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Organisation de Coopération et de Développement Économiques
Organisation for Economic Co-operation and Development **11-Apr-2008**

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NUCLEAR ENERGY AGENCY
COMMITTEE ON THE SAFETY OF NUCLEAR INSTALLATIONS

NEA/CSNI/R(2007)7/REV1
For Official Use

OPERATING PLAN (2006-2009)

JT03243966

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ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

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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, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Luxembourg, Mexico, the Netherlands, Norway, Portugal, Republic of Korea, the 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.

EXECUTIVE SUMMARY

In 2004, NEA issued its Strategic Plan covering the period 2005-2009, addressing the NEA activities associated with nuclear safety and regulation. Committee on the Safety of Nuclear Installations (CSNI) and Committee on Nuclear Regulatory Activities (CNRA), which have the primary responsibility for activities in this area, have developed and issued a joint strategic plan covering this same time period. As requested in the Joint Strategic Plan, each committee is to prepare an operating plan which describes in more detail the committee's organisation, planned activities, priorities and operating procedures to be used to implement the Joint Strategic Plan. In effect, the Joint Strategic Plan defines what type of work CSNI should do, whereas the Operating Plan describes the overall work scope and how to accomplish it to meet the joint CSNI/CNRA Strategic Plan objectives and mission.

The present Operating Plan follows and takes into account the outcome of a CSNI assessment group, which has evaluated the CSNI activities. The assessment group expressed appreciation for the CSNI role and activity, while making recommendations with regards to scope of work and way to operate in order to further improve efficiency. The main objectives of CSNI are to:

- Keep all member countries involved in and abreast of developments in safety technology.
- Review operating experience with the objective to identify safety issues that need to be addressed by new research.
- Review the state-of-knowledge on selected topics of nuclear safety technology and safety assessment.
- Promote training and research projects that serve to maintain competence in nuclear safety matters.
- Promote research as needed to reach consensus on nuclear safety issues of common interest.
- Consider the safety implications of scientific and technical developments.

To accomplish these objectives, CSNI is organised into six permanent working groups (as described in Section II), each covering a different set of technical disciplines. Temporary task groups may also be established to address specific technical issues.

The overall scope and technical goals have been established for CSNI for 2006-2009 (see Section III) consistent with the challenges identified in the joint CSNI/CNRA Strategic Plan. High level, top down guidance is provided to the working groups through the development of a set of safety issues and topics which define the technical areas and issues CSNI activities should focus on. The working groups then each prepare their own integrated plan that defines the specific activities and schedule for addressing the safety issues and topics and accomplishing the objectives and technical goals.

In Section IV CSNI working methods are described covering priorities, project management, coordination, cooperation, communication, documentation and self assessment.

The Operating Plan describes CSNI responsibility and organisation, overall scope of work and working methods, and is supplemented by the so-called CSNI Activity Report, which contains a description of the updated status of the approved specific activities for all Working Groups (WGs), including new proposals set forth for CSNI approval. While the present document remains basically unchanged in the performance period, the CSNI Activity Report is updated every six months, in correspondence of the CSNI meetings.

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I. INTRODUCTION

In 2004, NEA issued its Strategic Plan covering the period 2005-2009, addressing the activities that are associated with nuclear safety and regulation. CSNI and CNRA have a primary responsibility for activities in this area and, due to the interrelationship of these activities, have developed and issued a Joint Strategic Plan covering this same time period. This Joint Strategic Plan identifies the Committees' mission, objectives, main challenges, roles and responsibilities, working methods and plans for implementation consistent with the direction provided by the NEA Strategic Plan. The Joint Strategic Plan also contains the mandates for CSNI and CNRA. As described in the Joint Strategic Plan, each committee is to prepare an Operating Plan which describes in more detail the committee's organisation, planned overall work scope, priorities and operating procedures to be used to implement the Joint Strategic Plan. In effect, the Joint Strategic Plan defines what type of work CSNI should do, whereas the Operating Plan describes the scope of work and how to accomplish it to meet the joint CSNI/CNRA Strategic Plan objectives and mission.

As described in the joint CSNI/CNRA Strategic Plan, the mission of CSNI/CNRA is to: "Assist member Countries in maintaining and further developing the knowledge, competence, and infrastructure to support the safe operation through the lifecycle and efficient and effective regulation of NPP's and fuel cycle facilities based upon sound technical information, shared experience and up-to-date methods."

To accomplish this mission, the Joint Strategic Plan identifies *five main challenges* for CNRA and CSNI. These are:

1. shrinking nuclear infrastructure;
2. increased public expectation on safety in the use of nuclear energy;
3. industry initiatives to improve economics and safety performance in nuclear power production;
4. necessity to ensure safety over the plant lifecycle; and
5. new reactors and new technology.

These main challenges define the framework for future CSNI activities.

The present CSNI Operating Plan covers the time period 2006-2009 and has the following structure:

- CSNI responsibilities and organisation;
- CSNI scope of work ; and
- CSNI working methods and procedures

In addition, several appendices are included to provide supplemental information and guidance. As described in this document, the Operating Plan outlines CSNI responsibility and organisation, overall scope of work and working methods, and is supplemented by the so-called CSNI Activity Report, which contains a description of the approved specific activities for all WGs, including new proposals set forth for CSNI approval. While the present document remains basically unchanged in the performance period, the CSNI Activity Report is updated every six months, in correspondence of the CSNI meetings.

II. CSNI RESPONSIBILITIES AND ORGANISATION

The CSNI mandate is described in the joint CSNI/CNRA Strategic Plan and is reported in Appendix A. Basically, CSNI mandate makes the Committee responsible for NEA activities related to maintaining and advancing the scientific and technological knowledge base of the safety of nuclear installations. The nuclear installations considered are water reactors and their fuel cycle facilities. However, CSNI will provide assistance on other reactor types, if requested by CSNI members and approved by CSNI. In addition, it is recognized that some technical areas and issues of interest to CSNI may have application to all reactor types (e.g., human and organisation factors).

In the future, activities may include other types of reactors (such as high temperature gas-cooled reactors) or other types of fuel cycle facilities in response to industry or government initiatives. Finally, CSNI activities encompass the entire life-cycle of facilities including design, construction, operation and decommissioning and focus on protecting the public and operating staff safety. In line with the joint CSNI/CNRA Strategic Plan, the main objectives of CSNI activities are to:

- Keep all member countries involved in and abreast of developments in safety technology.
- Review operating experience with the objective to identify safety issues that need to be addressed by new research.
- Review the state-of-knowledge on selected topics of nuclear safety technology and safety assessment.
- Promote training and research projects that serve to maintain competence in nuclear safety matters.
- Promote research as needed to reach consensus on safety issues of common interest.
- Consider the safety implications of scientific and technical developments.

