



# CORDEL Strategic Plan 2014 – 2018

Cooperation in Reactor Design Evaluation and  
Licensing Working Group

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## Foreword

In January 2007 the World Nuclear Association (WNA) established the Cooperation in Reactor Design Evaluation and Licensing (CORDEL) Working Group with the aim of stimulating a dialogue between the nuclear industry (including reactor vendors, operators and utilities) and nuclear regulators (national and international organizations) on the benefits and means of achieving a worldwide convergence of reactor safety standards for reactor designs.

From the time of its inception to the present, CORDEL has evolved from a group of experts discussing how

to achieve international standardization in nuclear safety design and standards to an established and recognized working group dedicated to analyzing and forging common understandings in key areas as input to major decisions on nuclear energy policy.

The aim of this Strategic Plan is to outline the general directions and activities CORDEL plans to undertake during the next five-year period. This includes general strategy, activities, priorities and interactions with its customers in order to meet its objectives.

## CORDEL Working Group

The CORDEL group began by analyzing the benefits that could be realized from internationally accepted standards for the new generation of reactors (Generation III and III+ reactors), which could lay the foundations for developing standards for future Generation IV reactors. As a result the CORDEL Working Group produced a position paper on “*Benefits Gained through International Harmonization of Nuclear Safety Standards for Reactor Designs*”, which is available on the WNA website.

### 2.1 Mission Statement

The CORDEL Working Group’s mission is to promote the standardization of nuclear reactor designs. This can be achieved only by the development of a worldwide nuclear regulatory environment, where internationally accepted standardized reactor designs, certified and approved by a recognized competent authority in the country of origin, can be widely deployed without major design changes due to national regulations. In practice, this would mean that generic design certification and safety evaluations approved by a recognized competent authority in the country of origin would be acceptable in other countries without the need to duplicate or repeat the entire design certification process.

A standardized design approval process and nuclear power plant designs would enhance nuclear safety worldwide. It would also boost investment attractiveness and predictability of nuclear new build, both in established nuclear countries and in emerging nuclear countries; through more efficient sharing of operating experience, enabling more cost effective licensing and safety analysis and providing more effective nuclear power plant monitoring, safety would be improved.

### 2.2 Roadmap

The CORDEL Report, “*International Standardization of Nuclear Reactor Designs*”, published in 2010

included a ‘Roadmap’. After having explained the benefits of the concept, the Roadmap described a way forward via three steps (which can also be perceived as short to long term objectives):

1. **Share design assessment.** Once a design is licensed in one country, the approving regulator should share information with other national regulators, conveying its full experience in the safety assessment of the design, and receiving regulators should draw upon this experience. Additionally, if several regulators are concurrently reviewing the same design, they could form a collaborative network and discuss their assessment methodology (including criteria) and share their assessment results. This sharing process, which can be undertaken without any change in existing regulatory frameworks, may itself foster tendencies toward harmonization of licensing standards and procedures.
2. **Validate and accept design approval.** If a design is already licensed in one country and is later proposed for other countries, the existing approval could be taken over by the other countries following a simplified validation procedure. This may require some adjustments in regulations and legislation.
3. **Issue international design certification.** By international agreement, a procedure could be created whereby a design could be certified by a team of national regulators (from countries with a direct interest in the design). Under the agreement, participating countries would accept this certification. Alternatively, such international certification could be facilitated by a designated international organization. Of course, national regulators would remain responsible for assessing the adaptation of the internationally certified design to the local circumstances and for the supervision of construction, commissioning and operation.

## 2.3 Recent Developments

International standardization of reactor designs is now more important than ever if new build is to be delivered on a worldwide scale in the light of economic difficulties and challenges of public perception after the Fukushima incident. In addition, this would enable to further enhance the safety of nuclear reactors. The CORDEL Roadmap remains relevant along with the steps to be taken.

Regulators are now following some of the initiatives proposed in Steps 1 and 2, primarily through the Multinational Design Evaluation Programme (MDEP) initiative. It is clear that harmonization and standardization needed for achieving Step 3 will take substantial time, effort, and acceptance by

the major stakeholders, particularly the national regulators.

In order to meet its objectives, CORDEL has changed over the last few years from discussing various issues internally and with other organizations on broad international industrial perspectives in design and licensing issues, to analyzing and developing recommendations on specific elements of licensing requirements and international standards, both regulatory and industrial, that could be harmonized, or accepted as being equivalent in terms of meeting standards. This is a strategic change in the work of CORDEL and given the time required to gain acceptance of the Step 3 principles it is important that momentum be maintained through a steady stream of successes in the continuing programme of work.

