



Health & Safety Executive
HM Nuclear Installations Inspectorate

**Rosyth Royal Dockyard Ltd's
strategy for decommissioning
the Rosyth nuclear licensed site**

A Review by HM Nuclear Installations Inspectorate

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Foreword

This report sets out the findings of a review by the Health and Safety Executive's Nuclear Installations Inspectorate (NII), in consultation with the Scottish Environment Protection Agency, of the decommissioning strategy for the Rosyth nuclear licensed site. The site is owned and operated by Rosyth Royal Dockyard Ltd (RRD), which until 2003 provided a refitting and maintenance service for the Royal Navy's nuclear powered submarines. The review has been undertaken in accordance with the Government White Paper, "Review of Radioactive Waste Management Policy: Final Conclusions" (Cm 2919) published in 1995.

The review considers RRD's strategy in relation to regulatory guidance, the underlying assumptions made, and whether the plans are comprehensive and appropriate. RRD's approach to quantifying the tasks and the necessary liability provisions is reviewed.

Our overall conclusion is that, based on current knowledge, the strategy proposed by RRD for decommissioning the Rosyth site is generally appropriate, so far as it has been defined. In particular, NII welcomes RRD's approach to decommissioning of facilities through to planned de-licensing of the site by the end of 2009, with the exception of an operational store required to support storage and treatment for disposal of radioactive wastes for which there is currently no disposal route. There are a few areas where RRD needs to develop its strategy before the next quinquennial review. NII will review progress as part of its routine regulatory work. In addition, NII intends to formally review the situation again in five years time to ensure that progress with the strategy is being maintained and that it remains appropriate should new information change current assumptions.

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1 INTRODUCTION

1 Government Policy set down in the 1995 White Paper “Review of Radioactive Waste Management Policy: Final Conclusions,” Cm 2919 requires nuclear operators to draw up strategies for the decommissioning of their redundant plant, including justification of the timescales proposed and the adequacy of the financial provision (Ref 1). To ensure that the operators’ decommissioning strategies remain soundly based as circumstances change, the White Paper places a requirement that the Health and Safety Executive (HSE) reviews these strategies quinquennially, in consultation with the environment agencies. The HSE asked HM Nuclear Installations Inspectorate (NII), one of its specialist inspectorates, to undertake the reviews on its behalf.

2 The Rosyth Dockyard in Fife, Scotland comprises a nuclear licensed site and a non-licensed site, both of which contain facilities used to support the refitting and maintenance of nuclear powered submarines. Rosyth Royal Dockyard Ltd (RRD) is the owner of the facilities on both of these sites and is responsible for decommissioning of these facilities, including management of the resulting waste. RRD is the holder of the nuclear site licence. Ownership of the waste rests with the Ministry of Defence (MoD), which bears the cost of decommissioning and waste management.

3 This report presents the outcome of NII’s quinquennial review of the decommissioning strategy for the Rosyth nuclear licensed site, with consideration of other areas of the Dockyard only so far as their impact on decommissioning and waste management activities on the nuclear licensed site.

4 The report is structured as follows:

- Section 2 provides background information to the review with a summary of the decommissioning strategy for the site;
- Section 3 presents the review;
- Section 4 presents the overall conclusions.

5 Any reference in this report to ‘Rosyth’, ‘the dockyard’, ‘the site’ etc means the Rosyth Royal Dockyard nuclear licensed site, unless otherwise stated.

2 BACKGROUND INFORMATION

2.1 Work required of HSE

6 The breadth, extent and detail of the review process are not specified in the White Paper. NII has interpreted this task in the manner described in the internal guidance for inspectors (Ref 2), which has been published on the HSE web site. NII has examined the licensee’s strategy with two main objectives:

- first, to consider the adequacy of the plans for the eventual removal of all the nuclear liabilities from the Rosyth nuclear licensed site; and

- second, to consider briefly the arrangements for funding the liabilities so that the work may proceed.