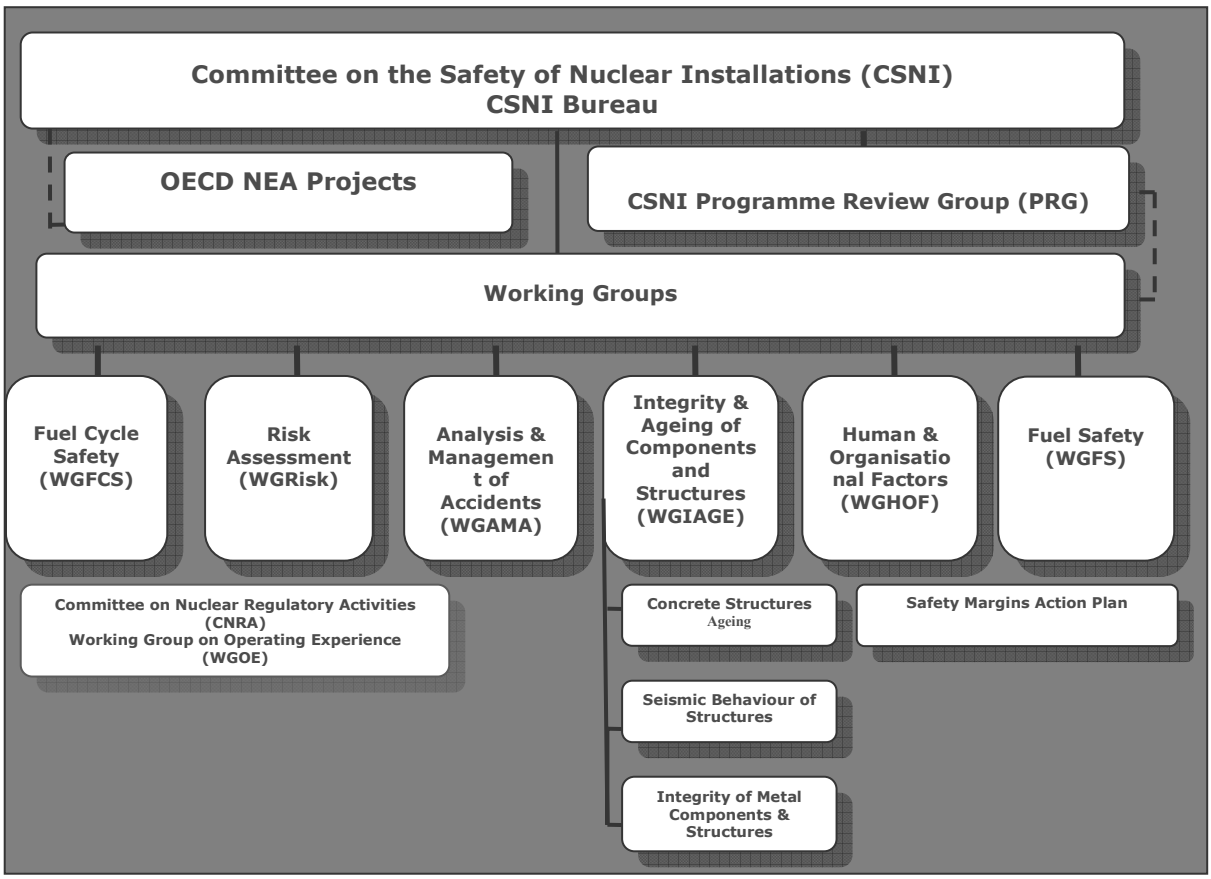
The responsibility for organisng and monitoring cooperative research projects also resides within CSNI. Cooperative research projects are generally organised to share costs and information on research programs of common interest to many member countries and/or to ensure that key facilities/programs related to the nuclear safety infrastructure are maintained. These projects can vary in nature and number from year to year, but are organised and managed in accordance with the guidance provided in publication NEA/CSNI/R (2002) 17 “Procedures for Initiation, Cost- Sharing and Management of OECD Projects in Nuclear Safety” (NEA/CSNI/R (2002)17, 19 August 2002).

It is CSNI goal to perform work in an effective and efficient manner. This includes having a CSNI structure and working methods that facilitate focusing resources on the main challenges and goals, shortening the time to produce products and improving product applicability and quality. The CSNI working structure is shown in the figure on the next page.

Decisions regarding the adoption of the CSNI meeting agenda, the undertaking of studies, the establishment of working or task groups and the submission of questionnaires to participating countries, shall be adopted by a majority of the members. Decisions on CSNI collective opinions or recommendations shall be adopted by consensus.

The CSNI is headed by a Chairperson elected by the CSNI members for a three-year term. At the conclusion of the term, the CSNI members present may elect a new chairperson or re-elect the existing chairperson for a new term. The CSNI Chairperson is assisted by the CSNI Bureau which consists of the Chairperson and up to six CSNI delegates selected as determined by the Committee. The CSNI Bureau supports the planning the CSNI activities and their coordination with other NEA committees or international organisations.

CSNI Structure



A Programme Review Group (PRG) is to perform a programme quality review function within CSNI and to provide scientific assistance to the decision-making process of CSNI. The PRG should provide support on the technical matters to be dealt with at the CSNI meetings and propose actions concerning the achievement of CSNI objectives. In particular, the PRG reviews major CSNI reports and work scope of each WG with respect to overall work-load and priorities, it evaluates new activity proposals from the WGs and monitors the progress of ongoing activities, recommending corrective actions if needed. It may also undertake actions as requested by the CSNI to address issues and topics which cut across the WG lines of responsibility. The PRG consists of seven members elected for a three-year term as determined by the CSNI. The chairperson serves for a three-year term.

The detailed technical work of CSNI is carried out by six permanent WGs, each with a defined scope of responsibility and mandate. The six WGs are as follows:

- WGRISK: responsible for work related to the development and use of risk assessment methods, data and information.
- WGIAGE: responsible for work related to the development and use of methods, data and information to assess the behavior of materials and structures.
- WGAMA: responsible for work related to the development and use of analytical tools, data and information for accident analysis.
- WGFCS: responsible for work related to the evaluation of the safety of fuel cycle facilities (i.e., fuel fabrication and reprocessing facilities).
- WGHOF: responsible for work related to assessing the role of human and organisational performance in safety.
- WGFS: responsible for work related to fuel safety issues.

The members of each WG elect the group chairperson and vice-chairperson, who are to serve for a fixed period of time (three years). Upon completion of the term, the group may elect a new chairperson or re-elect the existing chairperson for another term. In general, it should be the goal of the groups to rotate chairmanships. WGs may with CSNI approval organize into sub-groups, if such an arrangement improves the effectiveness and efficiency of the group's activities (e.g., does not add to the number of meetings). Group chairs should identify task leaders for each project. However, it is the WG chairperson's overall responsibility to monitor the progress and bring problems to CSNI attention.

The mandates for the CSNI bureau, PRG and each of the WGs are provided in Appendix A. For cross-cutting issues (i.e., issues that cut across more than one WG's lines of responsibility) the lead will be assigned to one WG who will be responsible for coordinating with other appropriate WGs and organisations. Temporary task groups (TG) may be established to address other specific issues. These task groups are time-limited and have a defined program of work. Two examples of temporary task groups created in recent past are as follows:

- Safety Margins Action Plan (SMAP) - to assess the combined effects of plant changes (e.g., power up-rates, high burn-up fuel) on safety.
- Senior Group of Experts on Safety Research (SESAR) - to assess the status and actions needed to preserve key research infrastructure (i.e., research facilities) that support current and future LWR and PHWR safety research needs as well as identify HTGR safety research needs.

The WGs, TGs should be comprised of technical experts in the group's area of responsibility and participation of younger personnel is also encouraged to promote knowledge transfer, training, experience and succession planning.

To adequately address the scope of responsibilities described above, CSNI expertise must cover the following areas:

- Thermal-hydraulics phenomena, modeling, safety issues and analysis under steady state and transient conditions.
- Fuel and cladding performance, modeling safety issues and analysis relevant for accident conditions.
- Reactor physics sufficient to support thermal-hydraulic and fuel analysis.
- Severe accident phenomena, modeling, safety issues and analysis.
- Fire modelling and analysis.
- Human and organisational performance, modeling and safety issues.
- Materials performance (e.g., corrosion, cracking, erosion).
- Seismic behavior of structures.
- Digital I and C performance and safety issues.
- Risk assessment methods and applications.
- Criticality safety in fuel cycle facilities.

