

Review of the Role, Activities and Working methods of the CSNI

**Committee on the Safety
of Nuclear Installations (CSNI)**

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FOREWORD

At its June 2004 meeting the NEA Committee on the Safety of Nuclear Installations (CSNI) agreed to set up an Assessment Group to review the role, activities and working methods of the Committee. It was agreed that members of the Assessment Group would consist of current or former members of the CSNI, with detailed knowledge of its history.

In preparing this report, the Assessment Group gathered information by examining CSNI activities, seeking comments from working group chairs and the NEA Secretariat. The Group met three times, organising detailed debates on the different activities and working methods of the Committee as well as their organisational aspects.

The report was finalised on the basis of discussions with, and input provided by, the members of the Assessment Group. The Group was chaired by Lothar Hahn (Germany) and consisted of the following members:

- Kiyoharu Abe (Japan),
- Sabyasashi Chakraborty (Switzerland),
- Gustaf Lowenhielm (Sweden),
- Jean-Christophe Niel (France), subsequently replaced by Philippe Jamet,
- Peter Wigfull (Canada),
- NEA Secretariat: Javier Reig and Carlo Vitanza.

COMMITTEE ON THE SAFETY OF NUCLEAR INSTALLATIONS

The Committee on the Safety of Nuclear Installations (CSNI) of the OECD Nuclear Energy Agency (NEA) is an international committee made up of senior scientists and engineers with broad responsibilities for safety technology and research programmes, and representatives from regulatory authorities. It was set up in 1973 to develop and co-ordinate the activities of the NEA concerning the technical aspects of the design, construction and operation of nuclear installations insofar as they affect the safety of such installations.

The Committee's purpose is to foster international co-operation in nuclear safety amongst OECD member countries. The CSNI's main tasks are to exchange technical information and to promote collaboration between research, development, engineering and regulatory organisations; to review operating experience and the state of knowledge on selected topics of nuclear safety technology and safety assessment; to initiate and conduct programmes to overcome discrepancies, develop improvements and research consensus on technical issues; and to promote the co-ordination of work that serves to maintain competence in nuclear safety matters, including the establishment of joint undertakings.

The Committee focuses primarily on existing power reactors and other nuclear installations; it also considers the safety implications of scientific and technical developments of new reactor designs.

In implementing its programme, the CSNI establishes co-operative mechanisms with the NEA Committee on Nuclear Regulatory Activities (CNRA) responsible for the programme of the Agency concerning the regulation, licensing and inspection of nuclear installations with regard to safety. It also co-operates with the NEA Committee on Radiation Protection and Public Health (CRPPH), the NEA Radioactive Waste Management Committee (RWMC) and the NEA Nuclear Science Committee (NSC) on matters of common interest.

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EXECUTIVE SUMMARY

At its thirty-fifth meeting in June 2004, the Committee on the Safety of Nuclear Installations (CSNI) discussed the drafts of the joint CSNI/Committee on Nuclear Regulatory Activities (CNRA) Strategic Plan and of the CSNI Operating Plan. As a result of this discussion the CSNI convened a small group of present and past CSNI members to assess the CSNI organisation structure. The assessment was to include the working methods and experience of Working Groups (WGs) and Special Expert Groups (SEGs) – as well as their mandates.

The task and composition of this CSNI Assessment Group was outlined in the mandate that was prepared by the NEA secretariat following a request by CSNI. The Group was to review the way of operation of the CSNI, WGs and SEGs, to identify issues of concern and to suggest ways to further increase the efficiency of the CSNI. Ways to increase the interaction with the CNRA and other NEA committees were also to be considered.

The CSNI assessment naturally follows the recent publication of the revised five-year NEA Strategic Plan covering the period 2005-2009, which sets the goals of the NEA activities on nuclear safety and regulation and provides the method for achieving this goal. The assessment aims to adjust the CSNI strategic goals and structure in order to ensure alignment with the revised NEA Strategic Plan.

The main challenges, technical areas of concern and mission of the CSNI (and CNRA) are identified in the Joint CSNI/CNRA Strategic Plan for 2005-2009, which was issued at the beginning of 2005 and which has constituted an important guidance for the present assessment. In particular, the CSNI role and priorities have been reviewed considering the challenges for the future set forth in that document.

As requested in the mandate, the Assessment Group has prepared a report on its findings for presentation to the CSNI. The report takes into account the comments received by the Group, which were thorough and substantial, especially those made by the WG, SEG and Programme Review Group (PRG) chairs.

The Assessment Group agrees that the best way to measure CSNI performance is by its products – and that, in general, the CSNI is delivering excellent products. The workshops and specialist meetings have generally attracted the best experts in their respective fields and yielded proceedings of high quality. The International Standard Problems (ISPs) have established best practices through its benchmarking activities. State-of-the-art reports and other reports provide valuable technical information to the nuclear safety community. The OECD/NEA projects have been successful and efficient means of producing valuable data and assisted in maintaining infrastructure.

The Group has made recommendations aiming to maintain and possibly improve these qualities. Its main conclusions and recommendations are as follows:

CSNI role: The Group considers that the CSNI performs an important function today and will continue to have a prominent role in the nuclear safety arena also in the future. The CSNI mandate is to “support maintaining and advancing the scientific and technological knowledge base of the safety of nuclear installations”. This long-term vision, while at the same time supporting the CNRA, will continue to be the major CSNI role. The main challenge for CSNI will be to further increase its efficiency, increase focus on result-oriented work, extend product applicability and shorten the time used to produce applicable output.

Priorities: The Group considers that the already established CSNI principles are sound, but are currently not being applied consistently, and therefore specific suggestions for improvement are given. The CSNI priorities will continue to be identified by the *High level safety issues and topics*, which are set by the CSNI and updated every two years or when need arises. It will be noted that these *High level safety issues and topics* also reflect CNRA priorities.

Products: The Group sees no need for significant changes in the type of products or in the reporting practice. Nevertheless, an effort should be made for increasing result applicability, i.e. for compounding scientific value with increased practical usability of the results. Delivering results in a timely manner is, in this context, part of increased applicability.

The CSNI should take upon itself the task to reconfirm and possibly strengthen the commitment of member countries and to find ways to promote experts’ participation in order to ensure that the required products are delivered to quality and time.

Structure: The Group agreed that there is no urgent need to change the CSNI structure at this time, although some adjustments are advisable and are recommended.

The Group believes that the PRG should perform a programme quality review function within CSNI and provide scientific assistance to the decision-making process of CSNI, while the Bureau should focus on identification of priorities, interaction among groups within the CSNI structure and co-ordination with CNRA, other NEA committees and external organisations. The PRG should also support the Bureau in preparing the CSNI meetings and in proposing actions concerning the achievement of CSNI objectives. The CSNI should therefore revisit the PRG mandate and membership.

The Group considers that the matters covered by the two existing SEGs are very important for nuclear safety and cannot be limited to a specific time frame. It is therefore the Group’s view that these SEGs should become new Working Groups. The CSNI should consider revisiting the mandate and membership of these SEGs with this in mind.

The Group noted that there are different approaches to permanent subgroups within WGs structure, e.g. Working Group on Integrity and Ageing of Components and Structures (IAGE). The Group agreed that CSNI should revisit this matter and look for a consistent approach, taking into account available expertise and the time frame needed.

Working methods:

In general, it appears that a good balance has been achieved between the top-down direction and control by CSNI itself and the bottom-up initiatives of the WGs and SEGs. This balance is a valuable asset, but is one that should be strengthened in the future. For example, the Group believes that improvements are still needed in issues like incorporating suitable prioritisation, better understanding of member countries needs, adequate use of resources and user-oriented outcome. Specific suggestions on how to achieve these improvements are proposed.

