

## SUMMARY AND CONCLUSIONS

### 1. Introduction

This report documents the proceedings from the 2<sup>nd</sup> “Workshop on New Reactor Siting, Licensing and Construction Experience”, held in Atlanta, Georgia, USA on 24-26 October 2012. A total of 45 specialists from 16 countries and international organisations attended. The meeting was sponsored by the OECD Nuclear Energy Agency Committee on Nuclear Regulatory Activities and hosted by the US Nuclear Regulatory Commission (U.S.NRC).

The objectives of the workshop were to provide a forum to exchange information on lessons learned from siting, licensing and constructing new nuclear power plants around the world. Key focus areas included siting practices and regulatory positions that have been enhanced as a result of the Fukushima accident; lessons learned from licensing and design review approaches and challenges, construction experience and recommendations for regulatory oversight; and regulatory cooperation on generic and design specific issues through the MDEP specific working groups.

The workshop provided an excellent opportunity to learn from others which is a key to success and progress. Information obtained as a result of this workshop provided understanding keys and interpretations of regulatory issues of licensing process of new reactors, and possible methods to address them. The workshop also allowed communicating recent experience to a wider audience, including participants from OECD member countries as well as New Entrants from non-OECD member countries. The workshop allowed the WGRNR group to introduce and discuss the current programme of work and products under development in order to gain insights from workshop participants on each of the programme of work areas, and get feedback on additional focus areas.

The workshop was structured in 4 technical sessions, each followed by ample time for panel discussions. The first technical session was devoted to regulatory cooperation on generic and design specific issues, MDEP working groups (EPR, AP1000), vendor inspection co-operation, digital I&C, and codes and standards. The second technical session was intended to discuss and share regulatory positions on siting practices and enhancements as a result of lessons learned from Fukushima accident. The third technical session addressed the construction experience and regulatory oversight of new reactor construction activities. And the fourth technical session included presentations on the lessons learned from regulatory licensing reviews of new reactor designs.

### 2. Background of the Workshop

Based on the regulatory actions underway or being considered in different member countries concerning the design and construction of advanced nuclear power plants, the NEA’s Committee on Nuclear Regulatory Activities established in 2008 a working group responsible of the regulatory issues of the siting, licensing and regulatory oversight of generation III+ and generation IV nuclear reactors. The working group on the regulation of new reactors (WGRNR) constitutes a forum of experts for the licensing of new and advance commercial nuclear power reactors and should facilitate a cooperative approach to identify key new regulatory issues and promote a common resolution.

The main purpose of the WGRNR and its products are to improve regulatory reviews by comparing practices in member countries; improve the licensing process of new reactors by learning from best practices in member countries; ensure that construction inspection issues and construction experience is

shared; promote cooperation among member countries to improve safety; and enhance the effectiveness and efficiency of the regulatory process.

The WGRNR programme of work is periodically approved by the CNRA. It includes the collection of construction experience and the assessing of the information collected in order to share the lessons learned and good practices, the review of regulatory practices concerning the regulation of nuclear sites selection and preparation, and the review of recent regulatory experience concerning the licensing structure of regulatory staff and regulatory licensing process.

The WGRNR is the point of contact between the Multinational Design Evaluation Programme (MDEP) and the CNRA and is aimed to co-ordinate its work with the work performed by MDEP such that: it utilises its outputs and does not duplicate its efforts; extends the results of MDEP to other CNRA members.

### **3. Summary and Conclusions**

The workshop was opened by a welcome address from the U.S.NRC Regional Administrator of Region 2, Victor McCree. A presentation about the on-going activities within NEA followed. Then, the vision and action plan of the Cooperation in Reactor Design Evaluation and Licensing (CORDEL) Working Group of the World Nuclear Association (WNA) have been presented. Subsequently, the U.S.NRC explained its strategies for licensing new reactors. Finally, to close the opening session, AIEA detailed its activities related to construction.

#### **Regulatory cooperation on generic and design specific issues, MDEP working groups (EPR, AP1000), vendor inspection co-operation, digital I&C, and codes and standards**

The following participants made remarks and presentations on MDEP focusing on on-going activities, major achievements and plans for the future.