III CSNI SCOPE OF WORK

The Joint CSNI/CNRA Strategic Plan recognises the current status of the nuclear power industry and, in particular, the main challenges the nuclear safety community will face over the next five years. These determine the focus of CSNI activities and include:

1. shrinking nuclear infrastructure;
2. increased public expectation on safety in use of nuclear energy;
3. industry initiatives to improve economics & safety performance in nuclear power production;
4. necessity to ensure safety over plant lifecycle; and
5. new reactors and new technology

At the strategic level, the objective of CSNI is to perform work to address the above challenges. The strategy to be employed by CSNI is to work closely with CNRA in addressing these challenges and identify and perform work that will contribute to the resolution of related issues. To be useful, such work will need to be technically relevant and timely and clearly communicated to potential users.

To help ensure that the work performed by CSNI is relevant to the challenges listed above, a list of safety issues and topics (SIT) has been developed to define the areas in which CSNI activities are to focus. This SIT list is shown below.

1. *Shrinking nuclear infrastructure*
   a) knowledge management
   b) Experimental facility loss
2. *Increased public expectation on safety in use of nuclear energy*
   a) Use of risk-informed methods
   b) Transparent technical basis for safety assessment
3. *Industry initiatives to improve economics and safety performance*
   a) Management strategies
   b) Maintaining safety margins
   c) Fuel and fuel cycle safety
   d) Maintaining safety culture
4. *Necessity to ensure safety over plant lifecycle*
   a) Ageing management
   b) New risk perspective and safety requirements
   c) Upgrades in digital technology
   d) Risk management across operating modes
5. *New reactors and new technology*
   a) Digital technology
   b) New materials and fabrication technologies
   c) New concepts of operation
   d) New methods and tools

A description of all identified SITs is provided in Appendix B.

As a complement to the above, the CSNI objectives and technical goals for the next four years for each of the five main challenges are given in the following:

- **Shrinking nuclear infrastructure**

  Objective: maintain sufficient expertise, data, analytical and experimental capabilities to be able to develop the technical basis to resolve currently identified safety issues and respond to and investigate safety issues that may be identified in the future.

  Technical goals:

  - Develop and implement knowledge transfer activities that ensure knowledge of past CSNI activities and accomplishments is preserved.

  - Maintain databases in key areas (e.g., fires, digital I and C, piping failures, thermal- hydraulic experiments) and identify sources of data (e.g., develop catalogues identifying what previous experimental data exists and how to obtain access to it), construct code validation matrices, and encourage and support data preservation.

  - Complete the SESAR/SFEAR study and implement key recommendations.

  - Continue to initiate and maintain cooperative research projects to better utilise available resources and maintain key research facilities.

- **Increased public expectations for safety**

  Objective: provide a form for sharing information and experience on matters related to nuclear safety and disseminate information to interested parties relevant to improving their knowledge, and the current status of nuclear safety issues.

  Technical goals:

  - Assist the application of probabilistic risk assessment information in the regulatory process.

  - Support the development of the technical basis for enhancement of severe accident understanding and mitigation.

  - Document the resolution of safety issues through activities such as state-of-the-art reports and the comparison study.

  - Exchange research information and technical views among member countries, aiming to reach consensus on ways to resolve issues (e.g., on severe accident).

  - Share analytical tools and user experience through international seminars or ISPs.

  - - Publish and disseminate information on key aspects (e.g., new information, issue resolution, consensus statements) of nuclear safety.

- **Industry initiatives to improve economics and safety performance**

  Objective: assess industry initiatives for safety implications and develop and qualify the technical basis for resolution of safety concerns.

  Technical goals:

  - Complete the study on "safety margins" and provide insights to CNRA and CSNI members on the integrated effect of simultaneous changes in plant operation (e.g., power up-rates, longer operating cycles, etc.) on safety and research needs.

  - Identify the need and technical basis for new or revised safety criteria to address industry initiatives (e.g., high burn-up fuel, use of digital I and C, etc.), including research needs.

  - Enhance the capabilities of calculation tools.

  - Evaluate safety management and safety culture with respect to its impact on safety and potential measures to assess and improve it.

- **Necessity to ensure safety over the plant lifecycle**

  Objective: assess information (e.g., operating experience, new phenomena, aging experience) and technical basis (e.g., data, analytical tools) to ensure an adequate capability and understanding of safety over the plant lifecycle.

  Technical goals:

  - Ensure long term safety management, including evaluation of maintenance and operating experience to identify safety issues and research needs.

  - Assess plant aging phenomena, their potential safety significance, research needs and potential corrective actions.

  - Assess analytical tools in the thermal-hydraulic, severe accident and fire areas for strengths and weaknesses.

  - Assess issues related to the safe storage of spent nuclear fuel on-site.

  - Assess current information on external events and their impact on the safety of operating nuclear power plants and fuel fabrication and reprocessing facilities.

  - Assess information on fuel cycle criticality safety and issue good practices reports.

  - Assess the application of improved regulatory techniques to ensure safety (e.g., risk-informed regulation).

- **New reactors and new technology**

  Objective: develop information useful to regulators, designers and researchers on safety issues and research needs.

  Technical goals:

  - Identify safety issues, research needs and infrastructure needs associated with new reactor designs and technologies.
  - Identify safety issues and research needs for the application of new technologies to existing plants (e.g., digital I and C).
  - Identify analytical methods, tools and data needed to assess the safety of new reactor designs and technology (e.g., passive safety features).
  - Develop "lessons learned" reports from previous experience on non-LWR designs to facilitate knowledge preservation and transfer.
  - Assess experience with and research needs for methods and application of risk-informed design approaches.
  - Assess technical basis and research needs for measures to prevent severe accidents.

The CSNI work is organised according to the following top-down scheme:

Type of document	**Programmatic content**
Joint CNRA-CSNI Strategic Plan	Main challenges
CSNI Operating Plan	Safety issues and topics (SIT)
WG Integrated Plan	Work plan covering the activities of a WG
CSNI Activity Report (6-month revision)	All WG activities, status and new proposals

The work planned for the next three-four years by each WG is to be documented in an integrated plan for which the guidelines regarding scope, content and format are included in Appendix C.

Each WG is responsible for developing and maintaining its integrated plan. The integrated plans are to describe each WG mandate, strategy, areas of responsibility and what is being done by each WG to address the SITs and accomplish the goals described above. In particular, each integrated plan should reflect the SITs for which the WG has responsibility and describe the WG current and proposed future activities covering at least a 3-year period. The integrated plan should also pinpoint the most significant areas that cannot be covered by the group and the reasons why they cannot be addressed (e.g. not enough knowledge or data, not suited for international cooperation, need for additional expertise or resources, etc).

All WG activities are described according to the so-called CSNI Activity Proposal Sheet (CAPS), as shown Appendix D. The CAPS are prepared when an activity is submitted to CSNI for approval. The same format is to be used for activities assigned by the CSNI to a WG or TG, i.e. for work initiated through a top-down approach. The CAPS and the full set of specific CSNI activities (from the integrated plans) being conducted or planned are described in a CSNI Activities Report, which is updated twice per year, prior to each CSNI meeting. The CSNI Activities Report is an integral part of the Operating Plan.