7 NII has interpreted 'decommissioning' as being 'the set of actions taken at the end of a nuclear facility's operational life to take it permanently out of service with adequate regard for the health and safety of workers and the public and the protection of the environment'. The ultimate aim of decommissioning is to make the site available for other purposes (Ref 2). This review has therefore considered the licensee's strategy for the decommissioning of its redundant nuclear facilities and the management of radioactive wastes.

2.2 Legislative background

8 The main legislation governing the safety of nuclear installations in the UK is the Health and Safety at Work etc Act 1974 (HSWA 74) (Ref 3) and the associated relevant statutory provisions of the Nuclear Installations Act 1965 (as amended) (NIA 65) (Ref 4). Under the NIA 65, no site may be used for the purpose of installing or operating a nuclear installation unless a nuclear site licence has been granted by the HSE and is for the time being in force. The NII is that part of the HSE that is responsible for administering this licensing function and enforcing NIA 65 and HSWA 74 on nuclear sites.

9 NII's regulatory responsibilities on nuclear licensed sites include the regulation of the licensee's decommissioning activities, and activities associated with the on-site management of nuclear material and radioactive wastes. The relevant environment agency (i.e. the Environment Agency in England and Wales, and the Scottish Environment Protection Agency in Scotland) is responsible for regulating discharges to the environment and the disposal of radioactive wastes on or from nuclear licensed sites, under the terms of the Radioactive Substances Act 1993 (Ref 5). Formal administrative arrangements (Refs 6 and 7) ensure that the NII and the environment agencies work closely together to ensure compliance with requirements.

10 NIA 65 provides HSE with powers to attach conditions to the licence in respect of safety and with respect to the management of nuclear matter, which includes radioactive waste. HSWA 74 provides the regulatory powers to enforce these conditions. The standard licence conditions are reproduced in Ref 8. All the licence conditions apply to decommissioning and the management of nuclear material and radioactive wastes. However, a number of licence conditions are particularly relevant to such activities, and these are discussed further in Refs 2 and 9.

11 NIA 65 places significant obligations and responsibilities on the licensee. Under current legislation, the licensee's period of responsibility does not end until the HSE is able to declare that there is no danger from ionising radiations from anything on the licensed site (Sections 3(6) and 5(3) of NIA 65). It is assumed that the licensee will ultimately wish to be relieved of these responsibilities after the useful life of the nuclear installation has ended, and will plan the decommissioning of individual sites to achieve this where practicable.

2.3 Regulatory guidance

12 NII has produced internal guidance for inspectors entitled 'Decommissioning on Nuclear Licensed Sites' (Ref 2). The objectives of the guidance are to draw together those aspects of legislation, Government policy and international standards which are relevant to the work of NII in regulating decommissioning, and to provide a framework for the inspection and assessment of decommissioning on a consistent basis.

13 NII has four fundamental expectations for decommissioning, which should be met so far as is reasonably practicable. These expectations, which are consistent with current Government policy, are as follows:

- in general, decommissioning should be carried out as soon as is reasonably practicable, taking account of all relevant factors;
- hazards associated with the plant or site should be reduced in a progressive and systematic manner;
- full use should be made of existing routes for the disposal of radioactive waste; and
- the remaining radioactive material and radioactive waste should be put into a passively safe state for interim storage pending future disposal or other long term solution.

14 NII has also produced internal guidance for inspectors entitled 'Management of Radioactive Materials and Radioactive Waste on Nuclear Licensed Sites' (Ref 9) which complements the guidance on decommissioning.

15 NII has two additional fundamental expectations concerning the management of radioactive materials and radioactive waste on nuclear licensed sites, which should also be met so far as is reasonably practicable. These are:

- the production of radioactive waste should be avoided. Where radioactive waste is unavoidable, its production should be minimised;
- radioactive material and radioactive waste should be managed safely throughout its life cycle in a manner that is consistent with modern standards.

