.

3.3 CNRA Working Groups

As stated previously, in addition to the products such as results of special issues meetings, forums, senior level Task Groups, etc., CNRA has established working groups in four areas, Inspection Practices, Operating Experience, New Reactors and Public Communication. The work of these groups is described in the following sub-sections.

3.3.1 *Working Group on Inspection Practices (WGIP)*

One of the first actions taken by the CNRA was to establish the Working Group on Inspection Practices (WGIP). The CNRA believed and continues to believe that an essential factor in ensuring the safety of nuclear installations is the continuing exchange and analysis of technical information and data. The Working Group on Inspection Practices (WGIP) was formed in 1990 with the mandate "... to concentrate on the conduct of inspections and how the effectiveness of inspections could be evaluated...".

A key product of the group is a compendium of commendable inspection practices. These are neither international standards nor guidelines but serve as a useful reference when each country reviews and improves their inspection practices.

In addition, WGIP began a series of international workshops on nuclear inspection practices in 1992. The workshops have provided a unique opportunity for nuclear inspectors to meet and 'calibrate' their own inspection methods against those from other countries. These exchanges of information on regulatory inspection issues allow inspectors from different countries and backgrounds the opportunity to learn and understand different inspection methods and applications. The workshops have covered the following issues:

- (1992) 1st International Workshop on Conduct of Inspections and Inspector Qualifications and Training, Chattanooga, Tennessee, United States.
- (1994) 2nd International Workshop on Conduct of Inspections for Plant Modifications, Event Investigation and Operability Decisions, Helsinki, Finland.
- (1996) 3rd International Workshop on Regulatory Inspection Practices related to Inspection Planning, Plant Maintenance and the Assessment of Safety- Proceedings of an International Workshop, Chester, United Kingdom.
- (1998) 4th International Workshop on Regulatory Inspection Activities related to Older Operating NPPs, Risk Evaluation and Licensee Resource Commitment, Prague, Czech Republic.
- (2000) 5th International Workshop on Regulatory Inspection Activities related to Radiation Protection, Long Shutdowns and Subsequent Re-starts, and the Use of Objective Indicators in Evaluating the Performance of Plants, Baltimore, Maryland, United States.
- (2002) 6th International Workshop on Regulatory Inspection Activities related to Inspection of Events and Incidents, Inspection of Internal and External Hazards, and Inspection Activities related to Challenges Arising from Competition in the Electricity Market, Veracruz, Mexico.
- (2004) 7th International Workshop on Inspection Activities related to the Risk Informed Inspection, Inspection Aspects of Plant Near or at End-of-Life, and Inspection of Performance of Licensee Organisation, Budapest, Hungary.
- (2006) 8th International Workshop on Inspection Activities on How International Nuclear Regulatory Inspections Can Promote, Or Not Promote, Good Safety Culture, Inspection of Interactions Between the Licensee and its Contractors and Future Challenges for Inspectors (e.g. new techniques, developing competence, etc.), Toronto, Canada.
- (2008) 9th International Workshop on the Training and Qualifying of Inspectors, Integration of Inspection Findings, and Inspections of New Plants under Construction, Porvoo, Finland.

3.3.2 Working Group on Operational Experience (WGOE)

As noted, WGOE was a sub-group under the CSNI until 2005 at which point it was transferred to the CNRA. The main mission of the working group under CSNI was to analyse and develop insights from operating experience, and to communicate these insights to the CSNI, CNRA, and interested government and industry bodies. On an annual basis WGOE reviewed and assessed the safety significance of operating events, using information from probabilistic safety assessment of events when available, and make recommendations to the CSNI, and the CNRA where applicable, on the basis of these reviews.

The 2004 CNRA Review Report noted, “For the CNRA, analysis of operating experience is essential to discuss and judge the need for regulatory response in different timeframes and to assess the effectiveness of various regulatory actions in preventing recurrence of certain types of events. While WGOE thus has to serve both the CSNI and the CNRA, the WGOE should belong clearly to one of the committees. In principle, it could be either of them. However, the Review Group has concluded that added-value to safety from analysis of operating experience could be more rapidly and effectively accomplished if the WGOE belonged to the CNRA, and was included in a communication and feedback loop as shown in the figure below.”

The mandate of the group as it initiated its work under CNRA established its main objective that WGOE is to share experience and knowledge, analyse and provide expert insights from operating experience to reach timely conclusions on trends, lessons learnt and effective responses in the short to medium term, and to promote proposals for re-assessment of safety, additional research, new or revised regulatory inspection practices, improvements in managing operations, and other actions to maintain and improve safety in the longer term. Additionally, WGOE reviews the information from the IRS and other data bases and maintains oversight of the Incident Reporting System (IRS) established for collection and dissemination of operating experience.

Based on discussions and a proposal made at the December 2006 CNRA Meeting the WGOE committed to review existing International Operating Experience Feedback (OEF) processes and networks, and their connections with National OEF systems and provide recommendations for more effective use of international OEF to improve nuclear safety. The final report was completed and disseminated at the beginning of 2008.

3.33 Working Group on Public Communication (WGPC) for Nuclear Regulatory Organisations

Efficiency in decision-making by governmental authorities is increasingly dependent upon public trust. Public communication is one of the keys to the future of nuclear power. In recognition of this, the CNRA set up in 2001 the Working Group on Public Communication (WGPC). The purpose is to facilitate the exchange of information, news, documents, experiences and practices among nuclear regulatory organisation communicators. It also aims to exchange views regarding the policies of nuclear regulatory organisations in the area of public communication of a regulatory nature, and identifies ways of promoting efficient collaboration.

The group has set-up an informal (simple) confidential network between members for fast and easy electronic communication to report on events of interest including early warning and alleged events and other relevant topics of interest to regulatory organisation communicators.

3.3.4 Working Group on the Regulation of New Reactors (WGRNR)

As noted the CNRA agreed to establish this working group at its 2007 summer meeting and approved its mandate at the following meeting in December 2007. The main objectives of the group is be responsible for the programme of work in the CNRA dealing with regulatory activities in the primary program areas of siting, licensing and oversight for new commercial nuclear power reactors (Generation III + and Generation IV reactors). The working group shall constitute an international forum for exchanging information and experience and with the agreement of CNRA and will plan its work to ensure improvements in nuclear safety through more effective and efficient regulation.

Within the scope of work, CNRA noted that WGRNR should co-ordinate its work with the work performed by the Multinational Design Evaluation Programme (MDEP) such that: it utilises its outputs and does not duplicate its efforts; extends the results of MDEP to other CNRA members and plans for the transition of MDEP into CNRA and should ensure that construction inspection issues and construction experience is shared through existing CNRA working groups or new working groups as appropriate.

3.4 CNRA Internal Issues

In addition to the nuclear issues (technical and non-technical) discussed by CNRA, internal issues are discussed from time to time as necessitated by the OECD and NEA programmes. The following listing provides:

Topic / Title	Reference	Year	Description/Outcomes/Reports
Results of Activities Survey and Suggestions for Possible Implementation	NEA/SEN/NRA(1991)5	1991	Results of CNRA survey
Long Term Orientation of the NEA	NEA/SEN/NRA(1995)2	1995	In-depth discussion
Review of the Role and Activities of the OECD/NEA with Particular Reference to the Interface with the IAEA	NEA/NE(1996)2	1996	Consultant Report to the Director General of the NEA prepared by R. E. Cunningham and E. Gonzalez Gomez
Competition versus Co-operation: Future Regulatory Policies	NEA/SEN/NRA(1996)4	1996	In-depth Discussion
Review of the Role, Activities and Working Methods of the CNRA	NEA/SEN/NRA(1997)4	1997	Senior level regulator review group report prepared by T. Murley
	N/A	1997	Internal CNRA Report
	NEA/SEN/NRA(1998)1	1997	Discussion item
Future Nuclear Regulatory Challenges	NEA/SEN/NRA(1997)4	1997	In-depth Discussion
	NEA/SEN/NRA(1998)1	1997	In-depth Discussion
	ISBN 92-64-16106-6	1998	A ten (10) year perspective prepared CNRA Task Group
	NEA/SEN/NRA(2001)4	2001	In-depth Discussion
CNRA Strategic Plan	NEA/SEN/NRA(1999)3	1999	Approved proposal to prepare plan
	NEA/SEN/NRA(2000)1	1999	Approved report
The Strategic Plan for the CNRA	NEA/CNRA/R(2000)3	2000	CNRA Report
CNRA Historical Record (1989 - 2004)	NEA/SEN/NRA(2003)3	2003	Discussion item
	December 2003 Highlights		

Topic / Title	Reference	Year	Description/Outcomes/Reports
Review of the Role, Activities and Working Methods of the CNRA	ISBN 92-64-01062-9	2004	Independent Group set-up which conducted interviews and had in-depth discussions at CNRA Meetings
		2005	CNRA Publication
Joint CSNI/CNRA Strategic Plans and Mandates	ISBN 92-64-1060-2	2005	Discussion Item and approved report
Operating Plan (2006-2009)	NEA/CNRA/R(2006)2	2006	CNRA Report
Operating Guidelines	NEA/CNRA/R(2006)3	2006	CNRA Report
Operating Guidelines	NEA/CNRA/R(2008)1	2008	CNRA Report - Updates and replaces NEA/CNRA/R(2006)3
Operating Plan (2006-2009)	NEA/CNRA/R(2008)2	2008	CNRA Report - Updates and replaces NEA/CNRA/R(2006)2
CNRA Historical Record (1989 - 2007)	NEA/CNRA/R(2008)5	2008	CNRA Report - Updates and replaces NEA/CNRA/R(2006)2

4. TECHNICAL ISSUES WITH POTENTIAL REGULATORY IMPACT

This chapter includes references to CNRA reports, discussions, workshops and other documents related to the following issues:

- Plant Ageing including physical ageing of components and structures, ageing of analytical techniques and documentation, ageing of rules and standards and ageing of technology.
- Increasing Operational Flexibility.
- Safety Margins during more Exacting Operating Modes.
- Backfitting and Safety Upgrading Programmes for Plants Designed to Lower Safety Standards.
- Decommissioning.
- Management, Storage and Disposal of High-Level Radioactive Waste and Spent Fuel.
- Requirements for Future Plants.
- Other Technical Issues (e.g., operating experience, risk assessment, structural integrity, accident management, etc.).

4.1 Plant Ageing

4.1.1 General

Topic / Title	Reference	Year	Description/Outcomes/Reports
The Periodic Safety Review of Nuclear Power Plants	NEA/CNRA/R(1992)2	1994	CNRA Report
Reconstitution / Maintenance of the Licensing and Design Basis	NEA/SEN/NRA(1999)1	1998	In-depth Discussion
Regulatory Aspects of Ageing Reactors	NEA/SEN/NRA(1998)3	1998	Special Issues Meeting
	NEA/CNRA/R(1999)1	1999	CNRA Report
Life Extension and Upgrading	NEA/SEN/NRA(199)1	1998	Discussion Item (Approved as 2000 Special Issues Meeting)
	NEA/SEN/NRA(1999)3	1999	Discussion item
	NEA/SEN/NRA(2000)1		
	NEA/SEN/NRA(2000)4	2000	Special Issues Meeting
	NEA/CNRA/R(2001)1 & 2	2001	CNRA Report

Topic / Title	Reference	Year	Description/Outcomes/Reports
Regulatory Inspection Practices Related to Older Operating NPPs, Risk Evaluation and Licensee Resource Commitment (1998)	NEA/CNRA/R(1999)2	1999	CNRA/WGIP Workshop Proceedings (cross issue w/4.6.2, 5.1 and 91)
Regulatory Aspects of Life Extension and Upgrading	NEA/CNRA/R(2001) 1	2001	Main Report
	NEA/CNRA/R(2001)2		Appendix: Questionnaire Responses
International Workshop on Risk Informed Inspection, Inspection of Performance of Licensee Organisation and Inspection Aspects of Plants Near or at End-of-Life	NEA/CNRA/R(2005)4 & 5	2005	CNRA/WGIP Workshop Proceedings (cross issue w/4.14, 4.6.1, 5.5, 6.4 and 9.1)

4.1.2 *Physical Ageing of Components and Structures.*

The main corresponding regulatory challenges are:

- To have an adequate knowledge of the current design basis of the plant;
- To have a correct picture of the actual state of the plant through periodic tests, in-service inspection and feedback of operating experience, in order to repair or replace aged components and maintain the design basis; and
- To define the analyses needed to support life extensions and demonstrate that the plant will still operate within its design basis.

