

# DEFENCE NUCLEAR ENVIRONMENT AND SAFETY BOARD

## 2010 ASSURANCE REPORT<sup>1</sup>

### OVERVIEW

1. My assurance report from the Defence Nuclear Environment and Safety Board (DNESB) covers the calendar year 2010. The DNESB oversees nuclear and radiological safety and environmental protection in the defence nuclear programmes. This report presents a summary compilation of assurance gathered principally by the independent Defence Nuclear Safety Regulator (DNSR) together with comment provided by relevant statutory regulators: the Health and Safety Executive's (HSE's) Nuclear Installations Inspectorate (NII), the Environment Agency (EA) and the Scottish Environment Protection Agency (SEPA); its conclusions have been noted by implementers brigaded under Director Submarines (DSM), Chief of Materiel (Fleet) (CoM(F)) and Navy Command (NC).

2. Looking ahead, particularly this year in the context of the Strategic Defence & Security and Comprehensive Spending Reviews, I consider that **adequacy of resources**, both money and staff complement, and the maintenance of a sustainable cadre of **suitably competent staff** (Royal Navy, MOD civilians and in industry partners) to be the principal threats to safety in the defence nuclear programmes in the medium term.

### ASSURANCE ASSESSMENT

3. DNSR (with input from statutory colleagues) has assessed that those responsible for the Defence Nuclear Programmes (DNP) have maintained an acceptable standard of nuclear and radiological safety for the submarine crews, the workforces, the public and the protection of the environment. The demonstrability of this performance to accepted good practice is sound in many aspects of the DNP, but continues to need improvement in others. Whilst there have been initiatives that prospectively resolve some long-standing issues (eg. in relation to decommissioning strategy), implementers will need to sustain priority for these initiatives over a period of years (in most cases) until they deliver benefits; this will not be easy within projected defence resources.

4. On the basis of the assurance provided and through dialogue with the dutyholders, I am satisfied that an acceptable standard of nuclear and radiological safety and environmental protection has been maintained in the operation and delivery of the DNP. Behaviours are generally appropriate, and are underpinned by effective systems for safety and environmental protection. But there are a number of issues which present risks to compliance, or to demonstrability of compliance, with SofS's Policy Statement on Safety, Health and Environmental Protection and which the Department should therefore regard as potentially significant risks to its programmes. I judge that a rating of **substantial assurance** can be provided, although my confidence in making this judgement is reduced from 2009 due to the adverse trend in resources (which I expect will become yet more painful), further aggravated by constraints on regulatory capacity.

### ISSUES & RISKS

5. Progress has been made in addressing all the key issues presented in the 2009 Report, most of which are challenging and long term issues. One issue from last year no

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<sup>1</sup> This report is for the Defence Environment and Safety Board (DESB); it is also provided for the Defence Nuclear Safety Committee (DNSC) and the Defence Nuclear Executive Board (DNEB).



longer appears<sup>2</sup>; it is being managed as normal business. The eight that remain have been updated to reflect the progress that has been achieved or the way the Issue has migrated; the risk rating has been adjusted accordingly.

6. The eight *Issues* are presented in the table below, in which *Regulatory Risk* is to be interpreted as the risk to:

- a. Protection of the workforce, the public and the environment; or
- b. Compliance with SofS's Policy Statement in respect of relevant legislation, government policy or MOD requirements (as expressed in JSPs); or
- c. The demonstrability of such compliance.

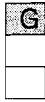




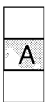
*Current Status* describes the likelihood of regulatory action prior to the *Suggested Strategies and Controls* being implemented. A red (high) *Current Status* suggests that significant action might be necessary within a year; amber and green risks have commensurately longer realisation periods. Arrows indicate whether the *Current Status* is assessed to be improving ↑, degrading ↓ or remaining steady →. The level described by the *Current Status* is a judgement of significance within the DNP; no attempt has been made to calibrate this against the levels of risk in other safety environments.

7. **Individually, none of the Issues reflect an immediate safety or environmental concern<sup>3</sup>**; they all represent a potential compromise to compliance or the demonstrability of compliance or associated processes. Taken together they pose the risk that it will become increasingly difficult to maintain that the defence nuclear programmes are being managed with due regard for the protection of the workforce, the public and the environment.

