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D NM&NARG SAFETY STATEMENT FOR THE MODIFICATION OF THE NUCLEAR WEAPON CONVOY TASK TO CONTINUOUS RUNNING INCLUDING RUNNING IN THE HOURS OF DARKNESS

INTRODUCTION

1. Nuclear Weapon (NW) convoys have been undertaken successfully for many years using a single team of SQEP personnel[1] between the southern and northern termini. The convoy takes between 3 and 4 days to transit between the termini, usually travelling in daylight hours, but on occasion travelling in the hours of darkness and allowing for compliance with driver and duty hours regulations contained within JSP 341. The NW convoy stages overnight at two approved MoD establishments on both the upward and return legs. Allowing for rest breaks and unloading and loading operations, a minimum of [redacted] (S. 26/31) days are needed to undertake a complete evolution from AWE Burghfield to RNAD Coulport and back to AWE.

2. Following the events of 11 September 2001, D Def Sy agreed that a comprehensive review of the security arrangements for nuclear convoys was required. The study into convoy operations was carried out by [redacted], (S. 40) Royal Marines. The report [2] recommended that whilst current operations are conducted safely, limiting movements to daylight hours and using only two Staging Posts [redacted] (S. 26/31) makes them extremely predictable [redacted]. (S. 26/31) The [redacted] (S. 40) report recommendations were endorsed by the DMB(N) in June 2003 and Ministers were subsequently briefed in August 2003.[3]

3. One of the principal recommendations was to increase the number of routes the convoy uses, and to reduce the amount of time the convoy is at risk by running the convoy continuously between termini. Implementation of these measures has resulted in the concept of continuous running. This entails the convoy transiting between the southern and northern termini supported by two Suitably Qualified and Experienced Personnel (SQEP) convoy crews that change over at approved Crew Change Locations (CCL) [redacted] (S. 26/31) between the termini. The security requirements at the CCLs will be incorporated in JSP 440 Supplement 1 at next amendment. The result is that the outward and return legs of the convoy operation can each be completed in a continuous 24-hour period, utilising a range of different routes. This reduces significantly the time the convoy is on the road, its vulnerability to protestor disruption, and potential terrorist targeting. However, from a nuclear safety perspective, the modes of handling and carriage for the NW remains unaltered.

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[1] AWE, MDP, and Royal Marine personnel
[2] D/NM/156/66/1 dated 19 February 2003
[3] DGS7S/70/54 (07-03) dated 4 August 2003

AIM

4. The aim of this safety statement is to demonstrate that the move towards running convoys on a continuous basis between termini is no less safe than the current "staged" operation as agreed with NWR.[4]

CATEGORISATION OF THE CHANGE

5. In moving towards nuclear authorisation of the NW transportation task, DNM&NARG has an established Nuclear Safety Categorisation Procedure[5]. In accordance with this procedure, the Hazard Category of the NW transport operation is Category 1. This is defined as "An unmitigated equipment or operation that is capable of providing a hazard level to members of the public outside the perimeter of the site, requiring countermeasures to be employed such as sheltering, evacuation or food banning." The Continuous Run (CR) Change Proposal is assessed as Change Category C, "Change and associated commissioning/test activities which, if inadequately conceived or implemented, have a potential to create an effect within the perimeter of the TCHD", (i.e. within the boundary of the convoy operation). Change Category A is the highest category and D is the lowest. Determination of this category is based on the facts that no alterations are being made to the weapon design, the packaging, the containerisation, the tie-down scheme, the transportation mode or its design.

CONCEPT OF CR OPERATION

6. The movement of Nuclear Weapons on public roads has been authorised by Trident Stage 1 approvals. The movement starts either at AWE Burghfield (AWE (B)) or RNAD Coulport (RNAD(C)). The weapons are prepared and packaged for transport in accordance with approved AWE and RNAD (C) procedures. The packages are constructed to IAEA Type B approved design to withstand specified crush, drop and fire criteria[6]. The complete approved package[7], comprising the Trident Re-entry Body Assembly (RBA) and its packaging, is termed PD AWG 516 package (also known as the Trident Container Assembly (TCA)), and is the only approved method for packaging the Trident Nuclear Weapon. The PD AWG 516 package is secured into the Truck Cargo Heavy Duty (TCHD) to approved tie-down arrangements[8]. The TCHD is the only approved vehicle for transporting the PD AWG 516 package on public roads and in accordance with the Stage 1 approval (and ESTC prescription) a fire tender must travel with the convoy at all times.