The Group recommends that the WG and SEG scope could be structured in a project-like fashion, in order to ensure that activities have clearer objectives and that objectives are met as expected. A project orientation is to some extent already present, especially in the activity initiation and product delivery phase. It should be reinforced and extended to include programme monitoring during the programme execution.

The Group believes that maintaining a high technical level in CSNI activities is crucial for providing adequate support to member countries. With this aim, the Group agreed that there should be a mechanism to ensure resource commitment of participating organisations, as part of the process for deciding on new activities submitted to CSNI.

The Group believes that, in general, cross cutting activities will result from top down requests, and in order to improve management of these activities, they should be assigned to one specific WG as lead group, taking into account the different fields of expertise involved.

The Group believes that the CSNI ability to close issues is an indication of the conclusive value of its work and should be strengthened, giving consideration to the number of activities successfully closed, when deciding on new proposals.

The Group agreed that the interaction among WGs should be enhanced. In the Group's opinion this interaction includes two goals, one is to benefit from other group's experience and improve the efficiency of the working process. The second goal is to achieve overall programme consistency. The Group considers that the Bureau, assisted by the PRG, should have a leading role in WG's interaction.

The Group believes that there is a need to continue improving the CSNI working methods and that the top down management should be more precisely applied. The Group agreed that a meeting of CSNI Bureau with WG's chairs and PRG would provide a good means to address these concerns and arrive at specific proposals to make to the CSNI.

Interaction:

There is considerable CSNI interaction with CNRA, with other NEA committees and with the IAEA and the EC. This interaction should be intensified in the future. Means to increase co-operation with industry should also be explored. Co-operation with non-member countries should be maintained and periodically assessed.

1. INTRODUCTION

At its thirty-fifth meeting in June 2004 [1], the CSNI discussed the drafts of the joint CSNI/CNRA Strategic Plan and of the CSNI Operating Plan. As a result of this discussion the CSNI decided to convene a small group of present and past CSNI members to assess the CSNI organisation structure. The assessment was to include the working methods and experience of Working Groups (WGs) and Special Expert Groups (SEGs) – as well as their mandates. The task and composition of this CSNI Assessment Group was laid down in the mandate [2] that was prepared by the NEA secretariat upon request from the CSNI and that was distributed by the secretariat together with background material on 9 and 10 September 2004 [3].

According to the mandate, the Group, in addition to reviewing the way of operation of the CSNI, WGs and SEGs, was to identify issues of concern and suggest ways to further increase the efficiency and visibility of the CSNI. Ways to increase the interaction with the CNRA and other NEA committees were also to be considered.

The CSNI assessment naturally follows the recent publication of the revised five-year NEA Strategic Plan covering the period 2005-2009 [4], which sets the goal of the NEA activities on nuclear safety and regulation and provides the method for achieving this goal. The assessment aims to adjust the CSNI strategic goals and structure in order to ensure alignment with the revised NEA Strategic Plan and to effectively address future challenges for maintaining and further improving nuclear safety through international co-operation.

The main challenges, technical areas of concern and mission of the CSNI (and CNRA) are identified in the Joint CSNI/CNRA Strategic Plan for 2005-2009 [5], which has constituted an important guidance for the present assessment. In particular, the CSNI role and priorities have been reviewed in light of the challenges for the future outlined in that document, aiming to identify points of convergence as well as points where adjustments should be made.

The basic elements of the current CSNI organisation derive from the review that was carried out in year 2000, when the CSNI Strategic Plan was established [6]. Criteria for determining priority and measuring success of the CSNI activity were also developed at that time. Amongst others, it was proposed that CSNI reviews the overall effectiveness of the Strategic plan two to three years after its implementation. This was done in 2003 in the form of a questionnaire that was circulated among CSNI members [7]. In performing the present assessment, the results of the 2000 review and of the 2003 questionnaire have been taken into account.

As requested in the mandate, the Assessment Group prepared a report on its findings for presentation to the CSNI. A first presentation was made on the occasion of the CSNI summer meeting in 2005, when the draft report was circulated for comment and discussion. In finalising the report, account has been taken of the comments received, which were thorough and substantial, especially those made by the WG, SEG and PRG chairs [8] and of the further internal discussion among the Assessment Group members. The trial move of WGOE to CNRA, decided by CSNI in June 2005, has also been an underlying consideration in finalising the report.

A survey of the CSNI role, priorities and products is presented in Chapter 2, which reviews the priority-setting process accounting for the main challenges identified in [5] and other matters. Chapter 3 contains an assessment of the CSNI structure and of the working methods, where method improvements are delineated. After an outline of CSNI co-operation within and outside the NEA (Chapter 4), the main conclusions of the Group are summarised in Chapter 5.

2. CSNI ROLE, PRIORITIES AND PRODUCTS

2.1 Role

The Group reviewed the WG and SEG mandates and activities as regards the CSNI goal outlined in the NEA Strategic Plan and the role and mission stated in the Joint CSNI/CNRA Strategic Plan, which both define the CSNI role. The Group found that the mandates and activities adequately reflect the CSNI role and mission. In particular, all WGs and SEGs recognise in their mandate and work scope the CSNI role to keep member countries involved in and abreast of developments in safety technology [5]. This is in most cases carried out by means of exchange of information, development of tools and methods, promotion of co-operative efforts and consensus-seeking on technical approaches to safety matters.

One of the most useful functions that the WGs and SEGs perform is to serve as a forum for regular exchange of specific safety issues and approaches amongst international specialists. This enables group members to share their experience and promotes early awareness of issues which may have implication in their countries [8].

Through State-of-the-Art Reports (SOAR) and other technical reports, the CSNI reviews the status of knowledge in safety-relevant subjects and it assesses the usability and use of available information for the resolution of safety issues, thus providing valuable technical support for regulatory decisions. It performs comparative evaluation of methods, models and calculation tools by means of analytical exercises such as ISPs, which normally involve several member countries. When appropriate, it sponsors international co-operation involving member countries in OECD-NEA projects, which are jointly financed safety research projects devised to produce advanced experimental data and develop databases in specific technical areas.

Because of the nature of its programmes, the CSNI with its WGs and SEGs are a significant contributor to knowledge management [8]. Moreover, all groups encompass knowledge management and competence preservation activities in one or another form, e.g. creation and use of databases, organisation of transfer-of-knowledge seminars or as already mentioned arrangement of ISPs or of joint research projects. Apart from some potential improvements which are outlined at the end of this chapter, the Group observes that the competence and infrastructure maintenance is well developed within CSNI. This important part of the CSNI role should be continued.

The Group believes that the CSNI performs an important function today and that it will continue to have a prominent role in the nuclear safety arena in the future. Seen in the perspective of a shrinking nuclear infrastructure, increased public expectations on safety, industry globalisation and initiatives to improve economics, all of which characterise the nuclear industry today, there will be an increased need for a body like CSNI. This is necessary to lead internationally coordinated efforts in developing the nuclear safety knowledge and seeking consensus on safety approaches. This will also be essential for maintaining a solid technical basis in support of member countries. The main challenge for CSNI will be to further increase its efficiency, i.e. focus on result-oriented work, extend product applicability and shorten the time used to produce applicable output, while its work is based on voluntary contributions of experts who are already very busy at their home institution.

2.2 Priorities

In determining whether or not a proposal should be pursued and the degree of attention it requires, the 2000 CSNI Strategic Plan set some general criteria for prioritization [6 / pages 21-23]. The criteria for priority ranking were revisited by PRG/CSNI in 2003, in connection with a collective statement concerning good practice and closure criteria in safety research [9 / page 18]. The Group suggestion on criteria for priority is given at the end of this section.