- Gary Holahan, U.S.NRC, Deputy Director of the Office of New Reactors and Chairman of the MDEP, Steering Technical Committee
- Richard Rasmussen, U.S.NRC, Chief of the Electrical Vendor Inspection Branch in the office of New Reactors and member of the MDEP Vendor inspection cooperation working group
- Thomas Houdré, ASN, head of the nuclear power plant department and co-chair of the MDEP EPR working group

The MDEP representatives emphasised the support of MDEP Countries toward harmonization where safety will be enhanced. They also mentioned the benefits from MDEP cooperation in sharing documents and experience associated with design evaluation and in developing common position on certain topics, either on design specific topics or on generic issue where harmonization is needed (e.g. digital I&C, Nuclear Pressure Boundary Codes and Standards). It was also noted the benefit of identifying technical or regulatory divergences and understand their origin.

The industry representatives also provided their insights about new reactor activities, what reactor designers, operators/licensees, and representatives from standards development organizations are doing to promote standardization of designs and convergence of standards and what are their expectations toward MDEP to further enhance standardization of designs and convergence of standards:

- Andrew Wasylyk, WNA CORDEL, Codes and Standards Staff Director

- Richard Delong, Westinghouse, Director of International Licensing & Regulatory Support
- John Green, Westinghouse, Acting Manager of International Licensing Engineering
- François Bouteille, AREVA, Senior Vice-President Safety and Licensing within the Reactor and Services Business Group of AREVA
- Christian Raetzke, WNA CORDEL, Director of Licensing

The industry emphasised that they are embracing harmonisation to address new reactor issues and that they would hope that the regulators do the same. AREVA, Westinghouse and CORDEL described their efforts in maintaining standard design as much as possible to gain efficiency in licensing, constructing and operating new nuclear power plant worldwide. They considered that MDEP work was valuable, but should be pursued further to avoid differences in the design driven by differing regulatory requirements. The need that the regulators identify areas where convergence is not likely to be reached was also underlined. Cooperation between regulators involved in licensing of aircraft was mentioned as an example to be followed.

The following participants took part in the panel discussion:

- Gary Holahan, U.S.NRC, Deputy Director of the Office of New Reactors and Chairman of the MDEP, Steering Technical Committee
- Richard Rasmussen, U.S.NRC, Chief of the Electrical Vendor Inspection Branch in the office of New Reactors and member of the MDEP Vendor inspection cooperation working group
- Thomas Houdré, ASN, head of the nuclear power plant department and co-chair of the MDEP EPR working group
- Richard Delong, Westinghouse, Director of International Licensing & Regulatory Support
- Xavier Pouget-Abadie, EDF, International Safety Delegate in the Nuclear Engineering Division
- Christian Raetzke, WNA CORDEL, Director of Licensing
- John Waddington, WNA CORDEL, Director of Strategy

Some common themes emerged in the panel discussion based on the questions raised and the answers that followed. It was commonly agreed that harmonization was a long term goal and that significant progress has been made. However, this long term objective needs to be associated with short term measurable steps. To do so, MDEP approach to tackle on one side with specific technical subjects and to strive harmonisation on generic topics was considered appropriate. Regarding codes and standards, there was a general agreement that convergence on technical requirements is more realistic than harmonization of codes and standard; the participants acknowledged that concrete short term steps could be achieved. The report to be issued by the CORDEL on the comparison aviation-nuclear was discussed: the differences in the legislative and regulatory framework on the nuclear field were underlined (e.g. no high level binding common requirements), but the participants agreed that it should be studied to identify potential areas for increase multilateral cooperation and convergence.

### **Regulatory positions on siting practices and enhancements as a result of lessons learned from Fukushima accident**

The Session featured five presentations, followed by a Panel discussion.

- Regulation of Site Selection and Preparation; Status of Siting Survey – Supplement 2.

The Survey that has already been published as NEA/CNRA/R(2010)3 was being re-visited in light of the Fukushima accident. The initial results had not shown that any countries had revised the design basis for external events, though some were considering moving to lower frequencies, particularly for seismic events. Most countries were considering deriving requirements to address combinations of events (consequential, not simultaneous). There is a movement towards analyzing for ‘cliff-edge’ events, where a small increase in magnitude beyond the design basis may cause a large increase in consequence. All felt that periodic re-evaluation of sites were necessary to re-characterize external hazards. For multi-unit sites, all were aware of the need to consider the impact of an external event on all units or of one unit on another, though none had imposed a limit on the number of units permitted on a site or had moved to consider the overall risk posed to the public and environment by the site as a whole. The ability to access the site following damage to the surrounding infrastructure is of common interest. Emergency preparedness is not being considered at the siting stage. The overall conclusion is that it is perhaps too soon after the accident for requirements/expectations to have been revised, since most countries are still absorbing the lessons from the accident.