Topic / Title	Reference	Year	Description/Outcomes/Reports
Regulatory Requirements and Experience related to Steam Generators	NEA/SEN/NRA(1992)3	1992	Summary Record Special Issues Meeting, June 1993
Periodic Safety Review (PSR)	NEA/CNRA/R(1992)2 also referenced as: ISBN 92-64-13788-2	1992	In-depth Discussions and preparation of report
		1993	
		1994	
Regulatory Requirements and Experience Related to Steam Generators	NEA/SEN/NRA(1992)3	1992	Special Issues Meeting
	NEA/SEN/NRA(1993)6	1993	Discussion item
	NEA/SEN/NRA(1995)5	1995	Discussion item
Workshop on Steam Generator Tube Integrity in NPPs	NEA/CNRA/R(1996)1	1996	Proceedings
Maintaining Design Safety Margins of Passive Components over the Life of the Plant	NEA/SEN/NRA(95)5	1995	In-depth Discussion
Steam Generators	NEA/SEN/NRA(96)4	1996	Discussion item
Need for Improved NDT Qualification	NEA/SEN/NRA(2001)1	2001	CNRA Request to CSNI
International Practices with Respect to License Periods/Terms for Nuclear Facilities in NEA Member Countries	NEA/CNRA/R(2002)1	2002	CNRA Report

4.1.3 Ageing of Analytical Techniques and Documentation

The main corresponding regulatory challenges are:

- How to ensure that complete documentation exists to describe the current plant design;
- To make sure that safety analysis is up-to-date, reflecting the actual plant in use and all modifications made to it;
- How to interpret results of advanced inspection techniques (are old defects being rediscovered or are they more recent ones) and what to do with defects unacceptable to modern standards; and
- How to use probabilistic safety analysis (PSA) to complement the original deterministic analysis.

Topic / Title	Reference	Year	Description/Outcomes/Reports
Ageing of "Paperware"	NEA/SEN/NRA(1998)3	1998	Part of Special Issues Meeting discussion on Ageing

4.1.4 Ageing of Rules and Standards

The main corresponding regulatory challenges are:

- Applying current rules and standards to existing plants, deciding which criteria should be applied, hence determining the extent of backfitting necessary. The crucial decision is defining the criteria beyond which operation will no longer be allowed, and the difficulties involved in implementing such criteria; and
- Checking if criteria, rules and standards developed for past technological applications remain valid for present technology.

Topic / Title	Reference	Year	Description/Outcomes/Reports
Harmonisation of Standards	NEA/SEN/NRA(2002)3	2002	In-depth Discussion (cross issue w/ 7.1.2)
Comparison of Criteria used for Nuclear or Radiological Emergencies	NEA/SEN/NRA(2003)3	2003	In-depth Discussion (cross issue w/ 7.1.7)
	December 2003 Highlights		
Harmonisation Approaches to Standards	December2003 Highlights	2003	In-depth Discussion (cross issue w/ 7.12)
International Workshop on Risk Informed Inspection, Inspection of Performance of Licensee Organisation and Inspection Aspects of Plants Near or at End-of-Life	NEA/CNRA/R(2005)4 & 5	2005	CNRA/WGIP Workshop Proceedings (cross issue w/4.11, 4.6.1, 5.5, 6.4 and 9.1)

4.1.5 Ageing of Technology

The main corresponding regulatory challenges are:

- To qualify new technologies, like the use of specific software in safety critical applications or off-the-shelf software for less critical ones; and
- To adapt qualification requirements without impacting safety.

Topic / Title	Reference	Year	Description/Outcomes/Reports
Licensing of Safety Critical Software	NEA/SEN/NRA(1994)8	1994	In-depth discussion (cross issue w/ 4.6.3)
Licensing of Computer-Based Systems Important to Safety	NEA/SEN/NRA(1996)2	1996	Special Issues Meeting (held jointly with CSNI) (cross issue w/ 4.6.3)
	NEA/CNRA/R(1997)2	1997	CNRA Report (cross issue w/ 4.6.3)
Impact of the Year 2000 (Y2K) on Nuclear Installations	NEA/SEN/NRA(1998)3	1998	Results of preliminary survey on actions being taken by member countries
	NEA/SEN/NRA(1999)1	1998	Discussion of Workshop planning and other activities (e.g., YEWS, electronic mailbox, etc.)
	NEA/SEN/NRA(1999)3	1999	
	NEA/SEN/NRA(2000)1	1999	
	NEA/CNRA/R(1999)3	1999	CNRA Report – Workshop Proceedings
Y2K (YEWS)	NEA/SEN/NRA(2000)4	2000	Final results
Licensing of Digital I&C	NEA/SEN/NRA(2000)4	2000	Approved proposal for Workshop. (cross issue w/ 4.6.3)
Workshop on Licensing and Operating Experience of Computer-Based I&C Systems	NEA/SEN/NRA(2002)1	2001	Results of Workshop presented. (cross issue w/ 4.6.3)
WGIP Workshop on Regulatory Inspection Practices Related to Older Operating NPPs, Risk Evaluation and Licensee Resource Commitment	NEA/CNRA/R(1999)2	1998	Workshop Proceedings, Prague, Czech Republic 8-11 June 1998 (cross issue w/ 4.6.3)

4.2 Increasing Operational Flexibility

The main regulatory challenge is to determine when increased operational flexibility might have consequential effects detrimental to safety.

Topic / Title	Reference	Year	Description/Outcomes/Reports
Low Power and Shutdown Activities	NEA/SEN/NRA(1991)2	1991	June 1991 - Special Issues Meeting Summary Record of presentations and discussions
Conduct of Inspections for Plant Modifications, Event Investigations and Operability Decisions	NEA/CNRA/R(1994)4	1994	CNRA/WGIP Workshop Proceedings (cross issue w/ 4.4, 9.1 and 9.2)
Application of Best Estimate Methodology in Safety Analysis and Licensing	NEA/SEN/NRA(1996)4	1996	In-depth Discussion
Low Power and Shutdown	NEA/SEN/NRA(2001)14	2001	Request to CSNI for future report

Topic / Title	Reference	Year	Description/Outcomes/Reports
Loss of Residual Heat Removal (RHR) While at Mid-Loop Conditions Corrective Actions	NEA/CNRA/R(2006)4	2006	CNRA Report
Regulatory Challenges related to Power Upgrades	NEA/SEN/NRA(2007)2	2007	In-depth Discussion

4.3 Safety Margins During more Exacting Operating Modes

The main corresponding regulatory challenges are:

- To identify cumulative, small design changes which are not individually fully tested; their effect can produce significant differences to the original design and require a comprehensive assessment;
- To review best estimate methodologies and define the corresponding acceptance criteria, taking uncertainties into account. Collaboration between regulatory bodies should be enhanced in order to come to common positions; and
- To assess the impact on safety of the use of fuel assemblies of different designs in the same core.

Topic / Title	Reference	Year	Description/Outcomes/Reports
Transient Behaviour of High Burn-up Fuel	NEA/SEN/NRA(1995)5	1995	Discussion item
Fuel Safety Margins	NEA/SEN/NRA(1996)4	1996	In-depth Discussion
Application of Best Estimate Methodology in Safety Analysis and Licensing	NEA/SEN/NRA(1996)4	1996	In-depth Discussion
Regulatory Inspection Practices on Fuel Elements and Core Lay-out at NPPs	NEA/CNRA/R(1997)4	1997	CNRA/WGIP Report.(Cross-Issue w/ 9.1)
Safety Margins	NEA/SEN/NRA(1998)3	1998	In-depth Discussion
Use of Best Estimate Analysis in Licensing	NEA/SEN/NRA(1999)1	1998	In-depth Discussion
Safety Criteria for High Burn-up Fuel	NEA/SEN/NRA(2000)4	2000	In-depth Discussion
	NEA/SEN/NRA(2001)1	2001	CNRA Request to CSNI
	NEA/SEN/NRA(2001)4	2001	Interim report by CSNI
Provisional Safety Criteria for RIA and LOCA	NEA/SEN/NRA(2002)3	2002	In-depth Discussion
CSNI Action Plan on Safety Margins	NEA/SEN/NRA(2004)1	2003	Discussion Item
Safety Criteria for High Burn-up Fuel	NEA/SEN/NRA(2005)1	2004	Joint CSNI/CNRA Topical Discussion
Earthquake in Nigata, Japan	NEA/SEN/NRA(2007)2	2007	Presentation on regulatory challenges following major earthquake

4.4 Backfitting and Safety Upgrading Programmes for Plants Designed to Lower Safety Standards

The main corresponding regulatory challenges are:

- To agree on which safety improvements are required; and
- To conduct an integrated safety review to optimise backfitting by addressing all issues rather than using a piecemeal approach.

Topic / Title	Reference	Year	Description/Outcomes/Reports
Conduct of Inspections for Plant Modifications, Event Investigations and Operability Decisions	NEA/CNRA/R(1994)4	1994	CNRA/WGIP Workshop Proceedings (cross issue w/ 4.2 and 9.1)
The Nuclear Regulatory Challenges of Judging Safety Backfits	NEA/SEN/NRA(2001)1	2001	Approved proposal
	Reference # 3674	2002	CNRA Green Booklet
Survey on Power Up-rates	December 2003 Highlights	2003	Discussion item
Lesson Learnt from Sump Pump Clogging Issue	NEA/SEN/NRA(2006)4	2006	Approved proposal for 2008 workshop

4.5 Requirements for Future Plants

The main corresponding regulatory challenges are:

- To establish close co-operation between designers and regulators of different countries to achieve a consensus on licensing requirements, in order to ensure that new designs can have a wide application around the world; and
- To maintain a level of scientific and industrial capability that is able to introduce new plants in the countries that may wish to build nuclear facilities in the future.

Topic / Title	Reference	Year	Description/Outcomes/Reports
A Review for Regulatory Requirements for Advanced Nuclear Power Plants	NEA/SEN/NRA(1993)1	1992	Summary Record of the 4 th CNRA Meeting
	NEA/SEN/NRA(1994)1	1993	Approval of CNRA report
	NEA/CNRA/R(1994)2	1994	CNRA Report
Requirements for Future Plants	NEA/SEN/NRA(2002)1	2001	In-depth Discussion
	December 2003 Highlights	2003	In-depth Discussion
How International Nuclear Regulatory Inspections Can Promote or not Promote Good Safety Culture, Inspections of Interactions Between Licensee and Its Contractors and Future Challenges for Inspectors	NEA/CNRA/R(2007)1 & 2	2007	CNRA Workshop Proceedings, (cross issue w/ 5.2, 5.6, 6.3, 6.4 and 9.1)
Regulation of New Reactors	NEA/SEN/NRA/(2006)4	2006	CNRA Discussion
	NEA/SEN/NRA(2007)1	2007	Agreed to setup new group
	NEA/SEN/NRA(2007)2		Approved mandate

4.6 Other Technical Issues

Numerous other technical issues have been discussed and numerous reports have been produced. The CSNI structure has been utilised in the following sub-sections to provide the reader with a simple categorisation of the different nuclear safety technical issues covered unless they have already been covered in the NRFC report.

4.6.1 Risk Assessment

Topic / Title	Reference	Year	Description/Outcomes/Reports
Workshop on Application and Limitations of PSA	NEA/SEN/NRA(1990)7	1990	CNRA Discussion
Regulatory Approaches to PSA	NEA/SEN/NRA(1995)2	1995	Special Issues Meeting
	NEA/CNRA/R(1995)2	1995	CNRA Report
Review Procedures and Criteria for Different Regulatory Applications of PSA	NEA/SEN/NRA(97)4	1997	Special Issues Meeting
	NEA/CNRA/R(1997)5	1997	CNRA Report
Risk Informed Regulation	NEA/SEN/NRA(1997)4	1997	Special Issues Meeting
	NEA/SEN/NRA(99)1	1998	In-depth Discussion
Regulatory Inspection Practices Related to Older Operating NPPs, Risk Evaluation and Licensee Resource Commitment (1998)	NEA/CNRA/R(1999)2	1999	CNRA/WGIP Workshop Proceedings (cross issue w/4.1.1, 5.1 and 9.1)
Risk and Application of Risk-Informed Regulations	NEA/SEN/NRA(2000)1	1999	In-depth Discussion
Risk Informed Regulation – In-Service Inspections	NEA/SEN/NRA(2001)4	2001	In-depth Discussion
International Workshop on Risk Informed Inspection, Inspection of Performance of Licensee Organisation and Inspection Aspects of Plants Near or at End-of-Life	NEA/CNRA/R(2005)4 & 5	2005	CNRA/WGIP Workshop Proceedings (cross issue w/4.1.1, 4.14, 5.5, 6.4 and 9.1)

4.6.2 Analysis and Management of Accidents

Topic / Title	Reference	Year	Description/Outcomes/Reports
CNRA Review on Regulatory Approaches to Accident Management of Containment	SEN/NRA(90)3	1990	Discussions on survey results at CNRA meetings
	NEA/SEN/NRA(91)2 & NEA/SEN/NRA (92)1	1991	
	NEA/CNRA/R(1992)1	1992	CNRA Report
Regulatory Approaches to Severe Accidents	NEA/SEN/NRA(1994)5	1994	Special Issues Meeting
CNRA Statement on Regulatory Views to Severe Accident Issues.	NEA/SEN/NRA(1995)2	1995	Approval of statement
Hydrogen Mitigation in Containment	NEA/SEN/NRA(2000)1	1999	In-depth Discussion
CSNI Specialist Meeting on External Hazards	NEA/SEN/NRA(2002)3	2002	Results and recommendations presented (cross issue w/4.6.12)

Topic / Title	Reference	Year	Description/Outcomes/Reports
Learning from Nuclear Regulatory Self-Assessment International Peer Review	Ref.# 6161	2006	CSN Lessons Learnt from the Essential Service Water System Degradation Event

4.6.3 Instrumentation and Control

The utilisation of software systems in nuclear installations has expanded rapidly in the last 10 years. As technology improves more and more of these systems are being considered and proposed by licensees for inclusion in plants especially in safety critical systems. The ability to plan, specify, develop, operate and maintain these systems is a complex problem facing not only the utilities and licensees but also the regulators who must verify that they can perform in accordance with established requirements.