A key reference for priority-setting is constituted by the so-called *Main Challenges*, which have been identified in the 2005 Joint CSNI/CNRA Strategic Plan. An analysis of these main challenges and of how the WG and SEG activities reflect these challenges is presented in Appendix 1. Further, in defining the PRG tasks [6/page 14], the 2000 CSNI Strategic Plan specifies that a CSNI list of safety issues should be compiled, providing also an indication of priority, for the purpose of serving as reference for prioritising WG activities. This list was established and is regularly reported in all updates of the CSNI Activity Report under the heading *High Level Safety Issues and Topics*.

As the comparison in the table below shows, there is good consistency between the Main Challenges and the High Level Safety Issues and Topics, in that the latter reflect well the concerns of the Main Challenges. The Group believes that the challenges and safety issues should be developed into specific requests, as an important input for WGs programme of work, and that Bureau could take the lead for this effort, assisted by the PRG and WG chairs. As regards increased public expectation, which mainly relates to CNRA and which is the only main challenge not explicitly recognised in the current list of CSNI issues, the Group believes that continuing to assure a solid technical basis to safety and regulation will also help in meeting public expectations and ensuring transparency in the treatment of safety matters.

<p style="text-align: center;">Main challenges (CSNI/CNRA Joint Strategic Plan, 2005)</p>	<p style="text-align: center;">High level safety issues and topics (CSNI Activities, e.g. November 2004 update)</p>
<ol style="list-style-type: none"> 1. Shrinking nuclear infrastructure 2. Increased public expectation on safety in use of nuclear energy 3. Industry initiatives to improve economics and safety performance in production of nuclear power 4. Necessity to ensure safety over the plant life cycle 5. New reactors and new technology 	<ol style="list-style-type: none"> 1. Accident management 2. Safety management 3. Maintain research capabilities 4. Ageing 5. Maintaining data 6. Safety aspects of commercially driven initiatives 7. Operating experience 8. Advanced reactors 9. External events 10. Safety analysis methods (medium priority) 11. Fuel safety (medium priority) 12. Spent fuel management (medium priority) 13. Criticality safety in fuel reprocessing (medium priority)

The current CSNI priority setting principles are the following:

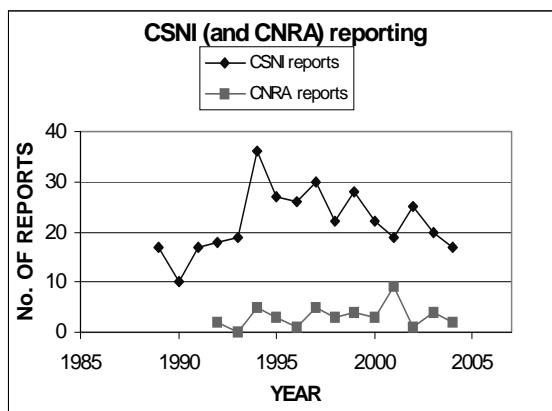
1. The CSNI priorities are identified in the High Level Safety Issues and Topics, which is prepared by the PRG for CSNI approval and updated every two years or when need arises. These high level issues and topics also accurately reflect CNRA priorities.
2. The criteria for priority setting reflect the following considerations:
 - Is it an issue of high importance to regulators in many OECD countries?
 - Is the issue of potentially high safety relevance?
 - Is resolution of the issue better accomplished through international co-operation?
 - Is the proposal likely to bring conclusive results and in what timeframe?
 - Will the proposal serve to maintain or develop strategic competence or facilities?
3. Each proposal for new activity is submitted according to the current template, but modified to include explicit answers to the questions in point 2.

The Group considers that these principles are sound, but are currently not being applied consistently. Specific suggestions for improvement are given in Chapter 3.

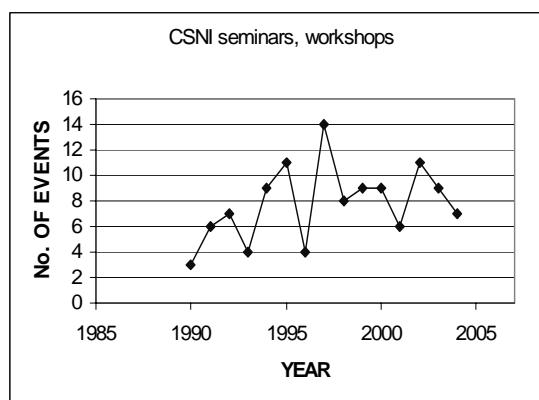
2.3 Products

A brief overview of the main categories of CSNI products is given in the following.

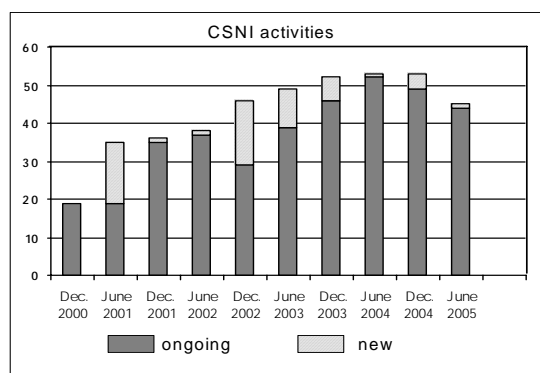
A first category of products is constituted by the CSNI reports, i.e. state-of-the-art reports, technical opinion papers, collective opinion statements and meeting proceedings. As shown in the first figure, the report production has been rather stable over a long time and is of 20-25 reports per year. Fluctuations are due to publishing schedule in most cases. The overall picture remains that the CSNI reporting programme is stable and extensive. The trend of CNRA reports is also shown.



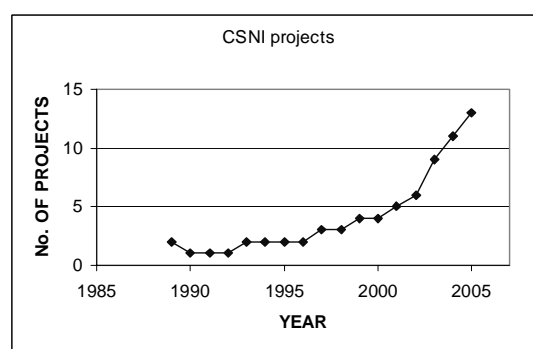
A second category of products consists of workshops, seminars and topical meetings. In the CSNI process, these represent important milestones for determining the state of knowledge and the need and direction of future work in specific technical areas. They are also opportunities for experts to gather, confronting opinions and learning from each other's experience. The second figure gives the evolution of workshops, seminars and topical meeting with time. Also in this case the trend is basically stable, with a slight increase.



The third figure shows the total number of CSNI activities, both on-going and new activities approved at each CSNI meeting. There are two significant increases (June 2001 and December 2002) related to the approval of the GAMA integrated programme of work. The trend shows a continuous increase in the number of activities until 2004, where the number of closed activities becomes greater than the number of new activities approved. This suggests that the current level of activity is not consistent with the available resources.



A fourth product type is constituted by joint undertakings, such as ISPs and – on a broader scale – the OECD/NEA joint projects, which involve technical or financial contribution from many countries. For the joint projects, the data generated are participant’s property, although the safety relevance of the results is normally shared. As shown in the fourth figure, the number of OECD/NEA joint projects has considerably increased in recent years, which implies that results match expectations of participating countries, since these are separately funded initiatives.



