

Permit with introductory note

The Environmental Permitting (England & Wales) Regulations 2016

BAE Systems Marine Ltd

Barrow Shipyards Nuclear Site
Barrow-In-Furness
Cumbria
LA14 1AF

Permit number
EPR/UB3433DW

Barrow Shipyards Nuclear Site

Permit number EPR/UB3433DW

Introductory note

This introductory note does not form a part of this permit

The permit allows the Operator to dispose of radioactive waste on or from the specified premises, which are a nuclear licensed site.

The permit is issued under the provisions of regulation 13 of the Environmental Permitting (England and Wales) Regulations 2016. Those Regulations are concerned, amongst other things, with the control of radioactive material and radioactive waste.

The operator must also comply with other legislation to which the keeping or use of radioactive material and the transfer, accumulation and disposal of radioactive waste is subject. This includes legislation enforced by the Office for Nuclear Regulation.

The main features of the facilities on the premises are as follows.

The Barrow Shipyards are currently the only submarine production facility in the UK and currently produce "Astute"-class submarines for the Royal Navy. A dedicated part of the shipyard is designated as a Nuclear Licensed Site (NLS), this is the Barrow Shipyards Nuclear Site. This is utilised for the storage, assembly and installation to submarines of nuclear fuel and the subsequent completion of radioactive commissioning operations of the nuclear power plant. This takes place on submarines docked within Wet Dock Quay (WDQ). The Barrow Shipyards Nuclear Site is authorised to discharge radioactive wastes under the Environmental Permitting Regulations 2016 (as amended). Radioactive waste discharges are generated principally during the commissioning phase of the submarine build: Solid radioactive waste arises from consumables such as PPE, overalls, gloves etc. Liquid radioactive effluent arises from the sampling of primary coolant, although larger volume coolant discharges may occur. Gaseous discharges only arise in the event of a need to de-gas reactor plant post-criticality. Radioactive liquid effluent generated during submarine reactor commissioning is discharged to the town's sewer via a dedicated Waste Treatment Facility (WTF) situated on WDQ. Radioactive liquid effluent is also generated as a result of using refurbished main coolant pumps (MCPs) in the primary coolant circuit as part of the build programme for the Astute-class of submarines from Boat 4 onwards. The refurbished MCPs have undergone extensive cleaning and decontamination and flushing operations off-site to remove as much loose radioactive contamination as possible. Fixed Cobalt-60 and Carbon-14 contamination remains with the MCPs and the aqueous waste resulting from the flushing of the primary coolant circuit during the build programme is slightly radioactive and is discharged to the town's sewer via a dedicated Effluent Management Facility (EMF). The town's sewer transfers effluent from both the WTF and the EMF to the Salthouse Pool Wastewater Treatment Works (WwTW), Barrow, which discharges via a 1000m long pipeline into Morecambe Bay. Overall, only a small quantity of radioactive waste is generated in terms of volume and activity. Following successful commissioning and testing activities, submarines depart from Barrow (not to return), to undergo sea trial operations from Royal Navy submarine facilities situated elsewhere in the UK.

This document is a varied and consolidated permit reflecting the changes made to the permit since issue. Variation V003 aligned the permit boundary with a revised nuclear licensed site boundary and included the category of 'approved outlets (air)' for the disposal of gaseous radioactive waste to air. Variation V003 also introduced new conditions into the permit that require the operator to develop and maintain a Site Wide Environmental Safety Case (SWESC) and Waste Management Plan, in line with the Environment Agency guidance document 'Management of radioactive waste from the decommissioning of nuclear sites: guidance on the requirements for release from radioactive substances regulation'. Variation V003 also included minor changes to some conditions and definitions as a result of the Basic Safety Standards Directive 2013/59/Euratom. The latest variation (V004) has made minor changes to reflect changes in the wording of standard conditions since the previous variation was issued.

The status log of the permit sets out the permitting history, including any changes to the permit reference number.

Status Log of the permit

Detail	Date	Response Date
Permit BU6808 Issued	24/05/04	
Variation BU6808/CA9422 Issued	15/11/06	
Variation BU6808/CC2747 Issued	07/04/08	
Variation BU6808/CD9259/V001 Issued	17/09/10	
Variation BU6808/CD9259/V002 Issued	19/07/11	
Revised & consolidated EPR Permit Issued EPR/UB3433DW/V001	06/09/13	
Variation EPR/UB3433DW/V002 Issued	02/06/16	
Varied and consolidated permit EPR/UB3433DW/V003 Issued	01/02/19	
Environment Agency initiated variation EPR/UB3433DW/V004	16/10/19	
Variation determined EPR/UB3433DW	18/11/19	

