JSP 518

REGULATION OF THE NAVAL NUCLEAR PROPULSION PROGRAMME

CONDITIONS OF RELEASE

By Command of the Defence Council

MINISTRY OF DEFENCE

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AMENDMENT RECORD

Issue	Description of Changes	Date
1	Initial issue based on BR3018(2) 1999 (as amended in December 2000) to include changes introduced by the following Consultation Memorandum: No 5 - Safety Principles (Annex A); No 6 - Seismic Qualification & Safety Criteria (Annex A); No 7 - Qualifications, Experience & Training (Chapter 5 & Annex H).	December 2001
1.1	Reformatted to be one document with a comprehensive index. Minor amendments including the deletion of the MOD/HSE Agreement.	February 2002
1.2	Addition of Foreword by the Chairman of the Defence Nuclear Safety Board Incorporation of changes introduced by the following Consultation Memoranda: No 8 - Safety Criteria – Accident Conditions (Annex A); No 9 - Periodic Safety Reviews (Annex A); No10 - Berth Assessments (Chapter 6, Annex I); No 11 - Safety Issue Management (Chapter 1).	April 2003
2	See details on pages (v)-(vii)	April 2004
3.00	The JSP has been revised following DNSR's adoption of the HSE Safety Assessment Principles and has been restructured into 2 volumes. Volume 1 covers regulatory requirements and Volume 2 regulatory guidance.	December 2008
3.10	Requirements for transport packages clarified. Introduction of Annex C, removal of Annexes D and E and re-designation of Annex F in Chapter 4. Introduction of Environmental Permitting Regulations (Annex A to Chapter 2). Revision of post titles. Editorial amendments.	September 2010

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FOREWORD

The nuclear programmes of the Ministry of Defence are a fundamental component of the UK's defence posture and have been so for many years. Those involved in these programmes, both Crown servants and contractors' staff, have a duty of care to their workforces, the public and the environment. Nuclear and radiological safety and environmental protection are important, not only because of our legal and moral responsibilities, but also because their effective management safeguards defence capability. Following wide consultation, the Defence Nuclear Safety Regulator has produced this Joint Services Publication (JSP 518) for the Naval Nuclear Propulsion Programme and its sister (JSP 538) for the Nuclear Weapons Programme. Together they define and promulgate the policy (requirements and guidance) for regulation of the defence nuclear programmes. Those responsible for implementing these programmes are to comply with the requirements, and the Defence Nuclear Safety Regulator is tasked with regulating in accordance with this policy. I expect this to be done with due rigour, and I use the Defence Nuclear Environment & Safety Board, with its supporting processes, to satisfy myself that this is so.

N C F GUILD
Rear Admiral
Chairman, Defence Nuclear Environment & Safety Board

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REGULATION OF THE NAVAL NUCLEAR PROPULSION PROGRAMME

HANDBOOK CONTENTS

Nuclear Weapons Programme
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GLOSSARY

Accident. Any unintended event, including operator errors, equipment failures or other mishaps, the consequences or potential consequences of which are not negligible from the point of view of protection or safety[1].

Agreement. Allows an Authorisee, Approving Authority or Design Authority to proceed in accordance with their arrangements.

Approval. The granting of consent by a regulatory body.[2]

> Interpretation: When an Authorisee, Approving Authority or Design Authority is required to submit its arrangements for approval if so specified by DNSR.

Approve. Is used throughout the Authorisation Conditions, in which context it has the purpose of 'freezing' arrangements and giving permission to proceed. Once regulatory approval is given to a set of arrangements, they must not be changed or varied unless and until the changes have been formally re-approved:

> Explanation: An Authorisee, Approving Authority or Design Authority is required to submit its arrangements for approval if so specified by DNSR.

Assurance. The action taken to report to another party that the specified arrangements, organisation, situation or activities are in place in accordance with expectations. The process includes monitoring, audit, inspection and sampling, but excludes direct involvement to alter or take responsibility for specific actions or decisions. This does not preclude the ability to instruct operations to cease.

Audit. A systematic, independent and documented process for obtaining evidence and evaluating it objectively to determine the extent to which audit criteria are fulfilled.

Authorisation. A regulatory mechanism through which the Chairman Defence Nuclear Environment and Safety Board sets the Conditions permitting an Authorisee to establish his own safety arrangements whose adequacy must be demonstrable to the satisfaction of DNSR.

Authorisation Conditions. Those obligations that are applied by the Chairman Defence Nuclear Environment and Safety Board, as a condition of being Authorised to conduct specified activities in relation to the Nuclear Programmes.

Authorisation Condition Compliance Statement. A statement which identifies the management arrangements to achieve compliance with the Authorisation Conditions and Further Authorisation Conditions.

Authorised Site. A defined site within which nuclear activities are controlled by an Authorisee in compliance with the Authorisation Conditions and Further Authorisation Conditions.

Authorisee. The individual authorised by the Chairman Defence Nuclear Environment and Safety Board to operate in compliance with the Authorisation Conditions and Further Authorisation Conditions.

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[1] IAEA Safety Glossary 2007. Terminology used in nuclear, radiation, radioactive waste and transport safety.
[2] IAEA Safety Glossary 2007. Terminology used in nuclear, radiation, radioactive waste and transport safety

Authority. The Chairman Defence Nuclear Environment and Safety Board is charged with Authorising the conduct of defined activities that may entail a direct or indirect risk to nuclear safety, and with providing assurance that the requisite level of nuclear safety is being achieved.

Barrier. A means to:

- prevent or inhibit the movement of people or radioactive substances, or some other phenomenon (e.g. fire);
- provide shielding against radiation;
- protect against some other potentially hazardous event.

Berth Assessment. The process of systematic and consistent collation of data on a berth to allow relative societal risk to be evaluated in order to judge the general suitability of the berth for hosting a nuclear powered warship.

Broadly Acceptable. A level of risk that is low enough that it should not cause particular concern to informed individuals potentially affected by it. The regulatory authorities consider that while even broadly acceptable risks should be rendered as low as reasonably Practicable, they are unlikely to seek positive demonstration that such risks have been minimised.

Cause. The origin, sequence or combination of circumstances leading to a hazardous event.

Commissioning. The process by means of which systems and components of facilities and activities, having been constructed, are made operational and verified to be in accordance with the design and to have met required performance criteria[3].

Competence. The ability to put skills and knowledge into practice in order to perform a job in an effective and efficient manner to an established standard.

Consent to Operate. Consent is required before an Authorisee, Approving Authority or Design Authority can carry out any activity for which DNSR has so specified the need.

Consequence. The (usually undesirable) outcome deriving directly or indirectly from a hazardous event or a combination of events and or circumstances.

Constraint. A limiting value of dose imposed by an operator on an employee or group of employees for a specified period, as an additional restriction to the legal limits, in order to further enforce the minimisation of individual dose.

Decommissioning. Administrative and technical actions taken to reduce hazards progressively and thereby allow the removal of some or all of the regulatory controls from a facility.

Defence Nuclear Material. A generic term covering Nuclear Weapons, Special Nuclear Materials for the nuclear programmes.

Design Authority (DA). An approved Duty Holder who manages the system that ensures that vital features of the nuclear weapon system, facility, utility or nuclear plant are identified

[3] IAEA Safety Glossary 2007. Terminology used in nuclear, radiation, radioactive waste and transport safety

and maintained throughout life. The Design Authority is responsible for the provenance of the design documentation included in the Safety Case.

Design Intent. The Design Intent, as its name implies, refers to the plan that the designer had for a particular component, system or subsystem to deliver a specific function. This function itself will be part of a plan for the delivery of key design parameters and attributes, including safety performance, set by the customer; this represents the highest level Design Intent. The Design Intent should be documented at various levels by functional and procurement specifications, design drawings and design descriptions and substantiations, including safety justifications. Where it is referred to in this JSP it must be taken to mean the Design Intent at the appropriate level according to context.

Direction. Requires an Authorisee, Approving Authority or Design Authority to take a particular action. This is mandatory action, which DNSR is directing the Authorisee, Approving Authority or Design Authority to carry out, e.g. 'the Authorisee, Approving Authority or Design Authority is directed to cease activities immediately'.

Diversity. The presence of two or more systems or components to perform an identified function, where the systems or components have different attributes so as to reduce the possibility of common cause failure, including common mode failure[4]. See also redundancy.

Dose. See Effective dose.

Duly Authorised Persons (DAP). Those persons who are authorised to control and supervise operations which may significantly affect nuclear/radiological safety, where those responsibilities go beyond their normal managerial duties or across line responsibilities (DAP are also Suitably Qualified and Experienced Persons).

Duty Holder. A person who has direct responsibility for, and control of, activities that influence, directly or indirectly, the safety of the Defence Nuclear Programmes.

Effective Dose. The quantity obtained by multiplying the equivalent dose to various tissues and organs by a weighting factor appropriate to each and summing the products. Measured in Sieverts (Sv)[5].

'Effective dose' is frequently abbreviated to 'dose'

Emergency Arrangements. Arrangements which are put in place in advance to enable the implementation of the emergency plan when required.

Emergency Plan. A plan designed to secure, so far as is reasonably practicable, the health and safety of persons who may be affected by such reasonably foreseeable emergencies as have been identified by an operator or carrier in a Hazard Identification and Risk Evaluation.

Endorse. To endorse a document is to express agreement to its content. Any document which has been endorsed by DNSR may not be changed without DNSR's further endorsement of each change.

Environment. The total set of all external natural or induced conditions to which a materiel is exposed, during a specified period of time.

[4] IAEA Safety Glossary 2007. Terminology used in nuclear, radiation, radioactive waste and transport safety
[5] Living with Radiation, NRPB 1998.

Event. An event is any occurrence:

a. which has/could have resulted in an unintended release of radioactive material, a failure of a line of defence/protection or a similar occurrence;

b. that could have given rise to a significant radiological consequence, on or off site;

c. which could significantly prejudice the requirements of a safety case or a breach of safety case requirements;

d. that may affect the safe operation or safe condition;

e. of safety interest or concern, including:

(1) human error;
(2) equipment or process failures that cause 'near misses';
(3) abnormal occurrences.

External Hazard. External hazards are those natural or man-made hazards to a site and facilities that originate externally to both the site and the process, i.e. the Duty Holder may have very little or no control over the initiating event.

Facility. A facility is that part of a nuclear site identified as being a separate unit for the purposes of nuclear or radiological risk. This may be a single reactor, a group of processing plants as on a nuclear fuel-cycle facility or a dock and its support systems containing a naval reactor plant.

The term 'facility' includes both the terms 'nuclear installations' as defined in the Nuclear Installations Act 1965 (as amended) and the term 'plant' as used in nuclear site licences granted by HSE.

It also includes nuclear weapons, components and relevant support equipment.

Fissile Material. Any matter containing Uranium 233, Uranium 235 (>0.72%), Plutonium 239 or Plutonium 241, either singly or in any combination.

Hazard. The potential for harm arising from an intrinsic property or disposition of something to cause detriment[6].

Hazard Assessment. The identification of undesired events that lead to the materialisation of a hazard, the analysis of the mechanism by which those undesired events could occur and, for those recognised as significant, the estimation of the extent, magnitude and likelihood of the harmful effects.

Hold Point. A point in any project in the nuclear programmes beyond which progress is prohibited without satisfying certain predetermined criteria which provide safety assurance or risk mitigation.

Incident. An undesired circumstance or 'near miss' that has the potential to cause an accident.

[6] Reducing risks, protecting people: HSE's decision making process, HSE Books 2001 ISBN 0 7176 2151 0.

Independent Nuclear Safety Assessment (INSA). Provides an independent assessment of the adequacy of the Safety Justification documentation with regard to its basis, completeness and whether it demonstrates that the risk presented is acceptable in terms of the Safety Principles and Safety Criteria. INSA is independent of the organisation which generates the Safety Justification. INSA provides a continuous wide ranging independent review of the nuclear programmes in the context of national and international nuclear safety standards and Safety Principles and Safety Criteria.

Independent Peer Review (IPR). The examination of Safety Justification documentation by suitably qualified and experienced persons independent of the project to consider its acceptability and completeness and whether the safety case presented is acceptable when compared to established standards and criteria. The IPR will be commissioned by the organisation responsible for making the Safety Justification. Independence can stem from the use of resources outside the department producing the Safety Justification. IPRs will be done against well-defined terms of reference.

Individual Risk. The risk to any individual of premature death from cancer or other radiation effects as a result of exposure to ionising radiation during any one year, whether the death occurs during the year of exposure or subsequently.

Initiating Event. The cause and start point of a fault sequence which may originate either outside or inside a site or facility.

Intelligent Customer. An intelligent customer is the capability of an organisation to have a clear understanding and knowledge of the product or service being supplied.

Internal Hazard. Internal hazards are those hazards to plant and structures that originate within the site boundary and over which the Duty Holder has control over the initiating event in some form.

Joint Regulation. The Duty Holder produces information once on a given topic and receives one response from one regulator, which incorporates the judgement of the other[7].

Licensed Site. A site in respect of which a Nuclear Site Licence has been granted by HSE under the Nuclear Installations Act 1965 (as amended), whether or not that Licence remains in force.

Licensee. The body corporate that has been granted a Nuclear Site Licence under the Nuclear Installations Act 1965 (as amended), which permits it to carry out a defined scope of activities on a delineated site.

Management Arrangements. Documented methods which describe how particular operations or activities will be controlled to meet the requirements of the Conditions or relevant Safety Cases.

Modification. "Modification" means any alteration to buildings, plants, operations, processes or safety cases and includes any replacement, refurbishment or repairs to existing buildings, plants or processes and alterations to the design of plants during the period of construction.

[7] Note from Chairman DNSB to 2nd PUS 26 Sep 03.

Naval Reactor Plant. The significant systems fundamental to the operation of the nuclear steam raising plant. A meaning assigned to a nuclear reactor comprised in a nuclear powered warship, interpreted as if the NIA65 (as amended) applied.

Normal Operation. Operation within specified operational limits and conditions[8].

Note. To acknowledge the existence of a document or arrangements. Noting a document does not imply that DNSR has examined the document or arrangements.

Notification. When so notified, an Authorisee, Approving Authority and Design Authority is required to submit information to DNSR.

Nuclear Accident. This refers to a Reactor Accident, Nuclear Fuel Accident, Neutron Source Accident or a Nuclear Weapon Accident, which may lead to a release of fissile material or fission products.

Nuclear Matter. Subject to any exceptions prescribed in NIA and the Nuclear Installations (Excepted Matter) Regulations 1978, nuclear matter is:

a. any fissile material in the form of uranium metal, alloy or chemical compound (including natural uranium), or of plutonium metal, alloy or chemical compound, and any other fissile material which may be prescribed; and

b. any radioactive material produced in, or made radioactive by exposure to the radiation incidental to, the process of producing or utilising any such fissile material as aforesaid.

Nuclear Safety. The state achieved when the probability and potential consequences of a nuclear accident have been reduced to an acceptably low level and the potential for personnel exposure arising from normal work with ionising radiation has been reduced to levels which are as low as reasonably practicable.

Nuclear Safety Related. An equipment or system that provides a supporting role to Nuclear Safety and where failure leads to erosion of Nuclear Safety margins.

Nuclear Weapon (NW). In this JSP the term 'nuclear weapon' is used to describe a nuclear bomb or warhead, excluding the delivery system.

Nuclear Weapon System. The entire stockpile of nuclear weapons, including facilities, activities and equipment necessary for operational use and safety.

Nuclear Steam Raising Plant. A pressurised water reactor within a primary circuit and those other (non-nuclear) systems necessary to generate steam to enable propulsion.

Operational Berth. NPW berths outside of Authorised Sites (HMNB Clyde (including Coulport), HMNB Devonport, Devonport Royal Dockyard and BAES at Barrow in Furness) will all be titled as Operational Berths (OB).

Operating Instructions. Used in the Authorisation Condition AC24, in which they are defined as written instructions that:

[8] IAEA Safety Glossary 2007. Terminology used in nuclear, radiation, radioactive waste and transport safety.

a. provide step by step instructions on how to carry out an operation to ensure that it is done in the way assumed in the safety case;

b. ensure that Operating Conditions and Limits are implemented;

c. are other instructions necessary in the interests of safety.

Operating Organisation. A body empowered to conduct nuclear operations within the nuclear programmes, either by itself or through prescription of a safe boundary and limits to an approved Duty Holder who is the respective operating authority.

Operating Rules. Referred to in Authorisation Condition 23 and are the conditions and limits which bound the safety case from which they were derived. The conditions and limits ensure that the operation is conducted safely and could arise from consideration of:

a. the calculated limits of performance, to ensure that the limits and conditions of the Design Basis are not exceeded;

b. the limits of analysis, beyond which the performance of the system is unknown;

c. the limitations in the scope of Safety Case;

d. the need to ensure that engineered safeguards are in place.

Operation(s). "Operation" includes maintenance, examination, testing and operation of the plant and the treatment, processing, keeping, storing, accumulating or carriage of any radioactive material or radioactive waste and "operating" and "operational" shall be construed accordingly.

Periodic Review of Safety. A comprehensive assessment of equipment, operations and safety cases against current standards to demonstrate that the risks continue to be as low as reasonably practicable and that ageing and other time related phenomena will not render operations unsafe before the next Review.

Permissioning. The process by which the DNSR regulates hazardous activities, through the imposition of formal requirements on operating authorities to gain permission before conducting certain defined activities.

Radiation Emergency. Any event (other than a pre-existing situation) which is likely to result in any member of the public being exposed to ionising radiation arising from that event in excess of any of the doses set out in Schedule 1 (of REPPIR) and for this purpose any health protection measure to be taken during the 24 hours immediately following the event shall be disregarded (REPPIR).

Radiation Safety. An integral part of nuclear safety and requires the implementation of Radiation Protection measures which ensure that personal exposure arising from normal work with ionising radiation is kept to levels which are as low as reasonably practicable.

Radioactive Material. Radioactive material is as defined in Radioactive Substances Act 1993.

Radioactive Substance. Radioactive substance is as defined in Ionising Radiations Regulations 1999.

Radioactive Waste. Radioactive waste is as defined in Radioactive Substances Act 1993.

Reactor Accident. An unexpected event which is likely to lead to, or has resulted in, a release of fission product external to the fuel cladding.

Redundancy. Provision of alternative (identical or diverse) structures, systems or components, so that any one can perform the required function regardless of the state of operation or failure of any other[9].

Risk. Risk is the chance that someone or something is adversely affected in a particular manner by a hazard[10].

Risk Assessment. The quantitative evaluation of the likelihood of undesired events and the likelihood of harm or damage being caused, together with the value judgements made concerning the significance of the results.

Safety Case. In this document, 'safety case' refers to the totality of an Authorisee's (or Duty Holder's) documentation to demonstrate safety.

Safety Category. The classification of nuclear weapons, nuclear plant, modifications or engineering work, or operations according to the potential consequences of failure.

Safety Criteria. The numerical values against which the calculated risks arising from activities are compared as an aid in judging whether those risks are acceptable.

Safety Justification Plan. A plan to demonstrate that the safety justification will be progressed in a coherent, structured and timely manner.

Safety Principle. A point of accepted best practice in corporate and engineering management which is (or is to be) adopted in the pursuit of nuclear safety.

Safety System. A system that acts in response to a fault to prevent or mitigate a radiological consequence.

Site Safety Case. The documentation which gives an overview and which demonstrates that the site as a whole is designed and operated such that nuclear powered warships can be operated and nuclear weapons and nuclear powered warships can be repaired within MOD criteria.

Suitably Qualified and Experienced Persons. The terms Suitably Qualified and Experienced Persons are used in the Authorisation Conditions 12 & 26 and are defined as those persons whom the Authorisee, Approving Authority or Design Authority considers suitably qualified and experienced to perform duties which may affect nuclear and radiological safety.

Target. A value of individual dose or collective dose set by an intelligent customer, or may be self-imposed by an operator or designer, so that in the design of new nuclear plant, nuclear weapon or component or in the planning of an activity involving radiation exposure, dose is minimised by good dose management and dose limiting values are not exceeded.

[9] IAEA Safety Glossary 2007. Terminology used in nuclear, radiation, radioactive waste and transport safety
[10] Reducing risks protecting people.

Transport. The deliberate physical movement of radioactive material (other than that forming part of means of propulsion) from one place to another[11].

Unacceptable. In relation to risk, a level of risk that is high enough to cause serious concern to informed individuals who are subjected to it. The regulatory authorities consider that such a risk should not be permitted in normal circumstances, and only permitted in order to avert greater risks in the course of serious emergency.

Utility. A supporting plant system such as a power distribution system which has no inherent radiological hazard but which is safety related because failure of it could have an adverse effect on the safety of another facility or nuclear plant.

[11] IAEA Safety Glossary 2007. Terminology used in nuclear, radiation, radioactive waste and transport safety

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ABBREVIATIONS

AA	Approving Authority
AC	Authorisation Condition(s)
ACCS	Authorisation Condition Compliance Statements (MOD)
ACCSGN	ACCS Guidance Note
ADA	Approving and Design Authorities
ADAC	Approving Design Authorities Conditions
AF&F	Arming Fuzing and Firing Unit
ALARP	As Low As Reasonably Practicable
AtO	Authority to Operate
AWE	Atomic Weapons Establishment
BAES	BAE Systems
BR	Book of Reference
BSL	Basic Safety Level
BSO	Basic Safety Objective
CSSE	Chief Strategic System Executive
DA	Design Authority
DAP	Duly Authorised Persons
DBA	Design Basis Analysis
DESB	Defence Environment and Safety Board
DfT	Department for Transport
DNRF	Defence Nuclear Regulatory Forum
DNESB	Defence Nuclear Environment and Safety Board
DNSC	Defence Nuclear Safety Committee
DRDL	Devonport Royal Devonport Ltd
DSTL	Defence Science and Technology Laboratory
EA	Environment Agency
EC	European Community
EIMT	Examination, Inspection, Maintenance and Testing
EOP	Emergency Operating Procedures
EPR	Environmental Permitting Regulations
EU	European Union
GoG	Government of Gibraltar
HASS	High Activity Sealed Source
HIRE	Hazard Identification and Risk Evaluation
HMNB	Her Majesty's Naval Base
HPA	Health Protection Agency
HSE	Health and Safety Executive
HSE/NII	Health and Safety Executive/Nuclear Installations Inspectorate
HSWA	Health and Safety at Work etc Act 1974
IAEA	International Atomic Energy Agency
ICRP	International Commission on Radiological Protection
IM	Insensitive Munitions
INES	International Nuclear Event Scale
INSA	Independent Nuclear Safety Assessment
INSAG	International Nuclear Safety Advisory Group (of IAEA)
IoF	Incredibility of Failure
IP	Intervention Plan
IPR	Independent Peer Review
IRR	Ionising Radiations Regulations
IS	Intervention Strategy
ISR	Immediate Safety Requirement
JSP	Joint Service Publication

LC	Licence Conditions
LCP	Life Cycle Phase
LOD	Line(s) of Defence
MOD	Ministry of Defence
NABUST	Nuclear Accident Back-Up Support Team
NAIAG	Nuclear Accident Information Advisory Group
MPS	Multi-Point-Safe
NARO	Nuclear Accident Response Organisation
NBC	Naval Base Commander
NIA	Nuclear Installations Act
NII	Nuclear Installations Inspectorate
NNPP	Naval Nuclear Propulsion Programme
NP PT	Nuclear Propulsion Project Team
NPR	Nuclear Propulsion Regulator
NPW	Nuclear Powered Warship
NRP	Naval Reactor Plant
NR(EIAD)R	Nuclear Reactor (Environmental Impact Assessment of Decommissioning) Regulations
NRTE	Naval Reactor Test Establishment
NSC	Nuclear Safety Committee
NSRP	Nuclear Steam Raising Plant
NW	Nuclear Weapon
NWP	Nuclear Weapons Programme
NWR	Nuclear Weapon Regulator
NW SPSC	Nuclear Weapon Safety Principles and Safety Criteria
OECD	Organisation for Economic Co-operation and Development
PRT	Power Range Testing
PSA	Probabilistic Safety Analysis/Assessment
PUS	Permanent Under Secretary
QA	Quality Assurance
RA	Radioactive
R&D	Research and Development
REPPIR	Radiation Emergency Preparedness and Public Information Regulations
RPC	Regulatory Policy Committee
RSA	Radioactive Substances Act
RSD	Serco Regulatory Support Business Area
SAP	Safety Assessment Principles
SEPA	Scottish Environment Protection Agency
SFAIRP	So Far As Is Reasonably Possible
SI	Statutory Instrument
SIN	Safety Improvement Notice
SJP	Safety Justification Plan
SMDC	Safety Mechanism, Devices and Circuits
SNM	Special Nuclear Material
SofS	Secretary of State
SPS	Single-Point-Safe
SPSC	Safety Principles and Safety Criteria
SQEP	Suitably Qualified and Experienced Persons
SSC	Site Safety Case
SW PT	Strategic Weapons Project Team
Sv	Sievert
TAG	Technical Assessment Guide
ToR	Terms of Reference
WH	Warhead
2nd PUS	Second Permanent Under Secretary

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CHAPTER 1

INTRODUCTION

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CHAPTER 1

INTRODUCTION

STRUCTURE, PURPOSE AND SCOPE OF THE JSP

1. This JSP defines and promulgates the policy, requirements and guidance for nuclear and radiological safety and environmental protection management of Naval Nuclear Propulsion Programme (NNPP) activities.

2. The JSP is divided into two volumes; Volume 1, consisting of Chapters 1, 2 & 3, states regulatory requirements and Volume 2, consisting of Chapters 4 & 5, contains regulatory guidance. In the context of the 'hierarchy of environment and safety publications' set out in JSP 815 'Defence Environment and Safety Management', Volume 1 of this JSP is at 'Level 2', and Volume 2 is at 'Level 3'.

3. Where possible, detailed material in this JSP is presented in Annexes linked to the relevant section of text in the Chapters.

4. Chapter 1 gives the background to the MOD's internal, non-prescriptive, goal-setting regulation of defence nuclear activities and the basis for that regulation. It explains briefly the objectives of MOD regulation, including the provision of assurance to senior levels of the Department.

5. Chapter 1 explains how and why regulation is based upon the Authorisation of operators to conduct defence nuclear activities during the life cycle of Naval Reactor Plant (NRP) which have an impact on nuclear and radiological safety. It explains why this Authorisation mirrors the licensing approach of the statutory regulator (Health and Safety Executive/Nuclear Installations Inspectorate, HSE/NII).

6. Chapter 2 sets down the regulatory requirements for the Authorisation of operators for specific roles in the life cycle of the NRP. These are principally the Authorisation Conditions (AC), which mirror Licence Conditions (LC) applied by the statutory regulator. There are additional Defence Nuclear Safety Regulator (DNSR) requirements arising directly from the mobile nature of the NRP and the wider remit of DNSR. These are presented as Further Authorisation Conditions (FAC).

7. The AC are generally presented in phrases such as "the Authorisee shall make and implement arrangements for……." Such arrangements then form part of the Authorisee's Compliance Statements against the AC (ACCS) against which they can be inspected. There is no attempt to repeat or even outline these arrangements, which are owned by the Authorisees, in this JSP, and for that reason, the JSP omits much of definition of arrangements included in earlier versions which pre-dated Authorisation of the key players in the NNPP.

8. Chapter 3 outlines the regulatory processes which DNSR uses to set requirements, agree Authorisees' arrangements to meet those requirements, and monitor Authorisees' adherence to those arrangements. This supports DNSR's objectives to seek and provide assurance and permission activities.

9. Volume 2, Chapter 4 provides guidance to Authorisees, and their Duty Holders, on how to meet the requirements. Some information in this chapter was included in earlier versions of this JSP as quasi-prescriptive requirements. Information from this source has been sentenced as:

a. no longer appropriate, deleted;
or
b. suitable for Authorisees to adopt as internal guidance or requirements;
or
c. suitable as guidance to Authorisees for inclusion in the new Chapter 4.

10. Volume 2 Chapter 5 provides guidance to DNSR staff to inform regulatory judgements when deciding whether to permission activities. This is principally done through the adoption of HSE Safety Assessment Principles (SAP) which, subject to occasional interpretation provided, DNSR considers are not inimical to the NNPP.

11. Subsidiary Guidance to Regulators is provided by the HSE in the form of Technical Assessment Guides (TAG). It is DNSR's intention to influence the applicability of these, such that they can be used by DNSR staff. Where necessary DNSR will publish specific TAG.

12. The structure of this document is shown diagrammatically below (Figure 1).

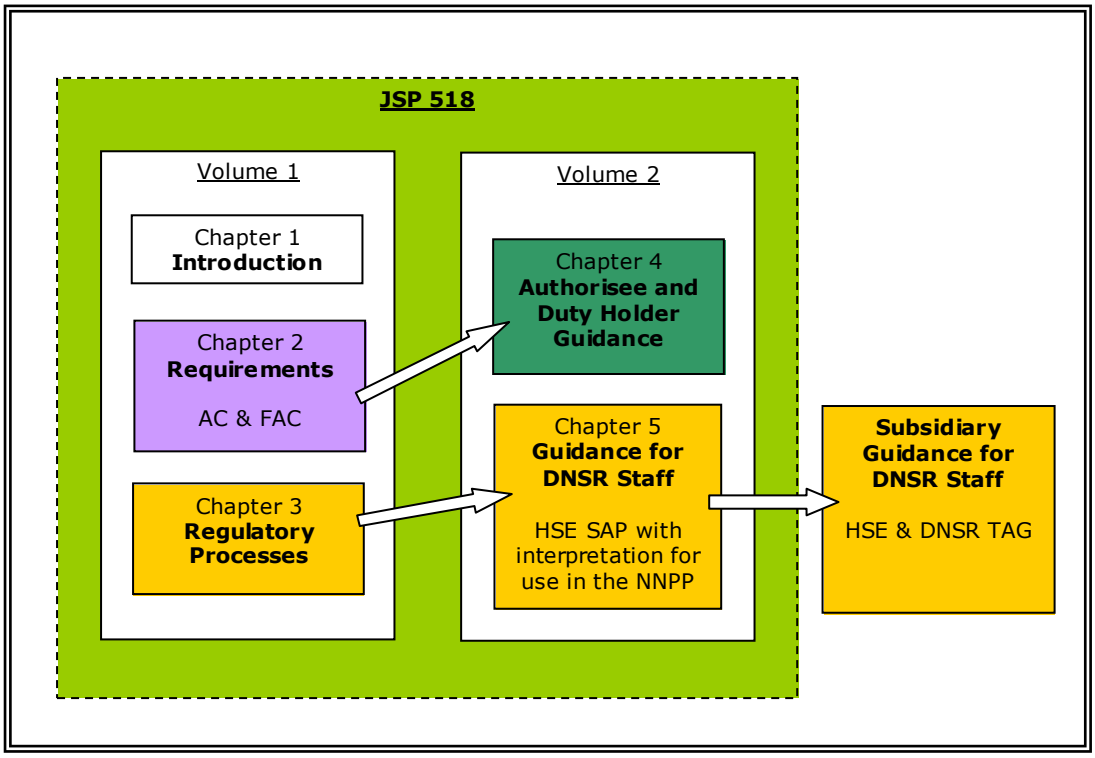

Figure 1 – Schematic of the Structure of JSP 518 and Regulatory Policy

BACKGROUND AND OUTLINE LEGAL FRAMEWORK FOR MOD REGULATION OF THE NAVAL NUCLEAR PROPULSION PROGRAMME

13. The Secretary of State's (SofS) Safety and Environment Policy Statement requires that "where Defence can rely on exemptions or derogations from either domestic or international law, we introduce standards and management arrangements that are, so far as reasonably practicable, at least as good as those required by the legislation".

14. The fundamental requirement for MOD regulation of the NNPP derives from the fact that it is a defence programme which has exemptions from relevant legislation.

15. The primary national legislation under which nuclear sites are regulated is the Health and Safety at Work etc Act 1974 (HSWA) and the 1965 and 1969 Nuclear Installations Act (NIA). HSWA is the enabling legislation for subsequent regulations and empowers the HSE, via the NII, as the statutory nuclear regulator through certain provisions of the NIA. Under Section 1 of the NIA, the NII licenses operators of nuclear facilities.

16. Relevant subsidiary legislation, from which the MOD is not exempt, comprises the Ionising Radiation Regulations, 1999, (IRR), and the Radiation (Emergency Preparedness and Public Information) Regulations 2001 (REPPIR). The NII regulate all MOD sites, contractor operated and those under Crown control, and Nuclear Powered Warships (NPW) within UK territorial waters against this legislation.

17. The transport of radioactive materials within civil nuclear programmes is subject to regulations made by the Department for Transport (DfT).

18. The UK defence nuclear programmes benefit from a unique relationship with the United States of America which is formalised by the UK/US 1958 Agreement on the Uses of Atomic Energy for Mutual Defence Purposes and the 1963 Polaris Sales Agreement as amended for Trident. The nuclear reactor technology transferred under the 1958 agreement is used in the UK only for NPW propulsion.

THE OBJECTIVES OF MOD REGULATION OF THE NNPP

19. In some areas of the NNPP, the wider national security benefits which arise from the military use of nuclear powered warships are best achieved through MOD regulation of nuclear safety. In these areas, the NNPP has defence disapplications from legislation or MOD exemptions exist (though that is not the reason for the disapplications).

20. The primary objective of MOD regulation of the NNPP is to ensure that SofS's policy for the achievement of standards at least as good as required by statute is implemented as far as is reasonably practicable, taking into account the mobility of naval reactor plants and the military context in which they operate.

21. Compared to a statutory nuclear regulator, DNSR has an additional factor to consider when judging the acceptability of the standards of nuclear safety and environmental protection achieved. This is to balance the potentially competing demands of nuclear safety, NPW safety and battle survivability, and defence strategy. This can be a factor in judgements on As Low As Reasonably Practicable (ALARP) arguments. DNSR's regulatory stance will take account of this factor.

22. A secondary objective of MOD regulation is to provide assurance to SofS that nuclear safety in the NNPP is, as far as is reasonably practicable, at least as good as that required by statute.

23. To achieve these objectives the MOD has appointed a Head of Defence Nuclear Safety Regulator (DNSR-Hd) and staff, collectively titled DNSR. Under DNSR-Hd, Nuclear Weapons Regulation is managed by the Nuclear Weapons Regulator, DNSR-NWR, and Nuclear Propulsion Regulation is managed by the Nuclear Propulsion Regulator, DNSR-NPR.

AUTHORITY AND DELEGATIONS

24. The SofS's Safety Policy Statement makes clear that it is the responsibility of those charged with conducting defence activities to carry them out safely in accordance with the law and MOD requirements. It applies both to activities conducted directly by MOD employees (which includes the Armed Forces) and those conducted by contractors.

25. The SofS formally delegates, via PUS, responsibility for conducting defence activities safely through the management structure of the MOD, and he separately charges 2nd PUS with oversight of the Department's safety and environment management arrangements and the responsibility for providing assurance about them. 2nd PUS chairs the Defence Environment and Safety Board (DESB) as the most senior safety assurance forum reporting to the Defence Board (DB). For nuclear and radiological safety in the defence nuclear programmes, 2nd PUS appoints a Chairman of the Defence Nuclear Environment and Safety Board (DNESB). The Chairman, DNESB, is the line manager for the Head of Defence Nuclear Safety Regulator (DNSR-Hd) and provides him with a letter of delegation giving him authority for the regulation of nuclear and radiological safety and environmental protection within the defence nuclear programmes. This extends, inter alia and in extremis, to direct operations to cease within the nuclear programmes.

REGULATION AND AUTHORISATION

26. MOD regulation follows from the empowerment of the Regulator by letter of delegation from the appropriate authority (paragraph 25 above). It is in the interest of both the regulator and regulated (and above all in the interest of safety) that both work to agreed arrangements so that their interactions may be understood and harmonised.

27. A system of Authorisation has been determined as fundamental to defence nuclear programmes' safety management arrangements. Authorisation is a system analogous to licensing under the NIA. The requirements are defined in 36 AC which are as far as possible identical to the 36 LC applied under statute to operators of nuclear installations.

28. The AC are applied to an operator responsible for managing the risk presented to the workforce, the public and the environment by the nuclear assets and activities under his managerial control and who is in day-to-day control of operations. In the NNPP, operators need the support of an Authorisee responsible for through-life safety to discharge their responsibilities for nuclear safety.

29. The Chairman DNESB, acting on advice from DNSR-Hd, 'Authorises' a NNPP operator designated as 'Authorisee' for particular activities associated with the NNPP. One of the functions of the Naval Reactor Plant Authorisee (NRPA) is to act as the Approving Authority (AA) with responsibility for safety of the NRP across life cycle boundaries, and delivery of a Design Authority (DA) function for the plant; this is shown diagrammatically by the colour coding in Figure 2. Authorisees are required to develop and maintain robust safety management systems consistent with the AC and additional requirements set out in Chapter 2 of this JSP.

30. The responsibilities of the AA are outlined in the NRPA Certificate of Authorisation. Given the mobile nature of the NRP and the different organisations with responsibility at different phases of the plant's life, these responsibilities are crucial for the delivery of adequate standards of safety. Therefore the AA is regulated with the same formality as those with direct responsibility for day-to-day safety on account of the contribution they make to NNPP safety. While the responsibility for the safe operation of the NRP rests with the Authorisee, DNSR expects that there is a formal relationship between all Authorisees and the

AA and that the AA provides clear, authoritative and coherent advice and guidance to Authorisees.

THE MOD REGULATOR

Vision, Mission and Scope

31. DNSR's vision is "Demonstrably safe defence nuclear programmes providing effective, available capability" and the mission statement is "To regulate nuclear and radiological safety of the defence nuclear programmes so that they are managed with due regard for the protection of the workforce, the public and the environment". The NNPP covers all life cycle phases of UK NRP, associated Special Nuclear Materials and Research and Development (R&D) in support of naval nuclear reactors. DNSR-NPR also contributes to the development of the safety objectives for the R&D programme.

32. In discharging his duties, DNSR-Hd:

a. owns and maintains on behalf of the Chairman, DNESB, regulatory policy;

b. gains assurance about safety and environmental protection by inspection and permissioning of activities, audit of arrangements, review of safety justifications and assessment of emergency response exercises;

c. provides assurance about safety and environmental protection by reports to DNESB, 2nd PUS and the DESB, the Defence Nuclear Executive Board and to the Defence Nuclear Safety Committee.

Relationship with Other Regulators

33. DNSR liaises and works closely with other MOD Regulators with common interests. Principally these are Chief Inspector of Explosives (MOD) and the Naval Authorities. The aim is to align regulatory policy and processes and assessment effort for efficiency and to minimise impact on operators.

34. The principal interface which DNSR has with any other regulator is with HSE/NII. The MOD/HSE Agreement describes the overall working relationships between the MOD and the HSE. DNSR works closely with the NII in a process of joint regulation of relevant areas to minimise the impact on operators and ensure, so far as is practicable, that they are not subject to differing requirements or processes. The NII looks to DNSR-NPR as the "Competent Authority" in respect of naval reactor plant design and DNSR-NPR provides NII with any clarification it requires on hazards arising therefrom. The NII will not seek to influence naval reactor design. A 'Letter of Understanding' (LoU) between DNSR and the NII captures the working relationship.

35. NII has its regulatory duties defined through statute while DNSR duties are founded on MOD policy partly in response to exemptions from statute and SofS's wider responsibilities. Furthermore, the NII's legal responsibilities require it to regulate compliance with the provisions of the IRR and REPPIR even on MOD regulated sites. Thus there is inevitably some overlap of DNSR and NII duties such that a tightly defined interface subject to formal demarcation is not practicable. There would be the risk that in closely defining an interface, some activities might escape regulation altogether.

36. Regulation of the NNPP is most effectively achieved by DNSR and the NII operating a system that ensures complete and seamless oversight of all NNPP activities. In some

cases joint regulation occurs but generally the NII and DNSR gain assurance from the other's activities. The DNSR/NII relationship is formally monitored through routine bipartite meetings to monitor adherence to the spirit of the LoU.

37. The NII process of regulation and enforcement against LC is mirrored by the DNSR process of Authorisation against AC. If an activity is both Licensed and Authorised, the same compliance statements should satisfy both regulators where the LC and AC are identical. Similarly the process of regulatory inspection of Licensee/Authorisee and the assessment of its safety documentation may be undertaken jointly by the NII and DNSR to ensure a common regulatory response and approach.

38. DNSR's responsibility for the regulation of some radioactive discharges means that it also has interfaces with environmental regulators, the Environment Agency (EA) in England and Wales, and the Scottish Environment Protection Agency (SEPA) in Scotland. DNSR is the sole regulator for:

a. liquid and gaseous radioactive discharges while at sea;

b. gaseous radioactive discharges while the NPW is alongside.

39. In keeping with SoS's policy declaration of equivalence with civil standards where reasonably practicable, DNSR regulates these discharges in keeping with the principles applied by the environmental regulators, and agrees appropriate levels with the EA. The interfaces between DNSR and EA/SEPA are governed by Memoranda of Understanding (MoU) (references, SEPA agreement in draft).

40. The safety management arrangements for liquid discharges alongside NNPP sites and berths are regulated by NII, with DNSR assistance, under the auspices of the IRR, and any subsequent environmental discharges are regulated directly by the appropriate environmental agencies. The respective regulatory responsibilities may be summarised as follows:

a. Radioactive discharges from defence-related Licensed sites and MOD Authorised sites:

(1) the discharges are regulated by EA/SEPA. (NB The discharges may include radioactive material originating on-board NPWs and transferred ashore for processing);

(2) EA/SEPA also regulate the associated radioactive waste management arrangements from an environmental protection perspective;

(3) DNSR regulates the associated radioactive waste management arrangements from a nuclear safety perspective;

(4) HSE/NII regulates the associated radioactive waste management arrangements from a health and safety perspective, principally in accordance with IRR99 requirements.

b. Radioactive discharges from NPWs directly to the environment:

(1) the discharges (comprising gaseous discharges alongside and liquid and gaseous discharges at sea) and the associated radioactive waste management arrangements from both environmental protection and nuclear safety perspectives are regulated by DNSR;

(2) in keeping with SofS's policy commitment so far as reasonably practicable to operate to standards equivalent to those applied by the civil regulators, this DNSR regulation is in accordance with the regulatory principles adopted by EA/SEPA and DNSR liaises closely with the civil regulators on their application;

(3) HSE/NII regulates the associated radioactive waste management arrangements from a health and safety perspective, principally in accordance with IRR99 requirements.

41. The relationship between DNSR and EA/SEPA is one of interfaces; there is not the same overlap of responsibilities as with the NII. It should be noted that:

a. the environmental regulators operate a more prescriptive regime based on limits than the nuclear safety regulators, though legally, the ALARP requirement applies to environmental discharges as well as nuclear safety;

b. NNPP discharges, both from shore establishments and from NPWs, are very small in absolute and relative (to nuclear industry generally) terms.

42. DNSR is the Competent Authority for transport packages for the defence nuclear programmes which are exempted by the relevant regulations. DNSR has a Letter of Understanding with the Department for Transport Dangerous Goods Division in relation to this regulatory activity.

Regulatory Requirements

43. On behalf of the Chairman, DNESB, DNSR owns, sets and maintains regulatory requirements for the management of nuclear and radiological safety and environmental protection in the NNPP. Volume 1, Chapter 2 of this JSP sets out the requirements and Volume 2, Chapter 4 includes related guidance.

Regulatory Processes

44. The principal processes which DNSR employs to achieve regulation are similar to those employed by the statutory nuclear regulator such as:

a. Authorisation – equivalent to licensing;

b. Inspections;

c. Assessment (of arrangements, safety documentation etc.), including emergency response exercises to examine the effectiveness of emergency arrangements in a dynamic environment;

d. Permissioning (of activities with implications for present and future nuclear safety).

45. Inspections to verify Authorisee and Duty Holder adherence to ACCS are the principal activity of the DNSR Inspectors, Site and Plant. Assessments are carried out on a sampling basis taking account of (for example):

a. the level of nuclear hazard presented by the issue to be assessed;

b. the level and independence of assessment effected by the Authorisee's Internal Safety Authority and made available to DNSR.

46. Regulatory control over activities deemed to have a significant nuclear safety implication is effected by imposing regulatory hold-points. Progression beyond these points, be they project stages, continued plant operation, or maintenance activities (for example) then requires DNSR permission; permissioning is then the DNSR process to apply leverage to Authorisees and Duty Holders. Mature Authorisees with strong internal safety management which impose their own hold-points will be subject to fewer, or combined, regulatory hold-points.

47. DNSR Inspectors maintain a routine relationship with operators and Duty Holders based on protocols between DNSR and the relevant manager(s). DNSR-NPR produces a programme level intervention strategy for each regulated area from which DNSR Inspectors produce an intervention strategy and plans for each Authorisee. These include inspection and assessment programmes covering all activities to gain the necessary assurance for permissioning of activities (where this form of regulatory leverage is applied). These programmes cover:

a. inspection of activities and arrangements – inspectors may wish to see how procedures are applied in practice and to verify compliance with regulatory requirements (e.g. AC);

b. review of nuclear safety justifications (guided by SAP) - to enable activities to be permissioned;

c. assessment of emergency response exercises – to examine the effectiveness of emergency arrangements in a dynamic environment.

48. In the event of an accident in the NNPP, DNSR becomes Head of the Safety Cell within the HQ Nuclear Accident Response Organisation in London.

49. Volume 1, Chapter 3 of this JSP sets out the related processes in more detail and Volume 2 Chapter 5 provides guidance to DNSR staff on assessment.

Regulatory Expectations

50. This JSP sets out requirements and guidance against which to judge the acceptability of all activities within the NNPP with respect to nuclear and radiological safety and environmental protection. It requires each operator or Duty Holder (Authorisee) and DA to provide and maintain written justifications addressing the safety of activities conducted with or on nuclear propulsion plant and nuclear material within their area of the NNPP. DNSR expects safety justifications to be developed, to be comprehensive in scope, to be of a standard equivalent to best industry practice, and to provide a depth of analysis appropriate to the risks.

