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**HEALTH AND SAFETY COMMISSION  
NUCLEAR SAFETY ADVISORY COMMITTEE**

**8 July 2004**

**Status Report on The Benchmarking and Review of NSD Safety  
Assessment Principles**

**A Paper by NSD**

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Manager – SAPs Review Project**

**Executive Summary**

The terms of reference for this project and an outline project plan were presented to NuSAC in NuSAC (2004) P4 at its March 2004 meeting. This current paper presents the project progress and outlines the planned intentions in regard of the structure and architecture of the revised documents.

Progress to date: Vectra started the task of benchmarking against IAEA standards on 1 March, and the task is now about a third complete. Tabular outputs summarise the non-compliances with recommendations for what might be necessary. Prior to NII addressing the recommendations set out in the Tables a managed process for handling them, with an action tracking system, is being set up. The need has been identified for a process for grouping the requirements in a way that will produce fewer and more appropriate goal setting Principles. It is intended to pilot this process in one or two key areas before applying it more generally.

A preliminary meeting with the inspectors working on the key sub-project to develop the decommissioning and radioactive waste principles has been held and a Project Initiating Document is being finalised, which identifies deliverables, responsibilities and the sub-tasks. Included is the interface with EA/SEPA in order to coordinate with their development of Environmental Principles.

Document Architecture: In developing the structure of the Standards and Technical Guides the two issues of hierarchical structure and document architecture are being addressed and will be piloted in one or two key areas before a final structure is adopted. A proposal for the hierarchical structure and architecture is set out in the paper based on the IAEA standards. As the proposals for the architecture of the revised principles and guidance documents is developed, it is intended that a process of consultation with key stakeholders will be undertaken.

The project to benchmark and review the NII SAPs has completed its first 6 months review milestone and is progressing in accordance with the agreed project plan and NuSAC is invited to note the progress with the project and indicate its endorsement of the strategic direction being taken.

## Introduction

- 1 The terms of reference for this project and an outline project plan (Annex 1) were presented to NuSAC in NuSAC (2004) P4 at its March 2004 meeting. This current paper presents the project progress and outlines the planned intentions in regard of the structure and architecture of the revised documents. It also satisfies Action 82/1/35.

## Project Progress

### Benchmarking

- 2 Vectra was chosen as contractor for this task in order to secure the services of 2 recently retired Deputy Chief Inspectors plus one other principal consultant familiar with NII and the SAPs. The Project Manager identified about 55 IAEA documents as in scope for the benchmarking. These comprise 3 Fundamentals documents, 10 Requirements documents with the remainder being Guides.
- 3 Vectra started this task on 1 March, and Stage 1 was completed by the beginning of May, with 12 IAEA documents reviewed. The Stage 1 report was considered at the Project Board on 30 April, and Vectra is now progressing Stage 2 to programme, with completion planned for October 2004.
- 4 Outputs are in Tabular form, and a system of peer review between the reviewers is ensuring consistency. For each IAEA document substantive points are identified and the SAPs and NSD's Technical Assessment Guides are benchmarked against them in a table. Each finding is categorised either A (adequate; no changes), B (minor differences) or C (Substantive difference). This is based on the approach in the WENRA Harmonisation project, although Vectra has split B into B1 (consider change) and B2 (ought to change). A second table summarises the non-compliances with recommendations for what might be necessary. Prior to NII addressing the recommendations set out in the Tables a managed process for handling them, with an action tracking system, is being set up.
- 5 From the Stage 1 work it looks as if there will in total be about 1500 recommendations at category B or C, but considerable numbers of these are duplications. The first 6 Requirements documents to be reviewed yielded about 520 Requirements, many of which are very detailed and prescriptive. This identified the need to use a process for grouping the requirements in a way that will produce fewer and more appropriate goal setting Principles. It is intended to pilot this process in one or two key areas before applying it more generally.
- 6 The existing SAPs, many of which cover more than one Requirement, were found to comply with 270 out of the 520 Requirements. A further 90 Requirements were identified that were associated with licence conditions rather than SAPs.
- 7 Stage 1 has shown that it is on average taking the consultants a little longer than planned for each document. This has led to reviewing the intentions in Stage 2 in order to maintain an end October 2004 end date for this task. It has been decided therefore not to benchmark the Research Reactor documents, and the Radiation Protection Standard (SS115) has been approached in a less structured way by discussion with a specialist lead in NII. The QA Standard (50-C/SG-Q) has been put on hold pending clarification of IAEA intentions for its review. All Requirements documents will be completed by July (Stage 2a) bar Emergency Response, which will be reviewed with the associated Guidance in Stage 2b.