End of Introductory Note

Permit

The Environmental Permitting (England and Wales) Regulations 2016

Permit

Permit number

EPR/UB3433DW

The Environment Agency hereby authorises, under regulation 13 of the Environmental Permitting (England and Wales) Regulations 2016 (the “regulations”),

BAE Systems Marine Ltd (“the operator”)

whose registered office is

Warwick House

PO Box 87

Farnborough Aerospace Centre

Farnborough

Hampshire

GU14 6YU

company registration number **00229770**

to carry on a radioactive substances activity/ radioactive substance activities at

Barrow Shipyards Nuclear Site

Barrow-In-Furness

Cumbria

LA14 1AF

(“the premises”)

to the extent authorised by and subject to the conditions of this permit.

Name	Date
A Fairhurst, Power Defence and Disposals Sites Team Leader, Nuclear Regulation Group	18/11/2019

Authorised on behalf of the Environment Agency

The permit shall come into effect from 01 December 2019

1 Management

1.1 General management

- 1.1.1 The operator shall manage and operate the activities:
- (a) in accordance with a written management system that is sufficient to achieve compliance with the conditions of this permit; and
 - (b) using sufficient competent persons and resources.
- 1.1.2 The operator shall maintain records demonstrating compliance with condition 1.1.1.
- 1.1.3 After completion of requirement IC1 specified in Schedule 1 table S1.2, the operator shall maintain a waste management plan and a site-wide environmental safety case, which together demonstrate throughout the lifecycle of the regulated facility:
- (a) how the production and disposal of radioactive waste is managed to protect the environment and to optimise the protection of people;
 - (b) how the disposability of radioactive waste that will require disposal on or from the premises is assured;
 - (c) how members of the public and the environment are protected from the non-radiological hazards of disposals of radioactive waste; and
 - (d) how the premises will be brought to a condition at which it can be released from regulation under this permit.
- 1.1.4 Any person having duties that are or may be affected by the matters set out in this permit shall have convenient access to a copy of it kept at or near the place where those duties are carried out.
- 1.1.5 The operator shall manage and operate the activities in consultation with a suitable Radioactive Waste Adviser for the purpose of advising the operator as to compliance with this permit.

2 Operations

2.1 Permitted activities

- 2.1.1 The operator is only authorised to carry on the activities specified in schedule 1 table S1.1 (the “activities”).

2.2 The site

- 2.2.1 The activities shall not extend beyond the site, being the land shown edged in red on the site plan at schedule 7 to this permit.

2.3 Operating techniques

- 2.3.1 The operator shall use the best available techniques to minimise the activity of radioactive waste produced on the premises that will require to be disposed of on or from the premises.
- 2.3.2 The operator shall use the best available techniques in respect of the disposal of radioactive waste pursuant to this permit to:
- (a) minimise the activity of gaseous and aqueous radioactive waste disposed of by discharge to the environment;
 - (b) minimise the volume of radioactive waste disposed of by transfer to other premises;
 - (c) dispose of radioactive waste at times, in a form, and in a manner so as to minimise the radiological effects on the environment and members of the public.
- 2.3.3 The operator shall use the best available techniques to:
- (a) exclude all entrained solids, gases and non-aqueous liquids from radioactive aqueous waste prior to discharge to the environment;
 - (b) characterise, sort and segregate solid and non-aqueous liquid radioactive wastes, to facilitate their disposal by optimised disposal routes.
- 2.3.4 The operator shall maintain in good repair the systems and equipment provided:

- (a) to meet the requirements of conditions 2.3.1, 2.3.2 and 2.3.3;
 - (b) to carry out any monitoring and measurements necessary to determine compliance with the conditions of this permit;
 - (c) to measure and assess the exposure of members of the public and radioactive contamination of the environment.
- 2.3.5 The operator shall check, at an appropriate frequency, the effectiveness and maintenance of systems, equipment and procedures provided to meet the requirements of conditions 2.3.1, 2.3.2 and 2.3.3.
- 2.3.6 The operator shall have and comply with appropriate criteria for the acceptance into service of adequate systems, equipment and procedures for:
- (a) carrying out any monitoring and measurements necessary to determine compliance with the conditions of this permit;
 - (b) measuring and assessing exposure of members of the public and radioactive contamination of the environment.
- 2.3.7 Subject to condition 2.3.2, the operator shall carry on the activities in a manner so as to minimise the risk of pollution from any non-radioactive substances in, or any non-radiological properties of, the radioactive waste, except to the extent the risk is addressed in a separate environmental permit.

2.4 Improvement and information programme

- 2.4.1 The operator shall complete the requirements specified in schedule 1 table S1.2 by the dates specified in that table unless otherwise agreed in writing by the Environment Agency.
- 2.4.2 Except in the case of a requirement which consists only of a submission to the Environment Agency, the operator shall notify the Environment Agency within 14 days of completion of each requirement.