16 The HSE web site (Ref 10) has a more detailed discussion of these fundamental expectations and other topics. This review of RRD's strategy has been undertaken in accordance with the NII guidance.

2.4 The Rosyth nuclear licensed site

17 The Rosyth Dockyard comprises a nuclear licensed site and a non-licensed site, both of which contain facilities used to support the refitting and maintenance of nuclear powered submarines. The final two nuclear submarine refits were completed in 2003.

- 18 The nuclear licensed site consists of three separate areas comprising:
- the 2/3 Dock Area (the former nuclear submarine refit complex) which includes the Submarine Refit Building, Health Physics Building, Effluent Treatment Plant, Core Pond, No.2 and 3 Docks and dockside areas;
 - the Reactor Support Active Workshop – an operational workshop;
 - the Active Waste Accumulation Facility (AWAF) - the existing facility for storage of solid Intermediate Level Waste (ILW) and for accumulation and processing for disposal of radioactive Low Level Waste (LLW).

19 The decommissioning and radioactive waste management liabilities on the site have resulted mainly from nuclear powered submarine refit and maintenance operations. The radioactive matter in the nuclear submarine comprised: the irradiated fuel; fission products resulting from nuclear chain reactions within the clad fuel; and activation products produced from neutron irradiation of the reactor primary circuit components and of the pressurised water coolant. The fuel was removed from the submarine reactor as part of the refit operations, stored temporarily and then transferred to BNFL's Sellafield site in Cumbria. There is no fuel remaining at Rosyth.

20 Relatively small quantities of radioactive wastes are currently stored on the site. The waste streams are far less diverse in nature than those which occur at some other nuclear licensed sites in the UK.

21 The Ministry of Defence (MoD) has set up Project RD83 to discharge its nuclear liabilities following the completion of nuclear submarine refit operations. Project RD83 covers decommissioning of all facilities on the nuclear licensed site (as well as other areas on the overall Dockyard site), with the exception of the Active Waste Accumulation Facility (AWAF). RD83 is scheduled for completion, with de-licensing of all areas excluding the AWAF planned, by 2009. The AWAF facility is not covered within the scope of Project RD83 since it will be needed until approximately 2030 to support radioactive waste storage and treatment for disposal operations. Separate arrangements will be put in place by MoD and RRD to ensure the continuing maintenance of the AWAF whilst it remains in use and provide for its safe decommissioning at the end of its useful life. RRD was involved with production of decommissioning studies for UKAEA at Dounreay; the Dounreay model for decommissioning studies is being used at Rosyth.

22 A substantial programme of site and facility characterisation work has been undertaken under RD83 to inform the Rosyth decommissioning strategy. This work indicates that the site contains very little contamination. The activation products cobalt-60, tritium, carbon-14, nickel-63, and iron-55 are the main radionuclides to be encountered during decommissioning, with cobalt-60 being most dominant.

23 There are seven redundant nuclear submarines berthed at Rosyth. A stakeholder consultation exercise was completed in December 2003, as part of the Ministry of Defence ISOLUS project (Interim Storage of Laid-Up Submarines), concerning options for the management of radioactive waste from redundant submarines at Rosyth and Devonport. A report summarising the outcome of the

consultation is available on the ISOLUS web-site (Ref 11); MoD is considering this report and will be publishing its response to it. As RRD's decommissioning Project RD83 progresses through to 2009, existing facilities at Rosyth which could be used for dismantling nuclear submarines will no longer be available.

2.5 Context of the review

24 There have been several external developments since Cm 2919 (Ref 1) was issued in 1995. These include the Government's proposals for developing policy for the management of solid radioactive waste (Ref 12), the proposal to establish the Nuclear Decommissioning Authority (Ref 13), the UK strategy for radioactive waste discharges (Ref 14), and the Government's proposed revision to the UK nuclear decommissioning policy (Ref 15). In general, these developments are of less significance to RRD's decommissioning strategy, compared with the strategies of some other licensees in the UK, due to the nature of the decommissioning tasks which will be required at the Rosyth site. However, those external factors which may impact on RRD's strategy are discussed later, where appropriate, in the technical assessment section of this report.

