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| NUCLEAR SAFETY DIRECTORATE - BUSINESS MANAGEMENT SYSTEM | | |
| RESEARCH REACTOR NUCLEAR SAFETY RESEARCH NUCLEAR RESEARCH INDEX - DEVELOPMENT | | G/RES/002 |
| | | ISSUE 002 |
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1. Purpose & Scope

1.1 This note is to provide guidance to Unit NSD 4A and NSD assessors on writing and maintaining sections of the Nuclear Research Index (NRI). The assessors most directly concerned are the Technical Reps (see G/RES/001 Roles and responsibilities).

1.2 Nuclear safety research is used as a short form, but both research and development are implied. The scope includes exposure to radiation, nuclear safety and waste management at licensed reactor sites. Conventional health and safety issues are not addressed.

1.3 The Nuclear Research Index is different from the NSD Issues Database (see AST/004), although if research is required to close an issue on the NSD Issues Database, this fact and the associated NRI issue number can be recorded in the NSD Issues Database.

2. Function of Nuclear Research Index

2.1 The Nuclear Research Index (NRI) is produced annually by NSD to act as a focus for the UK reactor nuclear safety research programme under the aegis of HSC, paid for by the reactor licensees. The NRI is NSD's document but technical representatives are expected to consult with the licensees on the content of the technical area strategies and the creation of new issues. The NRI is divided into a number of technical areas which are monitored by technical representatives from NSD and the reactor licensees.

2.2 The reactor licensees will produce research schedules that take account of the contents of the Nuclear Research Index. Therefore the NRI should concentrate on defining the nuclear safety issues and explaining how safety is expected to benefit from the outcome of research, rather than describing research projects. If appropriate, the technical exchanges with the licensees may discuss whether there are other means than research to address an issue before adding an issue to the NRI. Technical reps are not expected in general to back-fit the NRI to include all items on the previous version of the licensees' research schedules.

2.3 The NRI also serves the functions of recording the status of those nuclear safety issues that are being addressed by research and, because it is a public document placed on the HSE website, discharges NSD's duty of openness to the public. Given its status as a public document, it should not contain sensitive information of a commercial

or security nature, e.g.:

- station names
- contractors
- costs
- emotive or political remarks.

2.4 The NRI is not designed to be a project monitoring tool.

3. Responsibilities

3.1 Head of NSD 4A is responsible for the management of the NRI production and development of the overall research strategy. Supported by Band 2 / 3 members of NSD 4A.

3.2 The NSD technical reps are responsible for updating the NRI in the individual technical areas.

3.3 Band 4, NSD 4A, is responsible for collation, checking and distribution of the NRI. Supported by other NSD 4A admin staff.

4. Format of NRI

4.1 The NRI is divided into 14 technical areas. These do not correspond on a 1-1 basis with the technical groupings of the licensees. The NRI is in 3 parts.

- Overall strategy - Unit NSD 4a is responsible for this part of the NRI and will consult the nominated NSD technical representatives. Appendix 1 provides guidance for the overall strategy.
- Technical area strategy - The nominated NSD technical representative is responsible for the strategy and is advised to consult with the relevant NSD Nuclear Topic Group (NTG). Appendix 2 provides guidance for the technical strategy.
- Research issues - This part comprises a series of records in a standard format containing information on individual nuclear safety issues. It is subdivided into open (or live) issues and closed issues. The NSD technical representative is responsible for maintaining these records. Appendix 3 describes the format of a standard record.

5. Timetable

5.1 The timetable for updating the NRI is governed by the need to have an index of Live Issues agreed before the end of October so that it is available to inform preparation of the Licensees' Nuclear Research Schedules and HSE's Levy programme. Hence it must be consistent with BMS/RES/001 for the overall timetable and licensee GN 2 for the production of the NRS. It is shown schematically in Fig. 1.