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# GOVERNANCE

The following three chapters describe the general management processes used by CORDEL in carrying out its programme of work, its organizational structure, the roles and responsibilities of CORDEL members and different units and how it organises its activities, documents and communicates its products.

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## Management Process

As already noted, the focus of work for CORDEL has changed. These new challenges not only have changed the focus of the group, but will require the development of new processes and procedures in order to ensure an integrated approach towards reaching consensus and to increase effectiveness and efficiency.

The main priorities towards better organisation and operation are the development and issuance of a strategic plan and implementation of policies within the Secretariat.

The Strategic Plan should include the following:

- A process for proposing work to CORDEL (including deliverables, schedule, cost, outsourcing needs, etc.) see Appendix.
- A definition of membership requirements for CORDEL Steering Committee, Task Forces and Ad-hoc Groups.
- A guideline for planning efficient and effective meetings (i.e., scheduling, location, etc.).
- A procedure for performing peer reviews of documents and reports prior to requesting CORDEL approval.

Two of the policies should:

- Define the roles and responsibilities of CORDEL staff.
- Develop a process for disseminating reports and information internally and externally, including use of the worldwide web and social networks.

The roles of CORDEL Working Group, its Chair, its Steering Committee and its associated Task Forces and Ad-hoc Groups are defined in this chapter.

## Organizational Structure

From its beginning, CORDEL has operated under a flexible organisational structure that has allowed it to obtain quick and effective consensus on a number of broad issues including, *“Benefits Gained through International Harmonization of Nuclear Safety Standards for Reactor Designs”* and *“International Standardization of Nuclear Reactor Designs”*. Besides economic benefits, international standardization offers a unique opportunity to make optimal use of best practice and feedback sharing mechanisms and to maximize their contribution to nuclear safety.

Under this structure CORDEL has operated via a plenary group at times and through decisions made by its Steering Committee at other times. Additionally, as part of its evolution, CORDEL has over the past few years created a number of Task

Forces and Ad-hoc Groups in a number of specific areas. The distinction between Task Forces and Ad-hoc Groups has been loosely interpreted in the past and as such they have both functioned in similar ways<sup>1</sup>. Under this Plan, the roles and functions of each of these groups are now clarified<sup>2</sup>.

Under this plan, the organizational hierarchy is as follows:

1. CORDEL Working Group.
2. CORDEL Steering Committee.
3. Task Forces and Ad-hoc Groups.

In order to carry out its work, the CORDEL Working Group has a Chairman, Vice-Chairman(s), a WNA Board Mentor and the WNA/CORDEL Secretariat.

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<sup>1</sup> Based on a review of meeting summaries and actions taken.

<sup>2</sup> See Section 4.6.

## Roles and Responsibilities

### 5.1 Membership

Membership in the CORDEL Working Group presupposes a commitment from WNA member companies to devote adequate resources to ensure that the mission can be fully accomplished. Companies and organizations eligible for membership include:

- All nuclear new build vendors, including architect engineering companies and key supply chain vendors.
- All utilities with actual or projected new build projects.
- Technical support and consulting services or any other company/organization in a relevant field.

The following can be invited to participate as observers:

- Representatives from the major codes and standards organizations (e.g., ISO, ASME, etc.).
- International organizations involved or directly interested in nuclear power plant licensing.

### 5.2 The CORDEL Working Group

The CORDEL Working Group Establishes and agrees upon the main policy directions, including the programme of work. It also agrees to and approves work and products as set out in the CORDEL Strategic Plan.

### 5.3 Chairman and Vice-Chairman

A Chairman and a Vice-Chairman (or two Vice-Chairmen) shall be nominated by the CORDEL Working Group for terms of two years. At least one should represent a reactor vendor company and the other a utility company. Appointments are for a term of two years.

The CORDEL Chairman and Vice-Chair(s) are at the same time Chairman and Vice-Chair(s) of the Steering Committee.

### 5.4 Steering Committee

The Steering Committee consists of the CORDEL Chairman, the CORDEL Vice-Chair(s) and a limited number of CORDEL Working Group members distributed among the members considering:

- Various regions, nuclear capacities, size and expertise.
- Degree of commitment and resources contributed to the work of CORDEL.