2.5 Pre-operational conditions

- 2.5.1 The activities shall not be brought into operation until the measures specified in schedule 1 table S1.3A have been completed.
- 2.5.2 The specific disposals and receipts of radioactive waste identified in schedule 1 table S1.3B shall not commence until the relevant measures specified in that table have been completed.

2.6 Receipt of radioactive waste

- 2.6.1 The operator shall:
- (a) for each type of radioactive waste that the operator is prepared to receive, produce a written specification of the information required to:
 - (i) enable the disposal of that type of radioactive waste in compliance with this permit; or
 - (ii) where disposal of that type of radioactive waste is not currently permitted, sufficiently characterise that waste to, as far as reasonably practicable, enable its future disposal;
 - (b) provide that written specification to any person from whom the operator is prepared to receive radioactive waste of that type;
 - (c) only accept a consignment of radioactive waste that is accompanied by a legible note providing the information specified in 2.6.1(a);
 - (d) keep a copy of any such note received;
 - (e) provide a receipt to the consignor in respect of each consignment of radioactive waste that the operator accepts.
- 2.6.2 The operator shall ensure that any radioactive waste which does not comply with the specifications produced pursuant to condition 2.6.1 is returned to the consignor as soon as reasonably practicable, unless otherwise agreed in writing with the Environment Agency

- 2.6.3 The provisions of conditions 2.6.1 to 2.6.2 do not apply to any radioactive waste collected as a result of the operator's participation in the National Arrangements for Incidents involving Radioactivity or in the Radsafe scheme

3 Disposals of radioactive waste and monitoring

3.1 Disposals of radioactive waste

- 3.1.1 Subject to condition 3.1.4, there shall be no disposals of radioactive waste except of the types of radioactive waste and by the disposal routes specified in schedule 3.
- 3.1.2 The limits on disposals given in schedule 3 shall not be exceeded.
- 3.1.3 The operator shall ensure the use of an optimised disposal route when disposing of any radioactive waste in accordance with Table S3.3.
- 3.1.4 The operator may dispose of radioactive waste, not being radioactive waste otherwise authorised to be disposed of, which is collected as a result of the operator's participation in the National Arrangements for Incidents involving Radioactivity or in the Radsafe scheme provided that the operator:
- (a) transfers the radioactive waste to a person whom the Environment Agency has agreed in writing may receive that radioactive waste;
 - (b) as soon as reasonably practicable provides available details in writing to the Environment Agency of the nature of the radioactive waste, the radionuclides present, their activities and the manner and date of disposal.
- 3.1.5 The operator shall ensure that the transfer of radioactive waste is in accordance with the directions of the person to whom the radioactive waste is transferred that are necessary to enable that person to comply with all relevant regulatory requirements.
- 3.1.6 The operator shall:
- (a) ensure that the person to whom radioactive waste is transferred receives at the time of transfer of each consignment a clear and legible note signed on the operator's behalf stating:
 - (i) the total activity in the consignment of each relevant radionuclide or group of radionuclides listed in the relevant table in schedule 3; or
 - (ii) when no relevant radionuclide or group of radionuclides is specified in schedule 3, the total activity in the consignment of each radionuclide or group of radionuclides as listed in the written specification of the person to whom the radioactive waste is transferred.
 - (b) obtain a note signed on behalf of the person to whom radioactive waste is transferred, at the time of transfer, stating that the transfer has taken place;
 - (c) keep a copy of any note issued under condition 3.1.6(a) and any note received under condition 3.1.6(b).
- 3.1.7 If required by the Environment Agency, the operator shall ensure that any consignment or part of any consignment of radioactive waste found, following transfer, not to be in accordance with the conditions of this permit:
- (a) is packaged in accordance with the relevant legislation;
 - (b) is returned as soon as is reasonably practicable to the operator's premises.
- 3.1.8 The operator shall, not later than 14 days after the end of each month or within such longer period as the Environment Agency may approve in writing, record all disposals of radioactive waste made during that month.