25 The Government's consultation document on the revised UK decommissioning policy proposes that the existing quinquennial review process should continue for those licensees such as RRD, which will remain outside the remit of the Nuclear Decommissioning Authority (NDA). Alternative arrangements are planned for the BNFL and UKAEA site strategies which will come under the control of the NDA (Ref 15).

3 THE TECHNICAL REVIEW

3.1 The review process

26 The technical assessment has considered the licensee's strategy and supporting information in relation to NII's internal guidance for decommissioning and waste management (Refs 2 and 9). The submission has been assessed by:

- consideration of RRD's general approach, in particular, with regard to the fundamental expectations set down in NII guidance; and
- examination of the assumptions upon which the site strategy is based to determine their validity.

27 The review process also involved: meetings with RRD staff during which further data was obtained; visits to a number of operational and redundant facilities to be decommissioned under RD83; and to the operational Active Waste Accumulation Facility (AWAF), which RRD expects to decommission in several decades time.

3.2 The technical assessment

RRD's decommissioning policy and objectives

28 RRD's policy is for safe closure and decommissioning of the licensed site on cessation of nuclear submarine re-fit operations, with de-licensing as the desired end point. Implementation of this policy is being demonstrated through the RD83 project, with de-licensing of all areas excluding the Active Waste Accumulation Facility (AWAF) planned by 2009. The RRD approach for RD83 is consistent with the Government's existing and proposed policies (Refs 1 and 15) for systematic and progressive reduction of hazards presented by the site. However, RRD plans to store radioactive waste resins on site for several decades in the AWAF in a raw untreated state. This practice is not consistent with the principle of passive safe storage in an immobilised state. RRD therefore needs to justify why it is not reasonably practicable to immobilise these wastes earlier than is currently planned.

Decommissioning programme and plan

29 Project RD83 is underway, with de-licensing of all areas excluding the AWAF planned, by 2009 and physical decommissioning of facilities to commence in early 2005. The end point of the decommissioning process is the removal of radioactivity from the site to the extent that nuclear regulatory controls can be removed. NII is maintaining regulatory oversight of RD83 as part of its routine regulatory work.

30 RRD is undertaking Project RD83 in two phases:

- Phase 1 Assessment and Works Planning – April 2001 – March 2005;
- Phase 2 Decommissioning – April 2005 – December 2009.

31 Phase 1 of the RD83 project is progressing to programme. This phase is concerned with providing overall characterisation of the site and includes:

- facility studies to characterise each facility under assessment, to define the preferred option(s) for the future of each facility and the scope and costs of decommissioning;
- preparation of safety cases;
- site characterisation surveys (complementing facility studies) to supplement information on radioactive contamination provided by existing operational Health Physics surveys;
- development of a monitoring protocol defining survey routines to be followed on completion of decommissioning to demonstrate the absence of significant contamination;
- work planning for Phase 2 physical decommissioning.

32 RRD requires a new authorisation under the Radioactive Substances Act 1993 (RSA 93) from the Scottish Environment Protection Agency (SEPA) for disposal of decommissioning wastes before it can commence RD83 Phase 2 decommissioning work. RRD's application for this authorisation is undergoing due process in accordance with the requirements of RSA 93: a public consultation phase

has been completed and draft certificates of authorisation are with NII, the Food Standards Agency and Scottish Ministers for comment.

33 The current decommissioning strategy does not include the AWAFF, which is expected to be operational for several decades to support waste storage and treatment for disposal operations. However, RRD has undertaken a facility characterisation study under Project RD83 for the AWAFF and plans to use a similar approach for decommissioning of the AWAFF as is presently being adopted for RD83. This approach assumes that all wastes accumulated in the AWAFF will be consigned through existing disposal routes before decommissioning commences. RRD's waste inventory and waste management arrangements are considered later in this report.