The Steering Committee will meet regularly throughout the year either in person or by conducting telephone conferences in order to:

- Select and prioritize issues to be dealt with by CORDEL Task Forces and Ad-hoc Groups and to set their mandates.
- Identify and communicate goals and metrics suitable for follow up.
- Identify means for structured engagement with other stakeholders and their initiatives, including other industry associations, regulators and international organizations.
- Identify common positions produced by the Groups prior to their issue or publication.
- Define a communications strategy and identify the means for its implementation.

The Steering Committee, with the advice of the Secretariat, shall propose changes in its membership. The Steering Committee members will be elected by the CORDEL Working Group and serve staggered 2-year terms.

### 5.5 WNA Board Mentor

Like all WNA Working Groups, the CORDEL Working Group has a WNA Board Mentor, who is a member of the WNA Board of Management, and whose responsibility is to monitor developments within the

group and voice to the group any relevant guidance from the WNA Board.

## 5.6 Task Forces and Ad-hoc Groups

The Task Forces and Ad-hoc Groups are organized and supported by the Secretariat. In general, Ad-hoc Groups are established on a temporary basis to respond to a short-term issue of concern, while Task Forces are created in order to address specific issues (as noted below) over a longer period.

### Task Forces

Task Forces are established to address specific technical or institutional issues identified by the CORDEL Working Group. They are made up of appropriate individual experts nominated by their respective CORDEL Working Group Member. The Task Forces may also include invited experts from relevant stakeholders.

Task Forces draw up status reports and present their developments to the CORDEL Steering Committee and during CORDEL meetings on a regular basis.

### Ad-hoc Groups

Ad-hoc Groups are temporary in nature (short-term) set up to provide CORDEL with an oversight of the current State of the Art (SOAR), to assess industry's views on the need to enhance harmonization and to analyze future requirements. Based on the assessment an Ad-hoc Group may be transformed into a Task Force.

Ad-hoc Groups are made up of CORDEL Working Group Members or individual experts nominated by CORDEL members.

## 5.7 Organization, Documentation and Communication

### Organization

In organizing its activities, CORDEL uses the following selection criteria:

- The issue is of relevance to many members.
- International co-operation is essential to address, and possibly resolve the issue.
- The expected outputs will provide significant added value to nuclear safety and further the goal of standardization.
- CORDEL is the most suitable place for international co-operation on the specific issue.

Proposing and carrying out work should use the following process:

- All work to be proposed should be submitted via a CORDEL Task Proposal Form (see Appendix).
- Approval of proposals should be by CORDEL Working Group based on the recommendation of the CORDEL Steering Committee.
- Approval of publications, reports, etc., should be by CORDEL Working Group, based on the recommendation of the Steering Committee and after a complete and full peer review has been carried out.

### Documentation

Documentation and Dissemination includes the following:

- Publications, reports, proceedings, etc. should be produced as required and in accordance with WNA guidelines.
- Meeting notes and records should be produced for all formal meetings of CORDEL, the Steering Committee and Task Forces/Ad-hoc Groups.
- Dissemination of publications, reports, proceedings, etc., should be made available in printed and/or electronic form. Printed copies should be distributed to all CORDEL Members (including members of the Task Force/Ad-hoc Group involved).
- Meeting notes and records should be made available electronically with an objective to finalizing no later than one month after the meeting.
- WNA/CORDEL staff shall maintain a complete electronic filing system for documents.

### Communication

- For the communication of its results, goals and activities and in order to foster communication with relevant stakeholders, CORDEL will continue to present its work at relevant meetings and conferences.
- Presentations should be done by CORDEL members (e.g. the Chairman of the Steering Committee or of any relevant Task Force) or by WNA staff using a standardized process, which includes making sure contents are reviewed internally beforehand and that standard messages are presented in a defined template.

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## PROGRAMME OF WORK

The next two chapters describe the objectives, current status, and the short-term and long-term objectives for the current CORDEL Task Forces and Ad-hoc Groups, which characterizes the CORDEL Programme of Work over the next five years. The goals and priorities reflect the continued strategic need for CORDEL to seek specific areas or technical issues where better harmonization of licensing requirements and international standards can be achieved within a reasonable time and effort, and to make recommendations to the nuclear industry and other stakeholders based on CORDEL's findings.