The Group expresses satisfaction with the quality of the work performed in the WGs and SEGs, as well as with the value of the results. As noted in some comments on the draft report, the best way to measure CSNI performance is by its products – and CSNI is delivering excellent products. The workshops and specialist meetings have gathered the best experts in their respective fields and yielded proceedings of high quality. The ISPs have established best practices on e.g. benchmarking. SOARs and other reports provide valuable technical information [8]. The OECD-NEA projects have generally been successful. Nevertheless, the Group believes that an effort needs to be made for increasing result applicability, i.e. for compounding scientific value with increased practical usability of the results. Delivering results in a timely manner is, in this context, part of increased applicability.

The Group sees no need for significant changes in the type of products or in the reporting practice. As mentioned above, extending usability, particularly for regulatory purposes, should remain a constant goal. Further, the CSNI and the NEA secretariat should explore means of conveying (relevant parts of) joint project results to the WGs and SEGs, who could integrate them in their work – while ensuring that this doesn’t impinge on project participants’ rights.

As a final remark on CSNI role and products, the Group points out that maintaining a high technical level among WG and SEG members is crucial for continuing to provide valid results to the NEA nuclear community. Therefore, the CSNI should take upon itself the task of reconfirming and possibly strengthening the commitment of member countries and of finding ways to promote experts participation in order to ensure that expected products are delivered with quality and in a timely manner.

3. CSNI STRUCTURE AND WORKING METHODS

3.1 Structure

The 2000 CSNI Strategic Plan reduced the number of Working Groups from five to four by merging the former Principal Working Groups No. 2 (reactor coolant system analysis) and No. 4 (severe accident and containment analysis) into the new Working Group on Accident Management and Analysis (GAMA). Three other Working Groups, i.e. IAGE on Integrity of Components and Structures, WGRisk on risk assessment methodologies and WGOE on operational experience, basically continued the tasks of the former Principal Working Group No. 1, three and five respectively. Further, the WG on Fuel Cycle Safety was incorporated in the WGOE.

The SEGs were set up mainly to deal with cross-cutting issues [6]. They report directly to CSNI and were originally intended for specific time-limited tasks.

The PRG was created in order to support the CSNI guidance, to assist the Bureau and enable a more rapid initiation of proposals and approval of reports [6], and to help in assuring the quality of the CSNI work. The PRG was also expected to enhance the communication within the CSNI working structure. The tasks of the PRG are described in the document CSNI Procedures and Guidelines [11].

The CSNI organisational chart is schematically presented on page 20. A concise delineation of the scope of the WGs and SEGs is given in the next section (a detailed activity description can be found in the CSNI Activity Report, which is updated at each CSNI meeting [12]). Each group has its integrated plan, which also presents the group activities in detail.

Most answers to the 2003 questionnaire expressed satisfaction with this structure, the main point being that it ensures the involvement of experts from member countries, it facilitates good discussions and promotes consensus on issues [7], while providing a better top-down direction.

There is nevertheless room for improvement. The Group considered several options, including the Bureau assuming PRG functions and termination of this Group. The Group noted that the PRG has facilitated the communication within the CSNI structure, ensured consistency between strategy and programmes and helped to maintain an excellent level of reports. However, its advisory capacity should be clearly separated from the decision making, which is a CSNI prerogative. As a consequence the Group believes that the respective roles of PRG and the Bureau need clarification.

In summary, the Group believes that the PRG should perform a programme quality review function within CSNI and provide scientific assistance to the decision-making process of CSNI, while the Bureau should focus on identification of priorities, interaction among groups within the CSNI structure and co-ordination with CNRA, other NEA committees and external organisations. The PRG should also support the Bureau in assisting in the preparation for the CSNI meetings and in proposing actions concerning the achievement of CSNI objectives. From an operational point of view, the comprehensive approval process that is in place today should be avoided since this causes delays in report publication. The CSNI should therefore revisit the PRG mandate and membership.

Another point that the Group believes should be clarified is the nature of SEGs, which according to the CSNI Strategic Plan should be mandated for specific time-limited tasks, but in practice seem to operate in a WG-like fashion. Since there is no doubt for the Group that both Special Expert Group on Fuel Safety Margins (SEGFSM) and especially Special Expert Group on Human and Organisational Factors (SEGHOF) cover a more fundamental and lasting function than time limited tasks, the Group is proposing to change these experts groups into WGs (see Section 3.2). The proposal attempts to better reflect the current characteristics that have developed, bearing in mind that time limited tasks are more properly performed by single-task experts groups, such as the Senior Group of Experts on Nuclear Safety Research, Support Facilities for Existing and Advanced Reactors (SFEAR) or Safety Margin Action Plan (SMAP) groups.

The Group noted that there are different approaches to permanent subgroups within WGs structure, e.g. IAGE. The Group believes that CSNI should revisit this matter and look for a consistent approach, taking into account available expertise and time frame needed.

3.2 Working Groups and Special Expert Groups

Aspects related to each of the Working Group (WG) and Special Expert Group (SEG) operations are presented in the following.

GAMA: Analysis and Management of Accidents

This WG had the demanding task of bringing together the disciplines formerly treated by PWG 2 and five, i.e. system thermal-hydraulics and severe accidents including iodine behaviour. Because these disciplines are very different from each other, the task has not been easy and has required considerable effort from the chair, from the secretariat and from the members. However, the Group believes that progress has been made and that the effort to integrate thermal-hydraulics and severe accidents expertise should continue.

Much work has been performed in the areas of thermal-hydraulics and severe accidents in the last two decades. Thermal-hydraulics appears to have reached a high level of maturity and GAMA attention is on improving analytical tools, advancing best estimate methods and reducing calculation uncertainty. On severe accidents, there are questions that still need to be answered in order to obtain a solid technical basis for safety assessments and accident management measures. Competence maintenance is systematically dealt with in the GAMA agenda. Initiatives on research co-operation and proposals for joint projects centred on unique thermal-hydraulic or severe accident facilities are discussed during plenary meetings. A point of concern is the continuation of ISP activities, considering that most of the recent data are generated in joint OECD/NEA projects and are proprietary [8].

The current GAMA scope embraces a wide range of activities. While recognising that this is to some extent due to the group's broad mission, there could be merits in streamlining the programme and increasing the focus on user-oriented products. The CSNI should pursue this recommendation.

IAGE: Integrity of Components and Structures

As constituted currently, the IAGE and its subgroups focus on broad areas of integrity of components and structures. Ensuring safety over plant life is recognised as one of the most important challenges and hence IAGE's work should continue to constitute an essential part of the CSNI

activities. The work scope includes integrity of metal components and structures, aging of concrete structures and seismic behaviour of structures. Because these are critical items for regulators in addressing aging management, the Group believes that IAGE activities should continue and possibly increase focus on providing results that could be used by regulatory authorities.

IAGE has taken initiatives on operating experience and knowledge management consistent with its mandate, such as the creation of a piping failure database and the conduct of a benchmark exercise. It has recognised the importance of risk-information and incorporated it in relevant parts of its programme. Further, it has had exploratory discussions on structural integrity issues and status of research related to new and advanced reactors, mainly high temperature gas reactors [8].

WGRisk: Risk Assessment

In contrast to other WGs and due to the technical nature of risk assessment, the WGRisk experts have basic knowledge covering different fields such as physics, thermal-hydraulics, accident management, human factors etc. The Group believes that this is an asset, considering that cross-cutting issues are of great relevance for safety. The work scope reflects the WGRisk multidisciplinary character, in that many activities are done in co-operation with other WGs or with external organisations [8].