3.2 Monitoring

- 3.2.1 The operator shall:
- (a) take samples and conduct measurements, tests, surveys, analyses and calculations to determine compliance with the conditions of this permit;
 - (b) unless otherwise agreed in writing by the Environment Agency:
 - (i) define, document and carry out an environmental monitoring programme;

- (ii) use the results of that programme to carry out an annual retrospective assessment of the dose to the representative person;
 - (iii) inform the Environment Agency in writing in advance of any modifications affecting the extent of that programme or that have a potential to change the results obtained.
 - (c) use the best available techniques when taking such samples, conducting such measurements, tests, surveys, analyses and calculations, and carrying out such an environmental monitoring programme and retrospective dose assessment, unless particular techniques are specified in schedule 3 of this permit or in writing by the Environment Agency;
 - (d) define and document the techniques being employed to determine the activity of radioactive waste disposals and inform the Environment Agency in writing in advance of any modifications to those techniques that have a potential to change the results obtained.
- 3.2.2 The operator shall maintain records of all monitoring required by this permit including records of the taking and analysis of samples, instrument measurements (periodic and continual), calibrations, examinations, tests and surveys and any assessment or evaluation made on the basis of such data.
- 3.2.3 Monitoring equipment, techniques, personnel and organisations employed for the monitoring of disposals and the environment required by condition 3.2.1 or 3.2.5 shall have either MCERTS certification or MCERTS accreditation (as appropriate), where available, unless otherwise agreed in writing by the Environment Agency.
- 3.2.4 Permanent means of access shall be provided to enable sampling and monitoring to be carried out in relation to the disposal outlets specified in schedule 3 unless otherwise agreed in writing by the Environment Agency.
- 3.2.5 If required by the Environment Agency, the operator shall:
- (a) take such samples and conduct such measurements, tests, surveys, analyses and calculations, including environmental measurements and assessments, at such times and using such methods and equipment as the Environment Agency specifies;
 - (b) keep samples, provide samples, or dispatch samples for tests at a laboratory, as the Environment Agency specifies, and ensure that the samples or residues thereof are collected from the laboratory within three months of receiving written notification that testing and repackaging in accordance with the relevant legislation are complete.
- 3.2.6 The operator shall carry out:
- (a) regular calibration, at an appropriate frequency, of measuring instruments and other systems and equipment provided for:
 - (i) carrying out any monitoring and measurements necessary to determine compliance with the conditions of this permit;
 - (ii) measuring and assessing exposure of members of the public and radioactive contamination of the environment.
 - (b) regular checking, at an appropriate frequency, that such measuring instruments and other systems and equipment are serviceable and correctly used.

4 Information

4.1 Records

- 4.1.1 All records required to be made by this permit shall:
- (a) be legible;
 - (b) be made as soon as reasonably practicable;
 - (c) if amended, be amended in such a way that the original and any subsequent amendments remain legible, or are capable of retrieval; and
 - (d) be retained until notified in writing by the Environment Agency that records no longer need to be retained.
- 4.1.2 The operator shall keep on the premises all records, plans and the management system required by this permit, unless otherwise agreed in writing by the Environment Agency.
- 4.1.3 The operator shall:

- (a) retain records made in accordance with any previous relevant permit issued to the operator and related to the premises covered by this permit;
- (b) retain records transferred to the operator, which were made in accordance with any previous relevant permit related to the premises covered by this permit.

4.2 Reporting

4.2.1 The operator shall send all reports and notifications required by this permit to the Environment Agency using the contact details supplied in writing by the Environment Agency.

4.2.2 The operator shall supply such information in relation to:

- (a) the disposals of radioactive waste; and
- (b) the samples, tests, surveys, analysis and calculations, environmental monitoring and assessments undertaken under conditions 3.2.1 and 3.2.5 in relation to disposals of radioactive waste;

in such format and within such timescales as the Environment Agency may specify in writing.

4.3 Notifications

4.3.1 The operator shall notify the Environment Agency without delay following the detection of:

- (a) any malfunction, breakdown or failure of equipment or techniques or any accident that has caused, is causing or may cause significant pollution or may generate significant amounts of radioactive waste;
- (b) the breach of a limit specified in this permit, or disposal of radioactive waste other than by a relevant permitted route;
- (c) any significant adverse environmental effects that could reasonably be seen to result from the operation of the facility.

4.3.2 Any information provided under condition 4.3.1 shall be confirmed by sending the information listed in schedule 5 within the time period specified in that schedule.

4.3.3 Where the Environment Agency has requested in writing that it shall be notified when the operator is to undertake monitoring and/or spot sampling, the operator shall inform the Environment Agency when the relevant monitoring and/or spot sampling is to take place. The operator shall provide this information to the Environment Agency at least 14 days before the date the monitoring is to be undertaken.

4.3.4 The operator shall notify the Environment Agency within 14 days of the occurrence of the following matters, except where such disclosure is prohibited by Stock Exchange rules:

- (a) any change in the operator's trading name, registered name or registered office address;
- (b) any steps taken with a view to the operator going into administration, entering into a company voluntary arrangement or being wound up.