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# CORDEL Task Forces

## 6.1 Codes and Standards Task Force (CSTF)

### Current Status

The Codes and Standards Task Force (CSTF) was created to call on the nuclear industry to pursue harmonization of industrial codes and standards as a precondition of broader standardization. The scope of this work covers mechanical, civil, structural and instrumentation and control systems. The initial objectives were based on the work performed by the MDEP to develop a detailed comparison of various mechanical codes. CORDEL charged the CSTF with sponsoring a pilot project to interact with the Standards Developing Organizations (SDOs) involved in the MDEP work with the aim of identifying areas where a) convergence seems most feasible; or b) a demonstration of equivalent level of safety could be made (e.g., areas of non-destructive examination or qualification of workers).

CSTF work is currently focused on two areas, technical requirements and regulatory requirements:

- Requirements for Non-Destructive Evaluation (NDE) Personnel Qualification.
- Mechanical design stress analysis, including elastic stress analysis rules, stress limits and non-linear analysis methodologies.

### Strategic Objectives

The overall objective remains as previously stated, "to pursue harmonisation of industry codes and standards as a precondition of broader standardization".

### Short-term Objectives

- Provide a set of detailed code comparisons on the two topics: NDE personnel qualification and non-linear analysis codified rules.

- Identify areas of equivalences and areas that require additional industrial best practices.
- Define industrial best practices (with supporting documentation).
- Influence the SDOs to acknowledge our conclusions and recommendations (formal validation of equivalence).
- Provide advice to the industry members on the latest status on the use of international codes and standards (e.g. from one country being applied in another).

### Long-term Objectives

- Define a set of viable methodologies to achieve code convergence. (description of the proposed three-step approach, identification of major stakeholders in the harmonization process, achieving international recognition, etc.).
- Achieve code convergence.
- Reduce divergences in key areas of code requirements in order to allow international certification of components, which would meet all major mechanical design code requirements.

## 6.2 Design Change Management Task Force (DCMTF)

### Current Status

Standardization is mainly seen as a tool to improve nuclear plant economics during design approvals, licensing and construction. But standardization can also bring significant benefits to operational safety as it offers a wide international basis for experience exchange from the entire fleet of standard plants worldwide. In order to retain the benefits of standardization throughout plant operation, an international fleet-wide approach to design change management has to be in place.

The Design Change Management Task Force (DCMTF) report *“Design Change Management in the Operation of Nuclear Fleets”* looks at existing and new mechanisms, which might deliver improved benefit from design standardization throughout a fleet’s lifetime. The main focus has been on future new build plants where the opportunity for standardization is greatest, but some of these recommendations are also applicable to existing fleets.

An issue raised by this report is how the operators’ responsibility for nuclear safety is preserved while involving vendors, Owners Groups (OGs) and even regulators over the plant lifetime. As a result the DCMTF is looking at ways to better clarify this within existing legal frameworks.

Several other issues were considered as being significant, such as:

- How to ensure adequate design standardization throughout plant lifetime while recognizing that utilities have responsibility for a Design Authority.
- Finding increased opportunities by OGs for standardization and other work by OGs as outlined in the DCMTF report.
- Some elements of knowledge (related to the Design Basis) is solely in the hands of original vendors or responsible designers. It is important that utilities’ Design Authorities have arrangements to ensure they have access to this knowledge.

### Strategic Objectives

The overall objective is to develop ideas and recommendations on how design changes over the lifetime of a fleet of new reactors of a similar design can be managed to maximize the benefits to safety of maintaining standardization, while maintaining the responsibilities of licensee and the variety of ways in which that responsibility is met around the world.

### Short-term Objectives

- Issue updated report *“Design Change Management in Operation of Nuclear Fleets”* to clarify issues raised above.
- Cooperate with World Association of Nuclear Operators (WANO) and the Institute for Nuclear Power Operations (INPO).
- Draft a design authority guide for utilities.
- Review best practices in OGs as identified by the DCMTF.

### Long-term Objectives

- Define set of viable methodologies that could be used to achieve better cooperation between vendors, responsible designers and utilities and disseminate design safety related information in a way that does not threaten intellectual property elements nor jeopardize industry credibility.
- Act as a catalyst for OGs excellence.

## 6.3 Licensing and Permitting Task Force (LPTF)

### Current Status

The Licensing and Permitting Task Force (LPTF) has published the report *“Licensing & Project Development of New Nuclear Plants”*. The report is based on a survey, which asked members to:

- Identify how regulatory regimes affect investment decisions and can change project risk.
- Identify industry experience in managing the licensing/project interface to mitigate risk.
- Identify aspects of the regulatory regimes better suited to a multinational approach.
- Propose ways to improve the regulatory/commercial interface to enhance the decision-making process.
- Compare/analyse one-step versus multistep licensing and categories of builds in different countries.