Principles for Decommissioning and Radioactive Waste Management

- 8 A preliminary meeting with the inspectors working on this key sub-project has been held and a Project Initiating Document is being finalised, which identifies deliverables, responsibilities and the sub-tasks. Included is the interface with EA/SEPA in order to coordinate with their development of Environmental Principles.
- 9 In addition to the relevant IAEA benchmarking outputs, the team will consider Command 2919, the government's proposed revised decommissioning policy statement and international conventions in deriving new SAPs. In developing an overall hierarchical structure for these, the sub-project will be the primary pilot and example for the restructuring of the principles and guidance.

Known Technical Issues

- 10 Some 42 issues, varying considerably in scope, were identified from work carried out in 1999/2000 when the need to carry out a revision to the SAPs was first assessed. All have had the necessary resources identified together with a responsible Nuclear Topic Group. Assessment Requests have all been issued, although work on many is only just starting. It is too early to tell if any of the tasks will have their target completion date threatened due to resource limitations. One area at risk in this respect is Human Factors and it has therefore been decided to secure additional effort from a contractor. This is planned to be the other key area for piloting the hierarchical restructuring of the principles and guidance. A related issue, behavioural compliance, has been put with HSL also using the Nuclear Safety Studies budget.
- 11 A review of the HSE document Reducing Risk, Protecting People (R2P2) has been made and has shown that there are no implications from that document that are not already being addressed.
- 12 Some important additions arising from the work will be:
  - a) Societal risk targets.
  - b) Safety case requirements.
  - c) Multi-plant sites and site risk targets.
  - d) Releases requiring food bans.
  - e) Intelligent customer requirements.
  - f) Principles for emergency preparedness.
- 13 Some important improvements include:
  - a) Worker risk targets.
  - b) Handling time at risk.
  - c) Improved human factors principles.
  - d) More developed safety management principles.
  - e) Alignment of terminology between SAPs and Licence Conditions.

## Structure and Architecture

- 14 In developing the structure of the Standards and Technical Guides the following two issues are being addressed.
- 15 The first is to agree a model hierarchy of the different elements and what fits at each level:
- a) The proposal is that they should comprise “Fundamental Principles”; “Safety and Radioactive Waste Management Principles”, which should as a minimum address all IAEA “Requirements”; “Targets”: risk targets based on ToR but with SFAIRP as the overriding legal requirement, and guidance setting out relevant “Good Practices”. Table 1 specifies the characteristics for the principles that reside at each level.
  - b) The levels between the Safety Principles document and Technical Guides are key to the rest of the project. The recommendation is that the Safety Principles document will contain the fundamentals, all requirements and targets plus enough relevant guidance and good practice to ensure that the reader has a clear understanding as to the principles underpinning NII’s expectations of what should be in a satisfactory safety case and what arrangements should underpin and implement safety. Technical Guides will provide the interpretation of these principles by providing further guidance and good practices.
- 16 The second is to develop the architecture of the documentation within which the above hierarchy sits:
- a) It is proposed that the starting point should be the IAEA standards structure rather than that of the existing SAPs. This structure is shown in Table 2.
  - b) Discussion within NII has so far indicated that in doing this we should not slavishly follow the structure but use it as a guide and wherever possible retain existing groupings unless there is a clear driver for a change. The tenet of evolution rather than revolution applies.
- 17 It will be vital to pilot the developing structure and architecture in one or two key areas before a final structure is adopted. The Decommissioning and radioactive waste area will be the first pilot as an exemplar for other areas.
- 18 In developing the architecture the following tenets will be applied:
- a) We will make it clearer what the legal requirements are that underpin the process of assessment.
    - i) We propose to do this by adding the regulatory framework and reference to Licence Conditions to the Preface, expand and emphasise SFAIRP requirements and separate out the BSO/BSL success targets from the expectations of the way in which safety analyses should be carried out.
  - b) We will make it clear that any principles that are generic in nature apply to all assessments.
    - i) We will do this by identifying the cases where principles are unnecessarily constrained (either by their wording or their position) and rewrite them to make them generic in nature.

- ii) We will re-organize the Principles such that it is evident which are relevant to each type of assessment activity by grouping<sup>1</sup> the principles on the basis of their usage.
- c) We must be clear on what we mean when particular terms are used, to avoid difficulty and differences in interpretation.
  - i) Currently some of the vocabulary used within the SAPs is not defined or explained. There are adjectives such as “excessive”, and “significant”, and “reasonable” and nouns such as “risk” which need to be explained more clearly as they can lead to difficulties and differences in interpretation.
  - ii) Similarly, the use of “shall” and “should” needs to be considered to allow the mapping across from the IAEA documents.
- d) We will ensure than any “hidden” expectations are made evident;
  - i) There are a number of key statements and concepts within the body of the SAPs text e.g. proportionality and requirements with regard to emergency arrangements, that need to drawn out. These “hidden” principles need to be correctly placed.
  - ii) In reviewing and categorising the text of the SAPs we are capturing these additional expectations as extra requirements or good practices and these extra principles will then be factored into the overall review of the Standards.

