



MINISTRY OF DEFENCE
DEFENCE NUCLEAR SAFETY REGULATOR
NUCLEAR WEAPON REGULATOR

DNSR/04/18/10/1

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4 April 2013

EXERCISE ASTRAL CLIMB 2012 – ASSESSMENT

References:

- A. JSP471: Defence Nuclear Emergency Response
- B. JSP538: Regulation of the Nuclear Weapon Programme
- C. D/SW/12/84. Exercise Astral Climb DNSR Assessed Objectives – 12th June 2012.
- D. DNSR/18/10/1 Exercise Astral Bend 2011 Assessment dated 27 Jul 11.
- E. DNSR/18/10/1 Exercise Astral Bend 2012 Assessment dated 22 May 12.
- F. Convoy & Station Nuclear Emergency Organisation Team (SNT) Immediate Response Force Manual. SWS000690 (Issue 5) AL 1, September 2012.
- G. Convoy & SNT Immediate Response Force Manual (IRF). SWS000690 (Issue 4), May 2012.
- H. DNSR/04/18/10/5 dated 11 Nov 2011. Exercise Senator 2011 – Assessment. 11 Nov 2011.

1. This assessment is provided in accordance with the MOD policy on nuclear emergency response (Reference A) and with Defence Nuclear Safety Regulator (DNSR) requirements (Reference B).

2. Exercise Astral Climb 2012 was a Level 1 demonstration of the arrangements for responding to an emergency involving the road transport of nuclear weapons, and was held at Albemarle Barracks, Ouston, Northumberland on 15th November 2012. The objectives of the exercise were agreed at Reference C.

3. DNSR assessed the MOD response during the exercise and provided a preliminary verbal assessment on completion. It is confirmed that the exercise provided an appropriate vehicle for demonstrating the agreed aspects of the arrangements, and that the Ministry of Defence Police (MDP) nuclear weapons road convoy demonstrated their ability to cope with such an event. However, a number of difficulties were observed, in some cases concerned with the convoy response on the day but in the main concerning the wider Immediate Response Force (IRF) arrangements and their integration with the Civil Emergency Services (CES) response. This re-iterates the need for a wide-ranging review of the IRF role, responsibilities and capabilities, as identified previously (References D and E).

4. Details of the assessment are at Annex A. A preliminary summary of the Findings and Observations is at Annex B. In accordance with Reference B, the final version of the Findings is for agreement between DNSR and SWPT. Account has been taken of SWPT comments on the draft of this assessment. Any further issues requiring clarification should be referred to DNSR-IT.

Signed on original

Annexes:

- A. Exercise Astral Climb 12 – Detailed Assessment.
- B. Exercise Astral Climb 12 Assessment – Findings and Observations.

Distribution:

Action:

SW PT – Hd ,

Information:

SW-SAM-DepHd

MDP-ALDERMASTON SEG SUPT

DNSR-IT

DBR-DefSy-NucSyEP AH

INM-OMS-SRMHead

SM SW SA6

dstl – [REDACTED]

EXERCISE ASTRAL CLIMB 2012 – DETAILED ASSESSMENT

Documented Arrangements

1. [REDACTED] However, this change has not been supported by a documented review of the requirements or expectations for the medical response in a convoy nuclear transport emergency.
2. A review of Reference F reveals that amendments which were successfully introduced at the previous Issue No (Reference G) have been lost, specifically regarding radiological monitoring instruments for Highly-Enriched Uranium (HEU). Although HEU instruments were not involved in this exercise, it should be noted that this loss undoes the work incorporated in Reference G to address Safety Improvement Notice, DNSR 18/10.
3. As agreed following recent exercises, the existing response strategy, plans and drills implemented in Reference F require an overarching, fundamental review of convoy and SNT emergency response arrangements. This review should take into account the recent advances in CES arrangements for response to CBRN emergencies.

Finding TRF 195: The documented arrangements need to be reviewed and updated as stated. [See also related Finding TRF 0171]

Exercise Planning and Management

4. Exercise planning was effective in securing early engagement with the CES, taking account of their requirements, and gaining extensive CES participation on the day.
5. Simulation of the accident scene and debris field on the day of the exercise was more limited than previously but provided an adequately realistic scene for response forces. Realism was significantly assisted by improved making-up of casualties and their subsequent extremely enthusiastic role-playing.
6. Di-staffing and injection of radiological monitoring results was good. Elsewhere, there was some inappropriate coaching of participants by MOD Distaff and Observers, in particular providing extensive input into Silver in the absence of the requested convoy support.