The report concluded, “Predictability and stability of a regulatory system are more critical to making commercial decisions than the adherence to any specific regulatory system.”

The LPTF has completed the objectives set out by CORDEL. Discussions among the members noted that additional work may be warranted in several areas, including:

- Pitfalls to avoid for mature countries.
- Ideal licensing system for emerging countries.
- Small Modular Reactor (SMR) market – requirements, impact on licensees, designers, etc.
- One step versus multistep licensing.
- How mature a design has to be before starting the licensing process.

### Strategic Objectives

Based on specific developments, CORDEL may decide to look at one or more of these issues with

a view towards identifying which attributes of a country's licensing regime can be best harmonized with other regimes. However, it should not focus on those issues that are the interest of the government or its regulator, as they would be outside the scope of CORDEL.

Alternatively, CORDEL could request the WNA Nuclear Law & Contracting Working Group to assist in providing this; or in some cases can attain inputs through its involvement with the International Atomic Energy Agency (IAEA), MDEP and other international organizations.

### Short-Term Objectives

The LPTF is considering the feasibility of having an international workshop with CORDEL and other organizations in which both industry and government/regulators can further explore these and other potential areas of harmonization.

### Long-Term Objectives

At this time, long-term objectives are subject to various developments related to new build over the coming years. This would be supplemented by the results of the proposed workshop (short-term objective).

## 6.4 IAEA Nuclear Safety Standards and Probabilistic Safety Goals Task Force

### Current Status

One of the first efforts undertaken by CORDEL was to set up a small group of members to review IAEA Safety Standards and Probabilistic Safety Goals. The Task Force has set up two groups, one for each issue, working on parallel paths.

**IAEA Nuclear Safety Standards** - This group has been commenting on new safety standards at the request of the IAEA, providing a "window" into development activities that is otherwise not available. Many of these comments have been incorporated into the final documents. Members of this group along with the CORDEL staff regularly attend meetings of Nuclear Safety Standards Advisory Committee (NUSSC).

**Probabilistic Safety Goals** - Several CORDEL members initially provided oversight to work being performed by MDEP on High Level Safety Goals. MDEP produced a report reviewing the structure and application of High Level Safety Goals but

recommended that the further work on developing such a report should be passed over to IAEA.

IAEA is completing a report on the development and application of a safety goals framework for nuclear installations, which sets down a hierarchical structure for safety goals and how the lower level goals may be derived from the higher level ones in a consistent fashion. This will provide a means to look at the completeness and consistency in the definition and application of the goals.

A number of preliminary applications of the framework will be presented at a technical meeting, after which members will be requested to take the framework and apply it to reflect their company/national safety goals. A report comparing and contrasting the goals being used and identifying any key areas where further harmonization is required will be produced. Differences may exist in the lower level hierarchical structure as well as in the numerical targets used.

### Strategic Objectives

The IAEA Nuclear Safety Standards Subgroup will maintain oversight on the work being performed by the IAEA NUSSC to ensure that proper input is provided to the IAEA safety standards work related to industry concerns. The focus shall continue to be directed on the revision process of the IAEA safety standard documents.

The Probabilistic Safety Goals Subgroup will focus on the development of an integrated safety goal concept, which is an essential part of Integrated Risk-Informed Decision Making (IRIDM), based on the IAEA work and other research organizations around the world.

## 6.5 Digital Instrumentation & Control Task Force (DICTF)

### Current Status

Digital I&C licensing has been an issue for over 20 years and with the recent plans for new build it has become extremely important issue. CORDEL decided to set up the Digital Instrumentation & Control Ad-hoc Group (DICAG) in order to address the issue. Subsequently, a survey was distributed and a small group of experts met in early 2013 to discuss the results and various issues.

The highest priorities were: safety classification for Instrumentation & Control (I&C) systems; design

for diversity and common cause failure; acceptance criteria for the use of Field-Programmable Gate Arrays (FPGA) and software reliability.

At a meeting between CORDEL and the MDEP Steering Committee, MDEP proposed that its' Digital I&C Working Group (DICWG) interact with the CORDEL Ad-hoc Group. MDEP DICWG is in the process of completing, or has finalized, common positions on software common cause failures, complex electronics, qualification of industrial digital devices, system architecture considerations, configuration management for software, factory and site acceptance testing and surveillance and periodic testing.

Based on the establishment of these short-term and long-term objectives, the CORDEL Working Group agreed in 2013 that the group should be transformed into a Task Force, Digital I&C Task Force (DICTF).