7. [redacted] (S. 26/31) The CR operation will commence at varying times in order to blur the focus and lend less predictability to the movement task, thereby enhancing security. At all times the number of

[4] D/NM 175/5 dated 22 Dec 03 & 26 Feb 04; NWR/15/7 dated 12 Jan 04
[5] NSP 04 – NM&NARG Nuclear Safety Categorisation Procedure
[6] IAEA Regulations for the Safe Transport of Radioactive Material No TS-R-1(ST-1, Revised)
[7] Certificate of Approval for the Carriage of Radioactive/Hazardous Non Radioactive Material AWE/HNM02/A/CoA AWG 516 Issue 14
[8] NM & NARG Container & Weapon Handling Procedures Using TCHD MKII and LTPT MKII Issue 3 July 2002-Engineering Order No 1

qualified and experienced personnel on the convoy will be consistent with existing, staged operations. In order to achieve this, uplift in funding has been provided to allow AWE, MDP and FPGRM to recruit, train and qualify additional convoy personnel. The convoy will continue to run in its current configuration, and will continue to take rest breaks in accordance with current driver and duty hours in accordance with guidance contained in JSP 341 and UK legislation[9].

8. The convoy operation will continue to be planned and approved in accordance with existing requirements in JSP 483 and Transport Management Control Standard Operating Procedures. Some changes have been introduced to the planning process to allow more time for planning staffs to prepare the required operational order (OPORD) which incorporates the current Movement Order (MO) and authorises the movement. At [redacted], (S. 26/31) a replacement crew of AWE, MDP and FPGRM personnel pre-deploy to await the arrival of the convoy. The pre-deployment process ensures that the oncoming crew is fully rested. A planned approach is taken at each CCL with individual site plans being approved by the authorities concerned. While each site is unique, in essence, the plans call for the following actions. MDP and FPGRM personnel are positioned at the CCL in advance of the convoy's arrival, [redacted] (S. 26/31). The off-going crew formally hands over to the on-coming crew and vehicles are refuelled to existing "staged" safety criteria [redacted] (S. 26/31). A formal transfer of the custody of the nuclear weapons, as well as tactical command (TACOM) of the convoy occurs. Such transfers are formally recorded and notified to the MDP task control and the Special Safety Cell (SSC). The Convoy is not authorised to leave the CCL until such transfers have taken place.

9. When the convoy departs, the off-going MDP and FPGRM personnel [redacted] (S. 26/31) either return to base or move to the return leg CCL to take over the convoy. Taking appropriate rest breaks, the convoy then proceeds to its destination. Security arrangements and unit administration and logistics support have been agreed and formally documented in Site Security Plans (SSP).

SECURITY

10. Security of the operation is in accordance with JSP 440 Supplement 1. The CR concept requires the use of additional MOD locations to undertake crew changes. An initial batch of sites have been identified and assessed as suitable CCLs and individual SSPs have been prepared for authorisation by DLO PSyA. These are a composite of the unit's own plans, FPGRM's Convoy Reaction Force (CRF) responsibilities, and the MDP's Operational Support Unit (OSU) orders. These plans define the C^2 arrangements, guarding, safety and supporting administrative and logistical requirements whilst the convoy is present. Further sites are to be visited in early 2005 to provide greater flexibility of choice in route selection for NW movements between termini. [redacted] (S. 26/31)

[9] Road Transport directive (2002/15/EC) and EU Drivers' Hours Regulations (Regulation (EEC) 3820/85)

11. In accordance with the requirements of JSP 440 Supplement 1 NW convoys are not permitted to run in heightened security alert states. Each convoy is the subject of a [redacted] (S. 26/31) threat assessment, which are continuously-reviewed throughout the operation. Any indication of a significant terrorist threat would be sufficient to stop the convoy running.