Decommissioning methods and safety of decommissioning

34 RRD has produced a pre-decommissioning safety case in accordance with the requirements of Licence Condition 35(5) for the RD83 project. The safety case is underpinned by site and facility characterisation studies, which provide confidence that the levels of radioactivity are sufficiently low to allow manual dismantling and demolition of plant by conventional techniques.

35 RRD expects doses to operators from RD83 decommissioning operations to be significantly lower than those experienced from its submarine refit operations and support work, which were also low. RRD's estimated doses for the RD83 project seem consistent with the levels of radioactivity determined from site and facility characterisation work, and, in addition, RRD has introduced ALARP (As Low as Reasonably Practicable) dose reduction measures.

36 The AWAFF is outwith the scope of RD83. However, decommissioning of this facility should be achievable using well-understood techniques and no unusual safety issues are anticipated.

Completeness of the strategy

37 The RD83 decommissioning strategy covers existing facilities on both the nuclear licensed and non-licensed parts of the Rosyth site. Facilities excluded from the RD83 are:

- the AWAFF, which will remain operational for several decades for waste storage and treatment for disposal operations;
- a Very Low Level Waste (VLLW) Disposal Pit (closed in 1978) owned by the Ministry of Defence (MoD) which is located off (but adjacent to) the licensed site, and hence not regulated by NII. A letter of agreement between MoD and HM Industrial Pollution Inspectorate for Scotland (HMIPI) covered VLLW disposals to the pit. This VLLW pit presents a potential risk to site de-licensing via the possibility of water containing very small quantities of cobalt-60 leaching onto the site. RRD has recognised this risk and has a monitoring programme covering the perimeter of the pit to establish the extent and quantity of contamination. RRD has not detected any radioactivity to date. The MoD would have responsibility for

clean-up in the unlikely event of radioactivity leaching onto the licensed site from the VLLW pit.

38 The RD83 project includes construction of a new effluent treatment plant to support decommissioning operations. Decommissioning of this facility is not included within the scope of RD83. It is expected to remain available for the period of waste resin storage.

39 There are seven redundant nuclear submarines at Rosyth (and four at Devonport) for which Government decisions are awaited concerning the management of their decommissioning wastes. As noted previously, as Project RD83 progresses through to 2009, existing facilities at Rosyth which could be used for dismantling nuclear submarines will no longer be available.

Management of decommissioning

40 Project controls for RD83 have been set up by RRD. These controls involve a RRD project team, with decommissioning and decontamination work subcontracted as necessary. Radiation surveys and monitoring essential to statutory and regulatory compliance are to be undertaken by suitably qualified and experienced RRD Health Physics staff. NII has no objection in principle to the use of specialist contractors, indeed NII recognises that contractors can provide valuable skills and experience to supplement those of the licensee. However, the licensee needs to be in control of nuclear safety at all times, and needs to have the capability to act as an intelligent customer for work which is contracted out. NII considers RRD to be an intelligent customer at the present time, noting RRD's significant operational experience of the site. NII will continue to regulate the management aspects of RD83 as part of its ongoing regulatory work.

41 The AWAFF (and effluent treatment plant) will be operational for some considerable time and will continue to be regulated by NII under the conditions attached to the nuclear site licence. Detailed controls for the management of its decommissioning have not yet been developed but they are expected to be similar to those for RD83.

Records

42 Licence Condition 25 requires that licensees make adequate operational records, including records relating to decommissioning and radioactive waste management. RRD has developed comprehensive facility characterisation and waste inventory records as part of the RD83 project. These records include facility characterisation information on the AWAFF, the only part of the current nuclear licensed site remaining on completion of RD83 decommissioning. RRD will be maintaining in-service records for the AWAFF and those for its eventual decommissioning in accordance with nuclear site licence requirements.