IV. CSNI WORKING METHODS AND PROCEDURES

To help meet the CSNI organisational and technical goals, CSNI has established working methods and procedures providing a uniform, consistent and structured process for the conduct of committee activities. This section describes those working methods and procedures. CSNI meets twice per year (June and December) to review program status, approve the publication of completed work products and approve proposals for new work. The CSNI Bureau also meets twice per year, prior to the June and December CSNI meetings, to discuss administrative, policy, schedule, and organisational matters. A report by the CSNI Bureau is also made at each CSNI meeting. Likewise, the PRG meets twice per year to review WG activities, proposals for new work and completed work products prior to their being presented to the CSNI. The PRG reports on its activities and recommendations at each Committee meeting.

The WGs generally meet once per year. The WG chairs are responsible for managing the activities of their WG to ensure timely and useful products in accordance with their integrated plans and for bringing problems (e.g. resources) to the attention of CSNI. WG chairs are encouraged to attend the PRG meetings where activities related to their WG are discussed. At each CSNI meeting the WGs report on their activities, with full reports from WGFCS, WGHOF and WGRISK at the CSNI June meeting and full reports from WGFS, WGAMA and WGIAGE at the CSNI December meeting. Abbreviated reports may be made on an as needed basis by those WGs not scheduled for full reports. The full WG reports shall cover:

- Status of ongoing work, i.e. priorities, problem areas (resources) and schedule changes.
- Main technical findings.
- Final products for approval.
- Proposals for new work.
- Overall assessment of the value and use of the WGs work with respect to meeting CSNI goals, fulfilling WG integrated plan objectives and contributing to the resolution of safety issues or maintaining or improving nuclear safety research infrastructure and capabilities.

The TGs meet on an as needed basis and brief CSNI and the PRG on the status of their activities.

Other items routinely discussed at the CSNI meeting are the status of ongoing special projects, ongoing cooperative research projects and any proposals for new cooperative research projects. Finally, at each CSNI meeting, a relevant safety topic will be discussed with respect to current issues, research needs and possible CSNI actions.

IV.1 Prioritising CSNI activities

As proposals for new work are made and considered by CSNI, the priority of the proposed work needs to be considered. The following criteria should be used by the PRG, WGs and TGs in proposing priorities for new work.

- Criterion 1: Issue of high safety significance and of importance to nuclear regulators
- Criterion 2: Better accomplished by international group
- Criterion 3: Likely to bring conclusive results in reasonable time frame
- Criterion 4: Maintain and preserve strategic safety competence

Criteria 1 should reflect the country priorities, which may include risk considerations. Criteria 2 and 3 should be assessed by WGs and reviewed by PRG. Criterion 4 may be a support argument, but not the main criterion to decide on a new activity. In addition, each CSNI activity should be linked to one or more of the safety issues/ topics.

Questions or specific request of CSNI activity coming from the CNRA will be treated as high priority item. In order to be treated effectively, the CNRA request should clearly identify the matter to be addressed and the expected CSNI product. The CSNI will determine the best way to respond to such request and, when this entails group work, define the scope, timetable, resources and lead group, including reporting to both CSNI and CNRA.

As mentioned in Section III, each WG should also keep an integrated plan, including all ongoing and planned activities. The number of activities should be dependent on expertise and resources available for each proposed task. A new activity can be started when an ongoing one (involving the same resources) is clearly ending, unless additional resources can be made available. It may be necessary to terminate or defer work of lower priority and to perform fewer activities, with greater focus on more important ones. The WG integrated plans should reflect the priority of each activity in the plan consistent with the above guidelines.

IV.2 Initiation, management and closure of CSNI activities

All CSNI activities have a lifecycle that consists of initiation, management and closure. Prior to initiation of any CSNI activity, CSNI approval is necessary. Proposals for new work can come from the WGs, the PRG, the CSNI Bureau, individual CSNI members or from external sources (e.g., CNRA requests). The work of CSNI is dependent upon the resources that are made available by member countries for participation in the WGs, TGs or other special projects. Therefore, when a proposal for new work is approved by CSNI, approval implies a commitment of resources by participating member countries to accomplish the task on the proposed schedule. To provide consistency and relevant information on proposed CSNI activities, each proposed activity should provide information in accordance with the CAPS shown in Appendix D. The person, group or organisation proposing the activity is responsible for providing the information requested in Appendix D and providing it to the Secretariat in sufficient time to be considered by the PRG prior to presenting it to CSNI for approval. As can be seen in Appendix D, the proposal needs to include information on priority, schedule, coordination and resources, link to SITs as well as a technical description and justification. Relations to other activities and cross-cutting aspects have to be explicitly addressed. Section IV.1 above provides guidance on how to establish priorities and Section IV.3 below provides guidance on coordination. Regarding resources, new tasks should not be proposed

unless the resources are clearly assessed, the expertise needed is identified, and both aspects firmly committed in advance. If this would involve deferring or cancelling lower priority work, this should be included in the proposal.

After approval by CSNI the activity should be managed by the lead WG or by a TG. A project management approach should be applied to each activity to ensure progress is closely monitored, problems identified and resolved (and when necessary brought to CSNI attention), schedules adhered to and a qualify product produced. Monitoring of the progress is a responsibility of the WG chair with support of the activity leader and the NEA secretariat. In this regard, each activity should have an assigned technical lead (i.e., project manager), who is responsible for the detailed planning, monitoring, timeliness and quality of the activity, including reporting of progress or problems to the WG. The WG chairperson should assign the technical leads. CSNI performance will be tied closely to the timeliness and quality (well written, practical and useful) of CSNI products.

Timely completion and closeout of WG and TG activities is an important CSNI consideration, as it can free resources for new activities. Final reporting has to assess the activity contribution to the resolution of safety issues. If additional work is desired, it should be proposed as a new activity in accordance with this section.

Finally, it is important for each WG and the PRG to manage their workload. Committing to too many activities will have negative implications on CSNI goal of timely, high quality products. Therefore, each WG and PRG chairperson is responsible for managing their group's workload so as to match available resources. Substantial delays in activities can result in reminders to participating organisations or activity termination.

The CSNI Bureau should support the communication and the interaction within the CSNI structure. For what concerns documentation and reporting on WG activities, they should include a description of what input is needed from other WG and what outputs from the activity may be of interest to other WG. As a general recommendation, each joint research project should produce at least one publication on main outcome or progress, and provide information involving a limited part of the project data for one ISP, if this is organised by a WG.

IV.3 Co-operation, co-ordination, and communication

Consistent with the joint CSNl/CNRA Strategic Plan, the CSNI will maintain a close working relationship with CNRA in areas of mutual interest. This will be accomplished by:

- briefing CNRA on CSNI activities;
- In-depth discussion with CNRA on SITs and regulatory challenges;
- receiving briefings from CNRA on its activities;
- responding to requests for assistance from CNRA;
- discuss coordination, cooperation, priorities in joint CSNI/CNRA Bureau meetings;
- conducting joint workshops, seminars, etc. on topics of mutual interest;
- inviting a CNRA representative to participate in selected CSNI WGs or other activities; and
- issuing joint reports, opinions or statements on topics of mutual interest.

Coordination and cooperation with other NEA committees, external organisations and, in some cases, non-member countries or industry is also important for achieving an effective and efficient committee operation. A fundamental goal in planning CSNI work should be to ensure appropriate coordination and cooperation with other organisations. Within CSNI, it is the role of the WG and TG Chairmen, the PRG, the Secretariat, and the Bureau to ensure proper coordination, subject to CSNI review and approval. External to CSNI, similar coordination is desired where it can lead to improved efficiency of CSNI work (for example by avoiding duplication) and/or wider or timelier dissemination of information important to safety. Such coordination or cooperation should not, however, detract from CSNI mission and leadership in the resolution of safety issues and maintaining safety research expertise and capability, as described in the joint CSNI/CNRA Strategic Plan. Accordingly, the following guidelines for coordination/cooperation are to be followed:

- Proposal for new work are where suitable to include plans for coordination and cooperation within CSNI, NEA and with external organisations.

