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Our reference: [REDACTED]

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Plymouth City Council
Ballard House, West Hoe Road
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PL1 3BJ

Date 20 September 2019

Dear [REDACTED]

DEVONPORT ROYAL DOCKYARD LIMITED – RADIATION (EMERGENCY PREPAREDNESS AND PUBLIC INFORMATION) REGULATIONS 2019 – CONSEQUENCES REPORT

1. Devonport Royal Dockyard Limited (DRDL) has made an assessment pursuant to regulation 5(1) of the Radiation (Emergency Preparedness and Public Information) Regulations 2019 (REPPiR 19), considering and evaluating a full range of the possible consequences of the identified radiation emergencies, at Devonport Royal Dockyard, Plymouth. In accordance with regulation 7(3) a report setting out the consequences identified by that assessment is attached with this letter.
2. The operations considered when undertaking the hazard evaluation were:
 - a. Berthing, docking and movements of Nuclear Powered Warships;
 - b. Operation and maintenance of the Naval Reactor Plant, including associated systems;
 - c. Storage, handling and use of nuclear and radiological material, including new and used nuclear fuel.

The hazard evaluation identified all hazards arising from the work undertaken which have the potential to cause a radiation emergency.

3. DRDL have copied this letter to our regulators, the Office for Nuclear Regulation (ONR) and the Defence Nuclear Safety Regulator (DNSR). We have also copied this letter to Her Majesty's Naval Base (Devonport) who are submitting their own Consequences Report for HMNB(D) iaw regulation 7(3) of REPPiR
4. DRDL formally invites the local authority to discuss the attached consequences report, in accordance with regulation 7(4).

Devonport Royal Dockyard Ltd
Registered in England & Wales No. 2077752
Registered Office: Devonport Royal Dockyard, Plymouth PL1 4SG

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Copies:

Plymouth City Council – [REDACTED]
Office for Nuclear Regulation
Defence Nuclear Safety Regulator
HMNB(D) – NBS

Consequences Report

Part 1 – Factual Information

1. Regulation 7(3) Schedule 4 Clause 1(a) - Name and address of the operator:

- a. Devonport Royal Dockyard Limited (DRDL).
- b. Devonport Royal Dockyard, Devonport, Plymouth, Devon. PL1 4SG.

2. Regulation 7(3) Schedule 4 Clause 1(b) - Postal address of the premises where the radioactive substance will be processed, manufactured, used or stored, or where the facilities for processing, manufacture, use of storage exist:

- a. Devonport Royal Dockyard, Devonport, Plymouth, Devon. PL1 4SG

3. Regulation 7(3) Schedule 4 Clause 1(c) - The date on which it is anticipated that the work with ionising radiation will commence or, if it has already commenced, a statement to that effect:

- a. DRDL has worked with ionising radiation to provide technical, logistic and administrative support to Nuclear Powered Warships since 1987.

Part 2 – Recommendations

1. Regulation 7(3) Schedule 4 Clause 2(a) - The proposed minimum geographical extent from the premises to be covered by the local authority's off-site emergency plan:

- a. The proposed minimum geographical extent from the premises to be covered by the local authority's detailed emergency plan is an area extending to a distance of 1.5 km from a submarine berth.
- b. An outline planning zone of 5 km has been determined for Devonport Royal Dockyard by the Secretary of State for Defence in accordance with regulation 9(1)(c).

2. Regulation 7(3) Schedule 4 Clause 2(b) – The minimum distances to which urgent protective actions may need to be taken, marking against each distance the timescale for implementation of the relevant action; and Clause 3(a) – The recommended urgent protective actions to be taken within that zone, if any, together with timescales for the implementation of those actions:

The following distances are recommended for the urgent protective actions of evacuation, sheltering and stable iodine tablets (SITs). These are the largest distances determined by detailed consequence assessment of a range of source terms and include consideration of a range of weather conditions and populations.

- a. 200 m from the submarine in all directions - controlled evacuation of the immediate area around the submarine (NB: No member of the public would be expected to be within this area).
- b. 400 m from the submarine in all directions – personnel to shelter indoors within the first few hours.
- c. 1.5 km from the submarine in the downwind sector - provision and consumption of SITs

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within the first few hours¹.

- d. 1.5 km from the submarine in the downwind sector - sheltering indoors within the first few hours.

It is recommended that the declaration of an Off-Site Nuclear Emergency by the operator to the local authority is the trigger for implementing the off-site emergency plan and initiating all of the above recommended urgent protective actions.

3. Regulation 7(3) Schedule 4 Clause 3(b) – Details of the environmental pathways at risk in order to support the determination of food and water restrictions in the event of a radiation emergency:

- a. A release of radioactive material from the submarine could create the requirement for food and water restrictions. For a submarine, this can take the form of an airborne release and/or a marine release.
- b. For an airborne release, radioactive material will be dispersed downwind. A proportion of this material will fall to the ground - this material will be available for uptake into the terrestrial food chain via ingestion of contaminated foodstuffs. Radioactive material released to the air may also make its way into the freshwater environment either through run-off or direct deposition on open water.
- c. For a marine release, radioactive material will be deposited in the area surrounding the submarine - this may affect the marine food chain and pose a hazard via ingestion of contaminated seafoods.

Part 3 - Rationale

1. Regulation 7(3) Schedule 4 Clause 4 – The rationale supporting each recommendation made:

- a. Controlled evacuation of the immediate area around the submarine to 200 m in all directions is to protect against the direct gamma radiation hazards from the submarine, in accordance with the lower emergency reference level (ERL) for evacuation of 30 mSv.
- b. Sheltering indoors up to 400 m in all directions from the submarine is to protect against the direct gamma radiation hazards from the submarine, in accordance with the lower ERL for shelter of 3 mSv.
- c. Consumption of SITs in the 1.5 km downwind zone is to protect against an uptake of radioactive iodine to the thyroid, in accordance with the lower ERL for stable iodine of 30 mSv.¹
- d. Sheltering within the 1.5 km downwind zone is to protect against contamination following a release of radioactive material, in accordance with the lower ERL for shelter of 3 mSv.
- e. The recommendation to shelter and consume SITs out to 1.5 km in the downwind sector differs from the previous recommendation of 1.2 km due to the consideration of a wider range of weather conditions in accordance with Schedule 3. This is in line with the current emergency arrangements, and ensures the public are protected from the full range of possible consequences identified.

¹ Note: The provision and consumption of SITs within the first few hours is only a requirement for radiation emergencies involving the naval reactor plant.

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- f. The Secretary of State for Defence has determined an outline planning zone distance of 5 km.

2. Regulation 7(3) Schedule 4 Clause 5(a) – The rationale for its recommendation on the minimum distances for which urgent protective action may need to be taken:

- a. The minimum distances recommended are based on a full range of possible consequences of the identified radiation emergencies evaluated in the consequence assessment made in accordance with regulation 5(1). These consequences were subsequently compared with the ERLs listed in PHE-CRCE-049 May 2019.

3. Regulation 7(3) Schedule 4 Clause 5(b) – The rationale for agreement that no off-site planning is required.

- a. This clause does not apply to Devonport Royal Dockyard, Plymouth.