Waste Management

43 Operational solid, liquid and gaseous wastes arising from the re-fitting or de-equipping of nuclear submarines or associated support activities have been managed for many years in accordance with existing discharge authorisations, and

this will continue for some time. Decommissioning waste is classified as waste arising from decommissioning of the site. As noted previously, RRD's existing discharge authorisations do not cover the disposal of decommissioning wastes; RRD's application to SEPA for an additional authorisation for disposal of decommissioning wastes is currently undergoing due process under RSA93.

44 Project RD83 decommissioning operations are expected, from summation of data from facility studies, to generate approximately 630 m³ of solid low level waste (LLW) comprising mainly solid LLW, including some sludges and resins from effluent treatment operations, and very small quantities of liquid wastes. RRD does not expect any of the primary decommissioning wastes to be intermediate level waste (ILW) but recognises the possibility of ILW secondary waste arisings such as effluent treatment plant resins and filters. Management of decommissioning wastes is to be under RRD's current waste management regime.

Low Level Waste (LLW)

45 RRD's solid LLW waste management strategy involves segregation and characterisation of wastes at the point of origin where appropriate. The considerable work undertaken by RRD during RD83 Phase 1 (see paragraphs 30 and 31) in developing a good site history will assist this aim when managing decommissioning wastes. Solid LLW is subject to shredding and compaction waste volume minimisation measures, where appropriate, before being sentenced for disposal at Drigg.

46 There are approximately 100 drums of solid LLW remaining on the site as a result of a five-year embargo on Drigg disposals caused by detection of carbon-14 in wastes from the nuclear submarine programme. This embargo has been lifted. Approximately 500 LLW drums have already been despatched to Drigg; disposal of the remaining 100 drums is expected by early 2005.

47 RRD's site and facility characterisation records indicate that SEPA annual authorisation disposal limits in the new discharge authorisation (see paragraph 43) will be sufficient to meet the existing RD83 decommissioning programme.

48 RRD's preferred option during operations has been to trap radioactivity in liquid and gaseous wastes by means of ion exchange resins and filters before it leaves the plant, and then to concentrate and immobilise it, with the resulting solid LLW being disposed of to Drigg as soon as practicable. This practice has also given rise to solid intermediate level waste (ILW). RRD plans to continue this practice during decommissioning, with a replacement, lower capacity effluent treatment plant being constructed as part of RD83.

Solid Intermediate Level waste (ILW)

49 There are very small volumes of ILW stored at Rosyth as a result of previous submarine refit operations. Also, as noted above, there may be small volumes of ILW generated during decommissioning. RRD's strategy for ILW is to store it on site until it has decayed to LLW and can be disposed of to Drigg or sentenced to a national repository for ILW when it becomes available. The Committee on Radioactive Waste Management has recently been established to review options for

the management of ILW in the UK, and to recommend an option (or combination of options) that will provide a long-term solution. It is expected that the Government will decide around 2006 how these options should be implemented (Ref 16). RRD will therefore need to review its strategy for the management of its small amount of solid ILW when the Government decision is known.

Ion Exchange Resins

50 29 m³ of ILW ion exchange resins from water treatment operations are stored in above ground resin catch tanks (RCTs) in the modern standard Active Waste Accumulation Facility (AWAF). RRD has undertaken studies to substantiate that RCTs will safely survive nine years in use; many of the RCTs are approaching this nine-year milestone. RRD has a programme of work underway to transfer resins from RCTs, before the end of their justified life, into Waste Resin Holding Containers having a 30-year design life.

51 RRD's strategy for managing ILW resins is to store them unconditioned until they decay to LLW. At that time, the resins are to be encapsulated in cement in the AWAF prior to Drigg disposal. The most active resins are expected to be LLW by 2030, the expected lifetime of the AWAF, based on their anticipated isotopic content (primarily cobalt-60, with a half-life of 5.3 years). HSE's expectation (in line with Government policy (ref 1)) is that the waste should be stored, so far as is reasonably practicable, in a passive safe form (ie the waste is immobilised and the need for maintenance, monitoring or other human intervention is minimised). Since the resins are not in an immobilised state, RRD needs to justify why it is not reasonably practicable to immobilise them earlier than is currently planned.