51. DNSR does not seek to be prescriptive about the construction of management arrangements or safety justifications provided their coverage is adequate. Comprehensive written Compliance Statements are expected to be produced and maintained to justify Authorisation or Accreditation (e.g. as Duty Holder or DA) status.

52. DNSR endorses the long-standing MOD position that Authorisees with the support of the Department should maintain a comprehensive capability to respond to nuclear propulsion programme accidents, even where assessments may show that such accidents are highly

unlikely. This approach takes account of the societal concerns associated with a nuclear accident within the NNPP. Operators must maintain and periodically demonstrate the adequacy of a nuclear accident response capability.

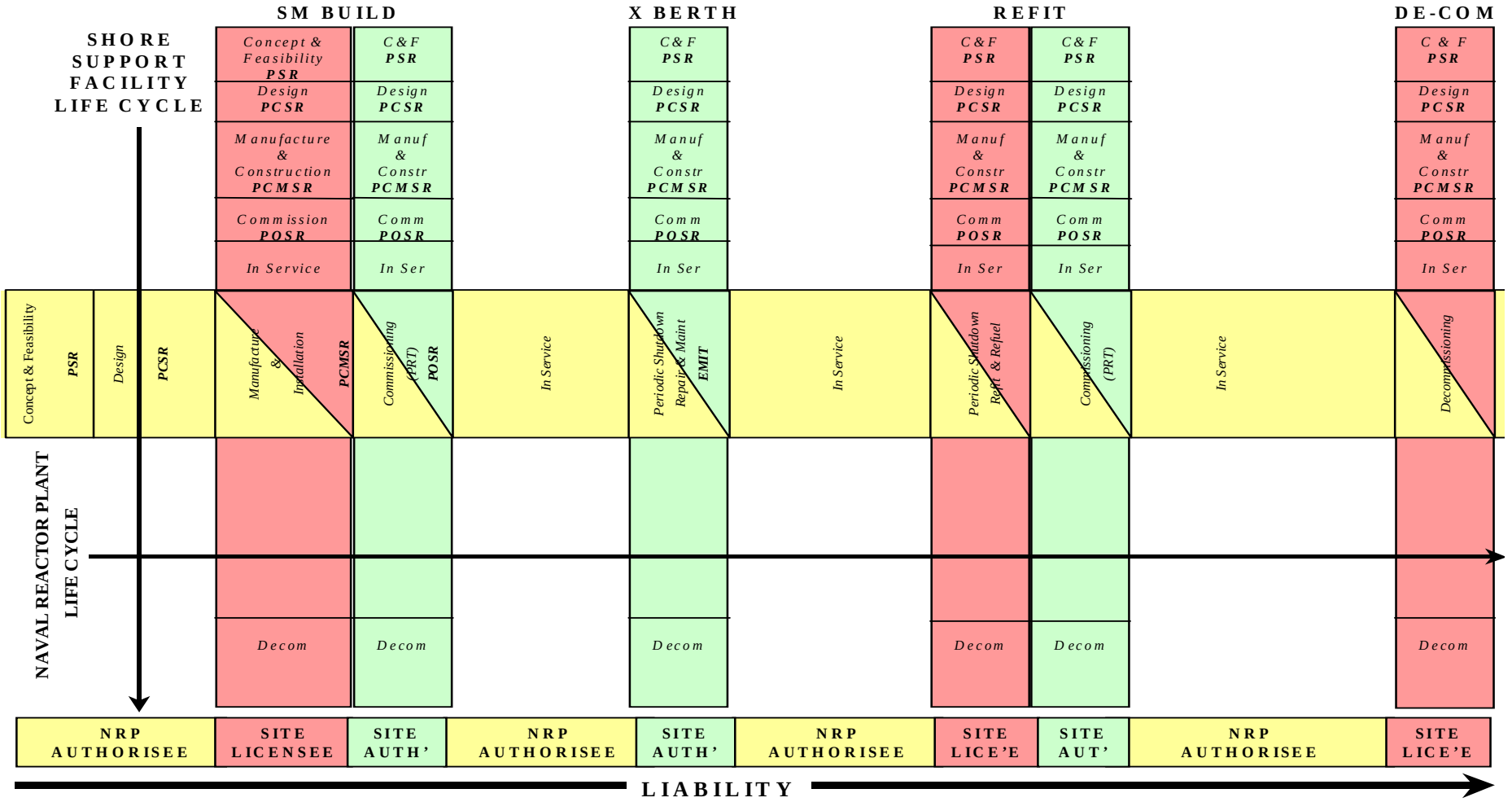

Figure 2 - Diagrammatic Representation of NNPP Through-Life Responsibilities

CHAPTER 2

REQUIREMENTS

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CHAPTER 2

REGULATORY REQUIREMENTS

LEGISLATION

1. The law of the United Kingdom applies to the defence nuclear programmes and is to be complied with; it is the Duty Holder's responsibility to determine applicable legal requirements. Principal legislation relating to nuclear and radiological safety (in many cases providing exemptions, disapplications or derogations relating to the defence nuclear programmes) is listed in Annex A. A fundamental feature of UK law (as required by the Health and Safety at Work etc Act 1974 (HSWA)) is that risk to the workforce and the public is to be reduced So Far As Is Reasonably Practicable (SFAIRP also expressed as "As Low As Reasonably Practicable" ALARP).

POLICY OF THE SECRETARY OF STATE FOR DEFENCE

2. The Secretary of State for Defence (SofS) sets out policy for Safety, Health and Environmental Protection in defence in a statement (available in JSP 815). A key aspect of this policy is expounded in the following extract:

> "Where Defence can rely on exemptions or derogations from either domestic or international law, [I require that] we introduce standards and management arrangements that are, so far as reasonably practicable, at least as good as those required by legislation. Where there is no relevant legislation, our internal standards aim to optimise the balance between risks and benefits. This does not mean avoiding risks but managing them responsibly, on the basis of impact and likelihood. We seek to disapply legislation on the grounds of national security as far as possible only when such action is essential to maintain operational capability, or in accordance with applicable laws."

3. In the policy statement SofS requires the Permanent Under Secretary to ensure that responsibility for health, safety and environmental protection aligns with the mandates of top-level budget (TLB) holders to manage defence activities in their delegated areas. TLB holders with responsibilities for delivery of the defence nuclear programmes are Commander in Chief, Navy Command (for Navy Command) and Chief of Defence Materiel (for Defence Equipment and Support (DE&S)). In DE&S at senior level the responsible managers are Chief of Materiel (Fleet) and Director Submarines.

4. JSP 815 contains the following statement in respect of acquisition decisions in the MOD:

> "Those seeking approval for investment in equipment, systems or facilities shall provide a declaration that the relevant functional/assurance areas have been appropriately engaged during the Initial and Main Gate business case or Review Note and that environment and safety management requirements for the project have been addressed. For high category projects, or where environment and safety issues may be novel or contentious, it may be necessary to demonstrate that the views of relevant Functional Safety Board (FSB) chairmen have been sought."

5. A Duty Holder in the defence nuclear programmes seeking such an approval is to engage with the Defence Nuclear Safety Regulator (DNSR) as early as possible in the preparation of the submission, and at subsequent relevant stages, in order that advice may

be provided to the relevant approving officer and the Chairman, Defence Nuclear Environment and Safety Board (DNESB).

NUCLEAR AND RADIOLOGICAL SAFETY AND ENVIRONMENTAL PROTECTION MOD REGULATORY REQUIREMENTS

Introduction

6. Nuclear Installations Act 1965 is the principal legislation governing the use of a site for nuclear activities. Under the Act, before conducting nuclear activities, the operator of a site must be granted a licence by the Health & Safety Executive (HSE); this is subject to management arrangements being made to satisfy 36 Licence Conditions (LC). A similar process, called Authorisation, is to be applied in the defence nuclear programmes where licensing is not applicable or where there are constraints in its application. This is to include the operation of nuclear powered (and armed) warships "at sea" (which includes operational berths) and the transport[12] of nuclear weapons, new and used fuel and special nuclear materials. It is also to include the discharge of radioactive materials to the environment where this is exempted[13]. An Authorisation Certificate is provided defining the scope of activities Authorised. Both licensing and Authorisation are non-prescriptive, permissioning regulatory regimes suitable for high hazard activities.

Authorisation

7. Authorisation Conditions (AC) for the defence nuclear programmes are stated in Annex B; these mirror LC. Specific attributes of the defence nuclear programmes (e.g. the organisational structures and the mobility of naval reactor plant and nuclear weapons) and the remit of DNSR (e.g. encompassing environmental protection and transport) require conditions in addition to those of LC. Four Further Authorisation Conditions (FAC) are stated in Annex C.

8. An Authorisee is to maintain a compliance statement for each relevant AC and FAC outlining how his or her management arrangements meet the requirements. Authorisees are responsible for managing the risk that the nuclear assets under their control present to the workforce, the public and the environment. Authorisees are to demonstrate day-to-day control of activities for which they are responsible. If an Authorisee is to cease conducting Authorised activities, a process leading to removal of Authorisation is to be undertaken by consultation between the Authorisee and DNSR.

9. Authorisees in the defence nuclear programmes are detailed in Table 1.

[12] Transport of radioactive materials in the defence nuclear programmes is exempted from the Carriage of Dangerous Goods … Regulations 2007.
[13] The Crown is exempted from the Radioactive Substances Act 1993; administrative arrangements have been agreed between MOD and the environmental agencies covering most discharges from MOD sites.

Scope of Activities[14]	Naval Nuclear Propulsion Programme	Nuclear Weapons Programme
Construction and first commissioning of naval reactor plant	MD/BAE Systems Submarines, Barrow	
R&D, manufacture, assembly/disassembly, of nuclear weapons		Atomic Weapons Establishment plc
Testing of naval reactor plant	Naval Superintendent, NRTE Vulcan	
Logistic transport of reactor fuel, nuclear weapons and special nuclear materials	Head of Nuclear Propulsion[15]	Head of Strategic Weapons
Naval base support and maintenance	Naval Base Commander, Clyde Naval Base Commander, Devonport	Naval Base Commander, Clyde
Deep maintenance (including refuelling) of naval reactor plant	MD Submarines/Devonport Royal Dockyard Limited	
Operations at sea and alongside operational berths outwith Authorised sites[16]	Head of Nuclear Propulsion	Chief, Strategic Systems Executive

Table 1 – Authorisees in the Defence Nuclear Programmes

Design and Approval

10. Naval reactor plant and fuel (in the Naval Nuclear Propulsion Programme (NNPP)) and nuclear weapons and special nuclear materials (in the Nuclear Weapons Programme (NWP)) are common features of the activities in Table 1 above. The designers of naval reactor plant and nuclear weapons, and those who approve them for use, are to ensure that they, and information supplied about them, are fit-for-purpose and facilitate safe conduct of activities by the Authorisees[17]. Authorisees are to provide assurance to the approvers and designers about the conduct of activities with naval reactor plant and nuclear weapons so that knowledge about their condition is maintained.

11. The Approving Authority (AA) for naval reactor plant is Head of Nuclear Propulsion (NP-Hd)[18]; the scope of Authorisation encompasses NP-Hd's role as AA[19].

Transport

12. Those who conduct the transport[20] of radioactive material in the defence nuclear programmes external to licensed or authorised sites are to comply with the extant issue of the 'Regulations for the Safe Transport of Radioactive Material' (TS-R-1) issued by the UN International Atomic Energy Agency and any requirements of DNSR as the defence Competent Authority[21].

[14] A summary of the scope is provided; details are in the relevant Authorisation Certificate
[15] NP-Hd is the Duty Holder, but Authorisation Conditions are not applied to this activity.
[16] Navy Command is principal Duty Holder to both NP-Hd and CSSE
[17] Section 6 of HSWA, General Duties of Manufacturers as Regards Articles and Substances for Use at Work, is relevant
[18] Technical Authority is by Rolls Royce Marine Power
[19] Note – role as Authorisee sea quite separate.
[20] For this purpose 'transport' has the meaning in para 106 of IAEA Standard 'TS-R-1'.
[21] Guidance in respect of this paragraph can be found in Vol 2 Ch 4 Annex B (FAC4)

Guidance

13. Guidance on interpretation of and compliance with regulatory requirements is provided in Volume 2 Chapter 4 of this JSP.

ANNEX A TO CHAPTER 2

LEGISLATION

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ANNEX A TO CHAPTER 2

LEGISLATION

INTRODUCTION

1. A comprehensive framework of legislation exists to ensure that the UK's civil and, where applicable, defence nuclear programmes achieve acceptable standards of safety and environmental protection.

2. The Naval Nuclear Propulsion Programme (NNPP) and the Nuclear Weapons Programme (NWP), referred to as the defence nuclear programmes for this chapter, generally work within this legislative framework, but subject to a number of exemptions, disapplications or derogations which take account of the purpose of the MOD and its objectives (principally the Defence imperative), and the physical environment in which the defence nuclear programmes operate. The following paragraphs provide an overview of the principal legislation applicable to nuclear and radiation safety and environmental protection in UK and British Overseas Territories. The general application of the legislation to defence nuclear programmes is described and the regulating authority is identified. Nothing in this Annex affects the responsibility of an Authorisee or Approving and Design Authority for complying with applicable legislation.

INTERNATIONAL FRAMEWORK

3. Nuclear safety is the subject of international co-operation and agreement through such bodies as the International Atomic Energy Agency, the Organisation for Economic Co-operation and Development and the International Commission for Radiological Protection. It is also a major element of European Union (EU) policy, and is addressed in particular within the EURATOM Treaty which imposes requirements on the way in which member states must conduct activities involving nuclear and radiological hazards.

4. Although it is the UK Government's position that the EURATOM Treaty does not apply to military activities, legislation emanating from EURATOM which is incorporated into national law under UK Acts of Parliament is applicable unless a Defence exemption is included in the legislation.

5. In the framework of the Treaties establishing the European Union, EU law may take the following forms:

a. **EU Legislation.** This is applicable and binding on all Member States:

(1) Directives. These bind Member States as to the objectives to be achieved and require Member States to implement national legislation to give effect to these objectives within a specified time-scale. For example, Directive 96/29/EURATOM, commonly known as the Basic Safety Standards (BSS) Directive, was implemented in part by the Ionising Radiations Regulations 1999 (see below).

(2) Regulations. These are directly applicable and binding in Member States without the need for any national legislation. For example, Council Regulations (Euratom) 3954/87 and 2218/89 set out the maximum permitted levels of radioactive contamination in foodstuffs following a nuclear accident which are directly applicable in UK.

(3) Decisions. These are binding in all respects on those to whom they are addressed. Thus, Decisions do not require national implementing legislation. A Decision may be addressed to any or all Member States, to enterprises or to individuals;

b. **EU Recommendations, Opinions** - not binding on Member States.

LEGAL FRAMEWORK IN THE UK

6. In UK, legislation provides the fundamental basis of safety practice. It is legislation, through an Act of Parliament or subordinate legislation, brought into force by a Secretary of State (SofS) that requires a regulatory body to be set up and provides the basis for its regulatory powers. It defines the limits of these powers and is likely to indicate some guiding directions for its implementation. Increasingly, UK legislation reflects the UK's international commitments and agreements, most notably arising from membership of the EU.

7. The detail of regulatory requirements is frequently expanded through codes of practice, guidance to the regulations, and associated documents published by bodies such as the Health & Safety Executive (HSE). Guidance can also be set out in formal statements of Government policy (White Papers) or in statutory guidance issued to regulators. However, it is legislation which provides the overall basis of regulatory provision.

8. SofS for Defence may, in the interests of national security, by a certificate in writing, exempt certain defence activities and premises from the requirements of certain Regulations.

RELEVANT LEGISLATION – HEALTH AND SAFETY

European Communities Act 1972 (ECA)

9. The ECA is an Enabling Act which brings the UK under the legal umbrella of the European Community. The Act empowers SofS to make subordinate legislation which does not completely align with existing UK Enabling Acts. Much of the UK's modern legislation is brought into force via a combination of the powers invested in SofS by ECA and by other enabling acts. For example, the Ionising Radiations Regulations are brought into force via ECA and the Health and Safety at Work etc Act 1974 (HSWA).

Health and Safety at Work etc Act 1974

10. HSWA introduced a framework for safety legislation and its enforcement, establishing the HSE, responsible to the Health and Safety Commission. HSWA is an enabling act for subordinate health and safety legislation. The HSE have statutory responsibilities under the HSWA and its subordinate regulations, which on nuclear sites are delivered through their Nuclear Directorate (of which the NII is a part).

11. There is no general Crown exemption from the HSWA and MOD is bound by the general duties it imposes and by regulations made under it, except where specific exemptions apply. JSP 815 sets out the arrangements by which MOD complies with HSWA, and includes the MOD/HSE General Agreement which describes how the Act is implemented in practice.

Nuclear Installations Act 1965 and 1969 (NIA)

12. NIA restricts the operation of specified nuclear installations (including nuclear reactors) to bodies licensed for that purpose by NII. Licensees are then regulated through a set of 36 Licence Conditions (LC) designed to ensure that adequate standards of nuclear safety are maintained. NIA also establishes licensees' strict liability for any harm or damage arising from their activities.

13. NIA is generally not applicable to the Crown (i.e. MOD) although S9 acts to apply the liability provisions referred to above as though the Act did apply. Reactors in a means of transport (which include operational Nuclear Powered Warships' (NPW) reactors) are further specifically disapplied from the Act. NIA does apply where MOD is not in direct control of activities, for example at the Atomic Weapons Establishment (AWE) and Devonport Royal Dockyard Limited (DRDL). The NII have statutory responsibilities under the NIA. DNSR regulate MOD Duty Holders who are exempt from NIA in accordance with equivalent provisions, including Authorisation Conditions which correspond to NII Licence Conditions.

Atomic Weapons Establishment Act 1991 Amendment Order 1997

14. The AWE Amendment has provision for licensing by the NII but excludes nuclear weapon design etc. from licensing.

Ionising Radiations Regulations 1999 (IRR99)

15. IRR99 sets out detailed provisions for radiation protection, including prior risk assessments, dose limitation, As Low As Reasonably Practicable (ALARP), the appointment of Radiation Protection Advisers, dosimetry etc. JSP 392 (Radiation Safety Handbook) sets out the corresponding MOD policy. The Regulations are applicable to MOD, and are regulated on nuclear sites by NII. Outside UK, DNSR apply equivalent provisions so far as is reasonably practicable.

16. The SofS for Defence has exempted in writing foreign NPWs visiting UK in accordance with IRR99.

Radiation (Emergency Preparedness and Public Information) Regulations 2001 (REPPIR)

17. REPPIR sets out detailed provisions for emergency preparedness and response in relation to holdings of large quantities of radioactive material, including hazard identification and risk evaluation (HIRE) and, in the case of a reasonably foreseeable radiation emergency (as defined), the provision of prior information to both identified civil authorities and the public, operators' and off-site emergency plans, and tests (i.e. exercises) of those plans. REPPIR applies to fixed sites and transport by rail only, and is generally applicable to defence nuclear programmes. However, assessments have established that a radiation emergency is not reasonably foreseeable in the case of large parts of the NWP, which restricts the applicable provisions in these cases. Further, there are specific disapplications for transport in a Type B package or in accordance with Special Arrangements (as defined) which have the effect of disapplying the Regulations in respect of rail transport of used fuel.

18. REPPIR is regulated by HSE (of which the NII is a part). DNSR act as Competent Authority in this regard, providing assurance to NII that the detailed NNPP and NWP design information contained within the HIREs is valid and has been used appropriately outside UK, DNSR apply equivalent provisions so far as is reasonably practicable.

19. The SofS for Defence has exempted in writing foreign NPWs visiting UK in accordance with REPPIR.

The Justification of Practices Involving Ionising Radiation Regulations 2004

20. The Regulations implement an EU Directive requirement for any new class or type of practice resulting in exposure to radiation to be justified by the benefits arising in relation to any corresponding health detriment. Such determinations are made by the Department of Environment, Food and Rural Affairs and/or the devolved administrations (the Justifying Authorities). For the purpose of these Regulations a new class or type of practice is one introduced since May 2000. There is also provision for an existing practice to be reviewed in the event that new and important evidence about its efficacy or consequences is acquired.

21. Associated guidance emphasises the principle underlying the Directive (and thereby the Regulations) that justification is to be applied generically rather than at the level of individual uses of a practice, and would therefore relate for example to the operation of the NNPP as a whole. Since both of these broadly stated practices were carried out prior to May 2000, the Regulations have no practical impact on the programmes subject in principle to the following two provisos.

22. Substantial design or other changes sufficient to alter the overall balance between the benefits and detriments of the programme could in principle require a new justification decision.

23. Similarly, new and important evidence about the efficacy or consequences of the programme could in principle require a new justification decision.

Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009

24. These Regulations set out detailed provisions for the transport of radioactive material, mainly by reference to international regulations for the carriage of dangerous goods by road[22] and by rail[23]. The Regulations apply to MOD but include wide-ranging exemptions in respect of instruments of war (as defined), which have the effect of largely disapplying the Regulations in relation to the transport of defence nuclear material. Regulation is by the Department for Transport. DNSR regulate the transport of defence nuclear material which is exempt from the Regulations using equivalent provisions, including acting as the Competent Authority for the approval of packages to be used for such transport.

RELEVANT LEGISLATION – ENVIRONMENTAL PROTECTION

Environmental Permitting (England and Wales) Regulations 2010 (EPR10)

25. EPR10 Schedule 23 Parts 2 & 3 implement the European Basic Safety Standards Directive, namely Council Directive 96/29/EURATOM and as such provide the basis for permitting the keeping and use of radioactive material and of mobile radioactive apparatus, and for the control of radioactive waste accumulation and discharge/disposal. Schedule 23 does not apply in the case of MOD sites where MOD is in direct control of relevant activities, but MOD has agreed to comply with the provisions of EPR10 by administrative procedures. Schedule 23 does apply where MOD is not in direct control of activities, for example at AWE

[22] The European agreement concerning the international carriage of dangerous goods by road (ADR)
[23] Regulations covering international carriage of dangerous goods by rail (RID)

and Devonport Royal Dockyard Limited (DRDL). Regulation is by the Environment Agency (EA).

26. EPR10 Schedule includes exemptions in respect of the keeping and use of radioactive material and the accumulation of radioactive waste on a nuclear licensed site. In this case NII regulate under NIA. Equivalent exemptions for MOD Authorised non-licensed sites have been included in the MOD agreement with EA. Regulation is by DNSR under provisions equivalent to NIA (see above). The agreement with EA also excludes from consideration the very low level discharges of liquid and gaseous radioactive waste from NPWs directly to the environment. Again, regulation is by DNSR using equivalent provisions.

27. EPR10 Schedule 23 Part 4 provides for the implementation of council Directive 2003/122/EURATOM, 'the HASS Directive'. In England and Wales EPR10 fully revokes the High-Activity Sealed Radioactive Sources and Orphan Sources Regulations 2005. Schedule 23 Part 4 sets out detailed provisions for the registration, management and control of high-activity sealed radioactive sources (as defined). The directive applies to MOD and related Duty Holders to the extent that Schedule 23 applies, either statutorily or by agreement (see above). Regulation is by EA. In the case of radioactive material held on a licensed site, again NII regulate under NIA. For MOD Authorised non-licensed sites DNSR regulate under provisions equivalent to NIA.

Radioactive Substances Act 1993 (RSA93)

28. In England and Wales much of RSA93 has been repealed by EPR10 (see above), hence its application there is limited.

29. In Scotland and Northern Ireland RSA93 continues to provide the basis for the registration of the keeping and use of radioactive material and of mobile radioactive apparatus, and for the control of radioactive waste accumulation and discharge/disposal. The Act does not apply in the case of MOD sites where MOD is in direct control of relevant activities, but MOD has agreed to comply with the provisions of the Act by administrative procedures. RSA93 does apply where MOD is not in direct control of activities, for example at HMNB Clyde, regulation is by the Scottish Environment Protection Agency (SEPA).

30. The Act includes exemptions in respect of the keeping and use of radioactive material and the accumulation of radioactive waste on a nuclear licensed site. In this case NII regulate under NIA. Equivalent exemptions for MOD Authorised non-licensed sites have been included in the MOD agreement with SEPA. Regulation is by DNSR under provisions equivalent to NIA (see above). The agreement with SEPA also excludes from consideration the very low level discharges of liquid and gaseous radioactive waste from NPWs directly to the environment. Again, regulation is by DNSR using equivalent provisions.

High Activity Sealed Radioactive Sources and Orphan Sources Regulations 2005 (HASS)

31. In England and Wales these regulations are fully revoked by the EPR10 (see above), but remain in place in Scotland and Northern Ireland. The HASS Regulations set out detailed provisions for the registration, management and control of high-activity sealed radioactive sources (as defined). The Regulations act by amending RSA93, and therefore apply to MOD and related Duty Holders to the extent that RSA93 applies, either statutorily or by agreement (see above). Regulation is by SEPA. In the case of radioactive material held on a licensed site, again NII regulate under NIA. For MOD Authorised non-licensed sites DNSR regulates under provisions equivalent to NIA.

Nuclear Reactor (Environmental Impact Assessment of Decommissioning) Regulations 1999, amended 2006 (NR(EIAD)R)

32. NR(EIAD)R sets out provisions requiring an environmental impact assessment to be carried out prior to beginning the decommissioning of a nuclear reactor, and submission of the assessment to NII for their agreement for the work to proceed. The Regulations are applicable to MOD although there is provision for SofS to exempt on a case-by-case basis projects serving national defence purposes. In the unlikely event DNSR would regulate by application of equivalent provisions.

RELEVANT LEGISLATION – VISITING FORCES

33. There are a number of pieces of legislation that govern the use of UK berths by NPW of other nations, including:

a. Visiting Forces Act 1952. Defines Visiting Forces and acknowledges customary International Law. In essence Visiting Forces are exempt from UK domestic legislation under state immunity.

b. Ionising Radiation Regulations 1999. The Secretary of State for Defence has exempted visiting forces from the provisions of IRR99 as permitted under regulation 40 (2).

c. Radiation (Emergency Preparedness and Public Information) Regulations 2001. The Secretary of State has exempted visiting forces from the provisions of REPPIR as permitted under regulation 18(2).

34. Notwithstanding statutory exemption, within UK, DNSR regulates berths and facilities that support visiting NPW as though they were occupied by a UK NPW but does not extend this to the vessel itself.

Gibraltar

35. Gibraltar is a British Overseas Territory and is subject to EU Directives etc. through the UK. Separate legislation has been enacted covering radiation protection (Ionising Radiation Regulations 2004) and Emergency Preparedness (Radiation (Emergency Preparedness and Public Information) Regulations 2004). The provisions are very similar to the corresponding UK legislation described above but with certain key differences. The legislation is applicable to MOD. Regulation is by the Government of Gibraltar Competent Authority, identified as the Minister with responsibility for the environment in the case of Gibraltar REPPIR.

ANNEX B TO CHAPTER 2

MOD AUTHORISATION CONDITIONS

CONTENTS

Note: The above mirror closely NII Licence Conditions (LC). For interpretation of some Authorisation Conditions (AC) and guidance on their application to specific defence roles, please refer to Chapter 4, Annex A.

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1 INTERPRETATION

(1) In the Conditions set out herein, unless the context otherwise requires, the following expressions have the meanings hereby respectively assigned to them, that is to say –

"an Authorised site' is a defined site within which nuclear activities are controlled by an Authorisee in compliance with Authorisation Conditions.

"commissioning" means the process during which plant components and systems, having been constructed or modified, are made operational and verified to be in accordance with design assumptions and to have met the appropriate safety criteria;

'DNSR' means the Defence Nuclear Safety Regulator;

"excepted matter" has the meaning assigned thereto in the Nuclear Installations Act 1965 (as amended) and the Nuclear Installations (Excepted Matter) Regulations 1978 made thereunder;

"experiment" means any test or non-routine activity other than an activity carried out pursuant to Conditions 21 and 28;

"installation" means "nuclear installation" and has the meaning assigned thereto in the Nuclear Installations Act 1965 (as amended);

"modification" means any alteration to buildings, plants, operations, processes or safety cases and includes any replacement, refurbishment or repairs to existing buildings, plants or processes and alterations to the design of plants during the period of construction;

"nuclear matter" and "relevant site" each has the meaning assigned thereto in the Nuclear Installations Act 1965 (as amended);

"nuclear safety committee" means any nuclear safety committee established pursuant to Condition 13 herein;

"operations" includes maintenance, examination, testing and operation of the plant and the treatment, processing, keeping, storing, accumulating or carriage of any radioactive material or radioactive waste and "operating" and "operational" shall be construed accordingly;

"radioactive material" and "radioactive waste" each has the meaning assigned thereto in the Radioactive Substances Act 1993 and the Environmental Permitting (England and Wales) Regulations 2010, as appropriate;

"safety" refers to the safety of persons whether on or off the site;

"safety case" means the document or documents produced by the Authorisee in accordance with Condition 14 herein.

"the Authorisee" is the post holder Authorised by the Chairman Defence Nuclear Environment and Safety Board to operate in compliance with the Authorisation Conditions and Further Authorisation Conditions.

(2) In these Conditions except where the context otherwise requires –

(a) any reference to the singular shall include the plural and vice versa and any reference to the masculine shall include the feminine;

(b) any reference to any arrangement, agreement, approval, consent, direction, specification, notification or any formal communication between DNSR and the Authorisee (and vice versa) shall be deemed to be a reference to a written document;

(c) any reference to a numbered Condition is a reference to the Condition so numbered herein.

(3) Where in these Conditions DNSR requires any matter to be approved or to be carried out only with its consent or to be carried out as it directs DNSR may –

(a) from time to time modify, revise or withdraw either wholly or in part any such approval, direction or consent;

(b) approve either wholly or in part any modification or revision or any proposed modification or revision to any matter for the time being approved.

The purpose of this Condition is to ensure there is no ambiguity in the use of certain specified terms which are found in the text of the Conditions. It also contains important powers for DNSR to modify, revise or withdraw approvals etc. and to approve modifications to any matter currently approved. Where appropriate reference is made back to the relevant statutory Acts of Parliament.

2 MARKING OF THE SITE BOUNDARY

(1) The Authorisee shall make and implement adequate arrangements to prevent unauthorised persons from entering the site, or, if so directed by DNSR, from entering such part or parts thereof as DNSR may specify.

(2) The Authorisee shall submit to DNSR for approval such part or parts of the aforesaid arrangements as DNSR may specify.

(3) The Authorisee shall ensure that once approved no alteration or amendment is made to the approved arrangements unless DNSR has approved such alteration or amendment.

(4) The Authorisee shall mark the boundaries of the site by fences or other appropriate means and any such fences or other means used for this purpose shall be properly maintained.

(5) The Authorisee shall, if so directed by DNSR, erect appropriate fences on the site in such positions as DNSR may specify and shall ensure that all such fences are properly maintained.

The purpose of this Condition is to ensure the Authorisee takes the necessary steps to prevent unauthorised access to those parts of the Authorised site that DNSR specifies in order to prevent unauthorised persons entering the site and injuring themselves or damaging safety related plant or equipment.

3 RESTRICTION ON DEALING WITH THE SITE

The Authorisee shall not convey, assign, transfer, let or part with possession of the site or any part thereof or grant any Authorisation in relation thereto without the consent of DNSR.

The purpose of this Condition is to ensure that the Authorisee does not let, convey, assign or transfer any part of the nuclear Authorised site to a third party without seeking the permission of DNSR. This is to ensure that the Authorisee does not change the character of the activities that are Authorised and to prevent activities being carried out on the site which could put nuclear operations at risk. Also it is essential that nothing confuses the absolute responsibility of the Authorisee in respect of safety on the whole Authorised site. The Authorisee should be able to demonstrate that there are organisational procedures to prevent individuals within the company from conveying, assigning, transferring, feuing or granting any Authorisations in relation to the site or parts of the site without first obtaining the consent of DNSR.

4 RESTRICTIONS ON NUCLEAR MATTER ON THE SITE

(1) The Authorisee shall ensure that no nuclear matter is brought onto the site except in accordance with adequate arrangements made by the Authorisee for this purpose.

(2) The Authorisee shall ensure that no nuclear matter is stored on the site except in accordance with adequate arrangements made by the Authorisee for this purpose.

(3) The Authorisee shall submit to DNSR for approval such part or parts of the aforesaid arrangements as DNSR may specify.

(4) The Authorisee shall ensure that once approved no alteration or amendment is made to the approved arrangements unless DNSR has approved such alteration or amendment.

(5) For new installations, if DNSR so specifies, the Authorisee shall ensure that no nuclear matter intended for use in connection with the new installation is brought onto the site for the first time without the consent of DNSR.

The purpose of this Condition is to ensure that the Authorisee has adequate arrangements to control the introduction and storage of nuclear matter on the Authorised site to ensure safety. It also provides DNSR with powers to specify that certain types of nuclear matter cannot be brought onto the site without the consent of DNSR. This enables DNSR to intervene to ensure that, for specific activities, it can assess the adequacy of the Authorisee's arrangements before nuclear matter is brought onto the site. (Nuclear matter being nuclear fuel, radioactive waste, etc. as defined by the NI Act).

5 CONSIGNMENT OF NUCLEAR MATTER

(1) The Authorisee shall not consign nuclear matter (other than excepted matter and radioactive waste) to any place in the United Kingdom other than a relevant site except with the consent of DNSR.

(2) The Authorisee shall keep a record of all nuclear matter (including excepted matter and radioactive waste) consigned from the site and such record shall contain particulars of the amount, type and form of such nuclear matter, the manner in which it was packed, the name and address of the person to whom it was consigned and the date when it left the site.

(3) The Authorisee shall ensure that the aforesaid record is preserved for 30 years from the date of dispatch or such other period as DNSR may approve except in the case of any consignment or part thereof subsequently stolen, lost, jettisoned or abandoned, in which case the record shall be preserved for a period of 50 years from the date of such theft, loss, jettisoning or abandoning.

The purpose of this Condition is to ensure that the transfer of nuclear matter, other than excepted matter and radioactive waste, to sites in the UK other than relevant sites:

(a) is carried out only with the consent of DNSR; and that

(b) the Authorisee has adequate records of where such nuclear matter has been sent. The Authorisee should also be able to demonstrate that there are organisational procedures to prevent individuals from inadvertently consigning such matter to non-relevant sites without first obtaining a consent from DNSR.

This Condition is aimed at ensuring not only that there is a record of where nuclear matter is sent so that DNSR can be sure that there are adequate arrangements for safely handling such material at the destination.

[Relevant sites are other Authorised sites.]

6 DOCUMENTS, RECORDS, AUTHORITIES AND CERTIFICATES

(1) The Authorisee shall make adequate records to demonstrate compliance with any of the Conditions attached to this Authorisation.

(2) Without prejudice to any other requirements of the Conditions attached to this Authorisation the Authorisee shall make and implement adequate arrangements to ensure that every document required, every record made, every authority, consent or approval granted and every direction or certificate issued in pursuance of the Conditions associated with this Authorisation is preserved for 30 years or such other periods as DNSR may approve.

(3) The Authorisee shall submit to DNSR for approval such part or parts of the aforesaid arrangements as DNSR may specify.

(4) The Authorisee shall ensure that once approved no alteration or amendment is made to the approved arrangements unless DNSR has approved such alteration or amendment.

(5) The Authorisee shall furnish to DNSR copies of any such document, record, authority or certificate as DNSR may specify.

The purpose of this Condition is to ensure that adequate records are held by the Authorisee for a suitable period to ensure that the safety case for operation is available at all times, that design and construction information is available for decommissioning, that operational records are available to assist investigations in the event of an accident or incident and operational records are available for the statutory number of years after the cessation of operations for the purpose of assisting any claims of damage to health as a result of exposure to ionising radiation.

7 INCIDENTS ON THE SITE

(1) The Authorisee shall make and implement adequate arrangements for the notification, recording, investigation and reporting of such incidents occurring on the site:

(a) as is required by any other Condition attached to this authority;

(b) as DNSR may specify; and

(c) as the Authorisee considers necessary.

(2) The Authorisee shall submit to DNSR for approval such part or parts of the aforesaid arrangements as DNSR may specify.

(3) The Authorisee shall ensure that once approved no alteration or amendment is made to the approved arrangements unless DNSR has approved such alteration or amendment.

The purpose of this Condition is to ensure that the Authorisee has adequate arrangements to deal with incidents that may occur on the nuclear Authorised site. It is essential that the Authorisee keeps a record of all such incidents, notifies DNSR when appropriate, investigates the cause of each incident and produces a report of the investigation to ensure that lessons are learnt.

8 WARNING NOTICES

The Authorisee shall ensure that suitable and sufficient notices are kept on the site for the purposes of informing persons thereon of each of the following matters, that is to say:

(a) the meaning of any warning signal used on the site;

(b) the location of any exit from any place on the site, being an exit provided for use in the event of an emergency;

(c) the measures to be taken by such persons in the event of fire breaking out on the site or in the event of any other emergency;

and that such notices are kept posted in such positions and in such characters as to be conveniently read by those persons.

The purpose of this Condition is to ensure the safety of all people on the site so that they can respond appropriately and without delay to an emergency situation. The Authorisee therefore needs to ensure that all warning notices are in appropriate places to advise people on what to do in that area in the event of a fire or any other emergency.

9 INSTRUCTIONS TO PERSONS ON THE SITE

The Authorisee shall ensure that every person authorised to be on the site receives adequate instructions (to the extent that this is necessary having regard to the circumstances of that person being on the site) as regards the risks and hazards associated with the plant and its operation, the precautions to be observed in connection therewith and the action to be taken in the event of an accident or emergency on the site.

The purpose of this Condition is to ensure that the Authorisee provides adequate instructions to all persons allowed on the site so that they are aware of the risks and hazards associated with the plant and its operations, the precautions that must be taken to minimise the risks to themselves and others and the actions to be taken in the event of an accident or emergency.

10 TRAINING

(1) The Authorisee shall make and implement adequate arrangements for suitable training of all those on site who have responsibility for any operations which may affect safety.

(2) The Authorisee shall submit to DNSR for approval such part or parts of the aforesaid arrangements as DNSR may specify.

(3) The Authorisee shall ensure that once approved no alteration or amendment is made to the approved arrangements unless DNSR has approved such alteration or amendment.

The purpose of this Condition is to ensure that all people who carry out activities during design, construction, manufacture, commissioning, operation or decommissioning of a nuclear installation which may affect safety are adequately trained for that purpose. The Authorisee is expected to ensure that the necessary training requirements are identified for each activity, that individuals who carry out these activities can demonstrate that they have received such training and that records are kept to demonstrate that individuals have been trained. This Condition is in addition to the general duty under the Health and Safety at Work Act (HSWA) s.2(2)(c) and the Ionising Radiation Regulations 1999, reg 14.

11 EMERGENCY ARRANGEMENTS

(1) Without prejudice to any other requirements of the Conditions attached to this Authorisation the Authorisee shall make and implement adequate arrangements for dealing with any accident or emergency arising on the site and their effects.

(2) The Authorisee shall submit to DNSR for approval such part or parts of the aforesaid arrangements as DNSR may specify.

(3) The Authorisee shall ensure that once approved no alteration or amendment is made to the approved arrangements unless DNSR has approved such alteration or amendment.

(4) Where any such arrangements require the assistance or co-operation of, or render it necessary or expedient to make use of the services of any person, local authority or other body the Authorisee shall ensure that each person, local authority or other body is consulted in the making of such arrangements.

(5) The Authorisee shall ensure that such arrangements are rehearsed at such intervals and at such times and to such extent as DNSR may specify or, where DNSR has not so specified, as the Authorisee considers necessary.

(6) The Authorisee shall ensure that such arrangements include procedures to ensure that all persons in his employ who have duties in connection with such arrangements are properly instructed in the performance of the same, in the use of the equipment required and the precautions to be observed in connection therewith.

Even though nuclear installations are designed and operated to high safety standards it is recognised that it is prudent to plan for accidents. The purpose of this Condition is to ensure that the Authorisee has adequate arrangements in place to respond effectively to any incident or accident. The Authorisee is required to have arrangements in place to cover a wide range of events from minor incidents which are restricted to on-site locations to large incidents or emergencies which can result in a significant release of radioactive material to the environment. The Condition gives DNSR the powers to ensure that the Authorisee's emergency arrangements are exercised. DNSR uses its powers to ensure the Authorisee's exercises demonstrate adequate performance to protect both workers and the public.

12 DULY AUTHORISED AND OTHER SUITABLY QUALIFIED AND EXPERIENCED PERSONS

(1) The Authorisee shall make and implement adequate arrangements to ensure that only suitably qualified and experienced persons perform any duties which may affect the safety of operations on the site or any duties assigned by or under these Conditions or any arrangements required under these Conditions.

(2) The aforesaid arrangements shall also provide for the appointment, in appropriate cases, of Duly Authorised Persons to control and supervise operations which may affect plant safety.

(3) The Authorisee shall submit to DNSR for approval such part or parts of the aforesaid arrangements as DNSR may specify.

(4) The Authorisee shall ensure that once approved no alteration or amendment is made to the approved arrangements unless DNSR has approved such alteration or amendment.

(5) The Authorisee shall ensure that no person continues to act as a Duly Authorised Person, if, in the opinion of DNSR, he is unfit to act in that capacity and DNSR has notified the Authorisee to that effect.

The purpose of this Condition is to ensure that only suitably qualified and experienced persons perform duties which may affect safety. The Authorisee is required to ensure that all activities that can affect safety are identified and the experience and qualification requirements for people to carry out these activities are defined. The Authorisee must ensure that the qualifications and experience of people match those required for the job. The Condition gives DNSR the power to remove a person from safety related work if he or she is not suitably qualified or experienced for the job.

13 NUCLEAR SAFETY COMMITTEE

(1) The Authorisee shall establish a nuclear safety committee or committees to which it shall refer for consideration and advice on the following:

(a) all matters required by or under these Conditions to be referred to a nuclear safety committee;

(b) such arrangements or documents required by these Conditions as DNSR may specify and any subsequent alteration or amendment to such specified arrangements or documents;

(c) any matter on the site affecting safety on or off the site which DNSR may specify; and

(d) any other matter which the Authorisee considers should be referred to a nuclear safety committee.

(2) The Authorisee shall submit to DNSR for approval the terms of reference of any such nuclear safety committee and shall not form a nuclear safety committee without the aforesaid approval.

(3) The Authorisee shall ensure that once approved no alteration or amendment is made to the terms of reference of such a nuclear safety committee unless DNSR has approved such alteration or amendment.

(4) The Authorisee shall appoint at least seven persons as members of a nuclear safety committee including one or more members who are independent of the Authorisee's operations and shall ensure that at least five members are present at each meeting including at least one independent member.

(5) The Authorisee shall furnish to DNSR the name, qualifications, particulars of current posts held and the previous relevant experience of every person whom he appoints as a member of any nuclear safety committee forthwith after making such appointment. Notwithstanding such appointment the Authorisee shall ensure that a person so appointed does not remain a member of any nuclear safety committee if DNSR notifies the Authorisee that it does not agree to the appointment.

(6) The Authorisee shall ensure that the qualifications, current posts held and previous relevant experience of the members of any such committee, taken as a whole, are such as to enable that committee to consider any matter likely to be referred to it and to advise the Authorisee authoritatively and, so far as practicable, independently.

(7) The Authorisee shall ensure that a nuclear safety committee shall consider or advise only during the course of a properly constituted meeting of that committee.

(8) The Authorisee shall send to DNSR within 14 days of any meeting of any such committee a full and accurate record of all matters discussed at that meeting including in particular any advice given to the Authorisee.

(9) The Authorisee shall furnish to DNSR copies of any document or any category of documents considered at any such meetings that DNSR may specify.

(10) The Authorisee shall notify DNSR as soon as practicable if it is intended to reject, in whole or in part, any advice given by any such committee together with the reasons for such rejection.

(11) Notwithstanding paragraph (7) of this Condition, where it becomes necessary to obtain consideration of, or advice on, urgent safety proposals (which would normally be considered by a nuclear safety committee) the Authorisee may do so in accordance with appropriate arrangements made for the purpose by the Authorisee, considered by the relevant nuclear safety committee and approved by DNSR.

(12) The Authorisee shall ensure that once approved no alteration or amendment is made to the approved arrangements described in paragraph (11) of this Condition unless the relevant nuclear safety committee has considered and DNSR has approved such alteration or amendment.

The purpose of this Condition is to ensure that the Authorisee sets up a senior level committee to consider and advise the Authorisee on matters which affect the safe design, construction, commissioning, operation and decommissioning of any installations on its Authorised site and any other matter relevant to safety. The committee must have members who are adequately qualified to perform this task including members who are independent of the Authorisee. The Condition gives DNSR the power to veto the appointment of or continued presence of any member. The committee is intended to act as a check on the Authorisee's decision making process to ensure that safety considerations are given due weight. However, the committee is intended to be purely advisory and must not be considered to have an executive function. Where the Authorisee rejects the advice of the committee the Condition requires the Authorisee to notify DNSR; in this way DNSR can investigate the justification of the Authorisee's safety related actions.

14 SAFETY DOCUMENTATION

(1) Without prejudice to any other requirements of the Conditions attached to this Authorisation the Authorisee shall make and implement adequate arrangements for the production and assessment of safety cases consisting of documentation to justify safety during the design, construction, manufacture, commissioning, operation and decommissioning phases of the installation.

(2) The Authorisee shall submit to DNSR for approval such part or parts of the aforesaid arrangements as DNSR may specify.

(3) The Authorisee shall ensure that once approved no alteration or amendment is made to the approved arrangements unless DNSR has approved such alteration or amendment.

(4) The Authorisee shall furnish to DNSR copies of any such documentation or any such category of documentation as DNSR may specify.

The purpose of this Condition is to ensure that the Authorisee sets up arrangements for the preparation and assessment of the safety related documentation used to justify safety during design, construction, manufacture, commissioning, operation and decommissioning. The arrangements for the assessment of safety related documentation are intended to ensure an independent review of the quality and accuracy of the Authorisee's safety related decisions and activities to ensure they have been adequately justified.