### Strategic Objectives

The DICTF should identify and prioritize the topics to be worked over the short-term and long-term, based on the topics noted above or other evolving issues.

### Short-term Objectives

- Identify areas in the design and licensing of digital I&C systems that have caused difficulties in satisfying regulatory authorities in arriving at generally agreed solutions.
- Understand the causes of those difficulties through analysis and discussion.
- Identify potential solutions to those difficulties.
- Advise industry, regulators and SDOs of the potential solutions.

Some of the specific issues identified included: cyber security, independent verification and validation (V&V), software specifications, guidance to designers (e.g. mapping plant level requirements to system level requirements) and System Architecture.

### Long-term Objectives

- Management of design changes for Digital I&C, given the speed of obsolescence. Hardware is generally not too much of a problem, but changing software is.
- Develop a common understanding of what is expected by Industry and Regulators.
- Promote the development of international standards.



# CORDEL Ad-hoc Groups

## 7.1 Seismic Reliability

A presentation on this issue was made at the January 2013 meeting of the CORDEL Steering Committee. CORDEL members noted that absent any major new developments, most plants have recently reviewed this issue and taken necessary actions. A related issue, that of external events (flooding, wind/sand storms, etc.) occurring individually or combined may result in some new issues that the CORDEL Working Group may want to study.

In general, both the short-term and long-term objectives are for the CORDEL Working Group to maintain oversight on any new developments in this area and terminate the Ad-hoc Group.

## 7.2 Small Modular Reactors Ad-hoc Group (SMRAG)

### Current Status

Over the past few years, Small Modular Reactors (SMRs) have been seen as a promising new option for nuclear development. Numerous workshops and conferences have looked at the development of various designs that could be introduced in emerging nuclear markets as well as in developed regulated markets. The CORDEL Working Group convened an Ad hoc Group in 2010, which developed an action plan for a Task Force or Ad-hoc Group.

The Small Modular Reactor Ad-hoc Group (SMRAG) recently met to develop its' main objectives and short-term and long term objectives.

### Strategic Objective

Establish a path towards harmonized and regulated global SMR deployment through the issuance of industry position papers on key issues.

### Short-term Objectives:

- Develop a clear recognized definition for SMR
- Compile information and data in order to identify major issues.

- Develop an interactive roadmap for SMRs to address specific issues for established and emerging markets and to create strategies for standardization and harmonization of design criteria, certification and licensing processes.
- Produce position papers on key issues as determined by the roadmap. Work on these should be coordinated with other CORDEL Task Forces and the relevant international agencies (IAEA, MDEP, etc.).
- Consider if the group should be transformed into a Task Force.

### Long-term Objectives:

- Provide a unified international industry voice and reference on SMR issues.
- Identify 'commendable practices' and 'lessons learned' as part of the innovative SMR concepts such as modular construction, licensing, operation and maintenance.

## 7.3 Results from Fukushima

The reactor accident in Fukushima in March 2011 has led operators and regulators of all nuclear countries to conduct a reassessment of the relevant aspects of nuclear safety, for example robustness against external events and the ability to cope with station blackout and severe accident situations. CORDEL has noted that initial proposals to strengthen the global nuclear safety regime, such as compulsory random peer reviews organized by the IAEA or a revision of the Convention on Nuclear Safety (CNS), have not yet been followed up by governments and regulators. In any case, the topic of achieving greater international cooperation in nuclear safety and reactor design remains on the agenda of international discussion and is being pursued by initiatives such as American Society of Mechanical Engineers (ASME's) Nuclear Safety Construct and the WANO program of work.

In general, both the short-term and long term objectives are to maintain oversight on the results of work being performed by other organizations and bring industry views into the discussions.

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# INTERACTIONS

The WNA and CORDEL encompass a wide area of expertise related to many different topics. In addition, other international and regional agencies and organizations contribute to the overall goal of improving nuclear safety. Maintaining contact and interacting with these groups helps ensure accuracy in the products and, at the same time, lower the possibility of duplication. The following two chapters describe these interactions.

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## Internal Stakeholders

The WNA Working Groups are forums through which the enterprises of the global nuclear industry share information, conduct analysis, prepare WNA Position Statements, and develop and implement strategies to advance their collective interest in the safe and expanding worldwide use of nuclear power. Some Working Groups coordinate WNA representation in international forums, others engage to share international knowledge and strengthen industry capabilities in a wide range of topics.