Issue	Regulatory Risk	Suggested Strategies & Controls	Owners & Managers	Current Status
<p><b>1. Adequacy of Resource</b>  <i>2009 Issue No 1 updated.</i>                      Lack of adequate resource to deliver the defence nuclear programmes safely.                      (Para 9-12)</p>	Risk to compliance with MOD policy (JSP815) and JSPs 518 & 538.	a. Identify organisational baselines and essential level of resource required to fulfil safety responsibilities, using best practice and guidance. b. Compare with existing level of resource and where necessary seek appropriate additional resource.	<u>DSM, CoM(F) &amp; NC</u>  Managers - Authorisees	
<p><b>2. People</b>  <i>2009 Issue No 2 updated.</i>                      Measures already in hand may be insufficient to address the present and predicted shortage of NSQEP in the Royal Navy, among MOD civilians and in defence contractors.                      (Para 13-18)</p>	Risk to the protection of the workforce & to compliance with JSPs 518 & 538.	a. Continue to implement present initiatives. b. Make the Clyde development panel work. c. Consider crown control and industrial sustainability in outsourcing decisions.	<u>DSM, CoM(F) &amp; NC</u>  Managers – DSM, NC & Authorisees	

<sup>2</sup> Explanation for its removal is provided in the commentary below.

<sup>3</sup> In general in this report the term "safety ..." can be taken to include matters affecting the environment since the measures to achieve protection of both are often similar.

Issue	Regulatory Risk	Suggested Strategies & Controls	Owners & Managers	Current Status
<b>3. Front Line Responsibilities.</b> <i>2009 Issue 3 updated</i> Navy Command is in control of submarines "at sea" but is not the authorisee. (Para 19-20)	Risk to demonstrable compliance with legislation and Defence Policy	a. Investigate migration of the authorisation for submarines "at sea" to NC from CSSE (weapons) and NP (propulsion). b. Integrate developing thinking from Haddon-Cave Duty-Holder workstream.	<u>NC</u>  Managers – NC, NP-Hd, CSSE	
<b>4. Safety Case Improvement and ALARP Demonstration</b> <i>2009 Issue No 4 updated.</i> The development of safety analyses for the plant and weapon by Approving Authorities and the use of these analyses by Authorisees in their safety cases is inconsistent. (Para 21-23)	Risk to demonstrable compliance with legislation.	a. Continue the development of reactor and weapon safety analyses. b. Integrate these analyses into facility activity safety cases. c. Use these safety cases to demonstrate ALARP.	<u>DSM &amp; CoM(F)</u>  Managers – Authorisees & Approving Authorities	
<b>5. Control of Work</b> <i>2009 Issue No 6 updated</i> The number of events remains too high. (Para 24)	Risk to the workforce and public safety and to the environment, in both short and medium term.	a. Maintain current momentum in identifying and implementing best practice at all sites. b. Continue the momentum in addressing safety culture.	<u>DSM, CoM(F) &amp; NC</u>  Managers - Authorisees	
<b>6. Co-operation</b> <i>2009 Issue No 7 updated.</i> Co-operation between Authorisees and between Authorisees and Approving Authorities needs to be improved & formalised. (Para 25)	Risk to compliance with JSPs 518 & 538	a. Develop and agree documented arrangements between Authorisees. b. Develop and agree documented arrangements between Authorisees and Approving Authorities. c. Provide compliance statements for FAC1 (Duty of Co-operation).	<u>DSM, CoM(F) &amp; NC</u>  Managers – Authorisees & Approving Authorities	
<b>7. Decommissioning &amp; Disposal.</b> <i>2009 Issue No 8 updated.</i> Funding has not been allocated to achieve the developing Decommissioning & Disposal Strategy. (Para 26-27)	Risk to meeting government policy.	a. Allocate funding to meet the decommissioning liabilities declared in the MOD accounts. b. Continue pilot submarine dismantlement. c. Continue to develop the Decommissioning & Disposal Strategy.	<u>DSM</u>  Manager – DSM/STL	
<b>8. Future SSBN.</b> <i>2009 Issue No 9 updated.</i> Regulatory visibility of reactor design safety management arrangements is not adequate. (Para 28)	Risk to intrinsic safety of reactor and to compliance with JSP518.	Provide adequate visibility of reactor design arrangements to DNSR.	<u>DSM</u>  Manager – NRPA Approving Authority	