In the opinion of the Group, PSA methods should increasingly be applied to provide very useful insights for a wide range of safety issues in an integrated approach. On the other hand PSA methodology still requests further development and refinements to ensure correct application. The CSNI should revisit WGRisk programme of work to ensure that a proper balance between development and application work is obtained, so as to serve the different approaches of member countries to this issue.

WGOE: Operating Experience

As agreed in the summer 2005 CSNI meeting, WGOE will be organisationally moved to CNRA on a trial basis.

The Joint Strategic Plan states that both committees review operating experience with the objective to promote safety improvements based on lessons learnt – the CNRA with the view to identify immediate regulatory actions and the CSNI with the objective to perform analyses and if necessary promote research on issues that emerge from operational events. Because of this two-fold aim, the WGOE has made regular reports and presented proposals for new activities to both CNRA and CSNI. The WGOE activities are closely related to human and organisational matters. Thus, co-operation with SEGHOFF should be better organised and structured. Risk analysis helps in assessing the importance of events in terms of relevance to safety and potential consequences – hence the importance of co-operation with WGRisk. The CNRA should ensure that, as agreed, WGOE continues to serve both committees and good interaction is taking place with CSNI Working Groups. The CSNI should pursue this issue.

The WGOE includes the subgroup on Fuel Cycle Safety (FCS). The CSNI, in consultation with the CNRA, should revisit the mandate of this subgroup and define the proper statute and interaction with the new structure.

SEGFSM: Fuel Safety Margins

The fuel integrity is a fundamental consideration in reactor safety. Licensees are implementing or considering extended burn-up, longer fuel cycles, power upratings and load follow as the means to reduce operational and fuel cycle costs. This exposes the fuel to increasing challenges, which has prompted the vendors to propose new fuel designs and new materials. On the other hand, the use of MOX fuel has introduced specific challenges that need to be addressed.

This SEG currently addresses the issue of fuel safety from two viewpoints. One regards the need for validated data to support the extension of safety criteria to high burn-up and/or to new fuel designs. The other regards the adequacy of codes for simulation of high burn-up fuel behaviour in accident conditions. In performing these activities, attention has been placed on a specific request from CNRA on burn-up effects on safety limits and margins. Providing deliverables within the expected time scale has however been difficult and is a point to be improved. Some level of co-operation has been established with the NEA NSC on, for instance, fuel databases. This co-operation is expected to increase in the future [10].

The Group considers that the matters covered by this SEG are very important for nuclear safety and that these cannot be limited to a specific time frame. It is the Group's view that this SEG should become a new Working Group. The CSNI should consider revisiting the mandate and membership of the SEG with this in mind.

SEGHOF: Human and Organisational Factors

Human and organisational factors make a significant contribution to maintaining nuclear safety. SEGHOF has a continuing programme of work to address CSNI priorities, such as the comparison of approaches to assess licensee safety culture, which is in preparation. It has recognised the problems deriving from changes in electricity markets and declining infrastructure, and addressed aspects of this issue in its work on the management of organisational change.

SEGHOF has been collaborating with CNRA and Working Group on Inspection Practices (WGIP) on a scientific approach to safety management and with the NEA radiation protection and waste management committees [Committee on Radiation Protection and Public Health (CRPPH) and Radioactive Waste Management Committee (RWMC)] on transition from operation to decommissioning. Within CSNI, there has been collaboration with WGOE and WGRisk. Nonetheless, co-ordination with other CSNI working groups can be improved, e.g. through more formal consultations that would enable these groups to influence new activity proposals [8].

The Group considers that the matters covered by this SEG are very important for nuclear safety and that these cannot be limited to a specific time frame. It is the Group's view that this SEG should become a new Working Group. The CSNI should consider revisiting the mandate and membership of the SEG with this in mind.

3.3 Working Methods

When the CSNI structure underwent an in depth appraisal and the previous CSNI Strategic Plan was established (in 2000 [6]), it was among other things concluded that the CSNI top-down guidance was to be strengthened. This top-down guidance has been exerted by means of:

- *The previous CSNI Strategic Plan*, which sets the structure and way to operate of working and expert groups and projects.
- *The list of high-level safety issues and topics*, which as said earlier is set forth by the CSNI as reference for all WG and SEG activities.
- *Approval of the mandate, of the integrated plan and of each activity* of WGs and SEGs. The integrated plan and the request of activity initiation contain the objective, work scope, expected result, expected users and time frame of each WG or SEG activity.
- *Approval of reports and approval of meetings* (including seminars and workshops) proposed by the WGs or SEGs.
- *Approval of expert meetings* in the preparation phase of a new joint project – and *approval of the setting up of a new joint project* when the preparatory phase is completed. Guidelines for the establishment and implementation of OECD joint projects were set up by the CSNI in 2002 [13].

At the same time, experience shows that the most productive actions of CSNI result from those technical experts who get involved in the details [8]. In practice the CSNI top-down initiatives are influenced by a generally very pro-active attitude of the WGs and SEGs. In most cases, ideas and initiatives are proposed and promoted by the WG or SEG experts, who are working with pressing issues in their respective member countries and are thus well placed to identify areas where work is needed [8]. In general, it appears that a reasonable balance has been achieved between top-down direction and control of CSNI and bottom-up initiative of WGs and SEGs. This balance constitutes a valuable asset that should be strengthened in the future. Nevertheless, the Group believes that improvements are still needed in a number of areas, such as incorporating suitable prioritisation, better understanding of member countries needs, adequate use of resources and user-oriented outcome. Specific suggestions on how to achieve these improvements are proposed in points 2.1, 2.2 and 3.3 of this report.

The Group considered that both efficiency and transparency could be increased if the WG and SEG scope was structured in a project-like fashion, in order to ensure that activities have clear objectives and that objectives are met as expected. Each group activity should be organised as a single project with a defined structure including assigned responsibilities, allocated resources as well as management and quality assurance. The group should assume the guidance for these projects, with a group member being assigned as coordinator and/or reviewer. Submission of proposals and products for CSNI approval should respectively identify coordinator and reviewer.

It should be noted that a project-oriented approach is already in place to a considerable extent for the initiation and product-delivery phase. With regard to initiation, in each proposal for a new WG activity submitted to CSNI should contain [12]:

- Objectives and expected products.
- Scope and justification.

- Safety significance, use and users of the results.
- Schedule and milestones.
- Lead organisation and co-ordination with other groups.
- Participants (and financing when relevant)

The Group believes that maintaining a high technical level in CSNI activities is crucial for providing adequate support to member countries. With this aim, the Group agreed that there should be a mechanism to ensure resource commitment of participating organisations, as part of the process for deciding on new activities submitted to CSNI.

As to product delivery, an extensive report quality control and approval process is currently employed, which involves the WG, PRG and CSNI review, before issuing the report.

While the initiation phase and the product delivery process appear to be reasonably well defined at present, the monitoring of progress while the programme is under way is somewhat less well structured. This might create conditions that favour delays in some circumstances. (These do not include workshop and seminar arrangements, since these normally have clear organisational milestones). In reinforcing a project-orientation of the groups' work, effort should be made to define more precisely how the programme progress is to be checked and how any necessary corrective actions should be introduced, taking care that this doesn't increase bureaucracy, posing further burden on already busy experts.

In order to avoid complex project management processes, the Group suggests that the WG chairs with the support of the NEA secretariat should be given the authority to exert a more rigorous monitoring function and to undertake necessary actions to keep the programme back on track. In practice, this could take place by placing more emphasis on project planning and use of resources, both in the initiation phase and in the WG/SEG chairs' annual reporting to CSNI. A mechanism to promote in-depth discussion among the WG/SEG chairs and the PRG, could be instrumental for performing a thorough review of the work progress and schedule. This would at the same time facilitate inter-group communication and exchange of experience. A specific proposal to address this matter is included at the end of this chapter.

