

Report to NuSAC meeting to be held 3-5 November 2004

Purpose

1. To report the work of the Western European Nuclear Regulators' Association for harmonizing safety for the EU's operating nuclear power plants.

Executive summary

2. In 1999, the main WENRA committee established a working group to determine whether it would be feasible to assess the degree of harmonization across Europe's operating nuclear reactors. A pilot study was carried out to provide benchmark reference levels and peer review national self-assessments of compliance with the reference levels.
3. This was not to be a direct attempt to set or to raise regulatory standards: it was to evaluate whether different regulatory systems achieved the same overall level of safety. It was decided to aim for high-level, possibly challenging for some countries, statements of requirements, rather than low-level ones that every country could meet. Because of the diversity of regulatory regimes, it was also decided not to define requirement for governments or regulators, but to restrict them to what was expected of licensees, as plant safety was being evaluated.
4. Since 1999, Accession Countries have joined the project, taking the number of countries involved in the project to 17, and 18 nuclear topic areas have been identified for benchmarking. Benchmarking and peer review are now in hand, but represent a very high workload on all countries.
5. The working group is planning to present its report to the main WENRA committee in November 2005. Following this, each country will consider its national findings and implement any measures it considers appropriate.

Timing

6. This report is for the NuSAC meeting due to be take place on 3-5 November 2004.

Recommendations

7. It is recommended that NuSAC notes that:

- (a) The 17 Western European countries with nuclear reactors are participating in the WENRA project to harmonize safety standards for existing, operating NPPs in Europe¹;
- (b) 18 reference level documents have been developed and are being used to benchmark national practices; they are not intended as direct legal requirements;
- (c) At present, benchmarking is being carried out by regulatory bodies, but it is anticipated that the industry will be invited to comment upon the work before it is made publicly available; and
- (d) Work is currently on schedule for completing all assessments by the end of 2005, but the workload on member countries is very demanding.

Background

8. The Western European Nuclear Regulatory Authorities is a group of senior nuclear regulators from the enlarged Europe. Its objectives are to:
 - o Build and maintain a network of chief nuclear safety regulators in Europe;
 - o Promote exchange of experience and learning from each others' best practices;
 - o Develop a common approach to nuclear safety and regulation, in particular, within the EU;
 - o Provide the EU with an independent capability to examine nuclear safety and regulation in future applicant countries; and
 - o Discuss and, where appropriate, express its consensus opinion on, significant safety and regulatory issues.
9. At the end of 1999, before the EU expanded to accept the Accession Countries, a working group began a project to identify any significant differences in safety requirements between countries for existing operating reactors of different design generations and to suggest appropriate steps, if necessary, to approach harmonisation of reactor safety throughout Europe.

¹ This project does not apply to new build NPPs, chemical or manufacturing plants.

10. A Definition of Harmonisation was agreed as:

“There are no substantial differences between countries from the safety point of view in generic formally issued national safety requirements, and in the resulting implementation in the Nuclear Power Plants practices.”

Pilot Study

11. The working group, then comprising nine countries, chaired by the Swedish regulator body, SKI, began a pilot study in 2000, and a methodology was duly developed and tested. They reported to WENRA at the end of 2002, and published an abstract of the main findings, including the six documents containing their so-called reference levels, in March 2003.
12. The group sought to answer two questions:
- Is there a national regulatory requirement for the reference level?
 - Has the reference level been implemented on all operating nuclear power plants?
13. The methodology chosen:
- Selected significant safety issues (six issues were selected for the pilot study);
 - Established a set of high-level reference levels on each issue, reflecting the best national practices (the target was to choose levels that were among the upper quartile of those in use among member countries, and it was decided that any reference level to be used must already be a legal requirement in at least one country);
 - Compared the resultant reference levels with the most recent IAEA safety standards – amended the reference levels, if justified – and commented on the relationship between the finally agreed reference levels and the IAEA standards;
 - Identified relevant legal documents for each country and safety issue;
 - Assessed and documented in a systematic way, country by country, how fully the reference levels are met and implemented in each country;
 - Gave standardised descriptions of each country’s national requirements and their degree of implementation; and
 - Evaluated whether or not there were any significant differences between the reference levels and the respective national regulations.
14. The six representative topics selected for the pilot study are shown in Table 1.

Benchmarking

15. Each country assessed itself systematically, to see which reference levels were met and implemented – with the following possible outcomes:

Table 1 – Pilot Study topics
Safety Policy
Operating Organization
Verification and Improvement of the Design
Beyond Design Basis Accident Management
Probabilistic Safety Analysis
Periodic Safety Review

- A. Matching legal requirement exists and is complied with;
- B. No matching legal requirement exists, but the position can be justified, say, because there is no such plant in that country, or there is only a short, time-limited period of operation remaining; and
- C. No legal requirement exists: some regulatory response is needed.

16. Three similar outcomes, A, B, and C, apply for implementation at nuclear power plants.

17. Each country's position was reviewed by working group members, with national representatives justifying their assessments. The results showed areas where participating countries' regulatory bodies could gain improvements.

Some key findings from the pilot study were:

For Probabilistic Safety Analysis

- Several countries lacked all or some requirements of the reference levels; and
- Half of the countries had not implemented several or some of the reference levels.

For Periodic Safety Review

- Some countries lacked most of the reference level requirements; but
- Most countries confirmed that all reference level requirements were regarded as having been implemented.

Relation between the reference levels and the IAEA safety standards

- There was, in general, good agreement between the most recent IAEA safety standards and the chosen reference levels; however, on a number of specific points the reference levels were stricter.