- EIA Process and Siting of Temelin 3&4.

It is proposed to construct two new reactors alongside the operating reactors at the site in the south of the Czech Republic. Three designs are being considered (AP1000, EPR and MIR) with construction due to start in 2017. The EIA is continuing using a ‘plant parameter envelope’ approach. This has included evaluating the site characteristics and confirming acceptability against the siting criteria. Since the site is not new, available data was used, updated and expanded as available. The methods of evaluation were verified and upgraded, with a focus on seismic hazard, including performing some paleoseismic research. An IAEA mission was requested to review and verify the seismic hazard re-evaluation and validation. The site preparation quality assurance programme has also been evaluated, as has the need for physical protection. One unique element to the public consultation programme is the legal requirement to consult neighbouring countries, some of which are quite anti-nuclear, and address their concerns. As a result, public meetings were held in Germany and Austria. It was found very difficult to engage the neutral or pro-nuclear public who, according to polls, want the project to go ahead.

- Environmental Insights from Siting New Nuclear Power Plants in the United States.

This described the Part 52 combined licence review process, under which a design certification and an early site permit can come together to allow a limited work authorization to be issued for pre-construction work while the combined Construction and Operation Licence (COL) application is being considered by the regulator. The regulatory then performs ITAAC (Inspection, Test, Analysis, Acceptance Criteria) to verify that the as-build plant conforms to what was licensed. The Siting Safety Review that is performed under the COL process considers factors such as geology, surface faulting, seismology, geotechnical engineering, hydrology, flooding and groundwater. For an existing site, this involves updating the hazard evaluation from the original one. Dose consequence calculations are performed for both design basis accidents and severe accidents. Experience with siting has shown that all applicants deviate from the guidance, that it is difficult to compare existing sites with new sites, that water supply is a bigger issue now than it was for existing reactors and that site selection can come down to a choice ‘among the best’, rather than the ‘best possible’. Consideration of alternative sites is a big part of the process; the U.S.NRC can

reject a primary site if an alternative site appears to be more appropriate, though it cannot force an applicant to select a secondary site.

- Siting Practices and Site Licensing Process for New Reactors in Canada.

Site evaluation is not federally regulated in Canada but should be done by the applicant prior to submitting an application, to confirm suitability for the full lifecycle of the facility. This includes the impact of external events on the site and of the site on the environment. Site evaluation information is then expected to be kept up-to-date for the life of the facility. Regulatory guidance has not been substantially revised post-Fukushima but clarification is being added regarding the need to consider multiple and simultaneous severe external events or reactor accidents, also that earlier discussions are needed on emergency planning to prepare for extreme events. The CNSC does not specify return frequencies for external events to be considered when characterizing a site but expects the applicant to justify its approach and rationale, following best practices where they exist.

- New Reactor Siting in Finland, Hanhikivi Site in Pyhäjoki.

STUK has performed a preliminary assessment of the Decision-in-Principle on the Fennovoima application. A variety of factors must be considered in the selection of a site, including effects of the site on the plant design and the effects of the plant on the site environment. These include external hazards, both natural and human-induced. Since this is a new site, an extensive siting process is followed, that can include an EIA. A site survey is performed to identify candidate sites, after investigating a large region and rejecting unsuitable sites. The remaining sites are then screened and compared on the basis of safety and other considerations to select one or more preferred sites. Natural hazards include geology, seismology, hydrology and meteorology. Offshore ice will be a particular hazard for this plant, since the site is on average only 1.5m above sea level. The design basis earthquake corresponds to a return frequency of 100,000 years, with 50 % confidence. The existing sites in southern Finland used a design peak ground acceleration of 0.1g with the ground response spectrum maximum at 10Hz. The candidate sites in northern Finland will require a peak ground acceleration of 0.2g with the ground response spectrum maximum at 25Hz.

Panel Discussion then touched upon topics like:

- Multi-agency coordination and communication and the need for clear roles and responsibilities.
- Societal acceptability, public consultation; which organizations do it and how.
- Updating external hazard studies for existing sites; characterizations and return frequencies.
- Processes for environmental assessments and how to compare across varying local conditions.

### **Construction experience and regulatory oversight of new reactor construction activities**

The session was devoted to discuss relevant aspects related to the construction of current nuclear construction projects with the main objective of learn from the past experience to improve future projects.