AUDIT

12. DNM & NARG's arrangements[10] for formal auditing of the NW convoy and associated supporting establishments remains unchanged, with an annual Convoy Operating Proficiency Inspection (COPI) undertaken of the NW convoy. This includes provision for formal assessment of the adequacy of site security and administrative and general support arrangements for the convoy operation, whilst a convoy is in situ at the CCL.

HAZOP/RISK ASSESSMENT

13. On 8th January 2004, a HAZOP[11] was held at AWE Aldermaston with all key stakeholders in attendance. Subsequently, a Modification Report[12] was completed to inform the DNM&NARG Nuclear Weapon Transportation Safety Case. In that report, a number of "hold points" were identified which required "close-out" before live CR operations could commence. These hold points, along with other implementation tasks, were rolled into a project management plan and managed through the Nuclear Weapon Convoy Security Working Group[13], guided by the Nuclear Weapon Convoy Security Steering Group[14]. The Modification Report was forwarded to the Nuclear Weapon Regulator (NWR) for comment[15], as DNM&NARG is preparing for formal authorisation of the NW transportation task by the NWR. Since then, DNM&NARG have established a modification procedure. A change proposal has been prepared for the consideration and endorsement of the Authorisee designate's Operations Management Safety Committee (OMSC). It is anticipated that this paper addresses NWR's subsequent response.[16]

14. The following hold points were identified in the AWE Modification Report hazard analysis:

a. *Procurement of task lighting for use on start up inspections and maintenance activities, including assessment on how this equipment will be carried. A secondary use for the lighting may also be its use during an Emergency Response.* – Following an unassessed NARO Standardisation Test inspection in February 2004[17], additional lighting has been provided. It was subsequently trialled during evening training runs from AWE to Buckley Barracks and DMC Kineton in September 2004 and has been a feature since September 2004 of scheduled convoy training weeks at MDP HQ Wethersfield including the back-to-back training weeks held in October

[10] JSP 483 Volume 2 Chapter 12
[11] EEUK/200426.03/R1, Hazard and Operability (HAZOP) I Study Report, Defence Nuclear Material Convoys Under NM&NARG Responsibility, [redacted] (S. 40), Draft B, March 2004
[12] AWE/COM/2004/001 Draft A of Issue 1 dated 27th January 2004.
[13] D/NM/156/66/1/2 Action Grid dated 1 November 2004
[14] D/NM/156/66/1/1 Action Grid dated 30 November 2004
[15] D/NM/88/1(R) dated 26 February 2004
[16] NWR/15/7 dated 12 March 2004
[17] D/NM/25/1/3 dated March 2004

2004. It has also been deployed during non-live continuous running operations in late November 2004 as part of Movement Order 4034. [redacted] (S. 26/31) A method of operation has been arrived at, and there is no degradation of nuclear weapon safety from current operations brought about by the lighting.

b. *Briefing to personnel to ensure clear communication is used with respect to reduced visibility of landmarks* – Single point briefing of both CR crews has been introduced. The MDP's Convoy Operating Procedures (COPs)[18] have been amended to focus on effective communications in the hours of darkness without any degradation of nuclear weapon safety.

c. *MDP (S. 26) review alternative options to motorcycles to control the flow of traffic in the hours of darkness.* - The MDP Special Escort Group (SEG) are currently provided with motorcyclists to effect traffic control during the progress of the convoy. During continuous running, a combination of darkness, poor weather, and light refracting through the rider's visor, significantly reduces the rider's visibility and hence his ability to operate safely. Similarly the motorcyclists are more difficult to see, despite their high visibility jackets, especially as their blue lights can dazzle oncoming vehicles. As a consequence, MDP have procured and brought into operation traffic control cars to replace the motorcycles. Traffic cars are unable to overtake the convoy safely on more minor routes and the support of local Constabularies will be enlisted to police potential choke points on minor roads where appropriate during the hours of darkness. However, there is no degradation of nuclear weapon safety as a result of the deployment of traffic control cars in lieu of motorcycles. SWS 134C raised some issues verbally during the 2002 NW Convoy COPI regarding TCHD driver visibility during inclement weather, the potential glare from oncoming vehicles when driving at night, and the difficulty of using the TCHD door mirrors. In two and a half years of operation this is not an issue that has been raised by drivers nor has it featured in the recently revised AWE Safety Justification. During night running training this has not been raised as an issue by the Convoy Safety Officer (CSO) or by the AWE drivers themselves. However in the event that visibility was obscured it is within the driver's remit to inform the Convoy Commander (Cvy Cdr) that driving conditions have worsened and the Cvy Cdr would take appropriate action in accordance with his delegated responsibilities.

d. *Review requirements to ensure there is sufficient battery life for the use of communications equipment during operations. Include within the assessment how any additional batteries (Dangerous Goods) would be carried.* A complete suite of new batteries has been procured and includes one spare battery per radio. These are carried in the Convoy Support Vehicle and present no nuclear or personnel safety hazard as they are stored in appropriate proprietary containers.