52 Some ILW resins at Rosyth contain carbon-14 and chelating agents, both of which are potentially problematic materials for disposal at Drigg. RRD should confirm the availability of the Drigg disposal route for these resins or develop contingency arrangements if necessary. RRD has limited data on the composition and radiological content of ILW resins to inform future waste management options. Since good waste characterisation information is necessary in developing a waste management strategy, RRD should improve its ILW resin knowledge base using ALARP (As Low As Reasonably Practicable) measures in relation to dose uptake.

Miscellaneous Intermediate Level Wastes

53 There is a small quantity of ILW stored in underground shielded storage pits in the AWAF facility. This ILW includes effluent treatment plant filters and redundant activated metal components removed from areas close to submarine reactor compartments. RRD should develop a management strategy for these wastes.

54 A redundant empty reactor core barrel is stored in the Core Pond on site. RRD is awaiting a transport licence from the Department for Transport and a Scottish Environment Protection Agency (SEPA) disposal authorisation for transfer of this barrel to Sellafield.

Decommissioning end point and de-licensing

55 NII welcomes RRD's approach in Project RD83 to decommissioning and de-licensing of the Rosyth site, excluding the Active Waste Accumulation Facility (AWAF), and the early production of a monitoring protocol, which provides the rationale and general methodology for final surveys of areas that have been decommissioned to confirm that no significant radiological contamination is present. NII also welcomes the opportunities provided by RRD for early NII comments on iterations of the documents. The monitoring protocol takes account of the good practice guidance developed through the SAFEGROUNDS (Ref 17) and MARSSIM (Ref 18) projects.

56 RRD's general approach to decommissioning and de-licensing is to classify areas depending on their operational history in relation to radioactive materials and define monitoring requirements commensurate with the area classification. The survey methodology demonstrates a defence in depth approach, with complementary surveys undertaken as appropriate, and suggests that resources will be properly targeted. RRD's recognition that developing a good site history, through facility studies and other site characterisation work, including a review of site records in relation to incidents and spills, will also aid the decommissioning and de-licensing process. Site characterisation work carried out by RRD under RD83 Phase 1 (see paragraphs 30 and 31) indicates that ground contamination is not a significant issue on the site.

57 The development of a site fingerprint, and recognising that there may be local variations from this, to allow use of more simple beta/gamma survey instruments for monitoring is a good initiative. The recognition that the tasks of monitoring for decommissioning/de-licensing are different from operational requirements will allow for appropriate training of the surveyors. The use of a single standard for both the licensed and non-licensed areas is welcomed.

58 It is important that RRD's decommissioning and de-licensing documentation is allowed to evolve and is regularly reviewed to take account of any future developments, for example, in standards applied to free release and advances in instrumentation, and sampling and analysis techniques. There are a number of developments ongoing which may have a bearing on this. The HSE is consulting on the interpretation of 'no danger' in the Nuclear Installations Act 1965. The IAEA is about to publish guidance on the concepts of exclusion, exemption and clearance for commodities - which may include concrete and steel from decommissioning sites. Any such developments are likely to be in force in the medium to long term (allowing for IAEA publication and any subsequent European Union directive(s) and transposition into national legislation). These developments may occur within the proposed timescales for de-licensing of this site.

Consultation with general public and interested parties

59 The Government expects that the decommissioning strategies of licensees should take account of the views of stakeholders (Ref 15). RRD's strategy for the RD83 decommissioning project involves regular stakeholder dialogue throughout the duration of the project.

Decommissioning cost provision

60 The RRD submission states that the Ministry of Defence (MoD) will make provision for funding activities and operations required to render the Dockyard licensed and unlicensed areas free from ionising radiation in so far as required for industrial use.

4 CONCLUSIONS

61 This section draws together the issues identified in sections 2 and 3, discusses their significance in the context of the site strategy and draws overall conclusions.