The session was co-chaired by Janne Nevalainen (STUK) and Jose Balmisa (CSN). The speakers in this session were the following individuals:

- Thomas Houdré, ASN, Head of the Nuclear Power Plant Department
- Seon Ho Song, KINS, Shin-Kori Units 3&4 Project Manager
- Richard Rasmussen, U.S.NRC, Chief of the Electrical Vendor Inspection Branch in the Office of New Reactors
- Greg Kaser, WNA, Senior Project Manager
- Laura Dudes, U.S.NRC, Director, Division of Construction Inspection and Operational Programs (DCIP)

First, a summary of the activities of the NEA WGRNR was introduced to the audience. In particular the following tasks related to the ConEx (Construction Experience Program) were presented:

- Development of the event construction database ConEx,
- ConEx procedure for program management,
- Conclusions of the ConEx synthesis first report on lessons learned during construction,
- Potential ConEx program uses for operating experience, training, etc.

Some industry members asked about the possibility of having access to the events of the database and the relationship between the ConEx events and the IRS (Incident Reporting System).

To answer the question about the relationship between IRS and ConEx, WGRNR representatives indicated that the ConEx database is specific and it is focused on events detected at any time during the life cycle of the plant but that happened before the first fuel load. This is the main feature of the ConEx database and the main difference with the IRS database. However, it was noted that the fields of the database have been made fully compatible with the IRS so they can be combined or merged at any time.

Related to the possibility of the industry of having access to the database, it was noted that currently the database is under development, being in a state of consolidation by increasing the number of events in it. Up to now the main contributors to the database are France, USA, Finland and Canada and it is the intention of the group to involve more actively other countries, currently in the group, such as Korea, India and other not in the group such as Russia and China.

Mr. Houdré made a presentation on the status of the construction of Flamanville 3. He provided detailed information regarding oversight activities by ASN, the transition from design to construction and the use of hold points during construction, supervision and regulation applicable to the design and manufacture of pressure components, ASN human resources devoted to the oversight of Flamanville 3 and the Flamanville 3 inspection program and experience feedback process.

Mr. Song presented the regulatory approach for the oversight of the APR 1400. He first introduced the licensing system in Korea and after that he described the inspection program during the construction and commissioning, operation and finally decommissioning phase. Mr. Song put special emphasis on the installation inspection (52 items), cold functional inspections (77 items), hydrostatic and hot functional test inspection (23 items) and initial fuel loading and startup test inspections (33 items).

Mr. Rasmussen made a presentation on the domestic and international construction experience sources. From the domestic (USA) point of view, the sources are event notifications, non-compliance reports, inspection reports, etc. Internationally, Mr. Rasmussen highlighted the following sources: IRS and ConEx reports, Nuclear Events Web Based System (NEWS), bilateral agreements, MDEP, etc. He also mentioned and described briefly reported on concrete, rebar, fabrication and digital issues.

The two final panelists were Mr. Kaser and Ms. Dudes. Mr. Kaser made a presentation about the project risks and how to mitigate major risks and structure a new project. Mr. Kaser also talked about the contract implications to handle the specificities of a new project: design complexities, interface between the engineering, procurement and constructing contractors, and finally he talked about the necessity of a stable regulatory environment and the role of government.

Ms. Dudes' presentation dealt with the new task force created under the umbrella of the CNRA (NEA) to cope with the emergent and safety relevant issues of non-conforming, counterfeit, fraudulent and suspect items (NCFSI). Ms. Dudes talked about what are the causal factors and challenges faced related to these problems and what are some of the main improvements and recommendations to cope with it such as: methods for inspecting NCFSI, review regulatory requirements and to work on international groups such as the WGIP and WGOE on these issues.

During the discussion of the session, some regulators and industry participants indicated the need to foster information exchange regarding construction operating experience in order to avoid recurrence of these types of events. It was also noted by the participants, that all that countries constructing new nuclear power plants, should be able to report on construction events. Besides that, some participants encouraged NEA to broaden the potential users of the database by including industry, utilities, including the supply chain members. There is a need to publish an update of ConEx synthesis first report on lessons learned during construction.

