



MINISTRY OF DEFENCE

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EXERCISE HIGHPORT 08 – ASSESSMENT

References:

- A. JSP471: Defence Nuclear Accident Response
- B. JSP518: Regulation of the Naval Nuclear Propulsion Programme
- C. HMNB Clyde's COB 252/6/10 dated 6 May 2008 - Exercise Instruction
- D. DNSR/20/7 dated 20 May 08
- E. NNRP/11/14 dated 20 May 05 – Exercise Highport 05 – NNRP Assessment

1. This assessment is provided in accordance with Ministry of Defence policy on nuclear accident response set out in Reference A and with DNSR regulatory requirements (Reference B).
2. The exercise was a Grade B exercise of the emergency arrangements for responding to a reactor accident at Loch Ewe and Broadford Bay which was held on 13-15 May 08. The agreed objectives of the exercise are at Reference C.
3. This assessment covers the operator's response, including the operator's support to the off-site response, and was conducted jointly by DNSR and NII. As anticipated, there were difficulties in satisfactorily demonstrating the agreed objectives within the static exercise structure adopted, with essentially no live play. Accordingly, the regulatory expectation is that the next exercise in this series will include a more conventional, dynamic phase in order better to demonstrate the physical interactions and communications which are key to the effectiveness of the response. Nevertheless, it is confirmed that the exercise provided a valid test of a number of aspects of the response, but in so doing highlighted significant shortcomings in the documented arrangements. Regulatory requirements in relation to this documentation have been set out separately (Reference D). In view of the difficulties, it is very much to the credit of all concerned that they managed to some extent at least to work around the problems, were able satisfactorily to demonstrate a number of aspects of the response, and in particular developed cooperative and constructive working relationships with the external authorities throughout the three days. The wholehearted commitment and the high level of knowledge, flexibility and enthusiasm of all involved was also clearly evident.
4. Details of the exercise assessments are at Annexes A and B. In view of the difficulties in demonstrating the agreed objectives the assessments are not aligned with these objectives in the usual way. Instead, comments are provided in respect of key aspects of the response. Not all aspects of the response were tested at both locations but the very

similar arrangements and areas of difficulty which were identified in each case indicate that the comments can to a large degree be read across from one location to the other. A consolidated summary of the Findings is at Annex C. Comments on the documented arrangements are provided at Annex D in support of the review of this documentation which is now required. Any issues requiring clarification should be referred to DNSR at an early stage.

5. The contents of this letter have been agreed with HSE-NII.

Signed on original

Annexes:

- A. Loch Ewe Exercise – Regulatory Assessment.
- B. Broadford Bay Exercise - Regulatory Assessment.
- C. Exercise Highport 08 Assessment – Findings.
- D. Loch Ewe and Broadford Bay – Documented Emergency Arrangements.

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LOCH EWE EXERCISE – REGULATORY ASSESSMENT

Introduction

1. The exercise of the arrangements on the ground was carried out on 14 May 08, supplemented by a table-top exercise of the operational, tactical and strategic levels of the response the previous day.
2. Except where indicated, the comments relate to the alongside berth but in general should be read across to the buoy also.

Response plans

3. The extant Operator's Emergency Plan for this berth dates from 2005, and presented significant difficulties when exercised at that time (Reference E refers). A draft revised plan was issued immediately prior to the exercise but its status and the due process which had been followed is not clear. Also the revised draft still includes many of the difficulties previously identified in the extant version, with the result that the players repeatedly had to devise work-arounds. Further comments on the plan are at Annex D. It is concluded that the Operator's Emergency Plan does not constitute adequate arrangements as required by AC 11(1) and REPPIR Reg 7(1) and needs to be revised.

Finding (F/NRPA_V_08006/1): The Operator's Emergency Plan needs to be revised and subject to appropriate due process, including statutory consultation as required by DNSR/20/7 dated 20 May 08

4. The off-site plan also dates from 2005 and is currently under review with the intention of combining it with the plans for Vulcan NRTE and Dounreay. The exercise highlighted a number of areas where additional amendments are needed quite separate from this integration process. While responsibility for this plan rests with Highland Council, the Operator is expected to engage with the revision process and ensure that the operator's plan remains coherent with the multi-agency response.

Exercise planning and management

5. The exercise was subject to a formal planning process but this was effective to only a limited degree in delivering the agreed demonstration objectives. This followed from the 'walk and talk' structure which was adopted for the exercise with no live play. While this does have advantages, for example in helping participants understand aspects of the response which would not be visible to them in reality, this structure does not readily lend itself to a demonstration exercise in general and to the agreed objectives in particular. Regulatory concerns were raised during the planning process which led to some adjustment to the format, but inevitably some aspects of the arrangements were demonstrated to only a limited extent. Crucial elements that were not demonstrated were the dynamic decision making process, the effective management of interventions, some aspects of local and distant communication and the provision of real time RP advice to non-MoD agencies at all levels. Accordingly, it is anticipated that the next exercise in this series will include a live-play phase to demonstrate these aspects.