5.2 The key milestones in the timetable are as follows.

- **May** NSD 4a:
 - a) issue ARF's for NSD Technical Representatives to update NRI;
 - b) issue draft update of overall programme strategy.
- **May - June** NSD Technical Representatives review and update technical area strategy and seek Licensees' comments.
- **July** NSD Technical Representatives complete strategies and submit to NSD4a.
- **May - August** NSD Technical Representatives:
 - a) update status of open issues;
 - b) close issues where appropriate;
 - c) develop draft new issues and discuss with Licensees' Technical Representatives.
- **August** NSD Technical Representatives conclude discussions with Licensees and complete changes to NRI.
NSD4a:
 - a) complete final draft of overall programme strategy;
 - b) produce updated NRI of Live Issues and send to Licensees.
- **September** NSD 4A present the updated NRI of Live Issues to the September meeting of NuSAC SCR.
- **October** NSD4a:
 - a) update NRI of Closed Issues;
 - b) place updated NRI for both Live and Closed Issues on HSE website.

6. Related documents

RES/001 Nuclear safety research

G/RES/003 NRI issue closure

AST/004 Assessment Issues Recording Process

Reactor Licensee GN 2 Preparation of the Nuclear Research Schedule

Nuclear Research Index - available under:

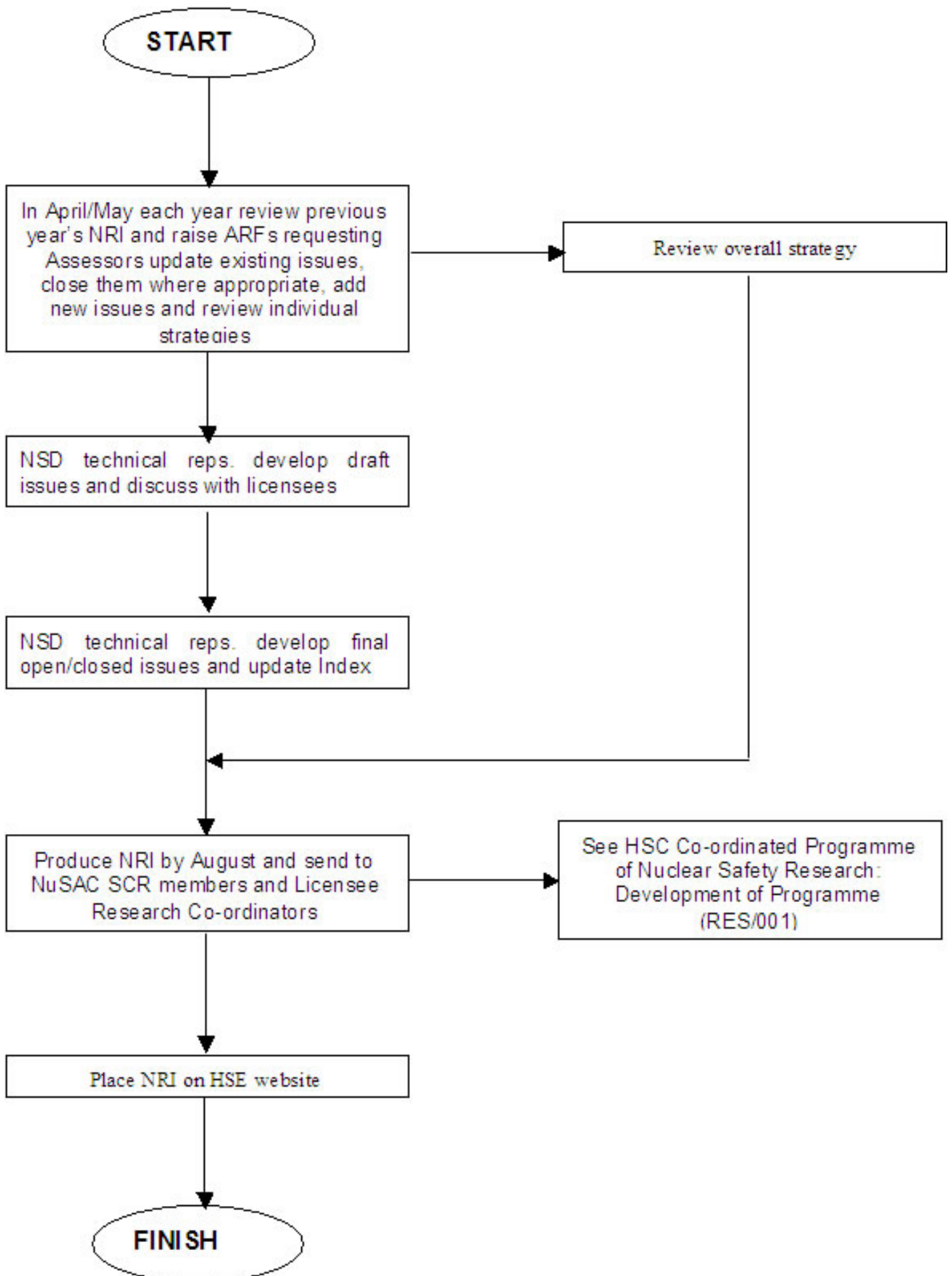
Start / Programmes / Local Applications / F3 issues.