The Group noted that in many cases the task of composing a SOAR or other reports is assigned to smaller writing groups as a practical way to organise the report write up. In order to ensure transparency, there should always be a WG or SEG review of such reports. If there are points of disagreement within the group, they should be evidenced in the report.

Defining and carrying out cross-cutting activities has sometimes been difficult and the Group believes that better CSNI guidance is needed. In doing this, attention should be placed in defining concrete and clearly discernible goals to avoid objectives that are too generic or require considerable interpretation. Moreover, since cross-cutting themes normally encompass a broad range of expertise, the experts available for carrying out the work should be identified before the work commences. The Group believes that, in general, cross cutting activities will result from a top down request and that in order to improve management of these activities; they should be assigned to one specific WG as lead group. A specific proposal to address this matter is included at the end of this chapter.

As noted in [9], good practice includes closure of activities when the objectives have been met, when the information that has been made available is sufficient to enable the regulator to draw conclusions on how to deal with a given issue, or when it is unlikely that further research will provide results that will substantially augment the knowledge that is already available. The CSNI ability to

close issues is an indication of the conclusive value of its work and should be strengthened. In doing this, one should consider the possibility of revisiting an issue after a certain time interval and also take account of the consequences that closure may entail, for instance on disbanding competence or facilities. Therefore the Group believes that CSNI should always give consideration to the number of activities successfully closed, when deciding on new proposals.

Good communication among the various bodies of the CSNI is essential for achieving overall programme consistency, for harmonising ways to operate and improve product quality – and for learning from each other’s experience. An appreciable level of exchange and co-operation already exists in several cases. As already mentioned, the WGRisk is an example of a crossing point for several activities carried out in other groups, such as GAMA, IAGE and SEGHOFF. The Group believes that there would be considerable merit in enhancing inter-group exchange as well as increasing WGs interaction with CSNI. In the Group’s opinion, the interaction among WGs includes two goals, one is to benefit from other group’s experience and improve the efficiency of the working process. The second goal of WG’s interaction is to achieve overall programme consistency. The Group considers that the Bureau, assisted by the PRG, should have a more active leading role in WG’s interaction. Another point to consider is the interaction between CSNI groups (especially GAMA) and joint OECD/NEA projects. Apart from the general reporting on project status, which occurs today, consideration should be given to identifying ways to achieve stronger project-to-group feedback.

In summary, the Group believes that there is a need to continue improving the CSNI working methods and the top down management should be more precisely applied. The Group suggests that a meeting of CSNI Bureau with WG’s chairs and PRG would provide a good means to address these concerns and arrive to specific proposals to present to the CSNI. The meeting would cover two objectives. The first goal would be to identify and propose specific mechanisms for priority setting, supervision of the working process, assessment of applicability of CSNI products and commitment of resources by participating organisations. The Group considers this part of the meeting as a single event. The second goal would be to identify technical topics that would deserve specific top down guidance, either because of its cross-cutting nature or because they are of significant interest for a number of countries. The Group believes that there maybe merits to consider this second part of the meeting as a periodical event, but that the CSNI may decide on this at a later stage based on the results obtained.

4. INTERACTION WITH OTHERS

While the *CSNI has worked closely with the CNRA* over the years, and this effort has increased in recent years, there remain strong motives for favouring a closer interaction between the two committees. Recognising this fact and the many common areas of interest, the two committees decided to develop and approved a joint CSNI/CNRA Strategic Plan [5]. The plan includes some provisions to accomplish this closer interaction, namely mutual reporting, request for assistance, conducting joint activities, issuing joint statements, conducting joint Bureau meetings and reviewing their respective Operating Plans. Along these lines, the CNRA needs should be identified and brought forward as clearly as possible in the “high level issues” list of CSNI, so that they may be incorporated in the CSNI/WG/SEG work scope in a timely manner. Both committees should have a shared perception of priorities and a clear understanding of CNRA needs, of how CSNI is to respond to these needs, and of the scope and time required to provide useful answers. Feedback from CNRA on the use of CSNI advice would also be useful. The NEA secretariat will also continue to support the co-ordination of CSNI-CNRA programmes.

Co-operation with other NEA committees (in addition to CNRA) is also underlined in the Joint Strategic Plan, is already taking place and being increased. An example of this development is the understanding that is being reached on co-ordination of activities between CSNI and the NSC and Data Bank. Interaction among these bodies has occurred in the past, notably on core transients and on fuel performance data. The aim of the understanding is to define areas of common interest, further develop the sharing of resources and information and reach alignment on consistent application of the results. This understanding is in written form and can serve as reference for co-operation with other committees as well.

The *co-ordination of CSNI with the IAEA and EC* activities aims at increasing the opportunity for learning from each other’s experience, having a comprehensive picture of approaches to safety issues and of research programmes and avoiding duplication. IAEA and EC representatives participate and make regular presentations of their activities in CSNI meetings. They also take part in, and make contributions to, the WGs, SEGHOFF and other expert group work. The NEA secretariat should continue its effort to achieve good co-ordination with IAEA and EC. CSNI member organisations are expected to help in this process, through their participation in IAEA and EC work, e.g. by ensuring that insights gained from NEA work are taken into account in IAEA and EC activities.

Both the NEA Strategic Plan [4] and the Joint CSNI/CNRA Strategic Plan [5] refer to establishing useful interaction with industry. Several responses to the 2003 questionnaire noted the need of some degree of *involvement of industry in the CSNI work*. Considering that plant operators have the ultimate responsibility for running nuclear plants in a safe manner – and thus have a need to keep their safety knowledge updated as much as the regulators do – it seems that some sort of regular dialogue between CSNI and industry would be beneficial. Industry has deep technical knowledge and experience and is the primary source for safety relevant information and data – and can give important contribution to practically all issues addressed by CSNI. Further, maintaining and developing safety research facilities and competence is both a regulator and industry priority. Some level of industry participation takes place already in some WGs and SEGs, but on a limited scale. This participation

could be gradually enlarged, making also use of the experience with the OECD-NEA project, where industry participation is stronger and so far beneficial for all parties.

Co-operation with non-member countries is also underlined in both the NEA Strategic Plan and the Joint CSNI/CNRA Strategic Plan. The Group considers that this cooperation should be based on mutual benefit. The CSNI should periodically assess the contribution from observers and the need to invite other candidates that can make a significant contribution to CSNI.

5. CONCLUSIONS AND RECOMMENDATIONS

The main Group conclusions and recommendations are as follows:

Role

The group considers that the CSNI performs an important function today and will continue to have a prominent role in the nuclear safety arena in the future. The CSNI mandate is to “support maintaining and advancing the scientific and technological knowledge base of the safety of nuclear installations”. This long-term vision, while at the same time supporting the CNRA, will continue to be the major CSNI role. The main challenge for CSNI will be to increase its efficiency, increase focus on result-oriented work, extend product applicability and shorten the time used to produce applicable output.

Priorities

The Group considers that the already established CSNI principles are sound, but are currently not being applied consistently, and therefore specific suggestions for improvement are given. The CSNI priorities will continue to be identified by the *High Level Safety Issues and Topics list*, which are set by the CSNI and updated every two years or when need arises. These *High Level Safety Issues and Topics list* also accurately reflect CNRA priorities.

Products

The Group sees no need for significant change in the type of products or in the reporting practice. Nevertheless, an effort should be made for increasing result applicability, i.e. for combining scientific value with increased practical usability of the results. Delivering results in a timely manner is, in this context, part of increased applicability.