- Cross-cutting issues might be identified by WG or bureau. To ensure proper handling of the cross-cutting issues, there should be one lead WG, which will interact with other working groups as appropriate. Monitoring will be the same as for other activities. In some cases the CSNI may establish a Task Group to deal with a specific cross-cutting issue.

- External to CSNI and subject to CSNI approval, the Secretariat will invite other NEA Committees or external organisations (e.g., IAEA), non-member countries or industry to participate in CSNI activities where those activities are directed toward developing technical information relevant to the resolution of an open safety issue or of interest to those committees or organisations. The purpose of this participation should be to improve the quality and/or efficiency of the WG or TG activity, to facilitate broader and timelier dissemination of results and to avoid duplication.

- Subject to CSNI approval, CSNI WGs and TGs will accept invitations from other NEA committees, external organisations, non-member countries or industry to participate in joint activities where those activities are essential to CSNI mission and where participation will result in greater WG/TG efficiency and/or higher quality work.

- Coordination and communication with other NEA committees and external organisations, non-member countries and industry shall be improved by inviting representatives from those committees and organisations to provide a status report on relevant activities at each CSNI meeting.

The CNRA firstly, but also other NEA committees such as NSC, CRPPH and NDC and external organisations such as IAEA and the EC, are of particular interest in implementing the above.

IV.4 Documentation and dissemination

CSNI work is to be documented and disseminated to interested parties. Formal CSNI products (i.e., those requiring formal CSNI approval) are generally one of the following:

- Workshop or seminar proceedings (with organising committee consensus on conclusions).

- Technical reports on selected topics, including state of the art reports (WG or TG consensus).

- Technical opinion papers on selected topics (WG consensus).
- Collective opinion statements on selected topics (CSNI consensus).

Other informal products (e.g., technical notes) may be prepared and approved by the WGs for limited distribution. Workshops and seminar proceedings are prepared by the workshop/seminar organiser/ sponsor and reflect the information, opinion and conclusions of the workshop/seminar participants. Specific technical reports and technical opinion papers are prepared by the appropriate WG or TG and reflect the collective conclusions and opinion of the group. Collective opinion statements are in general prepared by the PRG and reflect the CSNI collective opinion and conclusion.

All of the above formal products require CSNI approval before they are issued. In general, CSNI products are to be distributed as shown Table 3 below.

Table 3. **Distribution of formal CSNI products**

Recipient	Workshop or seminar proceedings	Topical reports	Technical and collective opinion statements
WG members or workshop attendees	X	X	X
CSNI members	X	X	X
PRG members	X	X	X
Members of relevant WG	X	X	All WG members
CNRA	X	X	X
Other NEA Committee Chairmen	As appropriate	As appropriate	X
IAEA nuclear safety managers		X	X
EU nuclear safety managers		X	X
INSAG, WENRA, WANO, VVER Forum			X

CSNI also organises and manages cooperative research projects, as discussed in Section II. Dissemination of information resulting from these projects is generally limited to members participating in the cooperative project for a period of three years following initial dissemination of the information to project participants. Exceptions to this general practice require approval of the project's Management Board. However, the CSNI encourages the transfer of general results from the OECD joint projects to working groups to support the development of their programs (e.g., International Standard Problems, State-of-the-Art Reports). In addition, as already mentioned in Section IV.2, CSNI encourages each project to produce at least one international publication on the project so that others are aware of the work and have a point of contact if further information is desired.

To help communication of CSNI work, each formal product should have an executive summary that briefly discusses the objective and scope of the work, key results and how they could be used, their significance and any conclusions or recommendations. Guidance for preparation of executive summaries is contained in Appendix E. In distributing the formal products, the Secretariat, with CSNI chair concurrence, will also include a short cover letter highlighting the purpose, usefulness and conclusions of the product.

In addition to the above distribution, each member country should disseminate CSNI products to those organisations within their country that should be aware of the product. CSNI Members and WG members are free to distribute CSNI products in their own country without restriction (except for products from cooperative research programs that contain proprietary data). It is suggested a short cover letter accompany such transmittals to highlight the product purpose, usefulness and main conclusions. Finally, it should be noted that many CSNI products are made available for sale as NEA publications. Such availability should be highlighted, whenever useful.

IV.5 Assessment of CSNI activities and updating the Operating Plan

The NEA Strategic Plan indicates that each standing technical committee assesses its level of achievement in conducting activities in accordance with the NEA Strategic Plan. This assessment is carried forward into the joint CSNI/CNRA Strategic Plan, noting that the results of this assessment will be reported to the NEA Steering Committee every second year.

To help ensure early identification of problems and to provide for corrective action, the assessment of CSNI activities may consider the following:

- Identification of CSNI products related to each of the technical goals identified in Section III and their value to nuclear safety.
- Tracking and identification of the impact CSNI products have had in member countries, other organisations or the industry.
- Evaluation of the progress of each WG with respect to its integrated plan.
- Cooperative research project accomplishments and status.
- Responsiveness to requests for assistance.
- Degree of coordination and cooperation within CSNI and with external organisations and other NEA committees.

The WGs and PRG, along with the NEA Secretariat, shall be responsible for collecting information to assist the CSNI in the assessment. Every two years the CSNI Operating Plan should be updated where needed needed, in order to reflect the results of the assessments and safety topic updates.

APPENDIX A

MANDATES OF CSNI, PRG AND WGS

COMMITTEE ON THE SAFETY OF NUCLEAR INSTALLATIONS (CSNI)

The Committee on the Safety of Nuclear Installations (CSNI) shall be responsible for the activities of the Agency that support maintaining and advancing the scientific and technological knowledge base of the safety of nuclear installations. The Committee shall constitute a forum for the exchange of technical information and for collaboration between organisations, which can contribute, from their respective backgrounds in research, development and engineering, to its activities.

It shall have regard to the exchange of information between member countries and safety R&D programmes of various sizes in order to keep all member countries involved in an abreast of developments in safety technology.

The Committee shall review operating experience and the state of knowledge on selected topics of nuclear safety technology and safety assessment. It shall initiate and conduct programmes identified by these reviews and assessments in order to overcome discrepancies, develop improvements and research consensus on technical issues of common interest. It shall promote the co-ordination of work in different member countries that serve maintaining competence in the nuclear safety matters, including the establishment of joint undertakings, and shall assist in the feedback of the results to participating organisations.

The Committee shall focus primarily on existing power reactors and other nuclear installations; it shall also consider the safety implications of scientific and technical developments of new reactor designs. Furthermore, it shall examine any other matters referred to it by the NEA Steering Committee. The committee shall organise its own activities. It may sponsor specialist meetings and technical working groups to further its objectives. In implementing its programme the committee shall establish co-operative mechanisms with the Committee on Nuclear Regulatory Activities (CNRA) to work with that committee on matters of common interest, avoiding unnecessary duplications. The Committee shall also co-operate with the Committee on Radiation Protection and Public Health (CRPPH), the Radioactive Waste Management Committee (RWMC) and the Nuclear Science Committee (NSC) on matters of common interest.

CSNI BUREAU

The CSNI Bureau assists the CSNI chairperson in high level planning related to CSNI activities, including identification of priorities, safety issues and topics and co-ordination with external organisations. The Bureau consists of the CSNI chairperson and six CSNI delegates from different member countries, elected for a three-year term on a rotating basis as determined by the Committee. For some of its functions the CSNI Bureau is supported by the Program Review Group (PRG).