## Consultation

- 19 It is understood that the Safety Directors Forum is planning to provide a coordinated interface with the project through nominated licensee contacts. This is welcomed and a strategy for dialogue with licensees has been discussed at the Project Board. Informal meetings are being set up to explain and clarify the issues discussed in this paper.
- 20 A meeting was held with EA and the interface is being maintained via the Decommissioning sub-project. A regular interface meeting with the MOD regulator has been set up. Both MOD and EA get copies of the monthly project Highlight Reports.
- 21 As the proposals for the architecture of the revised principles and guidance documents become more developed, it is intended that a more formal process of consultation with key stakeholders will be undertaken.

## Resources

- 22 The NSD Management Board (NMB) is reviewing the project every 6 months and that includes reviewing the resource requirements. The NMB authorised 5.5 staff years for the project but it is still too soon to know if this is adequate. This will be clearer once the process of addressing the benchmarking recommendations commences. The need for a small increase in the planned resource to 5.8 staff years has been identified and agreed to cover additional effort for the

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<sup>1</sup> That is, those principles that should be considered by all assessments and those that apply only to specific technical/discipline areas. It is anticipated that some Principles will need to be generalised and some repositioned. Some Principles may be better placed in a Technical Guide.

Decommissioning sub-project and to enlarge the role of the Technical Secretary to the project.

**Conclusion**

23 The project to benchmark and review the NII SAPs has completed its first 6 months review milestone and is progressing in accordance with the agreed project plan. The activity to benchmark against IAEA standards is about one third complete and a process for handling the emerging recommendations is being set up. A strategic direction for restructuring and developing the options for the architecture of the resulting principles and guidance has been set out and will be consulted upon.

**Recommendation**

24 NuSAC is invited to note the progress with the project and indicate its endorsement of the strategic direction being taken.

**TABLE 1 - Proposed working model**

<b>Fundamental Principles</b>	<p>These are the existing ICRP Fundamental Principles, plus additional Fundamental Principles based on IAEA Draft Standard 298, which is planned to replace the existing 3 fundamental standards.</p> <p>All these principles are mandatory.</p>
<b>Safety and Radioactive Waste Management Principles</b>	<p>These principles will be generic in nature.</p> <p>These principles will be applicable to all facilities/installations.</p> <p>These principles will be applicable in all lifecycle stages</p> <p>These principles will be phrased, as “shall” statements, but subject to SFAIRP.</p> <p>These statements will set out what the inspector must expect to see, to allow a judgement on the extent of conformity with the principles.</p> <p>These principles will equate to the IAEA Requirements level.</p>
<b>Targets</b>	<p>These statements will set out the risk management structure that NII adopts, emphasising SFAIRP as the legal requirement and clarify what is necessary for safety.</p>
<b>Good Practice</b>	<p>These statements may be plant or installation specific</p> <p>These statements may relate to particular lifecycle stage(s)</p> <p>These statements will be phrased, as “should” statements.</p> <p>These statements will equate to the IAEA Safety Guide level.</p> <p>All these statements are non-mandatory.</p> <p>These statements advise the assessor on acceptable approaches to meet the Safety and Waste Management Principles.</p>
<b>Guidance</b>	<p>This is the non-bold text to give the reader a sufficient understanding of the intent and application of the Principles. Additional good practice guidance will be in the relevant supporting TAGs</p>

**Table 2. IAEA Document Structure**

<b>Thematic</b>	<b>Facility Specific</b>
Legal and Governmental Infrastructure	Design of Nuclear Power Plant
Emergency Preparedness and Response	Operation of Nuclear Power Plant
Management Systems	Site Evaluation of Nuclear Power Plant <sup>2</sup>
Safety Assessment	Research Reactors
Radiation Safety	Fuel Cycle Facilities
Radioactive Waste Management	Radiation and Related Facilities
Decommissioning	Waste Disposal Facilities
Rehabilitation	
Transport Safety <sup>3</sup>	

<sup>2</sup> Site Evaluation for nuclear facilities may be considered as a thematic area.

<sup>3</sup> Transport safety may also be considered as an activity specific area but it is not relevant to this review.

## ANNEX 1

## Outline Project Plan

Activity	Date
Task 1- Develop decommissioning principles	
Initial proposals	June 2004
Completion	December 2004
Task 2- IAEA Benchmarking	
Stage 1	March - April 2004
Review by NII.	Early May 2004
Stage 2	May to November 2004
Task 3- Review international conventions	June 2004
Task 4- Develop strategy for final document	To December 2004
Task 5- Address already identified technical issues	
Phased completion	To March 2005
Task 6 - Drafting	January to October 2005
Project Reviews:	
Mid year review	June 2004 MBM
NUSAC endorsement	8 July 2004 NuSAC meeting
Mid Project Review	January 2005 MBM
Final Project Review	June or July 2005 MBM
Present final draft SAP document to NuSAC	October 2005 NuSAC meeting
Revised SAP document agreed by NSD MB	November 2005 MBM
Finalise document for public consultation	End November 2005