The CSNI should take upon itself the task to reconfirm and possibly strengthen the commitment of member countries and to find ways to promote experts’ participation in order to ensure that expected products are delivered to quality and time.

Structure

The Group agreed that there is no urgent need to change the CSNI structure at this time, although some adjustments are advisable and are recommended.

The Group believes that the PRG should perform a programme quality review function within CSNI and provide scientific assistance to the decision-making process of CSNI, while the Bureau should focus on identification of priorities, interaction among groups within the CSNI structure and co-ordination with CNRA, other NEA committees and external organisations. The PRG should also support the Bureau in preparing the CSNI meetings and in proposing actions concerning the achievement of CSNI objectives. The CSNI should revisit both the PRG mandate and its membership.

The Group considers that the matters covered by the two existing SEGs are very important for nuclear safety and cannot be limited to a specific time frame. It is therefore the Group's view that these SEGs should become new Working Groups. The CSNI should consider revisiting the mandate and membership of these SEGs with this in mind.

The Group noted that there are different approaches to permanent subgroups within WGs structure, e.g. IAGE. The Group agreed that CSNI should revisit this matter and look for a consistent approach, taking into account available expertise and the time frame needed to develop the mandate.

Working methods

In general, it appears that a good balance has been achieved between top-down direction and control of CSNI and bottom-up initiative of WGs and SEGs. This balance constitutes a valuable asset that should be strengthened in the future. However, the Group believes that improvements are still needed in incorporating suitable prioritisation, better understanding of member countries needs, adequate use of resources and user-oriented outcome. Specific suggestions on how to achieve these improvements are proposed.

The Group recommends that the WG and SEG activities could be structured in a project-like fashion, in order to ensure that these activities have clearer objectives and that objectives are met. A project approach is already present to some extent, especially in the activity initiation and product delivery phase. This should be reinforced and extended to include programme monitoring during the programme execution.

The Group believes that maintaining a high technical level in CSNI activities is crucial for providing adequate support to member countries. With this in mind, the Group believes that there should be a mechanism to ensure resource commitment of participating organisations, as part of the process for deciding on new activities submitted to CSNI.

The Group believes that, in general, cross cutting activities should result from a top down request. However in order to improve management of these activities, they should be assigned to one specific WG as lead group, taking into account the available expertise and time frame needed.

The Group believes that the CSNI ability to close issues is an indication of the conclusive value of its work and should be strengthened, giving consideration to the number of activities successfully closed, when deciding on new proposals.

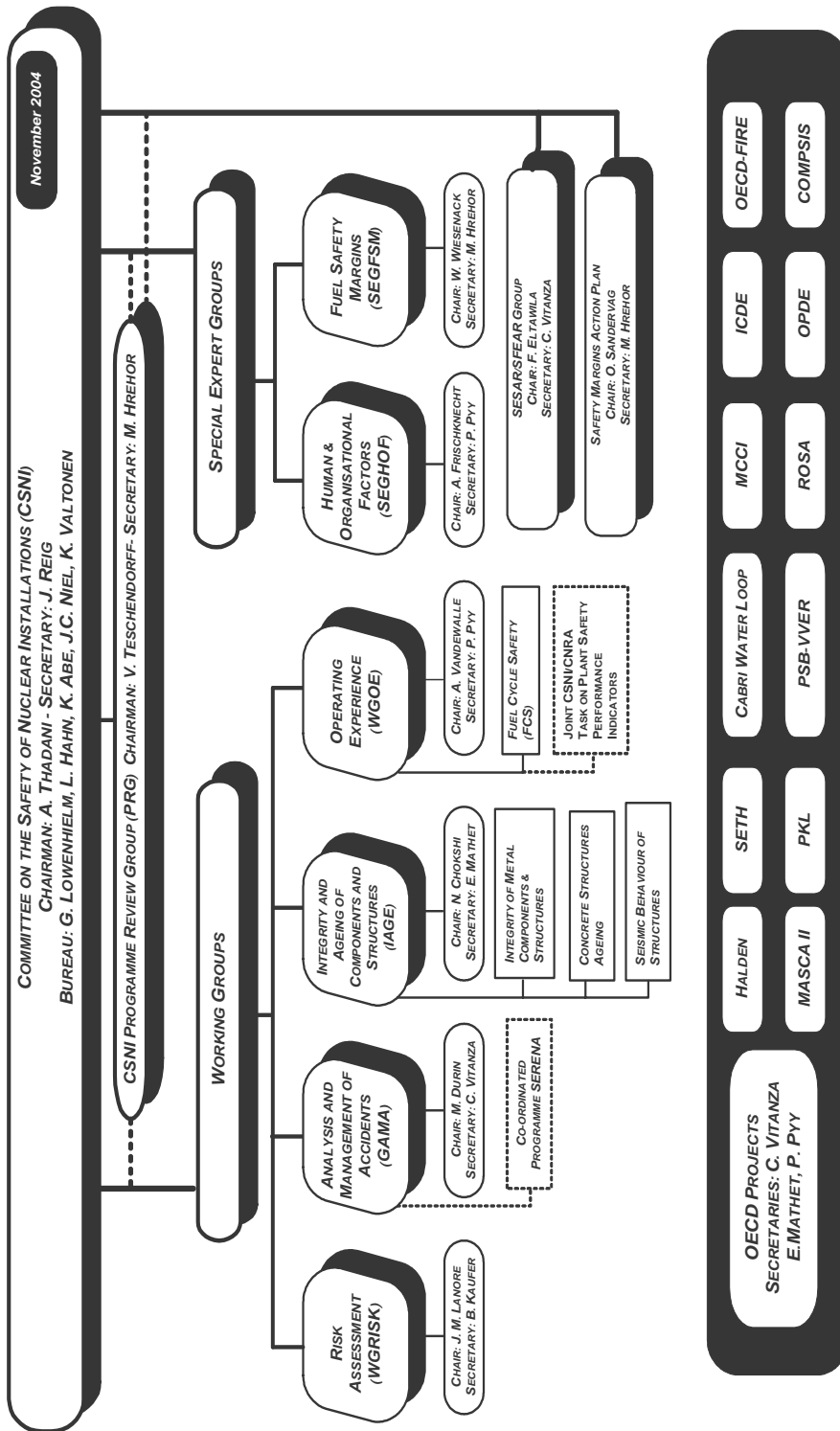
The Group agreed that the interaction among WGs should be enhanced. In the Group's opinion this interaction includes two goals, one is to benefit from other group's experience and improve the efficiency of the working process. The second goal of WGs' interactions is to achieve overall programme consistency. The Group considers that the Bureau, assisted by the PRG, should have a more active leading role in WG's interaction.

The Group believes that there is a need to continue improving the CSNI working methods and that the top down management should be more precisely applied. The Group suggests that a meeting of CSNI Bureau with WG's chairs and PRG would provide a good means to address these matters and arrive to specific proposals to the CSNI.

Interaction

There is considerable CSNI interaction with CNRA, with other NEA committees and with the IAEA and the EC. This interaction should be intensified in the future. Means to increase co-operation with industry should also be explored. Co-operation with non-member countries should be maintained and periodically assessed.

CSNI Organisational Chart (13/06/05)



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Appendix 1

WORKING GROUP'S AND SPECIAL EXPERT GROUP'S SCOPE VERSUS MAIN CHALLENGES

The Group made an effort to survey current CSNI scope and priorities in light of the challenges identified in the Joint CSNI/CNRA Strategic Plan. The outcome of this survey is outlined below.