62 The Ministry of Defence (MoD) has set up Project RD83 to discharge its nuclear liabilities following the completion of nuclear submarine refit operations. RD83 covers decommissioning of all facilities on the nuclear licensed site (as well as other areas on the overall Dockyard site), with the exception of the Active Waste Accumulation Facility (AWAF). RD83 is scheduled for completion, with de-licensing of all areas excluding the AWAF planned, by 2009. RRD's approach to decommissioning and de-licensing for Project RD83 is welcomed by NII, it is in line with current Government Policy and NII fundamental expectations. NII is regulating Project RD83 as part of its ongoing work under the conditions attached to the nuclear site licence.

63 There is a Very Low Level Waste (VLLW) Disposal Pit (closed in 1978) owned by the Ministry of Defence (MoD) which is located off (but adjacent to) the nuclear licensed site, and therefore not regulated by NII. A letter of agreement between the MoD and HM Industrial Pollutions Inspectorate (forerunner to the Scottish Environment Protection Agency (SEPA)) covered VLLW disposals to the pit. This VLLW pit presents a potential risk to site de-licensing via the possibility of water containing very small quantities of cobalt-60 leaching onto the site. RRD has recognised this risk and has a monitoring programme covering the perimeter of the pit to establish the extent and quantity of contamination. RRD has not detected any radioactivity to date. The MoD would have responsibility for clean-up in the unlikely event of radioactivity leaching onto the licensed site from the VLLW pit.

64 The Active Waste Accumulation Facility (AWAF) is the only existing facility on the nuclear licensed site not covered by Project RD83. This facility will be required for several decades to support radioactive waste storage and treatment for disposal operations. In addition, RRD is constructing a new effluent treatment plant to support decommissioning operations. RRD proposes a similar decommissioning approach for the AWAF and the effluent treatment plant to that taken for RD83. Decommissioning of the AWAF and the new effluent treatment plant should be achievable by established methods and no unusual safety issues are anticipated. In the meantime RRD and MoD will provide for the continuing maintenance of the facility.

65 Future Government decisions concerning the decommissioning of redundant submarines and management of the resulting wastes will need to recognise that, as RRD's decommissioning Project RD83 progresses through to 2009, existing facilities

at Rosyth which could be used for dismantling nuclear submarines facilities will no longer be available

66 RD83 decommissioning operations are expected to generate relatively small volumes of LLW and possibly some secondary ILW. LLW arisings will follow well-established waste management practices resulting in Drigg disposals and discharges of liquid and gaseous waste to the environment in accordance with certificates of authorisation issued by SEPA under the Radioactive Substances Act 1993. RRD plans to store any ILW arisings at Rosyth until they have decayed to LLW and can be disposed of using existing routes.

67 29 m³ of ILW ion exchange resins from water treatment operations are stored in above ground resin catch tanks (RCTs) in the modern standard Active Waste Accumulation Facility (AWAF). RRD has undertaken studies to substantiate that RCTs will safely survive nine years in use; many of the RCTs are approaching this nine-year milestone. RRD has a programme of work underway to transfer resins from RCTs, before the end of their justified life, into Waste Resin Holding Containers having a 30-year design life. RRD should maintain progress with its programme of work for resin transfers.

68 RRD's strategy for ILW resin wastes involves storage of unconditioned waste on site until it decays to LLW, which could be several decades into the future, and then encapsulation into cement for Drigg disposal. RRD should provide justification for why it is not reasonably practicable to encapsulate these resins earlier than currently planned. RRD also needs to provide assurance on the acceptability to Drigg of some of its resin wastes and to develop contingency arrangements if necessary. RRD needs to improve characterisation of its ILW resin wastes to assist in developing a management strategy.

69 RRD needs to develop management strategies for solid ILW, including filters and activated metals, stored in underground shielded storage pits in the AWAF facility.

70 NII will review progress on issues arising from this quinquennial review as part of its routine regulatory work.

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