[18] D/MDP/Ops/3/10/8 dated 5 November 2004 (NW COPs Continuous Running Instruction)

e. *Review Stage 1 approval to ensure CR modification does not invalidate any assumptions made within the assessments.* – Initially, it was thought by NW IPT that the Stage 1 approval specifically excluded night-time running. However, review of the approval revealed, inter alia, that Stage 1 approval requires the Trident NW to be correctly packaged in the TCA and transported in a TCHD Mk2 at a normal operating speed of 50 mph (but up to 55 mph for overtaking). These requirements will be fully complied with for CR. Since Stage 1 approvals remain unaffected, it is concluded that there should be no need for NW IPT to seek Trident Safety Committee approval of this modification. NW IPT forwarded two letters[19] with comments on the proposal for CR. The principal concern was the balance between security needs and the increase in potential risk. The imperative for the modification is based on the need for the convoy operation to be much less predictable in the light of the revised postulated threat. As stated earlier, the intention is to demonstrate that CR is no less safe than staged running. The Hunting Engineering limited (HEL) report[20] into road accident probability for the TCHD Mark 2 has been carefully scrutinised, and while the diagrams indicate that statistically there would be an increased risk of vehicle accident in the early hours of the morning, the conclusions (paragraph 74) state:

"Accident risk shows variation with both time of day and season. The current practice of scheduling the TCHD Mk2 to operate during the normal working day enhances the risk of involvement in any accident by a factor of approximately 1.5. This represents a worst case condition and changes to scheduling would not impose additional risk."

More recently, DOSG conducted a series of studies looking at the radiological risks of transporting nuclear weapons[21]. This took a "generic" route, the longest up the east of the UK, as there were uncontrollable influences on any chosen route that made selection of the one with the lowest risk impossible. The study stated[22] that:

" Currently, convoys are restricted to travelling in daylight hours, therefore there is a balance of risk argument, balancing day time population against night time population. There is also the increase in day time traffic during peak traffic concentrations, in particular rush hour conditions, when transiting through densely populated areas. During daylight, transit times would increase, therefore the time at risk will increase and the accident rate will increase[23]. However, the transit speeds (including other traffic) are likely to reduce, therefore the impact velocities may be reduced. Therefore the consequences of an accident may be less severe although more probable."

However, taking account of the dominant hazards to the convoy, the total probability of Radioactive release per kilometre was, to a Best Estimate value of 9.462×10^{-11}. This exceeds the boundary of "extremely unlikely" of 10^{-9}.

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[19] DPA/NW/PTGL/101/964 dated 25 May 04 and 26 May 04

[20] D/DC(Nuc)/ALD/4/22/6 dated 1991 - Hunting Engineering Report 1984-1988 Road Accident Probability Study of the TCHD Mk 2

[21] DOSG/ST/REP/009/2002 published May 2003

[22] Paragraph 33 & 34

[23] Taken from the DfT report of Road Accidents in Great Britain2000, published September 2001

Additionally, the Association of Chief Police Officers, Terrorist and Allied Matters (ACPO (TAM)) was approached in November 2003[24] to seek their agreement to CR. ACPO (TAM) sought the views of all the UK's Chief Constables for CR on the public highway, and the potential impact on Home Office/Scottish Police Force support to the convoy whilst in transit during the hours of darkness. They supported the line that there was less traffic at night, and that in the event of an accident leading to a release, imposition of sheltering would be made easier, since a large part of the population would be indoors, no schools would be open, and the majority of offices would be shut down.