Topic / Title	Reference	Year	Description/Outcomes/Reports
Licensing of Safety Critical Software	NEA/SEN/NRA(1994)8	1994	In-depth discussion (cross issue w/ 4.1.5)
Licensing of Computer-Based Systems Important to Safety	NEA/SEN/NRA(1996)2	1996	Special Issues Meeting (held jointly with CSNI) (cross issue w/ 4.1.5)
	NEA/CNRA/R(1997)2	1997	CNRA Report (cross issue w/ 4.1.5)
Licensing of Digital I&C	NEA/SEN/NRA(2000)4	2000	Approved proposal for Workshop. (cross issue w/ 4.1.5)
Workshop on Licensing and Operating Experience of Computer-Based I&C Systems	NEA/SEN/NRA(2002)1	2001	Results of Workshop presented. (cross issue w/ 4.1.5)
WGIP Workshop on Regulatory Inspection Practices Related to Older Operating NPPs, Risk Evaluation and Licensee Resource Commitment	NEA/CNRA/R(1999)2	1998	Workshop Proceedings, Prague, Czech Republic 8-11 June 1998 (cross issue w/ 4.1.5)
Defence in Depth of Electrical Systems and Grid Interactions	NEA/SEN/NRA(2006)4	2006	In-depth Discussion on Forsmark Event
	NEA/SEN/NRA(2007)1	2007	Approved proposal for Joint SKI Workshop with IAEA
	NEA/SEN/NRA(2007)2		Proposal made to CSNI based on SKI request to CNRA
Inspection of Digital I&C Systems: Methods and Approaches	NEA/CNRA/R(2008)	2008	CNRA Workshop Proceedings cross issue w/ 9.1)

4.6.4 Fuel Cycle Facilities

Topic / Title	Reference	Year	Description/Outcomes/Reports
Comparison of regulations and licensing for fuel cycle facilities particularly with regard to external hazards	NEA/CNRA/R(1986)1	1986	Proceedings from a Specialist Meeting in Spain (CSNI Sub-Licensing Committee)
Workshop on the Safety of the Nuclear Fuel Cycle	NEA/SEN/NRA(2000)4	2000	Results of the Joint Workshop
Inspection of Fuel Cycle Facilities in NEA Member Countries	NEA/CNRA/R(2003)2	2003	CNRA/WGIP Report

4.6.5 Other Issues

Topic / Title	Reference	Year	Description/Outcomes/Reports
Hydrogen Mitigation in Containment	NEA/SEN/NRA(2000)1	1999	CNRA Discussion

5. SOCIO-ECONOMIC AND POLITICAL ISSUES WITH POTENTIAL REGULATORY IMPACT

This chapter includes references to CNRA reports, discussions workshops and other documents related to the following issues:

- De-regulation
- De-manning and Contractorisations
- Research
- Emergency Arrangements
- Managerial Changes
- Safety Culture
- Emerging Issues

5.1 De-regulation

The main corresponding regulatory challenges are:

- The potential long-term consequences of the privatisation of national companies on regulation of the nuclear industry;
- The effect of regulation on mergers between utilities;
- The regulation of a foreign-owned or managed nuclear facility;
- The ways to overcome operators' resistance to regulators' requirements for improvements to safety;
- The need for greater prioritisation by regulators;
- How to ensure that sufficient money is available to cover the back-end costs of nuclear power generation;
- The potential effects of early closure on decommissioning funds; and
- The effects of the financial failure of operators.

Topic / Title	Reference	Year	Description/Outcomes/Reports
Early Signs of Deteriorating Safety Performance	NEA/SEN/NRA(98)1	1997	In-depth Discussion.
Regulatory Inspection Practices Related to Older Operating NPPs, Risk Evaluation and Licensee Resource Commitment 1998)	NEA/CNRA/R(1999)2	1999	CNRA/WGIP Workshop Proceedings (cross issue w/4.1.1, 4.6.1, and 9.1)
Nuclear Regulatory Challenges Arising from Competition in Electricity Markets	NEA/SEN/NRA(99)3	1999	Discussion and approval to prepare report
	NEA/SEN/NRA(2000)1	1999	Discussion Item
	NEA/SEN/NRA(2000)4	2000	
	Reference # 2948	2001	CNRA Green Booklet
Regulatory Inspection Activities related to Radiation Protection, Long Shutdowns and Subsequent Restarts, and the Use of Objective Indicators in Evaluating the Performance of Plants	NEA/CNRA/R(2001)4 & 5	2001	CNRA/WGIP Workshop Proceedings (cross issue w/ 6.2 and 9.1)
Operating Experience related to De-regulation of Electricity Markets	NEA/SEN/NRA(2002)1	2001	In-depth Discussion. In-depth Discussion.(Cross-Issue w/ 9.2)

5.2 De-Manning and Contractorisation

The main corresponding regulatory challenges are:

- How to ensure the operators maintain ownership of their safety cases;
- The need to develop ways of monitoring the adequacy for safety of new working arrangements caused by staff reductions and the greater use of contractors; and
- How to ensure the long-term availability of staff with the appropriate skills and training in the future for safety critical work.

Topic / Title	Reference	Year	Description/Outcomes/Reports
Nuclear Regulatory Inspection of Contracted Work	NEA/CNRA/R(2003)4	2003	CNRA/WGIP Report
NEA Regulators Industry Forum 2004 - Licensees Capability & Regulators Oversight to Ensure Safe NPP Operation - Technical Support Services & Contractors.	NEA/SEN/NRA(2004)3	2004	CNRA International Forum
How International Nuclear Regulatory Inspections Can Promote or not Promote Good Safety Culture, Inspections of Interactions Between Licensee and Its Contractors and Future Challenges for Inspectors	NEA/CNRA/R(2007)1 & 2	2007	CNRA Workshop Proceedings, (cross issue w/ 4.5, 5.6, 6.3, 6.4 and 9.1)

5.3 Research

The main corresponding regulatory challenges are:

- The need for research activities to be regulated in such a way that the regulator maintains its independence; and
- How to ensure that the necessary research facilities are available, a stable infrastructure is maintained and appropriate level of research covering all necessary areas is sponsored and shared by the nuclear industry to improve the knowledge base on safety issues in the future.

Topic / Title	Reference	Year	Description/Outcomes/Reports
Future Direction of Nuclear Safety Research	NEA/SEN/NRA/SIN(95)2	1995	Summary Record of Combined CNRA/CSNI meeting
The Role of Research in a Regulatory Context	NEA/SEN/NRA(2000)4	2000	Approved Joint Forum in 2001
	NEA/SEN/NRA(2001)1	2001	International Forum
	Reference # 3288	2001	Joint CNRA/CSNI Collective Statement
List of Regulatory Implications in CSNI Products	NEA/SEN/NRA(2002)1	2001	Request to CSNI
CSNI Collective Opinion on Safety Research Capabilities in Support of Efficient and Effective Regulation of NPPs	NEA/SEN/NRA(2003)3	2003	Discussion item
NEA Nuclear Safety and Regulation Forum (SRF 2005) 40 Years of Multi-lateral Co-operation	NEA/SEM/NRA(2004)3	2004	Discussion item
	NEA/SEN/NRA(2005)1	2005	International Forum
The Role of Research in Regulatory Context II	NEA/SEN/NRS(2006)3	200	CNRA Discussion
	NEA/CSNI/R(2008)3 &4	2008	Joint CSNI/CNRA Workshop

5.4 Emergency Arrangements

This includes the co-ordination with, and the support of, other responsible government organisations, the effective communication of risk information, necessary protection measures and the results achieved, and a critical review and conservative response to lessons learnt

Topic / Title	Reference	Year	Description/Outcomes/Reports
International Workshop on the Impact of the Year 2000 on Nuclear Industry	NEA/SEN/NRA(2000)1	1999	In-depth Discussion
Inspection of Licensee Activities in Emergency Planning	NEA/CNRA/R(1998)2	1998	CNRA/WGIP Report.(Cross-Issue w/ 9.1)

5.5 Managerial Changes

The main corresponding regulatory challenges are:

- How to ensure that commercial interests and strategy do not compromise safety; and
- How to ensure that safety risks from redundant plants are addressed, and that they are decommissioned over the appropriate timescale.

Topic / Title	Reference	Year	Description/Outcomes/Reports
The Effectiveness of Licensees in Inspecting the Management of Safety	NEA/CNRA/R(2001)9	2001	CNRA/WGIP Report
Workshop on Management of Change	NEA/SEN/NRA(2002)1	2001	Results of Workshop presented
CSNI TOP On Managing and Regulating Organisational Change in Nuclear Installations	NEA/SEN/NRA(2003)3	2003	Discussion item
International Workshop on Nuclear Safety Management and the Effectiveness of Inspections	NEA/SEN/NRA(2005)1	2005	Joint NEA/IAEA Workshop
International Workshop on Risk Informed Inspection, Inspection of Performance of Licensee Organisation and Inspection Aspects of Plants Near or at End-of-Life	NEA/CNRA/R(2005)4 & 5	2005	CNRA/WGIP Workshop Proceedings (cross issue w/4.1.1, 4.14, 4.6.1, 6.4 and 9.1)

5.6 Safety Culture

The main corresponding regulatory challenges are:

- The definition itself, agreeing on what constitutes a good safety culture and how to develop one;
- How to measure safety culture (tools to be developed), how to maintain it and how to develop it further;
- The effort needed to better understand the relationship between organisational and human behaviour and nuclear safety;
- How to measure the effectiveness of the application of a safety culture policy at all levels of an organisation;
- The effort required to assess the effect of management attitude and practices, policy, structure, procedures and level of internal communication on nuclear safety; and
- The importance of managers' training (e.g., simulation games, case studies, etc.).

Topic / Title	Reference	Year	Description/Outcomes/Reports
The Role of the Nuclear Regulator in Promoting and Evaluating Safety Performance	Reference # 1547	1999	CNRA Green Booklet
Regulatory Response Strategies for Safety Culture Problems	NEA/SEN/NRA(99)1	1998	Progress report
	NEA/SEN/NRA(99)3	1999	
	NEA/SEN/NRA(2000)1	1999	Report approved
Regulatory Response Strategies for Safety Culture Problems	Reference # 2248	2000	CNRA Green Booklet
Joint NEA/IAEA Workshop on Nuclear Safety Management and the Effectiveness of Inspections	December 2003 Highlights	2003	Approved workshop
How International Nuclear Regulatory Inspections Can Promote or not Promote Good Safety Culture, Inspections of Interactions Between Licensee and Its Contractors and Future Challenges for Inspectors	NEA/CNRA/R(2007)1 & 2	2007	CNRA Workshop Proceedings, (cross issue w/ 4.5, 5.2, 6.3, 6.4 and 9.1)

5.7 Emerging Issues

A few of the possible emerging issues denote in the publication are as follows:

- the potential long-term consequences of the privatisation of national companies on regulation of the nuclear industry;
- the effect of regulation of mergers between utilities;
- moves to de-regulate utilities;
- energy market de-regulation and concomitant emphasis on short-term financial aspects of operation with possible neglect of longer-term safety concerns;
- ensuring that resources are available to discharge operators' long-term liabilities; and
- Increasing public concern for the environment.

Topic / Title	Reference	Year	Description/Outcomes/Reports
Competition vs. Co-operation: Future Regulatory Challenges	NEA/SEN/NRA(1996)4	1996	CNRA Discussions / CNRA Report
	NEA/SEN/NRA(1997)4	1997	
	NEA/SEN/NRA(1998)1		
International Regulatory Forum Safety and Regulation Forum (SRF 2005)	NEA/SEN/NRA(2005)3	2005	40 th Anniversary of NEA Safety Committees

6. ORGANISATIONAL, MANAGEMENT AND HUMAN ISSUES WITH POTENTIAL REGULATORY IMPACT

This chapter includes references to CNRA reports, discussions workshops and other documents related to the following issues [NOTE: Human and Organisational Factors were not specifically covered in the original Future Nuclear Regulatory Challenges (FNRC) report, but have been added into this chapter]:

- Regulatory Effectiveness and Changes
- Operator Responsibility
- Human and Organisational Factors
- Staff Training and Preserving a Critical Mass of Knowledge
- Interface between Regulatory Authorities and the Public

6.1 Regulatory Effectiveness and Changes

The main challenge of credibly judging regulatory effectiveness starts with the establishment of clear criteria for success and the tools for its measurement. A number of possible challenges are detailed in the FNRC Report, including:

- To what extent risk-informed, performance-based regulation should be applied and how this should be related to cost-benefit considerations;
- To what extent international peer-reviews should be used to monitor regulatory effectiveness;
- What the rationale should be for frequency and scope of inspections; also, whether the inspection requirements for facilities with significant passive safety features should be different;
- Etc.