4.3.5 Where the operator proposes to make a change in the management system or resources, which might have, or might reasonably be seen to have, a significant impact on how compliance with the conditions of this permit is achieved, the operator shall:

- (a) notify the Environment Agency at least 28 days before making that change, or where that is not possible, without delay; and
- (b) include in the notification a description of the proposed changes.

4.3.6 Where the operator proposes to make a change to the waste management plan, to the site-wide environmental safety case or, where applicable, to the facility-specific environmental safety case, including a change to the waste acceptance criteria, which might have, or might reasonably be seen to have, a significant impact on the quantity or nature of radioactive wastes disposed or planned to be disposed of on the site, or result in a significant change to the nature, place or environmental impact of such disposals, the operator shall:

- (a) notify the Environment Agency at least 28 days before making that change, including in the notification a description of the proposed changes; and
- (b) where the Environment Agency so notifies the operator, not implement the proposed changes until the Environment Agency has given its agreement in writing.

- 4.3.7 If, in any week, the activity in any radioactive waste disposed of from any outlet or group of outlets specified in schedule 3 of any radionuclide or group of radionuclides exceeds, or is likely to exceed, the relevant Weekly Advisory Level (where specified), the operator shall:
- (a) without delay, inform the Environment Agency and the Food Standards Agency;
 - (b) as soon as reasonably practicable, advise the Environment Agency and the Food Standards Agency of the circumstances at the premises leading to the release and the possible impact of any deposition of radioactivity on pasture or crops in the vicinity of the premises, including any measurements made.
- 4.3.8 If, in any quarter, the activity in any waste discharged from any outlet or group of outlets specified in schedule 3 of any radionuclide or group of radionuclides exceeds the relevant Quarterly Notification Level (where specified), the operator shall provide the Environment Agency with a written submission which includes:
- (a) details of the occurrence;
 - (b) a description of the means used to minimise the activity of radioactive waste discharged;
 - (c) a review of those means having regard to conditions 2.3.1, 2.3.2 and 2.3.3;
- not later than 14 days from making the record which demonstrates such excess.

4.4 Interpretation

- 4.4.1 In this permit the expressions listed in schedule 6 shall have the meaning given in that schedule.
- 4.4.2 In this permit references to reports and notifications mean written reports and notifications, except where reference is made to notification being made "without delay", in which case it may be provided by telephone.

Schedule 1 - Operations

Table S1.1 activities			
Activity reference	Activity listed in Schedule 23 of the regulations	Description of specified activity	Limit of specified activity
A1	Sch 23 Part 2 para 11(2)(b)	Disposal of radioactive waste on or from the premises	Commissioning of nuclear submarine reactor plant.
A2	Sch 23 Part 2 para 11(4)(a)	Receipt of radioactive waste for the purpose of disposal	

Table S1.2 Improvement and information requirements		
Reference	Requirement	Date
IC1	Prepare a suitable waste management plan and a site-wide environmental safety case to meet the requirements of condition 1.1.3 of this permit, and have these available for inspection by the Environment Agency.	31 December 2023

Table S1.3A Pre-operational measures	
Reference	Measure
	None specified

Table S1.3B Pre-operational measures for future development		
Reference	Disposal or receipt	Measure
	None specified	None specified

Schedule 2 – Holdings of Open Sources

There are no requirements under this schedule.

Schedule 3 – Disposals of radioactive waste and monitoring

Table S 3.1 Disposals to air						
Radioactive waste type	Disposal outlet reference	Disposal outlet	Radionuclide or group of nuclides	Annual limits	Weekly Advisory Level	Quarterly Notification level
Gaseous waste	All outlets (including approved outlets)	As specified below	Tritium	0.0032 GBq	Not specified	Not specified
			Argon-41	48 GBq	Not specified	Not specified
Gaseous waste	A1	Waste (Effluent) Treatment Plant Disentrainment Column	No individual limits specified for these disposal outlets			
Gaseous waste	A2	Chemistry Laboratory Fume Cupboard Stack				
Gaseous waste	A3	Submarine Reactor Compartments				
Gaseous waste	Approved outlets (air)	All outlets to air, not otherwise described in this table, that are approved by the Environment Agency				

Table S3.2 Disposals to sewer					
Radioactive waste type	Disposal outlet reference	Disposal outlet	Radionuclide or group of nuclides	Annual limits	Quarterly Notification level
Aqueous waste	All outlets	As specified below	Tritium	12 GBq	None specified
			Carbon-14	0.295 GBq	None specified
			Cobalt-60	0.0134 GBq	None specified
			Other beta-gamma emitting radionuclides ¹	0.0035 GBq	None specified
Aqueous waste	S1	System provided by the Operator for the transfer of aqueous effluent to the Waste Treatment Facility and subsequent discharge to sewer, following which treatment takes place at Salthouse Waste Water Treatment Works	No individual limits specified for these disposal outlets		
Aqueous waste	S2	System provided by Operator for the transfer of aqueous effluent from Devonshire Dock Hall to the Effluent Management Facility and subsequent discharge to sewer, following which treatment takes place at Salthouse Waste Water Treatment Works	No individual limits specified for these disposal outlets		