## PROGRESS & SUCCESSES

8. In 2010, those responsible for implementing the nuclear programmes have:
  - a. maintained Continuous At Sea Deterrence (CASD) despite increasing pressures on manpower and [REDACTED];
  - b. safely delivered the required (albeit reduced) military capability from the Submarine Arm despite reduced platform availability;
  - c. commissioned HMS ASTUTE, the first new SSN in the fleet since 1991;
  - d. safely maintained the required operational outputs of the nuclear weapons programme;
  - e. brought into being a dedicated Career Management Team for nuclear suitably qualified and experienced MOD civilian staff;
  - f. developed and implemented Submarine Peer Review of Safety Culture through Control of Work across the Submarine Enterprise;
  - g. achieved Investment Approval & Defence Boards' agreement at Initial Gate to the Future SSBN incorporating PWR3.

## ISSUES & COMMENTARY

9. **Adequacy of Resource.** The risk resulting from inadequate resource in the DNP has become an Issue demanding much management attention in the last couple of years. The DNSC's principle recommendation from 2009 also focussed on the resource issue to complement a long-running recommendation on Suitably Qualified and Experienced Persons (SQEP). In the current context, the resource Issue is primarily focussed on the number of funded posts in internal MOD organisations (including the regulator), but it also applies to the level of contract funding (and hence the resource available to industry partners) that delivers safe operations (an indication of the difficulties is discussed under "Control of Work" – para 24) and equipment designed for optimum safety. Inadequate resource can undermine the timely provision and analysis of evidence to support safety submissions<sup>4</sup>; readiness and availability may be lost as a result or in attempting to maintain these, safety considerations may suffer. It should be said that there is, as yet, little or no evidence of the latter, but the implementers are acutely aware that they are currently delivering only at the minimum end of the capability requirement.

10. In July I wrote to the Members of the DNESB (copied to all authorisees in the DNP) urging that work be expedited<sup>5</sup> to develop robust organisational baselines (which adequately justify the resource available to each authorisee to deliver safely). Attached to my letter was the relevant extract from the Nuclear Industry Code of Practice (NICO<sup>6</sup>) – *Nuclear Safety Capability: Nuclear Baseline & Organisational Change*. Follow up work by DNSR (particularly with MOD authorisees) has confirmed an encouraging use of the NICO<sup>6</sup>, but perhaps inevitably, the inadequacy of a number of baselines has been

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<sup>4</sup> There is evidence across the DNP of extended timescales to respond to regulatory findings and requests.

<sup>5</sup> Progress has been variable with excessive focus on process at the expense of delivery.


<sup>6</sup> Being consistent with the non-prescriptive principles of nuclear regulation in the UK, the NICO<sup>6</sup> is owned by duty-holders, but it was developed with the active encouragement of NII and DNSR.

revealed with new clarity. In the case of the Naval Reactor Plant Authorisee, and as presaged last year, earlier inspections had caused the generation of a Safety Improvement Notice titled "Organisation for Delivery of Nuclear Safety by the Approving Authority Role"; there has been an active response which aims to conclude in February to enable the Notice to be withdrawn.

11. Work preceding the announcements of the Strategic Defence & Security and the Comprehensive Spending Reviews (SDSR & CSR) in the autumn produced some high-level programme changes for the DNP and incorporated a Value for Money study for the deterrent. The principal effect is to delay in-service dates for next generation deterrent by extending current systems; this will present safety justification challenges (see below), but the essential capability of the DNP is to continue. What is less clear at the time of writing is the pressure that may result from the declaration of reductions in the MOD workforce by 17,000 military and 25,000 civilian personnel, but it would seem unlikely that the DNP will be exempt from an expectation of "efficiencies". Initial indications are of an aspiration for 25% savings in operating costs; this is obviously pulling in an opposite direction to the current shortfall in resource; managers in the DNP will need to establish the most robust baselines possible and defend them rigorously.

12. While there are encouraging signs that resource requirements are being better defined and justified, this has only helped to confirm last year's judgement that some areas were barely resourced to deliver their outputs (including safety). The countervailing pressures to reduce defence resources are still apparent and the status of this issue must remain at Red, but now getting progressively worse rather than being steady.  
(Issue No 1 continues)

13. **People.** The market place for nuclear competent people has changed little in the twelve months since the last report. The incoming government reviewed plans for new nuclear generating capacity and has recently confirmed this approach and the changed arrangements for regulation<sup>7</sup> that complement it. At the same time, a public sector pay freeze will apply for at least the next two years. This will only increase already apparent pressures on defence employers (Royal Navy, MOD civilian and industry partners) in maintaining adequate numbers of people to populate their organisations (which generally require greater numbers as the baseline analyses are demonstrating).