Topic / Title	Reference	Year	Description/Outcomes/Reports
Developing and Measuring Regulatory Effectiveness	NEA/SEN/NRA(1999)1	1998	Discussion item
	NEA/SEN/NRA(1999)3	1999	International Forum and approval of follow-up activities
Improving Nuclear Regulatory Effectiveness	NEA/SEN/NRA(2000)1	1999	Progress report from Task Group
	NEA/SEN/NRA(2000)4	2000	
	NEA/SEN/NRA(2001)1	2001	Approved report
	NEA/CNRA/R(2001)3 OR Reference # 3148	2001	CNRA Green Booklet
The Effectiveness of Nuclear Regulatory Inspection	NEA/CNRA/R(2001)7	2001	CNRA/WGIP Report (cross issue w/9.1)
Improving versus Maintaining Nuclear Safety	NEA/SEN/NRA(2001)1	2001	In-depth Discussion
	Reference # 3672	2002	Publication (small green booklet)
Direct Indicators of Regulatory Effectiveness and Efficiency	NEA/SEN/NRA(2002)1	2001	In-depth Discussion on Task Group Objectives / Approval of Pilot Project
International Forum on Measuring, Assessing and Communicating Regulatory Effectiveness (MACRE)	NEA/SEN/NRA(2002)3	2002	Proposal approved for Workshop
	Not yet issued		Forum Proceedings
Pilot Project; Direct Indicators of Regulatory Effectiveness and Efficiency	December 2003 Highlights	2003	Approved Report
	Spring 2004	2004	CNRA Green Booklet
Nuclear Regulatory Decision Making	ISBN 92-64-01051-3	2005	CNRA Green Booklet
Regulatory Goal of assuring Nuclear Safety	NEA/SEN/NRA(2006)4	2006	Approved task group and Forum for 2007
	NEA/SEN/NRA(2007)1	2007	International Forum (FANS 2007)
	NEA/SEN/NRA(2007)2	2008	Green Booklet

6.2 Operator Responsibility

Challenges in this area include:

- How to ensure a proper interface between regulatory activities and operator activities to maintain effectiveness on both sides;
- While permitting some measure of "self-regulation" or "self-assessment", what should be the standards or criteria against which operators can be assessed to quantify their success in that endeavour and at the same time ensure a strong regulatory presence is maintained;
- To what extent regulators and operators should consult one another to agree on required R&D as well as priorities in order to minimise duplication of work and to accelerate the resolution of safety issues;
- How regulators should interact with operators to help them develop a proper framework to ensure high levels of safety without being overly prescriptive; and
- How regulators should measure operator performance and respond to different levels of performance.

Topic / Title	Reference	Year	Description/Outcomes/Reports
Compilation of Responses to the Questionnaire on the Evaluation of the Safety Performance of Licensees	NEA/CNRA/R(1996)1	1996	CNRA/WGIP Report
Regulatory Inspection Activities related to Inspection Planning, Plant Maintenance and the Assessment of Safety	NEA/CNRA/R(1997)1	1997	CNRA/WGIP Workshop Proceedings (cross issue w/9.1)
Performance Indicators and Combining Assessments to Evaluate the Safety Performance of Licensees	NEA/CNRA/R(1998)3	1998	CNRA/WGIP Report
Licensee Self Assessment (Merit, Extent, Promotion and Evaluation)	NEA/SEN/NRA(1999)3	1999	In-depth Discussions
	NEA/SEN/NRA(2001)1	2001	
	NEA/SEN/NRA(2002)1		
Nuclear Regulatory Review of Licensee Self-Assessment	Reference # 4728	2003	CNRA Green Booklet
Regulatory Inspection Activities related to Radiation Protection, Long Shutdowns and Subsequent Restarts, and the Use of Objective Indicators in Evaluating the Performance of Plants	NEA/CNRA/R(2001)4 & 5	2001	CNRA/WGIP Workshop Proceedings (cross issue w/ 5.1 and 9.1)
Plant Safety Performance Indicators	NEA/SEN/NRA(2001)4	2001	General Discussion
Inspection of Maintenance on Safety Systems during NPP Operation	NEA/CNRA/R(2001)6	2001	CNRA/WGIP Report
NEA/WANO International Forum on Nuclear Regulator/Licensee Interface Issues	NEA/SEN/NRA(2002)3	2002	Reviewed Overview Forum Report
	NEA/SEN/NRA(2003)3	2003	Approved CNRA/WANO overview report
Nuclear Regulatory Decision Making	NEA/SEN/NRA(2003)3	2003	Approved Task Group
	December 2003 Highlights		Progress Report
	NEA/SEN/NRA(2004)3	2004	
Plant Safety Performance Indicators	NEA/SEN/NRA(2004)3	2004	Discussion Item
Regulatory Uses of Safety Performance Indicators	NEA/CNRA/R(2005)2 & 3 NEA/CNRA/R(2006)1	2005	CNRA Report
Regulatory Challenges in Using Operational Experience	ISBN 92-64-01083-1	2006	CNRA Green Booklet
The Use of International Operating Experience Feedback for Improving Nuclear Safety	NEA/CNRA/R(2008)3	2008	CNRA/WGOE Report (cross issue w/ 9.2)

6.3 Human and Organisational Factors

As previously noted Human and Organisational Factors were not specifically covered in the original FNRC report, but have been added into this chapter as the most logical section. This element has become increasingly important and includes regulatory challenges such as:

- While many technical problems have been resolved in the past, human and organisational problems largely remain unresolved and it is important to understand how regulators deal with this issue;
- How do regulators evaluate organisations and their support in order to identify problems before they lead into events;
- Many events with their roots in human and organisation already have taken and will take place. Consequently, more complete and profound reporting of their contributing factors is necessary and how do regulators improve experience feedback in this area;
- While training is very important, it is also valuable to have experts in human and organisational performance issues involved due to the interdisciplinary nature of the area. What are regulators doing to increase their knowledge in this area of human and organisational issues.

Topic / Title	Reference	Year	Description/Outcomes/Reports
Regulatory Approaches to Human Factors in Operational Experience	SEN/NRA(1990)3	1990	Special Issues Meeting, Summary Record of presentations and discussions
Nuclear Regulatory Challenges related to Human Performance	NEA/SEN/NRA(2002)1	2001	Request to CSNI for future report
	NEA/SEN/NRA(2003)3	2003	CSNI Presentation
	ISBN 92-64-02089-6	2004	CNRA Green Booklet
International Workshop on Nuclear Safety Management and the Effectiveness of Inspections	NEA/SEN/NRA(2005)1	2005	Joint NEA/IAEA Workshop
How International Nuclear Regulatory Inspections Can Promote or not Promote Good Safety Culture, Inspections of Interactions Between Licensee and Its Contractors and Future Challenges for Inspectors	NEA/CNRA/R(2007)1 & 2	2007	CNRA Workshop Proceedings, (cross issue w/ 4.5, 5.2, 5.6, 6.4 and 9.1)
Special Presentation by CSNI WGHOE	N/A	2008	In-depth Discussion

6.4 Staff Training and Preserving a Critical Mass of Knowledge

This element was been identified as one of the most critical aspects of maintaining regulatory effectiveness, efficiency and quality of work. Numerous challenges are reviewed in the FNRC report including:

- How to implement structured training programmes and hoe to measure programme effectiveness;
- What is the best way to preserve the "regulators' corporate memory" in order to maintain regulatory effectiveness in the face of the imminent retirement of senior and key regulatory staff, or how to "download" senior specialist expertise in a planned and structured manner;

- The need for periodic review of regulatory documents and procedures to ensure that they are current and relevant;
- Etc.

Topic / Title	Reference	Year	Description/Outcomes/Reports
Assuring Nuclear Safety Competence in the 21 st Century	NEA/SEN/NRA(1999)1	1998	Discussion of Workshop planning
	NEA/SEN/NRA(1999)3	1999	
Workshop on Assuring Nuclear Safety Competence into the 21st Century	NEA/SEN/NRA(2000)1	1999	Results of Workshop
	NEA/CNRA/R(2000)1	2000	CNRA Workshop Proceedings
Assuring Future Nuclear Safety Competencies	NEA/SEN/NRA(2000)4	2000	Discussion on follow-up activities from workshop
	NEA/SEN/NRA(2001)1	2001	
	Reference # 3149	2001	CNRA Green Booklet
	NEA/SEN/NRA(2001)4	2001	Reviewed Workshop Recommendations
	NEA/SEN/NRA(2002)3	2002	Discussion at CNRA meeting
International Workshop on Risk Informed Inspection, Inspection of Performance of Licensee Organisation and Inspection Aspects of Plants Near or at End-of-Life	NEA/CNRA/R(2005)4 & 5	2005	CNRA/WGIP Workshop Proceedings (cross issue w/4.1.1, 4.14, 4.6.1, 5.5, and 9.1)
How International Nuclear Regulatory Inspections Can Promote or not Promote Good Safety Culture, Inspections of Interactions Between Licensee and Its Contractors and Future Challenges for Inspectors	NEA/CNRA/R(2007)1 & 2	2007	CNRA Workshop Proceedings, (cross issue w/ 4.5, 5.2, 5.6, 6.3 and 9.1)
Workshop on Human Resource Management in Safety and Regulation	NEA/SEN/NRA(2005)3	2005	CNRA Workshop (cross issue w/7.1.4)

6.5 Interface between Regulatory Authorities and the Public

Major challenges in this area include:

- Responding to increasing pressures on regulatory body resources in some countries to accommodate public needs to participate in deliberations as well as the decision-making process through hearings and consultations;
- Meeting freedom of information requirements and the requirement in some countries to respond to all requests from the public and media;
- Responding to public demands for involvement in major decision-making; and
- How to maintain an appropriate balance between the need to inform the public and at the same time the need to encourage responsible media reporting of regulatory actions.

Topic / Title	Reference	Year	Description/Outcomes/Reports
Workshop on Investing in Trust: Nuclear Regulators and the Public	NEA/SEN/NRA(1999)3	1999	Proposal approved for Workshop
	NEA/SEN/NRA(2000)1	1999	Discussion of Workshop planning
	NEA/SEN/NRA(2000)4	2000	
	NEA/SEN/NRA(2001)1	2001	Results of Workshop Discussed
Workshop on Building and Measuring and Improving Public Confidence in the Nuclear Regulator	NEA/SEN/NRA(2002)3	2002	Proposal approved for Workshop
Achievements and Challenges in Nuclear Regulatory Communication with the Public	NEA/CNRA/R(2008)4	2008	Outcome from the CNRA Workshops held in 2000, 2004 and 2007 (cross issue w/7.1.5)

7. INTERNATIONAL ISSUES WITH POTENTIAL REGULATORY IMPACT

This chapter includes references to CNRA reports, discussions workshops and other documents related to the following issues:

- Co-operation between Safety Authorities;
- Co-operation and assistance to safety authorities in countries where regulatory organisations need to be strengthened.

7.1 Co-operation between Safety Authorities

The major issues are:

- Producing common technical standards and guides;
- Technical consensus issues;
- Regulators' human resources;
- Public communication;
- Research; and
- Responding to a nuclear emergency.

7.1.1 *International Co-operation on Nuclear Safety*

Topic / Title	Reference	Year	Description/Outcomes/Reports
Interaction between the INRA and the CNRA	NEA/SEN/NRA(1998)1	1997	Presentation by INRA Chairman
Nuclear Safety Convention – Preparation of National Reports	NEA/SEN/NRA(1998)1	1997	Round Table Discussion
Lessons Learned from the Preparation of National Reports and the Meeting of the Nuclear Safety Convention	NEA/SEN/NRA(2000)1	1999	Round Table Discussion
Lessons Learned from 9/11	NEA/SEN/NRA(2002)1	2001	Round Table Discussion
ICRP Recommendations	NEA/SEN/NRA(2004)3	2004	CNRA Discussion

7.1.2 Producing Common Technical Standards and Guides

Topic / Title	Reference	Year	Description/Outcomes/Reports
Comparison of regulations and licensing procedures for fuel cycle facilities particularly with regard to external hazards : proceedings of a specialists' meeting (1986 : Salamanca, Spain), 1986	NEA/CNRA/R(1986)1	1986	CSNI Report
Nuclear Safety Convention	NEA/SEN/NRA(1994)8	1994	CNRA Discussion
Harmonisation of Standards	NEA/SEN/NRA(2002)3	2002	In-depth Discussion (cross issue w/ 4.1.4)
CSNI/PRG Proposal on Development of a Report on Approaches to Resolution of Key Safety Issues for Operating Reactors	NEA/SEN/NRA(2003)3	2003	In-depth Discussion
Harmonisation Approaches to Standards	December2003 Highlights	2003	In-depth Discussion (cross issue w/ 4.1.4)

7.1.3 Technical Consensus Issues

Topic / Title	Reference	Year	Description/Outcomes/Reports
Trends in Occupational Exposure	NEA/SEN/NRA(1998)1	1997	In-depth discussion

7.1.4 Regulators' Human Resources

Topic / Title	Reference	Year	Description/Outcomes/Reports
See Appendices in WGIP status reports	NEA/CNRA/R(1994)3	1994	CNRA/WGIP Report
	NEA/CNRA/R(1997)3	1997	CNRA/WGIP Report
	NEA/CNRA/R(2001)8	2001	CNRA/WGIP Report
Workshop on Human Resource Management in Safety and Regulation	NEA/SEN/NRA(2005)3	2005	CNRA Workshop (cross issue w/6.4)

7.1.5 Public Communication

Topic / Title	Reference	Year	Description/Outcomes/Reports
Nuclear Events Web Based Systems (NEWS)	NEA/SEN/NRA(2000)4	2000	Proposal to set-up new system based on Y2K experience
IRS / INES	See Summary Records	Various	Continuous Discussions
Regulatory Requirements and Experience Related to Low-Power and Shutdown Activities	NEA/SEN/NRA(1991)2	1991	Special Issues Meeting
Working Group on Public Communications for Nuclear Regulatory Organisations (WGPC)	NEA/SEN/NRA(2001)4	2001	Approved setting up new Working Group
Enforcement Policies	NEA/SEN/NRA(2001)4	2001	
Nuclear Events Web Based Systems (NEWS)	NEA/SEN/NRA(2002)3	2002	Discussion at CNRA meeting

Topic / Title	Reference	Year	Description/Outcomes/Reports
Nuclear Regulatory Decision Making	ISBN 92-64-01051-3	2005	CNRA Green Booklet
	NEA/SEN/NRA(2006)1	2005	CNRA Discussions
	NEA/SEN/NRA(2006)3	2006	CNRA discussions
Achievements and Challenges in Nuclear Regulatory Communication with the Public	NEA/CNRA/R(2008)4	2008	Outcome from the CNRA Workshops held in 2000, 2004 and 2007 (cross issue w/6.5)

7.1.6 Research

Topic / Title	Reference	Year	Description/Outcomes/Reports
CSNI Specialist Meeting on External Hazards	NEA/SEN/NRA(2002)3	2002	Results and recommendations presented. (cross issue w/4.6.2)
Regulator and Industry Co-operation on Nuclear Safety Research Challenges and Opportunities	Reference # 4413	2003	CSNI/CNRA Publication

7.1.7 Responding to a Nuclear Emergency

Topic / Title	Reference	Year	Description/Outcomes/Reports
Comparison of Criteria used for Nuclear or Radiological Emergencies	NEA/SEN/NRA(2003)3	2003	In-depth Discussion (cross issue w/4.1.4)
	December 2003 Highlights		

7.2 Co-operation with and Assistance to Safety Authorities in Countries where Regulatory Organisations need to be Strengthened.