The move to CR was discussed at the January 04 meeting of ACPO(TAM) where it was agreed to engage in consultation over the new policy. In April it was confirmed that ACPO (TAM) was in agreement with the need to change procedures to allow 24 hour movement of nuclear convoys, and a revised policy document, "Transportation By Road Of Nuclear Weapons and Special Nuclear Materials" was disseminated by ACPO(TAM) to all Home Office and Scottish police forces in April 2004.

In summary, running in daytime and at peak traffic times increases the probability of an accident, but the consequences would be less severe because of reduced road speeds. Running in the hours of darkness reduces the probability of an accident, but the potential consequences could be more severe than daytime because of the increased road speed, due to less congestion. However, Stage 1 approvals limits the road speed of the convoy to a level that in the most severe road crash condition, the TCHD design, and the TCA packaging should mitigate a radiological release. In the extremely unlikely event of a radiological release at nighttime, a large proportion of the local population would already be in shelter. From the above it is considered that running in the hours of darkness is no less safe than running in daytime.

f. *Review policy for compliance with the Drivers Hours Regulations for operations conducted in hours of darkness.* – In conducting operations D NM&NARG always comply with the requirements of JSP 341 which, with regard to driver and duty hours, is currently more onerous than EU legislation. At no time during normal CR operation will driving hours be planned to exceed JSP 341 requirements. During the demonstration run on 25/26th November the total duty time for convoy personnel exceeded the 12 hours limit laid down in JSP 341 when measured from the time that personnel left their [redacted] (S. 31) accommodation [redacted] (S. 31) to arrival at the terminus after the convoy had secured. It is questionable whether the travelling time between [redacted] (S. 31) and the CCL should be classed as duty time, as well as the time from when the convoy arrives at the Terminus to personnel arriving at their [redacted] (S. 31). How this time should be counted is still under review with JSP 341 sponsors and MoD legal representatives. However, total driving hours did not exceed [redacted] (S. 26/31) hours and were well within JSP 341 regulations and EU legislation.

g. *Amend planning procedures.* - A comprehensive list of amendments to documentation was completed as part of the project management plan. Key documents amended being JSP 483 Volumes 2 and 3, AWE Transport Management Control SOPS, MDP Task Control SOPS, MDP COPS, to take account of timings,

[24] WSA/DNM/156/66/1 dated 24 November 2003

continued use of staging posts and the use of CCLs, early deployment of the relief team to allow adjustment to body rhythm etc. Welfare of personnel was raised, primarily about sustenance, but provision has been made for food availability after the CCL, and staff also take their own sandwiches. An issue still being addressed is keeping food fresh during the hot summer months. This is not a nuclear safety issue, and is a problem for staged running as well as CR.

h. *Amend operating procedures to reflect change to operations.* – Continuous running has necessitated a review of a range of documentation, e.g. JSP 483 Volumes 2 and 3, OP TASMAN, TMC & TC SOPs; MDP COPs, AWE Work Instructions, DNM&NARG Work Instructions and SOPs. A complete listing of affected documentation is attached at Annex.

i. *Assess access and working arrangements for sites involved with the control and operation of the convoy.* – The currently approved CCLs have been visited and assessed in accordance with JSP 483 Volume 2 and the proposed changes to JSP 440 Supplement 1. Site Security Plans address the interfaces between the lodger unit and convoy personnel, and the detailed responsibilities of FPGRM and MDP. All new routes have been assessed by the MDP Routes and Survey Group in accordance with JSP 483 Volume 2. DNM&NARG hold an up-to-date list of approved routes, and all routes are re-surveyed annually. [redacted]. (S. 26/31)

j. *Review of Emergency Response arrangements with respect to increased probability of call out during silent hours and feasibility study for carrying out actions with reduced visibility.* – Both D NM&NARG and AWE have adapted their SOPs, WIs, and roster system to provide appropriate NARO coverage. Manning levels within the Special Safety Cell (SSC) at Ensleigh remain unchanged, with a shift system in place for CR, ensuring that the requirements laid down in JSP 471 (e.g. in relation to transmission of Instructions In Writing to the Police) can be met within prescribed PI time scales.