- Shrinking nuclear infrastructure:
 - fewer suppliers of nuclear facilities and nuclear specific equipment and services;
 - fewer experts with high level experience and knowledge in nuclear safety;
 - less education in nuclear field;
 - less financing for nuclear safety research.

As mentioned in Section 4, all WGs address this issue in their programme. Undertakings such as the THICKET Seminar [16], which brought together young scientists and senior experts in the field of system thermal-hydraulics, is an example of knowledge transfer that can be followed in the future. The OECD projects [13] have also proven to be a valuable means of maintaining technologies and competence as well as experimental facilities, and should be continued in the future.

The Group believes that the concern on shrinking infrastructure is properly dealt with in ongoing CSNI work. CSNI should continue to monitor the situation and when necessary promote initiatives to continue ensuring that member countries retain an adequate level of competence in key technical areas.

Improvements should be made in the area of data preservation, where progress so far has been modest. In addition, as observed in several questionnaire responses, the CSNI should find ways to increase co-operation with industry, which could amongst others enhance resource utilisation.

- Increased public expectation on safety in use of nuclear energy:
 - desire for more effective and efficient regulations;
 - need for transparency and public communication;
 - need to increase efforts on security and emergency preparedness.

This challenge regards mainly the CNRA. For the CSNI, the current WG mandates cover well the need to provide the technical basis for more effective regulation. Considerations on safety criteria and margins or on reduced uncertainty through improved assessment methods and tools are addressed in IAGE (material integrity), GAMA (thermal-hydraulics and severe accidents) and SEGFSM (fuel safety). Probabilistic approaches for risk analyses are discussed and dealt with in WGRisk.

The Group believes that CSNI transparency is best ensured by continuing the policy of open in-depth discussions and consensus seeking at WG level and by making the results available (and known) to the public. The WGs and SEGs technical competence will continue to be a most valuable asset for CSNI in order to assure a solid technical basis – and thus transparency – in the treatment of safety matters. The CSNI has also addressed the issue of transparency for safety research taking place as joint regulators–industry undertakings, and made recommendations on good practice to preserve regulator independence in such cases (GRIC report [15]).

Security is excluded from the present CSNI work scope and the Group sees no reasons for changing this in the future.

- Industry initiatives to improve economics and safety performance in production of nuclear power:
 - reduction of safety margins (power uprates, increase of fuel burn-up);
 - new management strategies (staff reduction, use of contractors);
 - risk informed approaches;
 - new approaches to safety management (including safety culture).

In many countries, electric utilities are faced with intense competition due to de-regulation. In order to compete effectively they are undergoing an extensive process of consolidation, while seeking at the same time to improve operational economics and flexibility. Plant life extension, reactor power uprates and higher fuel burn-up have been or are being implemented as measures to improve plant economics. New control room designs and new inspection practices enabling the reduction staff costs are also being adopted or contemplated. At the same time, risk-based management is being considered as a means to increase operational flexibility or to reduce the burden of conservatism in current regulation.

The technical consequences related to safety of these initiatives must be well understood. Consistent with its mandate the CSNI is addressing the issue of safety margin through its Safety Margin Action Plan and through the work of the SEG on Fuel Safety Margins. Staffing issues, scientific approaches to safety management and approaches to assess organisational change are incorporated in the SEGHOFF work scope. Technical issues related to power uprates or plant life extension are considered in the GAMA and IAGE scope – although not always explicitly. Some of the joint research projects also constitute an opportunity for discussing and exploring how plant economics can be improved without detriment to safety.

Nevertheless, this issue should be made more visible in the WGs mandates. The Group believes that more than by work scope enlargements; this can be achieved by adapting relevant WG activities and by increasing result applicability to practical industry goals.

- Necessity to ensure safety over the plant life cycle:
 - ageing of equipment, technologies, documentation;
 - learning from experience and knowledge transfer;
 - low power and shutdown risks;
 - decommissioning.

Ensuring safety over a plant life cycle necessitates that a comprehensive management programme is in place – based on a wide-ranging knowledge on long-term effects and degradation phenomena. The IAGE working group is deeply involved in parts of this area, its activities being amongst others devoted to understanding degradation mechanisms. Important parts of the ageing issue, such as corrosion of internals, cable ageing and I&C replacements are incorporated in the OECD Halden Reactor Project programme (HRP). The HRP also addresses decommissioning and low power and shutdown risk from a human factor viewpoint and/or for the purpose of devising advanced operator support tools. Low power and shutdown issues are also treated in WGRisk aiming to improve Probabilistic Safety Assessment (PSA) methods and data. Risk informed approaches are now being used to an increasing extent for establishing new inspection and maintenance practices, but the validity of these techniques is still under scrutiny. SEGHOFF has been treating human and organisational factors in operation-to-decommissioning transition.

The CSNI can promote improvements in this area by facilitating the exchange of experience and co-operation among specialists in different technical disciplines such as material degradation, destructive and non-destructive examination, human and organisational factors, operating event data analysis and risk. As noted in section 4, this integration of disciplines is already present in WGRisk, which by its nature deals with a variety of risk relevant subjects. With respect to learning from experience, enhanced usability and use of databases should also be on the CSNI agenda, also considering that several CSNI-sponsored database projects are now in place.

- New reactors and new technology:
 - licensing of new facilities and major plant modifications;
 - identification of safety issues specific to new designs and new technologies;
 - new regulatory standards;
 - new analysis methods/tools.

Even if the CSNI priority should remain with operating reactors, there will be technical issues arising from the licensing of both evolutionary and advanced designs. Considerable portions of the WGs and SEGs scope, for instance the development of new analytical tools, the investigation of materials degradation or the severe accident programme are applicable to future water reactor designs as well. Considering also the response to the 2003 questionnaire, the Group proposes that for the time being the CSNI maintains a watching brief over new reactor development. This item could be systematically revisited at CSNI meetings, or taken up whenever any new reactor issue is set forth by members.

As noted in some questionnaire answers, there is a tendency for the CSNI to concentrate on light water reactor systems and to overlook the CANDU and the gas reactors. Consideration should perhaps be given to these reactor designs, also in light of the fact that they can be relevant for some of the new reactor concepts.

The Group suggests that the CSNI should re-examine the recommendations on severe accident management made by SESAM, in order to determine the extent to which these could be adopted for new reactor designs.

As a concluding remark on this point, the Group observes that the main challenges as identified in the CSNI/CNRA Joint Strategic Plan are addressed in the current CSNI activities, although not always explicitly.

ACRONYMS

CNRA	Committee on Nuclear Regulatory Activities
CRPPH	Committee on Radiation Protection and Public Health
CSNI	Committee on the Safety of Nuclear Installations
GAMA	Working Group on Analysis and Management of Accidents
IAEA	International Atomic Energy Agency
IAGE	Working Group on Integrity and Ageing of Components and Structures
INSAG	International Nuclear Safety Advisory Group
NSC	Nuclear Science Committee
PEG	Principal Expert Group
PRG	Programme Review Group
PSA	Probabilistic Safety Assessment
PWG	Principal Working Group
SEG	Special Expert Group
SEGFSM	Special Expert Group on Fuel Safety Margins
SEGHOF	Special Expert Group on Human and Organisational Factors
SFEAR	Senior Group of Experts on Nuclear Safety Research – Support Facilities for Existing and Advanced Reactors
SMAP	Safety Margin Action Plan
SOAR	State-of-the-art-report
TOP	Technical Opinion Paper
WG	Working Group
WGOE	Working Group on Operating Experience
WGRisk	Working Group on Risk Assessment