The CORDEL Working Group, through the WNA and its members, maintains an open flow of communication to optimize resources, share expertise, minimize duplication and communicate results. In particular, CORDEL has been working with the Supply Chain Working Group and the Nuclear Law & Contracting Working Group. These joint efforts will continue to be extended as needed and applied to other WNA Working Groups if required in the future.

### 8.1 Supply Chain Working Group

The Supply Chain Working Group is devoting increased attention to supporting companies in the task of building the complex supply chains needed to ensure timely construction, while satisfying expected requirements for quality and national content for the new generation of nuclear power plants. The Vendor Oversight and Control of Suppliers Task Force (VOCS) is examining the scope for cooperation between vendors in developing common core standards for quality management systems, and in the control of critical production processes. The main goals of this working group are tied closely with those of CORDEL in the various aspects of nuclear safety.

Both the WNA Secretariat and the working group members maintain close cooperation with each other by attending meetings and exchanging results, analysis and commendable practices, which should be continued and enhanced during the coming years.

### 8.2 Nuclear Law & Contracting Working Group

The Nuclear Law & Contracting Working Group addresses legal issues facing the nuclear industry. The Working Group is an expansion of a previously constituted Task Force on Nuclear Liability and has a broader scope of work. The Working Group focuses on key legal, regulatory and procurement aspects of nuclear new build, that are of concern to the nuclear industry. As an additional function, the Working Group will engage with other working groups and offer assistance when necessary on ways to respond to related challenges.

The Working Group has worked together with the CORDEL Task Force on Licensing and Permitting to produce a report on “*Licensing & Project Development of New Nuclear Plants*” (see Chapter 6.3).

### 8.3 World Nuclear University (WNU)

The World Nuclear University (WNU) is a global partnership, committed to training and education, notably the transfer of knowledge to the next generation of nuclear industry leaders. The WNU’s various programmes are designed to close the gap in existing training and education offered by universities and companies. WNU’s flagship programme, the WNU Summer Institute (SI), is a comprehensive annual programme which aims to ensure that the future leaders of our industry gain an understanding of the many diverse areas that are relevant to nuclear throughout the world.

CORDEL has made and will continue to make contributions to the WNU in its training programme and at the SI. CORDEL will continue to interact by contributing to WNU and the SI as well as by ensuring that its products are made available.

## External Stakeholders

### 9.1 Multinational Design Evaluation Programme (MDEP)

A key aspect of the initial concept of forming CORDEL was based on industry providing its views and inputs on international harmonization and standardization. Many of the issues initially discussed evolved from discussions among nuclear regulators who had committed to the MDEP<sup>3</sup>. In fact, one of the aims pursued in the creation of CORDEL was to set up an industry counterpart and interlocutor to MDEP. MDEP comprises a group of regulators sharing information and feedback on technology and specific safety and licensing issues. It is a multinational initiative to develop innovative approaches to leverage the resources and knowledge of the national regulatory authorities who are currently or will be tasked with the review of new reactor power plant designs. MDEP comprises 13 countries' nuclear regulatory authorities and is currently structured with design-specific and issue-specific working groups, which meet several times a year. CORDEL regularly interacts with the MDEP Steering Technical Committee and the CORDEL Codes & Standards Task Force acts as the recognized industrial representative at the MDEP Codes & Standards Working Group.

Other CORDEL Task Forces/Ad-hoc Groups should continue developing interactions in specialized areas (e.g. Digital I&C).

### 9.2 World Association of Nuclear Operators (WANO)

CORDEL and WANO both benefit from increased collaboration on the topics of design change management, defining the role of the design authority, and assessing the effect of current

requirements on existing and new nuclear power plants. WANO and WNA CORDEL share many aims and mutually benefit from sharing views, ideas and concepts. Specifically, on the topic of enhancing the sharing of design events and design changes within OGs. WANO and CORDEL also benefit from the input from both of their memberships. Whilst WANO's membership includes all utilities running nuclear power plants, WNA CORDEL has additional input from the major international vendors and major nuclear engineering companies.

### 9.3 International Atomic Energy Agency (IAEA)

One of the objectives of CORDEL is to ensure cooperation and coordination with the International Atomic Energy Agency (IAEA) in the development of IAEA Standards and Guides and in other shared areas of nuclear safety work. The objective is to provide the IAEA with information and suggestions based on the industry's expertise and expectations, and therefore may not be available to the IAEA via other channels. In doing this, CORDEL strives to optimize resources, share expertise, minimize duplication and communicate results.

