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HSE Reference: D3NON 70059

DNSR Reference: DNSR/3/3/3/1

See Distribution

30 April 2009

REPPIR 2008 SUBMISSION – REGULATORY ASSESSMENT

References:

- A. DNSR/3/3/3/1 dated 6 Oct 08.
 - B. eg HSE-NII's NON 70033 dated 28 Feb 08 (HMNB Devonport)).
1. Hazard Identification and Risk Evaluations (HIREs) together with the associated Reports of Assessment (ROAs) were submitted in Feb 08 covering NNPP operations at the following defence nuclear sites:
 - a. HMNB Clyde (including Coulport)
 - b. HMNB Devonport (including Plymouth Sound buoys)
 - c. Devonport Royal Dockyard
 - d. UK Operational Berths (Portsmouth, Southampton, Portland, B4 Anchorage, Loch Goil, Broadford Bay (no longer used, and not considered further) and Loch Ewe).
 2. NII and DNSR put in place a regulatory strategy to assess the HIREs and ROAs with DNSR providing the detailed technical assessment. DNSR's technical assessment was issued at Reference A. NII completed the regulatory assessment requirements of REPPIR and this letter sets out the final joint regulatory position.
 3. The submission was much improved in a number of respects. In particular:

a. Clarity of Presentation. The adoption of a 'reference accident' approach, in line with the approach in the civil sector, has significantly improved the submission over previous years, providing a much more logical and auditable trail through the key arguments that lead to selection of a reference accident.

b. Judgements. The submission is largely judgement-based and is considered clear and valid for this purpose. The approach does however mean that there are uncertainties associated with any quantification used to dismiss accidents that are not considered to be reasonably foreseeable (NRF); it is evident that considerable care has been taken not to dismiss sequences as NRF without foundation.

c. Sensitivity Studies. The regulators welcomed the use of sensitivity studies to examine 'cliff edge' effects in the region of reasonable foreseeability (the terminology of 'not categorised' has been applied). It is clear that these studies have been carefully considered and are evidence of an appropriately cautious approach.

4. It is therefore concluded that the HIRE constitutes an appropriate submission in response to REPIR requirements. This is a substantial step forward and it is noted that the Safety Improvement Notice in this regard issued by CNNRP in response to the 2005 submission has now been closed.

Assessment of plant HIRE

5. Reference A accepted the validity of the selected Reference Accident for all submarine classes and core types. This may be summarised as primary coolant leakage of XX but with both primary and secondary containment intact (ie containment state nom/nom). NII's assessment supported this conclusion but with the proviso that the case of minor impairment of primary containment (ie containment state min/nom), although less than likely, is considered to be realistically possible and hence reasonably foreseeable. NII considers that this latter case represents a stepped change in off-site hazard and hence off-site response for which emergency arrangements need to be prepared, and therefore is a more appropriate Reference Accident. This position is also consistent with the approach taken within the civil nuclear power reactor sector.

Assessment of dose consequences

6. The dose consequence assessments contained within the HIRE were broadly corroborated at Reference A, although with some differences in the case of minor impairment of containment in particular. XXX class is the bounding case in this event. The assessed hazards may be summarised as follows:

- Gamma shine from the submarine – radiation emergency footprint extends to <900m.

- Release of fission products from the submarine – radiation emergency footprint extends to <1.5km

Determination of the Area Affected

7. On this basis NII have determined that the area within which members of the public are likely to be affected by a reasonably foreseeable radiation emergency extends to a distance of 1.5 km from the berth. Separate determinations have not been made for xxxxxxxxxxxx class as it was concluded that a consistent approach across the sector was desirable and would help maintain stakeholder/public confidence in the arrangements.

8. NII is writing separately to Local Authorities to advise them of this revised determination.

Reports of Assessment (RoAs)

9. As set out in Reference A, a number of areas for improvement have been identified in the RoAs. These are being addressed through normal regulatory channels, but they do not have any material effect on the conclusions of the RoAs or on the basis for emergency planning.

Assessment of weapons HIRE

10. As set out at Reference A, it is concluded that a radiation emergency arising from nuclear weapon activities whilst under the authority of NBC(C) and Navy Command (ie at Operational Berths) is not reasonably foreseeable.

Review of emergency plans

11. Further to Reference B, Operator's emergency plans should now be reviewed on the basis of the regulatory assessment set out here. Relevant information should also be provided by the Operators to the Local Authorities to enable them to review their plans.

Conclusions

12. The HIRE constitutes an appropriate submission in response to REPPIR requirements.

13. The plant HIRE has selected an appropriate accident sequence as the bounding accident but the case of minor impairment of primary containment should also be considered to be reasonably foreseeable.

14. xxx class is the bounding case in terms of dose consequences in the event of minor impairment of containment. The assessed hazards may be summarised as follows:

- Gamma shine from the submarine – radiation emergency footprint extends to <900m.

- Release of fission products from the submarine – radiation emergency footprint extends to <1.5km

15. NII have determined that the area within which members of the public are likely to be affected by a reasonably foreseeable radiation emergency extends to a distance of 1.5 km from the berth.

16. There is no site specific factor that undermines the conclusions of the plant HIRE at any UK berth, including Operational Berths.

17. There is no reasonably foreseeable radiation emergency leading to an off-site hazard arising from the nuclear weapon, at either HMNB Clyde or any Operational Berth.

18. Operator’s emergency plans should now be reviewed on the basis of the regulatory assessment set out here. Relevant information should also be provided to Local Authorities to enable them to review their plans.

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Distribution:

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