15 PERIODIC REVIEW

(1) The Authorisee shall make and implement adequate arrangements for the periodic and systematic review and reassessment of safety cases.

(2) The Authorisee shall submit to DNSR for approval such part or parts of the aforesaid arrangements as DNSR may specify.

(3) The Authorisee shall ensure that once approved no alteration or amendment is made to the approved arrangements unless DNSR has approved such alteration or amendment.

(4) The Authorisee shall, if so directed by DNSR, carry out a review and reassessment of safety and submit a report of such review and reassessment to DNSR at such intervals, within such a period and for such of the matters or operations as may be specified in the direction.

The purpose of this Condition is to ensure that the Authorisee periodically stands back and reviews the safety case for his installations. The objective of the review is to compare the safety case against modern standards to see if there are reasonably practicable improvements that could be made, to demonstrate that the plant is safe to continue to operate for the next defined period (usually 10 years) and to identify any life limiting factors.

16 SITE PLANS, DESIGNS AND SPECIFICATIONS

(1) The Authorisee shall submit to DNSR an adequate plan of the site (hereinafter referred to as the site plan) showing the location of the boundary of the Authorised site and every building or plant on the site which might affect safety.

(2) The Authorisee shall submit to DNSR with the site plan a schedule giving particulars of each such building and plant thereon and the operations associated therewith.

(3) If any changes are made on the site which affect the said buildings, plant or operations, the Authorisee shall forthwith send an amended site plan and schedule to DNSR incorporating these changes.

(4) The Authorisee shall furnish to DNSR such plans, designs, specifications or other information relating to such buildings, plants and operations as DNSR may specify.

The purpose of this Condition is to ensure that the Authorisee indicates, using a site plan, all buildings and plant or areas which might affect safety and provides a schedule updated as necessary giving details of each building and its associated operations. This is to ensure that not only does the Authorisee understand the content and function of all safety related buildings on his site, but it also enables DNSR to inspect the adequacy of activities and storage conditions across the site.

17 QUALITY ASSURANCE

(1) Without prejudice to any other requirements of the Conditions attached to this Authorisation the Authorisee shall make and implement adequate quality assurance arrangements in respect of all matters which may affect safety.

(2) The Authorisee shall submit to DNSR for approval such part or parts of the aforesaid arrangements as DNSR may specify.

(3) The Authorisee shall ensure that once approved no alteration or amendment is made to the approved arrangements unless DNSR has approved such alteration or amendment.

(4) The Authorisee shall furnish to DNSR such copies of records or documents made in connection with the aforesaid arrangements as DNSR may specify.

The purpose of this Condition is to ensure that the Authorisee applies quality assurance to all activities associated with the design, construction, manufacture, commissioning, operation and decommissioning of the installations on the site including the preparation and review of safety documentation. The Authorisee's arrangements are expected to include the provision of a QA department to oversee the specification, audit and review of QA arrangements.

18 RADIOLOGICAL PROTECTION

(1) The Authorisee shall make and implement adequate arrangements for the assessment of the average effective dose equivalent (including any committed effective dose equivalent) to such class or classes of persons as may be specified in the aforesaid arrangements and the Authorisee shall forthwith notify DNSR if the average effective dose equivalent to such class or classes of persons exceeds such level as DNSR may specify.

(2) The Authorisee shall submit to DNSR for approval such part or parts of the aforesaid arrangements as DNSR may specify.

(3) The Authorisee shall ensure that once approved no alteration or amendment is made to the approved arrangements unless DNSR has approved such alteration or amendment.

[NB Following the introduction of the Ionising Radiations Regulations 1999 the measure 'effective dose equivalent' has been superseded by 'effective dose'.]

The purpose of this Condition is to ensure that the Authorisee makes and implements adequate arrangements to assess the average effective dose for such class or classes of persons as the Authorisee may specify. It also requires the Authorisee to notify DNSR if the dose exceeds such level as DNSR may specify. This is complementary to the Ionising Radiations Regulations 1999, reg 25.

19 CONSTRUCTION OR INSTALLATION OF NEW PLANT

(1) Where the Authorisee proposes to construct or install any new plant which may affect safety the Authorisee shall make and implement adequate arrangements to control the construction or installation.

(2) The Authorisee shall submit to DNSR for approval such part or parts of the aforesaid arrangements as DNSR may specify.

(3) The Authorisee shall ensure that once approved no alteration or amendment is made to the approved arrangements unless DNSR has approved such alteration or amendment.

(4) The aforesaid arrangements shall where appropriate divide the construction or installation into stages. Where DNSR so specifies the Authorisee shall not commence nor thereafter proceed from one stage to the next of the construction or installation without the consent of DNSR. The arrangements shall include a requirement for the provision of adequate documentation to justify the safety of the proposed construction or installation and shall where appropriate provide for the submission of this documentation to DNSR.

(5) The Authorisee shall, if so directed by DNSR, halt the construction or installation of a plant and the Authorisee shall not recommence such construction or installation without the consent of DNSR.

The purpose of this Condition is to ensure that the Authorisee provides and implements adequate control over the construction and installation of new plant which may affect safety. The objective is for the Authorisee to plan the design and construction of any safety related plant. This is to ensure that before construction takes place a pre-construction safety report is produced to demonstrate the safety of the installation. The Condition gives the power to DNSR to prevent the commencement of construction until it is satisfied with the safety case and/or put hold points during the construction process to ensure the installation is being constructed in accordance with the stated intent. DNSR's control can be either through using the direct powers in the Condition or through secondary powers built into the Authorisee's arrangements.

20 MODIFICATION TO DESIGN OF PLANT UNDER CONSTRUCTION

(1) The Authorisee shall ensure that no modification to the design which may affect safety is made to any plant during the period of construction except in accordance with adequate arrangements made and implemented by the Authorisee for that purpose.

(2) The Authorisee shall submit to DNSR for approval such part or parts of the aforesaid arrangements as DNSR may specify.

(3) The Authorisee shall ensure that once approved no alteration or amendment is made to the approved arrangements unless DNSR has approved such alteration or amendment.

(4) The aforesaid arrangements shall provide for the classification of modifications according to their safety significance. The arrangements shall where appropriate divide modifications into stages. Where DNSR so specifies the Authorisee shall not commence nor thereafter proceed from one stage to the next of the modification without the consent of DNSR. The arrangements shall include a requirement for the provision of adequate documentation to justify the safety of the proposed modification and shall where appropriate provide for the submission of this documentation to DNSR.

The purpose of this Condition is to ensure that the Authorisee cannot change the design of an installation once DNSR has given its consent or agreement to construction without going through a proper design change process which assesses the modification in relation to its safety significance and defines the degree of safety justification required. The Condition gives DNSR the power to intervene and stop a modification if it believes there is inadequate safety justification.

21 COMMISSIONING

(1) The Authorisee shall make and implement adequate arrangements for the commissioning of any plant or process which may affect safety.

(2) The Authorisee shall submit to DNSR for approval such part or parts of the aforesaid arrangements as DNSR may specify.

(3) The Authorisee shall ensure that once approved no alteration or amendment is made to the approved arrangements unless DNSR has approved such alteration or amendment.

(4) The aforesaid arrangements shall where appropriate divide the commissioning into stages. Where DNSR so specifies the Authorisee shall not commence nor thereafter proceed from one stage to the next of the commissioning without the consent of DNSR. The arrangements shall include a requirement for the provision of adequate documentation to justify the safety of the proposed commissioning and shall where appropriate provide for the submission of this documentation to DNSR.

(5) The Authorisee shall appoint a suitably qualified person or persons for the purpose of controlling, witnessing, recording and assessing the results of any tests carried out in accordance with the requirements of the aforesaid commissioning arrangements.

(6) The Authorisee shall ensure that full and accurate records are kept of the results of every test and operation carried out in pursuance of this Condition.

(7) The Authorisee shall ensure that no plant or process which may affect safety is operated (except for the purpose of commissioning) until:

(a) the appropriate stage of commissioning has been completed and a report of such commissioning, including any results and assessments of any tests as may have been required under the commissioning arrangements referred to in paragraph (1) of this Condition, has been considered in accordance with those arrangements; and

(b) a safety case or cases as appropriate, which shall include the safety implications of modifications made since the commencement of construction of the plant and those arising from the commissioning of the plant, and any matters whereby the operation of the plant may be affected by such modifications or commissioning, has been considered in accordance with the arrangements referred to in paragraph (1) of this Condition.

(8) The Authorisee shall, if so notified by DNSR, submit to DNSR the safety case for the aforesaid plant or processes prepared in pursuance of paragraph (7) of this Condition and shall not commence operation of the relevant plant or process without the consent of DNSR.

When a new plant is constructed or when an existing plant is modified, it is important to commission the various systems to demonstrate they function as intended before the plant goes into routine operation. The purpose of this Condition therefore, is to ensure that the Authorisee has adequate arrangements for the commissioning of a new or modified plant or process which may affect safety.

The Condition gives DNSR powers to control various stages of commissioning. This is to ensure that the Authorisee demonstrates that the plant or modification has been completed according to the design intent, and the necessary safety implications associated with commissioning have been considered and assessed and shown to be acceptable. Usually a hold point is put at the start of inactive commissioning, i.e. testing systems before the introduction of radioactive materials, and at the start of active commissioning. This latter hold point is to ensure that the Authorisee has demonstrated

that the plant is functioning and safe to allow the introduction of radioactive materials. Finally the Condition gives DNSR the power to control the commencement of routine operations by requiring the Authorisee to produce a pre-operational safety report and seek DNSR's consent to start operations.

22 MODIFICATION OR EXPERIMENT ON EXISTING PLANT

(1) The Authorisee shall make and implement adequate arrangements to control any modification or experiment carried out on any part of the existing plant or processes which may affect safety.

(2) The Authorisee shall submit to DNSR for approval such part or parts of the aforesaid arrangements as DNSR may specify.

(3) The Authorisee shall ensure that once approved no alteration or amendment is made to the approved arrangements unless DNSR has approved such alteration or amendment.

(4) The aforesaid arrangements shall provide for the classification of modifications or experiments according to their safety significance. The arrangements shall where appropriate divide the modification or experiment into stages. Where DNSR so specifies the Authorisee shall not commence nor thereafter proceed from one stage to the next of the modification or experiment without the consent of DNSR. The arrangements shall include a requirement for the provision of adequate documentation to justify the safety of the proposed modification or experiment and shall where appropriate provide for the submission of the documentation to DNSR.

(5) The Authorisee shall, if so directed by DNSR, halt the modification or experiment and the Authorisee shall not recommence such modification or experiment without the consent of DNSR.

Many accidents across all industries have been caused by modifications to operating plant or changes to processes that have not been adequately assessed. The purpose of this Condition is to ensure that the Authorisee has adequate arrangements to control all modifications to its installations on an Authorised site that may affect safety. The Condition also gives DNSR the power to control such modifications to ensure that they cannot commence until the Authorisee has adequately demonstrated the safety of the proposal. These powers can be direct or indirect via the Authorisee's own voluntary hold points. The Condition also gives DNSR the power to halt a modification or intervene at any stage in the interest of safety.

23 OPERATING RULES

(1) The Authorisee shall, in respect of any operation that may affect safety, produce an adequate safety case to demonstrate the safety of that operation and to identify the conditions and limits necessary in the interests of safety. Such conditions and limits shall hereinafter be referred to as operating rules.

(2) The Authorisee, where DNSR so specifies, shall refer the operating rules arising from paragraph (1) of this Condition to the relevant nuclear safety committee for consideration.

(3) The Authorisee shall ensure that operations are at all times controlled and carried out in compliance with such operating rules. Where the person appointed by the Authorisee for the purposes of Condition 26 identifies any matter indicating that the safety of any operation or the safe condition of any plant may be affected that person shall bring that matter to the attention of the Authorisee forthwith who shall take appropriate action and ensure the matter is then notified, recorded, investigated and reported in accordance with arrangements made under Condition 7.

(4) The Authorisee shall submit to DNSR for approval such of the aforesaid operating rules as DNSR may specify.

(5) The Authorisee shall ensure that once approved no alteration or amendment is made to any approved operating rule unless DNSR has approved such alteration or amendment.

(6) Notwithstanding the preceding provisions of this Condition DNSR may, if in its opinion circumstances render it necessary at any time, agree to the temporary suspension of any approved operating rule.

The safe operation of a nuclear installation results from many factors including the design of the plant, its behaviour under fault or accident conditions and the functions of the operators. It is therefore essential that the totality of these often complex interactions are fully understood. The method of doing this is to require the operator to produce a safety case to justify the operation of the installation. The purpose of this Condition is to ensure that the Authorisee produces such a safety case and that it identifies all the necessary conditions and limits that ensure that the plant is kept within parameters which ensure the safety of the plant during normal operation and fault and accident conditions.

24 OPERATING INSTRUCTIONS

(1) The Authorisee shall ensure that all operations which may affect safety are carried out in accordance with written instructions hereinafter referred to as operating instructions.

(2) The Authorisee shall ensure that such operating instructions include any instructions necessary in the interests of safety and any instructions necessary to ensure that any operating rules are implemented.

(3) The Authorisee shall, if so specified by DNSR, furnish to DNSR copies of such operating instructions and when any alteration is made to the operating instructions furnished to DNSR, the Authorisee shall ensure that such alteration is furnished to DNSR within such time as may be specified.

(4) The Authorisee shall make and implement adequate arrangements for the preparation, review and amendment of such operating instructions.

(5) The Authorisee shall submit to DNSR for approval such part or parts of the aforesaid arrangements as DNSR may specify.

(6) The Authorisee shall ensure that once approved no alteration or amendment is made to the approved arrangements unless DNSR has approved such alteration or amendment.

The safety of a nuclear installation is influenced by the actions of people who control, maintain or service the plant. It is important given the often complex nature of the safety case for all actions carried out by people to be done in accordance with procedures derived from the safety case. It is also important that actions are not carried out on an ad hoc basis without written evidence. Therefore the purpose of this Condition is to ensure that all operations as defined in Condition 1 which may affect safety, including any instructions to implement Operating Rules, are undertaken in accordance with written operating instructions.

25 OPERATIONAL RECORDS

(1) The Authorisee shall ensure that adequate records are made of the operation, inspection and maintenance of any plant which may affect safety.

(2) The aforesaid records shall include records of the amount and location of all radioactive material, including nuclear fuel and radioactive waste, used, processed, stored or accumulated upon the site at any time.

(3) The Authorisee shall record such additional particulars as DNSR may specify.

(4) The Authorisee shall furnish to DNSR such copies of extracts from such records at such times as DNSR may specify.

The purpose of this Condition is to ensure that adequate records are kept regarding operation, inspection and maintenance of any safety-related plant.

26 CONTROL AND SUPERVISION OF OPERATIONS

The Authorisee shall ensure that no operations are carried out which may affect safety except under the control and supervision of suitably qualified and experienced persons appointed for that purpose by the Authorisee.

The purpose of this Condition is to ensure that safety-related operations are carried out only under the control and supervision of suitably qualified and experienced personnel.

27 SAFETY MECHANISMS, DEVICES AND CIRCUITS

The Authorisee shall ensure that a plant is not operated, inspected, maintained or tested unless suitable and sufficient safety mechanisms, devices and circuits are properly connected and in good working order.

A nuclear installation is designed to have multiple safety systems to provide defence in depth against maloperation, faults or accidents. It is important that at all times there are sufficient of these systems in good working order because by definition they must be able to function on demand and such instances are unpredictable. The purpose of this Condition is therefore, to ensure that there are always sufficient and operable safety mechanisms, devices and circuits to provide the necessary defence in depth.

28 EXAMINATION, INSPECTION, MAINTENANCE AND TESTING

(1) The Authorisee shall make and implement adequate arrangements for the regular and systematic examination, inspection, maintenance and testing of all plant which may affect safety.

(2) The Authorisee shall submit to DNSR for approval such part or parts of the aforesaid arrangements as DNSR may specify.

(3) The Authorisee shall ensure that once approved no alteration or amendment is made to the approved arrangements unless DNSR has approved such alteration or amendment.

(4) The aforesaid arrangements shall provide for the preparation of a plant maintenance schedule for each plant. The Authorisee shall submit to DNSR for its approval such part or parts of any plant maintenance schedule as DNSR may specify.

(5) The Authorisee shall ensure that once approved no alteration or amendment is made to any approved part of any plant maintenance schedule unless DNSR has approved such alteration or amendment.

(6) The Authorisee shall ensure in the interests of safety that every examination, inspection, maintenance and test of a plant or any part thereof is carried out:

(a) by suitably qualified and experienced persons;

(b) in accordance with schemes laid down in writing;

(c) within the intervals specified in the plant maintenance schedule; and

(d) under the control and supervision of a suitably qualified and experienced person appointed by the Authorisee for that purpose.

(7) Notwithstanding the above paragraphs of this Condition DNSR may agree to an extension of any interval specified in the plant maintenance schedule.

(8) When any examination, inspection, maintenance or test of any part of a plant reveals any matter indicating that the safe operation or safe condition of that plant may be affected, the suitably qualified and experienced person appointed to control or supervise any such examination, inspection, maintenance or test shall bring it to the attention of the Authorisee forthwith who shall take appropriate action and ensure the matter is then notified, recorded, investigated and reported in accordance with arrangements made under Condition 7.

(9) The Authorisee shall ensure that a full and accurate report of every examination, inspection, maintenance or test of any part of a plant indicating the date thereof and signed by the suitably qualified and experienced person appointed by the Authorisee to control and supervise such examination, inspection, maintenance or test is made to the Authorisee forthwith upon completion of the said examination, inspection, maintenance or test.

A nuclear installation, like any other complex machine, requires maintenance and if such maintenance is not carried out properly it has the potential to undermine the safety case and put the safety of the plant at risk. The purpose of this Condition therefore, is to ensure that all plant that may affect safety is scheduled to receive regular and systematic examination, inspection, maintenance and testing, by and under the control of suitably qualified personnel and that records of maintenance activities are kept.

29 DUTY TO CARRY OUT TESTS, INSPECTIONS AND EXAMINATIONS

(1) The Authorisee shall carry out such tests, inspections and examinations in connection with any plant (in addition to any carried out under Condition 28 above) as DNSR may, after consultation with the Authorisee, specify.

(2) The Authorisee shall furnish the results of any such tests, inspections and examinations carried out in accordance with paragraph (1) of this Condition to DNSR as soon as practicable.

The purpose of this Condition is to enable DNSR, following consultation, to require the Authorisee to perform any tests, inspections and examinations which it may specify, and to be provided with the results.

30 PERIODIC SHUTDOWN

(1) When necessary for the purpose of enabling any examination, inspection, maintenance or testing of any plant or process to take place, the Authorisee shall ensure that any such plant or process shall be shut down in accordance with the requirements of its plant maintenance schedule referred to in Condition 28.

(2) Notwithstanding paragraph (1) of this Condition DNSR may agree to an extension of a plant's operating period.

(3) The Authorisee shall, if so specified by DNSR, ensure that when a plant or process is shut down in pursuance of paragraph (1) of this Condition it shall not be started up again thereafter without the consent of DNSR.

It is necessary for an operating nuclear installation to be shut down at regular intervals for inspection and testing of essential components. The maintenance schedule will define the required intervals. The purpose of this Condition is, therefore, to ensure that the plant is shut down in accordance with the plant maintenance schedule and these important examination and maintenance activities are carried out. The Condition also gives DNSR the power to intervene and require the Authorisee to seek DNSR's consent to restart operations following the completion of the necessary maintenance.

31 SHUTDOWN OF SPECIFIED OPERATIONS

(1) The Authorisee shall, if so directed by DNSR, shut down any plant, operation or process on the site within such period as DNSR may specify.

(2) The Authorisee shall ensure that when a plant, operation or process is shut down in pursuance of paragraph (1) of this Condition it shall not be started up again thereafter without the consent of DNSR.

If DNSR has concerns about the safety of any nuclear installation and the Authorisee is unable or unwilling to provide the necessary safety justification for continued operation, it must have the power to order the shut down of the plant or process. The purpose of this Condition is to give DNSR the power to instruct the Authorisee to shut down any plant, operation or process within a given period. Following a direction to shut down the Authorisee will require a consent from DNSR to restart operations.

32 ACCUMULATION OF RADIOACTIVE WASTE

(1) The Authorisee shall make and implement adequate arrangements for minimising so far as is reasonably practicable the rate of production and total quantity of radioactive waste accumulated on the site at any time and for recording the waste so accumulated.

(2) The Authorisee shall submit to DNSR for approval such part or parts of the aforesaid arrangements as DNSR may specify.

(3) The Authorisee shall ensure that once approved no alteration or amendment is made to the approved arrangements unless DNSR has approved such alteration or amendment.

(4) Without prejudice to paragraph (1) of this Condition the Authorisee shall ensure that radioactive waste accumulated or stored on the site complies with such limitations as to quantity, type and form as may be specified by DNSR.

(5) The Authorisee shall, if so specified by DNSR, not accumulate radioactive waste except in a place and in a manner approved by DNSR.

The purpose of this Condition is to ensure that the Authorisee has adequate arrangements to ensure that the production and accumulation of radioactive waste on the site is minimised. The Condition also gives DNSR the power to ensure that radioactive waste is stored under suitable conditions, and that adequate records are kept to enable DNSR to monitor the management of radioactive waste on nuclear Authorised sites.

33 DISPOSAL OF RADIOACTIVE WASTE

The Authorisee shall, if so directed by DNSR, ensure that radioactive waste accumulated or stored on the site is disposed of as DNSR may specify and in accordance with an authorisation granted under the Radioactive Substances Act 1993, or in accordance with a permit granted under the Environmental Permitting (England and Wales) Regulations 2010.

An Authorisee may wish to store radioactive waste on its site rather than dispose of it even when a suitable disposal facility is available. The purpose of this Condition is to give DNSR the power to direct the Authorisee to dispose of radioactive waste which is stored on the Authorised site. This is related to the powers available to the appropriate Agency under the Radioactive Substances Act 1993, s.13 or Environmental Permitting (England and Wales) Regulations 2010, Schedule 23. However neither RSA 93 nor EPR10 Schedule 23 apply to premises occupied on behalf of the Crown for naval, military or air force purposes (Section 42 or Schedule 4 respectively refer). The Secretary of State for Defence has made a policy commitment to implement parallel administrative arrangements to those required by EPR10 or RSA93. DNSR would only use this power in conjunction with the appropriate agency.

In this context "the appropriate Agency" means, in relation to England and Wales, the Environment Agency, and, in relation to Scotland, the Scottish Environment Protection Agency.

34 LEAKAGE AND ESCAPE OF RADIOACTIVE MATERIAL AND RADIOACTIVE WASTE

(1) The Authorisee shall ensure, so far as is reasonably practicable, that radioactive material and radioactive waste on the site is at all times adequately controlled or contained so that it cannot leak or otherwise escape from such control or containment.

(2) Notwithstanding paragraph (1) of this Condition the Authorisee shall ensure, so far as is reasonably practicable, that no such leak or escape of radioactive material or radioactive waste can occur without being detected, and that any such leak or escape is then notified, recorded, investigated and reported in accordance with arrangements made under Condition 7.

(3) Nothing in this Condition shall apply to discharges or releases of radioactive waste in accordance with an approved operating rule or with disposal authorisations granted under the Radioactive Substances Act 1993 or permits to dispose under Environmental Permitting (England and Wales) Regulations 2010 as appropriate.

On nuclear Authorised sites DNSR has the responsibility for regulating the management of radioactive waste. It is therefore important for DNSR to have confidence that it knows where the Authorisee is storing such wastes and its condition. The purpose of this Condition is to place a duty on the Authorisee to ensure so far as reasonably practicable that radioactive material and radioactive waste is adequately controlled or contained so as to prevent leaks or escapes, and that in the event of any fault or accident which results in a leak or escape, the radioactive material or radioactive waste can be detected, recorded and reported to DNSR.

However neither RSA nor EPR10 Schedule 23 apply to premises occupied on behalf of the Crown for naval, military or air force purposes (Section 42 and Schedule 4 refer respectively). The Secretary of State for Defence has made a policy commitment to implement parallel administrative arrangements to those required by RSA93 or EPA10.

35 DECOMMISSIONING

(1) The Authorisee shall make and implement adequate arrangements for the decommissioning of any plant or process which may affect safety.

(2) The Authorisee shall make arrangements for the production and implementation of decommissioning programmes for each plant.

(3) The Authorisee shall submit to DNSR for approval such part or parts of the aforesaid arrangements or programmes as DNSR may specify.

(4) The Authorisee shall ensure that once approved no alteration or amendment is made to the approved arrangements or programmes unless DNSR has approved such alteration or amendment.

(5) The aforesaid arrangements shall where appropriate divide the decommissioning into stages. Where DNSR so specifies the Authorisee shall not commence nor thereafter proceed from one stage to the next of the decommissioning without the consent of DNSR. The arrangements shall include a requirement for the provision of adequate documentation to justify the safety of the proposed decommissioning and shall where appropriate provide for the submission of this documentation to DNSR.

(6) The Authorisee shall, if so directed by DNSR where it appears to them to be in the interests of safety, commence decommissioning in accordance with the aforesaid arrangements and decommissioning programmes.

(7) The Authorisee shall, if so directed by DNSR, halt the decommissioning of a plant and the Authorisee shall not recommence such decommissioning without the consent of DNSR.

It is important that when a nuclear facility reaches the end of its operational life it is decommissioned in a safe and controlled manner and not left to pose a hazard for current and future generations. The purpose of this Condition is therefore to require the Authorisee to have adequate arrangements for the safe decommissioning of its facilities. It also gives DNSR the power to direct the Authorisee to commence decommissioning of any plant or facility to prevent it being left in a dangerous condition or to ensure decommissioning takes place in accordance with any national strategy. The Condition also gives DNSR the power to halt any decommissioning activity if DNSR has concerns about its safety.

36 CONTROL OF ORGANISATIONAL CHANGE

(1) The Authorisee shall make and implement adequate arrangements to control any change to its organisational structure or resources which may affect safety.

(2) The Authorisee shall submit to DNSR for approval such part or parts of the aforesaid arrangements as DNSR may specify.

(3) The Authorisee shall ensure that once approved no alteration or amendment is made to the approved arrangements unless DNSR has approved such alteration or amendment.

(4) The aforesaid arrangements shall provide for the classification of changes to the organisational structure or resources according to their safety significance. The arrangements shall include a requirement for the provision of adequate documentation to justify the safety of any proposed change and shall where appropriate provide for the submission of such documentation to DNSR.

(5) The Authorisee shall if so directed by DNSR halt the change to its organisational structure or resources and the Authorisee shall not recommence such change without the consent of DNSR.

Over recent years the nuclear industry has been undergoing increasing change due to the privatisation and subcontracting of functions formerly effected in-house (by MOD). Under these circumstances there has been and continues to be pressures for organisational change and staff reductions. Such changes can, if inadequately conceived or implemented, have a detrimental effect on safety and hence in 1999 DNSR decided to introduce a new Authorisation Condition to require Authorisees to introduce arrangements to adequately control organisational changes and resources that may affect safety. The purpose of this Condition is therefore to ensure that the Authorisee has adequate arrangements to control any change to its organisational structure or resources which could affect safety. These arrangements require the Authorisee to assess the safety implications of any proposed changes before they are carried out. For changes that could have a significant effect on safety if they were inadequately conceived or executed the Condition gives DNSR the power to require the Authorisee to submit its safety case to DNSR, and to prevent the change from taking place until DNSR is satisfied that the safety implications are understood and that there will be no lowering of safety standards. The Condition also gives DNSR the power to halt any change that has commenced if it is concerned that the safety implications have not been adequately considered.

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ANNEX C TO CHAPTER 2

FURTHER AUTHORISATION CONDITIONS

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FAC1 DUTY OF CO-OPERATION

(1) The Authorisee shall make and implement adequate arrangements to co-operate with other Authorisees and to establish and maintain coherent management arrangements with such Authorisees for all activities which could affect safety.

(2) The Authorisee shall make and implement adequate arrangements to co-operate with Approving Authorities (incorporating, where appropriate, design authorities) for naval reactor plant and/or nuclear weapons.

(3) The Authorisee shall make and implement adequate arrangements to co-operate with organisations (both external and internal) for all activities which could affect safety.

(4) The Authorisee is to submit to DNSR for approval such part or parts of the aforesaid arrangements as DNSR may specify.

(5) The Authorisee shall ensure that once approved no alteration or amendment is made to the approved arrangements unless DNSR has approved such alteration or amendment.

This condition results from the mobility of reactors and weapons in the defence nuclear programmes, and the separate responsibilities of Approving Authorities. The first purpose of the condition is to maintain coherent arrangements between Authorisees to ensure the safe transfer of reactors or weapons from one to the other. The second purpose of the condition is to maintain arrangements for co-operation between Authorisees and Approving Authorities to ensure that appropriate design control is exercised throughout reactor or weapon life and across life-cycle phases (in the nuclear weapons programme this complements the requirements of Approving and Design Authorities Conditions (ADAC)). Finally, the condition ensures that arrangements are made for co-operation with independent organisations (e.g. contractors) and internally within the Authorisee's organisation where this is necessary to maintain safety.

FAC2 OPERATIONAL BERTHS

(1) The Authorisee shall make and implement adequate arrangements for use of operational berths by nuclear powered warships (NPW).

(2) The Authorisee shall ensure that no operational berth is used by a NPW without the consent of DNSR.

(3) The Authorisee shall submit to DNSR for approval such part or parts of the aforesaid arrangements as DNSR may specify.

(4) The Authorisee shall ensure that once approved no alteration or amendment is made to the approved arrangements unless DNSR has approved such alteration or amendment.

This condition results from the need for NPW to berth at operational berths outside Authorised sites including those in foreign countries. The purpose of this condition is to ensure that regulatory consent is obtained for the use, and the scope of such use, of an operational berth by a NPW.

FAC3 RADIOACTIVE DISCHARGES

(1) The Authorisee shall, make and implement adequate arrangements to minimise and control the discharge of radioactive material to the environment.

(2) The Authorisee shall, if so directed by Defence Nuclear Safety Regulator (DNSR), not discharge radioactive material to the environment without the consent of DNSR.

(3) The Authorisee shall make and implement adequate arrangements to record information about any discharge of radioactive material to the environment.

(4) The Authorisee shall record such additional information as DNSR may specify.

(5) The Authorisee shall furnish to DNSR such information about any discharge as DNSR may specify.

(6) The Authorisee shall submit to DNSR for approval such part or parts of the aforesaid arrangements as DNSR may specify.

(7) The Authorisee shall ensure that once approved no alteration or amendment is made to the approved arrangements unless DNSR has approved such alteration or amendment.

This condition results from the need for environmental controls equivalent to those in legislation to apply to all parts of the defence nuclear programmes. The purpose of this condition is to ensure that discharges of radioactive material are minimised and controlled and subject to regulatory consent. If a consent or its equivalent is granted by a statutory regulator, then DNSR will not need to issue a direction under (2) above.

FAC4 TRANSPORT PACKAGES

(1) The Authorisee or Duty Holder conducting transport activities outside an Authorised site shall make and implement adequate arrangements to ensure that radioactive material is carried in an appropriate package.

(2) Where DNSR so specifies, any such package shall be approved by DNSR (in its role as Defence Competent Authority (CA)).

(3) The Authorisee or Duty Holder supplying or using the package shall submit such reports and information as DNSR may specify.

(4) The Authorisee shall submit to DNSR for approval such part or parts of the aforesaid arrangements as DNSR may specify.

(5) The Authorisee shall ensure that once approved no alteration or amendment is made to the approved arrangements unless DNSR has approved such alteration or amendment.

This condition results from DNSR's role as Defence CA for transport packages which is consequent on exemptions in legislation. The purpose of this condition is to ensure that CA approval is granted, where necessary, prior to use of a package to transport material in the defence nuclear programmes.

CHAPTER 3

REGULATORY PROCESSES AND ACTIVITIES

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CHAPTER 3

REGULATORY PROCESSES AND ACTIVITIES

INTRODUCTION

1. This Chapter outlines the regulatory processes and activities which the Defence Nuclear Safety Regulator (DNSR) will use principally in interacting with organisations being regulated. The detailed processes that govern and guide the internal business of DNSR are contained in separate Local Work Instructions and, where appropriate, Technical Assessment Guides (TAG) not included in this JSP but available via the Health and Safety Executive's (HSE's) website.

DEFENCE SAFETY AND ENVIRONMENT MANAGEMENT ORGANISATION

Departmental Arrangements

2. Departmental arrangements for the management of safety and environmental protection in MOD and the defence community, including the necessary policy-making and regulatory processes are given in JSP 815.

Defence Nuclear Environment and Safety Board

3. The Defence Nuclear Environment and Safety Board (DNESB) is the Functional Safety Board under whose authority this JSP is published. The Chairman, DNESB is personally appointed by 2nd PUS and has delegated authority for regulatory policy for, and assurance of, nuclear and radiological safety in the defence nuclear programmes. In turn, he delegates the authority to regulate to the Head of the Defence Nuclear Safety Regulator (DNSR-Hd). The DNESB Manual is available via the DNESB intranet website.

DEFENCE NUCLEAR SAFETY REGULATOR

Organisation and Authority

4. DNSR's organisation is accessible via its intranet website.

5. DNSR-Hd heads the organisation. He is accountable to the Chairman, DNESB and delegates regulatory authority to:

a. the Nuclear Propulsion Regulator (DNSR-NPR) who regulates nuclear and radiological safety in the Naval Nuclear Propulsion Programme (NNPP);

b. the Nuclear Weapon Regulator (DNSR-NWR) who regulates nuclear and radiological safety in the Nuclear Weapons Programme (NWP).

6. DNSR Inspectors are responsible (with the assistance of their teams) for gaining assurance in their designated area of the defence nuclear programmes; they are the primary point of contact between DNSR and an Authorisee, Approving Authority (AA) and/or Design Authority (ADA) or Duty Holder (shortened to Authorisee for convenience in the remainder of

this chapter). Their authority is formally delegated from DNSR-Hd through DNSR-NPR and/or DNSR-NWR and includes the authority to:

a. approve/agree or otherwise the use of management arrangements;

b. set and lift regulatory hold points;

c. permission or otherwise specified activities;

d. direct the postponement or cessation of a specified activity;

e. consent to or otherwise specified discharge limits;

f. agree or otherwise the appointment of specified persons;

g. agree or otherwise specified Nuclear Steam Raising Plant (NSRP) clearances;

h. agree or otherwise specified Nuclear Weapons (NW) approval submissions.

7. Within DNSR certain 'generic' responsibilities (e.g. as focal point on specific issues) are allocated to team members who may support Inspectors as necessary.

Support from Consultants

8. To support its activities, DNSR employs consultants under contract (from Serco, Regulatory Support Business Area (RSD)) and from the Defence Science and Technology Laboratory (DSTL), for radiological protection and emergency response advice. The Nuclear Department of the Defence College of Management and Technology (part of the Defence Academy) and the Institute of Naval Medicine also provide support and advice. Regulatory authority is not delegated to these bodies.

Interaction with Other Regulators

9. The relationships that the DNSR has with other regulators are described in various Agreements and Understandings that have been established; these are reviewed periodically outside the publication process for this JSP. Departmental relationships with the Health and Safety Executive (HSE) are set out in a General Agreement (see JSP 815), Annex B of which covers nuclear issues. At the working level a Letter of Understanding has been agreed between DNSR and the Nuclear Division of the HSE. A Letter of Understanding has been agreed between DNSR and the Department for Transport's (DfT) Dangerous Goods Division in respect of transport of radioactive materials. A Memorandum of Understanding (MoU) between the MOD and the Environmental Agency (EA) exists along with an associated nuclear annex. It is anticipated that similar arrangements will be made with the Scottish Environment Protection Agency (SEPA) in due course. DNSR-NWR has agreed a Letter of Understanding with the Head of Defence Ordnance Safety Group (D-DOSG) (Chief Inspector of Explosives (CIE) (MOD)) as nuclear weapons also contain explosives.

SUMMARY OF REGULATORY ACTIVITIES

Regulatory Policy

10. On behalf of the Chairman, DNESB, DNSR sets, owns and maintains regulatory policy for, and assurance of, nuclear and radiological safety and environmental protection in the defence nuclear programmes. Volume 1, (particularly Chapter 2) of this JSP sets out the requirements and Volume 2, includes related guidance.

Defence Nuclear Regulatory Forum (DNRF)

11. Changes to regulatory policy are subjected to a consultation process with representatives of Authorisees and other stakeholders, culminating in agreement at the DNRF. The role of the DNRF is to enable the sharing of good practice and help indicate to DNSR where its regulatory practices could be improved. Authorisees and stakeholders can also provide their views on new or amended regulatory requirements, processes or guidance. Terms of reference are available through DNSR's intranet website.

12. Significant, novel or contentious changes to the regulatory requirement, processes or guidance are referred to the Chairman, DNESB.

DNSR Regulatory Policy Committee (RPC)

13. The purpose of the DNSR Regulatory Policy Committee (RPC) is to manage the programme to review and develop regulatory policy and to provide advice on drafts that will be issued for formal consultation. Terms of reference are available through DNSR's intranet website.

Assurance

14. DNSR seeks assurance through the following processes:

a. the generation of Intervention Strategies (IS) and Intervention Plans (IP) (see paragraph 16 below);

b. inspection of activities and arrangements (e.g. Authorisation Condition (AC) Compliance Statements and other documentation provided by an Authorisee) (see paragraph 19 below);

c. assessment of safety justifications or submissions which may enable activities to be permissioned or approvals to be agreed (see paragraph 28 below);

d. assessment of emergency response exercises to examine the effectiveness of emergency arrangements in a dynamic environment (see paragraph 35 below);

e. response to events (including incidents and accidents) and the investigation of them (see paragraph 38 below).

15. DNSR provides assurance principally by written reports at various levels, but it may also be offered in briefings of different degrees of formality. Each year, DNSR drafts an assurance report for the Chairman, DNESB which when endorsed is compiled with other functional safety board reports to form a Departmental report which is considered by the

Defence Board. Inspectors produce quarterly reports which where appropriate are provided to Local Liaison Committees (see paragraph 53 below).

INTERVENTION STRATEGIES AND PLANS

16. IS and IP determine the way that DNSR interacts with Authorisees. A programme (e.g. NNPP) level strategy is produced taking account of developments, technical, managerial and contractual in the NNPP. Authorisee specific IS and IP are produced by DNSR to guide regulatory staff in the business of gaining assurance, influencing behaviours and permissioning activities and to inform Authorisees about what is proposed. IS and IP are tuned to the particular circumstances of an Authorisee taking account of issues such as maturity of arrangements (compliance), the Authorisee's programme of activities, perceived safety risk and regulatory resource. Where DNSR works jointly with another regulator (especially with NII), integrated, sometimes joint, IS and IP are normally produced.

17. The following are considered in producing an IS and reviewing it (at least annually):

a. DNSR's Strategic Framework and Issues from the previous DNESB Assurance Report;

b. NPR programme level IS;

c. the opportunities for different styles of intervention;

d. the outcomes from previous interventions;

e. programme information published by the Authorisee and its superior organisation;

f. regulatory analysis of the Authorisee's activities and the risks they present;

g. regulatory view of the state of compliance with AC;

h. any Safety Improvement Notice (SIN) or Finding requiring long-term action;

i. a strategic view of the regulatory resource to be applied to the Authorisee.

An IS states regulatory priorities over a 3-4 year period, stating the major outcomes expected and requires the production of IP.

18. The following are considered in producing an IP and reviewing it (approximately quarterly):

a. the relevant IS;

b. the outcomes from previous interventions (in year);

c. short-term changes in the Authorisee's programme;

d. any SIN or significant Finding requiring action;

e. short-term information on the regulatory resource to be applied.

An IP scopes the inspection and assessment programmes over the future year, noting the permissions expected to be requested, and explains how the relevant IS will be achieved.

INSPECTIONS

Routine Inspections

19. A programme of routine inspections is agreed with each Authorisee to meet objectives in the relevant IP. The programme is reviewed approximately quarterly altering in the light of emerging issues or events.

Permissioning Inspections

20. When regulatory permission is sought to conduct a specified activity, the assessment of safety justifications may be complemented by inspections to examine the arrangements claimed.

Themed Inspections

21. Themed inspections may be conducted which address a specific topic (e.g. AC) in a consolidated manner across more than one Authorisee.

Reactive Inspections

22. When necessary, a reactive inspection may be conducted in response to an event which appears to require specific regulatory action and/or an investigation. While notice is normally given, in exceptional circumstances an immediate, unplanned inspection may be carried out (see paragraph 38 below.)

Large Scale Inspections

23. A large scale inspection may be conducted when, for example, it appears necessary to undertake a holistic or high-level review of an Authorisee's management arrangements in a way which routine inspections do not. The inspection team may be led by senior DNSR personnel.

Authorisation Inspections

24. A potential Authorisee is subject to one or more routine inspections and/or a large scale inspection to establish whether DNSR-Hd can recommend that the Chairman DNESB signs an Authorisation Certificate. A summary of DNSR's view of an Authorisee's compliance with AC is prepared in support of high-level meetings between DNSR-Hd and the Authorisee (approximately annually).

Inspection Process

25. DNSR Inspectors will work together with other regulators where appropriate to co-ordinate inspection programmes in the interests of efficiency. Before an inspection, the DNSR Inspector will consult with the Authorisee to be inspected to agree the detail of the inspection arrangements. In the interests of efficiency and practicality, occasions may arise when DNSR Inspectors may wish to observe or participate in an Authorisee's internal inspections.

26. Inspections are conducted against the relevant documentation covering the scope of the arrangements and activities being inspected (e.g. statutory requirements, appropriate elements of this JSP, Authorisation Condition Compliance Statements, Safety Assessment Principles (SAP), safety justifications). On request, an Authorisee is to make the outcome of relevant internal inspections available to DNSR Inspectors.

27. At the conclusion of an inspection a closing meeting is held with representatives of the Authorisee so that key Findings can be presented. Subsequently, a written report is provided which expands on the material presented at the meeting and proposes the Findings and Observations from the inspection (see paragraph 44 below).

PERMISSIONING AND AGREEMENT

28. In common with statutory regulators, DNSR operates a permissioning regime which requires Authorisees to seek regulatory permission before conducting specified activities; the elements of this regime (and the language of consents, approvals and agreements) are expounded in AC. DNSR also requires Approving Authorities (together with Design Authorities) to obtain regulatory agreement prior to granting approval for use by Authorisees. Permissioning or agreement is granted subject to the assessment of safety justifications or submissions together, where necessary, with the outcome of inspections of arrangements and/or activities.

29. Safety management arrangements require categorisation schemes which govern due process within an Authorisee's organisation, and with the regulator for higher significance activities or approvals. DNSR may also "call in" the justification or submission for lower significance activities or approvals and is notified about the business of an Authorisee's nuclear safety committee.

30. Relevant AC and associated guidance require that justifications and approvals are prepared in stages; for example a justification may be progressively prepared as the design of a new facility is developed. Authorisees and Approving Authorities are encouraged to engage early in any justification or approval campaign and to propose hold-points from which DNSR can select those significant enough to warrant regulatory interaction. A programme is then developed which allows sufficient time for DNSR to undertake assessments and provide the necessary permissions or agreements to meet declared milestones.

31. The depth and scope of scrutiny during regulatory assessment is at DNSR's discretion taking into account issues such as:

a. the probability and potential consequences of an accident;

b. the provenance of the design and safety justification;

c. the robustness of the Authorisee's arrangements.

The assessment seeks:

d. evidence of compliance with requirements in this JSP;

e. to establish that risks to workforce and public are ALARP;

f. evidence of the use of appropriate codes, standards and methods;

g. assurance that the Authorisee's own assessment has been adequate.

In conducting the assessment, DNSR Inspectors (and assessors) are guided by SAP (Chapter 5), relevant Technical Assessment Guides and other appropriate national and international guidance (e.g. from the International Atomic Energy Agency (IAEA)).

32. Specific amplifications of these processes are in place for the Regulation of Operational Berths and Agreement to the Criticality of Naval Reactor Plant. These are outlined in Annexes A & B.

33. DNSR's permission or agreement is indicated by letter or certificate as appropriate; conditions or Findings for subsequent action may be associated (see paragraph 44 below). DNSR may revoke, revise, or withdraw any permission or agreement if the circumstances so demand it.

Transport Packages

34. DNSR is the 'Competent Authority' for the transport of nuclear material within the defence nuclear programmes. Applications for package (and where appropriate shipment) approval are made to the Competent Authority. If it is intended to use a package for both defence and civil purposes, both DNSR and DfT's Competent Authority body are informed; they then agree how it is assessed and approved. In conducting the assessment, DNSR Inspectors (and assessors) are guided by DfT requirements and other appropriate national and international guidance (e.g. from IAEA).

EMERGENCY RESPONSE DEMONSTRATION

35. The response to an emergency is a dynamic activity; assurance that an Authorisee's arrangements are adequate is most satisfactorily gained when the response is demonstrated under simulated conditions in exercises. Not all elements of a specific emergency response (e.g. an Authorisee's on-site plan) need to be demonstrated in a single exercise, but DNSR expects an Authorisee to propose a programme of exercises over a period which will address all elements. In addition to routine inspection of management arrangements, DNSR assesses emergency response demonstration exercises in the defence nuclear programmes working jointly, when appropriate, with HSE/NII which has statutory regulatory responsibilities for emergency response under Radiation Emergency Preparedness and Public Information Regulations (REPPIR). JSP 471 states Departmental policy for defence nuclear accident response; DNSR works in conformance with that policy.