14. Whilst the overall strength of the RN is healthy (0.7% shortfall, attributable to low outflows and a recruiting surge), there are shortages in specific key specialisations and ranks/rates. Within the submarine engineering specialisations there are particular difficulties in growing and retaining sufficient SQEP. 

15. There has been better visibility of the DNP Human Resources Study and of the audit (conducted by Defence Operational Capability) of progress, a year on, in implementing its

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<sup>7</sup> Rewards for staff in the statutory regulator are approximately two grades ahead of MOD civilians.

<sup>8</sup> The long term management and retention of MESM Officers and Senior Rate Nuclear Watchkeepers is also the subject of a separate AFPRB 11 submission.

recommendations<sup>9</sup>. The graduate and apprentice group continues strongly and the introduction of development posts has added much-needed flexibility. Whilst welcome, it is recognised that this addresses predominantly the junior and training end of the cadre. It will take some years of development and retention to fill the key middle management roles where the current gaps are apparent and external recruitment constraints (the routine consequence of workforce reductions) will make it difficult to balance the cadre in the meantime. The NSQEP Career Management Team (CMT) has made an energetic start to its operations; getting to know the MOD civilian community as personnel managers and better identifying the true membership of the cadre. A stabilisation package for the workforce at the Defence Academy's nuclear department (SULTAN) has been implemented and others may follow. There are constraints in its delegation (eg. in respect of promotions); nor does the NSQEP tag (to post or person) provide routes around other management controls (eg. on headcount in DE&S operating centres – see also para 34 below).

16. That said, the current position for MOD civilian NSQEP complement is more complex, but possibly less concerning than previously reported. Shortfalls had been based on vacancies, but there is now a better and still evolving understanding of the actual requirement. Whilst it is not possible to provide an exact figure for the shortfall between requirement and complement, it is considered to be less than the 14% reported last year.

17. At the same time Clyde Naval Base is to make reductions in its MOD workforce (by further outsourcing to industry), not least because of the difficulties experienced in sustaining numbers. At Clyde's suggestion (and with strong regulatory support in permissioning organisational changes) an enhanced development panel is being introduced which will need to ensure the sustainability of the remaining MOD structure. As both the Haddon-Cave report and the case for changes at Clyde have demonstrated, MOD has an inalienable responsibility to manage or oversee defence activities properly with its own people, at least part of this being the exercise of control by crown servants to maintain Secretary of State's ultimate authority to deploy defence assets (notably at Clyde, deterrent patrols).

18. The working assumption at Clyde, [REDACTED], is that industry partners can exercise greater flexibility in employment conditions which helps to solve the sustainability issue. For the present it does appear that industry is better placed than MOD in respect of maintaining adequate SQEP, but it must be questionable how long such an assumption will be valid, given the pressure on Tier 1 contractors evident in the CSR. This Issue has carried a Red risk rating since the 2008 Report; mechanisms have been put in place to correct the deficiencies (suggesting an improvement), but they have yet to deliver against a background that is no easier.  
(Issue No 2 continues)

19. **Front Line Responsibilities.** This topic was first raised to an Issue last year having been addressed in previous reports. It was accepted that the priority for NC was to address 1SL's "submarine safety argument" and the expectations of the Operating Authority in compliance with JSP430. Some limited work has been conducted between CSSE and NC in the nuclear weapon context (Life Cycle Phase 4), but greater effort was

<sup>9</sup> [REDACTED]

needed to refresh compliance with Authorisation Conditions as a precursor to considerations of transfer. The outcomes from Wider Aspects (ie. beyond the aviation domain) studies resulting from the Haddon-Cave review are likely to reinforce the need to raise the priority of resolving the Issue if the nuclear domain is not to lag seriously. Work to give precision of responsibility and authority to key Duty Holders and to clarify scope and ownership of safety cases focuses clearly on those conducting defence activities<sup>10</sup>. A current revision of JSP430 is incorporating this thinking, emphasising the misalignment of maritime and nuclear safety responsibilities in the operation of submarines at sea. The current development of the Naval Safety Improvement Plan should enable NCHQ to focus more clearly on being the Operator responsible for the safety of submarine activities, at sea.