Topic / Title	Reference	Year	Description/Outcomes/Reports
Report on Regulatory Assistance to Eastern Countries	NEA/SEN/NRA(1993)1	1992	Discussion at CNRA meeting
	NEA/SEN/NRA(1993)6	1993	
Participation by CEEC/NIS to CNRA Activities	NEA/SEN/NRA(1994)1	1993	Discussion at CNRA meeting
Russian Observership	NEA/SEN/NRA(1996)4	1996	Approved by CNRA
Nuclear Safety in EU Applicant Countries	NEA/SEN/NRA(2001)1	2001	WENRA Report

8. DECOMMISSIONING AND THE MANAGEMENT, STORAGE AND DISPOSAL OF HIGH-LEVEL RADIOACTIVE WASTE AND SPENT FUEL

It should be noted that since 1999, CNRA has received a yearly report from the Radioactive Waste Management Committee and the Committee on Radiation Protection and Public Health on relevant regulatory activities. This chapter includes references to CNRA reports, discussions workshops and other documents related to the following issues:

- Decommissioning;
- Management, Storage and Disposal of High-Level Waste Radioactive Waste and Spent Fuel.

8.1 Decommissioning

The main corresponding regulatory challenges are:

- To select solutions making future decommissioning easier at the design stage of new plants or during operation of existing plants, with the aim of dose reduction;
- To define clearly the decommissioning strategy to be followed;
- To secure appropriate funding for decommissioning activities; and
- To define a policy for the management of the different types of radioactive wastes, preferably by international consensus.

Topic / Title	Reference	Year	Description/Outcomes/Reports
Joint Workshop on Regulatory Aspects of Decommissioning	NEA/SEN/NRA(1999)1	1998	Discussion item
Regulatory Practices for Decommissioning of NPPs with special Emphasis on Regulatory Inspection Practices	NEA/CNRA/R(1999)4	1999	CNRA/WGIP Report
The Regulatory Challenges of Decommissioning Nuclear Reactors	NEA/SEN/NRA(2000)4	2000	Approved Task Group
	Reference # 4375	2003	CNRA Publication
Joint Workshop on Safe, Efficient, And Cost-Effective Decommissioning	NEA/RWM/WPDD(2005)6	2004	Joint Workshop

8.2 Management, Storage and Disposal of High-Level Radioactive Waste and Spent Fuel

The main corresponding regulatory challenges are:

- How to deal with the accumulating spent fuel in interim storage;
- To define a long-term strategy for dealing with spent fuel and high-level waste acceptable to all parties; and
- To identify and maintain progress in developing options for final disposal of spent fuel and high-level waste in the face of public opposition.

Topic / Title	Reference	Year	Description/Outcomes/Reports
Regulatory Aspects of Waste Management	NEA/SEN/NRA(1995)5	1995	Discussion item
	NEA/SEN/NRA(1997)4	1997	Discussion item
Collaboration CNRA / RWMC	NEA/SEN/NRA(1998)3	1998	Discussion item
Collaboration CNRA / RWMC	NEA/SEN/NRA(1999)1	1998	Discussion item
Annual report by RWMC Regulators' Forum to CNRA	See Summary Records	> 1999	Annual report received by CNRA since 1999

9. OTHER REGULATORY CHALLENGES

This chapter includes references to CNRA reports, discussions workshops and other documents related to the following issues:

- Inspection Practices
- Operational Experience
- Siting, Construction, Commissioning, etc.

9.1 Inspection Practices

Topic / Title	Reference	Year	Description/Outcomes/Reports
Regulatory Inspection of NPPs in NEA Member Countries	NEA/CNRA/R(1978)1	1978	CNRA Report
WGIP Reports	Summary Records	>1991	WGIP provides a report to CNRA at every meeting
WGOE Reports	Summary Records	>1989	WGOE provides a report to CNRA at every meeting
Workshop on Conduct of Inspections and Inspector Training and Qualification	NEA/CNRA/R(1992)3	1992	CNRA/WGIP Workshop Proceedings
Status Report on Regulatory Inspection Philosophy, Inspection Organisation and Inspection Practices.	NEA/CNRA/R(1994)3	1994	CNRA/WGIP Report
Conduct of Inspections for Plant Modifications, Event Investigations and Operability Decisions	NEA/CNRA/R(1994)4	1994	CNRA/WGIP Workshop Proceedings (cross issue w/4.2, 4.4 and 9.2)
Future directions of inspection planning in assessing licensee safety performances	NEA.SEN/NRA(1996)2	1996	In-depth discussion
Regulatory Inspection Activities related to Inspection Planning, Plant Maintenance and the Assessment of Safety	NEA/CNRA/R(1997)1	1997	CNRA/WGIP Workshop Proceedings (cross issue w/6.2)
Status Report on Regulatory Inspection Philosophy, Inspection Organisation and Inspection Practices.	NEA/CNRA/R(1997)3	1997	CNRA/WGIP Report

Topic / Title	Reference	Year	Description/Outcomes/Reports
Regulatory Inspection Practices on Fuel Elements and Core Lay-out at NPPs	NEA/CNRA/R(1997)4	1997	CNRA/WGIP Report.(Cross-Issue w/ 4.3)
Comparison of Inspection Practices in relation to Control Room Operator and Shift Supervisor Licenses	NEA/CNRA/R(1998)1	1998	CNRA/WGIP Report
Inspection of Licensee Activities in Emergency Planning	NEA/CNRA/R(1998)2	1998	CNRA/WGIP Report.(Cross-Issue w/ 5.4)
Regulatory Inspection Practices Related to Older Operating NPPs, Risk Evaluation and Changing Operating Practices (1998)	NEA/CNRA/R(1999)2	1999	CNRA/WGIP Workshop Proceedings (cross issue w/4.1.1, 5.1 and 9.2)
Reactor Inspection and Oversight Programme	NEA/SEN/NRA(1999)3	1999	Presentation by US NRC followed by in-depth discussion
Commendable Inspection Practices	NEA/CNRA/R(2000)2	2000	CNRA/WGIP Report
Regulatory Inspection Activities related to Radiation Protection, Long Shutdowns and Subsequent Restarts, and the Use of Objective Indicators in Evaluating the Performance of Plants	NEA/CNRA/R(2001)4 & 5	2001	CNRA/WGIP Workshop Proceedings (cross issue w/ 5.1 and 6.2)
The Effectiveness of Nuclear Regulatory Inspection	NEA/CNRA/R(2001)7	2001	CNRA/WGIP Report (cross issue w/6.1)
Status Report on Regulatory Inspection Philosophy, Inspection Organisation and Inspection Practices.	NEA/CNRA/R(2001)8	2001	CNRA/WGIP Report
Inspection of Research Reactors	December 2003 Highlights	2003	CNRA / WGIP Report
Regulatory inspection activities related to inspection of events and incidents, inspection of internal and external hazards, and inspection activities related to challenges arising from competition in the electricity market	NEA/CNRA/R(2003) 1 & 2	2003	CNRA/WGIP Workshop Proceedings (cross issue w/ 5.1 and 9.2)
International Workshop on Nuclear Safety Management and the Effectiveness of Inspections	NEA/SEN/NRA(2005)1	2005	Joint NEA/IAEA Workshop
International Workshop on Risk Informed Inspection, Inspection of Performance of Licensee Organisation and Inspection Aspects of Plants Near or at End-of-Life	NEA/CNRA/R(2005)4 & 5	2005	CNRA/WGIP Workshop Proceedings (cross issue w/4.1.1, 4.14, 4.6.1, 5.5 and 6.4)
Regulatory Inspection Practices to Bring About Compliance	NEA/CNRA/R(2005)1	2005	CNRA / WGIP Report
How International Nuclear Regulatory Inspections Can Promote or not Promote Good Safety Culture, Inspections of Interactions Between Licensee and Its Contractors and Future Challenges for Inspectors	NEA/CNRA/R(2007)1 & 2	2007	CNRA Workshop Proceedings, (cross issue w/ 4.5, 5.2, 5.6, 6.3 and 6.4)

Topic / Title	Reference	Year	Description/Outcomes/Reports
Inspection of Digital I&C Systems: Methods and Approaches	NEA/CNRA/R(2008)	2008	CNRA Workshop Proceedings cross issue w/ 4..6.3)

9.2 Operational Experience

Topic / Title	Reference	Year	Description/Outcomes/Reports
WGOE Reports	Most Summary Records	All	WGOE presents a report on recent events of regulatory interest at all CNRA meetings
Integration into the Regulatory Process of Lessons Learned from Event Investigation	NEA/SEN/NRA(1994)1	1993	In-depth Discussion
Statement on the Operation of Incident Reporting System - IRS	NEA/SEN/NRA(1994)1	1993	CNRA Discussion
	NEA/SEN/NRA(2004)1	2003	CNRA Discussion
International Common Cause Data Exchange	NEA/SEN/NRA(2001)1	2000	In-depth Discussion
Operating Experience related to De-regulation of Electricity Markets	NEA/SEN/NRA(2001)4	2001	Request to CSNI for future report
	NEA/SEN/NRA(2002)1	2001	In-depth Discussion.(Cross-Issue w/ 5.1)
Regulatory inspection activities related to inspection of events and incidents, inspection of internal and external hazards, and inspection activities related to challenges arising from competition in the electricity market	NEA/CNRA/R(2003) 1 & 2	2001	CNRA/WGIP Workshop Proceedings (cross issue w/ 5.1 and 9.1)
External Hazards (Lessons Learned)	NEA/SEN/NRA(2002)1	2001	CNRA discussion
	NEA/SEN/NRA(2002)3	2002	CNRA Discussion
International Reporting System (IRS)	NEA/SEN/NRA(2003)3	2003	Agreement to produce joint letter on reporting
International Operating Experience Feedback	NEA/SEN/NRA(2006)1	2005	In-depth Discussion
	NEA/SEN/NRA(2006)3	2006	CNRA Discussion
	NEA/SEN/NRA(2006)4		
Regulatory Challenges in Using Operational Experience	ISBN 92-64-01083-1	2006	CNRA Green Booklet
The Use of International Operating Experience Feedback for Improving Nuclear Safety	NEA/SEN/NRA(2007)2	2005	CNRA Discussion
	NEA/CNRA/R(2008)3	2008	CNRA/WGOE Report (cross issue w/ 6.2)
	N/A	2008	IOEF Implementation Plan approved

9.3 Construction, Siting

Topic / Title	Reference	Year	Description/Outcomes/Reports
Revision of US Reactor Site Criteria	NEA/SEN/NRA(1993)2	1993	Summary Record from Special Information Meeting on proposed Revision of Reactor Site Criteria (10CFR Part 100)
Statement on NPP Siting	NEA/SEN/NRA(1993)6		CNRA Discussion
	NEA/SEN/NRA(1994)1	1993	Approved CNRA Statement on NPP Siting
Survey on Exclusion of Air Traffic around Nuclear Reactors	NEA/SEN/NRA(2002)1	2001	Internal Report issued

APPENDIX: HIGHLIGHTS FROM PAST CNRA MEETINGS

The following pages provide brief highlights and summaries of past CNRA meetings. The information is presented in a historical format beginning with the first CNRA meeting in 1989. A table of all CNRA reports is included as Appendix III.