36. The scope and scenario of a demonstration exercise is proposed adequately in advance by an Authorisee and agreed by the DNSR Inspector. The Authorisee plans the exercise, giving the DNSR Inspector visibility of the process, and provides a briefing for the assessors just prior to the exercise. The Authorisee may also conduct self-assessment of the demonstration. The DNSR assessment is conducted by a team who will observe each key area of the response. Observations are made systematically on as objective a basis as possible against common guidelines; they cover the way the exercise has been planned and is controlled as well as the response itself. The assessment focuses on the outcomes that are required, checking that the response plan describes how they should be achieved, but giving credit for achieving the right outcomes by means other than those identified. The lead DNSR assessor provides a preliminary verbal report shortly after the exercise has concluded summarising the key outcomes. A letter of assessment follows in which draft Findings are proposed for subsequent agreement and tracking (see paragraph 44 below).

37. The assessment is of an Authorisee's response and does not extend to other statutory authorities that may form part of overall response. In view of their major role, however, it is recognised that any shortcomings in the response by statutory authorities may impact on the achievement of particular outcomes. Where such difficulties arise DNSR seeks to establish that all necessary information and advice had been provided to the statutory authorities in advance to enable them to develop their plans effectively, and that appropriate support was provided to the response during the exercise.

EVENTS (INCIDENTS & ACCIDENTS)

Reporting an Event (Incident)

38. AC require an Authorisee to have arrangements for the notification of events[24] (incidents); they cover notification within its own organisation, to other Authorisees, to an Approving Authority and to relevant regulators. The primary reporting point is the DNSR Inspector; detailed arrangements are promulgated in a protocol document agreed by the Authorisee and DNSR-Hd. DNSR may specify the nature of events which are to be reported to DNSR if they occur. If certain criteria are met, it is a Departmental requirement that an Authorisee notify MOD HQ for defence ministers and that DNSR also provides information about the event (incident).

Early Action

39. DNSR considers the information provided in the notification, against the background of what is already known about the Authorisee's arrangements and activities and in conjunction with other relevant regulators, seeking to understand:

a. whether actual harm (and its degree) has occurred or what the potential for such harm was;

b. whether there is likely to have been a breach of statutory requirements;

c. whether there has been a release of radioactive material;

d. whether (and to what degree) the requirements of the safety justification have been breached;

e. the wider (including public) interest in the event;

f. the potential implications for other activities in the defence nuclear programmes.

Based on the understanding, DNSR may take early action in accordance with arrangements described at paragraph 44 below, may initiate a reactive inspection and/or may initiate a regulatory investigation.

Investigation

40. AC also require an Authorisee to investigate events (incidents and accidents) seeking assistance from others (e.g. an Approving Authority) as required. DNSR monitors the

[24] A plethora of terms may be used in this context (occurrence, abnormal event, event, incident, accident, emergency etc.); a distinction is made here only between incidents and accidents – the latter require activation of emergency response plans.

investigation conducted by an Authorisee and may undertake a regulatory investigation in conjunction with other regulators (as appropriate) and including a reactive inspection as necessary. Investigations establish the cause of the event and recommend any remedial activity. DNSR may take action in accordance with the arrangements at paragraph 44 below and may specify actions to be taken by other Authorisees and/or Approving Authorities as necessary. DNSR may issue reports as indicated elsewhere in this Chapter and/or may prepare a special report on the event, the actions taken, investigations and remedial activities as necessary.

DNSR Response to a Defence Nuclear Accident

41. Defence nuclear accident response arrangements are invoked if an Authorisee has to activate either its operator's or off-site plans. In the response to a defence nuclear accident, DNSR adapts working practices to the circumstances but does not cease to regulate. In due course, as determined by DNSR, routine regulatory processes are reinstated and preparations made for the investigation (see paragraph 39 above).

42. MOD establishes HQ Nuclear Accident Response Organisation (NARO) in the Defence Crisis Management Centre in Main Building to provide a link between the Military/MOD Coordinating Authority and MOD HQ (including ministers). HQ NARO also provides the Lead Government Department co-ordination of UK government response principally through the Nuclear Accident Information and Advisory Group (NAIAG). DNSR-Hd becomes Head of the Nuclear Safety Cell (part of HQ NARO), and senior DNSR personnel ensure the sustainability of this cell. DNSR interprets information on the defence nuclear asset involved, assesses the significance of the accident against the International Nuclear Events Scale (INES) and reviews proposals for stabilisation and recovery (if appropriate). DNSR considers the need for regulatory action in accordance with the arrangements described at paragraph 44 below.

43. The relevant DNSR Inspector (and other DNSR staff to provide sustainability) attends the accident location and associated command and control centres in order to:

a. provide regulatory input (including permissioning if appropriate);

b. provide a direct feed of information to the Head of Nuclear Safety Cell;

c. liaise with other regulators present (e.g. NII);

d. record information on developments and decisions;

e. glean information in support of the subsequent investigation.

REGULATORY ISSUES AND FINDINGS

44. As a result of its regulatory activities, DNSR may identify an issue affecting nuclear or radiological safety or environmental protection. DNSR's process for the management of issues is graduated and escalatory, communicating clearly to an Authorisee the status, importance and urgency of an issue which DNSR considers to have an impact on safety and facilitating its efficient resolution, as agreed with the Authorisee, at the lowest appropriate level of priority. An issue on which a response is required is raised as a Finding. A Finding which may have a significant or immediate impact on safety, either when it is raised or later, if it has not been resolved in a timely manner, may additionally be made the subject of a Safety Improvement Notice (SIN) or an Immediate Safety Requirement (ISR).

Observation

45. DNSR may identify an issue which is considered to be worthy of an Authorisee's attention, but which is not a Finding, and may raise an Observation. An Observation may be similar in format and communicated in a similar way to a Finding. The Authorisee is not required to respond to an Observation.

Finding

46. A Finding may be proposed:

a. during an inspection and/or in the subsequent report;

b. in an assessment letter:

(1) giving permission to an activity or;
(2) agreement to a safety submission or;
(3) following a demonstration exercise;

c. in response to an event;

d. as a result of an investigation;

e. in other circumstances as necessary.

The DNSR Inspector determines the final wording of the Finding, the proposed response and timescale after consultation with the Authorisee and records these in the DNSR Findings database.

47. Progress in responding to a Finding is presented to the DNSR Inspector during routine business. Evidence of a satisfactory conclusion may be sought in subsequent inspections, assessments or demonstration exercises. Close-out of a Finding is recorded in the DNSR Findings database.

Safety Improvement Notice

48. If a Finding has a significant impact on safety or an Authorisee's response to a Finding is inadequate, giving rise to serious concern, a SIN is issued. A SIN states DNSR's reason for imposing it and explains why action is required by a stated time or in a programme milestone. DNSR informs, and if appropriate consults with, other relevant regulators when a SIN is issued. DNSR agrees[25] with the Authorisee the period allowed for resolution of a SIN, taking into account relevant factors such as the impact on safety. A SIN is promulgated by approval of DNSR-Hd, DNSR-NPR or DNSR-NWR and copied to the Chairman, DNESB.

Immediate Safety Requirement

49. If an outstanding or new Finding identifies an immediate impact on safety that is unacceptable and no action appears imminent from the Authorisee, an ISR is issued under the terms of AC31 (Shutdown of Specified Operations). An ISR requires immediate action on the part of the Authorisee to mitigate the impact to an acceptable level and to justify this

[25] Final decision on timescales is DNSR's.

action to DNSR (and thus it differs from a SIN). The Authorisee's response to an ISR takes priority and may require an activity to cease or be postponed. Where practicable an ISR is promulgated by approval of DNSR-Hd, DNSR-NPR or DNSR-NWR (but DNSR Inspectors also have this authority) and is notified to the Chairman, DNESB. An activity that ceases or is postponed in response to an ISR cannot be restarted without DNSR agreement that mitigating action has been satisfactorily taken.

Arbitration and Escalation

50. If in exceptional circumstances the wording of a Finding or the response and timescale cannot be agreed or if it is not being resolved in a timely or satisfactory manner, then arbitration should be sought through management of both regulator and Authorisee, escalating as appropriate.

DNSR REPORTS

Visit Records

51. DNSR Inspectors keep a record of regulatory visits or interactions; records of meetings attended with an Authorisee may constitute such records. As a minimum these records include adequate information to support the production of the quarterly reports and provide an auditable trail of decision making.

Quarterly Reports

52. DNSR Inspectors produce Quarterly Reports to a set format covering interactions with the Authorisee over the previous period. Where appropriate, this report is consistent with equivalent reports issued by other relevant regulators. The Authorisee is consulted on the content of the report prior to publication. DNSR Quarterly Reports are available through its intranet website [and in due course through the MOD website].

53. If the Authorisee provides a forum for representation of local community interests through a Local Liaison Committee (e.g. at major sites), the DNSR Quarterly Report is provided for the Authorisee to forward to members.

DNESB Annual Assurance Report

54. DNSR drafts a formal assurance report for the Chairman, DNESB annually; the format of the report is adapted from the template required by the DESB. An overall statement of assurance about nuclear and radiological safety and environmental protection in the defence nuclear programmes is included. DNSR raises or carries forward issues[26], particularly of a generic nature, to which Authorisees or their superior organisations are expected to respond. The Issues result from the assurance seeking processes above and other information provided to DNSR; any SIN or ISR promulgated during the year is noted. The report provides a summary of DNSR's regulatory activities during the year. The Annual Assurance Report is formally presented to the Defence Nuclear Executive Board and the Defence Nuclear Safety Committee.

[26] NB. These are not the same as regulatory issues described in paragraph 44 et seq.

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ANNEX A TO CHAPTER 3

REGULATORY PROCESSES FOR OPERATIONAL BERTHS

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ANNEX A TO CHAPTER 3

REGULATORY PROCESSES FOR OPERATIONAL BERTHS

1. Where the berthing of a nuclear powered warship (NPW) takes place under the control of a site Authorisee, the regulatory processes applied are consistent with others for that site. Where NPW are berthed in locations outside Authorised sites, these locations are termed Operational Berths and the following processes apply.

2. Operational Berths form de facto temporary nuclear sites. In permissioning the use of an Operational Berth, the Defence Nuclear Safety Regulator (DNSR) takes into account the wide variety of geographic locations, and hence the diverse legal frameworks. The table articulates the regulatory responsibilities for the various issues which are reviewed in considering the use of berths in different locations.

Location	Management Arrangements	Safety Submission	REPPIR (or equivalent)	Emergency Arrangements
UK	DNSR	DNSR	NII	NII & DNSR
Gibraltar	DNSR	DNSR	Government of Gibraltar	Government of Gibraltar & DNSR
Other British Overseas Territories	DNSR	DNSR	DNSR	DNSR
Foreign	DNSR	DNSR	Not applicable	DNSR

APPLICABLE REGULATORY PROCESSES

3. Inspection. Inspections, led by DNSR, are conducted as necessary both of the management arrangements and the physical arrangements at berths as appropriate.

4. Permissioning. Assessment of safety submissions are normally led by DNSR. Within UK, DNSR supports the Nuclear Installations Inspectorate's (NII's) Radiation (Emergency Preparedness and Public Information) Regulations (REPPIR) determination in a similar manner to that for Authorised sites. DNSR seeks assurance that all identified regulators are content before giving permission to use a berth.

5. Emergency Response Demonstration. Within UK NII leads on the demonstration of off-site arrangements and DNSR leads on operator's arrangements. In Gibraltar, the Government of Gibraltar (GoG) assesses the off-site arrangements and DNSR the operator's arrangements. For other British Overseas Territories, DNSR assesses all aspects of the arrangements. Any arrangements put in place by other nations remain entirely their own responsibility and are neither required nor considered by DNSR.

ASSURANCE TO OTHER REGULATORS

6. UK. DNSR shares information with the Health and Safety Executive (HSE) NII as described in the Letter of Understanding between NII and DNSR.

7. Gibraltar. DNSR provides formal assurance to the GoG but does not pass over classified material. GoG REPPIR specifically takes credit for assessments conducted by the UK HSE.

8. Other Nations. DNSR normally answers approaches from other national authorities by reference to the Standard Statement (See Chapter 4 Annex D).

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ANNEX B TO CHAPTER 3

REGULATORY AGREEMENT TO CRITICALITY OF NAVAL REACTOR PLANT

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ANNEX B TO CHAPTER 3

REGULATORY AGREEMENT TO CRITICALITY OF NAVAL REACTOR PLANT

1. For a Naval Reactor Plant (NRP) to be operated critical, formal regulatory agreement is necessary. Normally this will be in the form of Defence Nuclear Safety Regulator (DNSR) agreement to the issue of an Authorisation to Operate (AtO) by the Naval Reactor Plant Authorisee (NRPA); the agreement will outline any conditions and limits, including limits on duration.

2. For initial criticality of a new core for Power Range Testing (PRT) there will normally be discrete elements of regulatory process:

a. DNSR (normally Principal Inspector for the NRP) will agree to the issue of the AtO (PRT) by the NRPA when satisfied that the NRP and its supporting documentation are in an adequate state following inactive commissioning;

b. DNSR (normally Principal Inspector for the site), in conjunction with Health and Safety Executive (HSE) Nuclear Installations Inspectorate (NII) where appropriate, will permission the conduct of PRT on an Authorised site when satisfied that the Authorisee's relevant arrangements and facilities are adequate.

3. On satisfactory completion and adequate assessment of PRT and when satisfied that continued operation of the NRP can be supported, DNSR will agree to the issue of the AtO(Fleet) by NRPA.

4. As long as there is a valid AtO, DNSR will not normally need to agree an individual NRP start up. There are, however, exceptions:

a. where a NRP is likely to operate outside the conditions and limits of the AtO (e.g. due to a defect or emergent issue): DNSR will need to understand the particular issues affecting the NRP, the mitigating action proposed and the benefit that will accrue from continued operation; it may be necessary to review the state of the NRP against the requirements of Radiation (Emergency Preparedness and Public Information) Regulations (REPPIR) where there is doubt over compliance with the submissions to HSE or a material change is indicated;

b. where a deviation from the permissioned activity is proposed; this is particularly the case if trials are to be planned that have a material implication for the safety of the workforce or the public or protection of the environment;

c. where a formal regulatory hold point has been placed.

5. Briefing of Ministers and senior officials will be conducted as appropriate to the plant in question and the situation prevailing at the time, noting the routine briefings by NRPA in support of PRT.

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CHAPTER 4

GUIDANCE TO AUTHORISEES/DUTY HOLDERS

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CHAPTER 4

GUIDANCE TO AUTHORISEES/DUTY HOLDERS

ADVICE AND GUIDANCE ON SPECIFIC TOPICS

1. This Chapter provides information and guidance on a selection of topics that are referred to in the JSP or are topics that have general applicability. The range of topics discussed and the information presented is not intended to be exhaustive and the reader should consult other authoritative advice and guidance, such as that issued by the Health and Safety Executive/Nuclear Installations Inspectorate (HSE/NII) and the International Atomic Energy Agency (IAEA) on these and other topics as required.

2. Chapter 4 takes account of the Defence Nuclear Safety Regulator's (DNSR's) adoption of the HSE's Regulatory Safety Assessment Principles (SAP) and DNSR is engaged with the HSE in the review of their Technical Assessment Guides (TAG) which support their SAP. DNSR expects that the majority of the guidance offered by the TAG will be adopted and that additional TAG authored by DNSR will be produced where there are specific issues for which additional guidance is required. DNSR authored TAG will be predominately for DNSR use however they may have universal applicability. Chapter 4 will therefore be subject to further development and the eventual balance between DNSR guidance in Chapter 4 and the TAG has yet to be determined. The guidance to Authorisees and Duty Holders offered in the attached Annexes is based largely on that which was available in the preceding issues of JSP 518 and JSP 538 and is generally being retained with minimal change. Once the TAG revision and production programme is complete the requirements for residual guidance to be included in Chapter 4 will become clearer.

3. The information from both JSPs has been merged where appropriate to form consolidated guidance applicable to the defence nuclear programme. The following provides a brief synopsis of what each of the supporting Annexes contain.

Annex A – Authorisation Condition Guidance

4. The information from the Authorisation Condition Compliance Statement Guidance Notes (ACCSGN) contained in JSP 518 Issue 2 and JSP 538 Issue 1 has been merged to form one consolidated set of ACCSGN.

5. The presentation of a single set of ACCSGN reflects the consolidation of the various sets of MOD Authorisation Conditions (AC) into one universal set of MOD AC which mirror the HSE/NII Licence Conditions (LC). A consequence of this standardisation of AC is that the guidance notes contain essential interpretation for their application to the specific needs of the NNPP and NWP.

6. The information from the previous issues of the ACCSGN has been subjected to a limited review prior to consolidation; however, a more fundamental review may be considered in the future. This is partly in recognition of the fact that the defence nuclear programme is now fully Authorised, and therefore the demand for new Authorisation Condition Compliance Statements is minimal.

7. The guidance associated with the previous AC4a and AC23a has been removed in keeping with the deletion of AC4a and AC23a. These topics are now covered by the Further Authorisation Conditions (FAC) whose guidance notes are contained in Annex B.

Annex B – Further Authorisation Condition Guidance

8. The FAC have been introduced to cover specific issues that pertain to the defence nuclear programmes which are not explicitly covered in the AC or HSE SAP. They also cover the specific Naval Nuclear Propulsion Programme (NNPP) elements that were previously included in AC4a and AC23a which have been removed from the AC in order to align completely with the LC.

9. Four FAC are being introduced at this stage however the facility will exist to introduce additional FAC at a later date. The FAC introduced cover the following topics:

- FAC1 Duty of Cooperation
- FAC2 Operational Berths
- FAC3 Radioactive Discharges
- FAC4 Transport Packages

Annex C – Guidance for Approving Authority

10. This Annex has been developed to provide guidance to the NRPA on the application of a selected number of Authorisation Conditions to the specific role of the Approving Authority.

Annex D – Standard Statements

11. The Standard Statements of the UK, USA and France in respect of information provided on the operation of nuclear powered warships in foreign countries are replicated in Annex D.

ANNEX A TO CHAPTER 4

GUIDANCE ON THE APPLICATION OF THE AUTHORISATION CONDITIONS

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AUTHORISATION CONDITION 1

INTERPRETATION

GUIDANCE NOTE

INTRODUCTION

1. The purpose of this Condition is to ensure there is no ambiguity in the use of certain specified terms which are found in the text of the Conditions. It also contains important powers for Defence Nuclear Safety Regulator (DNSR) to modify, revise or withdraw approvals, etc. and to approve modifications to any matter currently approved. Where appropriate, reference is made back to the relevant statutory Acts of Parliament.

GUIDANCE TO AUTHORISEES

2. The following regulatory controls are used throughout the Conditions and have the following definitions and meanings:

Consent

Explanation: A consent is required before an Authorisee can carry out any activity for which DNSR has so specified the need.

Reason for use: A consent is used to ensure an Authorisee does not carry out an activity before DNSR has been satisfied that the proposed course of action is safe and all necessary procedures and controls are in place.

Approval

Explanation: An Authorisee is required to submit its arrangements for approval if so specified by DNSR.

Reason for use: An approval is used to freeze an Authorisee's arrangements. Once approved no alteration or amendment can be carried out without further approval by DNSR.

Direction

Explanation: A direction requires an Authorisee to take a particular action.

Reason for use: A direction is used for matters of major or immediate importance.

Agreement

Explanation: An agreement allows an Authorisee to proceed in accordance with its own arrangements.

Reason for use: Where the need to obtain DNSR's agreement is written into the Authorisee's arrangements, it prevents an Authorisee from proceeding unless the course of action has been agreed.

Notification

Explanation: When so notified, an Authorisee is required to submit information to DNSR.

Reason for use: A notification to an Authorisee is used to request the submission of information to DNSR.

Specification

Explanation: A specification issued by DNSR requires an Authorisee to implement the specified arrangements.

Reason for use: A specification is the means by which DNSR can implement discretionary control over an Authorisee's arrangements.

3. To differentiate between the use of these terms by DNSR and other organisations, the terms may be prefixed by 'DNSR' or 'regulatory'.

AUTHORISATION CONDITION 2

MARKING OF THE SITE BOUNDARY

GUIDANCE NOTE

INTRODUCTION

1. The purpose of this Condition is to ensure that the Authorisee takes the necessary steps to make Authorised sites, facilities, Nuclear Powered Warships (NPW) and transportation secure in order to prevent unauthorised persons injuring themselves or damaging safety related plant or equipment.

SCOPE

2. This guidance relates to the identification, marking, inspection and maintenance of security by fences or other appropriate means around the sites, facilities, NPW or transportation, which are subject to Authorisation.

GUIDANCE TO AUTHORISEES

3. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements, including interfaces are adequate. Consideration should be given to the following:

a. Clear identification, using maps and plans as necessary, of the coverage of Authorisation. For sites, this should include a definition of any sea areas and the seaward boundary. This includes an indication of access controls, including both within and around any NPW and transportation.

b. Identification of the lines of responsibility for the control of access between individuals within each Life Cycle Phase and between Authorisees.

c. Any special precautions taken to prevent unauthorised entry, including patrols, manning and controls during movements. Fences, boundary markings, signs etc. should be provided as appropriate, not only warning of the restricted nature of an area but also giving hazard and emergency action information. See also Authorisation Condition 8 (AC8).

d. The arrangements for the inspection and maintenance of boundary markings, fences, signs, etc. including identification of those persons with the responsibility for carrying out such inspection and maintenance.

4. It is DNSR policy that all defence nuclear programme activities will, as far as is practicable, be subject to Authorisation. However, the Health and Safety Executive/Nuclear Installations Inspectorate (HSE/NII) Licensed Site boundaries are recognised by DNSR and are not required to be separately marked as Authorised site boundaries. As such, this Condition does not require those Authorisees who are also Licensed to apply measures in addition to those which satisfy Licence Condition 2 (LC2).

5. Where a Licensed Site has an attached area in which relevant support activities are undertaken by the same Licensee, but are not licensable activities under Nuclear Installations Act 65, AC2 will apply to that area. Hence the Authorisee's site will encompass all his relevant activities and compliance will be covered by compliance statements against LC2 for the licensed activities and AC2 for the remaining Authorised activities.

6. Suitable arrangements for security should be made by the sponsoring Authorisee or the Duty Holder at those sites that are not Authorised in their own right.

7. Whilst the assessment of the adequacy of security requirements implemented to prevent unauthorised access falls outside the scope of DNSR regulation, due credit will be given where such security arrangements effectively enhance the safety arrangements for restricted access. This Condition does not require the Authorisee to apply security measures in addition to those contained in JSP 440.

AUTHORISATION CONDITION 3

RESTRICTIONS ON DEALING WITH THE SITE

GUIDANCE NOTE

INTRODUCTION

1. The purpose of this Condition is to ensure that the Authorisee does not let, convey, assign, feu or transfer any part of the Authorised site to a third party without seeking the permission of the Defence Nuclear Safety Regulator (DNSR). This is to ensure that the Authorisee does not change the character of the activities that are Authorised and to prevent activities being carried out on the site which could put nuclear operations at risk. Also it is essential that nothing confuses the absolute responsibility of the Authorisee in respect of safety on the whole Authorised site or activity. The Authorisee should be able to demonstrate that there are organisational procedures to prevent individuals from conveying, assigning, transferring, feuing or granting any Authorisations in relation to the site or parts of the site without first obtaining the consent of DNSR.

SCOPE

2. See Introduction.

GUIDANCE TO AUTHORISEES

3. The Authorisee should include a simple but enforceable statement in his documented arrangements to the effect that he will not let, convey, assign, transfer, feu or grant any Authorisation in relation to the site, Nuclear Powered Warship or transportation under his control without first obtaining DNSR's consent.

AUTHORISATION CONDITION 4

RESTRICTIONS ON NUCLEAR MATTER ON THE SITE

GUIDANCE NOTE

INTRODUCTION

1. The purpose of this Condition is to ensure that the Authorisee has adequate arrangements to control the introduction and storage of nuclear matter on the Authorised site or Nuclear Powered Warship (NPW) to ensure safety. It also provides Defence Nuclear Safety Regulator (DNSR) with powers to specify that certain types of nuclear matter cannot be brought onto the site or NPW without the consent of DNSR. This enables DNSR to intervene to ensure that, for specific activities, it can assess the adequacy of the Authorisee's arrangements before nuclear matter is brought onto the site. *(Nuclear matter being nuclear fuel, radioactive waste, etc. as defined by the NI Act).*

SCOPE

2. This guidance describes the arrangements for controlling nuclear matter being brought onto or stored on a site or NPW, or transported within a site and for the production and keeping of records pertaining to such matter.

GUIDANCE TO AUTHORISEES

3. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements, including interfaces are adequate. Consideration should be given to the following:

a. The management responsibilities of all personnel who are responsible for the processing, recording and storing of radioactive matter.

b. The arrangements for ensuring that no nuclear matter is brought onto or stored on site or NPW or transportation within a site, unless:

(1) a safety case for the handling, storage or transport of that matter is in place;

(2) the Conditions and Limits of Safe Operation have been defined;

(3) operating instructions have been issued to ensure that the conditions and limits of safe operation are observed.

c. The safety case needs to indicate the type and form of nuclear matter, the method of storage and how traceability of the matter will be achieved. These arrangements should include how any radioactive matter brought onto the site or NPW is managed.

d. The safety case should include a justification for the use of all transport, storage flasks, packages and containers. The safety case should indicate the type and form of nuclear matter, the method of storage and how traceability of the material is achieved.

e. The arrangements for ensuring that no nuclear matter is brought onto a site or NPW for the first time without the consent of DNSR.

f. The arrangements for the production and keeping of all records which pertain to the introduction, storage, processing and transfer of nuclear matter.

4. Where matter is to be transferred between Authorisees then the arrangements must reflect the duty of co-operation between the Authorisees.

5. DNSR will not normally wish to be involved in the movement or use of sealed sources used for radiography except where there is a potential hazard which needs to be taken into account by the safety management arrangements. Further guidance on High Activity Sealed Sources is given in Authorisation Condition 25 guidance notes.

AUTHORISATION CONDITION 5

CONSIGNMENT OF NUCLEAR MATTER

GUIDANCE NOTE

INTRODUCTION

1. The purpose of this Condition is to ensure that the transfer of nuclear matter, other than excepted matter and radioactive waste, to sites in the UK other than relevant sites:

a. is carried out only with the consent of Defence Nuclear Safety Regulator (DNSR); and that

b. the Authorisee has adequate records of where such nuclear matter has been sent (Authorisation Condition 6). The Authorisee should also be able to demonstrate that there are organisational procedures to prevent individuals from consigning such matter to non-relevant sites without first obtaining a Consent from DNSR.

2. This Condition is aimed at ensuring not only that there is a record of where nuclear matter has been sent to, but also so that DNSR can be sure that there are adequate arrangements for safely handling such material at the destination.

3. For the defence nuclear programmes, a relevant site (as defined in S26 of the Nuclear Installations Act 1965) is identified as:

a. Licensed site;

b. an Authorised site;

c. Nuclear Powered Warship.

SCOPE

4. This guidance relates to the consignment of nuclear matter to relevant sites and the requirement for making and preserving a record of all consignments of nuclear matter, including excepted matter and radioactive waste.

GUIDANCE TO AUTHORISEES

5. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements, including interfaces are adequate. Consideration should be given to the following:

a. The management responsibilities of all personnel responsible for the consignment of nuclear matter.

b. The arrangements for ensuring that nuclear matter, other than excepted matter and radioactive waste, is consigned only to a relevant site.

c. The arrangements for recording details of all consignments of nuclear matter, including excepted matter and radioactive waste.

d. The arrangements for ensuring the preservation of records for the specified period.

e. The arrangements for ensuring that nuclear matter is not consigned to any place other than a relevant site without the consent of DNSR.

6. Any change in the Authorisee responsible for nuclear matter should be regarded as a consignment of nuclear matter from one Authorisee to another.

7. For consignments of nuclear matter (apart from excepted matter and waste) from a licensed defence nuclear programme site to a non-defence nuclear programme site, the Consent of NII will be accepted by DNSR.

AUTHORISATION CONDITION 6

DOCUMENTS, RECORDS, AUTHORITIES AND CERTIFICATES

GUIDANCE NOTE

INTRODUCTION

1. The purpose of this Condition is to ensure that adequate records are held by the Authorisee for a suitable period to ensure that the safety case for operation is available at all times, that design and construction information is available for decommissioning, that operational records are available to assist investigations in the event of an accident or incident and operational records are available for the statutory number of years after the cessation of operations for the purpose of assisting any claims of damage to health as a result of exposure to ionising radiation.

SCOPE

2. This guidance refers to the management of records associated with the Authorisation Conditions and statutory requirements.

GUIDANCE TO AUTHORISEES

3. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements, including interfaces are adequate. Consideration should be given to the following:

a. The management responsibilities of all personnel responsible for the production of documents, records, authorities and certificates and for the preservation of all documentation.

b. The arrangements and keeping of records of:

(1) the accumulated effective dose to all personnel who have been employed on defence nuclear programme activities;

(2) personnel health records; and

(3) any reports investigating over-exposure;

for 50 years after completion of last entry. All other records relating to the control of exposure such as monitoring, dosimetry service, radioactive substance accounting etc should be kept for at least 2 years. Records are a means of demonstrating that statutory requirements have been met.

c. The management arrangements for controlling documentation and how its storage and preservation is carried out, including the generation of a record retention schedule, record schedules and the means of record retrieval. This should take account of the challenge of obsolescence of hardware and any associated software, and also loss of operator skills. Arrangements should demonstrate how the continued viability of the records is maintained and how often the recording method is subject to periodic review for its longevity.

d. The arrangements for assessing the minimum time scale for the maintenance of records unless agreement to the contrary has been reached with Defence Nuclear Safety Regulator.

e. The arrangement for safeguarding records against hazards which may render the records unusable. These hazards include such events as fire, flood and adverse environments. Safeguards may include duplication of records or high integrity storage.

f. The maintenance of adequate records for design, safety justification, production, testing, operation, support, modification and decommissioning is essential to the long-term safety of the defence nuclear programmes and to satisfy legislative requirements.

AUTHORISATION CONDITION 7

INCIDENTS ON THE SITE

GUIDANCE NOTE

INTRODUCTION

1. The purpose of this Condition is to ensure that the Authorisee has adequate arrangements to deal with incidents that may occur within the scope of the Authorisation. It is essential that the Authorisee keeps a record of all such incidents, notifies Defence Nuclear Safety Regulator (DNSR) when appropriate, investigates the cause of each incident and produces a report of the investigation to ensure that lessons are learnt.

SCOPE

2. This guidance relates to incidents, as defined in the glossary.

GUIDANCE TO AUTHORISEE

3. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide evidence that the safety management organisation and arrangements, including interfaces are adequate. Consideration should be given to the following:

a. The management responsibilities of all personnel responsible for reporting incidents.

b. The arrangement for reporting, investigating, reviewing and assessing all incidents that directly or indirectly affect nuclear or radiological safety, including notifying and reporting incidents to DNSR.

c. The arrangements for the categorisation of incidents against the International Nuclear Events Scale.

d. The above should include arrangements for:

(1) appointing personnel to implement and supervise the arrangements;

(2) categorising incidents, occurrences and deviations;

(3) ensuring staff awareness of the need for reporting incidents and events;

(4) ensuring an open approach to the reporting and assessment of incidents;

(5) specifying the appropriate level of investigation;

(6) referring the reports to the Nuclear Safety Committee and to DNSR;

(7) implementing recommendations;

(8) ensuring staff awareness of the lessons learned from incidents;

(9) reviewing and analysing all incidents for trends in location, type, cause etc. and promulgating the lessons learned;

(10) analysing incidents occurring elsewhere and applying any applicable lessons learned;

(11) auditing the incident reporting and assessment system;

(12) providing an annual report to the respective safety committee on the effect of incidents on the validity of the respective safety justification;

(13) the control and storage of documentation recording incidents.

e. The arrangements for managing the interface with the Approving Authority (incorporating the Design Authority) for the provision of support where appropriate.

DNSR EXPECTATION

4. All incidents with the potential to adversely affect safety are to be notified to DNSR and a verbal brief provided at the earliest practicable opportunity following the incident. This will enable DNSR to fulfil its duties under the defence ministerial reporting requirements. The timing of the notification will depend upon the safety significance or regulatory profile of the incident or event and will range between:

(1) immediate notification by pager, telephone or fax;

(2) notification on the next working day;

(3) notification on the next Inspector's visit;

(4) notification during the Inspector's review of the Authorisee's event reporting process.

5. The Authorisee is to provide routine reports covering all safety related incidents not falling into the more serious category above.

6. DNSR to be informed of the assessment of incidents.

7. DNSR to be informed of any other incident/event/occurrence that might attract public and/or media attention.

8. The Authorisee is to submit proposals covering the period for retention of records relating to incidents for agreement by DNSR.

AUTHORISATION CONDITION 8

WARNING NOTICES

GUIDANCE NOTE

INTRODUCTION

1. The purpose of this Condition is to ensure the safety of all people on the site, Nuclear Powered Warship (NPW) or during transportation so that they can respond appropriately and without delay to an emergency situation. The Authorisee therefore needs to ensure that all warning notices are in appropriate places to advise people on what to do in that area in the event of a fire or any other emergency.

SCOPE

2. This guidance relates to the placing of notices on site, NPW or during transportation to ensure that personnel, visitors and contractors are made aware of:

a. the meaning of any warning signal;

b. the location of emergency exits or exit routes;

c. the actions to be taken in the event of an emergency.

GUIDANCE TO AUTHORISEES

3. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements, including interfaces are adequate. Consideration should be given to the following:

a. The management responsibilities of all personnel responsible for the arrangements that ensure that there are appropriate, sufficient, up-to-date and suitably positioned notices and signs that denote potential hazards, explaining the meaning of all warning signals and identifying the measures to be taken in the event of an emergency.

b. The arrangements that ensure all escape routes, emergency exits and equipment, and assembly points are clearly marked and are not obstructed.

c. The review arrangements that ensure all notices and signs remain valid and are maintained in a legible condition, including the recording of such reviews. It should be recognised that notices and signage may vary depending on the activity being undertaken and periods when normal operation may be disrupted.

d. The arrangements for ensuring that the dependence upon notices and signs is consistent with the training and briefings which should be given to personnel, including visitors and contractors who may not be familiar with local arrangements

e. Warning notices and signs should be sufficiently clear to avoid confusion between the response to nuclear and non-nuclear emergencies.

f. A ‘warning notice’ is defined as a notice which states one or more of the following:

(1) the meaning of a warning signal;

(2) the hazard associated with a warning signal;

(3) the action to be taken by individuals in response to a warning signal in order to avoid or minimise exposure to the hazard associated with the signal.

4. Notices and safety signs associated with the required response, e.g. signs for emergency exits, evacuation routes and muster points, and the location of emergency equipment, should be classed as warning notices.

5. A warning signal is an acoustic signal and/or illuminated sign used to indicate an accident or emergency condition requiring the person(s) hearing/seeing it to take specific action to protect themselves from harm, e.g. a fire alarm. Alarms that require action solely to maintain a process or operation within defined safety limits do not fall within this definition.

AUTHORISATION CONDITION 9

INSTRUCTIONS TO PERSONS ON THE SITE

GUIDANCE NOTE

INTRODUCTION

1. The purpose of this Condition is to ensure that the Authorisee provides adequate instructions to all persons allowed on the site, Nuclear Powered Warship (NPW) or involved in transportation so that they are aware of the risks and hazards associated with nuclear activities, the precautions that must be taken to minimise the risk to themselves and others and the actions to be taken in the event of an accident or emergency.

SCOPE

2. This guidance covers the provision of instruction to all persons who are authorised to enter a site, NPW or be involved in transportation for any purpose. The information provided to any person should be appropriate and adequate for the circumstances under which the person is authorised to be present.

GUIDANCE TO AUTHORISEES

3. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements, including interfaces are adequate. Consideration should be given to the following:

a. The management responsibilities of all personnel responsible for the provision of instructions.

b. The arrangements for authorising persons, including contractors and visitors, to be on site or NPW or involved in transportation, including the arrangements for instruction of personnel on such topics as ionising radiations, nuclear accidents, fire and bomb/terrorist alerts and making them formally aware of the hazards and the emergency arrangements, and how such arrangements relate to non-nuclear emergency arrangements.

c. The arrangements for determining the content of the instruction provided, including an audit trail back to the hazards and emergency arrangements.

d. The arrangements for co-operation between Authorisees where their activities overlap, typically when a NPW or transportation is within the site boundary.

e. The arrangements for assessing that the outcome of instructions is acceptable.

f. The arrangements for ensuring that records of staff training are kept.

g. The arrangements for managing the interface with the Approving Authority (incorporating the Design Authority) for the provision of information regarding the risks and hazards associated with a NRP, a nuclear weapon, component or relevant support equipment, the precautions to be observed in connection therewith and the action to be taken in the event of an accident or emergency.

AUTHORISATION CONDITION 10

TRAINING

GUIDANCE NOTE

INTRODUCTION

1. The purpose of this Condition is to ensure that all people who carry out activities during design, construction, manufacture, commissioning, operation or decommissioning which may affect safety are adequately trained for that purpose. The Authorisee is expected to ensure that the necessary training requirements are identified for each activity, that individuals who carry out these activities can demonstrate that they have received such training and that records are kept to demonstrate that individuals have been trained. This Condition is in addition to the general duty under the Health and Safety at Work etc Act 1974 (HSWA) s.2(2) and the Ionising Radiation Regulations 1999, Reg. 14.

SCOPE

2. This guidance applies to the training requirements for all persons with specific safety responsibilities, including non-nuclear safety where this may have implications for nuclear or radiological safety. It is applicable to all organisations, whether they are regulated through the framework of Authorisation or not and includes, those with emergency response responsibilities.

GUIDANCE TO AUTHORISEES

3. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements, including interfaces are adequate. Consideration should be given to the following:

a. The management responsibilities of all personnel responsible for ensuring the provision of safety training to personnel who have responsibility for any operations that may affect nuclear or radiological safety.

b. The arrangements that ensure that a training plan is developed and maintained and equates to the training and qualifications required to undertake duties of safety specific posts.

c. The arrangements that ensure that records are kept in a training register to show that safety post holders have the required qualifications. Where personnel have more than one role, for instance their main post and also a role in responding to emergencies, then the training needs of both roles should be considered jointly.

d. The process of assessing posts' training requirements should consider the demands of any relevant safety case and the performance, skill, experience and knowledge of post holders which the safety case assumes.

e. The arrangements for ensuring a continuing programme of formal and practical training, including any new training needs and periodic refresher training.

f. The arrangements for gaining assurance that lodger units and contractors have adequate training arrangements. Where additional resources within an Authorisee's organisation are provided by contractors (for instance as secondees), then these staff should be treated as if they were employed by the Authorisee for the purposes of Authorisation Condition 10.

g. The arrangements for:

(1) establishing the training need;

(2) approving the training solution for each safety specific post;

(3) approving the training delivery;

(4) planning and providing the training;

(5) verifying that the training is meeting the identified need.

h. The arrangements for managing the interface with the Approving Authority (incorporating the Design Authority) for the provision of information to support the structuring and content of training.

AUTHORISATION CONDITION 11

EMERGENCY ARRANGEMENTS

GUIDANCE NOTE

INTRODUCTION

1. The purpose of this Condition is to ensure that the Authorisee has adequate arrangements in place to respond effectively to any emergency. The Authorisee is required to have arrangements in place to cover a wide range of events including those which can result in a significant release of radioactive material into the environment. The Condition gives Defence Nuclear Safety Regulator (DNSR) powers to ensure that the Authorisee's emergency arrangements are exercised. DNSR uses its powers to ensure the Authorisee's exercises demonstrate adequate performance to protect both workers and the public.

SCOPE

2. This guidance relates to the arrangements for dealing with any emergency which has nuclear safety implications. This includes situations where no actual hazard exists but where the potential for a hazard to arise is identified.

GUIDANCE TO AUTHORISEES

3. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements, including interfaces are adequate. Consideration should be given to the following:

a. The management responsibilities for those personnel who are responsible for emergency response planning.

b. The arrangements for defining and reviewing the risk and hazard assessments which derive from the emergency arrangements, and the key conclusions of the risk and hazard assessments.

c. The arrangements for preparing the operating organisation's emergency plan on the basis of the risk and hazard assessment.

d. The arrangements for ensuring that any person who has duties in relation to the emergency arrangements is a Suitably Qualified and Experienced Person, and is provided with training, instructions, equipment, etc.

e. The arrangements for ensuring that all persons on site, Nuclear Powered Warship, or involved in transportation who may be affected by the emergency, are provided with the necessary instruction, training, equipment etc.

f. The arrangements for ensuring that any external organisation with a role in the emergency arrangements (e.g. the emergency services) is appropriately consulted and provided with all necessary information.

g. The arrangements for providing coherent information to the local authority to enable the preparation of an off-site plan, including identification of the key aspects of the information provided.

h. The arrangements for providing advance information to the local community.

i. The key aspects of the emergency arrangements, including the provision of support to the off-site plan and, in each case, the response capability or performance standard which the arrangements are intended to achieve.

j. The arrangements for assessing the adequacy of the emergency arrangements and for ensuring that each aspect of the emergency arrangements, including the interfaces with external agencies, is exercised at appropriate intervals.

k. How the emergency arrangements and any amendments thereto are approved.

l. The arrangements for ensuring compliance with the provisions of the Radiation (Emergency Preparedness and Public Information) Regulations (REPPIR) (2001).

m. The arrangements for managing the interface with the Approving Authority (incorporating the Design Authority) for the provision of information and support to Authorisees in the event of an emergency.

DNSR EXPECTATION

4. In accordance with REPPIR regulation 13(1)(1)(b), site Authorisees and Duty Holders as appropriate are to notify DNSR in addition to the Health and Safety Executive without delay in the event of either a radiation emergency or an event which could reasonably be expected to lead to a radiation emergency.

5. DNSR will specifically approve arrangements for this Authorisation Condition (AC) and under sub clause (2) will expect to be provided with evidence, for DNSR agreement, that Authorisees have developed performance standards based on those detailed in JSP 471.

6. In accordance with AC11(2), site Authorisees and Duty Holders as appropriate are to submit to DNSR for approval such parts of their emergency arrangements as are sufficient to demonstrate compliance with the requirements of AC11.

7. In accordance with AC11(5), Authorisees and Duty Holders as appropriate are to rehearse their on-site emergency arrangements at intervals not exceeding 1 year, other than by agreement with DNSR, the scope of the rehearsal to be agreed with DNSR on a case-by-case basis.

DNSR Guidance to Authorisees Further to the Radiation (Emergency Preparedness and Public Information) Regulations (REPPIR) 2001

8. Further to REPPIR Regulation 7(6)(b), DNSR should in all cases be included in the consultations conducted by site Authorisees and Duty Holders as appropriate for the purpose of preparing an operator's plan, in accordance with Regulation 7(1), or of reviewing the plan (in accordance with Regulation 10(1)).

AUTHORISATION CONDITION 12

DULY AUTHORISED AND OTHER SUITABLY QUALIFIED AND EXPERIENCED PERSONS

GUIDANCE NOTE

INTRODUCTION

1. The purpose of this Condition is to ensure that only Suitably Qualified and Experienced Persons (SQEP) perform duties which may affect safety. The Authorisee is required to ensure that all activities that can affect safety are identified and the experience and qualification requirements for people to carry out these activities are defined. The Authorisee must ensure that the qualifications and experience of people match those required for the job. The Condition gives Defence Nuclear Safety Regulator (DNSR) the power to remove a person from safety related work if he or she is not suitably qualified or experienced for the job.

SCOPE

2. This guidance relates to nuclear safety and non-nuclear safety where this may have nuclear or radiological safety implications.

GUIDANCE TO AUTHORISEES

3. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements, including interfaces are adequate. Consideration should be given to the following:

a. The management responsibilities of all personnel responsible for post profiling and identification of required qualifications and experience of individuals who are to fill each nuclear safety related post.

b. A description of the system for post profiling, the required qualifications and experience of the individuals who are to fill each nuclear safety related post.

c. The methods of defining the categorisation of each post and the arrangements that apply for managing the categorisation.

d. The arrangements that ensure that:

(1) only SQEP carry out the duties that may affect nuclear or radiological safety;

(2) only Duly Authorised Persons (DAP) are appointed to posts which provide specific control and supervision functions significantly affecting nuclear and radiation safety.

e. A description of the arrangements for appointing DAP, including the circumstances under which they hold authority, what that authority is, how that authority is transferred/relinquished, and how the DAP's authority is made known to other Authorisees' personnel.

f. The arrangements that ensure that contractors have an appropriate level of expertise, are qualified to perform the tasks required, or alternatively are supervised by SQEP throughout their work. Contractors who are Authorisees in their own right, are subject to the requirements of this Authorisation Condition and other contractors should adhere to these arrangements under the scrutiny of their parent Authorisee or Duty Holder.

g. Design and procurement activities are often carried out by external contractors who are not subject to the controls on qualifications and experience specified here. Authorisees should be able to provide assurance to DNSR that acceptable controls for appointing persons with the appropriate competence, qualifications and experience are in place in such organisations.

h. The 'waiver' arrangements for appointments should ensure that:

(1) the lack of qualification or experience is formally recorded along with the considerations which, permit the appointment;

(2) all waivers are controlled, managed, approved and regularly reviewed;

(3) an appropriate timescale is set defining the period of validity of the waiver.

i. The arrangements for identifying projected SQEP requirements to undertake future work programmes and the process for ensuring that future SQEP requirements are met.

j. The arrangements for appointing and training personnel to ensure that waivers are only necessary in exceptional circumstances and that they are not used as a palliative measure to overcome foreseeable and avoidable shortages of SQEP.

k. The Authorisees' arrangements for managing the interface with the Approving Authority (incorporating the Design Authority) for the provision of information about the qualifications and experience of personnel conducting nuclear activities.

DNSR EXPECTATION

4. The Authorisee to categorise posts in organisations according to their safety significance.

5. DNSR will expect to give agreement to those posts in the highest class, including the qualifications and experience relevant to those posts.

6. DNSR will expect to give agreement to a waiver if it is proposed to appoint someone in the highest class who does not meet the agreed qualifications and experience for the post.