(It requires Access 2000 to be installed.)

7. Abbreviations

| | |
|-----------|---|
| ARF | Assessment Request Form |
| HSC | Health and Safety Commission |
| NuSAC SCR | Nuclear Safety Advisory Committee Sub Committee on Research |
| NTG | Nuclear Topic Group |

FIGURE 1 - NUCLEAR RESEARCH INDEX (NRI) - G/RES/002



Appendix 1

Overall reactor safety research strategy

The Nuclear Safety Research Unit (NSD4a) is responsible for maintaining NSD's Overall Safety Research Strategy. This appendix provides a guide to the format and content of the strategy. The current version is available at <http://www.hse.gov.uk/research/nuclear/nri/overallstrat.htm>

Introduction

Introduces the document, sets out the historical context of nuclear safety research and highlights those factors that have had a significant influence on the development of the current year's strategy. Explains why NSD's regulatory powers makes it acceptable for plant to continue to operate despite the existence in the NRI of apparently many safety concerns.

Background

Sets out the responsibilities of the principal agencies involved in developing and implementing the programme of research, i.e. DTI, HSC, HSE, NSD and the licensees of operating nuclear power reactors.

Objectives

The NSD Perspective

There are a number of high-level strategic research objectives which will characterise the NSD's research activities. Some are generic objectives of the regulator, and some are required specifically in relation to each licensee.

The UK perspective

In addition to the above objectives arising directly from, and providing a basis for, NSD's regulatory business, there are others that address the UK perspective. Foremost of these is the duty delegated by DTI to HSC/HSE and described in the DTI Guidelines (which will be transferred to HSC).

Nuclear safety research also has secondary benefits for the UK in nuclear education and nuclear skills, but the programme does not fund projects with these are objectives.

Programme Arrangements

A brief description of the current arrangements for identifying and implementing the programme of nuclear safety research.

Programme Strategy

This section is informed primarily by NSD strategic plan and the current year's plan of work. The programme strategy will address the following.

Regulatory Challenge or Opportunity

This section will consider the threats and opportunities arising from, for example, the regulatory and commercial environment in which the nuclear generating industry is operating. It should aim to identify, at a high level, the principal short and long term challenges to the regulation of nuclear safety that have been considered when judging the need for safety research. This section will also recognise the more detailed consideration of regulatory challenges provided in the individual technical area strategies.

Regulatory Goals

This section will describe the goals that NSD needs to achieve in order to respond to the challenges and opportunities identified in the previous section.

Research Strategy

The research strategy will aim to set out the role of research in helping to achieve the regulatory goals. The strategy should deliver a programme of activities that have a good probability of providing both short term and long-term support to NSD's goals.

Reactor Type

This section should differentiate any plant specific aspects of nuclear safety research.

Concluding remarks.

Appendix 2

Format for technical area strategies

This appendix provides NSD's Technical Representatives with a guide to production of the Technical Area Strategy.

Technical Strategies should conform to the following structure.

1. Introduction
2. Regulatory Challenge or Opportunity
3. Regulatory Goal
4. Research Strategy

5. Access to Technical Capability - Essential Research Capability
- Independent Capability

6. Domestic and International Co-operation.

The following guidance is intended to help representatives to prepare the content of each of the above sections.

1. Introduction

Defines the scope of the technical or area or sub-area.

2. Regulatory challenge or opportunity

A challenge is a threat to maintaining the existing safety level. An opportunity is a chance to improve safety. This section should consider both the short and long term impact on the regulation of safety in the technical area.

Short term challenges/opportunities arise from:

- assessment of specific safety cases;
- operational experience, including maintenance and inspection;
- effects of ageing;
- Periodic Safety Reviews;
- incidents - domestic and international;
- outcome of research.