The reader should be aware of the following points:

- Since its conception CNRA has held its annual meeting in late November / early December each year. Each summer (mid-June) the CNRA convenes a more focused meeting relating to a regulatory issue of concern. Historically these have taken one of two approaches; in-depth discussions, which are focused on a specific issues (Special Issues Meeting) or, more recently, high-level international forums related to nuclear regulatory challenges.
- During the first few years, CNRA meetings were generally focused on setting-up its structure, the programme of work and discussing current regulatory issues of concern. A standard feature of every CNRA meeting (including summer meetings) is a tour de table of recent events of regulatory significance. Significant events are normally highlighted by special presentations.
- Over the years a general format has been established to also include: A review of the working group(s) programme of work; discussions of work by special expert Task Groups and discussions on one or several regulatory issues. Additionally, depending on the various activities ongoing in NEA, from time to time other committees provide status reports (e.g.; CSNI, CRPPH, RWMC, etc.).
- The material in this section consists of short summaries of the main results and highlights, which includes only the major points covered and actions taken. It does not (and is not intended to) provide a complete summary of all issues and discussions that took place.

November 1989 - 1ST CNRA Meeting [SEN/NRA(89)3]

The first meeting of the CNRA mainly concentrated on establishment of the programme of work and included:

- Approval of initiating a meeting to determine feasibility of establishing a working group to set up a programme of work on Regulatory Approaches to NPP Inspections (Working Group on Inspection Practices (WGIP));
- Approval of a consultant to survey and prepare a report on Periodic Safety/Licensing Reviews;
- Approved completion of report on Regulatory Approaches to Containment Management (started by CSNI Sub-Committee on Licensing); and
- Approval of a Specialists Meeting on Human Factors in Operational Safety for June 1990.

June 1990 - Special Issues Meeting

June 1990 CNRA Summer Meeting [SEN/NRA(90)3]

Special Issue: Regulatory Approaches to Human Factors in Operational Experience

In addition progress report on the 2 questionnaires; Periodic Safety Reviews and Containment Aspect of Accident Management were presented.

November 1990 - 2nd CNRA Meeting [NEA/SEN/NRA(90)7]

At its second annual meeting the CNRA approved preparation of survey by Secretariat to prioritise future CNRA issues and formation of Working Group on Inspection Practices (WGIP) whose mandate is to concentrate on the conduct of inspections and how the effectiveness of inspections could be evaluated. It also reviewed the draft report which provided a comparative review of national concepts and practices in periodic safety review and approved publication following circulation for final comments.

The CSNI provided several presentations including: PWG1 (Operating Experience) PWG3 (Structural Integrity), PISC (Programme for Inspection of Steel Components) and the results from the Workshop on Application and Limitations of PSA.

Finally, it also approved the topic for 1991 Special Issues meeting on Problems of Low Power and Shutdown Operation.

June 1991 - Special Issues Meeting

June 1991 CNRA Summer Meeting [NEA/SEN/NRA(91)2]

Special Issue: Low Power and Shutdown Activities.

In addition to the in-depth discussion on Low Power and Shutdown activities, CNRA reviewed the mandate and work of WGIP (approved by CNRA) including a proposal to hold International Workshop on the Conduct of Inspections and Inspector Training and Qualification.

Several follow-up reports were made on continuing surveys and work including: Regulatory Approaches to Accident Management, Draft training reports prepared by PWG1, PISC Results and the results of the survey on Prioritisation of CNRA activities.

November 1991 - 3rd CNRA Meeting [NEA/SEN/NRA(92)1]

At its third annual meeting, CNRA approved the general plans for the first WGIP workshop, which would cover the conduct of inspections and the qualification and training of inspectors. CNRA members reviewed the final draft of report on Analysis of Regulatory Approaches to Accident Management of Containment and publication was approved following final consultation with PWG4. They also approved the report on Low Power and Shutdown Activities.

Reports were also made by PWG1, SESAR (Senior Group of Experts on Severe Accident Management) and PISC. The Report on Prioritisation of CNRA activities resulted in approving the 1992 Special Issue meetings on Regulatory Requirements for Steam Generators, holding an in-depth discussion (December 1992) on Regulatory Requirements for Advanced and Future Reactors and to further consider approaches to safety assistance to Eastern countries.

June 1992 - Special Issues Meeting***June 1992 CNRA Summer Meeting [NEA/SEN/NRA(92)3]***

Special Issue: Regulatory Requirements and Experience Related to Steam Generators

In addition to the in-depth discussion on Steam Generators, CNRA received a progress report on planning for the WGIP workshop and a list of prioritised inspection topics. Other topics discussed included: Publication of report on Regulatory Approaches to Accident Management of Containment, Progress report on Regulatory Requirements for Advanced NPPs and approval to schedule meeting to review and update Regulatory Requirements & Experience Related to Shutdown and Low-Power Activities. The topic for the 1993 Special Issues topic selected was How to Deal with the Safety Cases for Ageing Plants.

November 1992 – 4th CNRA Meeting [NEA/SEN/NRA(93)1]

At the fourth annual meeting CNRA Members received a variety of reports from NEA Committees, a report from the CNRA sub-group on Regulatory Assistance to Eastern Countries and held an in-depth discussion on regulatory requirements for advanced reactors. The WGIP report included the results of the workshop and proposal to plan another, preparation of report on Inspection Philosophy, Organisation and Practices.

Follow-up reports were also made Regulatory Requirements & Experience Related to Steam Generators, Regulatory Requirements & Experience Related to Low Power & Shutdown, Regulatory Requirements for Advanced Reactors and Dealing with the Safety Case for Ageing Reactors. A discussion was held on Proposed USNRC Rules for Nuclear Power Plant Siting. CNRA approved having an in-depth discussion on Integration into the Regulatory Process of Lessons Learned from Event Investigation at the next annual meeting and for the 1994 Special Issues topic on Closure of Severe Accident Case for Evolutionary Designs.

January 1993 - Special Information Meeting on the Proposed Revision of US Reactor Site Criteria [NEA/SEN/NRA(93)2]

The US NRC made a detailed presentation on the proposed revision of the US reactor site criteria, which was followed by an open discussion. The meeting recommended that that CNRA consider the possibility of updating or re-writing 1990 statement made on nuclear power plant siting.

June 1993 - Special Issues Meeting [NEA/SEN/NRA(93)6]***June 1993 CNRA Summer Meeting***

Special Issue: Safety Case for Ageing Plants

In addition to the detailed discussion on Ageing, CNRA members received several progress reports on ongoing activities including regulatory assistance to Eastern Countries, NPP Siting, Steam Generators, etc. Members agreed to form a Task Group to prepare a statement on NPP siting.

November 1993 – 5th CNRA Meeting [NEA/SEN/NRA(94)1]

At the 5th annual meeting discussions and reports included; report by WGIP, participation by CEEC/NIS to CNRA Activities, an update on preparation for Special Issues meeting on Severe Accidents, a progress report on draft document on Dealing with the Safety Case of Ageing Reactors, approval of NPP

Siting statement and publication of report on Regulatory Requirements for Advanced Reactors. A presentation on integration into the regulatory process of lessons learned from event investigation was provided and a Statement on Operation of Incident Reporting System (IRS) was adopted.

June 1994 - Special Issues Meeting - Regulatory Approaches to Severe Accidents

June 1994 CNRA Summer Meeting [NEA/SEN/NRA(94)5]

In addition to the detailed discussion on Severe Accidents, CNRA Members reviewed the final report on Regulatory Requirements for Advanced Reactors and received a report from WGIP including the results of the Helsinki workshop.

November 1994 - 6TH CNRA Meeting [NEA/SEN/NRA(94)8]

At the 6th annual meeting CNRA members selected the special issues topic for June 1996) Licensing of Computer-Based Systems Important to Safety (Safety Critical Software). It was also agreed that a workshop be held in conjunction (prior) with this meeting and with the co-operation (jointly) of CSNI. Members approved setting up a Task Group organised to prepare statement on Regulatory Approaches to Severe Accidents. A report was also given by WGIP.

June 1995 Special Issues Meeting - Regulatory Approaches to PSA

June 1995 CNRA Summer Meeting [NEA/SEN/NRA(95)2]

In addition to the detailed discussion on PSA, CNRA Members reviewed and approved draft document to be used as input to the NEA Long-Term Orientation review and approved a statement on Regulatory Views on Severe Accident Issues. A report was received from WGIP.

June 1995 - Special Combined CNRA/CSNI Meeting [NEA/SEN/NRA/SIN(95)2]

Future Direction of Nuclear Research

Summary record on the results of the Senior Group of Experts on Safety Research (SESAR).

November 1995 - 7TH CNRA Meeting [NEA/SEN/NRA(1995)5]

At the 7th annual meeting CNRA members approved preparation for joint workshop (with RWMC and CRPPH) on Regulatory Aspects of Waste Management, requested CSNI to review technical issues related to maintaining adequate safety margins to fuel failure and issues related to steam generators. CNRA received a report from WGIP and approved interim report on Compilation of Responses to Questionnaire on the Evaluation of the Safety Performance of Licensees. CNRA also approved reports on Regulatory Approaches to PSA and Steam Generator Tube Integrity Issue in NPPs. Further discussions were held on SESAR, Transient Behaviour of High Burn-up Fuel, Steam Generator Issues, SESAM³, and Maintaining Design Safety Margins of Passive Components over the life of the Plant.

³. Senior Experts on Severe Accident Management

June 1996 - Special Issues Meeting - Technical Support for Licensing of Computer-Based Systems Important to Safety.

June 1996 CNRA Summer Meeting [NEA/SEN/NRA(96)2] and [NEA/SEN/NRA/SIN(96)2]

In addition to the detailed discussion on licensing of computer-based systems important to safety, CNRA Members received report from WGIP and discussed future directions of inspection planning in assessing licensee safety performance.

December 1996 - 8TH CNRA Meeting [NEA/SEN/NRA(96)4]

At the 8th annual meeting CNRA members agreed to set-up a small group be set-up to review the overall role of CNRA and identify long-term objectives and future directions to be taken. CNRA also agreed that Russia to be an observer in future meetings of the CNRA (and WGIP). A report was provided by WGIP. Issued discussed included Steam Generators, Application of Best Estimate Methodology in Safety Analysis and Licensing, Fuel Safety Margins, Competition and Co-operation Future Regulatory Policies.

June 1997 - Special Issues Meeting - Review Procedures and Criteria for Regulatory Applications of PSA

June 1997 CNRA Summer Meeting [NEA/SEN/NRA(97)4]

In addition to the detailed discussion on PSA, CNRA members received a report from WGIP and approved their report on Regulatory Inspection Philosophy, Inspection Organisation and Inspection Practices and agreed to invite the RWMC and the CRPPH to set up a joint ad hoc group of regulators to define issues of concern and priorities with respect to the regulatory aspects of waste management. Based on the results of the Task Group on Reviewing the Role, Activities and Working Methods of the CNRA, members endorsed recommendations to: enlarge the Bureau, review and update the mandate of the CNRA and develop closer co-operation and co-ordination on regulatory issues with the CSNI, the RWMC and the CRPPH.

The Committee approved the scope and the general lines of the work performed so far by the group on Future Nuclear Regulatory Activities.

December 1997 - 9TH CNRA Meeting [NEA/SEN/NRA(98)1]

At the 9th annual meeting CNRA members approved revisions to the mandate intended to stress the role of the Committee in promoting regulatory efficiency and maintaining capability and competence, holding a joint CNRA/CSNI/RWMC/CRPPH/NDC Workshop on regulatory aspects of nuclear installations decommissioning, starting a study on ageing of “paperware”, establishing a CNRA sub-group to develop further the work performed on early signs of deteriorating safety performance and on methods to recognise and measure safety culture and organisation of a Workshop on how to recruit, train and maintain qualified safety specialists..

CNRA received reports from WGIP, CRPPH (on trends in occupational exposure) and a presentation by Dr. Jackson, INRA Chairman clarifying the mechanisms for interaction between the INRA and the CNRA. Additionally a round-table was held on the preparation of all national reports under the Convention on nuclear safety.

CNRA Members also approved the following reports: Future Nuclear Regulatory Challenges, Review Procedure and Criteria for Regulatory Applications of PSA, Inspection Practices on Fuel Elements and

Core Lay Out of NPPs, Inspection of Licensee Activities in Emergency Planning, Comparison of Inspection Practices in Relation to Central Room Operator and Supervisor Licensees and Performance Indicators and Combining Assessments to Evaluate the Safety Performance of Licensees.

June 1998 Special Issues Meeting - Regulatory Aspects of Ageing Reactors

June 1998 CNRA Summer Meeting [NEA/SEN/NRA(98)3]

In addition to the detailed discussion on Ageing Reactors, CNRA members reviewed the co-operation between CNRA and RWMC on regulatory issues, had an in-depth discussion on safety margins, reviewed results of survey on country preparations for year 2000 (Y2K) and approved revised mandate for WGIP. In addition to the general discussion on ageing, CNRA agreed to set-up a small Task Group in 1999 to further discuss the issue of ageing of "paperware" in order to achieve a common position.