20. It is of note that instinctive behaviour is better aligned with the thrust of this Issue than formal authority. DNSR issued a direction to improve the management of operational berths in May; the work necessary is almost solely a matter for NC and the regulatory dialogue is with them.  
(Issue No 3 continues)

21. **Safety Case Improvement and ALARP Demonstration.** This has been an Issue since the 2005 Annual Report, and it is, therefore, clear that resolution remains intractable. A focus throughout this period has been on the benefits to be gained in improved demonstrability of safety from the proper integration of reactor and weapon safety analyses (the responsibility of approving and design authorities) with facility and human factors information to form the safety case for activities (the responsibility of authorisees). For the propulsion programme, the “shut-down safety analysis” has yet to be formally approved by NRPA, and though authorisees have made some use of preliminary information the expected benefits have to be realised. The through-life analysis for Core H in PWR2 has yet to be completed as priority has been given to work on Future SSBN; it has been made clear that this an essential requirement for ASTUTE Boat 4. There has been some encouragement in the adoption of a clear safety architecture for the warhead modification programme, but delays (from other causes) are likely to mean that delivery of safety cases conforming to the new architecture (including, for example, clear statements on conditions and limits of safe operation) is some few years away.

22. Prompted not least by a DNSC recommendation, the DNP has been wrestling for some time with concerns over risks of different natures that are inherent in the deterrent programme. A perception was that nuclear safety was given greater attention than explosive or maritime safety considerations; was it possible to say that the right balance had been struck so that the risk (eg. to the submarine crew) had been reduced so far as is reasonably practical from all hazards? My predecessor, (as chairman of both DNESB and SESB) RAdm Nigel Guild, was commissioned to provide an expert opinion on how duty-holders could best manage their responsibilities in this respect. His report published in September suggests some key principles about writing a plain language summary in a safety case and the use of a common currency (the risk of death) for all consequences. Although it has won general acceptance for a direction of travel over the next decade, it will require some changes of approach particularly for the maritime and explosive communities who have not traditionally expressed risk in this way. The adoption of a federated safety architecture for the Future SSBN is a welcome start in the direction.

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<sup>10</sup> It equally clarifies the responsibilities of DE&S Project Teams in respect of the acquisition and support of defence equipment.

23. The extended development timescales for the future deterrent (especially the warhead) will present the DNP community with a challenge in demonstrating, when designs are finally completed, that their intrinsic risks at that time have been reduced so far as is reasonably practicable. Credible and practicable technologies exist, or could be readily developed, today which could improve on current designs. There will need to be programmes that keep these technologies in being (and further develop them) so that they are available for incorporation at the appropriate time. In the meantime, arguments will need to be articulated to justify the continuing “ALARP” status of current equipment in the absence of new developments. Plans for VANGUARD class life extension will particularly need to address the maintenance of the reactor plant safety justification as “ALARP” to the end of required life.

(Issue No 4 continues)

24. **Control of Work.** Most DNP authorisees (or their superior organisations – eg. Navy Command’s Navy Safety Improvement Programme) have introduced safety culture initiatives and continue to reinvigorate them at suitable intervals. These are of real value, but the difficulty of improving control of work and the time it will take for the correct behaviours to be imbued in workforces is demonstrated by continuing incidents. The most significant of these led to the extended operation of two SSNs with a disabled primary safety system on a nuclear safety implicated pressure system (hull valve blanks); DNSR (in agreement with NII) issued a Safety Improvement Notice jointly on Babcock Marine, Devonport Naval Base and the Naval Reactor Plant Authorisee requiring improvements in procedure to prevent recurrence. The response, when the incident was discovered, was well led from the top of the submarine enterprise with opportunities to share and learn from the experience not just in the organisations at fault. Actions to address the Notice were expedited, resulting in its withdrawal some three months later. The “safety stand-down” approach adopted has been demonstrated to be an effective tool used with benefit on other occasions. The Submarine Enterprise Peer Review of Safety Culture through Control of Work has been implemented by licensees/authorisees based on the model sponsored by the World Association of Nuclear Operators. Reviews have been conducted at Clyde, AWE, Rolls-Royce Derby, Barrow and Devonport (Naval Base & Dockyard). It is early in peer review programme and cultural change will take some time to be effected; continuous effort will be needed in all areas of the DNP to reduce the frequency and significance of incidents, and the must remain an Issue (at Amber rating) until there is evidence of success.