Observation TRO 127: There was some inappropriate coaching of participants at Silver by MOD Distaff and Observers.

Alerting

7. Alerting actions from the convoy to the wider Defence Nuclear Material emergency organisation and to CES appeared to work well. CES arrived with some awareness of the involvement of weapons/radiation, indicating that their Control Rooms had recognised the significance of the alerting messages and briefed onward accordingly.

Command and Control

8. [REDACTED] This had the effect of delaying the very large scale CES response to the scene by ~40 minutes at a time when their specialist support was critically required in order to recover and provide life-saving treatment to casualties. This may have contributed to the number of fatalities within the exercise. In reality, on a public road, it is difficult to believe that the CES would have tolerated such delay. It is essential that convoy procedures ensure that every effort is made to expedite the progress of the CES to the RVP and their reception and briefing by the EC/IC.

Finding TRF 196: [REDACTED]

9. Thereafter, command and control at Bronze was generally effective. CES executives were briefed promptly on arrival and updated on particular requirements. In particular, the IC continued to communicate the priority to evacuate and treat casualties. Technical briefings were in accordance with established protocols but, as noted previously, the process is extremely laboured and includes excessive extraneous detail. The IC did not test or ensure that CES had understood the briefings or check on their intentions.
10. While explicitly deferring to the civil police, the IC took a good initiative in prompting initial Bronze Cdr meetings, and continued with this at ½ hour intervals throughout. This worked well and was appreciated by the CES.
11. The IC himself was kept well up-to-date with developments and was well supported by the EC and Chief of Staff (CoS) throughout. Stateboards in the CSV were used well, with key information clearly presented.
12. Forward planning was evident in the request for detailed weather forecasting and in the discussions regarding Follow-on-Forces (FoF). The COS provided timely updates to the IC and to Task Control, and controlled the White Monitors (WM), meeting all of his objectives.
13. The EC took a good initiative in seeking to address the problem of confusing, overlapping CES decontamination facilities at the cordon edge, and tried to get CES to co-ordinate their facilities. This eventually led to the development of at least a co-ordinated process for handling the various categories of personnel if not to the co-ordination of the separate facilities.
14. There were difficulties with the provision of convoy support to Silver. This was requested at an early stage but no support was provided until ~3 hours post-accident in order to participate in a press conference. A number of press releases had already been issued by this time without MOD input. The time available did not allow the pre-scripted statement to be considered, and in the event the MOD contribution was limited. No further meaningful support was provided following this. These comments effectively re-state those of Finding TRF 0187 of the Exercise Senator 11 assessment (Reference H), in that case concerning the lack of convoy support to Gold over the first several hours. As identified previously, this issue needs to be included in the anticipated overarching review of the response arrangements referred to in the covering letter to this report.

Finding TRF 197: The CES set up a local Silver. The Convoy Commander should have ensured that MOD was promptly represented there.¹

15. The handover brief to the MCA was effectively presented in accordance with protocols.

Emergency On-Scene Response

16. The CC's and EC's immediate actions were prompt and appropriate, with 'Mask Up' and 'Nuclear Transport Emergency' (NTE) messages communicated almost immediately. The CC selected sensible Rendezvous Point (RVP) and TCP locations, and reassembled the unaffected leading and trailing elements of the convoy at the RVP, also ensuring their security. Shelter advice was issued promptly by the EC, and radiological monitoring at the scene allowed the 'release of radioactive material confirmed' qualifier to be communicated in good time.

The immediate first-aid response by convoy personnel was rapid and effective. Appropriate respiratory protection was issued, and the medical prioritisation (P1-P3) of the casualties was

¹ Post exercise it was suggested that the CC thought the CES Silver was out of play: the DiStaff need to ensure that players and Assessors are clearly briefed about any potential areas of confusion.

correct. First-aid to the two trapped casualties was good, particularly by the convoy fire crew, pending their extraction. Separately, however, it was 35 minutes before the unconscious head injury casualties were given oxygen, blankets were unavailable or not used to protect them against the cold as they lay on the ground, and their eventual handling into 'ambulances' at the incident scene offered no cervical spine protection. Overall, the convoy [REDACTED] was not proactive and it was unclear what level of medical support he was expected or trained to provide. (As previously requested, details of the medical training received by the [REDACTED] should be provided to DNSR-IT and INM-OMS-SRM-Head.)