¹ as measured using the techniques specified in Schedule 3, Table S3.4

Table S3.3 Disposals by transfer to other premises					
Radioactive waste type	Disposal route: person to whom radioactive waste may be transferred ¹	Purpose of transfer	Radionuclide or group of radionuclides	Calendar year limit	Annual volume limit – m³
VLLW	The holder of an environmental permit for the receipt and disposal of VLLW	For any one or more of: - treatment - onward transfer for treatment or disposal - incineration - metals recovery - final disposal	Any	No limit	No limit
LLW	The holder of an environmental permit for the receipt and disposal of LLW	For any one or more of: - treatment - onward transfer for treatment or disposal - incineration - metals recovery - final disposal	Any	No limit	No limit
Liquid waste with an activity concentration not exceeding 4 GBq/t of alpha emitting radionuclides nor 12 GBq/t of all other radionuclides	The holder of an environmental permit for the receipt and disposal of liquid	For any one or more of: - treatment - onward transfer for treatment or disposal - incineration - final disposal	Any	No limit	No limit
Radioactive Waste as defined in the Transfrontier Shipment of Radioactive Waste and Spent Fuel Regulations 2008	Transfer in accordance with the conditions of an authorisation granted under the Transfrontier Shipment of Radioactive Waste and Spent Fuel Regulations 2008		Any	No Limit	No Limit

¹ For the purposes of this table, "environmental permit" includes any authorisation or permit issued by the environmental regulator for Wales, Scotland or Northern Ireland.

Table S3.4 monitoring techniques

Table and radionuclide	Monitoring technique
Table S3.2- Measurement of 'other gamma emitting radionuclides' in aqueous waste.	<p>For the purposes of demonstrating compliance with the limitations and conditions of this Permit relating to "other beta-gamma emitting radionuclides" in aqueous waste, the Operator shall:</p> <ul style="list-style-type: none"><li data-bbox="501 338 1402 506">(a) take samples of relevant aqueous waste and transfer to a Marinelli beaker for counting by high resolution gamma spectrometry using a high purity germanium semiconductor detector, calibrated against a nationally traceable mixed gamma standard. Gamma emitters will be identified, specific activities quantified and total gamma activity reported by relating to the total volume discharged. <p style="text-align: center;">Or</p> <ul style="list-style-type: none"><li data-bbox="501 562 1402 618">(b) any other suitable counting system, which has been agreed in writing by the Agency* <p>* For the purposes of demonstrating compliance with the conditions of this permit the Agency agrees that sampling, measurement and assessment methods are conducted in accordance with:</p> <p>BAE SYSTEMS Submarines Register of Analytical Techniques and Methods for the Characterisation of Radioactive Materials, NRSD/GR04-018</p>

Schedule 4 - Reporting

There are no requirements under this schedule.

Schedule 5 - Notification

These pages outline the information that the operator must provide.

Units of measurement used in information supplied under Part A and B requirements shall be appropriate to the circumstances of the disposal. Where appropriate, a comparison should be made of actual disposals and permitted disposal limits.

Part A – to be provided within 24 hours

Permit Number	
Name of operator	
Location of Facility	
Time and date of the detection	

(a) Notification requirements for any malfunction, breakdown or failure of equipment or techniques, accident, or disposal which has caused, is causing or may cause significant pollution or may generate significant amounts of radioactive waste	
Date and time of the event	
Reference or description of the location of the event	
Description of where any disposal into the environment took place	
Radionuclides potentially released	
Best estimate of the quantity or rate of release of radionuclides or amount of radioactive waste generated	
Measures taken, or intended to be taken, to stop any disposal	
Description of the failure or accident.	

(b) Notification requirements for the breach of a limit or disposal of radioactive waste other than by a relevant permitted route	
Disposal outlet reference/ source	
Radionuclides	
Limit	
Measured value and uncertainty	
Date and time of monitoring	
Measures taken, or intended to be taken, to stop the disposal	

(c) Notification requirements for the detection of any significant adverse environmental effect	
Description of where the effect on the environment was detected	
Radionuclides detected	
Activity of radionuclides detected	
Date of monitoring/sampling	

Part B - to be provided as soon as practicable

Any more accurate information on the matters for notification under Part A.	
Measures taken, or intended to be taken, to prevent a recurrence of the incident	
Measures taken, or intended to be taken, to rectify, limit or prevent any contamination of the environment which has been or may be caused by the disposal	
The dates of any unauthorised disposals from the facility in the preceding 24 months.	