Response to Pilot Study

18. The European nuclear industry forum, known as the European Utility Requirements for Light Water Reactor Plants (EUR)², provided extensive comments to WENRA on RHWG's Pilot Study documents. The Chair of WENRA and the past Chair of the RHWG met with EUR representatives in September 2003 to consider those comments and clarify some misunderstandings.
19. The EUR analysis was revised and reissued in October 2003. The current Chair of RHWG outlined the findings to RHWG at its Rome meeting in November 2003, noting that there were some very useful observations in the EUR analysis document, although there were necessarily some differences of perspective. Overall, RHWG has interpreted EUR's work as recognizing the value of WENRA's initiative. A key observation in EUR's analysis relates to their statement that, "A positive interaction between the group of investors/operators involved in EUR and the group of regulators involved in WENRA was sought". The main WENRA committee agreed that there was no need to involve EUR in its activities directly

Main study

20. The main study started in February 2003, and the chair was taken by the UK, Paul Woodhouse, Head of NSD's Operational Strategy Unit. The pilot study had identified 15 more topics (Table 2), and it was decided to use a different methodology:

Table 2 – Document for Main Study	Lead Country
Quality Management	UK
On-site Emergency Preparedness	UK
Event Investigation and OEF	Germany
Operational Limits and Conditions	France
Modifications	Spain
Safety classification of systems, structures and components etc	France
Contents & updating of Safety Analysis Report	Belgium
Preventive & corrective maintenance	France
Training & authorization of plant staff	Finland
Fire protection	Italy
Design basis envelope for existing PWRs & BWRs	Sweden
Ageing management	Spain
In-service inspection & functional testing	Belgium
Emergency operating procedures	Germany
Feasibility study for risk-informed applications	Finland

- Reference levels are now derived from the most recent IAEA safety standards;
- Countries propose their own best practices (referred to as 'Deltas' within the group) where they wish, and these are added where the group agrees (as with the pilot, these must already be regulatory requirements within the country); and
- Reference levels are amended, if justified, following a comparison with corresponding national requirements and benchmarking exercise.

² The EUR (European Utility Requirements) effort was launched in December 1991 by several European Utilities. The main objective of the EUR organization is to produce a common set of utility requirements, endorsed by major European utilities for the next generation of Light Water Reactor (LWR) nuclear power plants. British Energy (then Nuclear Electric) was a founder member.

21. A 'lead country' from the RHWG member countries has drawn up each document, and eight more countries have now joined the group, including some of the Accession Countries³.
22. While drawing up the 15 new documents, some rationalization has taken place, so that we now have 18 instead of 21 titles. Even so, with so many documents and so many countries, the task is proving to be a lengthy process that requires members to do a lot of work in their own countries between meetings, which last four days and take place four times a year. Benchmarking is under way, and this phase of the project is expected to continue until November 2005, when the group is due to report its work to the main WENRA committee.

Output from main study

23. There will be two main outputs:
 - o 18 reference level documents; and
 - o 17 national benchmarking assessments.
24. The reference level documents are not intended as regulatory standards, as such, but their production has certainly identified some important national differences. The benchmarking produces two major outputs, as highlighted in the section dealing with the pilot study. It identifies where the national position has been agreed by working group members to be fully harmonized or the gap can be justified, in which case, no further national action is needed. These are the 'A' and 'B' results. (A 'B' finding could result from a failure that is short-term, but new legislation is imminent, or the relevant plant is due to shut down soon.) A 'C' finding implies that there is a more significant harmonisation gap, and that this might require national consideration.
25. The main WENRA committee will consider the findings and make appropriate recommendations to national representatives, for national consideration.
26. The final phase will be reached when any harmonization gaps are finally eliminated. It is not intended that the national benchmark results will be made public by WENRA, but it is expected that a public report will be made available, as with the pilot study, that will highlight the methodology and give the eighteen reference level documents.

Consultation

27. It is intended that the industry will, again, be consulted, before final decisions are taken, although how and when this will be done is yet to be decided.

³ The countries are: Belgium, Bulgaria, Czech Republic, Finland, France, Germany, Hungary, Italy, Lithuania, Netherlands, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, and UK.

Russia

28. The Russian nuclear regulatory body has shown considerable interest in the RHWG project and has asked for assistance with such an exercise. WENRA has agreed to help, but it is not envisaged that Russia will join RHWG or receive RHWG's benchmark results. It is anticipated that international help with applying the benchmarking of Russia's own assessments would be given, if requested.

WENRA Radioactive Waste Harmonization Working Group

29. WENRA has also set up a separate group looking at radioactive waste harmonisation issues. In mid-2003, the Chairs of the Radioactive Waste Harmonization Working Group and RHWG considered whether there were sufficient synergies and commonalities to work more closely together. In particular, some of RHWG's organizational reference levels seemed to offer scope for joint development. In discussion, it was judged that RHWG's work was already too broadly ranged and its membership too large to become involved with the Radwaste issues in detail. The main WENRA committee confirmed that the two groups maintain contact, share information, and report their findings jointly in November 2005.

Finally

30. Finally, it should be noted that, whilst the end result will be the report that we send to the main WENRA members, a valuable output of the project already has been the discussion within the group on the wide range of topics during meetings and in members' organizations while preparing, commenting upon, and now benchmarking the reference level documents. Several members have confirmed that our activities have already influenced their own regulatory and document reviews, and we believe that some of our findings are reaching IAEA and influencing some of their work.

Action

31. NuSAC is invited to consider the recommendations provided in Paragraph 6.

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