AUTHORISATION CONDITION 13

NUCLEAR SAFETY COMMITTEE

GUIDANCE NOTE

INTRODUCTION

1. The purpose of this Condition is to ensure that the Authorisee sets up a senior level committee to consider and advise the Authorisee on matters which affect the safe design, construction, commissioning, manufacturing, operation and decommissioning on its Authorised site and any other matter relevant to safety. The committee must have members who are adequately qualified to perform this task including members who are independent of the Authorisee. The Condition gives Defence Nuclear Safety Regulator (DNSR) the power to veto the appointment of or continued presence of any member. The committee is intended to act as a check on the Authorisee's decision making process to ensure that safety considerations are given due weight. However, the committee is intended to be purely advisory and must not be considered to have an executive function. Where the Authorisee rejects the advice of the committee the Condition requires the Authorisee to notify DNSR; in this way DNSR can investigate the justification of the Authorisee's safety related actions.

SCOPE

2. This guidance relates to the Authorisee's or Duty Holder's Nuclear Safety Committee (NSC). The NSC's responsibilities should also cover all those aspects that are required by other Conditions and any other topic requested by the Authorisee or Duty Holder.

GUIDANCE TO AUTHORISEES

3. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements, including interfaces are adequate. Consideration should be given to the following:

a. The management responsibilities of all personnel involved with the NSC.

b. The Terms of Reference (ToRs) for the NSC, including the arrangements for providing the ToRs to DNSR for approval.

c. The constitution of the NSC, in particular the rules of attendance, what constitutes a quorum, the number of independent members, and members' experience and qualifications.

d. The arrangements for managing the NSC.

e. The arrangements for making appointments to the NSC, including informing DNSR of the name, experience, qualifications and details of current and past posts held by each member.

f. The arrangements for emergency meetings or out of committee decisions of the NSC, when urgent advice is sought but a properly constituted meeting is not practicable.

g. The arrangements that ensure a record of the committee's membership, the minutes of meetings, papers and reports considered are maintained.

h. The status of the NSC advice and the action to be taken if the Authorisee or Duty Holder rejects such advice.

i. The arrangements for notifying DNSR, as soon as practicable, if it is intended to reject, in whole or in part, any advice given by any such committee together with the reason for such rejection.

DNSR EXPECTATION

4. DNSR will specifically approve the ToRs of the NSC.

AUTHORISATION CONDITION 14

SAFETY DOCUMENTATION

GUIDANCE NOTE

INTRODUCTION

1. The purpose of this Condition is to ensure that the Authorisee sets up arrangements for the preparation and assessment of the safety related documentation used to justify safety during design, construction, manufacture, commissioning, operation and decommissioning. The arrangements for the assessment of safety related documentation are intended to ensure an independent review of the quality and accuracy of the Authorisee's safety related decisions and activities to ensure they have been adequately justified.

SCOPE

2. This guidance applies to the safety documentation produced to justify the safety during research, design, trials, development, construction, manufacture, commissioning, operation, modification and decommissioning.

GUIDANCE TO AUTHORISEES

3. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements, including interfaces are adequate. Consideration should be given to the following:

a. The management responsibilities of all personnel responsible for the production and approval of the safety documentation.

b. The arrangements to:

(1) prepare, peer review and assess safety documentation;

(2) ensure that safety documentation is categorised in accordance with its safety significance;

(3) ensure that safety documentation is produced by Suitably Qualified and Experienced Person(s) (SQEP);

(4) ensure that safety documentation is reviewed by independent SQEP;

(5) determine whether documentation which has higher categories of safety significance should be subjected to an Independent Nuclear Safety Assessment by SQEP, independent of the groups responsible for the production of the safety case or for activities;

(6) submit documents, where appropriate, after peer review to the Authorisee's own Nuclear Safety Committee;

(7) ensure that documentation is submitted to Defence Nuclear Safety Regulator (DNSR) in accordance with the categorisation scheme or as specified by DNSR. This includes the provision of the Nuclear Safety Committee's comments as appropriate;

(8) ensure that safety documentation is approved and reviewed at appropriate intervals. The level at which safety documentation is reviewed should be in accordance with the Authorisee's categorisation scheme.

c. The requirement for safety documentation to cover procurement, commissioning, operation, maintenance, modification, decommissioning of equipment or systems, supporting infrastructure if appropriate, and the management of radioactive waste products including their storage and disposal.

d. State the approval level of the safety documentation.

DNSR EXPECTATION

4. With regard to Authorisation Condition 14(1) DNSR expects:

a. The Authorisee to categorise safety documentation according to safety significance.

b. To give agreement to activities described in safety documentation in the highest class.

c. To be able to 'Call in' any safety documentation.

AUTHORISATION CONDITION 15

PERIODIC REVIEW

GUIDANCE NOTE

INTRODUCTION

1. The purpose of this Condition is to ensure that the Authorisee periodically stands back and reviews the safety case against current standards to see if there are reasonably practicable improvements that could be made, to demonstrate that it is safe to continue to conduct nuclear activities for the next defined period and to identify any life limiting factors.

SCOPE

2. All safety cases, Statements of Compliance and Safety Justifications.

GUIDANCE TO AUTHORISEES

3. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements, including interfaces are adequate. Consideration should be given to the following:

a. The management responsibilities of all personnel responsible for the periodic review of safety cases.

b. The form of the review being undertaken. There are two types of review: the rolling programme of reviewing and updating safety cases and Statements of Compliance, and the less frequent stand-alone periodic review of the Safety Justification.

c. The arrangements for reviewing safety justifications when any change, significant external event or emergent information arises.

d. The procedure for managing the unplanned situation, especially as to whether the operation may continue.

e. The arrangements for reporting and ensuring that results of all reviews are subjected to scrutiny by a sufficiently independent and competent body before submission to the Nuclear Safety Committee.

f. The arrangements for agreeing, prioritising, planning and implementing recommendations from the review and obtaining agreement from Defence Nuclear Safety Regulator (DNSR) when significant safety or programme implications are identified.

g. The arrangement for reviewing the safety justification if operation beyond the original justified period or equipment/system design life is considered.

h. The arrangement for determining the scope and review periodicity, linking this to its life cycle and ensuring that the safety justification remains valid and is reviewed at intervals agreed by DNSR, e.g. whilst a typical timescale for periodic

review is 10 years, for the Naval Reactor Plant this may be linked to the Long Overhaul Period programme.

i. The means by which the standards and processes for the review reflect current best practice, are systematic, address developments in technology and safety management, consider operating experience and emergent problems, address ageing, incorporate lessons learned from other sites and industries and address the principle of continuous improvement.

j. The arrangements for ensuring that a holistic view is adopted during each review.

AUTHORISATION CONDITION 16

SITE PLANS, DESIGNS AND SPECIFICATIONS

GUIDANCE NOTE

INTRODUCTION

1. The purpose of this Condition is to ensure that the Authorisee indicates, using plans and schedules, any site, facility, Nuclear Powered Warship (NPW), transport activity or Naval Reactor Plant (NRP) which might affect safety and provides a schedule updated as necessary giving details of each and its associated operations. This is to ensure that the Authorisee and Defence Nuclear Safety Regulator (DNSR) are able to understand the content and function of the site, facility, NPW, transport activities or NRP.

SCOPE

2. This guidance relates to all site plans, plans, schedules and specifications for the site, facility, NPW, transport activity, NRP or utilities sufficient to define the activities and boundaries.

GUIDANCE TO AUTHORISEES

3. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements, including interfaces are adequate. Consideration should be given to the following:

a. The management responsibilities of all personnel responsible for ensuring that site plans, design specifications and schedules are maintained up to date and are forwarded to DNSR at appropriate intervals.

b. The purpose of each facility, transport activity, service and utility. Their design life and the period of validity of the Safety Justification should be stated.

c. The arrangements that verify, at suitable periodicity, that the plans and schedules reflect the actual state of the subject of the plan or schedule.

d. The arrangement which ensures that independent surveys of facilities, transport activities, services and utilities are commissioned at appropriate intervals to show fitness for purpose.

e. The arrangements for ensuring that the proximity of any building does not constitute an unacceptable hazard to nuclear services.

f. The arrangements for locating facilities to ensure that hazards are minimised and separated by distance.

g. The arrangements for maintaining detailed plans of approved berths, facilities and associated services including any nuclear or explosives limitations on occupancy required by the site safety case.

h. The arrangements that state the period for which plans, designs and specifications will be retained.

AUTHORISATION CONDITION 17

QUALITY ASSURANCE

GUIDANCE NOTE

INTRODUCTION

1. The purpose of this Condition is to ensure that the Authorisee applies quality assurance to all activities associated with the design, construction, manufacture, commissioning, operation and decommissioning on the site including the preparation and review of safety documentation. The Authorisee's arrangements are expected to include the provision of a Quality Assurance (QA) capability to oversee the specification, audit and review of QA arrangements.

SCOPE

2. This guidance relates to the QA arrangements operated by Authorisees, Duty Holders and contractors, involved in activities covered by Defence Nuclear Safety Regulator (DNSR) Authorisation that may affect nuclear or radiological safety.

3. Duty Holders with responsibility for safety should have QA arrangements appropriate to the scope and extent of their activities.

GUIDANCE TO AUTHORISEES

4. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements, including interfaces are adequate. Consideration should be given to the following:

a. The management responsibilities of all personnel responsible for establishing, co-ordinating and maintaining the QA capability.

b. The arrangements for managing and supervising work with safety implications, demonstrating a clear split in responsibility for the prescription of nuclear and radiation safety and adherence to the rules.

c. The QA arrangements, making reference to any accredited system being operated.

d. The arrangements for monitoring, reviewing and maintaining documents and procedures.

e. The management arrangements for periodic internal and external audits, including audits by independent competent bodies.

f. The arrangements for rectification of shortfalls and deficiencies identified during audits, including the use of Safety Justification Plans and other arrangements to ensure that issues are not overlooked and that lessons are learned and managed.

AUTHORISATION CONDITION 18

RADIOLOGICAL PROTECTION

GUIDANCE NOTE

INTRODUCTION

1. The purpose of this Condition is to ensure that the Authorisee makes and implements adequate arrangements to assess the average effective dose for any class or classes of workers. It also requires the Authorisee to notify Defence Nuclear Safety Regulator (DNSR) if the dose exceeds a specified level. This is complementary to the Ionising Radiations Regulations 1999, Regulation 25 compliance of which fulfils this Authorisation Condition.

SCOPE

2. This guidance relates to the arrangements for assessing the average effective dose equivalent for classes of persons identified by the Authorisee.

GUIDANCE TO AUTHORISEES

3. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements, including interfaces are adequate. Consideration should be given to the following:

a. The management responsibilities of all personnel responsible for radiological protection including personal dosimetry and for the assessment of dosimetry returns.

b. The classes of persons for whom the average effective dose will be assessed.

c. The arrangements for assessing, recording and retaining the average effective dose of classes of persons.

d. The arrangements for identifying and notifying DNSR if the average effective dose equivalent exceeds levels specified by DNSR.

AUTHORISATION CONDITION 19

CONSTRUCTION OR INSTALLATION OF NEW PLANT

GUIDANCE NOTE

INTRODUCTION

1. The purpose of this Condition is to ensure that the Authorisee provides and implements adequate control over the construction and installation of any new facility, transport activity or Naval Reactor Plant (NRP) or system which may affect nuclear safety. The objective is for the Authorisee to plan the design, manufacture, construction and installation. This is to ensure that before the construction takes place a pre-construction safety report is produced to demonstrate the safety of the installation. The condition gives the power to Defence Nuclear Safety Regulator (DNSR) to prevent the commencement of construction until it is satisfied with the safety case and/or put hold points during the construction process to ensure the installation is being constructed in accordance with the stated intent. DNSR's control can be either through using the direct powers in the Condition or through secondary powers built into the Authorisee's arrangements.

SCOPE

2. This guidance relates to the control of design, manufacture, construction or installation of any new facility, transport activity or NRP.

GUIDANCE TO AUTHORISEES

3. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements, including interfaces are adequate. Consideration should be given to the following:

a. The management responsibilities of all personnel who are responsible for ensuring correct manufacture/construction/assembly and installation activities.

b. The personnel responsible for managing and supervising work and those responsible for categorising the proposed work.

c. The arrangements for categorising all proposed work according to the hazard potential.

d. The arrangements to:

(1) ensure that documentation is produced to justify the safety of the undertakings;

(2) ensure that such documentation is produced by Suitably Qualified and Experienced Persons (SQEP);

(3) ensure that the documents are reviewed by independent SQEP;

(4) ensure that the documents are approved through the appropriate due process;

(5) produce and keep records of the relevant safety documentation; and

(6) apply lessons learned from other similar projects.

e. The arrangements for managing the work during all phases of design, manufacture, construction or installation, including the assessment of hazards specific to the work and interactions between the broader site. This should demonstrate an integrated approach.

f. The arrangements for the production of a project programme and management plan that includes the arrangements for dividing the work into stages, where appropriate, each of which will have a safety justification and require approval before commencement. Approval hold points and the associated activities should be identified for internal approval activities (typically, internal audit, Independent Peer Review, Nuclear Safety Committee and the Design Authorities), as well as those associated with external approval activities undertaken by DNSR.

AUTHORISATION CONDITION 20

MODIFICATION TO DESIGN OF PLANT UNDER CONSTRUCTION

GUIDANCE NOTE

INTRODUCTION

1. The purpose of this Condition is to ensure that the Authorisee cannot change the design of an installation once Defence Nuclear Safety Regulator (DNSR) has given its consent or agreement to design, manufacture or construction without going through a proper design change process which assesses the modification in relation to its safety significance and defines the degree of safety justification required. The Condition gives DNSR the power to intervene and stop a modification if it believes there is inadequate safety justification.

SCOPE

2. This guidance relates to all modifications during design, manufacture, construction and installation.

GUIDANCE TO AUTHORISEES

3. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements, including interfaces are adequate. Consideration should be given to the following:

a. The management responsibilities of all personnel who are responsible for ensuring that modifications are managed, controlled and supervised.

b. The personnel responsible for the managing and supervising of work and those responsible for categorising the proposed work.

c. The arrangements for categorising or re-categorising modifications according to their safety significance; the management arrangements governing the processing and approval of modifications at each categorisation level; and the safety documentation required for each categorisation level.

d. The arrangements for implementing the modification in stages, where appropriate, with each stage needing DNSR consent, if specified, before commencement of the next stage.

e. The safety documentation justifying the safety of the modification describing the level of approval required.

f. A ‘hold point’ strategy and the arrangements for defining the appropriate level of approval for each stage.

g. The arrangements for appointing a committee, whose specific purpose is to approve safety related design changes.

h. The role of relevant groups or review bodies, the Approving Authority (incorporating the Design Authority) and the involvement of the Nuclear Safety Committee.

i. The arrangements for approval of modifications.

j. The arrangements to ensure that where DNSR so specifies, the Authorisee is not to introduce a modification without the consent of DNSR.

k. The arrangements, if so directed by DNSR, to halt a modification and not to recommence without DNSR consent.

AUTHORISATION CONDITION 21

COMMISSIONING

GUIDANCE NOTE

INTRODUCTION

1. The purpose of this Condition is to ensure that the Authorisee has adequate arrangements for the commissioning of a new or modified facility, Nuclear Powered Warship (NPW) or transport activity or Naval Reactor Plant (NRP) or process which may affect safety.

2. The Condition gives the Defence Nuclear Safety Regulator (DNSR) powers to control various stages of commissioning. This is to ensure that the Authorisee demonstrates that the facility, NPW, transport activity NRP or modification has been completed according to the design intent, and the necessary safety implications associated with commissioning have been considered, assessed and shown to be acceptable. Usually a hold point is put at the start of inactive commissioning, i.e. testing systems before the introduction of radioactive materials, and at the start of active commissioning. This latter hold point is to ensure that the Authorisee has demonstrated that the facility is functioning and is safe to allow the introduction of radioactive materials. Finally the Condition gives DNSR the power to control the commencement of routine operations by requiring the Authorisee to produce a pre-operational safety report and seek DNSR's consent to start operations.

SCOPE

3. This guidance relates to all commissioning of any facility, NPW, transport activity or NRP.

GUIDANCE TO AUTHORISEES

4. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements. Including interfaces are adequate. Consideration should be given to the following:

a. The management responsibilities of all personnel who are responsible for ensuring that commissioning trials are carried out safely.

b. The personnel responsible for managing and supervising the commissioning of new or modified items.

c. The system to define the commissioning required for each new or modified item. This should clearly differentiate between the testing required to demonstrate the project's design intent and the overall commissioning required to demonstrate correct functioning and fitness for purpose.

d. The arrangements for commissioning in stages, including inactive and active commissioning, where appropriate, recognising that each stage may require DNSR consent, before starting the next stage.

e. The arrangements that ensure only Suitably Qualified Experienced Persons control the commissioning process and assess the results of any tests or trials.

f. The safety documentation justifying the safety of the proposed commissioning and the description of the level of approval required, including the approval of concessions.

g. The arrangements that ensure there are comprehensive and accurate records of test and trial results and that assessment of the results are kept and form part of the commissioning report.

h. The arrangements that ensure that new or modified items which may affect safety are not operated until the appropriate stage of commissioning has been completed. A report of such commissioning has been produced and a safety case(s) has been developed and considered. DNSR will expect all pre-commissioning safety reports to be approved before any inactive and active commissioning takes place. These arrangements also apply after major work to restore the design intent including after such events as a fire when major repair work may be required.

i. The Authorisee should make provision for the Approving Authority (AA) (incorporating the Design Authority) to be integrated into the arrangements for commissioning. The AA is charged with understanding the design intent with respect to the nuclear safety case and representing this design intent at all stages of design, build and commissioning. DNSR will seek assurance that the integrity of the design intent and appropriate configuration control is being maintained. The management of these aspects is normally vested in a committee, which controls safety related design changes. Inactive and active commissioning should be planned and executed to show that the design assumptions have been met.

j. All work with nuclear safety significance should be carried out in accordance with an appropriate procedure. The procedure should undergo a process of review and approval commensurate with its significance to safety.

AUTHORISATION CONDITION 22

MODIFICATION OR EXPERIMENT ON EXISTING PLANT

GUIDANCE NOTE

INTRODUCTION

1. The purpose of this Condition is to ensure that the Authorisee has adequate arrangements to control all modifications to any facility, Nuclear Powered Warship (NPW), transport activity or Naval Reactor Plant (NRP) on an Authorised site that may affect safety. The Condition also gives Defence Nuclear Safety Regulator (DNSR) the power to control such modifications to ensure that they cannot commence until the Authorisee has adequately demonstrated the safety of the proposal. These powers can be direct or indirect via the Authorisee's own voluntary hold points. The Condition also gives DNSR the power to halt a modification or intervene at any stage in the interest of safety.

SCOPE

2. This guidance relates to all modifications, trials or experiments carried out on any part of existing facilities, NPW, transport activities, NRP and equipment.

GUIDANCE TO AUTHORISEES

3. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements, including interfaces are adequate. Consideration should be given to the following:

a. The management responsibilities of all personnel who are responsible for ensuring that modifications, trials or experiments are managed, controlled and supervised.

b. The personnel responsible for managing and supervising work and those responsible for categorising the proposed work.

c. The arrangements for categorising modifications, trials and experiments according to their safety significance; the management arrangements governing the processing and approval of modifications, trials and experiments at each categorisation level; and the safety documentation required for each categorisation level.

d. The arrangements for considering the affect of modifications on the category of the facility.

e. The arrangements for ensuring that the procedures for modifications, trials or experiments are implemented, properly controlled, authorised and conducted.

f. The arrangements for implementing the modification, trial or experiment in stages, where appropriate, with each stage requiring DNSR consent, if specified, before commencement of the next stage.

g. Producing a 'hold point' strategy and the arrangements for defining the appropriate level of approval for each stage.

h. The safety documentation justifying the safety of the modification, trial or experiment and the level of approval required.

i. The role of relevant groups or review bodies, including the involvement of the Nuclear Safety Committee and the Approving Authority (AA) (incorporating the Design Authority).

j. The arrangements for approval of modifications, trials or experiments.

k. The Authorisees' arrangements should make provision for the AA to be integrated into the control of modifications and alterations ensuring that operating instructions and procedures are consistent with the Safety Justification and the design intent.

l. The arrangements to ensure that where DNSR so specifies, the Authorisee is not to introduce a modification without the consent of DNSR.

m. The arrangements, if so directed by DNSR, to halt a modification and not to recommence without the consent of DNSR.

AUTHORISATION CONDITION 23

OPERATING RULES

GUIDANCE NOTE

INTRODUCTION

1. The safe operation of a nuclear installation results from many factors including the design of the facility, Nuclear Powered Warship (NPW), transport activity or Naval Reactor Plant (NRP), its behaviour under fault or accident conditions and the actions of the operators. It is therefore essential that the totality of these often complex interactions are fully understood. The method of doing this is to require the operator to produce a safety case to justify the operation of the installation.

2. The purpose of this Condition is to ensure that the operational safety case identifies all the necessary conditions and limits of safe operation (CLOSO). Operating rules must then be set to ensure that the safety related facility, NPW, transport activity, NRP, or system is kept within parameters which ensure the safety during normal operation and fault and accident conditions, and allowing an appropriate margin for error where operator action is invoked.

SCOPE

2. This guidance relates to the operating conditions and limits necessary in the interest of safety, which may also be referred to as operating rules which are generated to prevent a breach of the safe operating envelope.

GUIDANCE TO AUTHORISEES

3. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements, including interfaces are adequate. Consideration should be given to the following:

a. The identification of the safe operating envelope of the facility, NPW, transport activity or NRP from the design limits of individual safety critical components thereof.

b. The identification in the safety case of appropriate CLOSO, hereafter referred to as operating rules, to be applied by the operator which will keep within its safe design limits allowing a margin for error or oversight.

c. The arrangements that ensure that any operating rules identified in safety cases have been effectively translated into operational documentation

d. The management responsibilities of all personnel who are responsible for defining, approving, producing, reviewing and maintaining the operating rules, ensuring a consistent and rigorous link to the design substantiation and design safety case.

e. The arrangements for dealing with breaches of operating rules including their recording and monitoring to feed into a review process by competent persons with a knowledge of the design limits.

f. The links with related Authorisation Conditions (AC), e.g. see AC24, along with any other links necessary to ensure that the Authorisee's safety management arrangements are effective and consistently implemented.

g. The arrangements for ensuring that the appropriate operating rules are derived, reviewed, maintained and approved, including the Defence Nuclear Safety Regulator approval, if specified, via the appropriate clearance route.

h. The arrangements for ensuring that amendments to operating rules are approved before implementation.

i. The arrangements for dealing with a breach of an operating rule.

j. The arrangements for the production and keeping of relevant operational records.

l. The arrangements for managing the interface with the Approving Authority (incorporating the Design Authority) supporting the Authorisees in the identification of the operating rules.

AUTHORISATION CONDITION 24

OPERATING INSTRUCTIONS

GUIDANCE NOTE

INTRODUCTION

1. Safety is influenced by the actions of people who control, maintain or service the facility, Nuclear Powered Warship, transport activity or Naval Reactor Plant. It is important given the often complex nature of the safety case for all actions carried out by people to be done in accordance with procedures derived from the design intent and the safety case. It is also important that actions are not carried out on an ad hoc basis without evidence. Therefore the purpose of this Condition is to ensure that all operations which may affect safety, including any instructions to implement conditions and limits of safe operation (CLOSO), are undertaken in accordance with written operating instructions.

SCOPE

2. This guidance relates to operations that may affect nuclear or radiological safety. However, these can often not be separated in operating instructions from other operations which ensure the satisfactory output from the facility; such operations include the routine day-to-day operations and related activities such as research, trials, maintenance, commissioning and decommissioning.

GUIDANCE TO AUTHORISEES

3. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements, including interfaces are adequate. Consideration should be given to the following:

a. The management responsibilities of all personnel responsible for implementing (writing and acting upon) written operating instructions.

b. The arrangements for translating the CLOSO (operating rules) into operating instructions. Such operating instructions should include:

(1) step-by-step instructions on how to carry out an operation to ensure that it is undertaken in the way identified in a manner consistent with the design intent and the safety case;

(2) instructions to ensure that the CLOSO are complied with (operating rules may be cited explicitly);

(3) other instructions necessary in the interests of safety.

c. The arrangements for ensuring that the operating instructions and CLOSO are made available to personnel as appropriate.

d. The arrangements for introducing operating instructions, their review, amendment, control and approval, including Defence Nuclear Safety Regulator (DNSR) approval, if specified.

e. The arrangements for initiating a review of Operating Instructions in the light of operational experience indicating, for example, difficulties in following or understanding them. See also guidance to Authorisation Condition 23 on breach of operating rules.

f. The arrangements for ensuring that when significant changes are made to operating instructions they are submitted to an appropriate internal safety authority for approval, and DNSR if specified.

g. The arrangements for managing the interface with the Approving Authority (incorporating the Design Authority), for the provision of information to enable Authorisees to provide operating instructions including any instructions necessary in the interests of safety and any instructions necessary to ensure that any CLOSO are implemented.

AUTHORISATION CONDITION 25

OPERATIONAL RECORDS

GUIDANCE NOTE

INTRODUCTION

1. The purpose of this Condition is to ensure that adequate records are kept regarding the operation, inspection and maintenance of any safety-related facility, Nuclear Powered Warship (NPW), transport activity or Naval Reactor Plant (NRP).

SCOPE

2. Operational records are those relating to examination, inspection, maintenance, testing and operation of any facility, NPW, transport activity or NRP which may affect safety and records of the amount and location of all radioactive material, including nuclear fuel and radioactive waste, used, processed, stored or accumulated upon the site at any time.

GUIDANCE TO AUTHORISEES

3. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements, including interfaces, are adequate. Consideration should be given to the following:

a. Management responsibilities of all personnel responsible for records associated with the operation, inspection and maintenance of the facility, NPW, transport activity, NRP, process or system.

b. The arrangements for identifying the records to be kept and the retention period. The arrangements for ensuring that records of operations are produced, controlled and retained. Operational records should, where appropriate, include the results of the operation, inspection and maintenance, and the environmental exposure levels experienced.

c. The arrangements for ensuring that baseline records are established and re-established following modifications or changes in operations.

d. The arrangements for the recording and keeping of records of the amount and location of all radioactive material, including waste stored or accumulated on sites and Nuclear Powered Warships.

e. The arrangements for security of records, including duplication and diversity of storage to minimise the risk of accidental destruction.

f. The arrangements for managing the interface with the Approving Authority (incorporating the Design Authority) to establish what records are to be made of the operations conducted with facilities, NPW, transport activity or NRP and systems as necessary to support approval for service use.

g. The arrangements for operational records permit the Authorisee to review previous operations so as to:

(1) establish an operational baseline for a plant, facility or Nuclear Weapon System;

(2) confirm that the facility, NPW, transport activity and NRP performance is maintained through life;

(3) confirm the continuing validity of the safety case;

(4) establish that assumptions regarding operations made in the safety case are realistic;

(5) support justification of continued operation in the case of abnormal/ anomalous events, defects etc;

(6) allow analysis to support improvements in design or operation Authorisation Condition 14 (AC14);

(7) support the berth assessment process, Further Authorisation Condition 2;

h. A systematic approach should be taken to identify what records should be kept and the reasons for retaining each type of record. This should include such items as operating logs, records of maintenance activities, records of specific trials (which may be covered by Test Forms or Nuclear Procedures), etc.

i. The arrangements should ensure that the records are maintained so as to meet the requirements of AC6 for security, access and means of retrieval. The coherence of the arrangements with those of other Authorisees is an important factor, where appropriate.

DNSR EXPECTATION

4. The Defence Nuclear Safety Regulator (DNSR) will specify that Authorisees should provide DNSR with records of high activity sealed sources as defined in the Environmental Permitting (England and Wales) Regulations 2010 (SI 2010/675) or the High-Activity Sealed Radioactive Sources and Orphan Sources Regulations 2005 (SI 2005/2686) as appropriate which are held on the Authorised site, and which are not already held under a notification granted by Environment Agency/Scottish Environment Protection Agency, for example as mobile radioactive apparatus in accordance with RSA 93-equivalent or EPR10-equivalent arrangements.

5. MOD has determined that the following radioactive material does not constitute High-Activity Sealed Sources and should not be included in notifications:

- any component of a nuclear weapon;
- any nuclear fuel element;
- any radioactive substance inside a nuclear reactor;
- containers of radioactive material where the radioactive material would not constitute a sealed source in the absence of the container, and the container is for the purpose of storage or transport rather than to ensure the integrity of the source as in ISO 2919:1999.

AUTHORISATION CONDITION 26

CONTROL AND SUPERVISION OF OPERATIONS

GUIDANCE NOTE

INTRODUCTION

1. The purpose of this Condition is to ensure that safety-related operations are carried out only under the control and supervision of Suitably Qualified and Experienced Personnel (SQEP).

SCOPE

2. This guidance relates to all operations that may affect nuclear or radiological safety.

GUIDANCE TO AUTHORISEES

3. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements, including interfaces are adequate. Consideration should be given to the following:

a. The management responsibilities of all the personnel responsible for ensuring that no operations are carried out that may affect nuclear or radiological safety except under the control and supervision of SQEP who have been appointed for that purpose.

b. The arrangements through which the Authorisee gains assurance that personnel, including contractors, working on safety significant tasks are SQEP and appointed for that purpose by the Authorisee.

c. The arrangements for ensuring that personnel working on safety significant tasks on the Authorised site, who are not part of the site Authorisee's organisation, are SQEP and properly appointed for the purpose.

d. The arrangements for ensuring that copies of the operating instructions and conditions and limits of safe operation/operating rules are made available to operating personnel.

e. The arrangements to ensure that there are adequate staffing levels to meet the requirements of the safety case.

AUTHORISATION CONDITION 27

SAFETY MECHANISMS, DEVICES AND CIRCUITS

GUIDANCE NOTE

INTRODUCTION

1. A facility, Nuclear Powered Warship (NPW), transport activity or Naval Reactor Plant (NRP) is designed to have multiple safety systems to provide defence in depth against maloperation, faults or accidents. It is important that at all times there are sufficient safety systems in good working order because by definition they must be able to function on demand and such instances are unpredictable. The purpose of this Condition is therefore to ensure that there are always sufficient and operable safety mechanisms, devices and circuits to provide the necessary defence in depth.

SCOPE

2. This guidance relates to safety mechanisms, devices and circuits (SMDC) identified in the safety case.

GUIDANCE TO AUTHORISEES

3. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements, including interfaces are adequate. Consideration should be given to the following:

a. The management responsibilities of all personnel responsible for SMDC, safe operation and for providing instructions that ensure safe operation and maintenance.

b. The arrangements for ensuring SMDC identified in the safety case are incorporated into operating documentation and approved via the appropriate clearance route (see also Authorisation Condition 24 (AC24)).

c. The arrangements for ensuring that any element of the facility, NPW, transport activity, NRP or system that may affect nuclear or radiological safety is protected by a SMDC, if identified in the safety case.

d The actions to be taken following the operation of those SMDC essential for ensuring safety.

e. The arrangements for ensuring safe systems of work, including a system of permits to work, is implemented, that the safety system is maintained, tested according to specified procedures, and that safety-related trip or alarm levels are not changed without authorisation.

f. The arrangements for reporting failures of SMDC on occasions when operation of the SMDC is invoked, and any operation with SMDC not in accordance with the safety case or other instruction.

f. The arrangements for managing the interface with the Approving Authority (incorporating the Design Authority) to establish which operating conditions and

limits should be governed by the provision of suitable and sufficient SMDC and who will provide information in respect of such safety mechanisms, devices and circuits.

h. The arrangements for ensuring that at all times there are sufficient safety systems operational to ensure operation within the 'safety envelope' defined in the safety case. Any failure to comply with this or any failure of a SMDC discovered for instance during testing should invoke incident reporting arrangements made under AC7. Similarly, should a demand be placed on any SMDC for any reason, the circumstances should also be reported as an incident.

AUTHORISATION CONDITION 28

EXAMINATION, INSPECTION, MAINTENANCE AND TESTING

GUIDANCE NOTE

INTRODUCTION

1. A nuclear installation, like any other complex machine, requires maintenance and if such maintenance is not carried out properly it has the potential to undermine the safety case and put safety at risk. The purpose of this Condition therefore, is to ensure that regular and systematic examination, inspection, maintenance and testing is scheduled, by and under the control of suitably qualified personnel and that records of maintenance activities are kept.

SCOPE

2. This guidance relates to the correct conduct of Examination, Inspection, Maintenance and Test (EIMT) and the provision of an EIMT schedule.

GUIDANCE TO AUTHORISEES

3. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements, including interfaces are adequate. Consideration should be given to the following:

a. The management responsibilities of all personnel responsible for:

(1) producing and controlling the EIMT schedules for all nuclear safety related equipment;

(2) ensuring that all nuclear safety related equipment is examined, inspected, maintained and tested and is in a safe condition to enable approved operations to be undertaken;

(3) ensuring that only Suitably Qualified and Experienced Persons carry out the EIMT activities, including supervision of the task;

(4) ensuring that when any EIMT reveals that safe operation or safe condition may be affected the appropriate action is taken to ensure that the matter is investigated and reported in accordance with the arrangements made under Authorisation Condition 7 (AC7).

b. The arrangements for producing EIMT Schedules, including how they are derived from the safety cases, describing the operations and the periodicity of EIMT.

c. The arrangements for ensuring that EIMT schedules are carried out on time (unless Defence Nuclear Safety Regulator has agreed to an extension of the interval specified in the EIMT schedule). It is therefore in the interests of the Authorisee to:

(1) identify the limiting safe periodicity for EIMT items;

(2) identify a periodicity for EIMT, within the limit defined above, which will give flexibility to suit operational needs.

d. The arrangements for operating and reviewing the schedule, including recording of results and ensuring that those personnel carrying out the work have the appropriate qualifications and experience.

e. AC30, Periodic Shutdown, requires EIMT schedules to be adhered to, even if the shut down is necessary to carry out EIMT.

f. The arrangements for:

(1) allowing the suspension or delay in carrying out particular EIMT, specifying the levels at which such suspensions or delays are authorised;

(2) ensuring that appropriate action is taken in the event of a failure during EIMT and the requirements for reporting in such circumstances.

(3) managing Interfaces between EIMT schedules of different Authorisees.

g. The arrangements for managing the interface with the Approving Authority (incorporating the Design Authority) to establish the EIMT requirements.

AUTHORISATION CONDITION 29

DUTY TO CARRY OUT TESTS, INSPECTIONS AND EXAMINATIONS

GUIDANCE NOTE

INTRODUCTION

1. The purpose of this Condition is to enable the Defence Nuclear Safety Regulator (DNSR), following consultation, to require the Authorisee to perform any tests, inspections and examinations which it may specify and to be provided with the results.

SCOPE

2. This guidance relates to the carrying out of tests, inspections and examinations as specified by DNSR in addition to any carried out under Authorisation Condition 28 (AC28).

GUIDANCE TO AUTHORISEES

3. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements, including interfaces are adequate. Consideration should be given to the following:

a. The management responsibilities of all personnel responsible for the arrangements to carry out inspections, tests and examinations.

b. The arrangements for carrying out such inspections, tests and examinations.

c. The appropriate approval routes for carrying out such inspections, tests and examinations.

d. The arrangements for assessing such inspections, tests and examinations and providing the results to DNSR.

e. The arrangements for ensuring the provision of evidence to agreed dates, taking account of the operational requirements.

f. The arrangements in place for producing and keeping records. Records are considered under AC6.

AUTHORISATION CONDITION 30

PERIODIC SHUTDOWN

GUIDANCE NOTE

INTRODUCTION

1. It may be necessary for operations to be shut down at regular intervals for inspection and testing of essential components. The Examination, Inspection, Maintenance and Testing (EIMT) schedule will define the required intervals. The purpose of this Condition is, therefore, to ensure that shut down is in accordance with the EIMT schedule and these important examination and maintenance activities are carried out. The Condition also gives Defence Nuclear Safety Regulator (DNSR) the power to intervene and require the Authorisee to seek DNSR's consent to restart operations following the completion of the necessary maintenance.

SCOPE

2. See Introduction.

GUIDANCE TO AUTHORISEES

3. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements, including interfaces are adequate. Consideration should be given to the following:

a. The management responsibilities of all personnel responsible for the arrangements that ensure that periodic shutdowns are undertaken to meet EIMT requirements.

b. The arrangements to ensure shutdown to enable scheduled EIMT to be undertaken.

c. The arrangements for considering, justifying and obtaining the required approval to extend the period before scheduled shutdown and reporting the satisfactory completion of the EIMT.

d. The arrangements to ensure start up is not commenced unless approved by DNSR where such consent has been required by DNSR.

e. The arrangement for recording the extension and amending future shutdown plans where applicable.

f. The arrangements in place for producing and keeping of relevant records of scheduled shutdowns and the work carried out. Records are considered under Authorisation Condition 6 (AC6) and AC25.

g. The arrangements for managing the interface with the Approving Authority (incorporating the Design Authority) to enable such EIMT to take place.

AUTHORISATION CONDITION 31

SHUTDOWN OF SPECIFIED OPERATIONS

GUIDANCE NOTE

INTRODUCTION

1. If Defence Nuclear Safety Regulator (DNSR) has concerns about the safety of any activity, and the Authorisee is unable or unwilling to provide the necessary safety justification for continued operation, then DNSR must have the power to order the cessation of the activity. The purpose of this Condition is to give DNSR the power to instruct Authorisees to cease the activity within a given period. Following a direction to cease the Authorisee will require a consent from DNSR to restart the activity.

SCOPE

2. This guidance relates to the directed cessation of any defence nuclear activities.

GUIDANCE TO AUTHORISEES

3. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements, including interfaces are adequate. Consideration should be given to the following:

a. The management responsibilities of all personnel responsible for ensuring that there are arrangements to respond to a requirement to shutdown, if directed by DNSR.

b. The process by which the Authorisee will respond to DNSR's direction to shutdown.

c. The arrangements through which the restarting of activities will be justified and a consent obtained from DNSR following a shutdown under a DNSR direction.

d. The arrangements for managing the interface with the Approving Authority (incorporating the Design Authority) to enable shut down within a given period.

AUTHORISATION CONDITION 32

ACCUMULATION OF RADIOACTIVE WASTE

GUIDANCE NOTE

INTRODUCTION

1. The purpose of this Condition is to ensure that the Authorisee has adequate arrangements to ensure that the production and accumulation of radioactive waste is minimised. The Condition also gives Defence Nuclear Safety Regulator (DNSR) the power to ensure that radioactive waste is stored under suitable conditions, and that adequate records are kept to enable DNSR to monitor the management of radioactive waste.

SCOPE

2. This guidance relates to the arrangements for the storage and minimising the rate of production and the total quantity of radioactive waste accumulated. It also includes the generation and the maintenance of records of the radioactive waste accumulated.

GUIDANCE TO AUTHORISEES

3. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements, including interfaces are adequate. Consideration should be given to the following:

a. The management responsibilities of all personnel responsible for the accumulation and recording of radioactive waste.

b. The relevant Environment Agency/Scottish Environment Protection Agency Authorisations (EA/SEPA), permits, Noting Letters and Agreements or their equivalents under EPR10. Where the disposal of any radioactive waste has been authorised or permitted by EA/SEPA, the arrangements in respect of its prior accumulation should be in accordance with any requirements which may have been specified as part of that authorisation or permit, and the existence of such requirements should be explicitly stated. For activities under Crown control the EA and SEPA issue, respectively, approvals or letters of agreement of formal authorisations, or their equivalents under EPR10.

c. The arrangements for minimising the rate of production and total quantity of radioactive waste accumulated.

d. The arrangements for managing the accumulation and storage of radioactive waste.

e. The arrangements for the generation of records and the recording of radioactive waste accumulated. These requirements are in addition to the general record keeping requirements in respect of nuclear matter (which includes radioactive waste) considered under Authorisation Condition 4.

f. The arrangements for ensuring that any conditions, with respect to accumulation of waste, required by the disposal authorisation are clearly identified and met.

g. Any radioactive waste as a result of an accident involving radioactive material.

AUTHORISATION CONDITION 33

DISPOSAL OF RADIOACTIVE WASTE

GUIDANCE NOTE

INTRODUCTION

1. An Authorisee may wish to store radioactive waste rather than dispose of it even when a suitable disposal route is available. The purpose of this Condition is to give Defence Nuclear Safety Regulator (DNSR) the power to direct the Authorisee to dispose of radioactive waste in these circumstances. DNSR will only give such direction where the disposal is to be carried out in accordance with (as applicable):

a. An Authorisation or permit granted by the appropriate Agency under the Radioactive Substances Act (RSA) 1993 or Environmental Permitting Regulations (EPR) 2010 as appropriate;

b. A corresponding approval or letter of agreement, or equivalent under EPR10, granted by the appropriate Agency under their Memorandum of Understanding with MOD in the case of premises occupied by or on behalf of the Crown for naval, military or air force purposes, to which RSA93 and EPR10 Schedule 23 do not apply;

c. A consent granted by DNSR under Further Authorisation Condition 3 in the case of a radioactive discharge from a Nuclear Powered Warship directly to the environment.

2. In this context the appropriate Agency means, in relation to England and Wales, the Environment Agency and, in relation to Scotland, the Scottish Environment Protection Agency.

SCOPE

3. This guidance relates to the disposal of accumulated or stored radioactive waste.

GUIDANCE TO AUTHORISEES

4. Any DNSR direction under this Condition will require disposal to be made in accordance with an existing Authorisation, approval, letter of agreement or consent, as the case may be. The Authorisation Condition Compliance Statement should therefore reference the management arrangements already established for compliance with such Authorisation, approval, letter of agreement or consent and provide assurance that such arrangements would be implemented.

AUTHORISATION CONDITION 34

LEAKAGE AND ESCAPE OF RADIOACTIVE MATERIAL AND RADIOACTIVE WASTE

GUIDANCE NOTE

INTRODUCTION

1. The purpose of this Condition is to place a duty on the Authorisee to ensure so far as reasonably practicable that radioactive material and radioactive waste is adequately controlled or contained so as to prevent leaks or escapes, and that in the event of any fault or accident which results in a leak or escape, the radioactive material or radioactive waste can be detected, recorded and reported to Defence Nuclear Safety Regulator (DNSR).

SCOPE

2. This guidance relates to any potential leakage or escape of solid, liquid or gaseous radioactive material or radioactive waste even when there is no immediate effect on nuclear or radiological safety. The guidance does not apply to discharges or releases of radioactive waste in accordance with an authorisation granted under the Radioactive Substances Act (RSA) 1993 permit granted under Environmental Permitting (England and Wales) Regulations 2010 (EPR10) or equivalent arrangements approved by DNSR.

GUIDANCE TO AUTHORISEES

3. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements, including interfaces are adequate. Consideration should be given to the following:

a. The management responsibilities of all personnel responsible for controlling and containing radioactive material and radioactive waste in order to prevent its leakage or escape.

b. The arrangements for controlling and containing radioactive material and radioactive waste in order to prevent its leakage or escape.

c. The arrangements for detecting any leakage or escape of radioactive material or radioactive waste.

d. The arrangements for notifying, recording, investigating and reporting any leakage or escape of radioactive material or radioactive waste. These should be in accordance with the arrangements made under Authorisation Condition 7 (AC7). This should cover not only equipment which provides continuous indication (level alarms, radiation alarms etc.) but also the monitoring activities associated with the storage, such as health physics surveys and regular visual checks.

e. The Authorisee should define the levels at which reporting of leakage as an incident under AC7, is to be carried out.

f. Any equipment used for compliance with this Condition should also be subject to the maintenance and testing requirements of AC28.

g. Maintenance and testing of integrity of waste storage facilities and associated systems and functionality of alarms etc should form part of the arrangements and should meet the requirements of AC28.

AUTHORISATION CONDITION 35

DECOMMISSIONING

GUIDANCE NOTE

INTRODUCTION

1. It is important that when a facility, Nuclear Powered Warship (NPW), transport activity or Naval Reactor Plant (NRP) reaches the end of its operational life it is decommissioned in a safe and controlled manner and not left to pose a hazard for current and future generations. The purpose of this Condition is therefore to require the Authorisee to have adequate arrangements for safe decommissioning. It also gives Defence Nuclear Safety Regulator (DNSR) the power to direct the Authorisee to commence decommissioning or to ensure decommissioning takes place in accordance with any national strategy. The Condition also gives DNSR the power to halt any decommissioning activity if DNSR has concerns about its safety.

SCOPE

2. This guidance relates to the decommissioning where there are nuclear or radiological hazards.

3. Compliance with applicable Authorisation Conditions is required until it is demonstrated to DNSR's satisfaction that there has ceased to be any danger from ionising radiations.

GUIDANCE TO AUTHORISEES

4. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements, including interfaces are adequate. Consideration should be given to the following:

a. The management responsibilities of all personnel responsible for decommissioning.

b. The overall policy, production of detailed or outline decommissioning and disposal plans with clearly defined 'hold points', the proposed disposal routes and any anticipated problems or areas of future difficulty for decommissioning.

c. The processes governing the maintenance of the capability (including, funding, personnel, equipment and facilities etc.) necessary to ensure that decommissioning can be achieved within a safe timescale.

d. The arrangements to:

(1) categorise equipment and facilities according to their hazard potential;

(2) ensure that the documentation is produced by Suitably Qualified and Experienced Persons (SQEP);

(3) ensure that the documents are reviewed by independent suitably SQEP.

(4) ensure that the documents are approved at the appropriate level;

(5) produce and keep records of the relevant safety documentation;

(6) apply lessons learned from other decommissioning projects.

e. DNSR may consent to de-Authorisation where there is a clear programme for the removal of all residual activity to a level agreed, where applicable, with the Nuclear Installations Inspectorate and Environment Agency/Scottish Environment Protection Agency, and there is a demonstrable commitment that this programme will be met.

f. The management interface arrangements with the Approving Authority (incorporating the Design Authority) to enable decommissioning within a given period.