ROUTE SAFETY

15. All routes are surveyed by the MDP SEG routes and survey team who are all SQEP to undertake the tasking. The routes are reviewed on an annual basis. Only routes approved by DNM&NARG will be used, and their currency is checked as part of the movement authorisation process. A number of additional routes have been identified and brought in to use as a result of CR. This includes access routes into the CCLs from the main trunk roads, together with the [redacted]. (S. 26/31) Additional rest break areas in the SW of Scotland are under review with the Scottish Police and DfT's Highways Agency.

TRAINING

16. A training review group comprising MDP, RM, AWE, and D NM&NARG staff assessed what changes were needed and updated the Convoy Personnel Training and

Competency System (CPT&CS) manual. The new modular training methodology has been in use, successfully, since July 2004. It includes night time operations and emergency response. The change was supported by a DNM&NARG Change Proposal form[25] and was published in November 2004[26].

SAFETY CASES

17. Since the CR hazard and risk analysis was conducted in January 2004, DNM&NARG have produced a modern Safety Case for the Transportation of Nuclear Weapons[27]. In preparing the Safety Case, the fault tree analysis took account of CR. The Safety Case identifies full Lines Of Defence (LOD) for the NW design and manufacture (based on Stage 1 approvals, but not yet re-substantiated by NW IPT), the AWG 516 (the TCA), and a partial LOD for the TCHD Mk 2. Conditions and Limits of Operation are defined, and these criteria remain the same for CR as for staged running. Therefore, from a nuclear safety perspective, there is no change or degradation of the current approved arrangements.

18. AWE have also revised and re-issued their Safety Justification for the provision of specialist assistance and maintenance to the NW road convoy.[28] It addresses the health, safety and welfare of personnel in the provision of the NW convoy service.

19. A full risk assessment is contained in NM & NARG's operational safety case. It states that the relevant BSLs are given in the NW SPSCs, and indicates the percentage of the BSLs for yield, worker risk, and the public frequency BSLs for the various consequence bands, taken up by the estimated risk (frequency in the case of public) in each case.

20. The inadvertent yield criterion is a single BSL criterion of 10^{-8} y^{-1} from the NW SPSCs. The overall frequency of an inadvertent yield is 2.4×10^{-9} y^{-1}, i.e. 24% of the BSL. The key fault contributors to the overall frequency are vehicle accident in the event of multiple failures of LODs, due to the predominance of vehicle accidents, and aircraft crash, as the NW may not retain its SPS nature. As discussed in the full safety case document there are considered to be no additional protective measures that would reduce the frequency associated with these faults.

21. The public risks detailed in the table below are all below the applicable BSO levels and are therefore judged to be acceptable. In the 10-100 mSv category the risks are well below the BSO. The risk in the 1-10 mSv category is 1.7% of the BSO and this is mainly due to the risks from vehicle accidents as discussed in the safety case. The risk in the 1-10 Sv category is 23% of the BSO, predominantly due to the risk from an aircraft crash.

Consequences	Frequency (y^{-1})	BSL (y^{-1})	BSO (y^{-1})	% BSL	% BSO
0.1-1 mSv	N/A	10^{-1}	10^{-4}	N/A	N/A
1-10 mSv	1.7×10^{-7}	10^{-2}	10^{-5}	1.7×10^{-3}	1.7
10-100 mSv	N/A	10^{-3}	10^{-6}	N/A	N/A

[25] NM 88/1/1/06 – Change Proforma for the Introduction of Modular Training
[26] NM/127/3 dated 8 November 2004 - Convoy Personnel Training & Competence System Issue 6
[27] NM&NARG Operation Safety Case for the Transport of Nuclear Weapons 2004 – EEUK/200426.03
[28] AWE/COM/2004/856 Issue 2 dated 18th November 2004

Consequences	Frequency (y^{-1})	BSL (y^{-1})	BSO (y^{-1})	% BSL	% BSO
0.1-1 Sv	N/A	10^{-4}	10^{-7}	N/A	N/A
1-10 Sv	2.3×10^{-9}	10^{-5}	10^{-8}	2.3×10^{-2}	23
>10 Sv	N/A	10^{-6}	10^{-9}	N/A	N/A

For the workers, the individual risk of death criteria is 10^{-4} y^{-1} BSL, 10^{-6} y^{-1} BSO (taken from the NW SPSCs). The individual risk of death is 1.7×10^{-7} y^{-1}, i.e. 17% of the BSO and 0.17% of the BSL. It can therefore be seen that the BSO is not exceeded and the risk is therefore judged to be acceptable in line with the NW SPSCs. As explained in NM&NARG's operational safety case, the key risks to operators arise from vehicle accidents, in particular a collision between a TCHD and a fuel tanker.