Name*	
Post	
Signature	
Date	

* authorised to sign on behalf of *BAE Systems Marine Ltd*

Schedule 6 - Interpretation

In this permit, except where otherwise specified, words and expressions defined in the regulations in relation to radioactive substances regulation shall have the same meanings when used in this permit as they have in those regulations.

"*activity*", expressed in becquerels, means the number of spontaneous nuclear transformations occurring in a period of one second.

"*annual limit*" means the limit over a period of any consecutive 12 months.

"*aqueous waste*" means radioactive waste in the form of a continuous aqueous phase together with any entrained solids, gases and non-aqueous liquids.

"*best available techniques*" means the latest stage of development (state of the art) of processes, of facilities or of methods of operation which indicate the practical suitability of a particular measure for limiting discharges, emissions and waste. In determining whether a set of processes, facilities and methods of operation constitute the best available techniques in general or individual cases, special consideration shall be given to:

- a. comparable processes, facilities or methods of operation which have recently been successfully tried out;
- b. technological advances and changes in scientific knowledge and understanding;
- c. the economic feasibility of such techniques;
- d. time limits for installation in both new and existing plants;
- e. the nature and volume of the discharges and emissions concerned

"*techniques*" include both the technology used and the way in which the installation is designed, built, maintained, operated and dismantled.

"*Bq, kBq, MBq, GBq, TBq and PBq*" are used as abbreviations meaning becquerels, kilobecquerels, megabecquerels, gigabecquerels, terabecquerels and petabecquerels respectively.

"*calendar year*" means a period of 12 consecutive months beginning on 1 January.

"*disposability*" means capable of being conditioned, packaged and disposed of in a way that meets the standards and specifications for final disposal using the identified disposal route, and where the conditioned waste will maintain its integrity such that safe and efficient storage, handling, transport and disposal is achieved.

"*disposal facility*" means an on-site engineered facility where solid radioactive waste is permanently emplaced solely for the purpose of disposing of that waste.

"*disposal for a purpose*" means on-site disposal of solid radioactive waste by permanent deposit where, if suitable radioactive waste were not available, other materials would have to be found to fulfil the purpose.

"*disposal in-situ*" means on-site disposal of solid radioactive waste by leaving it permanently in its original position, together with any necessary preparatory works.

"*environment*" means all, or any, of the media of air, water (to include sewers and drains) and land.

"*gaseous waste*" means radioactive waste in the form of gases and associated mists and particulate matter.

"*LLW*" means solid radioactive waste, including any immediate packaging, with an activity concentration greater than the maximum for VLLW but not exceeding 4 gigabecquerels per tonne of alpha emitting radionuclides nor 12 gigabecquerels per tonne of all other radionuclides.

"*MCERTS*" means the Environment Agency's Monitoring Certification Scheme.

"*month*" means calendar month.

"*National Arrangements for Incidents Involving Radioactivity*" means the arrangements co-ordinated by Public Health England to protect the public from hazards arising from the use and transport of radioactive materials and in situations where no formal contingency plans exist.

"*nuclear operator*" means a person who carries on a radioactive substances activity on a nuclear site

"*optimise*" and "*optimised*" means the outcome of the process of optimisation, in which all exposures to ionising radiation of any member of the public and of the population as a whole resulting from the disposal of radioactive waste are kept as low as reasonably achievable, taking into account economic and social factors.

"*other than in a disposal facility*" means one or both of "*disposal for a purpose*" and "*disposal in-situ*"

"*packaging*" includes any sack, drum, container or wrapping.

"*quarter*" means any period of three consecutive months.

"*Radioactive Waste Adviser*" means an individual, or group of individuals, with the knowledge, training and experience needed to give radioactive waste management and environmental radiation protection advice in relation to radioactive waste to ensure the effective protection of members of the public whose competence is recognised by the Environment Agency.

"*Radsafe*" means the consortium of organisations which offer mutual assistance in the event of a transport accident involving radioactive materials belonging to a RADS SAFE member.

"*samples*" includes samples that have been prepared or treated to enable measurements of activity to be made.

"*site-wide environmental safety case*" means a documented set of claims made by the operator, and substantiated by a structured collection of arguments and evidence, to demonstrate achievement by the site as a whole of the required standard of environmental safety. Where relevant it includes the facility-specific environmental safety case for any on-site disposal facility.

"*spot sampling*" means the taking of samples on a non-continuous basis of radioactive substances for subsequent analysis.

"*VLLW*" means solid radioactive waste with a maximum concentration of 40 megabecquerels per tonne of tritium and carbon-14 (in total) and 4 megabecquerels per tonne of all other radionuclides.