6. Exercise management was led by SONART and staff who worked effectively within the constraints of the exercise format to maintain the engagement of the external agencies throughout, and maximise the benefits for all concerned.

Alerting

7. The arrangements which were described for alerting from the submarine to the collocated team, HMNB Clyde, MOD authorities generally and the police appeared to be sustainable. This was supported by the comms directory which is drawn up by the collocated team immediately prior to the arrival of the submarine and by a basic test of the key comms links which was carried out.

Protection of the submarine crew

8. Evacuation of the crew is to an Exclusion Zone Reception Centre (EZRC) in the Depot. Evacuating personnel would sweep-up with them any personnel working in the jetty area standfast the security guard and the generator watch-keeper who would be subject to specific consideration. Transport would be on an 'as available' basis but this would only be essential in the case of casualties, and sufficient transport would be available for this purpose.

9. Manning of the EZRC is by one of the collocated team initially, supplemented by self-help from the submarine crew. The facilities, equipment, instrumentation etc are fit-for-purpose, and personnel were familiar with their duties and able to demonstrate their procedures..

10. A nuclear safety tug is available during a submarine visit which would clearly be of critical importance for a submarine at the buoy. The same EZRC is used, which would involve a longer boat transfer (to the pol jetty) in the absence of road transport from Mellon Charles.

Depot area

11. The collocation team, EMHQ, EZRC and a small number of indigenous personnel are all located at the Depot, which is within the 2 km zone. Immediate action would be to take shelter, in common with the rest of the zone (see below). PITs are available to be taken as required.

Provision of initial public protection advice

12. As set out in the off-site plan, while the preferred approach is early evacuation of any potentially affected area, it is recognised that this will take some time and the arrangements are therefore to be determined by Strategic. The immediate, automatic response is to advise precautionary shelter throughout the 2 km zone (ie 360^o) at Category 1. This would be implemented initially by police media broadcast of a pre-scripted public safety statement, later supplemented as necessary by police loud-hailers etc. PITs are pre-distributed within this zone, and their consumption would be authorised by the health authority at Strategic (in all likelihood following Category 2) and again notified via the media. Additional stocks are held by the collocation team. Guidance and procedures in the Operator's Emergency Plan are not consistent with this public protection protocol, which led to uncertainty in the operator's support to this critical aspect of the response.

Finding (F/NRPA_V_080006/2): The operator's support to the provision of public protection advice needs to be consistent with the off-site plan.

Access control

13. The collocation team includes 2xMDP to set up initial road blocks on the access roads in support of Northern Constabulary who would have very limited resources in the local area. This therefore provides a very rapid means for preventing access to the area. A basic test of the link between the MDP and police radio nets was demonstrated.

14. The nuclear safety tug is available to patrol the seaward side of the hazard area standfast any other tasking, for example crew evacuation in the event of a submarine at the buoy.

Monitoring

15. This comprises a standard collocated monitoring capability, ie a monitoring HQ in the Depot and a field monitoring vehicle. TRAMS was installed on the jetty (for exercise, immediately adjacent to the RC), reading out in the HQ. Monitoring can be carried out on-board the tug should the wind direction be towards the sea.

16. All procedures were in accordance with standard protocols and personnel were familiar with their duties. A basic test of the communications links was demonstrated. While limited in scope, the monitoring capability overall was fit-for-purpose.

17. The collocated Health Physics Adviser demonstrated a good understanding of his key responsibility for determining the adequacy of the public protection advice post-Category 3 on the basis of the monitoring information (ie does shelter and/or PITs need to be extended further etc).

Command and control

18. An office within the Depot serves as a mini-NAHQ, housing the collocated Technical and Health Physics Advisers, subsequently the submarine executives also. Given the inward-looking focus of this group, ie on the safety of the crew, accident mitigation etc, there is clearly some merit in their location within the Depot, adjacent to both the monitoring information and the rest of the submarine crew who would provide the principal manpower resource.

19. In contrast to this, the off-site plan designates a Forward Control Point for the emergency services on the access road to the north beyond the 2 km hazard zone, and the police in particular were quite clear that, because of the potential hazards, they would not collocate within the Depot (which is within this zone). This divided command and control stance is not addressed or indeed recognised within the Operator's Emergency Plan and led to uncertainties in the operator's co-ordination with the emergency services, in relation to the provision of HP advice and management of ambulance and fire service intervention teams in particular (see below).

Finding (F/NRPA_V_080006/3): Effective arrangements are required for co-ordinating command and control arrangements in the local area with the emergency services.

Management of interventions

20. Although not demonstrated, there was good understanding of the management arrangements for an intervention involving the submarine crew, including the applicable dose limits.

