



**Navy Command**

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**Our Reference: 19-11-2009-094824-001**

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**19 November 2009**

Mr J H Large  
Large and Associates  
The Gatehouse  
1-2 Repository Road  
Ha Ha Road  
London SE18 4BQ  
Via email: [largeassociates@o2.co.uk](mailto:largeassociates@o2.co.uk)

Dear Mr Large,

Request for Information – Acknowledgement

Thank you for your request for information received on 17 November 2009, in which you seek information for a Briefing Note on the potential radiological environment in the local vicinity of Berth 38/39 at Southampton in the aftermath of a LOCA-based incident to a submarine nuclear propulsion plant. Your enquiry has been considered to be a request for information in accordance with the Freedom of Information Act 2000.

This letter is to acknowledge receipt of your request and to inform you that generally, in accordance with the Freedom of Information Act 2000 a response is to be given within 20 working days of your application, in this case 15 December 2009.

However, under section 10(3)(b) of the FOI Act, a public authority may extend the 20 working day deadline for responding to a request if additional time is required to consider the public interest. It has been assessed that some of the information falls within the scope of a qualified exemption under the FOI Act at Section 26 – Defence - and it will be necessary for us to consider the balance of public interest in disclosing or withholding the information under this exemption.

Under s26(1)(b) information is exempt if its disclosure under the Act would, or would be likely to, prejudice the capability, effectiveness or security of any relevant forces. It is likely that some of the information may fall within the scope of s26 to the extent that it may reveal operational practices and techniques that are still in use or might otherwise compromise current or future operations or the capability, effectiveness or security of our Forces.

We anticipate that we will be in a position to respond to this request by 15 January 2010. I will write to you again once a decision has been made as to whether the information you have requested should be released.

A copy of your question as received by this office is attached.

Yours sincerely

*Anita McDonald*

## **Request for Information**

Large & Associates has been further instructed by SCANS1 to provide a Briefing Note on the potential radiological environment in the local vicinity of Berth 38/39 at Southampton in the aftermath of a LOCA-based incident to a submarine nuclear propulsion plant.

The L&A assessment is to include and take account of the weather and atmospheric stability conditions prevalent during the week, as example, of the receipt of the SCANS instruction (8 to 14 November 2009); the effectiveness of the pre-prepared countermeasures described in V4 SotonSafe; and the assessment is to extend to the ground area out to approximately 1000m distance from the berth, that is including within the assessment the National Oceanography Centre located in the Eastern Dock Area.

During the public meeting of 4 November 2009 at Southampton City Council, the RN Commander present most generously invited L&A to write reiterating the requests made at the meeting by L&A and SCANS members. Rather than go over the detailed request again, I ask if the Commander and the accompanying Ministry of Defence official will now provide the information requested at the meeting, particularly in the context of our Briefing Note assessment referred to above.

The general areas of information sought at the meeting were as follows:

- 1) The complete end-of-core-life fuel core radionuclide inventory for each submarine class (PWR1 and PWR2 nuclear plant), together with the previous power history - if the Core H inventory is not to be made available then L&A will assume that the USN S9G core inventory will be sufficiently similar to Core H of PWR2 for adoption in the L&A assessment;
- 2) details of any restrictions in place related to item 1) above that would prohibit the use of the Southampton Z-berth at and above specified levels of the fuel core inventory and/or its power history;
- 3) the beyond-containment (either as a direct breach of the hull or via bypass) Release Fractions assumed for both PWR1 and PWR2 nuclear plant fuel cores applied to item 1), for each of the categories of fission products in the form of i) aerosols, ii) noble gases and iii) gaseous iodine (as identified by FLEET/585/1 of 30 October 2009);
- 4) the above waterline . shine gamma attenuation coefficient ( $\mu$ ) for the exposed section of the submarine hull and casing, assuming the appropriate degradation of internal shielding layers as a result of the temperature environment within the reactor compartment; and
- 5) as for item 4) but to within the boat manned spaces via the fore-aft bulkheads of the reactor compartment, assuming ECCS and diesel tanks, or whatever, are emptied during the active phase of the incident.

More generally, the Commander offered to provide further information relating to:

- 6) his claim that the surety of containment (and bypass) leakage rates for Astute and Vanguard classes were such that the maximum leakage and leakage rate to the atmospheric environment would not result in a public sector radiological consequence exceeding that predicted for the worst case (Category 2) Trafalgar (Swiftsure) incident;

7) relating to item 6), during and following the HIRE LOCA incident the reactor compartment pressure transients (and peaks), again for Astute, Vanguard and Trafalgar class nuclear plant and RC layouts and volume:

- i) the initial pressure transient within the RC resulting from the rapid depressurisation of the reactor primary circuit via a LOCA at an unisolable section of the RPC (eg at the same locality as the year 2000 Tireless fault at the pressurizer pipe/RPC junction);
- ii) the second transient at the flashover or boiling off of the residual coolant remaining in the RPV below the ports;
- iii) the following transient generated by the fuel mass (radio)active decay heat rate exceeding the hull heat dissipation capability; and
- iv) further transients arising from a) hydrogen release; b) a metal-steam explosion via pressure suppressed boiling, and c) rupture of the secondary circuit barrier (ie in the steam generators).

In your response it would be helpful if you refer to my order of itemisation above.