Finding TRF 198: The role of the convoy medic was unclear and the provision of medical equipment was not adequate.

17. Following the immediate actions there appeared delays and a lack of urgency to evacuate casualties from the scene to the cordon, particularly the moveable P1 casualties. At about one hour post-accident, MDP convoy staff evacuated P2 and P3 casualties to the cordon, before the higher priority moveable P1 casualties, although this delay and priority reversal may reflect convoy staff's concerns about the availability of civil medical resource at the cordon.

18. The civil ambulance service was delayed by the problem described at paragraph 9 above. Their response was led by the specialist Hazardous Area Response Team (HART) team. Upon arrival they were fully briefed by the EC, including on the presence of critical P1 casualties forward at the incident scene needing immediate lifesaving treatment. They committed immediately to access the hazard area, stabilise the casualties and transfer them directly to hospital – all very much in accordance with DoH guidance. Unfortunately, these actions were subsequently delayed, despite repeated prompting by the EC.

19. The initial civil Fire and Rescue Service response by-passed the CES delays described at paragraph 9. They were briefed by the EC immediately on arrival at the RVP and quickly deployed into cordon to extract trapped casualties. There was then very effective integration between the convoy fire crew and the civil crew at the incident scene. Extraction of the two trapped P1 casualties was well conducted with appropriate spinal column protection.

Security

20. Following his immediate response at the scene the [REDACTED], where remaining convoy assets were assembled and well controlled. Although not especially challenging within the scenario, appropriate action was taken to secure the leading and trailing parts of the convoy and provide guarding as necessary. [REDACTED] The CC briefed well on security issues to CES, also asking them to brief upwards on the presence of armed MDP and RM elements.

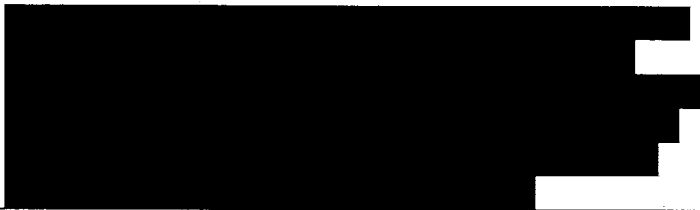
Monitoring and Decontamination

21. Initial detection and reporting of the release of radioactive material was well managed by the Yellow Monitor and Special Safety Team Coordinator.

22. [REDACTED] RPE was worn at all times, but the use of PPE was inconsistent: for example, gloves were removed to make phone calls and at one time a motorcycle helmet was placed on the ground. Some difficulty was experienced in operating the GPS units, particularly while riding and in the absence of any obvious land mark by which to navigate. Subsequently, the WMs demonstrated the delineation of the 2MBq/m² contour with good understanding of their instruments. Overall, this was a satisfactory demonstration of the downwind monitoring capability within the limitations of the exercise.

23. The TCP was declared operational around 95 minutes after the incident which is slower than anticipated, although the facility appeared to be ready well ahead of this. Alpha monitoring of convoy staff and members of the public was then demonstrated using two lanes. Monitoring techniques were thorough. The TCP Commander offered an alpha monitoring team to support CES decontamination facilities. Before ENDEX this team's early discussions on integrating their monitoring techniques with CES decontamination facilities were identifying difficulties and inconsistencies, including wet skin and persons emerging from CES facilities onto the clean side of the cordon wearing face masks. These are additional issues which should be considered in the overarching review referred to in the covering letter of this assessment.

EXERCISE ASTRAL CLIMB 12 ASSESSMENT – FINDINGS & OBSERVATIONS

Reference	Finding/Observation	Annex A para
TRF 0195	The documented arrangements need to be reviewed and updated as stated. [See also TRF 0171]	1-3
TRO 0127	There was some inappropriate coaching of participants at Silver by MOD Distaff and Observers	6
TRF 0196		8
TRF 0197	The CES set up a local Silver. The Convoy Commander should have ensured that MOD was promptly represented there.	14
TRF 0198	The role of the convoy medic was unclear and the provision of medical equipment was not adequate.	16