21. In the case of a submarine at the buoy, the nuclear safety tug would be an essential intervention resource. The Operator's Emergency Plan sets out alternative management arrangements given that the crew are not MOD employees but there was little confidence that the necessary enabling arrangements which underpin these have been implemented.

22. There was good understanding of the need for separate arrangements again in the case of intervention being required by the fire or ambulance service, and their Incident Officers were particularly well-informed on their own internal arrangements for this. However, they expected the necessary specialist support (briefing/reassurance, equipment, dosimetry etc) to be provided at the emergency service Forward Control Point (see above). This is not recognised within the Operator's Emergency Plan, and the issue was not resolved during the exercise.

Finding (F/NRPA_V_080006/4): Effective arrangements are required for the management of interventions by the nuclear safety tug and for providing necessary specialist support to emergency service interventions.

BROADFORD BAY EXERCISE - REGULATORY ASSESSMENT

1. The test of the arrangements on the ground was carried out on 15 May 08, supplemented by a table-top exercise of the tactical and strategic levels of the response earlier in the week.
2. The documented arrangements for Broadford Bay mirror those for Loch Ewe, and the arrangements presented on the ground also very largely mirrored those at Loch Ewe. The Loch Ewe assessment should therefore in general be read across to the Broadford arrangements, including those for the buoy given that the Broadford berth is at a buoy some 1 km off-shore. There is no alongside berth in this case. The Findings in particular (Annex C) all read across to the Broadford berth.
3. The following additional comments relate to the Broadford berth:
 - a. The EZRC is located at Broadford Fire Station, and was again assessed as fit-for-purpose given the constraints. Transport to EZRC from the jetty was again uncertain with self evacuation by foot being the subject of considerable debate. This is also the prime location for EMHQ.
 - b. The collocated Technical and Health Physics Advisers also established their mini-NAHQ at the Broadford Fire Station although the Operator's Emergency Plan identifies BUTEC as the location for Tactical and Operational command and control. The emergency services effectively used BUTEC as Tactical, with a Forward Control Point on the access road, as at Loch Ewe. This resulted in a similarly divided command and control stance between MOD and the emergency services, and similar difficulties.
 - c. Given that this berth is at a buoy the nuclear safety tug would be essential to any intervention but the uncertainties set out in Annex A in this regard again applied. Additional vessels are available from BUTEC in this case but these are not currently scoped within the intervention arrangements.
 - d. It was realised that flexibility in crew evacuation arrangements might be called for on the day. Evacuation by boat directly to BUTEC might be more practical than a lengthy transfer by boat and foot to an EZRC within the 2km zone, and it was established that there was sufficient flexibility in maritime regulations to permit this.

Observation (O/NRPA_V_080006/1): Given the remote location of the berths and the potential to require evacuation from a buoy, the Operator's Emergency Plans need to delegate to the local commanders sufficient flexibility in control of evacuation assets to react to events and circumstances on the day, while ensuring that adequate communication and control is maintained.

EXERCISE HIGHPORT 08 ASSESSMENT - FINDINGS

Reference	Finding	Para
F/NRPA_V_080006/1	The Operator's Emergency Plan needs to be revised and subject to appropriate due process, including statutory consultation as required by DNSR/20/7 dated 20 May 08.	Annex A para 3, Annex B para 2, Annex D
F/NRPA_V_080006/2	The operator's support to the provision of public protection advice needs to be consistent with the off-site plan.	Annex A para 12, Annex B para 2
F/NRPA_V_080006/3	Effective arrangements are required for co-ordinating command and control arrangements in the local area with the emergency services.	Annex A para 19, Annex B para 3b
F/NRPA_V_080006/4	Effective arrangements are required for the management of interventions by the nuclear safety tug and for providing necessary specialist support to emergency service interventions.	Annex A para 21-22, Annex B para 3c
	Observation	
O/NRPA_V_080006/1	Given the remote location of the berths and the potential to require evacuation from a buoy, the Operator's Emergency Plans need to delegate to the local commanders sufficient flexibility in control of evacuation assets to react to events and circumstances on the day, while ensuring that adequate communication and control is maintained.	Annex B para 3d