AUTHORISATION CONDITION 36

CONTROL OF ORGANISATIONAL CHANGE

GUIDANCE NOTE

INTRODUCTION

1. The purpose of this Condition is to ensure that the Authorisee has adequate arrangements to control any change to its organisational structure or resources which could affect safety. These arrangements require the Authorisee to assess the safety implications of any proposed change before they are carried out. For changes that could have a significant effect on safety if they are inadequately conceived or executed the Condition gives the Defence Nuclear Safety Regulator (DNSR) the power to require the Authorisee to submit a safety case to DNSR, and to prevent the change from taking place until DNSR is satisfied that the safety implications are understood and that there will be no lowering of safety standards. The Condition also gives DNSR the power to halt any change that has commenced if there is a concern that the safety implications have not been adequately considered.

SCOPE

2. This guidance provides advice on the arrangements for management of change to the organisation which delivers and manages safety. The scope ranges from high level changes, e.g. management board reorganisations or agency mergers, to low level changes; this includes the reduction of manpower in response to cost saving measures and the increased use of contractors. The arrangements should reflect the roles needed to carry out the full range of authorised activities including normal operations, decommissioning projects, maintenance, examination and testing, emergency response, etc. The governance of nuclear safety and Intelligent Customer functions are an integral part of the nuclear baseline.

GUIDANCE TO AUTHORISEES

3. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements, including interfaces are adequate. Consideration should be given to the following:

Adequate Arrangements

4. The Authorisee should demonstrate that adequate arrangements have been made and implemented to control any changes to the organisational structure or resources. Such arrangements should include a description of the Authorisee's:

a. nuclear baseline.

b. procedures for organisational change.

Nuclear Baseline

5. The nuclear baseline should be documented, and that documentation should identify and justify all safety significant aspects of the organisation, including:

a. The purpose of the organisation.

b. Senior management and their responsibilities.

c. Lines of accountability from the workforce to senior management.

d. Description of the staff comprising the organisation, including:

(1) numbers of staff required;

(2) identification of posts with safety responsibilities, including those with safety responsibilities to the Authorisee but not part of his organisation, requiring the post holders to be Suitably Qualified and Experienced Persons (SQEP); there needs to be an emphasis on sufficient in-house technical resource and Intelligent Customer aspects;

(3) identification of posts with specific safety responsibilities requiring the post holders to be Duly Authorised Persons;

(4) terms of reference and job descriptions; and

(5) training, qualification and experience requirements plan.

e. Arrangements for the employment of contractors.

Procedures for Organisation Change

6. a. Role of Senior Management. A statement of senior management commitment should be produced, including: acceptance of their responsibility; recognition that the management of safety is a key business objective; and a description of control of their organisation.

b. Project Management. The arrangements for proactive management of the change should be described, including the means by which proposed changes are to be planned, developed, assessed and subsequently implemented.

c. Review and Assessment. The arrangements for independent review and assessment, depending upon categorisation, should be described, including any arrangements for independent peer review.

d. Audit and Feedback. The arrangements for audit of an organisation post implementation of change should be described, to provide assurance that the change has been correctly implemented, and that the arrangements are robust on completion.

Categorisation

7. As with equipment modifications, changes to the organisational structure or resources are to be categorised according to their safety significance. This is to enable the application of a degree of scrutiny and review commensurate to the impact of the proposed change. This in turn should be based upon an assessment of the consequences of a management failure due to the organisational changes and the subsequent loss of control of a safety significant activity.

Documentation

8. The arrangements should provide for adequate documentation to justify any proposed change. This should include:

a. Recognition of the safety implicated aspects of the Nuclear Baseline arrangements.

b. Consideration of options.

c. Principles for change.

d. Demonstration of how the revised organisation is to function, highlighting the effect of change from the datum.

Submission

9. The Authorisee's arrangements should cover the submission of any documentation called for review by DNSR.

Approval of Specified Arrangements

10. The Authorisee should recognise the need for DNSR to review any proposed change and be prepared to stop the change or operational programme if DNSR is not satisfied with the safety implications.

11. Organisations may use their Compliance arrangements for Authorisation Condition 22 as a framework.

ANNEX B TO CHAPTER 4

GUIDANCE ON THE APPLICATION OF FURTHER AUTHORISATION CONDITIONS

CONTENTS

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FURTHER AUTHORISATION CONDITION 1

DUTY OF COOPERATION

GUIDANCE NOTE

INTRODUCTION

1 This condition results from the mobility of reactors and weapons in the defence nuclear programmes, and the separate responsibilities of Approving Authorities. The first purpose of the condition is to maintain coherent arrangements between Authorisees to ensure the safe transfer of reactors or weapons from one to the other. The second purpose of the condition is to maintain arrangements for co-operation between Authorisees and Approving Authorities to ensure that appropriate design control is exercised throughout reactor or weapon life and across life-cycle phases (in the nuclear weapons programme this complements the requirements of Approving and Design Authorities Conditions (ADAC)). Finally, the condition ensures that arrangements are made for co-operation with independent organisations (e.g. contractors) and internally within the Authorisee's organisation where this is necessary to maintain safety.

SCOPE

2 This guidance relates to the factors which Authorisees should consider to ensure that they co-operate with other Authorisees, with the Approving Authorities and with other organisations (both external and internally).

GUIDANCE TO AUTHORISEES

3 The responsibility for nuclear and radiological safety within the defence nuclear programmes remains ultimately with the Authorisee and cannot be delegated to another body/person.

4 The Further Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements are adequate. Consideration should be given to the following:

a. The management responsibilities for all personnel who interface with other Authorisees which transfer reactors or weapons across the boundary;

b The documented arrangements which provide for the coherent management of such transfers including reference to the other Authorisees' arrangements;

c. The management responsibilities for all personnel who interface with Approving Authorities which provide information on reactors or weapons;

d. The documented arrangements which provide for intelligent management of such information including reference to the Approving Authorities' arrangements;

e. The arrangements by which the Authorisee provides assurance about nuclear and radiological safety;

f. The contractual or other enforceable arrangements to cover the nuclear and radiological safety responsibilities of external organisations;

g. The documented arrangements for internal co-operation including links with related Authorisation Condition (AC), notably AC17 and AC36, necessary to ensure that the Authorisee's safety management arrangements are effective and consistently implemented.

FURTHER AUTHORISATION CONDITION 2

OPERATIONAL BERTHS

GUIDANCE NOTE

INTRODUCTION

1. This Condition results from the need for Nuclear Powered Warships (NPW) to berth at operational locations outside Authorised sites including those in foreign countries. The purpose of the Condition is to ensure that regulatory consent is obtained for the use, and the scope of such use, of an operational berth by a NPW. Operational Berths (OB) form de facto temporary nuclear sites. The management arrangements need to take account of the hazards and risks in a targeted and proportionate manner while remaining cognisant of national and international political aspects. In the case of foreign berths, arrangements consistent with those in the UK need to be demonstrated, so far as is reasonably practicable. As with other aspects of NPW operations, the basic requirement is that the risks associated with the use of the berth should be As Low As Reasonably Practicable (ALARP).

SCOPE

2. There is no specific limitation on the activities that may be conducted at an OB. However, the activities need to be fully scoped and described, with the appropriate arrangements put in place to ensure adequate margins of safety and demonstration of ALARP. A clear articulation of the scope of activity is therefore an essential precursor to justifying the use of a berth. The submission should be linked to the scope of activity, with a targeted and proportionate response to high risk activities. Wherever possible, source information (e.g. Naval Reactor Plant (NRP) and Nuclear Weapon safety analyses) should be referenced. It should also be clearly demonstrated that any conditions or limits identified in source documents have been implemented. Siting principles (e.g. HSE SAP ST1-7) should be addressed, and the “Devonport Comparator” should be considered to be a maximum acceptable population density without an appropriate ALARP case being made. Regulatory consent will be limited to those activities included within the scope; additional activities that have nuclear safety implications will require further specific formal regulatory consent.

VISITING NUCLEAR POWERED WARSHIPS

3. Visiting NPW will be considered on the same basis as Royal Navy NPW. Arrangements should be in place at all UK (including berths in Authorised sites) and Overseas Territory berths for visiting NPW that mirror those for UK NPW up to the edge of the quay, berth or other structure. Arrangements aboard the vessel are exempt from UK legislation as described in Chapter 2 Annex A. The Standard Statements of the United Kingdom, United States and France (see Annex F to Chapter 4) should be taken as assurance of the standards of safety for their NPW.

REPPIR

4. Although legally only applicable to UK and Gibraltar, the principles of Radiation (Emergency Preparedness and Public Information) Regulations 2001 (REPPIR) should be applied to all OB. A Report of Assessment should be prepared for all OB, but for those outside UK or Gibraltar it will only need to be submitted to the Defence Nuclear Safety

Regulator (DNSR). In determining “reasonable foreseeability”, the use of time at risk arguments to reduce probability should not be employed. However, any emergency arrangements required (e.g. co-located support) need only be in place when the berth is occupied. Where there is likely to be an urgent need for berthing before co-located assets can be deployed, contingency arrangements should be identified, which may be generic for all berths if this is deemed appropriate. Consent to use an OB will be conditional upon reassessment of the berth by the operator at intervals not exceeding three years, based upon the REPPIR review frequency.

FURTHER AUTHORISATION CONDITION 3

RADIOACTIVE DISCHARGES

GUIDANCE NOTE

INTRODUCTION

1. This condition results from the need for environmental controls equivalent to those in legislation to apply to all parts of the defence nuclear programmes. The purpose of this Condition is to ensure that discharges of radioactive material are minimised and controlled and subject to regulatory consent.

SCOPE

2. The discharge of radioactive material to the environment from defence licensed sites is regulated by the statutory regulators (Environment Agency/Scottish Environment Protection Agency (EA/SEPA)) under the Environmental Permitting (England and Wales) Regulations 2010 (EPR10) and the Radioactive Substances Act 1993 (RSA93). EPR10 Schedule 23 and RSA93 do not apply to premises occupied on behalf of the Crown for naval, military or air force purposes (Section 42 and Schedule 4 refer respectively). However, radioactive discharges from non-licensed, Authorised sites are subject to regulation by EA/SEPA in accordance with agreements between MOD and EA/SEPA27. This EA/SEPA regulation specifically does not cover discharges directly to the environment from Nuclear Powered Warships (NPW) either within licensed or Authorised sites or outwith such sites.

3. By the nature of reactor and weapon design, gaseous radioactive discharges arise from both the weapon and propulsion programmes. Discharges of low-level liquid radioactive waste arise from the propulsion programme, and liquid radioactive waste may also arise from the weapon programme as a result of oxidation and condensation of original gaseous material.

4. The scope of the Defence Nuclear Safety Regulator (DNSR) regulation under Further Authorisation Condition 3 (FAC3), and in particular the direction referred to at Clause (2) thereof, is specifically limited to those parts of the programme which are not subject to regulation by EA/SEPA either under EPR10, RSA93 or by agreement with MOD: i.e. to discharges directly to the environment from NPW. Thus DNSR will only issue consents under FAC3 in relation to the following activities:

a. low-level gaseous radioactive discharges from NPW directly to the environment;

b. the discharge of low-level liquid radioactive waste from NPW directly to the environment where it is not practicable for this to be transferred ashore for processing and discharge under EA/SEPA regulation; for practical purposes it is anticipated that this will be restricted to the discharge of low-level liquid radioactive waste from nuclear powered warships at sea.

5. All other radioactive waste from NPW should be transferred ashore for processing and discharge under EA/SEPA regulation.

[27] The MOD/SEPA agreement is still in course of preparation.

6. Further, DNSR consents under FAC3 will cover only discharges arising from routine NPW operations and specifically not discharges which may arise as a result of an accident or emergency.

SUBMISSIONS FOR CONSENT

7. In all cases discharges are anticipated to be low but, as a minimum, one-off assessments should be carried out on a pessimistic basis to estimate the maximum quantities of radioactive material which may be discharged. Comparison with applicable quantities set out in Exemption Orders made under EPR10 or RSA93 or equivalent may confirm that no regulatory consent to discharge is required. Alternatively such consent may be required either on a regular or precautionary basis.

8. Duty Holders as identified below are responsible for carrying out the necessary assessments and seeking DNSR consent as required:

a. Site Authorisees (with support from approving Authorities) are responsible for carrying out the assessments and seeking DNSR consent as required to discharge gaseous radioactive waste from NPW within their Authorised site;

b. Authorisees for the “at sea” phase (with support from Approving Authorities) are responsible for carrying out the assessments and seeking DNSR consent as required to discharge gaseous radioactive waste from NPW at operational berths and at sea;

c. Authorisees for the “at sea” phase (with support from Approving Authorities) are responsible for carrying out the assessments and seeking DNSR consent as required to discharge liquid radioactive waste from NPW at sea.

9. The submission should address the following key objectives:

a. to show that all discharges of radioactive waste are minimised and controlled;

b. to identify the arrangements for maintaining records of discharges and the particular details which will be recorded;

c. to demonstrate that the resulting radiation doses received by members of the public are as low as reasonably practicable;

d. to estimate by calculation/modelling etc. the radiological consequences arising (or upper bound thereof), in particular the resulting radiation doses to members of the public, and to show that these are below dose constraints for radioactive waste discharges as set out in extant Government or similar publications;

e. to identify any requirement for environmental monitoring in order to validate the estimated radiological consequences or conversely to demonstrate that in view of the very low levels of the discharges no such monitoring is required.

10. Submissions for consent to discharge should address each applicable paragraph of the FAC, and should identify a date for review.

11. While not prescriptive, it is anticipated that submissions will cover all routine discharges over a defined period (a period of one year will normally be suitable), with limits

proposed on a bounding basis in respect of each identified site (i.e. Authorised site or Operational Berth) and, on an aggregated basis, for all discharges outwith designated sites (i.e. at sea). In principle, the form of the submission should be consistent with EA requirements under EPR10 or RSA93 but moderated as appropriate on a proportionate basis reflecting the very low levels of discharge in this case. For example simple bounding estimates may be used to estimate radiological consequences where it can be shown that these are well below regulatory concern. It is anticipated that this will normally be the case.

DNSR EXPECTATIONS

12. DNSR will conduct assessments in accordance with the principles and methodologies adopted for this purpose by EA under EPR10 or RSA93, moderated as appropriate on a proportionate basis reflecting the very low levels of discharge in this case. Detailed arrangements will be set out in a Technical Assessment Guide.

13. Regulatory consent to discharge will be conditional upon continued compliance with the arrangements set out in the submission, including periodic review. DNSR may specify the duration of a consent, and may review consents in light of any significant change in circumstances. Any breach of a consent should be notified to DNSR immediately.

FURTHER AUTHORISATION CONDITION 4

TRANSPORT PACKAGES

GUIDANCE NOTE

INTRODUCTION

1. This Condition results from the Defence Nuclear Safety Regulator's (DNSR's) role as Defence Competent Authority for transport packages which is consequent on exemptions in legislation. The purpose of this Condition is to ensure that transport of radioactive material is adequately safe from a radiological and nuclear safety viewpoint. The associated requirements for containment, control of radiation, and control of contamination are more stringent than those often adopted on a site because carriers cannot in general control potential hazards in the manner which is customary on a nuclear site, and because any radiation shine or release of radioactive (RA) material from a package in transport is likely to be directly onto a public road or other area frequented by members of the public.

SCOPE

2. Any transport of RA material outside a fixed site. For the precise scope see the International Atomic Energy Agency (IAEA) 'Regulations for the Safe Transport of Radioactive Material, 2005 Edition' (TS-R-1) (hereafter referred to as the Regulations) paragraphs 106 and 107.

3. In Further Authorisation Condition (FAC)4 and this Guidance Note the meaning of 'transport' is as defined in paragraph 106 of the Regulations, i.e. 'transport' comprises 'all operations and conditions associated with and involved in the movement of radioactive material; these include the design, manufacture, maintenance and repair of packaging, and the preparation, consigning, loading, carriage including in-transit storage, unloading and receipt at the final destination of loads of RA material and packages'.

GUIDANCE TO AUTHORISEES AND DUTY HOLDERS

Competent Authority Approval

4. Competent Authority approval is required for certain packages, in particular Type B and Type C packages and those containing fissile material (see the Regulations paragraph 802 etc.). Submissions for such packages should be made 12 months before the intended first use or before the expiry of an extant certificate.

5. In general package approval certificates issued by DNSR will be valid for 5 years, after which a 'Periodic Review' and re-approval by DNSR is required prior to continued use.

Presentation of Safety Cases for Packages

6. Safety cases for packages requiring Competent Authority approval should be presented in a form which is reasonably easy for assessors to gain an overview of the design and design substantiation prior to delving into the detail. DNSR intends to issue further guidance on this subject. Until this is issued it is suggested that:

a. submissions should contain an introductory section meeting the general intent of that required by US Nuclear Regulatory Commission (NRC) Draft Regulatory Guide 7003 (updated version of the extant Reg. Guide 7.9);

b. submissions should be broadly compliant with the DfT guidance.

7. In respect of format and presentation safety cases of US origin compliant with the US NRC/Department of Energy requirements for the format of 'Safety Analysis Reports for Packagings' are acceptable to DNSR if they adequately address all appropriate issues and contain a 'cross reference' table setting out where in the report each requirement of the regulations is addressed (see the DfT guidance).

Interpretation of the Regulations

8. In interpreting the regulations and the adequacy of management arrangements for safety duty holders should take note of:

International Atomic Energy Authority Standards, including:

GS-R-3
TS-G-1.1
TS-G-1.2
TS-G-1.3

Draft International Atomic Energy Authority Standards, including

DS 326
DS 327
DS 345
DS 346
DC 387
DS 425 (Awaited)

Guidance issued by the DfT including:

'Guide to an Application for UK Competent Authority Approval of Radioactive Material In Transport'

'An Applicant's Guide to the Suitability of Elastomeric Seal Materials for Use In Radioactive Material Transport Packages'

'A DfT Guide to the Approval of Freight Containers as Type IP-2 and Type IP-3 Packages'

US Guidance

On occasion it may be appropriate to take note of the approaches required and/or recommended by the Nuclear Regulatory Commission (NRC) (in Code of Federal Regulations 71 (CFR 71) and the NRC Regulations (NUREGs)) when addressing aspects of the design and substantiation of package designs, in particular where the point is not clearly covered by IAEA or UK/EU standards.

Periodic Review

9. Safety cases for 'Periodic Reviews' of packages should generally be presented to the standard required for new packages. This does not preclude justification of 'grandfather rights' for older designs.

Marking, Labelling, and Placarding: Security Considerations

10. Packages and associated conveyances should normally be marked, labelled, and placarded in accordance with the regulations. However if the package has a dedicated escort/guard, and the escort/guard is in possession of both the information that would normally be visible on the package and/or conveyance and appropriate emergency response orders, then if necessary to improve security visible placards and labels may be omitted.

Transport of Radioactive Material within Fixed Sites

11. Compliance with the requirements for the transport of RA material between sites will almost always be sufficient to meet the requirements for the safety of transport of RA material within a large site. Alternative approaches are however permissible.

Emergency Response

12. Given appropriate interface arrangements it is acceptable for MOD rather than the consignor to be responsible for transport emergency response plans

DNSR EXPECTATIONS

13. DNSR uses internationally accepted standards as expressed in the extant issue of the 'Regulations for the Safe Transport of Radioactive Material' (TS-R-1) issued by the UN International Atomic Energy Agency (see Vol 1 Ch 2 Para 12). For consistency with other Authorisation Conditions, FAC4 has been drafted in a matter that is similar to the wording of the NII Licence Conditions. However Duty Holders should be aware that DNSR is most unlikely to accept any management arrangements for the transport of radioactive material which do not provide that:

a. all 'transport' activities are to be carried out in accordance with the extant issue of the Regulations, except where specifically agreed with DNSR;

b. packages for RA material are to have safety cases which demonstrate compliance with the Regulations as interpreted by DNSR;

c. safety cases for packages containing both Class 7 and Class 1 material (as defined in the United Nations regulations) are to address the possibility of an explosion within the package and to demonstrate compliance with any requirements of the Chief Inspector Explosives (MOD);

d. safety cases for packages containing both fissile material and a substantial quantity of Class 1 material may be assessed by reference to SAP (Vol 2 Ch5).

14. It follows that in practice all packages are to be designed, manufactured, inspected, tested, loaded, and used in accordance with the Regulations, and that submissions are to be made to DNSR for those packages for which the Regulations require Competent Authority approval.

15. Duty holders, including consignors and carriers, are to rehearse their accident and emergency arrangements at such intervals and at such times and to such extent as DNSR may specify.

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ANNEX C TO CHAPTER 4

GUIDANCE ON THE APPLICATION OF THE AUTHORISATION CONDITIONS FOR THE APPROVING AUTHORITY

CONTENTS

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INTRODUCTORY NOTE

1. The Authorisation Certificate for the Nuclear Reactor Plant Authorisee (NRPA) distinguishes two separate duties: that of conventional Authorisee for naval reactor plants outside of Authorised sites (the "at sea" phase of the life cycle which also includes time at operational berths) and the duty as the Approving Authority (AA). The following Authorisation Condition (AC) Guidance Notes have been developed to aid the NRPA in its AA role with the interpretation of applicable Authorisation Conditions (ACs) and to provide guidance on the content of the AC Compliance Statement.

2. The AA makes a significant contribution to nuclear and radiological safety in the NNPP, having essentially three functions:

- responsibility for the intrinsic or inherent safety of naval reactor plant (NRP);
- responsibility for the provision of information to Authorisees;
- responsibility for the receipt of information and assurance from Authorisees to underwrite the continued safety of NRP.

3. However, it is only the Authorisees, and not the AA, who conduct activities with NRP and radioactive material, and as a consequence, a number of the ACs are not relevant to the AA role. DNSR considers that 25 ACs (including FAC1) are relevant to the AA, but in a number of cases the ACs need to be interpreted in a subtly different way to reflect the functions of the AA. In some cases, the title of an AC does not lend itself to easy assimilation by the AA and an additional/alternative title is provided.

4. This guidance therefore addresses only the 25 relevant ACs and re-interprets them, where necessary, to the AA functions. DNSR will accept "nil return" compliance statements from the NRPA (as AA) in respect of the 12 ACs not included in this guidance.

5. The term Approving Authority is considered to include the NRP Design Authority (DA), Technical Authority (TA) and Independent Nuclear Safety Assessor (INSA). DNSR expects that all these bodies will need to contribute to compliance with the 25 ACs relevant to the AA role. The AA will also be responsible for acquiring and providing NRP components (prior to integration) and support equipment which may be relevant to nuclear and radiological safety; the same considerations apply to these as apply to NRP.

6. For clarity in this guidance, the NRPA in Approving Authority role is referred to as the Approving Authority (AA) for ease of language in differentiating its role from that of other NNPP Authorisees (including NRPA in "at sea" role).

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AUTHORISATION CONDITION 1

INTERPRETATION

GUIDANCE NOTE

PURPOSE AND SCOPE

1. The purpose of this Authorisation Condition (AC) is to ensure that there is no ambiguity in the use of certain terms that are found in the text of the AC.

AUTHORISATION CONDITION 6

DOCUMENTS, RECORDS, AUTHORITIES AND CERTIFICATES

GUIDANCE NOTE

INTRODUCTION

1. The purpose of this Condition is to ensure that adequate records are held by the Approving Authority for a suitable period to ensure that the safety case for operation is available at all times. To ensure that design and construction information is available for decommissioning, is available to assist investigations in the event of an accident or incident and is available for the statutory number of years after the cessation of operations for the purpose of assisting any claims of damage to health as a result of exposure to ionising radiation.

SCOPE

2. This guidance refers to the management of records associated with the Authorisation Conditions and statutory requirements.

GUIDANCE TO APPROVING AUTHORITY

3. The maintenance of adequate records for design, safety justification, production, testing, operation, support, modification and decommissioning is essential to the long-term safety of the defence nuclear programmes and to satisfy legislative requirements.

4. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements, including interfaces are adequate. Consideration should be given to the following:

a. The management responsibilities of all personnel responsible for the production of documents, records, authorities and certificates and for the preservation of all documentation.

b. The management arrangements for controlling documentation and how its storage and preservation is carried out, including the generation of a record retention schedule, record schedules and the means of record retrieval. This should take account of the challenge of obsolescence of hardware and any associated software, and also loss of operator skills. Arrangements should demonstrate how the continued viability of the records is maintained and how often the recording method is subject to periodic review for its longevity.

c. The arrangements for assessing the minimum time scale for the maintenance of records unless agreement to the contrary has been reached with Defence Nuclear Safety Regulator.

d. The arrangement for safeguarding records against hazards which may render the records unusable. These hazards include such events as fire, flood and adverse environments. Safeguards may include duplication of records or high integrity storage.

AUTHORISATION CONDITION 7

INCIDENTS ON THE SITE (INCIDENTS)

GUIDANCE NOTE

INTRODUCTION

1. This purpose of this Condition is to ensure that the Approving Authority has adequate arrangements in place:

a. To assist Authorisees and Duty Holders in the investigation and reporting of incidents that may occur whilst the NRP, component or relevant support equipment is under their control.

b. For the notification, recording, investigation and reporting of any condition or anomalous condition that may affect nuclear or radiological safety of the NRP, component or relevant support equipment revealed through Approving Authority sponsored activities.

SCOPE

2. This guidance relates to the provision of support to an Authorisee or Duty Holder during the investigation and reporting activity resulting from an incident, as defined in the glossary, to the more routine investigations associated with minor defects to equipment or procedural anomalies. The arrangements should address, amongst other things, the notification, recording, investigation and reporting of any anomalous conditions that may be identified by the Approving Authority. It includes the communication of lessons learned to avoid repetition and minimise the consequences of similar events.

GUIDANCE TO APPROVING AUTHORITY

3. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide evidence that the safety management organisation and arrangements, including interfaces are adequate. Consideration should be given to the following:

a. The management responsibilities of all personnel responsible for ensuring the investigation and reporting of incidents.

b. The arrangements governing the notification, recording, investigation and reporting of anomalous conditions revealed through Approving Authority activities. The arrangements should include:

(1) the processes and procedures employed to compile, approve, maintain the arrangements up to date;

(2) the processes and procedures necessary to integrate the Approving Authority management arrangements with those of each Authorisee; and

(3) the arrangements for alerting and advising the Authorisees and DNSR.

c. The arrangements to co-operate with Authorisees in the categorisation of accidents, incidents and anomalous events.

d. The arrangements for:

(1) appointing personnel to implement and supervise the arrangements;

(2) categorising incidents, occurrences and deviations;

(3) ensuring staff awareness of the need for reporting incidents and events;

(4) ensuring an open approach to the reporting and assessment of incidents;

(5) specifying the appropriate level of investigation;

(6) referring the reports to the Nuclear Safety Committee and to DNSR;

(7) implementing recommendations;

(8) ensuring staff awareness of the lessons learned from incidents and anomalous events;

(9) reviewing and analysing all incidents for trends in location, type, cause etc. and promulgating the lessons learned.

(10) analysing incidents and anomalous events occurring elsewhere and applying any applicable lessons learned;

11) auditing the incident reporting and assessment system;

(12) providing an annual report to the respective safety committee on the effect of incidents on the validity of the respective safety justification;

(13) the control and storage of documentation recording incidents.

DNSR EXPECTATION

4. All incidents with the potential to adversely affect safety are to be notified to DNSR and a verbal brief provided at the earliest practicable opportunity following the incident. This will enable DNSR to fulfil its duties under the defence ministerial reporting requirements. The timing of the notification will depend upon the safety significance or regulatory profile of the incident or event and will range between:

(1) immediate notification by pager, telephone or fax;

(2) notification on the next working day;

(3) notification on the next Inspector's visit;

(4) notification during the Inspector's review of the Approving Authority's event reporting process.

5. The Approving Authority is to provide routine reports covering all safety related incidents not falling into the more serious category above.

6. DNSR to be informed of the assessment of incidents.

7. DNSR to be informed of any other incident/event/occurrence that might attract public and/or media attention.

8. The Approving Authority is to submit proposals covering the period for retention of records relating to incidents for agreement by DNSR.

AUTHORISATION CONDITION 9

INSTRUCTIONS TO PERSONS ON THE SITE (INFORMATION ON HAZARDS)

GUIDANCE NOTE

INTRODUCTION

1. The purpose of this Condition is to ensure that the Approving Authority implements adequate arrangements to provide each Authorisee with information so that they are aware of the hazards and consequences associated with the NRP, component or relevant support equipment, the associated precautions to be observed and the action to be taken in the event of an accident or emergency.

SCOPE

2. This guidance covers the provision of information to Authorisees to enable them to assess the risk from the presence of NRP, component or relevant support equipment, the precautions to be observed and the action to be taken in the event of an accident or emergency.

GUIDANCE TO APPROVING AUTHORITY

3. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements, including interfaces are adequate. Consideration should be given to the following:

a. The management responsibilities of all personnel responsible for ensuring the provision of hazard information to Authorisees.

b. The arrangements for determining, approving and maintaining up to date the information provided to Authorisees, including an audit trail back to the source document.

c. The arrangements for transmitting information to the Authorisees.

d. Where appropriate the arrangements for assessing that the Authorisees have correctly interpreted the information.

AUTHORISATION CONDITION 10

TRAINING
(INFORMATION ON TRAINING)

GUIDANCE NOTE

INTRODUCTION

1. The purpose of this Condition is to ensure that the Approving Authority has arrangements to provide information to Authorisees on suitable training for those who conduct activities with the NRP, component or relevant support equipment to enable them to establish their training needs.

SCOPE

2. This guidance covers the generation and transfer of information to Authorisees to enable them to establish their training needs.

GUIDANCE TO APPROVING AUTHORITY

3. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements, including interfaces are adequate. Consideration should be given to the following:

a. The management responsibilities of all personnel responsible for ensuring the provision of safety training information.

b. The processes and procedures employed in order to generate the information on training requirements.

c. The arrangements for ensuring that information provided to Authorisees is kept up to date.

AUTHORISATION CONDITION 11

EMERGENCY ARRANGEMENTS

GUIDANCE NOTE

INTRODUCTION

1. The purpose of this Condition is to ensure that the Approving Authority has arrangements to provide information and support to Authorisees in the event of an accident or emergency.

SCOPE

2. This guidance relates to the provision of information and support to Authorisees in the event of an accident or emergency and during the following render safe and recovery activities.

GUIDANCE TO APPROVING AUTHORITY

3. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements, including interfaces are adequate. Consideration should be given to the following:

a. The management responsibilities for those personnel who are responsible for ensuring the provision of emergency response information and support.

b. The arrangements for providing suitable information and support to Authorisees in the event of an accident or emergency.

c. The arrangements for demonstrating the adequacy of the arrangements for providing suitable information and support to Authorisees in the event of an accident or emergency.

DNSR EXPECTATION

4. In accordance with AC11(5), DNSR expects the Approving Authority to rehearse its emergency response support arrangements at intervals not exceeding 1 year, other than by agreement with DNSR; the scope of the rehearsal to be agreed with DNSR on a case-by-case basis. Ideally, the rehearsal should be conducted in support of an Authorisee's emergency arrangements rehearsal.

AUTHORISATION CONDITION 12

DULY AUTHORISED AND OTHER SUITABLY QUALIFIED AND EXPERIENCED PERSONS (SUITABLY QUALIFIED AND EXPERIENCED PERSONS)

GUIDANCE NOTE

INTRODUCTION

1. The purpose of this Condition is to ensure:

a. That only Approving Authority's staff that are Suitably Qualified and Experienced Persons (SQEP) perform duties which may affect the safety of the NRP, component or relevant support equipment; and

b. That adequate arrangements exist to provide information to Authorisees about the qualifications and experience required by their personnel responsible for conducting operations with the NRP, component or relevant support equipment.

SCOPE

2. This guidance relates to SQEP within the Approving Authority and also the provision of information to Authorisees to assist them in determining their SQEP requirements.

GUIDANCE TO APPROVING AUTHORITY

3. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements, including interfaces are adequate. Consideration should be given to the following:

a. The management responsibilities of all personnel responsible for post profiling and identification of required qualifications and experience of individuals who are to fill each nuclear safety related post.

b. A description of the system for post profiling, the required qualifications and experience of the individuals who are to fill each nuclear safety related post.

c. The methods of defining the classification of each post and the arrangements for managing the classification.

d. The arrangements that ensure that only SQEP carry out the duties that may affect nuclear or radiological safety.

e. The arrangements for the management of 'waivers'.

f. The arrangements for identifying and planning for the provision of future SQEP requirements.

g. The arrangements for providing information to Authorisees to assist them in determining the qualifications and experience required by their staff.

DNSR EXPECTATION

4 With regard to ADAC12 (1) Defence Nuclear Safety Regulator (DNSR) expects:

a. The Approving Authority to classify posts, typically in three classifications, in the organisation according to the safety significance of the post and to agree the classification scheme with DNSR.

b. To give agreement to those posts in the highest classification and to agree the qualifications and experience relevant to each of the posts.

c. To give agreement to waivers where it is proposed to appoint a person to a post in the highest classification where the person proposed does not possess all the qualifications and experience agreed for the post.

AUTHORISATION CONDITION 13

NUCLEAR SAFETY COMMITTEE

GUIDANCE NOTE

INTRODUCTION

1. The purpose of this Condition is to ensure that the Approving Authority sets up a senior level committee to consider and advise the Approving Authority on matters which affect the safe design, construction, commissioning, manufacturing, operation and decommissioning of the NRP and any other matter relevant to safety. The committee must have members who are adequately qualified to perform this task including members who are independent of the Approving Authority. The Condition gives DNSR the power to veto the appointment of or continued presence of any member. The committee is intended to act as a check on the Approving Authority's decision making process to ensure that safety considerations are given due weight. However, the committee is intended to be purely advisory and must not be considered to have an executive function. Where the Approving Authority rejects the advice of the committee the Condition requires the Approving Authority to notify DNSR; in this way DNSR can investigate the justification of the Approving Authority's safety related actions.

SCOPE

2. This guidance relates to the Nuclear Safety Committee (NSC) and any subordinate committee(s) or working group(s) that report to NSC. The scope also covers all those aspects that are required by other Conditions and any topic requested by the Approving Authority.

GUIDANCE TO APPROVING AUTHORITY

3. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements, including interfaces are adequate. Consideration should be given to the following:

a. The management responsibilities of all personnel associated with the NSC.

b. The Terms of Reference (ToRs) for the NSC and any subordinate committee(s) or working group(s) that reports to the NSC. The arrangements for providing the ToRs to DNSR for approval.

c. The overarching committee and working group structure within the Approving Authority, defining the interactions between the NSC, committees and working groups.

d. The constitution of each committee, in particular the rules of attendance, what constitutes a quorum, the number of independent members, and members' experience and qualifications.

e. The arrangements for managing the committee(s) and working group(s) reporting to the NSC.

f. The arrangements for making appointments to the NSC, subsidiary committee(s) and working group(s), including the provision of information to DNSR covering the name, experience, qualifications and details of current and past posts held by each member.

g. The arrangements for emergency meetings or out of committee decisions, when urgent advice is sought, but a properly constituted meeting is not practicable.

h. The arrangements that ensure a record of the committee(s) membership, the minutes of meetings, papers and reports considered are maintained.

i. The status of the NSC advice and the action to be taken in the event that the advice of the NSC or subsidiary committee(s) is rejected.

j. The arrangements for notifying DNSR, as soon as practicable, if it is intended to reject, in whole or in part, any advice given by any such committee together with the reason for such rejection.

DNSR EXPECTATION

4 DNSR will specifically approve the ToRs of the NSC.

AUTHORISATION CONDITION 14

SAFETY DOCUMENTATION

GUIDANCE NOTE

INTRODUCTION

1. The purpose of this Condition is to ensure that the Approving Authority has arrangements for the preparation and assessment of the safety related documentation used to justify the intrinsic safety of NRP, components and relevant support equipment. The arrangements for the assessment of safety related documentation are intended to ensure an independent review of the quality and accuracy of the Approving Authority's safety related decisions and activities to ensure they have been adequately justified. It also includes the preparation and assessment of safety information provided to the Authorisees to enable them to justify the safety of their operations.

SCOPE

2. This Condition requires the Accreditee to have management arrangements to encompass:

a. All safety documentation that has implications for NRP, components and relevant support equipment; and

b. The design activities including research, trials, development, manufacture, operation, setting to work and decommissioning of the equipment.

GUIDANCE TO APPROVING AUTHORITY

3. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements, including interfaces are adequate. Consideration should be given to the following:

a. The management responsibilities of all personnel responsible for the production and approval of the safety documentation.

b. The arrangements to:

(1) prepare, peer review and assess safety documentation;

(2) ensure that safety documentation is categorised in accordance with its safety significance;

(3) ensure that safety documentation is produced by Suitably Qualified and Experienced Person(s) (SQEP);

(4) ensure that safety documentation is reviewed by independent SQEP;

(5) determine whether documentation which has higher categories of safety significance should be subjected to an Independent Nuclear Safety

Assessment by SQEP, independent of the groups responsible for the production of the safety case or for activities;

(6) submit documents, where appropriate, after peer review to the Approving Authority's own Nuclear Safety Committee;

(7) ensure that documentation is submitted to Defence Nuclear Safety Regulator (DNSR) in accordance with the categorisation scheme or as specified by DNSR. This includes the provision of the Nuclear Safety Committee's comments as appropriate;

(8) ensure that safety documentation is approved and reviewed at appropriate intervals. The level at which safety documentation is reviewed should be in accordance with the Approving Authority's categorisation scheme.

c. The requirement for safety documentation to cover procurement, commissioning, operation, maintenance, modification, decommissioning of equipment or systems, supporting infrastructure if appropriate, and the management of radioactive waste products including their storage and disposal.

d. State the approval level of the safety documentation.

e. The arrangements for transmitting safety information to the Authorisees and Duty Holders.

DNSR EXPECTATION

4 With regard to AC14 (1) DNSR expects:

a. The Approving Authority to categorise safety documentation according to safety significance.

b. To give agreement to safety documentation in the highest class.

c. To be able to 'call in' any documentation.

AUTHORISATION CONDITION 15

PERIODIC REVIEW

GUIDANCE NOTE

INTRODUCTION

1. The purpose of this Condition is to ensure that the Approving Authority periodically stands back and reviews the safety case against current standards to see if there are reasonably practicable improvements that could be made to NRP, component or relevant support equipment.

SCOPE

2. This review should seek to ensure the continued safety of the NRP, components and relevant support equipment for the period up to completion of the next review and should include:

a. The review of any information provided to Authorisees to justify the continued safety of their operations; and

b. The examination of all safety information and modifications, irrespective of their safety category.

GUIDANCE TO APPROVING AUTHORITY

3. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements, including interfaces are adequate. Consideration should be given to the following:

a. The management responsibilities of all personnel responsible for the periodic review of safety cases.

b. The form of the review being undertaken. There are two types of review: the rolling programme of reviewing and updating safety cases and Statements of Compliance, and the less frequent stand-alone periodic review of the Safety Justification.

c. The arrangements for reviewing safety justifications when any change, significant external event or emergent information arises.

d. The procedure for managing the unplanned situation, especially as to whether the operation may continue.

e. The arrangements for reporting and ensuring that the results of all reviews are subjected to scrutiny by a sufficiently independent and competent body before submission to the Nuclear Safety Committee.

f. The arrangements for agreeing, prioritising, planning and implementing recommendations from the review and obtaining agreement from DNSR when significant safety or programme implications are identified.

g. The arrangement for reviewing the safety justification if operation beyond the original justified period or equipment/system design life is considered.

h. The arrangement for determining the scope and review periodicity, linking this to its life cycle and ensuring that the safety justification remains valid and is reviewed at intervals agreed by DNSR, e.g. whilst a typical timescale for periodic review is 10 years, for the NRP this may be linked to the Long Overhaul Period programme.

i. The means by which the standards and processes for the review reflect current best practice, are systematic, address developments in technology and safety management, consider operating experience and emergent problems, address ageing, incorporate lessons learned from other sites and industries and address the principle of continuous improvement.

j. The arrangements for ensuring that a holistic view is adopted during each review.

k. The arrangements for the provision of information to Authorisees to support their reviews.

AUTHORISATION CONDITION 16

SITE PLANS, DESIGNS AND SPECIFICATIONS (DIAGRAMS, DESIGNS AND SPECIFICATIONS)

GUIDANCE NOTE

INTRODUCTION

1. The purpose of this Condition is to ensure that, when requested, DNSR is provided with up to date diagrams, design information and specifications relating to the NRP, component or relevant support equipment as the DNSR may specify.

SCOPE

2. This guidance relates to all diagrams, design information and specifications during all phases from research to decommissioning.

GUIDANCE TO APPROVING AUTHORITY

3. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements, including interfaces are adequate. Consideration should be given to the following:

a. The organisation to ensure that there is an effective management system to respond to requests from DNSR.

b. The processes and procedures governing the provision of information to DNSR, including the provision of amendments to the information already provided.

AUTHORISATION CONDITION 17

QUALITY ASSURANCE

GUIDANCE NOTE

INTRODUCTION

1. The purpose of this Condition is to ensure that the Approving Authority establishes and implements adequate quality assurance to all activities associated with the design, and approval of NRP including the preparation and review of safety documentation. The Approving Authority is to make and implement adequate arrangements to provide assurance about the quality of operations conducted by Authorisees in order to support continued approval for service use.

SCOPE

2. This guidance covers the managerial and procedural arrangements used to control and monitor those actions necessary in the interest of safety and to demonstrate compliance with the AC and in particular the arrangements made under them. This Condition relates to QA activities of the Approving Authority and their monitoring of the quality of operations conducted by Authorisees, Duty Holders and contractors.

GUIDANCE TO APPROVING AUTHORITY

3. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements, including interfaces are adequate. Consideration should be given to the following:

a. The management responsibilities of all personnel responsible for establishing, co-ordinating and maintaining the QA system.

b. The QA arrangements, making reference to any accredited system being operated.

c. The arrangements for monitoring and reviewing QA documents and procedures.

d. The arrangements for periodic internal and external audits and the arrangements for rectification of shortfalls and deficiencies identified during audits.

g. The arrangements for monitoring the quality of operations conducted by Authorisees in order to support continued approval for service use.

AUTHORISATION CONDITION 19

CONSTRUCTION OR INSTALLATION OF NEW PLANT (DESIGN OF A NAVAL REACTOR PLANT, COMPONENT OR RELEVANT SUPPORT EQUIPMENT)

GUIDANCE NOTE

INTRODUCTION

1. The purpose of this Condition is to ensure that the Approving Authority provides and implements adequate control over the design of any new NRP, component or relevant support equipment. This includes ensuring that at each stage of the design process appropriate safety documentation is produced to demonstrate the safety of the plant. The condition gives the power to DNSR to prevent the commencement of the next stage of design until it is satisfied with the safety analysis and/or to put hold points during the design process to ensure the installation is being constructed in accordance with the stated intent. DNSR's control can be either through using the direct powers in the Condition or through secondary powers built into the Approving Authority's arrangements.

SCOPE

2. This guidance relates to the control of design, manufacture, construction or installation of new plant or system which may affect nuclear safety.

GUIDANCE TO APPROVING AUTHORITY

3. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements, including interfaces are adequate. Consideration should be given to the following:

a. The management responsibilities of all personnel who are responsible for ensuring correct design/manufacture/construction and installation activities.

b. The personnel responsible for managing and supervising work and those responsible for categorising the proposed work.

c. The arrangements for categorising all proposed work according to the hazard potential.

d. The arrangements to:

(1) ensure that documentation is produced to justify the safety of the undertakings;
(2) ensure that such documentation is produced by Suitably Qualified and Experienced Persons (SQEP);
(3) ensure that the documents are reviewed by independent SQEP;
(4) ensure that the documents are approved through the appropriate due process;
(5) produce and keep records of the relevant safety documentation; and
(6) apply lessons learned from other similar projects.

e. The arrangements for managing the activities during all phases of design, including the assessment of hazards specific to the manufacture and construction, and interactions with the Authorised/Licensed sites. This should demonstrate an integrated approach.

f. The design and procurement processes, which should integrate:

(1) the arrangements for identifying, agreeing and recording the safety requirements to be satisfied by the NRP, component or relevant support equipment;

(2) the system to develop, agree and, where necessary, modify the programme of safety related work;

(3) the arrangements for ensuring the adequacy of the evidence generated, including aspects such as the management of trials, modelling and assessments, documentation and build standard reconciliation;

(4) the arrangements for developing and proving NRP, component or relevant support equipment processes and procedures (e.g. Standard Operating Procedures) used post manufacture;

(5) the arrangements associated with establishing and proving the manufacturing capability, and for ensuring that the quality and build standards are maintained in accordance with the design intent;

(6) the arrangements governing the assessment of the safety of the evidence generated; and

(7) the arrangements for the design to be kept under control to meet the required safety characteristics in the defined environments, including the arrangements governing the specification and recording of the design.

g. The arrangements for the production of a project programme and management plan that includes the arrangements for dividing the work into stages, where appropriate, each of which will have a safety justification and require approval before commencement. Approval hold points and the associated activities should be identified for internal approval activities (typically, internal audit, Independent Peer Review, Nuclear Safety Committee and the Design Authorities), as well as those associated with external approval activities undertaken by DNSR.

h. The arrangements controlling interactions with DNSR.

AUTHORISATION CONDITION 21

COMMISSIONING (APPROVAL FOR USE)

GUIDANCE NOTE

INTRODUCTION

1. The purpose of this Condition is to ensure that the Approving Authority has adequate arrangements for the approval for use of a new or modified NRP, component or relevant support equipment.

2. The Condition gives DNSR powers to control various stages of approval. This is to ensure that the Approving Authority demonstrates that the design or modification has been completed according to the design intent, and the necessary safety implications associated with commissioning and use have been considered, assessed and shown to be acceptable and the appropriate safety documentation is complete. Usually a hold point is put at the start of inactive commissioning, i.e. testing systems before the introduction of radioactive materials, and at the start of active commissioning. This latter hold point is to ensure that it has been demonstrated that the plant is functioning and safe to allow the introduction of radioactive materials. Finally the Condition gives DNSR the power to control the approval for use by requiring the Approving Authority to ensure that appropriate documentation has been produced and to seek DNSR's consent for approval.