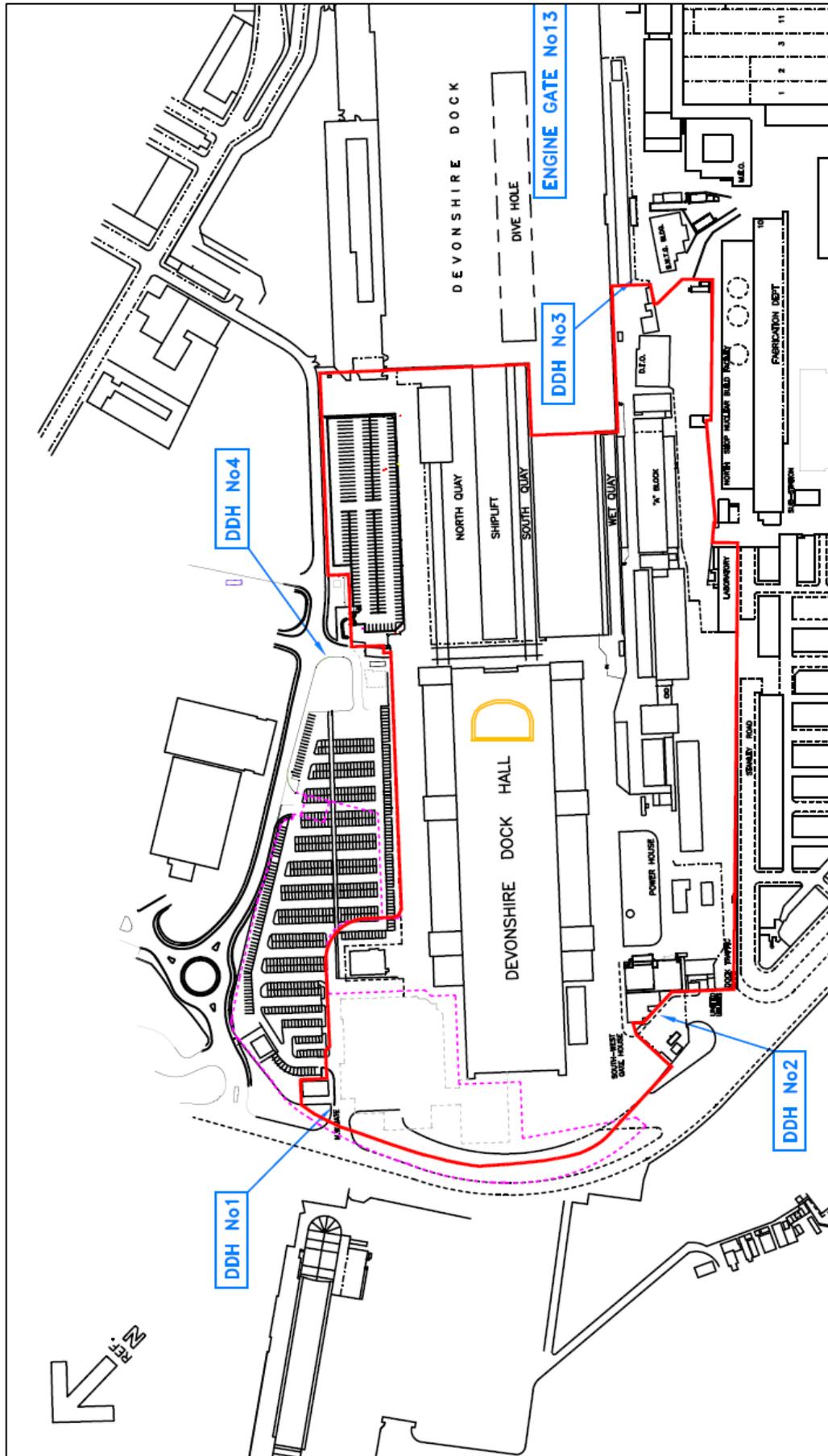
"*waste acceptance criteria*" means qualitative and/or quantitative criteria, specified by the operator, for solid radioactive waste to be accepted for disposal.

"*waste management plan*" means a documented plan, prepared by the operator, which provides a comprehensive description of the current intent for dealing with all radioactive waste on or adjacent to the site and demonstrates how waste management has been optimised.

"*week*" means a period of 7 consecutive days commencing at a day and time to be notified in writing to the Environment Agency by the Operator at least 14 days before any disposal of radioactive waste is made under the terms of this permit, any subsequent change being notified in writing to the Environment Agency at least 7 days in advance.

"*year*" means any period of 12 consecutive months.

Schedule 7 - Site plan



END of PERMIT