To help achieve these aims, each organization will consult each other on various programmes underway or planned, cross participate in relevant committee and task forces, and undertake joint activities as appropriate.

### 9.4 OECD Nuclear Energy Agency (NEA)

CORDEL aims to cooperate with the Organisation for Economic Co-operation and Development (OECD) Nuclear Energy Agency (NEA) in the development

<sup>3</sup> OECD Nuclear Energy Agency acts as the Secretariat for MDEP

of State-of-the-Art reports and in other shared areas of nuclear safety work, specifically with the NEA's Committee on Nuclear Regulatory Activities (CNRA) and its Working Group on Regulation of New Reactors (WGRNR). The objective is to provide the NEA with information and suggestions which are based on industry's expertise and expectations and therefore may not be available via other channels. In doing this, CORDEL strives to optimize resources, share expertise, minimize duplication and communicate results.

To help achieve these aims, CORDEL members have participated in WGRNR workshops and have sought WGRNR participation in its own Task Force meetings.

## 9.5 Other Organizations

Several other International and regional organizations exist and contribute to the efforts on harmonization and standardization. These include:

- Numerous nuclear organizations exist in different regions throughout the world. There are several within the European Union (EU) dealing with harmonization and standardization issues for reactor designs including the European Commission (EC), European Nuclear Safety Regulators Group (ENSREG), Western European

Nuclear Regulators Association (WENRA), European Utility Requirements (EUR), European Nuclear Installations Safety Standards (ENISS). In North America there are Nuclear Energy Institute (NEI), American Nuclear Society (ANS) and Institute for Nuclear Power Operations (INPO) among others. As a worldwide association, CORDEL does not concentrate on any specific region, but maintains interaction with many of these stakeholders to ensure mutual understanding and avoid duplication.

- The Standards Development Organization Convergence Board (SDOCB) is composed of 6 standard development organizations American Society of Mechanical Engineers (ASME), French Association for the Rules Governing the Design, Construction and Operation of Nuclear Power Plants (AFCEN), Japanese Society of Mechanical Engineers (JSME), Russian Research & Development Institute of Power Operations (NIKIET), Korean Electric Power Industry Code (KEPIC) & Canadian Standards Association (CSA), with the aim of finding areas of possible convergence of the various mechanical code requirements and working towards the minimizing of code divergences. WNA CORDEL CSTF is collaborating with the SDOCB on the topic of NDE qualification requirements and non-linear codified rules.

## Appendix: CORDEL Task Proposal Form

	Description	Responsible person/org.
<b>Name</b>	Name of group proposing task	
<b>Title</b>	Subject of the work to be performed	
<b>Description</b>	Brief description of the relevance of this work to the CORDEL members and why it is essential to be carried out by this group  Alignment to the Strategic Plan and/or CORDEL mandate	
<b>Products/Outputs</b>	What is the final product/output of this work	
<b>Work Process</b>	Short description of how the work will be carried out (e.g.; surveys, reports, workshops, coordination, use of consultants, etc.)	
<b>Schedule/ Milestones</b>	Expected intervals for developing and obtaining results (initial, intermediate, final)  Schedule for meetings/workshops/other  Delivery date of final product(s)	
<b>Interaction with others</b>	Internal: Other CORDEL Task Forces, WNA Working Groups  External: Other organizations (e.g., IAEA, WANO, MDEP, SDOs, etc.)	
<b>Estimated budget</b>	Estimated man-hours, support, etc.	
<b>Approval</b>	Reference CORDEL Board Meeting Minutes	Date



The World Nuclear Association's **Cooperation in Reactor Design Evaluation and Licensing (CORDEL)** Working Group promotes the standardization of nuclear reactor designs. This can only be achieved by the development of a worldwide regulatory environment where internationally-accepted standardized reactor designs, certified and approved by a recognised competent authority in the country of origin, can be widely deployed without major design changes due to national regulations.

This **Strategic Plan** outlines the general directions and activities CORDEL plans to undertake during the next five-year period. It includes general strategy, activities, priorities and interactions with CORDEL's customers in order to meet its objectives.

The **World Nuclear Association** is the international private-sector organization supporting the people, technology, and enterprises that comprise the global nuclear energy industry. WNA members include the full range of enterprises involved in producing nuclear power – from uranium miners to equipment suppliers to generators of electricity. With a secretariat headquartered in London, the WNA serves as a global forum for industry experts and as an authoritative information resource on nuclear energy worldwide.



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