LOCH EWE AND BROADFORD BAY – DOCUMENTED EMERGENCY ARRANGEMENTS

Off Site Plan

1. These comments relate to the Highland Safety Scheme (Highsafe) dated Jan 05.
2. Although the regulation of the off-site arrangements is a matter for NII, some observations on the off-site plan will provide a context for consideration of the associated Operator's plans. NB The off-site plan is currently under review in order both to combine with those for Vulcan NRTE and Dounreay and also to address a number of issues which arose in the exercise. This parallel review needs to be taken into account in the review of the operator's plans. (It is presumed that the off-site review process will provide an opportunity for appropriate operator input.)
3. The public protection arrangements are set out at Sections 4.1 and 4.2. The pre-scripted media statements in Section 6 are also relevant. As confirmed during the exercise, the plan is automatic shelter throughout the whole of the 2 km zone (ie 360^o) at Cat 1, to be implemented via a police media broadcast of a pre-scripted public safety statement. In parallel but slower time the police and other agencies at Strategic will consider the practicality of precautionary evacuation. PITs have been pre-distributed throughout the 2 km zone but advice to consume is subject to NHS Highland authorisation, again from Strategic.
4. The 2 km zone is treated as the hazard zone, with road blocks established as necessary.. Access to the hazard zone is managed from a Forward Control Point which is set up in a pre-designated car park/lay-by under the control of the police, with support provided by the collocated health physicist, and using Permit-to-Enter procedures (Sections 4.3 and 5.1). Tactical is at Dingwall in the case of Loch Ewe and BUTEC in the case of Broadford (Sections 5.1 and 5.2).

Operator's Plan – Loch Ewe

5. There are two berths, one alongside the NATO Pol Jetty and a buoy some 500m off Mellon Charles. The alongside berth is ~1 km from the NATO Pol Depot. Given the proximity of the Depot in the case of the jetty the extent of the premises (REPIIR Reg 2(1)) needs to be clearly defined. (It is presumed that the premises include the jetty area but not the Depot.)
6. Alerting – the text at Section 3 is not consistent with the alerting diagram (Fig 3.1), and neither reflect what is actually required or intended.
7. Protection of the crew – this should be a fundamental objective of the plan (REPIIR Sch 7 Part 1d). There is no indication of how the crew reach the shore in the case of the buoy or of where they would be landed and any associated transport. Although a nuclear safety tug is in attendance the arrangements for its management and control need to be defined. For either berth transport would be required at least for casualties – the arrangements for this need to be covered.
8. Protection of any personnel on the jetty – presumably these should be evacuated with non-essentials from the submarine, but this (or the alternative) needs to be stated.
9. Protection of personnel in the Depot – this is covered at Annex 1A but needs to be brought together with related arrangements (including those at paras 7 and 8 above). NB The repeated references to on-site and the ACMZ etc are not helpful in the context of these berths.
10. Public protection advice – this document is required to set out how the Operator supports the civil agencies in the early stages, in particular the information to be provided initially in support of implementation of the off-site plan (REPIIR Sch 7 Part 1e). There are difficulties in this area. The public protection arrangements are described at para 3 above. Para 2016 specifically mis-represents these arrangements in terms of precautionary evacuation. Further, the MOC arrangements for

providing advice on public protection documented at Annex 3B specifically contradict both this misrepresentation and the actual public protection arrangements in the off-site plan. There are additional difficulties and contradictions in the table of countermeasures and responsibilities in Section 5. Further, MDP collocate in order to control access to the area in support of the police. As confirmed in the exercise, the intention is for MDP to establish road blocks for this purpose immediately on declaration of Category 1 – this needs to be stated in the plan.

11. Command and control – the off-site plan makes clear that the focus of the police Operational level of command is the Forward Control Point, and it will be from here for example that the Permit-to-Enter procedures for emergency services accessing the hazard zone would be managed. This was confirmed in the exercise. This will require face-to-face support from the collocated team and the provision of specialist equipment. In contrast, the collocation team, submarine executives etc are based in the NATO Pol Depot, and the plan does not recognise the need to support the separate police Forward Control Point. While it may be practicable to maintain routine liaison via the various comms nets, as stated there would be a need for physical support in the case of an emergency service intervention. The arrangements in this regard were not resolved in the exercise. Accordingly, the arrangements for co-ordinating the Operational level of the response as set out in the plan do not correspond with the arrangements on the ground and were found not to be workable in practice.

12. Management of interventions – interventions by MOD personnel (principally the submarine crew) are adequately addressed. Separate arrangements are set out for authorisation of emergency exposures for Serco personnel (tug crews) but there was no confidence during the exercise that these arrangements exist in practice such that they could be implemented/demonstrated. The necessary provision of specialist support to emergency service interventions is not covered (para 11 above refers).

13. Communications – separate from initial alerting the plan needs to define the on-going communications arrangements between all elements of the response organisation, but especially those elements deployed in the local area (including the emergency services). The telephone directory drawn up by the collocation team would be one part of this.

14. More detailed comments:

- a. the pre-scripted media statement at Annex 3G is not consistent with those in the off-site plan and, given that this is a police responsibility, arguably does not need to be included;
- b. para 6029c – there is no estuarine dispersion model for Loch Ewe;

Operator's Plan – Broadford Bay

15. Standfast detailed geographical differences, the comments in respect of the Loch Ewe plan above apply very largely to the Broadford Bay plan also. (The berth is an anchorage ~1 km off-shore.)