SERVICEABILITY OF THE NUCLEAR CARGO

22. The Trident RBA Environmental Definition Document states the criteria within which the Trident RBA is to be maintained during transport. The move to CR will not alter the temperature, humidity, vibration, time in transit or shock parameters laid down in the EDD, and therefore it can be concluded that there is no degradation in serviceability as a consequence of CR.

VEHICLE IDENTIFICATION

23. [redacted] (S. 26/31) are fitted on the front of the TCHD trailer and [redacted] (S. 26/31) are applied to the rear of each to aid identification in the hours of darkness. [redacted] (S. 26/31)

EMERGENCY RESPONSE ARRANGEMENTS

24. It should be recognised that the Immediate Response Force (IRF) associated with the NW convoy has always had the capability to undertake IRF activities in the hours of darkness. However, acknowledging that this was an area less well practised, a review of the changes that would be required was undertaken and the following areas were addressed.

25. IRF Capability – The essential elements of the convoy operation remain in place regardless of the move to CR. A review identified that additional lighting was required to enable repairs and the IRF to operate more effectively in the dark. These lights have now been procured, and travel with every convoy. NW Convoy training has been undertaken over the past 9 months to ensure that the IRF can operate in the hours of darkness. An unassessed NARO Standardisation exercise was held on the evening of the 24th February 2004 to assess the IRF's capability to respond to an accident situation in the hours of darkness. This was conducted in accordance with the procedures in place for the conduct of a Nuclear Accident Response Organisation Standardisation Team Inspection (NST). Participation by the Essex Civil Emergency Services occurred. This exercise was assessed

formally by the staff of D NM&NARG and a report[29] was issued. All actions arising from this report have been cleared. This activity, coupled with the inclusion of additional NARO night training modules in the quarterly NW Convoy training weeks, has demonstrated that the IRF has the capability to conduct emergency operations in the hours of darkness within the PIs defined in JSP 471.

26. Civil and Emergency Services - Arrangements in the Hours of Darkness – The ACPO (TAM) assessment of the change in procedures addressed CES activity in the hours of darkness. It was acknowledged that in the unlikely event of an accident, the initial CES response could be smaller during the hours of darkness, but it was also recognised that fewer members of the public would be about during these periods, and traffic is far less dense. This would make the issue of shelter and traffic control more easily achievable.

27. Use of Crew Change Locations (CCL) – Emergency procedures at CCL are contained within the Site Specific Plans. The current convoy procedures for the CCL activities are very similar to those already in place for the convoy arrival/departure from a Staging Post. The Command and Control arrangements are clearly defined as is the handover of TACOM from one Cvy Cdr to the other. These arrangements have been regularly practised and have been the subject of a recent Documentation Review and audit.[30]

28. HCMF – Agreement has been reached that the HCMF will "shadow" the convoy going north, staying at an appropriate mid-point on the route, so that they will still be able to achieve their agreed performance indicators.

29. Special Safety Cell – As the duration of the convoy move will extend to approximately 24 hours, additional staff within D NM&NARG are being/have been trained to assist in the staffing activities. The training of the additional staff has concentrated upon the Emergency Procedure role in order that the performance indicators associated with Public Protection Measures can still be achieved within the required time scales.
D NM&NARG has also instituted a system whereby a Senior Operations Officer, suitably qualified and experienced, will be in office monitoring the move and capable of initiating the Operation BANKNOTE response throughout the period of the movement.

30. Operation BANKNOTE – Op BANKNOTE is currently a 24-hour system and procedures remain in place to activate the system in silent hours.

31. AWE Task Management Control – AWE has confirmed[31] that sufficient trained and qualified staff will be available in office during a continuous run.

32. MDP Task Control – CCMDP has confirmed[32] that sufficient trained and qualified staff are available to undertake a continuous run.