December 1998 - 10TH CNRA Meeting [NEA/SEN/NRA(99)1]

At the 10th annual meeting CNRA members agreed to request that the Chairman of RWMC sub-group on regulatory aspects of waste management report annually to the CNRA. Issues covered included approval of report on Ageing, planning for workshops on regulatory effectiveness, assuring nuclear safety competence and decommissioning, Y2K, continuation of the Task Group on Safety Culture and a report by WGIP. In-depth discussions were held on application of risk-informed regulation and the use of best estimate analysis in licensing. Discussions also covered reconstitution/maintenance of the licensing and design basis and on future issues to be discussed at CNRA meetings.

June 1999 - International Regulatory Forum - Developing and Measuring Regulatory Effectiveness

June 1999 CNRA Summer Meeting [NEA/SEN/NRA(99)3]

Following the regulatory forum CNRA members met and discussed the programme of work. It was agreed that CNRA would, along the lines of the NEA would develop a 5-year strategic plan. As a follow-up to the forum a strategy meeting to be held in fall to exchange information on ongoing national and international initiatives in this area and devise a strategy to advance the discussion. The main issues will be internal indicators (measurement of regulatory effectiveness) and internal Q/A and quality management systems.

Additionally reports were received on planning for the Special Issues Meeting 2000 on Life extension and Upgrading the workshop on Assuring Nuclear Safety Competence into the 21st Century and a proposal for a (approved) workshop on Interface with the Public and Accountability. Relating to the Year 2000 Issue, the proceedings from the Y2K workshop were under preparation, a Y2K Early Warning System (YEWS) is being set-up in co-operation with the US NRC as well as an "electronic mailbox" system to provide continuing exchange of information.

Progress reports were presented on "Regulatory Response Strategies to Safety Culture Problems" and from WGIP. A proposal was approved to develop a report on "Maintaining Safety in a Deregulated Electricity Market". In-depth discussions were held on Licensee Self-Assessment and the US Reactor Inspection and Oversight Programme.

November 1999 - 11TH CNRA Meeting [NEA/SEN/NRA(2000)1]

At the 11th annual meeting CNRA members approved the strategic plan (for the years 2000 to 2004), received progress reports on Y2K issues, regulatory effectiveness, assuring nuclear safety competence, nuclear regulators and the public, WGIP (including approval of report on Report on Decommissioning

Inspection Aspects), license extension and upgrading and maintaining safety in a de-regulated market. The Task Group on regulatory effectiveness, based on their discussions, would further develop the concept of maintaining versus improving safety and the meaning of 'the licensee is responsible for safety'.

In-depth discussions were held on Risk Informed Regulation, Lessons learned from the first meeting of Nuclear Safety Convention and Hydrogen Mitigation in Containment. Regarding future activities, CNRA members requested a report from CSNI on Safety Criteria for High Burn-Up Fuel, will review need to have a second workshop on Licensing of Digital I&C Systems, agreed to co-sponsor proposed joint workshop being organised by CSNI on Safety in the Nuclear Fuel Cycle. Members also endorsed development of Nuclear Early Warning System (NEWS), which is based on YEWS.

June 2000 Special Issues Meeting - Life Extension and Upgrading

June 2000 CNRA Summer Meeting [NEA/SEN/NRA(2000)4]

In addition to the detailed discussion on License Extension and Upgrading, CNRA Members setting up a small task group with the other NEA committees, the IAEA and the EC to identify the current status of decommissioning regulatory issues and work programmes by international organisations. CNRA reviewed the work of WGIP and noted that Commendable Inspection Practices should be included in individual WGIP reports.

Progress reports were received from task groups on Regulatory Effectiveness, Maintaining Safety in a Deregulated Electricity Market, Assuring Nuclear Safety Competence, the completion of Y2K activities and the development of new system to exchange information based on Y2K Early Warning System (YEWS). Results from the Workshop on the Safety of the Nuclear Fuel Cycle and plans for the Workshop on Nuclear Regulators and the Public were provided. A joint CSNI/CNRA Workshop on Licensing of Digital I&C Systems was also approved.

A presentation and in-depth discussion was held on Safety Criteria for High Burn-up Fuel. CNRA approved proposal Joint International Forum on the Role of Research in the Regulatory Context in June 2001. Future discussion topics would include Common Cause Failures and Licensee Self-Assessment.

December 2000 - 12TH CNRA Meeting [NEA/SEN/NRA(2001)1]

At the 12th annual meeting CNRA members approved report on Life Extension and Upgrading, publication on Regulatory Challenges Arising from Competition in the Electricity Market and agreed to set up new Task Group on Regulatory Challenges of Judging Safety Backfits. On Performance Indicators, CNRA the Task Group on Regulatory Effectiveness will be charged with the development of internal (direct) indicators to measure regulatory efficiency and in parallel a joint CNRA/CSNI group will be formed to exchange information and develop external (indirect) indicators.

Reports were received from CRPPH and RWMC (Secretariat agreed to provide a report at next meeting summarising the issues and work programmes of international organisations regarding Decommissioning Issues). WGIP reported on their activities and a report was received from WENRA (second report on Nuclear Safety in EU Applicant Countries). Progress report were given on the Workshop on Licensing of Digital I&C, NEWS, Task Group on Assuring Nuclear Safety Competence (workshop follow-up) and the results from the Workshop on Investing in Trust.

In-depth discussions were held on International Common Cause Data Exchange (ICDE), Licensee Self Assessment and Maintaining Safety versus Improving Safety.

CNRA requested CSNI to review, discuss and provide feedback on Safety Criteria for High Burn up Fuel and the need for improved NDT Qualification.

June 2001 International Regulatory Forum - The Role of Research in a Nuclear Regulatory Context (RRRCI)

June 2001 CNRA Summer Meeting [NEA/SEN/NRA(2000)4]

In addition to the international forum on the Role of Research in a Regulatory Context members received a progress report was received on NEWS, the current status of international decommissioning activities (task group to produce a report on regulatory challenges of decommissioning was approved), current status of tasks on regulatory effectiveness and judging safety backfits and agreed to discuss regulatory requirements for advanced reactors at the next meeting. CNRA members approved setting up a new Working Group on Public Communication of Nuclear Regulatory Organisations (WGPC).

A complete review of the report on Future Nuclear Regulatory Challenges was performed and a detailed discussion was held on the recommendations that were derived from the Workshop on Assuring Nuclear Safety Competence. Presentations were made on Plant Safety Performance Indicators, High Burn-up Fuel Criteria. In-depth discussions were held on risk-informed regulation in-service inspection and enforcement policies. A proposal was approved to hold a joint workshop with WANO on Regulator / Licensee Interface issues in June 2002. WGIP reported on their activities and CNRA members approved reports on Effectiveness of Regulatory Inspections, Inspection of Management, Inspection of Maintenance during Operation and the Proceedings of the 5th International Workshop, Baltimore, May 2000 and Status Report on Regulatory Inspection Philosophy, Inspection Organisation and Inspection Practices.

CNRA members made several specific requests for CSNI to consider, as follows:

- Deregulation: CSNI/WGOE is requested to review and report to the CNRA, in the December 2001 meeting, the abnormal events or other experience of concern that may have roots in deregulation of electrical market;
- Low power and shutdown risks: CSNI/WGOE, WGRisk is requested to present to the CNRA, in the June 2002 meeting an in-depth discussion on regulatory challenges.

December 2001- 13TH CNRA Meeting [NEA/SEN/NRA/R(2002)1]

At the 13th annual meeting CNRA members received reports from WGIP and WGPC (approval of nuclear regulatory communications network). Discussions were held on the work of CNRA Task Groups on regulatory challenges of safety backfits and regulatory challenges of decommissioning. An in-depth discussion was held on the work of the Task Group on improving regulatory effectiveness. The results of the joint workshop on Licensing and Operating Experience of Computer-Based I&C Systems were presented and the CSNI/SEGHOFF Workshop on Management of Change. Reports were received from CRPPH and RWMC

A presentation was made on Operating Experience related to deregulation of electricity markets. In-depth discussions were held on Licensee Self-Assessment and Requirements for Future Plants. A round table discussion was held on Lessons Learned from 11th September 2001 (With respect to the 2 surveys performed by CNRA as a result of the events of 11 September, CNRA agreed that the survey on exclusion of air traffic around nuclear reactors should be finalised and the survey on containment design basis in relation to airplane impact will not be further updated or distributed). A proposal to hold a Specialist Meeting on Dynamic Impact and Fires was reviewed.

CNRA members made several specific requests for CSNI to consider providing a brief summary of the regulatory implications of each CSNI product and to make a presentation on safety significance of human performance in connection with incidents at a future CNRA meeting.

2002 International Regulatory Forum - Nuclear Regulator/Licensee Interface Issues

June 2002 CNRA Summer Meeting [NEA/SEN/NRA(2002)3]

In addition to the international forum on the Role Nuclear Regulator/Interface Issues, members approved reports on Improving Safety versus Maintaining Safety and License Periods and Periodic Safety Review Requirements in NEA Member countries. The publication on The Nuclear Regulatory Challenge of Judging Safety Backfits was distributed. Short discussions were held on Nuclear Events Web-Based System (NEWS), and the Regulatory Challenges of Radiological Releases. WGIP and WGPC (CNRA Approved WGPC holding a workshop was on Building and Measuring Public Confidence in the Nuclear Regulator) reported on their activities

Progress reports were presented by Task Group on Regulatory Effectiveness Indicators (pilot project). CNRA approved the recommendation of the Bureau to hold an International Forum in June 2003 on Measuring, Assessing and Communicating Regulatory Effectiveness (MACRE 2003). The joint Task Group on Safety Performance Indicators and the task group on Licensee Self-Assessment also reported on their progress. A short discussion was held on follow-up actions on Assuring Nuclear Safety Competence.

Presentations were made on provisional safety criteria for RIA and LOCA based on outcomes of the SEGFSM Topical Meetings and the results from the CSNI Specialist Meeting on External Hazards. An in-depth discussion was held on Harmonisation of Standards.

December 2002- 14TH CNRA Meeting [NEA/SEN/NRA(2003)1]

At the 14th annual meeting CNRA members received a progress report on joint CSNI/CNRA task group on Plant Safety Performance Indicators, report on results from the recent HSK workshop on Regulatory Decision-Making Processes and Brief report on RWMC and CRPPH activities of interest to CNRA (a joint workshop on decommissioning was being planned for 2004). WGIP and WGPC reported on their activities. Progress reports were given on regulatory effectiveness indicators, and the work of the joint Task Group on Regulator-Industry Collaboration on Safety Research (GRIC). CNRA members approved the reports on Regulatory Challenges of Decommissioning Nuclear Reactors and Nuclear Regulatory Review of Licensee Self-Assessment and agreed to have a future follow-up workshop on Assuring Nuclear Safety Competence.

In-depth discussions were held on regulatory requirements for advanced reactors and regulatory challenges related to low power and shutdown events. CNRA agreed to have a round table discussion on Comparison of Criteria used for Nuclear or Radiological Emergencies (in reference to the IAEA Safety Standards Report on Preparedness and Response for Nuclear or Radiological Emergencies). CNRA members also agreed to develop a report on regulatory decision-making process (based on recommendation from HSK/NEA/IAEA workshop) and to a proposal to hold an International Workshop on Licensees Nuclear Safety Management and the Effectiveness of Inspections.

2003 International Regulatory Forum - Measuring, Assessing and Communicating Regulatory Effectiveness (MACRE 2003)

June 2003 CNRA Summer Meeting [NEA/SEN/NRA(2003)3]

In addition to the international forum on the Measuring, Assessing and Communicating Regulatory Effectiveness CNRA members approved the report on Nuclear Regulatory Inspection of Contracted Work, the overview report on NEA/WANO International Forum on Regulator/Licensee Interface Issues (including conclusions and recommendations agreed to by CNRA and WANO) and endorsed the CSNI Technical Opinion Paper on Managing and Regulating Organisational Change in Nuclear Installations. WGIP and WGPC reported on their activities. Brief presentations were provided on Plant Safety Performance Indicators, the results of supplemental survey on Assuring Nuclear Safety Competence and the draft document on CNRA History.

CNRA received presentations on CSNI/PRG Proposal on Development of a Report on Approaches to Resolution of Key Safety Issues for Operating Reactors, CSNI (Draft) Collective Opinion on Safety Research Capabilities in Support of Efficient and Effective Regulation of NPPs and Regulatory Challenges related to Human Performance. A round table discussion was held on the Comparison of Criteria used for Nuclear or Radiological Emergencies. They also endorsed prepare a joint letter with CSNI concerning IRS reporting. A Progress report was provided on Regulatory Effectiveness Indicators and members approved setting up a new Task Group to prepare a report on Regulatory Decision-Making.

December 2003 - 15TH CNRA Meeting [NEA/SEN/NRA(2004)1]

At the 15th annual meeting CNRA members received progress reports from Task Group on Regulatory Decision Making, CNRA Historical Record, Joint Task Group on Plant Safety Performance Indicators, planning for the Regulator Industry Forum (RIF 2004) and CSNI Action Plan in the area of Safety Margins. WGIP and WGPC reported on their activities. CNRA members approved the report on Pilot Project: Direct Indicators of Regulatory Effectiveness and Efficiency and Inspection of Research Reactors. Members discussed surveys on Power Up-rates and IAEA Safety Requirements for Emergency Planning.

In-depth discussions were held on Harmonisation Approaches to Standards and Regulatory Requirements for Future Nuclear Reactors. CNRA approved holding a joint Workshop with IAEA on Nuclear Safety Management and the Effectiveness of Inspections.