### **Lessons learned from regulatory licensing reviews of new reactor designs**

Session IV was focused on lessons learned from regulatory licensing reviews of new reactor designs. This session started with a presentation by Mr. Steve Gibson (ONR, UK) on the NEA/CNRA report of the survey on the review of new reactor application. Mr. Gibson indicated that licensing is state specific and that timelines vary from 6 months to 4 years. In addition, review effort and documentation is significant and most states have explicit guidance for the reviews. All states include some form of public participation and regulatory oversight. Next steps include two reports, one on design reviews and another on the construction phase. Mr. Gibson also presented on licensing experience in the United Kingdom. He highlighted the importance of several practices for ensuring a successful project, including: early engagement and communication between applicant and regulatory, sharing of plans between applicant and regulator, establishing and monitoring good metrics on progress and quality for both the applicant and the regulator, identifying "work streams" and monitoring those streams closely, identifying and addressing risks, ensuring high quality interactions between applicant and regulator, and using dashboards as a way to maintain openness, transparency and trust. He also emphasized the need for engagement at different levels within the organization, including management as necessary.

Mr. Paul Wong (CNSC, Canada) followed with a presentation on lessons learned from Canadian pre-project design review. Mr. Wong provided an overview of the Canadian legislative and regulatory framework and the pre-licensing review process. He highlighted 12 lessons learned from design reviews, including incomplete project quality assurance program, lack of definition of design management process, lack of implementing procedures, weaknesses in considerations of interconnections between systems, non-conformances related to control of design, and difficulties in addressing the functions and responsibilities of the design authority.

Mr. Wong was followed by Mr. John Waddington (WNA/CORDEL, Canada) who presented on design change management in the regulation of nuclear fleets. Mr. Waddington's presentation covered activities of the WNA/CORDEL/Design Change Management Task Force, including views on the roles of vendors, owner's groups, utility and design authority, WANO and the regulators. The presentation highlighted differences of capabilities between large utilities with strong technical staff and smaller utilities that require support and expertise from others. It also noted the current expectation that licensees are solely responsible for the safety of the design and operation of their plants and for maintaining a full understanding and knowledge of the design within licensee's own organization in an internal entity called design authority. Mr. Waddington encouraged regulators to re-examine this expectation for design changes, arguing that while large utilities maybe be able to deal with design changes, the smaller utilities may be challenged due to their small size and lack of appropriate expertise. He further noted that the original designer must be involved in the management of design changes. In addition, the presentation emphasized benefits of standardization in design and regulatory expectations internationally, including the benefits of increasing safety and economy. Mr. Waddington provided that the CORDEL Working Group uses international standardization to mean that each vendor's design can be built by a vendor, and ordered by a utility, in every country and be able to meet national regulations without significant changes other than adaptations to meet site requirements. In this discussion, he highlighted the aircraft industry as an example and noted the need for internationally agreed mechanisms for design change as well as the need for formal, agreed (internationally) role for the designer to play throughout the fleet lifetime.

Mr. Thomas Houdré (ASN, France) led the next presentation on licensing experience for EPR Flamanville 3. Mr. Houdré discussed the three stages of the process: the political decision to build a new nuclear power plant, the authorization decree for nuclear power plant creation/construction license, and the commission and operation license. He noted that the operating license process requires the operator to submit the safety analysis report, the general operating rules, a study on waste management, the onsite emergency plan, and an update, as necessary of the decommissioning plan and the environmental impact assessment. Mr. Houdré followed with a discussion on the licensing of the Flamanville 3 EPR reactor. He noted that Flamanville 3 licensing was a longstanding and continuous process taking 18 years for the 3 main steps (1989 to 2007) and resulting in the authorization decree. He described the safety objectives utilized in the process, the integration of recent operating experience, innovations, and design and manufacturing. He also highlighted several examples of modifications that resulted from the technical assessment supporting the authorization decree, including diversification of emergency electrical supply, practical elimination of fuel melt in the fuel pool, and diversification of heat sink and essential service water system. He reviewed the contents of the authorization decree. Next, Mr. Houdré discussed current on-going activities and milestones related to commissioning and operating license application and noted that current ASN/IRSN review activities are focused on a number of topics, including accident studies, I&C, protection system, internal and external events, detailed design of systems playing a safety role as supporting systems, equipment qualification to accident conditions, radiological consequences, several accident management, probabilistic studies, and several other topics. Mr. Houdré explained that a "focusing" review principle is used to inform the level of review for each topic. This principle is used to choose the SSCs that will be assessed in detail. The principle considers defence in depth; follow up of assessment performed before Flamanville 3 authorization decree; new technologies use for EPR; feedback

from French and German design, operating French nuclear power plants, Konvoi, etc.; and feedback from international cooperation.