SCOPE

3. This guidance relates to the approval of all NRP, components and relevant support equipment.

GUIDANCE TO APPROVING AUTHORITY

3. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements. Including interfaces are adequate. Consideration should be given to the following:

a. The management responsibilities, interfaces and boundaries of all personnel who are responsible for the approvals.

b. The arrangements to demonstrate that design intent has been maintained during the design and build phases or the modification.

c. The arrangements with any Authorisee to develop, record, agree and, where necessary, modify the commissioning programme. Inactive and active commissioning should be planned and executed to show that the design intent has been met.

d. The safety documentation justifying the approval for use and the description of the level of approval required.

e. The arrangements for maintenance of configuration control, the approval of safety related design changes and the approval of concessions.

f. The arrangements for approving the commissioning and in-service processes and procedures.

g. The arrangements for approval in stages, including inactive and active commissioning, where appropriate, recognising that each stage may require DNSR consent, before starting the next stage.

h. The arrangements that ensure there are comprehensive and accurate records of test and trial results and that assessment of the results are kept.

i. The arrangements that ensure that new or modified items which may affect safety are not approved until the appropriate stage of commissioning has been completed and a report of such commissioning has been produced and a safety analysis has been developed and considered.

j. The arrangements controlling interactions with the Defence Nuclear Safety Regulator.

AUTHORISATION CONDITION 22

MODIFICATION OR EXPERIMENT ON EXISTING PLANT (MODIFICATION TO A NAVAL REACTOR PLANT, COMPONENT OR RELEVANT SUPPORT EQUIPMENT)

GUIDANCE NOTE

INTRODUCTION

1. The purpose of this Condition is to ensure that the Approving Authority has adequate arrangements to control all modifications, trials or experiments to NRP, component or relevant support equipment. The Condition also gives DNSR the power to control such modifications to ensure that they cannot commence until the Approving Authority has adequately demonstrated the safety of the proposal. DNSR's control can be either through using the direct powers in the Condition or through secondary powers built into the Approving Authority's arrangements.

SCOPE

2. This guidance covers the control and assessment of modifications throughout all phases of the concept, assessment, design, manufacture, implementation and disposal cycle.

GUIDANCE TO APPROVING AUTHORITY

3. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements, including interfaces are adequate. Consideration should be given to the following:

a. The management responsibilities, interfaces and boundaries of all personnel who are responsible for ensuring that modifications, managed, controlled and supervised.

b. The processes and procedures undertaken to categorise, assess, approve and implement changes to the design of NRP, component or relevant support equipment. This should include the:

(1) processes and procedures employed to initiate modification action when arising from within the Approving Authority or externally;

(2) processes and procedures undertaken to assess a proposed modification;

(3) arrangements for the review and approval of a modification;

(4) arrangements for governing the dissemination of information following a modification;

(5) safety categorisation system employed;

(6) the safety documentation justifying the safety of the modification, and the level of approval required, including the provision of information to support the safety documentation of the Authorisees;

(7) arrangements to control the modifications and alterations, ensuring that operating instructions and procedures are consistent with the Safety Justification and the design intent;

(8) the arrangements for ensuring that the procedures for modifications, trials or experiments are implemented, properly controlled, authorised and conducted.

(9) processes and procedures used to update the design and as built records, manufacturing records and documentation defining the interfaces.

c. The arrangements for implementing the modification, in stages, where appropriate, with each stage requiring DNSR consent, if specified, before commencement of the next stage.

d. Producing a 'hold point' strategy and the arrangements for defining the appropriate level of approval for each stage.

e. The principal interactions with the Defence Nuclear Safety Regulator.

AUTHORISATION CONDITION 23

OPERATING RULES
(CONDITIONS AND LIMITS OF SAFE OPERATION)

GUIDANCE NOTE

INTRODUCTION

1. The safety of a NNPP activity results from many factors including the design of the NRP and its behaviour under fault or accident conditions. The purpose of this Condition is to ensure that the Approving Authority produces a safety analysis that identifies all the necessary conditions and limits that ensure that the NRP, component or relevant support equipment is kept within parameters which ensure safety during normal operation and in fault or accident conditions.

SCOPE

2. This guidance relates to the conditions and limits necessary in the interest of safety, which may also be referred to as Operating Rules which are generated to prevent a breach of the safe operating envelope of the NRP, component or relevant support equipment.

GUIDANCE TO APPROVING AUTHORITY

3. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements, including interfaces are adequate. Consideration should be given to the following:

a. The management responsibilities, interfaces and boundaries of all personnel who are responsible for defining, approving, producing, reviewing and maintaining the Operating Rules.

b. The arrangements controlling interactions with Authorisees, including the arrangements for transmitting information between the Approving Authority and Authorisees.

c. The arrangements controlling interactions with the Defence Nuclear Safety Regulator.

d. The arrangements employed by the Approving Authority for reviewing, approving and maintaining up-to-date the Operating Rules.

AUTHORISATION CONDITION 24

OPERATING INSTRUCTIONS

GUIDANCE NOTE

INTRODUCTION

1. The safety of a NNPP activity is influenced by the actions of people who control, maintain or service the NRP, component or relevant support equipment. It is important given the often complex nature of the safety case for all actions carried out by people to be done in accordance with procedures derived from the safety case. It is also important that actions are not carried out on an ad hoc basis without evidence. The purpose of this Condition is to ensure that the Approving Authority has arrangements to provide Authorisees with information necessary to enable the provision of written Operating Instructions for all operations which may affect safety, including any instructions to implement Conditions and Limits of Safe Operation.

SCOPE

2. This guidance relates to the provision of information and operating instructions to the Authorisees for operations that may affect nuclear or radiological safety. Such operations include the routine day-to-day operations and related activities such as research, trials, maintenance, commissioning and decommissioning.

GUIDANCE TO APPROVING AUTHORITY

3. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements, including interfaces are adequate. Consideration should be given to the following:

a. The management responsibilities, interfaces and boundaries of all personnel responsible for the provision of information necessary to enable the provision of written operating instructions.

b. The processes and procedures undertaken to ensure that adequate information is generated, including the arrangements for reviewing, amending, controlling, approving and maintaining up-to-date such information.

c. The arrangements for controlling interactions with Authorisees, including the arrangements for providing Authorisees with ‘instructions necessary in the interest of safety’ and the conditions and limits of safe operation.

d. The arrangements controlling interactions with the Defence Nuclear Safety Regulator.

AUTHORISATION CONDITION 25

OPERATIONAL RECORDS

GUIDANCE NOTE

INTRODUCTION

1. The purpose of this Condition is to ensure the Approving Authority has arrangements for specifying to Authorisees the records to be made of the operation, inspection and maintenance of any NRP, component or relevant support equipment necessary to support continued Approval for use.

SCOPE

2. Operational records are those relating to examination, maintenance, inspection, testing and operation of any NRP, component or relevant support equipment.

GUIDANCE TO APPROVING AUTHORITY

3. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements are adequate. Consideration should be given to the following:

a. Management responsibilities, including interfaces and boundaries of all personnel responsible for the specification of records associated with the operation, inspection and maintenance of the NRP, component or relevant support equipment.

b. The processes and procedures undertaken in order to define and agree the NRP, component or relevant support equipment operational records required.

c. The arrangements for specifying to Authorisees the operational records to be provided.

d. The arrangements controlling interactions with the Defence Nuclear Safety Regulator.

AUTHORISATION CONDITION 27

SAFETY MECHANISMS, DEVICES AND CIRCUITS

GUIDANCE NOTE

INTRODUCTION

1. The purpose of this Condition is to ensure that the Approving Authority has arrangements to specify for Authorisees which conditions and limits for operation of a NRP, component or relevant support equipment require the provision of safety mechanisms, devices and circuits.

SCOPE

2. This guidance relates to the conditions and limits for operation of a NRP, component or relevant support equipment in which the safety analysis has identified or recognised the need for Safety Mechanisms, Devices or Circuits (SMDC).

GUIDANCE TO APPROVING AUTHORITY

3. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements are adequate. Consideration should be given to the following:

a. The management responsibilities, interfaces and boundaries of all personnel responsible for defining the requirements for SMDC.

b. The processes and procedures governing the:

(1) identification of those conditions and limits that require the introduction of safety mechanisms, devices and circuits by an Authorisee; and

(2) reassessment of the requirements following a change, typically in the operating conditions and limits.

c. The arrangements controlling interactions with Authorisees.

AUTHORISATION CONDITION 28

EXAMINATION, INSPECTION, MAINTENANCE, AND TESTING

GUIDANCE NOTE

INTRODUCTION

1. The purpose of this Condition is to ensure that the Approving Authority has adequate arrangements to specify to Authorisees the requirements for the regular and systematic examination, inspection, maintenance and testing of all plant, components and relevant support equipment. The arrangements must also provide for the specification of an examination, inspection, maintenance and testing schedule for NRP, component or relevant support equipment.

SCOPE

2. This guidance relates elements of the NRP, component or relevant support equipment which are to be subject to regular and systematic Examination, Inspection, Maintenance and Testing (EIMT) and are to be included in a maintenance schedule.

GUIDANCE TO APPROVING AUTHORITY

3. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements, including interfaces are adequate. Consideration should be given to the following:

a. The management responsibilities, interfaces and boundaries of all personnel responsible for identifying EIMT requirements and communicating these to the Authorisees.

b. The arrangements for deriving and approving the examination, inspection, maintenance, and testing policy, including how they are derived from the safety analysis.

c. The processes and procedures governing the specification of examination, inspection, maintenance and test requirements to Authorisees.

AUTHORISATION CONDITION 30

PERIODIC SHUTDOWN

GUIDANCE NOTE

INTRODUCTION

1. It may be necessary for a NRP, component or relevant support equipment to be shut down at regular intervals for examination, inspection, maintenance and testing. The purpose of this Condition is to ensure that the Approving Authority has arrangements to define the periodicity for shutdown, examination, inspection, maintenance and testing. The Condition also gives Defence Nuclear Safety Regulator (DNSR) the power to intervene and require the Approving Authority to seek DNSR's consent to granting approval to restart operations following the completion of the necessary maintenance.

SCOPE

2. Periodic Shutdown refers to the shutdown of either the whole or part of the NRP, component or relevant support equipment to enable the safe conduct of examination, inspection, maintenance or testing according to the requirements of the maintenance schedule.

GUIDANCE TO APPROVING AUTHORITY

3. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements, including interfaces are adequate. Consideration should be given to the following:

b. The management responsibilities, interfaces and boundaries of all personnel responsible for managing and specifying the requirements for periodic shutdowns.

b. The processes and procedures governing the planning of the examination, maintenance, inspection and testing to be undertaken by the Approving Authority, including the safety justification.

c. The arrangements for considering, justifying and approving extensions, or reductions, to the period before scheduled shutdown and verifying the satisfactory completion of the EIMT.

d. The arrangements controlling interactions with Authorisees.

e. The arrangements for dealing with situations where examination, maintenance, inspection and testing reveals faults, or conditions which jeopardise safe operation or indicate a potentially unsafe condition, including the notification of the Defence Nuclear Safety Regulator.

AUTHORISATION CONDITION 31

SHUTDOWN OF SPECIFIED OPERATIONS (WITHDRAWAL OF APPROVAL)

GUIDANCE NOTE

INTRODUCTION

1. The purpose of this Condition is to give DNSR the discretionary power to direct the Approving Authority to withdraw the Approval for Use of any NRP, component or relevant support equipment and to require the consent of DNSR prior to reinstating any Approval.

SCOPE

2. This guidance relates to the withdrawal of the Approval for Use of any NRP, component or relevant support equipment. The Approving Authority must have arrangements in place to instruct any Authorisee to shutdown specified operations with any NRP, component or relevant support equipment for which Approval for Use is withdrawn.

GUIDANCE TO APPROVING AUTHORITY

4. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements, including interfaces are adequate. Consideration should be given to the following:

a. The management responsibilities, interfaces and boundaries of all personnel responsible for ensuring that there are arrangements to respond to a direction by DNSR to withdraw approval.

b. The processes and procedures employed by the Approving Authority to implement a direction from DNSR to withdraw Approval for Use and to instruct any Authorisee to shutdown specified operations.

c. The arrangements for seeking DNSR consent to reinstate Approval for Use.

AUTHORISATION CONDITION 35

DECOMMISSIONING

GUIDANCE NOTE

INTRODUCTION

1. The purpose of this Condition is to ensure the Approving Authority has made adequate plans for the decommissioning of a NRP, component or relevant support equipment.

SCOPE

2. This Condition relates to the planning of decommissioning of NRP, component or relevant support equipment that present nuclear or radiological hazards.

GUIDANCE TO APPROVING AUTHORITY

5. The Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements, including interfaces are adequate. Consideration should be given to the following:

a. The management responsibilities, interfaces and boundaries of all personnel responsible for planning decommissioning.

b. The processes and procedures for ensuring that adequate capability exists to withdraw and decommission NRP, component or relevant support equipment including decommissioning as part of the normal CADMID cycle.

c. The arrangements for the production, agreement and management of a decommissioning plan for NRP, component or relevant support equipment.

d. The arrangements for providing documentation to justify that safety has been duly consider in the proposed decommissioning plan and its submission to the Defence Nuclear Safety Regulator.

AUTHORISATION CONDITION 36

CONTROL OF ORGANISATIONAL CHANGE

GUIDANCE NOTE

INTRODUCTION

1. The purpose of this Condition is to ensure that the Approving Authority has adequate arrangements to control any change to its organisational structure or resources which could affect safety. These arrangements require the Approving Authority to assess the safety implications of any proposed change before they are carried out. For changes that could have a significant effect on safety if they are inadequately conceived or executed the Condition gives the Defence Nuclear Safety Regulator (DNSR) the power to require the Approving Authority to submit a safety statement, and to prevent the change from taking place until DNSR is satisfied that the safety implications are understood and that there will be no lowering of safety standards. The Condition also gives DNSR the power to halt any change that has commenced if there is a concern that the safety implications have not been adequately considered.

SCOPE

2. This guidance provides advice on the arrangements for management of change to the organisation which delivers and manages safety. The scope ranges from high level changes, e.g. management reorganisations or project team mergers, to low level changes; this includes the reduction of manpower in response to cost saving measures and the increased use of contractors. The arrangements should not be restricted to those roles set out in the Approving Authority's nuclear baseline; rather, the arrangements should reflect the roles needed to carry out the full range of authorised activities including Design Authority roles, decommissioning projects, maintenance, examination and testing, emergency response, etc. The governance of nuclear safety and Intelligent Customer functions are an integral part of the nuclear baseline.

GUIDANCE TO APPROVING AUTHORITY

3. Consideration should be given to the following:

Adequate Arrangements

4. The Approving Authority should demonstrate that he has made and implemented adequate arrangements to control any changes to the organisational structure or resources. Such arrangements should include a description of the Approving Authority:

a. nuclear baseline.

b. procedures for organisational change.

Nuclear Baseline

5. The nuclear baseline should be documented, and that documentation should identify and justify all safety significant aspects of the organisation, including:

a. The purpose of the organisation.

b. Senior management and their responsibilities.

c. Lines of accountability from the workforce to senior management.

d. Description of the staff comprising the organisation, including:

(1) numbers of staff required;

(2) identification of posts with safety responsibilities, including those with safety responsibilities to the Approving Authority but not part of his organisation, requiring the post holders to be Suitably Qualified and Experienced Persons; there needs to be an emphasis on sufficient in-house technical resource and Intelligent Customer aspects;

(3) identification of posts with specific safety responsibilities requiring the post holders to be Duly Authorised Persons;

(4) terms of reference and job descriptions; and

(5) training, qualification and experience requirements plan.

e. Arrangements for the employment of contractors.

Procedures for Organisation Change

6. a. Role of Senior Management. A statement of senior management commitment should be produced, including: acceptance of their responsibility; recognition that the management of safety is a key business objective; and a description of control of their organisation.

b. Project Management. The arrangements for proactive management of the change should be described, including the means by which proposed changes are to be planned, developed, assessed and subsequently implemented.

c. Review and Assessment. The arrangements for independent review and assessment, depending upon categorisation, should be described, including any arrangements for independent peer review.

d. Audit and Feedback. The arrangements for audit of an organisation post implementation of change should be described, to provide assurance that the change has been correctly implemented, and that the arrangements are robust on completion.

Classification

7. As with equipment modifications, changes to the organisational structure or resources are to be classified according to their safety significance. This is to enable the application of a degree of scrutiny and review commensurate to the impact of the proposed change. This in turn should be based upon an assessment of the consequences of a management failure due to the organisational changes and the subsequent loss of control of a safety significant activity.

Documentation

8. The arrangements should provide for adequate documentation to justify any proposed change. This should include:

a. Recognition of the safety implicated aspects of the Nuclear Baseline arrangements.

b. Consideration of options.

c. Principles for change.

d. Demonstration of how the revised organisation is to function, highlighting the effect of change from the datum.

Submission

9. The Approving Authority arrangements should cover the submission of any documentation called for review by Defence Nuclear Safety Regulator (DNSR).

Approval of Specified Arrangements

10. The Approving Authority should recognise the need for DNSR to review any proposed change and be prepared to stop the change or operational programme if DNSR is not satisfied with the safety implications.

11. Organisations may use their Compliance arrangements for Authorisation Condition (AC22) as a framework.

12. The arrangements defining interactions with the DNSR, including the submission of any documentation requested by DNSR and the procedures for seeking DNSR agreement.

FURTHER AUTHORISATION CONDITION 1

DUTY OF CO-OPERATION

GUIDANCE NOTE

INTRODUCTION

1 This Condition results from the mobility of reactors and weapons in the defence nuclear programmes, and the separate responsibilities of approving authorities. The first purpose of the condition is to maintain coherent arrangements between Authorisees to ensure the safe transfer of reactors or weapons from one to the other. The second purpose of the condition is to maintain arrangements for co-operation between Authorisees and Approving Authorities to ensure that appropriate design control is exercised throughout the plant life and across life-cycle phases (in the nuclear weapons programme this complements the requirements of Approving and Design Authorities Conditions (ADAC)). Finally, the condition ensures that arrangements are made for co-operation with independent organisations (e.g. contractors) and internally within the Authorisee's organisation where this is necessary to maintain safety.

SCOPE

2 This guidance relates to the factors which the Approving Authority should consider to ensure that it co-operates Authorisees, with the Technical/Design Authorities and with other organisations (both external and internally).

GUIDANCE TO APPROVING AUTHORITIES

3 The responsibility for nuclear and radiological safety within the NNPP remains ultimately with the authorisees and cannot be delegated to another body/person. This responsibility cannot, however, be discharged by the authorisees without information from and co-operation with those responsible for the design and approval of the NRP, component or relevant support equipment i.e. the Approving Authority.

4 The Further Authorisation Condition Compliance Statement should be sufficiently comprehensive to provide the basis for evidence that the safety management organisation and arrangements are adequate. Consideration should be given to the following:

a. The responsibilities of Approving Authority personnel for the interface arrangements with the Authorisees and Duty Holders, and within the Approving Authority, including the management structure, responsibilities and interactions between the associated organisations, committees and individuals.

b. The arrangements to ensure the provision of adequate information on the NRP, components and relevant support equipment safety to each Authorisee and Duty Holder, and within the Approving Authority, to enable them to discharge their nuclear and radiological safety responsibilities.

c. The arrangements the Approving Authority has in place to gain assurance that the activities undertaken by Authorisees and Duty Holders will not compromise the intrinsic safety of the NRP, component or relevant support equipment.

d. The contracts and customers supplier agreements etc. with customers, suppliers, Authorisees and within the Approving Authority.

DNSR EXPECTATION

5 DNSR expects the Approving Authority to agree a 'Documented Arrangement' with an Authorisee or Duty Holder where there is an interface which affects nuclear safety; this is to define the responsibilities of the parties as they affect the other.

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ANNEX D TO CHAPTER 4

STANDARD STATEMENTS

CONTENTS

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ANNEX D TO CHAPTER 4

STANDARD STATEMENTS

STATEMENT BY THE UNITED KINGDOM GOVERNMENT ON OPERATION OF NUCLEAR POWERED WARSHIPS IN FOREIGN PORTS

1 The UK Government certifies that the reactor safety aspects of design, crew training and operating procedures of the nuclear propulsion plant of UK nuclear powered warships are reviewed by the UK Defence Nuclear Safety Committee (DNSC) and other appropriate UK authorities, and are as defined in officially approved manuals. The UK Government also certifies that all safety precautions and procedures followed in connection with operations in UK ports will be strictly observed in foreign ports.

2 In connection with the operation of UK nuclear powered warships in foreign ports:

(a) No effluent or other waste will be discharged from the ship which would cause an ascertainable hazard through an increase in the general background radioactivity of the environment; waste disposal standards are consistent with the recommendations of the International Commission on Radiological Protection.

(b) During the period of the visit, the personnel of the nuclear powered warship will be responsible for the radiological control onboard the ship and for environmental monitoring of the vicinity. The host Government may, of course, take such surveys as it desires, in the vicinity of the warship, to assure itself that the visiting ship is not creating a radioactive contamination hazard.

(c) The appropriate authorities of the host Government will be notified immediately in the event of an accident involving the reactor of the warship during a port visit.

(d) The UK Government assumes the responsibility to salvage or otherwise make safe any nuclear powered warships that might be incapacitated in a foreign port.

(e) The UK Government does not make technical information on the design or operation of its nuclear powered warships available to host Governments in connection with port entry. The UK Government cannot, therefore, permit the boarding of its nuclear powered warships for the purpose of obtaining technical information concerning their propulsion plants or operating instructions.

(f) The Royal Navy will inform the appropriate host Government authorities as early as practicable, but normally at least 24 hours in advance, as to the estimated time of arrival and, pursuant to prior consultation with the host Government, the intended location of mooring or anchoring of its nuclear powered warships.

(g) The United Kingdom will, of course, welcome the customary protocol visits to its nuclear powered warships by representatives of the host Government.

3 Claims arising out of a nuclear incident involving a visiting nuclear powered warship will be dealt with through diplomatic channels in accordance with customary procedures for the settlement of international claims under generally accepted principles of law and equity.

STATEMENT BY UNITED STATES GOVERNMENT ON OPERATION OF US NUCLEAR POWERED WARSHIPS IN FOREIGN PORTS (REVISED SEPTEMBER 1964)

1 The United States Government certifies that reactor safety aspects of design, crew training and operating procedures of the nuclear propulsion plants of United States nuclear powered warships are reviewed by the United States Atomic Energy Commission and the statutory Advisory Committee on Reactor Safeguards, and are as defined in officially approved manuals. The United States Government also certifies that all safety precautions and procedures followed in connection with operations in United States ports will be strictly observed in foreign ports.

2 In connection with the operation of United States nuclear powered warships in foreign ports:

(a) No effluent or other waste will be discharged from the ship which would cause a measurable increase in the general background radioactivity of the environment; waste disposal standards are consistent with the recommendations of the International Commission on Radiological Protection.

(b) During the period of the visit, the personnel of the nuclear powered warship will be responsible for radiological control on board the ship and for environmental monitoring in its immediate vicinity. The host Government may, of course, take such surveys as it desires, in the vicinity of the warship, to assure itself that the visiting ship is not creating a radioactive contamination hazard.

(c) The appropriate authorities of the host Government will be notified immediately in the event of an accident involving the reactor of the warship during the port visit.

(d) The United States Government assumes the responsibility of salvage or otherwise make safe any United States nuclear powered warship which might be incapacitated in a foreign port.

(e) The United States Government does not make technical information on the design or operation of its nuclear powered warships available to host Governments in connection with port entry. The United States Government cannot, therefore, permit the boarding of its nuclear powered warships for the purpose of obtaining technical information concerning their propulsion plant or operating instructions.

(f) The United States Navy will inform the appropriate host Government authorities as early as practicable but normally at least 24 hours in advance as to the estimated time of arrival and pursuant to prior consultation with the host Government, the intended location of mooring or anchoring of its nuclear powered warships.

(g) The United States will, of course, welcome the customary protocol visits to its nuclear powered warships by representatives of the host Government.

3 Claims arising out of a nuclear incident involving a visiting nuclear powered warship will be dealt with through diplomatic channels in accordance with customary procedures for the settlement of international claims under generally accepted principles of law and equity.

DECLARATION OF THE FRENCH GOVERNMENT ON VISITS OF NUCLEAR POWERED WARSHIPS TO FOREIGN PORTS

1 The Government of France certifies that all aspects of reactor safety of French nuclear powered warships, with regard to design, crew training and the operation of these reactors have been reviewed by a national interministerial commission on nuclear safety composed of members of the Armed Forces and the Commissariat à l'Energie Atomique (Atomic Energy Commission), and that said aspects conform to the standards officially recognised in France and are defined in the officially approved manuals.

2 The French Government certifies that all rules for the operation of reactors will be observed in both French and foreign ports.

3 French nuclear powered warships visiting foreign ports will observe the following rules:

(a) No radioactive effluent or other waste which could cause an appreciable increase in radioactivity in the environment will be discharged by the ship during the visit; waste disposal standards are consistent with the recommendations of the International Commission on Radiological Protection.

(b) During the entire visit, the Commander of the ship will be responsible for radiological control onboard his unit and for environmental monitoring in its immediate vicinity. The host country may, of course, if it so desires, effect this monitoring in the vicinity of the ship to make sure that the visiting ship is not creating a radioactive contamination hazard.

(c) In the event of an accident involving the reactor of the ship during a port visit:

- The authorities of the host country will be informed immediately.
- The French Government will assume responsibility for the application of measures necessary for the safety of the ship, as well as its possible refloating or towage.

(d) The French Government does not make available technical information on the design or operation of its nuclear powered warships to host Governments in connection with port entry. The French Government cannot, therefore, permit the boarding of its nuclear powered warships for the purpose of obtaining either technical information concerning their propulsion systems or operating instructions.

(e) The customary protocol calls by representatives of the host country will be welcomed aboard French nuclear powered warships.

(f) Once the French Navy has received a visit authorisation from the host Government and has consulted with the appropriate authorities, it will communicate in good time the (location of) mooring or anchoring stations which it desires for its nuclear powered warships.

4 The French Government will be prepared to seek settlement of claims for damages through diplomatic channels in the event of a nuclear accident.

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CHAPTER 5

GUIDANCE FOR DNSR STAFF

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CHAPTER 5

GUIDANCE FOR DNSR STAFF

INTRODUCTION

1. Volume 1 Chapter 3 of this JSP outlines the regulatory processes that the Defence Nuclear Safety Regulator (DNSR) uses. It explains that safety submissions are assessed to inform the regulatory judgements when deciding whether to permission activities and agree submissions or not. DNSR staff (supported through contract) require guidance in order to apply consistent and acceptable approaches to their assessment and judgement. This chapter provides that guidance in the form of Safety Assessment Principles (SAP). It is published in this JSP in the interests of transparency so that Authorisees and Approving Authorities may have visibility of the approach that DNSR staff take.

2. The Health and Safety Executive/Nuclear Installations Inspectorate (HSE/NII) undertook a review of its SAP, publishing a revised set at the end of 2006 which are routinely updated. DNSR engages closely with the NII to ensure the relevance of HSE SAP to activities and facilities in the defence nuclear programmes, and DNSR formally adopts and integrates them for use by DNSR staff. However, the HSE SAP do not address specific issues associated with the Nuclear Weapons Programme (NWP), and further interpretation is also published in respect of the Naval Nuclear Propulsion Programme (NNPP). This is explained below.

3. Both DNSR and NII staff use SAP, together with the supporting Technical Assessment Guides (TAG) which are published separately, to guide regulatory judgements.

STRUCTURE

4. Figure 1 shows how SAP and interpretation for the defence nuclear programmes are structured. The applicability of any SAP (or its interpretation) in forming a judgement is determined by DNSR staff, in discussion if appropriate with the Authorisee or Approving Authority making a submission.

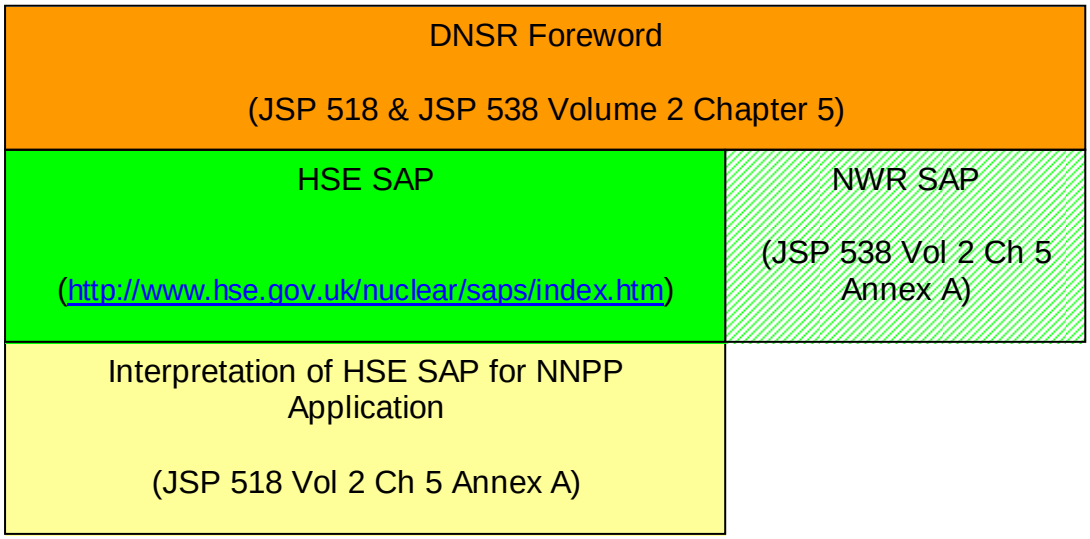

Figure 1

DEVELOPMENT NOTES

Naval Nuclear Propulsion Programme

5. In 2005 DNSR and NII agreed to engage in an 'alignment' project to advise the NII's revision of HSE SAP to improve the relevance to the defence nuclear programmes. Close joint working developed, including DNSR representation on the editorial board, enabling DNSR adoption of the HSE SAP.

6. The benefits of adopting common SAP include:

- helping to demonstrate that judgements are made, where practicable, to standards at least as good as those applied by the statutory regulator, in line with SofS policy;
- consistency in regulatory approach in respect of sites which are both licensed and Authorised;
- facilitating joint regulatory working to the benefit of both regulators and regulated;
- Duty Holders have one set of regulatory expectations expressed in one common document;
- improved clarity and understanding of the application of the principles in a defence environment.

7. In adopting the SAP the former NNPP Safety Principles and Safety Criteria (SPSC) have been withdrawn. The NNPP SPSC were originally derived from International Atomic Energy Agency (IAEA) guidance in 1994 and updated by International Nuclear Safety Advisory Group (INSAG)12 in 2000. The revised HSE SAP, have been benchmarked against the IAEA guidance developed in the intervening period.

Nuclear Weapons Programme

8. The HSE SAP were never intended to cover the complete range of issues in the NWP (The Aldermaston Weapons Establishment (AWE) Act and Amendment Order prohibit the application of Licence Conditions to the design of nuclear devices). Therefore, additional material has been adapted from the NW SPSC to complement HSE SAP and this constitutes NWR SAP. The NW SPSC were not designed to be regulatory safety assessment principles in the same style as the HSE SAP; their origins are in prescriptive Proceedings from the former Ordnance Board, and they are a combination of regulatory and design requirements. The extraction from and adaptation of the NW SPSC into regulatory SAP should provide much greater clarity between regulatory safety issues and design issues.

Technical Assessment Guides

9. Following the issue of the revised SAP in 2006, the NII initiated a project to review and update the current suite of TAG to make them consistent with the benchmarking of the IAEA Safety Standards. These TAG provide guidance on the interpretation and application of the SAP, Licence Conditions and other standards relevant to the regulation of the nuclear programmes.

10. It is DNSR's intent to develop detailed guidance for its staff, which will further harmonise assessment guidance with that of the NII, by:

- engagement in the development and update of the NII TAG to ensure, where possible, that they are applicable assessments in the defence nuclear programmes;
- preparation of DNSR-authored TAG, where necessary, to address issues specific to the defence nuclear programmes.

11. DNSR's objective is to attain a coherent suite of guidance to assessors which Authorisees can use to understand the basis on which their arrangements will be assessed, and which mirrors NII equivalent documentation to aid joint working.

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ANNEX A TO CHAPTER 5

INTERPRETATION OF SAP FOR NNPP APPLICATION

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ANNEX A TO CHAPTER 5

INTERPRETATION OF SAP FOR NNPP APPLICATION

FOREWORD

1. The Nuclear Directorate (ND) branch of the UK Health and Safety Executive (HSE) issued updated Safety Assessment Principles for Nuclear Facilities (SAP) towards the end of 2006 for use by their assessors and site inspectors. The Defence Nuclear Safety Regulator, (DNSR), intends to use these same principles in their assessment of the Naval Nuclear Propulsion Programme (NNPP), and to facilitate this, DNSR was engaged in the formulation of the HSE SAP. The benefits of adopting common Assessment Principles include:

- helping to demonstrate that the NNPP applies, where practicable, standards as high as those applied to the civil industry, in line with SoS policy;
- the avoidance of potential "double standards" being applied at licensed and Authorised sites;
- facilitating joint regulatory working to the benefit of both regulators and regulated.

2. DNSR believes that the new HSE SAP are generally applicable ***to the assessment of*** projects and programmes within the NNPP. The SAP ***do not represent a prescriptive compliance requirement***[28]. Following Authorisation of all key players in maintaining nuclear safety in the NNPP, DNSR intends to withdraw the more prescriptive Safety Principles and Safety Criteria currently within JSP 518 as part of the overall review of its documentation. This does mean that DNSR will take a greater interest in Authorisees' internal prescription and guidance to check ***consistency*** (not compliance) with SAP.

3. Notwithstanding the above statement, and DNSR's engagement in the formulation of the new HSE SAP, there are inevitably areas where a DNSR assessor or Principal Inspector might need to interpret a SAP in a particular way to take account of the special constraints applicable to the NNPP. This is recognised in the **So Far As Is Reasonably Practicable (SFAIRP), As Low As Reasonably Practicable (ALARP) and As Low As Reasonably Achievable (ALARA)** section of the SAP where at paragraph 14 on page 5 it is stated that the "**principles should be applied in a reasonably practicable manner"**. Similarly, paragraph 23 on page 6 of the SAP concludes: **"…….In short, the principles are a reference set from which the inspector needs to choose those to be used for the particular nuclear safety situation"**. Nevertheless, DNSR recognises that there could be a concern among Authorisees and Duty Holders that a simplistic interpretation of the HSE SAP will "move the goalposts" on safety demands within the programme. To allay these concerns, DNSR has reviewed the new SAP to identify particular principles which might appear new to the NNPP, or whose rigid application might appear contrary to existing NNPP safety approaches and requirements. We have then considered how we should interpret these in the NNPP context to achieve an ALARP position in nuclear safety which also optimises holistic programme safety while remaining consistent with Secretary of State for Defence policy.[29]

4. There are other SAP which are of special relevance to the NNPP because of (for example):

[28] Note paragraph 3 of the Introduction on Page 4 of the SAP/
[29] Expressed in JSP 815 Defence Environment and Safety Management.

- the nature of plant and the way it is operated;
- The development of the NNPP safety justification structure has led to weakness or lack of clarity in these areas.

5. DNSR has also attempted to identify these SAP to indicate to assessors and Authorisees how these issues might be addressed.

6. These specific interpretations, observations and guidelines are given below, under headings 1 to 6. They are inevitably somewhat disjointed since they pick up on specific SAP and supporting paragraphs, most of which DNSR considers applicable without interpretation. To aid identification of the relevance of these interpretations, they are presented as follows:

- by "topic area" or sub-area in descriptive form, e.g. Safety Analysis;
- reference to relevant SAP and/or supporting paragraphs to which the interpretation will be applied;
- how DNSR assessors and inspectors will evaluate Authorisees' submissions in these topic areas taking account of the relevant SAP and any special constraints applicable to the NNPP,

7. DNSR has used its experience, and that of Serco Regulatory Support (RSD) and Defence Science and Technology Laboratory (DSTL), to identify those SAP which may give rise to concern among Authorisees and Duty Holders, and to provide specific interpretation in advance of an issue arising. However, if there are other SAP not covered by topic areas 1) to 7), below, which Authorisees consider might give rise to problems, they are invited to raise these with DNSR for an early guide to DNSR interpretation where appropriate[30].

8. The SAP, their supporting paragraphs and the interpretation provided here for the NNPP give only high level guidance to inspectors and assessors; more detailed guidance for assessors in particular has been, and will continue to be, provided in Technical Assessment Guidelines (TAG) issued by HSE ND. It is DNSR's intent to arrive at a set of detailed guidance applicable to the NNPP by:

- engagement in the development and update of HSE TAG to ensure, where possible, that they are wholly applicable to the NNPP
- preparation of DNSR specific TAG, where necessary, to address issues peculiar to the NNPP

9. DNSR expects the latter to be few in number[31], and intend to discuss and agree them with HSE ND. Our objective is to attain a coherent suite of guidance to assessors which Authorisees can use to understand the basis on which their arrangements will be assessed, and which mirrors HSE equivalent documentation to aid joint working.

[30] This does not mean that DNSR will necessarily provide an interpretation in all cases, as we may consider the SAP as written to be wholly applicable.

[31] A requirement has been identified, at Dec 2007, for the following DNSR specific TAG:
1) Ageing and Degradation
2) Emergency Arrangements
3) Movements and Berthing
4) Management of Through Life Safety
5) Safety Systems
6) Commissioning

Those "Topic Areas" identified where DNSR interpretation of the new SAP is provided in the context of the NNPP are as follows:

1) NNPP interfaces, interdependencies and transfers of through life responsibilities

2) Safety cases
   a) Safety Analysis – systematic approach, Haz-ID
   b) Safety case – demonstration of sound engineering practice, and derivation of operating limits, EIMT, commissioning trials etc.
   c) Optimisation of protection and balanced plant design

3) Engineering Justification
   a) Inherent and passive safety
   b) Codes and Standards
   c) Redundancy and Diversity; Single Failure Criterion -
   d) High Integrity Design
   e) Ageing and Degradation
   f) Materials control, Welding and Inspection
   G) Purpose and Limitations of Commissioning

4) Design Basis Analysis

5) Design for Safety
   a) Consistency with function
   b) Safety Systems
   c) Monitoring and Control

6) Role of Operator

7) Numerical Targets

The interpretation is provided on the following sheets, numbered as above.

1. NNPP INTERFACES, INTERDEPENDENCIES AND TRANSFERS OF THROUGH LIFE RESPONSIBILITIES

Relevant SAP [32]	DNSR Specific Guidance to Assessors
FP1, page 10; 72, page 15; 102, page 20	The SAP are written for the case where there is generally a facility operator for a static plant who is the licensee and clearly has responsibility for day to day and through life safety of his plant. The situation is complicated in the NNPP by the mobile nature of the plant and the fact that its facility operator while at sea has other very serious safety responsibilities besides nuclear. Accordingly, a safety management system has been developed whereby the Naval Reactor Plant Authorisee (NRPA) lays down strict prescription in the manner of operation of the plant by Naval engineers, based upon advice from a continuous Design Authority (DA) organisation. Some aspects of this system have been tested over time, but others have had to be developed or modified to take account of revised contracting arrangements and real or perceived deficiencies in the management of site risks. DNSR inspectors and assessors, in applying the SAP, need to look for: • An identifiable facility operator with responsibility for day-to-day safety of plant operations or maintenance who understands and accepts that responsibility. • Support from the NRP DA organisation via the NRPA to ensure that the planned operations are within the design intent, and do not give rise to unexpected hazards • Satisfactory, clear and jointly agreed interface arrangements between Authorisees responsible for the plant at other stages of its life-cycle to enable the facility operator to discharge his responsibility for day-to-day safety. • Appropriate engagement of the NRPA to ensure that the through life safety of the plant is not compromised This is a vital function in the NNPP which currently lacks a direct parallel in the civil nuclear industry (though other safety critical industries have to manage more complex interfaces). Accordingly, DNSR intends to issue in the very near future an NNPP specific TAG to help both assessors and Authorisees understand reasonable expectations for the management of interfaces between Authorisees to ensure day-to-day and through life safety.

[32] and supporting paragraphs affected

2. SAFETY CASES

2.a Safety Analysis – Systematic approach, Haz-ID

Relevant SAP [33]	DNSR Specific Guidance to Assessors
80, page 16; 92a., page 18; EKP4, page 26; ECS1, page 26; ESS11, 346, page 61; 504, page 86; 527, page 89; 540, 547, pages 90, 91; FA22 and 565, page 93;	The SAP indicate many desirable features of a safety analysis and the process used to generate it. DNSR assessors should seek first and foremost: • Identification of the failure modes of the plant or equipment by a thorough, systematic, auditable and comprehensive hazard identification process (Haz ID) appropriate to the nature and function of the plant.– paragraph 92a • Identification of the safety function(s) to be delivered within the facility by a structured analysis starting with principal Critical Safety Functions and Haz ID • A staged process from Haz ID through analysis in a fault schedule (which can also incorporate a "safety schedule" – ESS11) to safety function identification and confirmation, and initiating sequences as input to a PSA The PSA can be considered a high level output from a hazard analysis process which starts with Haz ID. Haz-ID should engage creative thought to identify potential routes to radiological hazards (paragraph 80). This process is an integral part of design development and analysis (paragraph 527). There should be some interaction between the PSA and design (an example concerning balanced safety cases is mentioned at 2.c below) for which an early draft PSA should be planned. PSA should be based upon "best estimate" data so that designers and operators can focus on true high risk areas. However, PSA must not be unduly optimistic, and uncertainties which potentially undermine confidence in the PSA results might justify a conservative or bounding case approach to input data. This should be avoided if at all possible where the PSA output is sensitive to the specific data, and frequent simple sensitivity analyses should be used to prevent a distorted PSA output. Safety Analyses in the NNPP have not always demonstrated consistency with the basic requirements outlined above, and DNSR assessors should drive to see them achieved in future analyses. The SAP include other desirable features which may inform DNSR assessors in making their judgements.

[33] and supporting paragraphs affected

2.b Safety Analysis – Demonstration of Sound Engineering Practice, and Derivation of Operating Limits, EIMT, Commissioning Trials etc., ALARP Considerations

Relevant SAP [34]	DNSR Specific Guidance to Assessors
92.d, page 18; 184, page 31; EMT1, page 31; 187, page 32; 573, page 94; 622 - 623, page 101;	The SAP call up the need to demonstrate the maintenance of a sound design intent by: • Application of sound engineering practice at all stages of the design and manufacture of the plant • Derivation of operating limits and essential maintenance from the design and safety analysis • Definition and satisfactory completion of commissioning trials to demonstrate as far as possible the design intent. The relevant paragraphs and principles are listed in the 1st column of this table. Though these are comprehensive, it is not immediately clear that this linkage must be visible and traceable from the safety case, as they do not appear under the "Regulatory Assessment of Safety Cases" section. In the NNPP, there has been some disconnect between the safety case and the demonstration of these essential linkages between design and operation, and it is thus an area of improvement sought by DNSR. The DNSR assessor should therefore emphasise this requirement of the safety case to duty holders and test that it has been achieved using the specific paragraphs and principles listed in the 1st column as appropriate. The conditions and limits of safe operation (CLOSOs) required by Authorisation Condition 23 should be transparent within a safety case and CLOSOs should be readily identified. The demonstration that the ALARP principle has been applied appropriately is another essential output from the safety case. There is a danger both within and without the NNPP that ALARP is treated as a purely Cost Benefit Analysis (CBA) exercise. Though CBA may form an important part of an ALARP justification, the application of current sound engineering practice in new plant is overriding. It should be done whether or not it results in a quantifiable lowering of risk and CBA is not applicable, and even if the risk is below the BSO[35].

[34] and supporting paragraphs affected
[35] T/AST/005 Technical Assessment Guide NSD Guidance on the Demonstration of ALARP

2.c Safety Analysis – Optimisation of Protection and Balanced Plant Design

Relevant SAP [36]	DNSR Specific Guidance to Assessors
FP3, page 10; 94, page 18; 146e, page 26; 529, page 89	References to optimisation, balanced case and balanced design appear in the SAP and it is important that the DNSR assessor interprets these in a manner appropriate to the context of the Naval plant. Optimization of protection is a fundamental principle which also supports ALARP. However, optimised protection during one phase of a NRP life cycle may not achieve the same end in the next phase, and the assessor examining this phase must be flexible in his or her judgement on optimisation. Furthermore, the nuclear powered warship's crew are subject to many risks beside nuclear, such that optimisation of their safety may not be the equivalent of optimisation of the nuclear risk *during the operational phase of the nuclear powered warship's life* (this is a factor which will affect many DNSR judgements). This constraint will not apply to workers and local population while the nuclear powered warship is in a port or dockyard and nuclear safety as it affects them must be shown to be ALARP. However, the balance of plant and dockyard protection systems to achieve tolerable and ALARP risks might not necessarily be optimised for the docked phase due to the constraints of the operational phase, and DNSR assessors need a broad understanding to be able to test whether the right balance has been achieved. Another desirable characteristic of a safety case is that of balance in the case and the design such that predominant risks are not driven by single or a small number of failure modes to an unacceptable degree; similarly, an over reliance on single protection systems or barriers should be avoided. As paragraph 529 of the SAP states: "PSA should confirm that a balanced design has been achieved……." and early "first cut" PSA work should be carried out to identify any imbalances while they can still be addressed in the basic design, protection systems or operating procedures. The NRP suffers from some constraints (need for small size, high power density) and benefits from some inherent strengths (high quality fuel made without a tight cost constraint, robust containment) which can undermine the drive to a balanced design. In assessing NNPP safety cases, DNSR should: • Apply the SAP relating to balanced safety justification • Challenge shortfalls against them to test whether they are driven by the fundamentals of the NRP • Test whether an apparent imbalance is mitigated by reliable evidence of low failure probability in making its judgement.