33. Local Authority Emergency Services Information (LAESI) Document – DS&C ADNAR will be re-issuing the LAESI document. This new issue clearly identifies that NW convoys will be moving through more Local Authority and CES areas than had previously been the

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[29] D/NM/25/1/3 dated March 2004
[30] D/NM/AQM/427/42 dated 16 November 2004
[31] E mail AWE /DNM & NARG 08:51 6 December 2004
[32] Discussion [redacted] (S. 40) MDP/[redacted] (S. 40) DNM & NARG 6 December 2004

case. It should be noted that all the additional NW convoy routes identified are currently in use for the movement of Special Nuclear Materials Convoys. The Local Authorities and Civil Emergency Services involved are therefore accustomed to the movement of Defence Nuclear Material through their areas.

CONCLUSION

34. The acceptability for undertaking CR operations is based on the following conclusions:

a. The packaging, consignment, movement authorisation and mode of transport remain the same for CR as current operations.

b. The risks associated with the operation are controlled through the use of systems and procedures that have been demonstrated to be ALARP.

c. Personnel Hazards identified have been mitigated or are ALARP.

d. Appropriate training and qualification packages have been put in place in recognition of the CR operation.

e. Contingency plans for on-road incidents/accidents involving a laden TCHD are covered by NARO response procedures and supported by the Civil Emergency Services.

35. From the above it is concluded that CR presents no greater risk to the public or personnel, above that for the current staged running NW convoy operation. Nuclear safety risks are tolerable and ALARP, when balanced against the strategic imperative to move Nuclear Weapons and the concomitant security requirements.

RECOMMENDATION

36. The OMSC is invited to approve this submission prior to the document being presented to the NSC to note at their next meeting on 19th January 2005.

Annex to
NM/88/1/1
Dated 7 Dec 04

DOCUMENTS AFFECTED BY CONTINUOUS RUNNING

ACPO (TAM) "Transportation By Road of Nuclear Weapons and Special Nuclear Materials"

AWE :
AWE Transport Management Control SOPs
AWE Work Instructions

MDP :
MDP COPs
MDP Task Control SOPs
MDP TSP Plans "M" / "W"

DNM & NARG :
0201 Accident Response Commitment Register
0303 Convoy Tasking – RLF
0304 Tasking – Special Assignment Airlift Mission
0305 Tasking - RAF STOCEN – monthly notification
0306 Tasking – RAF STOCEN – Hospital Monitoring Teams
0307 NW & SNM Convoy Operations – Live / Non Live
0309 Convoy Operations – Communication Codes
OP KELSTERN
OP TASMAN
JSP 440 Supp 1
JSP 483 Vol 2 Issue 4
JSP 483 Vol 3
CCL / TSP Site Security Plans
CPT&CS Manual

FPGRM :
OP DANSK

Enclosure J(i)

GLOSSARY OF ACRONYMS AND ABBREVIATIONS USED IN THE SAFETY STATEMENT FOR THE MODIFICATION OF THE NUCLEAR WEAPON CONVOY TASK TO CONTINUOUS RUNNING

ALARP – As Low As Reasonably Practicable

AWE – Atomic Weapons Establishment

BSL – Basic Safety Limit

BSO – Basic Safety Objective

CCMDP – Chief Constable Ministry of Defence Police

COPS – Convoy Operating Procedures

D Def Sy – Director Defence Security

DLO PSyA – Defence Logistics Organisation Principal Security Adviser

DMB(N) – Defence Management Board (Nuclear)

DNM & NARG – Directorate of Nuclear Movements and Nuclear Accident Response Group

EDD - Environmental Definition Document

ESTC - Explosives Storage and Transport Committee

FPGRM – Fleet Protection Group Royal Marines

HCMF – Health Control and Monitoring Force

HOTAC – temporary accommodation for convoy crews

JSP – Joint Services Publication

MDP – Ministry of Defence Police

NARO – Nuclear Accident Response Organisation

NSC – Nuclear Safety Committee

NW IPT – Nuclear Weapon Integrated Project Team

OMSC – Operational Management Safety Committee

RNAD – Royal Naval Armaments Depot

SOPS – Standard Operating Procedures

SPS – Single Point Safe

SPSC – Safety Principles Safety Criteria

SQEP – Suitably Qualified and Experienced Personnel

TC – Task Control

TMC – Transport Management Control