Mr. Mohammed Shuaibi (NRC, USA) followed with a presentation on new reactor licensing status and lessons learned in the USA. The presentation covered a status of licensing for large lightwater reactors in the USA and insights and lessons learned from licensing reviews and on-going construction activities. In the area of lessons learned, Mr. Shuaibi highlighted the importance of pre-application interactions between applicants and the regulator. He noted that early interactions and reviews are important for major policy and technical issues and areas where research may be needed. He highlighted the importance of communication, the success of onsite audits of detailed calculations and analyses, and the importance for applicants and regulators to be aware of issues arising on similar applications domestically and internationally. He next discussed the importance of translation of design into construction documents as well as the need to ensure that construction is conducted in accordance with the licensing basis, especially under the U.S. one-step licensing process. Mr. Shuaibi also provided a discussion on new processes being implemented to address the need for changes during construction. These include a preliminary amendment request process by which the licensee could seek a no objection letter from the regulator to proceeding with installing and testing a proposed change pending U.S.NRC's review of the license amendment request. He also discussed the use of pre-submittal meetings with licensees on draft amendment requests in order to provide feedback and expedite the review of the amendments when submitted. Mr. Shuaibi noted the ongoing work to address Fukushima lessons learned. He concluded by noting that the U.S.NRC has initiated a comprehensive review to identify best practices and potential enhancements to its new reactor licensing processes and that a report should be published in early 2013.

Mr. Christian Raetzke (WNA CORDEL, Germany) provided a presentation on licensing and permitting practices – views of the international nuclear industry. Mr. Raetzke provided an overview of a survey by WNA on licensing that was completed in September 2012. He explained that responses to the survey were received from utilities, vendors and architect engineer firms across 4 continents. Mr. Raetzke noted that all nuclear stakeholders agree that safety and security is paramount in any licensing process. He also noted that the survey focuses the interaction of regulatory process with the industry's commercial activities, such as procurement, contracting, and finance. The results of the survey indicate that one licensing model does not fit all and that the regulatory, political and economic environments are very diverse across countries. Mr. Raetzke highlighted differences and some pros and cons for one-step and two-or multi-step licensing. He also highlighted the importance of pre-licensing activities. He noted that vendor and site selection are also different and can be commercial or government influenced. Regarding contracting, the survey indicates that it is not practical to develop or advocate for standardization because of the diversity of factors driving commercial considerations. Regarding financing, he highlighted the importance of a clear and predictable licensing regime to the availability of financing. Mr. Raetzke concluded by noting that international harmonization of safety requirements and standardization of designs would greatly facilitate licensing, although there still remains a long way to go in that regard.

The session concluded with a dialogue of questions and answers, many of which focused on design authority capability and standardization.

## **Conclusions**

In general workshop participants agreed on the need to regularly have this type of forum to discuss relevant regulatory issues for new builds. One important aspect of this workshop was the participation of "New Entrants". The interaction between NEA member countries with mature nuclear power plants and newcomers was quite important since it gave newcomers the possibility to benefit of mature international practices in order to focus their regulatory oversight and control. NEA members could also benefit from insights the New Entrants discover as they develop or enhance their regulatory controls. In addition

technical exchanges associated with construction experience of New Entrants as they begin to license, build and operate NPP could benefit NEA members.

WGRNR chair reported to CNRA on the main workshop conclusions:

- Harmonization is a long term goal and significant progress has been made. However, this long term objective needs to be associated with short term measurable steps;
- MDEP approach to tackle on one side with specific technical subjects, and to strive harmonisation on generic topics was considered appropriate;
- Convergence on technical requirements is more realistic than harmonization of codes and standard;
- Beneficial early engagement of different stakeholders specially at the siting stage has been acknowledged;
- Need to characterise the hazards and to keep updated the safety assessment (PSR);
- Land use issues are important particularly after Fukushima;
- Commissioning aspects (e.g. training aspects for inspectors) should be addressed by WGRNR taking into account MDEP interaction;
- Importance of WGRNR ConEx Programme: construction experience sharing is a leverage for quality and so for a future safe operation of NPPs;
- Capability of licensee to follow the responsibility of design changes (could be an issue for small utilities);
- Importance of Periodic Safety Reviews to review and account for the design.

It is recommended that the WGRNR convenes a third conference in about two years time (2014-2015).