2004 International Regulatory Forum - Licensee's Capability And Regulator's Oversight To Ensure Safe Nuclear Power Plant Operation: Technical Support Services And Contractors

June 2004 CNRA Summer Meeting [NEA/SEN/NRA(2004)3]

In addition to the international forum on the Licensee's Capability And Regulator's Oversight To Ensure Safe Nuclear Power Plant Operation: Technical Support Services and Contractors, CNRA members approved the CNRA Historical Record, approved holding a joint international forum with CSNI in 2005 on Nuclear Safety and Regulation marking 40 years of multilateral exchanges through NEA Committees concerned with nuclear safety research and regulation and agreed to provide responses to the new ICRP recommendations. WGIP and WGPC reported on their activities. Brief presentations were provided on Plant Safety Performance Indicators, status of the report on Nuclear Regulatory Decision Making, and planning for the Joint NEA/IAEA Workshop on Nuclear Safety Management and the Effectiveness of Inspections. The Workshop on Assuring Nuclear Safety Competence was delayed until 2005.

December 2004 - 16TH CNRA Meeting [NEA/SEN/NRA(2005)1]

At its 16th Annual Meeting the CNRA approved WGIP report on Inspection Used to Bring about Compliance and 2006 workshop; proposal to hold WGPC workshop in 2007, planning for the CNRA/CSNI Multilateral Co-operation in Nuclear Safety Research and Regulation: NEA Safety and Regulation Forum (SRF 2005) and the joint NEA/IAEA Workshop on Nuclear Safety Management and the Effectiveness of Inspections. Members also approved holding a workshop in Sweden in the fall of 2005 with the main aspects to cover as Human resource management of safety regulators in NEA countries and the regulation and oversight of human resource management of licensees and endorsed the proposal to hold joint international conference on use of operating experience to improve nuclear safety, but noted it should not take place until 2006.

Members also discussed joint task on Regulatory Use of Safety Performance Indicators, agreed to discontinue the Power Uprate Survey and issue the current results, approved the green booklet on Nuclear Regulatory Decision Making and the tonic for the next booklet, Nuclear Regulatory Challenges in Using Operational Experience. CNRA Members received a progress report and provided inputs to the CNRA review group. A special topical discussion was held on high burn-up fuel. Finally, CNRA Members approved the joint strategic plan including the mandates for each Committee, with minor comments.

2005 International Regulatory Forum - Safety and Regulation Forum (SRF2005)***June 2005 CNRA Summer Meeting [NEA/SEN/NRA(2005)3]***

Recognising the forty (40) years of successful co-operation in nuclear safety issues, the CSNI and the CNRA joined together to reflect on what has been learnt, what challenges are foreseen in the future, and whether the NEA arrangements that, in conjunction with other international organizations, have served the international community well in the past, remain appropriate for future challenges. The result was the NEA Safety and Regulation Forum on Multilateral Co-operation in Nuclear Safety Research and Regulation.

The Forum sessions covered What Have We Learned, Learning from each Other – International Approaches, and The Way Forward. Delegates also participated in smaller discussions groups to look more closely at how the safety committees should respond to new information and on ways to improve international harmonisation. A special discussion group was formed made up of experienced Committee members and the nuclear professionals from the younger generation. This groups' goal was to develop an outlook on the future of nuclear safety from different generational viewpoints. Each of these groups derived a number of key elements described in the following paragraphs.

In addition to the Forum, CNRA members unanimously endorsed the report including all the recommendations, which included the following main recommendations: (1) Selection criteria for selecting CNRA activities; (2) Co-ordination with CSNI - Creation of a joint programme advisory group; (3) Member and Secretariat Resource requirements; (4) Interaction with the NEA Steering Committee concerning safety and regulation; and (5) to organisationally move WGOE from CSNI to CNRA. The Chairman thanked Dr. Högberg and his group for their work. NOTE: Subsequent to the meeting, the Joint CSNI/CNRA Bureaux made a proposal to proceed with the WGOE move, which was accepted by the CSNI.

It was agreed that the main challenges in the Joint Strategic Plan would form the basis for generating a new list of future regulatory challenges. Also, the Committee agreed to prepare an operating plan for presentation at the next meeting (to be prepared by the Secretariat; with the assistance of consultant(s) if required). The plan will include details on how the Committee and its working groups shall operate based

on information from the CNRA Review Report; agreements made with CSNI on joint issues of concern; results from the Forum and the discussions from this meeting.

Other issues discussed included Workshop on Human Resource Management in Safety and Regulation, Nuclear Regulatory Challenges in using Operational Experience (RCOE), Regulatory Use of Safety Performance Indicators (joint task with CSNI), Joint NEA/IAEA Workshop on Nuclear Safety Management and the Effectiveness of Inspections and Regulatory Effectiveness.

CNRA Members approved the CNRA Bureau Recommendation (endorsed by CNRA Review Group) to expand the mandate of the WGIP from inspection practices to cover an integrated assessment of lessons learned from inspection activities (i.e.; inspection results, reviews, reports, indicators, etc.) and agreed on the new WGPC mandate including stakeholder interaction (in lieu of involvement as a logical complement to public communication).

December 2005 - 17TH CNRA Meeting [NEA/SEN/NRA(2006)1]

CNRA Members approved the mandate for WGIP and the new WGOE and emphasised the need to analyse operating experience towards improved inspection practices and new research (through specific proposals to the Committee) and to assess operating experience through IRS and other data bases (international and national). CNRA Members approved new WGIP task on Inspection of Fire Protection Systems. CNRA members approved the report on Nuclear Regulatory Challenges in using Operational Experience (RCOE) and agreed to an exploratory meeting to further develop the proposal for the next green booklet on regulatory approaches toward integrated safety assessment (e.g., How a Regulatory Ensures Safety). CNRA members also approved the report on Regulatory Use of Safety Performance Indicators (joint task with CSNI).

Presentations on follow-up activities from the CNRA report on Nuclear Regulatory Decision Making were made. The Committee reviewed the draft plan and agreed to setup a small sub-group to produce a final draft plan (separating the operating guidelines into a standalone report).

June 2006 CNRA Summer Meeting [NEA/SEN/NRA(2006)3]

The Committee approved the operating plan and operating guidelines. The Committee endorsed the preliminary programme structure for the WGPC workshop on Transparency of Regulatory Activities and agreed to issuance of reports on Publicity of Regulatory Decisions and Public Communication in Abnormal Situations as WGPC reports. The WGOE report on Loss of RHR while at Mid-Loop was approved as a CNRA and the Committee also approved the proposed programme of work which included new tasks on Safety Analysis of Fire Operating Events, Loss of Heat Sink Events and Trending/Analysis of Operational Experience. The Committee approved WGIP workshop on inspection of digital I&C (combining inspectors and I&C experts) in 2007 and a special discussion was held on co-operation between WGIP and WGOE.

The Committee approved holding a Joint CNRA/CSNI Workshop on the Role of Research in a Regulatory Context, based on concurrence by CSNI later this week and setting up a Senior Level Expert Group with consultant(s) to prepare a new green booklet on The Regulatory Goal of Assuring Nuclear Facility Safety. It was also agreed that if sufficient progress has been achieved, a Forum be held next June in which head regulators would be invited to assess the topic.

Presentations on follow-up activities from the CNRA report on Nuclear Regulatory Decision Making were made. Spain presented report on the NEA Peer Review of the CSN report on Lessons Learnt from the Essential Service Water System Degradation Event at Vandellós II NPP. Reports were also received on the IAEA Safety Fundamentals (Members endorsed CNRA support to NEA co-sponsorship of the IAEA

Fundamental Safety Principles) and from the Nuclear Development Committee (NDC) regarding the draft report on Licensing Processes and Nuclear Energy in the Competitive Electricity Market was presented.

December 2006 - 18TH CNRA Meeting [NEA/SEN/NRA(2006)4]

At its 18th Annual Meeting the CNRA agreed to a proposal for WGOE to develop a report on how to improve International Operating Experience Feedback (OEF) networks and their connections with National OEF networks including their status and approaches to meet current regulatory challenges, approved holding the 9th International WGIP Workshop in 2008 in Helsinki, Finland, preparation of an NEA publication compiling all green booklets, holding an NEA Forum on Assuring Nuclear Safety (FANS 2007) in June 2007 and a Workshop on Regulatory Lessons Learnt from Sump Pump Clogging Issues in 2008 in France (hosted by ASN). Additionally, CNRA agreed to provide support as required to the NEA pilot project on Knowledge Management.

A special in-depth discussion was held on the Forsmark Event.

2007 International Regulatory Forum - Assuring Nuclear Safety (FANS 2007)

June 2007 CNRA Summer Meeting [NEA/SEN/NRA(2007)1]

In addition to the international forum on Assuring Nuclear Safety, CNRA Members elected a new Chairman, two Vice-Chairs and four Bureau Members for a three year term, from summer 2007 to Summer 2010. Consensus was reached on creating a Working Group on the Regulation of New Reactors (WGRNR). CNRA approved the following topics for the workshop and requested that WGIP provide a detailed scope for each topic at the next CNRA meeting: training and qualification of inspectors, integration of inspection findings, and inspections of a new plant under construction (on site & in factories). CNRA Members recognised the complexity of the issue on Assuring Nuclear Safety and agreed with the proposed schedule, including the need for the consultants to exchange views on the pilot results and the Forum discussions.

CNRA members endorsed the proposed programme for the workshop on the Role of Research in Regulatory Context II and received information the Workshop on the Regulatory Lessons Learnt from Sump Pump Clogging Issues and the International Workshop on Defence in Depth Aspects in Electrical Systems of Importance for Safety. A brief update was provided on high burn-up fuel criteria and information on the final draft of the Safety Margins Action Plan. Additionally, a brief update on the work of MDEP Stage 2, including the status of the pilot projects and on the current status of NEA activities related to the International Basic Safety Standards. Presentations were received on dissimilar weld issue (United States); Shika Event (Japan) Unintended criticality and Fast depressurisation of BWRs RPV due to erroneous opening of 8 SRVs (Switzerland). National reports were tabled due to the reduced time schedule for the meeting.

December 2007 - 19TH CNRA Meeting [NEA/SEN/NRA(2007)2]

At its 19th Annual Meeting the CNRA members' approved a revision to the CNRA Operating Plan and an update of the Operating Guidelines, approved publication of the new "green booklet" on The Regulatory Goal of Assuring Nuclear Safety and approved the WGOE report on the Use of International Operating Experience Feedback (IOEF) for Improving Nuclear Safety. In doing so it noted that while it agreed with the recommendations in principle they would have to be carefully prioritised and decisions made in regard to the resource implications before deciding upon implementation.

CNRA approved the setting up the Working Group on the Regulation of New Reactors (WGRNR) and its mandate and endorsed proposal to ask CSNI to set up a Task Group to address the main concerns derived from the workshop on Defence in Depth aspects in Electrical Systems of Importance for Safety. The preliminary programme was approved for the Workshop on Lessons Learnt from Sump Pump Clogging Issues. A brief update on the work of MDEP Stage 2, including the status of the pilot project was provided. The Chairman noted the need for CNRA to closely coordinate any of its activities on new reactors with MDEP to avoid duplication. Presentations were made on Regulatory Challenges related to Power Uprates followed by an in-depth discussion. Presentations were also made by Japan on the earthquake in Niigata Prefecture and its effect on the Kashiwazaki-Kariwa Nuclear Power Station and France on Steam Generator Tube Support Plates Plugging.

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CNRA members reviewed the lessons learned and agreed that CNRA should consider the main issues addressed in the summary report and the compilation of highlights in developing the next strategic plan and to identify possible input for the next organisational meeting in September 2009. The Chairman with the assistance of the Secretariat and a small sub-group of the Bureau will prepare a draft of the plan which will be presented to the CNRA in December 2008. The new plan would be coordinated with the CSNI.

The revised Mandate for WGOE was approved with specific provisions on how these should be carried out included in the summary record of the meeting. CNRA approved the IOEF Implementation Plan noting that the Joint Bureau would review the concept of an IOEF Management Board to oversee coordination between all IOEF systems. CNRA noted that WGOE should be allowed adequate time to develop and execute its new programme of work in relation to screening of events and that industry participation should be limited to observer status only to preserve independence, but this would not prevent good dialogue.

CNRA agreed to publication of the proceedings of the WGIP Digital I&C Inspections Workshop and received the results from the 9th WGIP International Workshop. CNRA approved the WGPC report based on the results of the 3 International Workshops and continuation of the Working Group and its Programme of Work, which includes preparation of topical discussions on Information of Local public, Surveying Public perception and Transparency in Regulatory Activities. CNRA also approved minor revisions to the WGRNR Mandate and its initial programme of work which includes Development of a Construction Experience Database and Review of licensing practices used in nuclear power plant siting.

CNRA members agreed on the proposed programme for the workshop and the concept to setup a Knowledge Base web site for collecting information especially from ongoing CSNI work (Germany will offer the platform and control progress). Dr. Reiersen, Chair of CSNI/WGHOF provided a detailed and useful presentation on the work of the group. Special presentations were made by: United States on dissimilar butt welds, Spain on Ascó event, Finland on TVO event, Slovenia on Krsko event, France on concrete rebar issues, and Japan on seismic events.