[36] and supporting paragraphs affected

3. ENGINEERING JUSTIFICATION

3.a Engineering Justification; Inherent and Passive Safety

Relevant SAP [37]	DNSR Specific Guidance to Assessors
EKP1 and 136 – 138, page 24; 146, page 26; EHA13, page 38; ENM6, page 72;	The SAP mention both inherent and passive safety as desirable features of a design. In the nuclear powered warship context, DNSR assessors need to take account of consistency with function in assessing how well duty holders meet these principles. The nuclear powered warship brings together explosives and other hazardous materials within the same containment as a reactor which combines fissile material and a moderator. This breaks the simplest interpretation of inherent safety[38], the key point is whether inherent safety is maximised consistent with the plant's function as indicated in the second phrase of EKP1. Methods and approaches for the minimisation of unnecessary hazard are outlined at paragraph 137, and DNSR assessors are encouraged to test the application of these principles in the context of ALARP. That is not to say that DNSR should ignore the concept of inherent safety; for example, where a new plant, plant line-up or evolution is proposed which increases the inherent hazard, this should be challenged and a justification that it is both essential to the plant function and that this aspect of its function is worth the increased hazard should be sought. However, the fundamental concept of the nuclear powered warship will be treated as a "given" even though it is in some ways inimical to inherent safety. The SAP refer to passive safety in the context of the storage of radioactive materials (reference ENM6, RW5). It is not the same as inherent safety which would require removal of the hazard, but seeks hazard control by fundamental, simple, robust, physical measures in preference to safety systems which need to actively respond to a fault. This feature is also desirable in reactor design and is readily applicable to civil plants. It is harder to engineer in the nuclear powered warship context where space is limited, but should not be dismissed as a principle to be applied. As an example, the HPDHR system on the NRP can be considered a passive system *once triggered and once flows are established*; the adoption of Hang-Open Non-Return Valves (HONRVs) to permit DHR via SG's is a passive system which is not reliant on an active triggering system.

[37] and supporting paragraphs affected

[38] The same could be said of any nuclear reactor design. A Magnox reactor combines metallic magnesium and uranium in a block of coal with vertical gas passages…..

3.b Engineering Justification; Codes and Standards

Relevant SAP [39]	DNSR Specific Guidance to Assessors
159, 161, page 28; ECS4, page 28; EMT3, para 188, page 32; 266, page 46; 278, page 49	The safety classification assigned to each system, structure or component (SSC) provides the basis for identifying appropriate codes and standards for the design, manufacture and operation of SSCs. A SSC important to safety is one which delivers a safety function and provides a direct role in nuclear safety, or one which indirectly affects nuclear safety and whose failure could adversely affect a SSC which delivers a safety function. Design codes such as ASME III for nuclear components embody knowledge, experience and best practice and achievement of their requirements provides a level of assurance that the delivery of safety function can be met. Assessors should check that codes applied in the NNPP are selected and used appropriately, as the most common failure in this area is the use of codes outside their intended scope. It is usually preferable to base a SSC important to safety on normally accepted codes and standards but ECS.4 & 5 recognise that this may not always be possible by suggesting other means on which an acceptable case may be based. This should not be seen as an easy alternative; the burden of evidence is likely to be significant, depending on the classification and importance. One approach is to draw on existing codes and standards which ensure a conservative design that is commensurate with the safety classification and the importance of the delivery of the safety function. However, this will not always be possible, particularly in the NNPP where constraints and particular design objectives apply (this is explored in 3.c, Engineering Justification: Redundancy Diversity and Segregation; Single Failure Criterion). This can demand the development of NRP specific codes, potentially supported by limited operational experience and testing. This is not new in the UK nuclear powered warship programme, and the NRP Technical Authority has a good record of developing its own, sound design approaches. A recent development in the NNPP is the potential to achieve a significant advance in design leading to improved nuclear powered warship and nuclear safety by the use of information and even designs from the much larger US submarine programme. Again, these designs have been supported by internal design codes, which are not necessarily in the public domain. The DNSR assessor needs to follow a similar approach to that for earlier UK internal codes, i.e. • Understand why normally accepted codes and standards are not appropriate, and agree that the constraints and/or benefits demand the use of non-standard codes • Agree that the non-standard code is soundly supported by the best available operational and test data, and makes the best possible use of read across from the accepted codes and standards

[39] and supporting paragraphs affected

Relevant SAP [39]	DNSR Specific Guidance to Assessors
	• Check that appropriate conservatism has been applied where operational and test data is very limited • Test that the code is not tailored to support the existing design Paragraph 159 indicates that there may be situations where codes and standards need to be modified or supplemented to a level commensurate with the importance of the safety function delivered. Assessors should note that, although design to established codes and standards provide the basis for delivering safety functions, the standard of analysis demanded may be substantially higher, depending on the classification of the SSC. For example, in structural integrity cases, pressure vessel failure statistics suggest a failure frequency of the order of 10^{-5} per year as a typical limit to the level of reliability that might be inferred from compliance with the design, manufacture, testing and inspection requirements of established codes. So, high integrity or incredibility of failure classifications usually involve additional measures beyond basic compliance with design codes to substantiate the higher reliability claim. NRPA publication 4-1-11, Classification, provides guidance on what is required to support a design (Table 1) relative to the required reliability. The guidance at Paragraph 161 cautions against combining different codes and standards for justifying a single aspect of a SSC, and assessors should be wary of the selection of different codes where this appears to be tailored to support the existing design rather than as a design improvement tool. It can sometimes be justified, however. An example is the demonstration of defect tolerance in structural integrity cases where ASME III design rules are supplemented by assessment to the R6 procedure; two standards are used because of the inherent limitations of the ASME design rules. The sub division of responsible DA's and systems used in the NNPP means that different codes and standards may be employed for different aspects of the same SSC. In such cases, assessors need to be aware of potential incompatibility between standards. We must also recognise that some "codes" do not deliver firm design rules, but guidance as to how a design substantiation may be achieved, and the principles to be adopted in estimating the strength of particular "legs" of the case[40]. The code does not deliver a right or wrong answer. This is difficult for DNSR to assess, as it could require the assessor to gain the same detailed understanding of science and mechanics of potential failure that the designers have. However, one objective of regulation is to build trust with Authorisees and their internal safety authorities such that the regulator can gain assurance by a number of probing questions to the Authorisee. The assessor may also suggest to the Authorisee early regulator involvement in the design process to de-risk a time consuming regulatory assessment at a critical time in the project.

[40] An example of this is the output from the TAGSI

3.c Engineering Justification: Redundancy Diversity and Segregation; Single Failure Criterion

Relevant SAP [41]	DNSR Specific Guidance to Assessors
168, page 29; 172, page 29; EDR4 and paragraph 175, page 30; 261, page 44; 352, page 62;	EDR's 1-4 and associated paragraphs on pages 29–30 of the SAP are sound design principles aimed at increasing the reliability of a safety critical function or safety mechanism. In considering the application of these SAP to the NNPP, we need to explore a potential difference between typical civil nuclear operations and the Naval propulsion programme; namely, that for naval plant, a loss of output can put lives at risk as effectively as a serious nuclear accident[42]. The potential effect of a loss of output in an operating nuclear powered warship is explored briefly in Section 6, paragraph 4 on societal risk. However, its implications affect many SAP covering redundancy and diversity, safety systems role of operator, etc. The high risk of nuclear powered warship operations which can be mitigated by propulsion availability, especially though not exclusively during wartime, was recognised in the early design principles for the naval reactor plant. Thus the concept of a "responsible" control system, the "battleshort" switch, and permitted abnormal operating modes were all part of the design basis. Reliance on a battleshort protection system bypass is not an acceptable means to deliver peacetime propulsion reliability, but the other design bases are still valid.
ESS24, page 63; 358, page 64; ERC2 and 444 – 445, page 78;	Increasing the reliability of a safety critical function will generally also support nuclear powered warship safety, but increasing the reliability of a safety mechanism which triggers plant shutdown without considering the risk of spurious shutdown can be inimical to nuclear powered warship safety. The delivery of high propulsion reliability may be in conflict with the desire to have diverse protection systems where that could increase probability of spurious trips. DNSR assessors should be open, though challenging, to the argument from naval reactor designers that they can achieve a high reliability of protection by a small number of simple high integrity systems with the benefit of ease of EIMT as well as greater responsibility. There are also severe space constraints in nuclear powered warship design which will make it difficult to achieve the desired segregation, and possibly diversity (EDR.2). Paragraph 352 in the SAP is a counsel of perfection with regard to the segregation and protection of safety systems, which it will not always be practicable to achieve[43]. DNSR assessors should apply a reasonably practicable interpretation in line with the SFAIRP qualification described at paragraphs 9-7 of the SAP when considering the achievement of diversity and separation of function, taking account of nuclear powered warship constraints.
ESS 19, 20, 21, 27,	Another potential ramification is that safe nuclear powered warship operation is helped by reactor protection which permits fast

[41] and supporting paragraphs affected
[42] i.e., a shutdown plant is not necessarily a safe plant on a nuclear submarine
[43] This is not a blanket excuse which says that segregation cannot be achieved because it's a submarine. The DNSR assessor should rigorously test the justification for shortfalls against this SAP, while understanding the inevitable limitations and constraints of submarine operation.

Relevant SAP [41]	DNSR Specific Guidance to Assessors
pages 62, 63, 64	recovery and can continue to deliver propulsion for a time from a sub critical reactor. Achievement of these is facilitated by the use of software based control systems, which may not be consistent with SAP ESS 19, 20 and 21 (though ESS 27 recognises the possibility of using software based control). Thus some deviation from SAP may be justified to enhance the holistic safety of nuclear powered warship operation, and the DNSR assessor should evaluate critically any arguments advanced along such lines. **However**, the balance of risk, particularly to the public, changes when the nuclear powered warship is in port or port approaches such that the nuclear SAP should be applied. A switch to more conventional control algorithms and different operating procedures may well be possible to deliver optimum safety in all life cycle phases. The DNSR assessor should challenge, and seek to understand any arguments that this is impracticable, and demand an ALARP justification if it results in a significant public risk. ERC2 of the SAP relating to diverse shut down systems is an example of the above, and a brief exploration of DNSR expectations might be helpful. It carries the rider that it applies to civil reactors and naval reactors have a single means of both reactor control and fast shutdown, which is argued for various reasons to be more reliable than the control system in a civil reactor. Civil reactors also use the reactor control rods for fast shutdown, but include alternative reactivity reducers which are more or less fast acting and more or less diverse depending on the reactor type. It is arguable whether these achieve diverse fast shut-down or diverse hold-down. The arguments (involving nuclear powered warship safety) against diverse fast shut-down in an at-sea nuclear powered warship are understood by DNSR, and its absence gives rise to no significant public risk. The same is not self-evident for a nuclear powered warship in port, and, where no diverse hold-down system is made available, DNSR needs to understand the justification for this departure from civil practice, supported by an ALARP case if appropriate. The Single Failure Criterion (SFC) is quoted at EDR4 and paragraph 175 under the Design for Reliability section of the SAP, and it has no direct equivalent in the MOD SPSC. As written, and interpreted in a severely literal manner, it would be hard to meet by any nuclear plant, so we have to ask “what is the objective sought in improving reliability by design?” The SFC is a widely used test of safety functions, particularly their redundancy. It has application in high integrity industries including aerospace and petrochemicals as well as nuclear utilities. The IAEA promote the SFC as an essential requirement of the design of nuclear power plant and the reference given at paragraph 175 gives much more detail on the application of the SFC at paragraphs 3.73 to 3.80. DNSR assessors, and interested Authorisees, are encouraged to use this as a practical guide, recognising that ALARP considerations apply to this principle.

[44] and then test adherence thereto

Relevant SAP [41]	DNSR Specific Guidance to Assessors
	The two UK civil nuclear generating companies have developed the basic SFC concept and included it within their internal safety guidelines, and DNSR assessors might reasonably expect NNPP Authorisees to do the same. They should seek and evaluate similar relevant guidelines from NNPP internal safety authorities such as NRPA[44]. Note that the SFC refers to Safety Functions such as negative reactivity insertion, heat removal and ECCS amongst others. Specific hardware systems and components contribute to the achievement of these functions and they should each include appropriate levels of redundancy, diversity and segregation which are commensurate with the required continuous duty or demand related reliability. The SFC described in the IAEA reference covers normally permissible states of plant availability to include "the worst possible configuration of the safety group". DNSR interpretation is that this refers to operation within the design basis including any reduced operational or maintenance states permitted by the design basis. It does not include beyond design basis conditions, nor does it cover abnormal and time limited conditions such as urgent or unplanned maintenance. A corollary is that any assumed failure must be reasonably foreseeable within the design basis. Where specific measures have been taken to ensure the high integrity of systems or components, postulating a random failure of those systems or components in the context of a test of the Single Failure Criterion would not be appropriate. Obvious examples are where an IoF or a Special Case Procedure safety case has been assembled in recognition of the safety significance or lack of defence in depth of a component or system Consequential failures, sometimes referred to as cascaded failures, resulting from the assumed random single failure should be considered as an integral part of the single failure. This is because the tolerance to the initiating failure is the key issue not the analysis of all failures in the system. The IAEA differentiates between random active and random passive failures. Examples of active random failure events include the failure of a pump to start, a valve to operate or an incorrect action on the part of an operator. Passive failures are exemplified by the random and spontaneous leakage or rupture of a pressure system or tank or the undisclosed blockage of a flow line with debris. The view is that random active failures are of far greater significance because, in general, the failure rate will be several orders of magnitude higher than for passive failures. This can be offset by well designed maintenance and test regimes which DNSR should test as part if its assessment.

3.d Engineering Justification; High Integrity Design

Relevant SAP [45]	DNSR Specific Guidance to Assessors
EPS1, 234, page 39; 241, page 40; EMC1 to 3, 250, page 42; EMC5, Defects, 260, page 43; 356, page 63;	Principle EPS1 with paragraph 234 is aimed at the provision of measures to prevent the failure of a removable closure to a pressurised component or system whose failure could lead to a major release of radioactivity. It includes design provisions and procedural controls to ensure the integrity of bolted joints. Examples of removal closures for the NRP include the access covers for inspection of the pressuriser and removable closures to vessels e.g. the RPV closure head. In principle it could also be applied to the design of the containment. Paragraph 234 specifically calls for ***adequate*** levels of diversity and redundancy in closure methods. The adequacy judgement will need to consider the consequences of failure taking into account the potential for radioactivity release and personnel exposure, and the barriers to environmental release. Thus a removable closure (including valves) to a normal operating plant at full pressure might demand a full diverse protection if it is outside the containment, while a temporarily removable closure within containment to a depressurized plant during maintenance might not need any additional[46] protection. Taking the RPV head as an example of a major closure within the containment, failure is prevented by design, manufacture, and inspection and testing to recognised codes and standards in combination with procedural controls. Redundancy may be claimed from the provision of additional studs to limit the effects of a stud failure on the integrity of the joint. Full protection against failure through diversity of closure as implied in the text at paragraph 234 may not be a reasonably practicable option, but a degree of diversity may exist to limit the consequences of a failure e.g. the provision of both mechanical and toroid seals as leak limiting features of the RPV closure head. Assessors should also gain assurance that effective procedural controls are in place to maintain the integrity of removable closures, prevent tampering and demonstrate the integrity of such closures through the plant life. In some structural integrity cases there may be either limited or no defence against the consequences of a gross or disruptive failure of the component such that the gross or disruptive failure frequency of the component becomes an initiating event frequency. In such situations, a high reliability claim is required and for non-redundant components. Assessors should note that where high reliability is claimed, a disruptive or gross failure frequency of $<10^{-5}$ /year needs to be justified. However, as mentioned in 3)b), a working rule is that a failure frequency of the order of 10^{-5} is the limit to what might be claimed from compliance with conventional pressure vessel design codes such as ASME III, and there is generally insufficient nuclear operating experience to substantiate failure frequencies of $<10^{-5}$ from statistical data[47]. For this reason, among others, the

[45] and supporting paragraphs affected
[46] Beyond the containment
[47] referred to in paragraph 241 as a 'general lack of adequate reliability data for the disruptive failure of metal components and structures'

Relevant SAP [45]	DNSR Specific Guidance to Assessors
	assessment of structural integrity cases tends to be based on deterministic methods using established engineering practice rather than a probabilistic approach as used in a fault analysis or PSA studies. The justification of high reliability is made by invoking additional analysis and by specific examination of service loads and failure modes to infer that the failure frequency is acceptable (see also paragraph 248). The second part of paragraph 278 draws attention to the importance of considering all sources of loading which contribute to the crack driving force which, for the NNPP, may include thermal stress and residual stresses. This collection of deterministic arguments infers conceptual defence in depth and is referred to as an *alternative argument*, as the "usual route" of the provision of explicit engineered protection and defence in depth (redundancy, diversity and segregation) supported by failure frequency data is not available. The approach is the same as that invoked in the past where it is referred to as an 'alternative demonstration' under Principle 21 of the SPSC, or the 'special case procedure' in the early editions of the SAP. High reliability claims attract a rigorous design substantiation and assessment. The guidance in paragraph 250 points out that the need for such claims should be avoided where practicable by the provision of physical defence in depth[48]. Assessors should therefore give careful scrutiny to why such a claim is necessary and seek assurance that the provision of physical defence depth has been given careful consideration. For structural integrity cases the requirements to meet such claims and are detailed in EMC.1 to EMC.3 Assessors are reminded of the need to adopt a proportionate approach to the assessment of structural integrity cases. The gross failure of certain Structures, Systems and Components (SSCs), though undesirable from an availability perspective may have limited implications for nuclear safety. In these cases, a degree of nuclear safety protection is offered and there should be a commensurate reduction in the requirements of the structural integrity demonstration, reflected in the safety classification. This should be reflected in the failure frequency, though the integrity case should be primarily based on established engineering practice as embodied in design codes[49]. EMC.5 refers to a demonstration that safety-related components and structures are both free from significant defects and are tolerant of defects. The definition of a defect is covered in paragraph 240, the key word being 'significant'. Note that the requirement to avoid significant defects covers both those that are structurally significant and those that might impede subsequent examination. A structurally significant defect in terms of defect tolerance is a crack-like defect which is judged to be a threat to the integrity of a SSC *at some stage in the plant life*. This threat should be judged by comparing the margin

[48] This is consistent with guidance in NP-HD CoP no.3
[49] From which a nominal failure frequency might be inferred
[50] Noting that NDE does not constitute a deterministic case that defects > qualified size are absent, but can underpin confidence based on process control and qualification

Relevant SAP [45]	DNSR Specific Guidance to Assessors
	between the sizes of defects of structural concern (as derived from the fracture assessment) with the results of manufacture, pre-service and in-service examinations (paragraph 277). The twin concept of defect avoidance and defect tolerance underpins the philosophy of high reliability claims under EMC.1. The linkage between the defect of structural concern and the screening undertaken by examinations[50] is also crucial to high reliability claims. EMC.1 and EMC.5 therefore seek the same goals, but EMC.1 strives for a rigorous demonstration commensurate with a high reliability claim.

3.e Engineering Justification; Ageing and Degradation

Relevant SAP [51]	DNSR Specific Guidance to Assessors
178, page 30; 195, page 33; EAD's 3,4, and 5, page 34;	Ageing and degradation mechanisms have the potential to undermine confidence in the delivery of safety functions and maintenance of defence in depth. The management of ageing and degradation is a key aspect of the PSAR process and is closely linked with the achievement of Authorisation Conditions 15 and 23. The Authorisee should show that threat from ageing and degradation mechanisms has been considered and the risks managed. This includes demonstrating knowledge of the type and rate of degradation mechanisms, and where appropriate, linking this knowledge to the control of plant parameters to manage the threat. It also includes provision for monitoring for the unexpected. For the plant as a whole this is achieved by a policy of maintaining an adequate margin between the intended operational life and the predicted safe working life of SSCs (EAD.1, EAD.2 and paragraph 195). A corollary is that an adequate margin between the operating conditions (normal and emergency) and a limiting condition needs to be maintained throughout the plant life. The limiting condition is derived from the loading and material properties and an adequate margin is one that is not negated by, for example, uncertainty in either the loading, defect size, material properties, rate of degradation or a combination of these factors; it is not possible to assign a specific margin that is adequate for all situations. Again, to ensure a proportionate approach, the safety classification and failure mode should be taken into account in formulating judgments on the adequacy of these margins. Target margins in a particular case should therefore be derived from the safety classification, the level of uncertainty in the parameters and the failure mode. The management of the integrity of the RPV beltline is an example of where material properties, in particular fracture toughness, are degraded through life due to irradiation embrittlement. This risk is managed by gaining knowledge of the material properties, the rate of degradation and defining a safety margin to ensure that the risk of brittle fracture is managed to a level commensurate with a high integrity requirement. Principles EAD3 and the associated guidance in paragraphs 196-8 and 201 cover the periodic measurement of material properties. Paragraph 196 highlights the need to establish the level of uncertainty at the start of life, and paragraphs 197 and 198 provide guidance on surveillance and testing which are linked to confirming that the margins in the safety case are adequate. Where a component forms a principal means of ensuring nuclear safety the regulatory expectation is that the periodic measurement of material properties under EAD3 is achieved by testing representative samples. Thus for a RPV or other component where the Authorisee claims IoF, a materials surveillance programme is required to monitor the rate of degradation and to allow material properties to be established throughout the operational life and as part of any case to extend

[51] and supporting paragraphs affected

Relevant SAP [51]	DNSR Specific Guidance to Assessors
	the operational life beyond the designed life i.e. PLEX. For a modern plant, the regulatory expectation is that the lead plant should have a materials' surveillance programme using representative materials for a SSC designated by the Authorisee as IoF and some designated as high integrity. Additional surveillance programs may be required for subsequent plant if the materials and manufacturing processes or operating conditions are judged to be significantly different from those of the lead plant. It is the responsibility of the Authorisee to identify and justify departures from this ideal situation. For legacy plant, it should be demonstrated that alternative arrangements are in place to provide the data to a level of confidence commensurate with the integrity claim or safety classification. Where there is uncertainty e.g. from use of accelerated testing or reading across data from other plant, this needs to be considered and reflected in the assumptions used in the safety case and in setting the operating margins. The rate of degradation may be dependent on the control of certain plant parameters e.g. temperature, fluence and dose rate are important parameters which influence the rate of irradiation embrittlement and subsequent fracture toughness properties of RPV steels. Principle EAD4 identifies the need for these to be periodically monitored to enable an accurate prediction of the material condition to be made. Further guidance on Ageing and Degradation is to be provided in a DNSR TAG

3.f Engineering Justification; Materials Control, Welding and Inspection

Relevant SAP [52]	DNSR Specific Guidance to Assessors
262.b, page 44; 265, page 45; EMC15, page 45; EMC27, page 47; EMC29, page 48; 277, page 49;	Principle EMC.10 is one of several principles covering the requirement for defect avoidance and concerns the positioning of welds to take account of stress and the environmental conditions. The guidance at paragraph 262 expands on specific issues and indicates that in some situations e.g. the RPV beltline welds should be relocated to avoid the threat posed by the environment. The guidance at paragraph 262 is illustrative of the type of issues DNSR inspectors or assessors need to consider. Historically for the NRP, Environmentally Accelerated Corrosion (EAC) has proved to be a significant degradation mechanism and so the positioning of welds in regions where there is the potential for local environments should be avoided where reasonably practicable. The need to consider access for in-service examination should also be taken into account as a design activity in the location under Principle EMC.8 Welding inevitably gives rise to some level of residual stress in the weld, HAZ and adjacent parent material. Welding also has the potential to introduce several types of defect. These defects in conjunction with the imposed stresses may pose a threat to structural integrity. Welding defects may also provide conditions where there is a risk of defect propagation by a degradation mechanism. Welding is a difficult operation with some techniques e.g. TiG, MMA welding, requiring a high level of manual skill. The control of welding operations is therefore a key requirement of meeting the design intent. Paragraph 265 gives examples of the environmental considerations, but there are several other measures associated with the control of welding operations which are of equal importance to achieving quality and avoiding defects. These measures include but are not limited to consideration of the following - welder qualification, procedural qualification, qualification test pieces, pre and post weld heat treatments and in process examinations - and may feature in meeting the intent of Principles EMC13 to EMC17. The control of materials in EMC.15 is another Principle aimed at defect avoidance. Control of the materials used in fabrication is based on the effective implementation of QA procedures which cover identification, storage and issue. Storage arrangements are particularly important in welding where the threat of contamination and moisture needs careful management to ensure weld quality. Certification, chemical analysis and marking are also important aspects of the control of materials. Examples include the tight control of chemical composition necessary to limit the effects of irradiation damage to RPV steels, and the control of carbon in austenitic stainless steels to prevent sensitisation during welding and subsequent vulnerability to

[52] and supporting paragraphs affected

Relevant SAP [52]	DNSR Specific Guidance to Assessors
	stress corrosion cracking. Adequate arrangements for the marking and storage of materials are also relevant to the archiving of materials (see interpretation on ageing and degradation). Examination during manufacture is part of a package of measures including build records, QA, material procurement and testing etc. which collectively provide assurance of the achievement of the required standard of manufacture. Principle EMC.27 draws attention to the importance of deploying reliable examinations to underpin build quality and to screen out structurally significant defects during manufacture and at any subsequent stage in the plant life including pre-service and in-service examination (paragraph 271). The importance of demonstrating the absence of defects of structural concern through linking the fracture assessment to the results of examinations is emphasised in Principle EMC 28. The reference to reliability in Principle EMC27 is to ensure that the examinations can indeed detect and size defects to a level of confidence commensurate with the integrity claim. The demonstration of the reliability of examinations is the aim of EMC.30 which covers inspection qualification. DNSR inspectors and assessors should adopt a proportionate approach in implementing these measures taking cognisance of the safety classification. However, for a modern plant where the Authorisee identifies an IoF failure mode, a regulatory expectation is that at least one screened inspection for defects of structural concern should be carried out as part of the PSI[53], particularly if access to the location is precluded during service. Start of Life (SoL) Inspections should also be made to provide a "fingerprint" for locations identified for ISI. The comparison between the pre-service and in-service examination results is a crucial part of demonstrating knowledge of degradation rates and their management to support high reliability claims. The value of redundant inspections sought under EMC29 needs to be placed in the context of the reliability target sought. Redundant inspections through repeat independent inspections are principally designed to compensate for random effects that may result in the failure to detect significant defects. Diversity of inspection is designed to counter common-mode or systematic failure to detect defects. Compliance with the code requirements offers a degree of redundancy and diversity in examinations, but, dependent on the integrity claim and the difficulty of the examination, there may be a need to go beyond code requirements. For example in the absence of the deployment of at least one qualified inspection at the PSI stage, the dismissal of redundant inspections at different stages in build will only increase the risk of a structurally significant defect entering service. As noted above this position will be exacerbated if access restrictions preclude ISI through-life so the cost of repeat inspections would

[53] Or agreed alternative inspection

Relevant SAP [52]	DNSR Specific Guidance to Assessors
	need to be weighed against the potential resources associated with maintaining the through life SJ. Paragraph 277 emphasises the importance of linking the defects of structural concern as derived by the fracture assessment to the results of both pre-service and in-service examinations carried out under EMC.27. In principle, the fracture assessment should be carried out prior to the specification of the examination requirements, but the extent to which this can be done will depend on the knowledge of the loading and materials properties. For components where high reliability is sought, the aim is to achieve defect avoidance and the intent is to achieve a component that is as defect free as possible under Principle EMC1. A proportionate approach (see the comment against EMC.5 and paragraph 260) is therefore required. However, even for lower structural integrity classifications where at least one line of protection is available it would not be commensurate with the need to prevent accidents and ALARP to place a component into service in situations where the reasonably foreseeable defect size from manufacture or a real defect was commensurate with the structurally significant defect size. This risk is usually managed by meeting code acceptance criteria, or by undertaking a specific fracture assessment.

3.g Engineering Justification; Purpose and Limitations of Commissioning

Relevant SAP [54]	DNSR Specific Guidance to Assessors
ECM 1, page 31; 182, page 31; EMT.3, page 32	The principal purpose of commissioning is to "characterise the facility as a basis for evaluating its behaviour during its operational life" (paragraph 184b). It is to be expected during the commissioning of a complex plant that there may be some surprises in the characterisation of its performance (not to be confused with design errors). To minimise the frequency and significance of surprises and improve the diagnosis of their cause, a staged commissioning programme should be adopted with component and sub-system test and characterisation at appropriate points in the build programme. Nevertheless, allowance must be made in the programme for the feedback of plant level performance characterisation established during commissioning into operating documentation. This stage can introduce a last-minute delay to getting the plant into service which is anathema to project staff, but it is a vital safety related task, and the assessor should check that suitable time and resource allowance has been made to cover this. Commissioning requirements must be driven by the Design Safety Case, as they can only be identified by a full understanding of the design intent. The plant designers are responsible for specifying the requirements and the commissioning stages to confirm the design intent and achieve the required plant characterisation. They are also responsible for ensuring that the staged commissioning can be effected safely with suitable arrangements, and for specifying temporary monitoring arrangements to be implemented at plant level, when required. The assessor should therefore expect to see a linkage between the design bases and substantiations and the commissioning trials specified. The arrangements needed to ensure safety during the commissioning operation are the responsibility of plant builder, though the designers may assist with recommendations. Commissioning may be used to confirm some aspects of the design intent, though it is much more effective in this when effected at component and sub-system level. Plant level commissioning at its most limited will demonstrate only that Start-of-Life (SoL) functional requirements are met. Commissioning should never be considered as a fall-back to identify errors in the design; robust processes must be in place to drive these out during the design process, and the discovery of a design error during commissioning should be considered a serious failure which will substantially delay commissioning while the error is corrected, the root cause investigated, and the plant re-characterised. Testing is not the same as commissioning as plant characterisation is not the intent, but it is often carried out within the same programme slot for practical reasons, particularly at component and sub-system level. Testing outside normal operating conditions may be driven by:

[54] and supporting paragraphs affected

Relevant SAP [54]	DNSR Specific Guidance to Assessors
	• compliance with design codes • calculated conditions when the plant is operating in permitted abnormal modes • calculated conditions for accident scenarios within the design basis Designers are responsible for specifying tests at component, sub-system and plant level, and for ensuring that design substantiations cover test as well as operating conditions to support safety during the testing operation. Again, the assessor should expect to see a clear linkage between the design bases and substantiations and the tests specified. EMT.3 refers to type-testing prior to installation aimed at demonstrating that SSCs important to safety will meet their specification and reliably deliver their safety functions. Type-testing covers a wide range of testing related activities which are applied to demonstrate: a) that there are no inherent design faults that could adversely affect performance, life or reliability; b) that the manufacturer's production processes, including testing, setting-up and QA, are satisfactory; c) stability when subjected to various influence factors such as supply voltage changes, temperature and humidity changes, electromagnetic interference; d) evidence that the specification is met. Fatigue or endurance testing under a normal operating profile is a good example of type-testing, though one which is not often carried out in the NNPP due to the small number of units involved. DNSR assessors should note that the principle is relevant to "normal operating service" which may not necessarily be the same as design basis. Type-testing also covers proof (or pressure) testing and so is linked to paragraph 266 covering the integrity of metal components. Proof testing accords with the best practice embodied in established codes and standards. However, for metal pressure vessels, pipework and systems the guidance in paragraph 266 cautions against the confidence that can be gained from 'passing' such tests. While proof testing is an important test of the strength properties of the materials and section thicknesses, it has limitations for the assurance of the absence of crack-like defects of structural concern. Similarly, paragraph 188 infers that it is frequently not possible to test components under the most onerous in-service conditions prior to installation. DNSR assessors should be aware of the limited value of type/proof testing in such cases, and should note that "code compliance" may be a necessary but not complete condition for acceptance. They should establish that the Design Authority has identified the most onerous in-service and fault conditions, at what point in the component's or system commissioning or life cycle this is first tested, and any subsequent inspection required.

Relevant SAP [54]	DNSR Specific Guidance to Assessors
	The execution of commissioning at sites often remote from the Design Authority (DA) needs to be managed by a competent organization including DA and operator representation as well as experienced builders and dedicated commissioning engineers. The assessor should pay particular attention to the build authority's management arrangements to check that a satisfactory commissioning organisation is planned and put in place at the appropriate times. IAEA Safety Standard No. NS-G-2.9 is commended to assessors and Authorisees as a guide to commissioning nuclear power plants. The particular circumstances applicable to the NNPP need to be taken into account in applying these guidelines. It is intended to write a DNSR specific TAG on commissioning which will do the latter.

4. DESIGN BASIS ANALYSIS

Relevant SAP [55]	DNSR Specific Guidance to Assessors
EHA's 3&4, page 36; FA1, page 86; 515, page 87; 526, page 88;	Conservative design, good operational practice and adequate maintenance and testing should minimise the likelihood of faults. Nevertheless, faults, incidents and events may still occur and plant must be capable of tolerating them. Nuclear plants must therefore be designed to cope with, or be shown to withstand, a wide range of disruptions without unacceptable consequences by virtue of the plant's inherent characteristics or safety measures. This is known as the Design Basis. The DBA should be used to inform and support the plant design, which may well be an iterative process. The DBA would be expected to provide information on a variety of plant operational issues, as described in paragraph 526. A suitably conducted DBA would, for example, demonstrate whether or not the safeguards available against a particular design basis hazard are sufficient and where additional or improved protection is necessary. It should be noted that in accordance with FA.7, the consequence element of the DBA is to be performed on a conservative basis. Conservatism would usually be applied to parameters such as decay heat level, release fractions, failure probabilities of claimed safeguards, etc. Initiating event frequencies (except natural hazards) should, however, be established on a best-estimate basis. Internal and External Hazards need to be included in the DBA, dependent upon the consequences and frequency of occurrence. Further requirements for DBA are given in the HSE SAP at paragraphs 512 to 526.

[55] and supporting paragraphs affected

5. DESIGN FOR SAFETY

5.a Design for Safety; Consistency with Function

Relevant SAP [56]	DNSR Specific Guidance to Assessors
EPS2, page 39; ESS22, page 63;	The aim of EPS2 is to limit the consequences of postulated breaches in piping systems that are connected to or from branches off the primary pipework by the provision of flow limiting devices. Flow limiting devices include isolation valves as well as flow restrictors. The supporting text (paragraph 235) provides guidance on the positioning and reliability of such features, but also seeks assurance that the protection claims are soundly based and that the fitment of a flow limiting device does not undermine the system integrity e.g. by dynamic loading or water hammer. A pipe branch is usually sized for its duty, so the fitting of a flow restrictor may not be a practicable option if delivery of a safety function[57] is compromised. For the NNPP, this is one of a package of measures which may be used to improve LOCA protection, others measures may include, for example, minimising piping diameters[58] or operating pressures, and improving make-up capacity. The DNSR assessor should adopt a wider interpretation of EPS.2, and take cognisance of other design features which may meet the intent of minimising the consequences of postulated breaches from the primary circuit. For the NRP, the phrase “main pressure circuit”, first and foremost is associated with the primary circuit, though the concept of limiting consequences of failure should also be considered in the design of the secondary steam pipework where for example an ESDA provides a direct threat to nuclear safety. Principle ESS22 highlights the importance of avoiding spurious operation which may degrade safety. In terms of nuclear safety the principle is aiming to minimise spurious tripping whilst trying to maximise protection. Spurious tripping puts the plant through unnecessary additional transients and can potentially leave the plant in abnormal modes. Additionally, there is a human factors concern where the operators may not respond properly when a real trip occurs if they have been previously subjected to a number of spurious ones. The principle should be automatically satisfied if the trip settings are specified correctly and the system has adequate reliability.

[56] and supporting paragraphs affected
[57] Or indeed an operating function
[58] Consistent with function

Relevant SAP [56]	DNSR Specific Guidance to Assessors
	The SAP are only concerned with nuclear safety, but this principle is very important to managing the safety of the NNPP where there is a requirement to balance nuclear safety with nuclear powered warship safety, and the DNSR assessor will be conscious of this.

5.b Design for Safety; Safety Systems

Relevant SAP [59]	DNSR Specific Guidance to Assessors
333, page 59; ESS1, page 59; 337, page 59; ESS19 and 353, page 62; ESS20, page 63; 516, page 87;	The introductory paragraph to this section of the SAP (paragraph 333) notes that 'Safety Systems' are the highest category of plant equipment. In this context plant equipment are systems that provide a specific function rather than individual structures or components. The HSE ND glossary is generally consistent with IAEA Standard, NS-R-1 (Safety of Nuclear Power Plants: Design). NS-R-1 identifies that for plant equipment, Safety Systems and Safety Related Systems have equal importance. Safety Related systems scopes all plant equipment whose malfunction or failure could lead to radiation exposure but is not a safety system (acts in response to a fault to prevent or mitigate a radiological consequence). The requirement for safety systems should be determined from early design stage analyses of the plant. The supporting text (Paragraph 337) to SAP ESS.2 (Determination of Safety System Requirements) therefore states that the Design Basis and Probabilistic Safety Analyses (PSA) should determine the safety provisions, functions and required reliabilities. For the NNPP to date, analyses such as PSA are typically not carried out at the design stage but later in life when the design has been frozen and cannot therefore influence the design. This Principle states how the safety system requirements should be derived. For new designs, the DNSR assessor should ensure that appropriate analyses are conducted early in the design stages where their outcome can have the greatest influence on the selection of safety provisions and thus lead to risks that are ALARP. This states that 'A safety system should be dedicated to the single task of performing its safety function'. Although this should be the design goal, paragraph 353 recognises that this may not always be achievable, and it might be particularly difficult for a NRP. The SFAIRP argument (paragraph 9 of the SAP) should be used to justify where this Principle is not met. In such cases, the whole system should be classified as a safety system irrespective of the classification of secondary functions. To maintain integrity of safety systems, ESS.20 states that connections between a safety system and a system external to the plant should be avoided. The intent of this Principle is to prevent failures of the external system propagating to the safety system. As an example, PRT external instrumentation may be connected to the safety system during commissioning; all failure modes should be shown to have no effect of the safety system's functions. Paragraph 354 acknowledges that this may be impractical and advises that the function of these external systems should be limited to monitoring and should have adequate isolation features. Again, the SFAIRP argument should be used to justify where this Principle is not met.

[59] and supporting paragraphs affected

Relevant SAP [59]	DNSR Specific Guidance to Assessors
	Paragraph 516, at the Fault Analysis section of the SAP, states 'Correct performance of safety-related and non-safety equipment should not be assumed where this would alleviate the consequences'. This essentially states that if a system may be used to alleviate the consequences of a safety system failure, then it should also be classified as a safety system. If it is of a lower classification (non-safety system) then it should be assumed that it will not perform as intended within fault analyses.

5.c Design for Safety; Monitoring and Control

Relevant SAP [60]	DNSR Specific Guidance to Assessors
ERC4 and 456, page 79	The Reactor Core sub-section of the SAP includes ERC.4 (Monitoring of safety-related parameters). In this context 'safety-related' refers to the safety parameters of the core. With regard to in-service monitoring, the DNSR assessor should review the set of instrumentation provided to monitor in-core conditions. If in-core instrumentation is so limited as to preclude any direct measurement of core parameters important to safety, then assessors should check that this omission is supported by a SFAIRP argument. In such cases it would be reasonable that the provision of alternative indirect systems that detect consequential changes within the plant are provided. These may include sensors external to the core, including fission product and gamma monitors.'

[60] and supporting paragraphs affected

6. ROLE OF OPERATOR

Relevant SAP [61]	DNSR Specific Guidance to Assessors
343, page 60; 344, page 61; EHF2, page 68; 519, page 88;	The role of the operator for a nuclear powered warship plant has important differences from that of a static land based plant. At sea, many operator actions will be aimed at restoring a level of power output to protect nuclear powered warship safety, or even continue the mission. Alongside greater operator intervention may be required to compensate for protection systems that have been optimised for the "at sea" situation. The nuclear powered warship operators, and plant managers, may also find themselves without immediate access to design or safety authority support and are unusually highly educated operators in order to make autonomous decisions when necessary. For these reasons blanket adherence to some of the provisions in SAP and TAG would be inappropriate (e.g. the "30 minute rule"[62]). In considering the role of the operator in an emergency, DNSR assessors should consider: • The information available to the operator. This should include both the presentation of plant information from instrumentation and the sources of operating advice and guidance that are available in the likely scenario being considered. Assessors should be particularly wary of presumed access to detailed guidance from shore authorities for "at sea" events. • The level of training and education of operators (and managers). This should consider the whole of the SQEP resource available in the scenario under consideration bearing in mind that this will be different at sea from alongside. The scope and content of the training and education should also be considered to ensure that it is comprehensive and appropriate to both the plant and the situations that are reasonably foreseeable. Where appropriate guidance is given, and this is routinely examined (e.g. response to EOPs during simulator and at sea training), it is reasonable to take credit for operator action as part of the overall protection of the plant • When alongside with SQEP support available the "operator" should also be taken to include additional resource available either from the Naval Base, or readily available through deployable backup (e.g. NABUST). For sequences that have time for responses to be formulated, assessors may take credit for the ability of the operator to mitigate potential situations without the need to fully specify what would be done by whom. This will always be a judgment but it is probably reasonable to assume that something could be done within 24 hours of resource being available. Therefore, for those locations which

[61] and supporting paragraphs affected
[62] Noting that paragraph 344 of the SAP set this against civil nuclear power reactors

Relevant SAP [61]	DNSR Specific Guidance to Assessors
	are remote from support, mobilisation and transport times should be taken into account. In addition to the response to an event, assessors should also consider the role of the operator in prevention. While a nuclear powered warship power plant that requires no operator intervention to remain safe may be unrealistic, design of the NRP should wherever possible seek to provide a benign response to transients and simplicity of operation, thus avoiding the need for rapid operator action to stay within parameters.

7. NUMERICAL TARGETS

Relevant SAP [63]	DNSR Specific Guidance to Assessors
568 – 638, pages 94 – 103; "Numerical targets and legal limits in Safety Assessment Principles for Nuclear Facilities An Explanatory Note" – HSE Dec 2006	Assessors should note Paragraph 570 of HSE SAP that the numerical targets are guides to inspectors and assessors to indicate where there is a need for consideration of additional safety measures. The BSLs and BSOs translate the Tolerability of Risk framework and guide into decision making by inspectors and assessors. While the BSOs generally reflect the start of the broadly acceptable levels of dose/risk, as noted in Paragraph 4 of the HSE SAP explanatory note, the BSOs for normal operation are set at a level reflecting that achieved by industry. The BSOs are not design targets or surrogates to denote when ALARP levels of risk have been achieved. There is an overriding legal duty on duty-holders to consider whether they have reduced risks to As Low As Reasonably Practicable (ALARP) regardless of whether the BSO has been met. The BSO represents a level below which it would not be a good use of regulatory resource, nor consistent with a proportionate regulatory approach, to generally pursue further improvements in safety. Sufficient guidance on use of the numerical targets and legal limits is contained in SAP, the accompanying Numerical Target Explanatory Note and the associated HSE Technical Assessment Guides referred to in the text of theses references, with the exception of Target 6 and NT2. Further guidance on Target 6 is detailed below and guidance on NT2, justification and management of short term high risk activities, is in Annex C of the former JSP 518 (issue 2, April 2004); it is expected that this latter guidance will be promulgated as NRPA guidance or standards. **TARGET 6** Target 6 is a subsidiary target to Target 5 and applies to a single accident in an individual facility. The original intent of this target was that it would apply to the totality of accidents at the facility that could affect any person on the site. However, such a target was considered too onerous (see Paragraph 39 of Reference 2). Target 6 aims to produce a balanced approach to ensure that no single accident can make an excessive contribution to the overall site BSO and BSL of Target 5. The inspector or assessor should be assured that the fault sequence is appropriately categorised for consideration as a single accident, and not subject to excessive summation before comparison with the target, which would lead to a more onerous requirement. The consideration of Societal Risk at paragraphs 622-623 is complicated during nuclear powered warship operation. Severe reactor accidents or non-availability can result in loss of the boat with an immediate loss of >100 lives. Since this is unlikely to be a purely nuclear accident, the way in which nuclear ALARP is influenced by societal concerns should take account of the influence by those concerns on non-nuclear ALARP, so the targets at paragraph 623 (Target 9) are not directly applicable. However, any CBA applied to the evaluation of such an accident needs to take account of the full potential loss of life, not

[63] and supporting paragraphs affected

Relevant SAP [63]	DNSR Specific Guidance to Assessors
	individual nuclear risk values. The risk from the postulated nuclear incident will also need to be balanced with other sources of whole boat risk to avoid the potential for a focus on nuclear safety increasing the risk to the nuclear powered warship. The conventional or nuclear powered warship risk to the crew from normal nuclear powered warship operations is approximately an order of magnitude higher than the achievable nuclear risk, and such risk can be exacerbated by loss of propulsion. This lacks an obvious parallel in civil nuclear operations (i.e. that a loss of output can put lives at risk as effectively as a serious nuclear accident) and its implications affect many SAP covering redundancy and diversity, safety systems role of operator, etc. Loss of a vital strategic asset (in the case of a deterrent carrying nuclear powered warship), and the negative impact to the UK submarine programme of any nuclear accident or nuclear powered warship loss might also be factored into the societal risk calculation, though it is likely that the latter is covered by the potential loss of life from a single mishap. The application of the target 9 to nuclear powered warship maintenance and port visits gives rise to a different complication. Since the population density and its orientation relative to the nuclear powered warship will vary from site to site, the nuclear powered warship operating organisation could be required to achieve different safety standards at safety sites. The nuclear powered warship operating organisation or Authorisee may choose instead to set dose and/or fission product release targets to meet or better the societal risk targets at paragraph 623 at the “worst-case” site which the nuclear powered warship might visit. DNSR inspectors should test the accuracy and realism of such an approach while accepting its validity in principle.