The CSNI Bureau meets twice per year, i.e. prior to the June and December CSNI meetings, to discuss administrative, policy, schedule, and organisational matters. A report by the CSNI Bureau is also made at each CSNI meeting. Additional meetings of the Bureau can be convened by the CSNI chairperson.

The main tasks of the Bureau are to:

- Support the CSNI chair
- Promote the communication and the interaction within the CSNI structure, with other NEA committees and with external organisations
- In particular, discuss coordination, cooperation and priorities with CNRA in joint CSNI/CNRA Bureau meetings
- With PRG support, review proposals from the Working Groups, to ensure that proposals and reports have appropriate focus
- Propose updates of the list of safety issues and topics (SIT) to reflect new information and scientific or technical results
- Submit proposals of new CSNI activities
- Identify cross-cutting issues

CSNI PROGRAMME REVIEW GROUP (PRG)

The Programme Review Group (PRG) is to perform a programme quality review function within CSNI and to provide scientific assistance to the decision-making process of CSNI. The PRG should also support the Bureau in preparing the CSNI meetings and in proposing actions concerning the achievement of CSNI objectives.

The main functions of the Programme Review Group are the following:

- Assist the CSNI Bureau in updating the list of Safety Issues and Topics (SIT).
- Review the Integrated Work Plan of each WG with respect to overall work-load and priorities. WG chairpersons are encouraged to attend the PRG meetings.
- Evaluate new activity proposals from the WGs: check consistency with the SIT and the Integrated Plan, assess the resource and time requirements, and issue a recommendation to CSNI.
- Review new project proposals aiming to improve the technical content and complementarity with WG work scope.
- For cross-cutting issues, assist the CSNI Bureau in appointing a specific WG to take the lead.
- Monitor the progress of ongoing activities in context of the Integrated Plan and recommend corrective actions as needed.
- Review, and if necessary, draft Technical Opinion Papers and Collective Opinion Statements.
- Review major CSNI Reports (i.e., state-of-the-art reports and documents of similar significance) and provide guidance and advice on technical subjects to the CSNI.
- Report on its activities and recommendations at each Committee meeting.

CSNI WORKING GROUP ON RISK ASSESSMENT (WGRISK)

Scope

The Working Group shall support improved uses of Probabilistic Safety Assessment (PSA) in risk-informed regulation and safety management through the analysis of results and the development of perspectives regarding potentially important risk contributors and associated risk-reduction strategies. The Working Group shall address PSA methods, tools, and data needed to provide this information.

Objectives

The main objective of the Working Group on Risk Assessment (WGRisk) is to advance the PSA understanding and to enhance its utilisation for improving the safety of nuclear installations, for improving the operation and the design of nuclear installations and for increasing the regulatory effectiveness through risk-informed approaches. In order to achieve this objective, the group shall:

1. Report to the Committee on the Safety of Nuclear Installations (CSNI) and assist that Committee with its work. The Working Group shall prepare an integrated plan for its activities consistent with the mandate as well as proposed CSNI safety issues, updated at regular intervals and CSNI directives.

2. Constitute a forum for exchange of information and experience related to risk assessment in Member countries. This exchange is not only limited to technical discussions on questions regarding risk analysis approaches, results, insights, applications and interactions with other disciplines and analysis techniques, but it shall also include identifying and prioritising important issues requiring additional research.

3. Prepare technical reviews (such as state-of-the-art reports, technical opinion papers, compilations of ongoing efforts, comparison studies etc. as appropriate) of work in all phases of risk assessment to assist further developments and the application of PSA in risk-informed decision making. This work will be done in task groups, whose work will be organized in a project-like manner with outcomes and milestones.

4. Sponsor specialist meetings and workshops to further its objectives.

5. Collaborate with or assist other CSNI Working Groups, CNRA and other NEA committees on request. The group will also co-operate with other international organisations, aiming among others to avoid duplication of effort."

CSNI WORKING GROUP ON ANALYSIS AND MANAGEMENT OF ACCIDENTS (WGAMA)

Scope

The Working Group on the Analysis and Management of Accidents (GAMA) shall be responsible for activities related to potential accidental situations in nuclear power plants, including the following technical areas: reactor coolant system thermal-hydraulics; design-basis accident including ECCS strainer clogging; pre-core melt conditions and progression of accident and in-vessel phenomena; coolability of over-heated cores; ex-vessel corium interaction with concrete and coolant; in-containment combustible gas control; physical-chemical behaviour of radioactive species in the containment; fire safety. The activities will mainly focus on existing reactors, but will have application also for some advanced reactor designs. Priority setting will be based on established CSNI criteria and in particular on safety significance and risk and uncertainty considerations.

Objective

The GAMA objective is to assess and where necessary strengthen the technical basis needed for the prevention, mitigation and management of potential accidents in nuclear power plants, and to facilitate international convergence on safety issues and accident management analyses and strategies.

In order to fulfil this objective, the working group shall:

- Exchange technical experience and information relevant for resolving current or emerging safety issues.
- Promote the development of phenomena-based models and codes used for the safety analysis, including the performance of benchmarking exercises.
- Assess the state of knowledge in areas relevant for the accident analysis and, where needed.
- Promote research activities aimed to improve such understanding, while supporting the maintenance of expertise and infrastructure in nuclear safety research.

The Working Group shall report to the Committee on the Safety of Nuclear Installations (CSNI) and assist that Committee with its work. The programme will be carried out by small task groups, each set up for performing a specific programme activity under the GAMA supervision. The output of the working group will consist of state-of-the-art reports and other technical reports, workshops and related proceedings, benchmarking exercises and joint research proposals.

The working group will aim to provide answers as requested by CNRA, CSNI and member countries and will co-ordinate its work with other working groups, notably with WGRisk for priority setting, WGOE for emerging issues and IAGE for ageing and structure integrity evaluation. GAMA will also work in co-ordination with the NEA NSC on scientific items such as advanced neutronic and thermal-hydraulic methods. Interaction with joint projects will be strengthened as recommended in the CSNI Operating Plan.

CSNI WORKING GROUP ON INTEGRITY OF COMPONENTS AND STRUCTURES (WGIAGE)

The main mission of the Working Group on Integrity and Ageing of Components and Structures is to advance the current understanding of those aspects relevant to ensuring the integrity of structures, systems and components, to provide for guidance in choosing the optimal ways of dealing with challenges to the integrity of operating as well as new nuclear power plants, and to make use of an integrated approach to design, safety and plant life management.

The Working Group shall report to the CSNI and assist the Committee with its work. With prior approval of CSNI, the Working Group shall collaborate with or respond to requests from the CSNI Programme Review Group and Working Groups and other NEA committees or other international organizations.

The Working Group will have three subgroups dealing with a) integrity and ageing of metal structures and components, b) integrity and ageing of concrete structures and c) seismic behaviour of components and structures.

The specific mandate should be as follows:

1. The Working Group shall constitute a forum to exchange views, information and experience on generic technical aspects of integrity and ageing of components and structures, and review, as necessary, national and international programmes concentrating on research, operational aspects and regulation.

2. The Working Group shall stimulate, in relevant technical areas, new research and recommend possible international co-operative projects.

3. The Working Group shall develop common technical positions on specific integrity issues of operating and new nuclear power plants, and identify areas where further work is needed.

4. The Working Group shall discuss the potential impact of ageing and other challenges to integrity on the safety, regulation, and operability of operating and new nuclear power plants.