Long term challenges/opportunities include:

- changes in policy or direction;
- the implications of emerging technical developments and innovations;
- changes in technology;
- the need to set, review and utilise nuclear safety standards;
- long term implications of operating experience and incidents;
- the longer term business plans of the licensee;
- new information, views or practices - e.g. domestic & international meetings & conferences;
- domestic and international co-operation (nuclear and non-nuclear industries);
- access by licensee and regulator to technical capability;
- implications and application of international developments in nuclear safety.

3. Regulatory goal

This will describe the goals that NSD needs to achieve in order to respond to the challenges and opportunities identified in the previous section. The following are examples of regulatory goals that may be adapted to the specific technical or sub-technical area:

- improved plant safety
- the continued validity of safety cases;
- improved margins of safety;
- improved methodologies and data;
- enhanced safety of operations and culture;
- reduced operator dose,
- the upgrade/replacement of plant and safety systems to counter ageing;
- the investigation of incidents and accidents; and
- a proactive approach to emerging issues.

4. Research Strategy

The strategy should explain the contribution that research is expected to make towards NSD achieving the regulatory goals identified in the previous section. Specifically this may be done by describing how the output of the research will be used, for example whether this is:

- information gathering;
- new/improved data for safety cases;
- changing methodologies for safety cases;
- changes to the operation of the plant;
- modifications to plant or systems;
- new procedures;
- input to plant design.

The section may also acknowledge other relevant non-research activities that will contribute to the regulatory goals.

The strategy should comment on the balance of:

- short and long term research
- safety issue driven research / operational support / capability maintenance

Finally, the strategy should comment on expected changes to the size and nature of the research programme for the technical area in the current year as well as in the medium term future.

5. Maintenance of technical capability

This should be a short section. Do not name individuals or organisations. Although maintenance of technical capability may be considered as a regulatory challenge, the way it is addressed is rather different, so it is considered separately.

Licensee's Access to Technical Capability (ERC)

The licensees are expected to contribute to the maintenance of a technical capability, i.e. knowledge and expertise, that supports the nuclear safety of reactor operations. Where the maintenance of a capability relies upon a continued programme of research it is declared as an Essential Research Capability (ERC). The licensees' NRS will provide an annual review of its requirements for maintaining technical and describe how it intends to achieve this, e.g. an internal specialist team or a particular Contractor or University Department. The technical representative will consider this review in an annual assessment of the NRS. In this section the technical representative is asked to identify those topics that warrant ERC status and comment on the licensees' strategy for maintaining the capability. The NRI should include relevant issues to cover the maintenance of ERC.

NSD's Access to Independent Technical Capability (ITC)

In parallel NSD considers NSD's access to Independent Technical Capability, and takes measures to safeguard resources under threat. Such measures should be recorded as issues.

6. Summary of Collaboration

Although this should also be considered in the regulatory opportunities, a short summary statement should be added here. The licensee should demonstrate an appropriate level of collaboration and looking for information to other areas. They will have financial incentives to collaborate in some cases, but it is important also to broaden horizons, seek innovation where appropriate and stay abreast of new developments elsewhere. In some areas such as external events and C&I, there is commonality with chemical plant research. In other areas such as civil engineering, structural integrity, external events, there is common interest with the other industries. Where appropriate, international collaboration should be promoted by the regulator. The strategy should say in what areas collaboration is appropriate and the NRS should describe how this is implemented.

Appendix 3

Format for issues

It is emphasised that this should provide the background as to why the issue is a safety concern and what the safety concern is. It should be about half a side in length. Issues and sub-issues should be written in a way which makes them easy to close without giving the impression that the area cannot be revisited. *The research activity should not be specified, but should be given in the NRS provided by the licensee.*

Where issues are specific to a reactor system or does not apply to all licensees, this should be stated.

There is a field (added in 2005) 'Closable by specific project'. This should be ticked unless issues are essentially continuing duties such as maintenance of essential research capability to access to Independent Technical Capability, or benchmarking or intelligence gathering by international collaboration.

There is another field added in 2005 'More relevant than reactors'. This should be ticked if the issue is applicable more widely than just to reactor licensees. If this is the case, consideration should be given to spreading the charging, e.g. by using NSS or the HSE mainstream budget, or by a collaborative project.

FIGURE 1 - NUCLEAR RESEARCH INDEX (NRI) – G/RES/002

