

progresses, which may or may not have gamma spectrometry capability.<sup>28</sup>

In fact, monitoring activities immediately around the submarine or weapons accident site are likely to dominate the initial stages of the emergency response to any accident. This approach is set out in a Royal Navy training course on submarine reactor accidents:-<sup>29</sup>

“ ...

*Stage III monitoring is started as soon as emergency monitoring teams (LEMO or NEMT) can be spared from Stage I or Stage II monitoring, or on the arrival of “back up” monitoring teams from CEGB, UKAEA etc. This should be some six hours or so after the initial report and may take several days to complete, depending on the number of teams that can be deployed for this task.*

...”

(my emphasis)

It is not at clear from *SotOnSafe* how the appropriate countermeasures are to be implemented in the absence (“six hours or so”) of reliable radiological information being available.

### PART 3 THE Z BERTH AT SOUTHAMPTON - CONCLUSION

This Review identifies and assesses the potential severity of *i*) a loss of coolant accident on board a Royal Navy nuclear-powered submarine when in the approaches to, manoeuvring within or berthed at the Southampton Z berth; and *ii*) of a nuclear warhead accident occurring in the silo of a Vanguard class of nuclear powered submarine whilst docked or in proximity to the Z berth.

The *Radiation Emergency Preparedness and Public Information Regulations (REPPiR)* require that the operator (here the MoD) identify *hazards* and evaluate the *risks (Reg 4)* and that there is to be *co-operation between the parties (Reg 8)* relating to the preparation and maintenance of emergency plans in which *the emergency plan shall be designed to secure the restriction of exposure to ionising radiation and the health and safety of all persons identified by the assessment (Reg 8)*.

The local authority (here Southampton City Council) shall *prepare an adequate off-site emergency plan (Reg 10.1)* which shall address each reasonably foreseeable emergency identified by the operator (Reg 10.2) and which shall be provided to the local authority by the operator (Reg 10.4).

Put simply, there is a duty placed upon the MoD to provide the local authority with sufficient information so that it, Southampton City Council, can put in place adequate off-site emergency arrangements should a radiation emergency arise.

If Southampton City Council follows the example of Argyll and Bute and adapts the

<sup>29</sup> *Reactor Accidents Course Notes*, Royal Naval College Greenwich, Department of Nuclear Science and Technology, 1992

existing *SotOnSafe* public safety scheme then, it could be argued, this will not satisfy the REPPIR requirements for the following reasons:

### ***All Reasonably Foreseeable Emergencies***

The types and severities of accidents identified in **PART 1** of this Review are considered to be reasonably foreseeable and, indeed, have been adopted by the MoD for its own accident response planning. Since both the *Category 3* submarine reactor plant accident and the nuclear weapons atmospheric radioactive release of plutonium are modelled and planned for by the MoD, it is surprising that these are not specifically cited in *SotOnSafe*.

Adapting *SotOnSafe* as the basis of the local authority Off-Site Emergency Plan would not satisfy REPPIR because these two accident scenarios would not be in the Off-Site Plan. Also, since the resource demands for these two accident scenarios are absent, the organisational competency and identification of the human and equipment resources to be set aside by the Off-Site Plan could not be guaranteed to be adequate.

In these important respects a *SotOnSafe*-based Off-Site Plan would not address each reasonably foreseeable emergency as required by REPPIR.

### ***Adequacy of Off-Site Plans and Resources***

In providing the radiological monitoring role, particularly as to where and how the initial monitoring is to be undertaken, the Royal Navy adheres to the pre-planned priorities of the MoD Book of Reference (BR) 3019. Yet, BR 3019 is not publicly available so it is not at all clear when and how, and to what effect, the public areas of the pre-planned countermeasure would be monitored.

Another publicly restricted BR document, BR3025, assigns least priority to monitoring of public areas since Royal Navy personnel are instructed to delay Stage III monitoring, viz "*Stage III monitoring is started as soon as emergency monitoring teams (LEMO or NEMT) can be spared from Stage I or Stage II monitoring, or on the arrival of "back up" monitoring teams.*"

In other words, a *SotOnSafe*-based Off-Site Plan would be overly dependent upon MoD personnel and resources monitoring the off-site sector and reporting and advising the local authority on when and what countermeasure to implement. If the accident is severe then MoD personnel are likely to be prioritised to the immediate locality of the accident, but a severe accident that requires early monitoring in the public areas if the consequences to the much larger public group are to be mitigated

The failure of a *SotOnSafe*-based Off-Site Plan to define the resources in terms of specific demands and the secrecy over how the resources available are to be prioritised raises a number of concerns over the readiness and effectiveness of the Off-Site Plan.

### ***Reliance of the Local Authority on the MoD***

For the implementation of evacuation and all other countermeasures, the local authority seems to be overly dependent upon the MoD for radiological information and advice.

This is particularly so for the pre-planned countermeasure zone where the countermeasures are triggered by the Royal Navy's assessment of the condition of the reactor fuel or nuclear weapon involved in the incident.

Reliable projection of the assessment of the condition of the fuel or the nuclear weapon to the radiological hazard that this represents to members of the public is absolutely critical in safeguarding public health and property. The procedures employed for this assessment,<sup>30</sup> and the means of communicating it through the MoD organisational structure to the local authority would not be included within a *SotOnSafe* based Off-Site Plan documentation and, in the main, these are not publicly available.

This almost blind reliance of the local authority upon unpublished MoD procedures, criteria and judgements disqualifies the commanding role of the local authority in implementing its off-site emergency plan. Moreover, since there is no provision to check and corroborate the Royal Navy's decision-making until the involvement of the NRPB or Government representative, which will be several hours or more into the accident aftermath.

In effect, a *SotOnSafe*-based Off-Site Plan would simply state that Southampton City Council will implement emergency procedures and, other the most generalised statements of evacuation, sheltering and issue of PITs (which would not apply in a nuclear weapons accident), it remains totally reliant upon the MoD as to when and how it is to put in place actions that would mitigate the consequences to members of the public. This means that the Off-Site Plan is totally tied to the MoD's plan for dealing with incidents and accidents within the boundaries of MoD establishments.

The problem here is threefold: First, the MoD is unlikely to publish its own emergency plans so the identification of the hazards and assessment of the risks remains concealed from the public. Second, the MoD plans will concentrate resources within the immediate area of the incident and will not extend, since it has no formal responsibility, far into the public domain, and it may not have assessed the manpower and equipment resources required to cover larger areas of population. And, third, the methods and criteria deployed by the MoD to assess and project forward radiation doses in the public sector are not publicly available and may, indeed, assume means of health and risk assessment and valued judgements that would be unacceptable in the public domain.

In these important respects a *SotOnSafe* based Off-Site Plan would not satisfy *Regulation 10* of the *Radiation Emergency Preparedness and Public Information Regulations* and, accordingly, the off-site emergency plans associated with nuclear powered submarines and nuclear weapons for nuclear powered and armed submarines berthing at Southampton should be subject to review to ensure that there is adequate protection for the local populations and the environment.

<sup>30</sup> The procedures are set out in a series of MOD documents (BR 3030 – Radiological Controls, BR 3020 Radiological Protection, BR 3019 Nuclear Reactor Accidents, BR3025 – Naval Emergency Monitoring Organisational Orders) none of which are available in the public domain.