WORKING GROUP ON HUMAN AND ORGANISATIONAL FACTORS (WGHOF)

The main mission of the Working Group on Human and Organisational Factors (WGHOF) is to improve the understanding and treatment of human and organisational factors within the nuclear industry in order to support the continued safety performance of nuclear installations, and improve the effectiveness of regulatory practices, in member countries.

The Working Group shall report to the Committee on the Safety of Nuclear Installations (CSNI) and assist that Committee with its work. The Working Group shall prepare an integrated plan for its activities consistent with the mandate as well as proposed CSNI safety issues, and shall update this at regular intervals. The Group will also collaborate with, and respond to requests from, the Committee for Nuclear Regulatory Activities (CNRA) and other Working Groups of the CSNI. The WGHOF programme of work will be approved by CSNI.

In delivering its mission, WGHOF will seek to address the challenges identified in the joint CSNI/CNRA Strategic Plan and to implement the CSNI Operating Plan. WGHOF will:

1. Constitute a forum for exchange of information and experience about safety-relevant human and organisational issues in Member countries, thereby promoting co-operation and maintaining an effective and efficient network of experts.

2. Identify and prioritise current and emerging human and organisational safety issues.

3. Identify human and organizational factors methodologies and practices where further work and research are needed.

4. Identify those issues which appear most suitable to be addressed by WGHOF in a co-ordinated way across the international community.

5. Facilitate international convergence on safety issues related to human and organisational factors and, where practicable, seek to develop a shared understanding and common positions on important issues.

6. Compare, and where possible benchmark, practices and methodologies currently applied by Member countries in the assessment of safety-relevant human and organisational issues.

7. Prepare technical reviews of human and organisational factors work where such reports are needed for further development and to assist the application of human and organisational factors methods in member countries.

8. Collaborate with, and support cross-cutting initiatives proposed by, other CSNI/CNRA groups. Ensure that CSNI, CNRA and other organizations are consulted as appropriate when potential cross-cutting work on human and organisational factors is proposed by WGHOF.

9. Sponsor specialist meetings, workshops and other means of fostering international collaboration with nuclear and other industries, where appropriate, to further its objectives."

CSNI WORKING GROUP ON FUEL SAFETY (WGFS)

The main mission of the Working Group on Fuel Safety (WGFS) is to advance the current understanding and address safety issues related to fuel safety.

The specific mandate is as follows:

1. The Group will report to the Committee on the Safety of Nuclear Installations (CSNI), assist the Committee with its work and carry out the programme of work approved by the CSNI.

2. Assess the technical basis for current safety criteria and their applicability to high burn-up (above 50 MWd/kg) and to new fuel designs and materials. The assessment will focus on anticipated transients and postulated accident conditions. Information relevant to fuel performance under normal operating conditions will be considered only to the extent necessary to assess the safety behaviour.

3. Determine needs and priorities for future research programmes in the area of fuel safety behaviour, with the aim of understanding and adequately modelling key phenomena and of quantifying safety margins.

4. Review from the safety point of view, the adequacy of fuel codes and methodologies used for different core assessments as related to high burn-up fuel. Cores with different fuel assembly designs and with MOX fuel are to be considered. Neutronic, thermal-hydraulic and materials aspects are considered as they relate to core safety assessment.

5. Provide a forum where safety relevant fuel issues emerging from operating experience and research work can be addressed and resolved in an effective manner.

The group will aim at facilitating international convergence in fuel safety issues, including experimental approaches, interpretation and use of the experimental data or of other relevant information.

The group will perform its activities mainly trough organizing topical meetings on specific subjects or through small task forces dedicated to covering specific programme items."

CSNI WORKING GROUP ON FUEL CYCLE SAFETY (WGFCS)

Scope

The nuclear fuel cycle comprises a number of interrelated activities including; uranium mining and milling; uranium refining and conversion to uranium hexafluoride; uranium enrichment; fuel fabrication and storage (including MOX fuel); spent fuel storage; spent fuel reprocessing; decommissioning of nuclear facilities; radioactive waste management and disposal options (including for spent fuel) and the research and demonstration facilities that support these activities. Reactor operation is conventionally not included in the so-called nuclear fuel cycle. Similarly, the long-term management of radioactive waste is a very broad field, widely covered in several other NEA Committees, and is therefore not addressed, although the safety aspects associated with processing and storing waste in the short term on the site of fuel cycle facilities are treated by the group.

Objectives

The objective of the Working Group on Fuel Cycle Safety (WGFCS) is to advance the understanding for both ***regulators*** and ***operators*** of relevant aspects of nuclear fuel cycle safety in member countries.

In order to accomplish this objective the working group shall:

- Meet periodically to exchange information on relevant matters including licensing systems, safety philosophy and safety standards to improve mutual understanding, and to review the information from the Fuel Incident and Notification and Analyses System (FINAS) and other data bases.

- Indicate where further research is needed, review and prioritise safety issues, prepare state-of-the-art reports, hold workshops as appropriate and collaborate with other groups as necessary.

To achieve this mandate the FCS Working Group shall:

1. Report to the Committee on the Safety of Nuclear Installations (CSNI) and assist that Committee with its work. The programme of work of WGFCS will be approved by CSNI.

2. Constitute a forum for exchange of information and experience of activities related to nuclear fuel cycle safety in Member countries. Accumulation of operational experience should be used to improve safety technology. Mutual understanding of licensing systems, safety philosophy and safety standards should be common goal between members.

3. Maintain FINAS as a database which collects and disseminates safety related information concerning incidents at nuclear fuel cycle facilities. The main objective of FINAS is to serve as a tool for sharing lessons-learned from significant events that can be used to improve safety.

4. Indicate where further research and analysis is needed and denote priorities actions to be undertaken. It should prepare technical reviews of work in all phases of the nuclear fuel cycle where such reports are needed for further development. In doing so, care will be taken to avoid duplication of effort or scope with other CSNI Working Groups, or with other international bodies.

5. With prior approval of CSNI, collaborate with or assist the other WGs, NEA committees or other international organisations."

APPENDIX B

SAFETY ISSUES AND TOPICS

SAFETY ISSUES AND TOPICS

1. Shrinking nuclear infrastructure

c) Knowledge Management
The workforce in the nuclear safety field is mature; significant expertise has been and continues to be lost. The explicit and implicit knowledge residing within this workforce should be captured and made available to the future workforce, as done for instance in THICKET. Maintaining data is part of knowledge management. Working groups should continue to ensure that all technical reports developed by their group are appropriately documented and catalogued in accordance with NEA requirements.

d) Experimental Facility Loss
Shrinking nuclear safety research budgets, maturity of knowledge and completion of many research studies may make the continued operation of experimental facilities economically infeasible. An adequate and cost-effective set of facilities should be maintained to address emerging safety issues. Consistent with the SFEAR conclusions on this subject, the maintenance of these facilities must be based on the identification of a meaningful program of work. Working groups are expected to apply the SFEAR criteria when deciding on whether further information from existing facilities should be pursued.

2. Increased public expectation on safety in use of nuclear energy

c) Use of Risk-Informed methods
The public expects efficient and effective regulation. Risk informed methods, to the extent that they are used to improve the realism and safety-focus of regulatory requirements and processes, require a sound technical basis. Working Groups that employ risk methods and techniques in the course of their work are expected to assure and confirm that a sound technical basis exists to support any decisions, conclusions, recommendations, etc. that the group makes.

d) Transparent technical basis for safety assessment
Building an international perspective and consensus in addressing nuclear safety issues, through for instance state of the art reports or workshops, contributes to increasing public confidence. Since nuclear safety issues continue to be of significant interest to the public, Working Groups should strive to make their multi-national statements on nuclear safety issues and topics known and readily available to the public, through NEA-sponsored dissemination processes.

3. Industry initiatives to improve economics and safety performance

e) Management Strategies
Some new management strategies include for instance reduced staffing at operating nuclear facilities, which could lead to changes in maintenance or operational quality. As these strategies are implemented, safety and operational oversight and assessment must be sensitive to potential reductions in quality. The Working Group on Human and Organizational factors should consider whether meaningful work could be carried out and what impact, if any, reduced staffing levels might have on maintenance and/or operational quality.

f) Maintaining Safety Margins
There are considerable economic incentives to introduce new operational strategies and advanced, best-estimate tools for safety assessments of nuclear facilities. Adequate safety margins need to be maintained as these changes are made in order to ensure safety performance, also accounting for uncertainties. Working Groups should continue efforts for quantifying safety margins, ensuring that the methods used can be practically applied within existing regulatory frameworks.

g) Fuel and Fuel Cycle Safety
Fuel assembly design optimization, more demanding coolant temperature/chemistry conditions and more aggressive fuel management strategies are being introduced by the industry to improve the economy of nuclear power plant operations. Advances are also being made in fuel fabrication, processing and storage processes. Adequate evaluations considering operational experience, analytical results and data should be made in order to ensure that associated safety margins are maintained. The Working Groups on both Fuel Safety and Fuel Cycle Safety should maintain cognizance of evolving industry fuel cycle and management strategies, and report on potential technical shortcomings, and the need for regulators to obtain independent confirmatory information.

h) Maintaining Safety Culture
Safety culture and organisational aspects have been identified as root or contributing causes to many significant incidents in the nuclear and other industries. Tools are needed to better assess and characterize safety culture. The Working Group on Human and organizational factors should continue to assess available tools, and recommend work, as necessary, if these tools are considered inadequate or require improvement.

4. Necessity to ensure safety over plant lifecycle

e) Ageing management
Nuclear facilities continue to operate safely, often beyond their originally planned lifetime. The integrity and reliability of the facility's systems, structures, and components should remain essentially constant throughout its operating life. The Working Group on the Integrity and Aging of Components and Structures should focus on research activities are needed for aging management programs, particularly for non-readily replaceable components and structures (e.g., reactor vessel, concrete structures, cables) will retain their integrity and reliability during their projected years of service.

f) New Risk Perspective and Safety Requirements
The risk perspective and safety requirements may change over a plant lifecycle due to changing conditions such as plant modifications, new experimental findings or improved evaluation tools. Long-term safety management needs to be ensured with respect to issues such as severe accidents, external events, fire safety and seismic safety analyses. Each Working Group is expected to assure that new information, experimental data, improved evaluation tools, etc. (including those falling in the domain of other Working Groups) are properly taken into account.

g) Upgrades in digital technology

Currently operating nuclear facilities are, of necessity, having to convert from analog instrumentation and control systems to digital systems. The underlying digital technology evolves very rapidly, even after the initial conversion is made. The continued safety of the facilities during and after this conversion must be ensured. The Working Group on Risk should continue to pursue resolution of issues in this area, monitor for new and/or evolving technologies, and recommend work necessary by the group to adequately address the issues in this area.

h) Risk management across operating modes
Operational decisions often involve tradeoffs among risks at full power operations and other modes, including low power and shutdown modes. The underlying risk models should be sufficient to support such trade-off decisions. The Working Group on Risk should recommend work necessary to assure risk models are adequate to confidently predict plant risks under all modes of operation to which the models are applied.

5. New reactors and new technology

e) Digital technology
Digital systems are inherent in every new facility design. The safety of the facilities must be ensured already at the design stage. The Working group on Risk should consider the applicability of ongoing digital I&C work to new reactor designs, and recommend any additional work that may be necessary.

f) New materials and fabrication technologies
New materials and fabrication technologies are being introduced. Methods should be developed and applied to better understand how these advancements may affect safety. The Working Group on the Integrity and Aging of Components and Structures should monitor the development and deployment of new materials and fabrication techniques, and recommend any course of work that should be undertaken by the Working group to help ensure the safe deployment of these materials and/or techniques.

g) New concepts of operation
Modular reactors, passive safety features, advanced control rooms, and different workforces are all elements of new design that challenge traditional assessment methods. New methods may need to be developed to address the safety implications of these advancements. Working Groups should keep abreast of these new concepts, and, where appropriate, recommend to CSNI any work necessary to address emergent issues in this area.

h) New methods and tools
New analytical techniques such as computational fluid dynamics and virtual reality simulators are elements of new designs that challenge traditional assessment methods. New methods should be developed to address the safety implications of these advancements. Working Groups should keep abreast of these new concepts, and, where appropriate, recommend to CSNI any work necessary to address emergent issues in this area.

APPENDIX C

GUIDANCE FOR PREPARATION OF WG INTEGRATED PLANS

GUIDANCE FOR PREPARATION OF WG INTEGRATED PLANS

To help ensure consistency in scope and approach among the WGs, the integrated plans should contain:

- The group's mandate and vision.
- The safety issues and topics and technical goals which are within the group's area of responsibility.
- The strategy and the ongoing or planned activities of the group that will enable to achieve these goals. The plan should clearly mention if an activity is ongoing or planned.
- The scope and objectives of the group's activities, the link to the safety issues and topics, the expected results, products and users. For ongoing activities, these should be consistent with the CAPS approved by the CSNI. Relevant joint projects that are conducted in the same area of work should be mentioned, describing technical links and complementarity with WG activities.
- Any significant areas that cannot be covered by the group and why.
- A summary table with the overall time schedule of the activities, with major milestones where needed, covering a time period of typically three to four years.
- Plans for coordination with other CSNI groups, NEA Committees and external organisations (e.g., IAEA, industry) should be described.
- Plans for ensuring quality in the group's work should be described (e.g., peer review).

The integrated plan should generally cover at least three years in the future and longer if desired.

APPENDIX D

CSNI ACTIVITY PROPOSAL SHEET (CAPS) CONTAINING INFORMATION AND FORMAT FOR A PROPOSED NEW ACTIVITY

CSNI Activity Proposal Sheet (CAPS) containing information and format for a proposed new activity

Project/Activity Title	
Objective	
Scope/Justification/ Deliverables, expected results and users, relation to other projects	
Safety significance/ priority (see priority criteria in Section IV.1)	
Safety Issue and topic covered	
Milestones (deliverables vs. time)	
Lead organisation(s) and coordination	
Participants (individuals and organisations)	
Resources	
Requested action from PRG/CSNI	
PRG recommendation	
CSNI Disposition	

APPENDIX E

FORMAT AND CONTENT OF EXECUTIVE SUMMARIES FOR CSNI REPORTS

FORMAT AND CONTENT OF EXECUTIVE SUMMARIES FOR CSNI REPORTS

Each CSNI technical report should include an executive summary. Executive summaries should discuss the impact on nuclear safety of the work performed, the regulatory and policy implications, the impact on the current and future CSNI programme of work, possible follow-up actions, conclusions and recommendations, etc. of the work being reported on.

The format for executive summaries should include at least the following five sections:

- Background
- Objective of the work
- What was done (including key assumptions and limitations, etc.)
- Results and their significance
- Conclusions and recommendations.

In reviewing reports and their executive summaries the following will be the standard for approval:

- Does the report clearly describe the objective of the work?
- Does the report clearly describe results and their significance (if appropriate)?
- Does the report contain practical conclusions, follow-up actions and/or recommendations?
- Is the report clear as to its scope and usefulness?