(Issue No 5 continues (2009 Issue 6))

25. **Co-operation.** Previous commentary on this Issue has been favourable in respect of behaviours between individuals whilst noting limited progress in documenting arrangements to ensure continuity when individuals change. This position has not changed, and formal co-operation meetings (authorisee-to-authorisee or similar), whilst nominally part of arrangements, are not consistently held. Two years ago, with the publication of revised issues of JSPs 518 & 538, Further Authorisation Condition 1 (Duty of Co-operation) was introduced to clarify regulatory requirements recognising the unique feature of the DNP that the principal equipment (reactor or weapon) moves between authorisees. No authorisee has yet provided a compliance statement for FAC1; DNSR inspectors will raise the priority of completing such statements during the coming year.

(Issue No 6 continues (2009 Issue 7))

26. **Decommissioning and Disposal.** DSM’s Decommissioning and Disposal Strategy continues to develop following last year’s ministerial agreement to ten principles; an Enterprise Through-Life Management Plan is in preparation to define responsibilities for liabilities management. A Strategy Development paper has been taken by DNEB and has



been reviewed by DNSR. The Strategy itself is due to be published, following regulatory engagement and stakeholder consultation in summer 2011. This Issue has been extant since the 2005 Report with the constant theme being the allocation of the funding necessary to meet the liabilities. As the SDP pilot adequately demonstrates (see below), the Issue is potentially exacerbated by SDSR / CSR considerations and the risk rating will continue at Amber until funding is established.

27. Seventeen submarines (increased by two in 2010) are now laid-up, awaiting decommissioning and disposal; six are still to be de-fuelled. The Submarine Dismantling Project (SDP) is progressing with a Strategic Environmental Assessment ahead of its Demonstration Phase which will involve dismantling at least one submarine to optimise the industrial process and support a robust business case for the long term dismantling solution.

[REDACTED]. Preliminary discussions with DNSR have explored options for transport of the radioactive arisings from the work.

(Issue No 7 continues (2009 Issue 8))

28. **Future SSBN.** The programme continues through the approval process including a review by IAB in November at which PWR3 was favoured as the choice of reactor; briefings (including on legal implications) were supported by both DNSR and NII. The approval process will continue through the Defence Board and across government. Safety architecture through the use of federated safety cases was the thrust of this Issue last year and there has been positive progress in addressing this concern. The emerging issue, as the concept phase nears completion and regulatory agreement to the transition to design is sought, relates to the safety management arrangements of the reactor designer (Rolls Royce). DNSR will agree the intrinsic safety of the design of this reactor, and this can only be done against confidence in the design arrangements. Guidance introduced in the update of JSP518 (see para 44 below) informs this.

(Issue No 8 continues but modified (2009 Issue 9))

29. **Performance Measurement.** As previously reported, the use of safety performance indicators (SPI) had been progressively embedded in the arrangements of defence licensees and naval base authorisees. Further progress has been made through the Submarine Safety Assurance Forum to develop and populate SPIs with relevance to project team business, and thus to authorisees and duty-holders in the Submarine Operating Centre. DNSR will continue to monitor application of SPIs and trends evident from them, using the information in the development of intervention strategies, but it is judged no longer necessary to track this as a DNESB Issue.

(2009 Issue No 5 concluded)

30. **Transport Packages.** Approval has been given for three packages including the new module container for reactor fuel. DNSR has also inspected consignment arrangements at NRTE Vulcan. Duty-holders at Rolls Royce and in AWE have provided information on their future requirements for such approvals and options are being considered regularise the workload of both duty-holders and regulator.

31. **Propulsion Programme Consolidation.** It has been announced that Clyde will become the sole base port for RN submarines from about 2017 [REDACTED]. This will have consequences for the arrangements at Devonport [REDACTED] and the regulatory community, led by DNSR, will need to engage on changes to the regulatory framework.

32. **Emergency Response.** The revised arrangements for response to a submarine reactor accident (including changed alerting information) have been integrated into both on-site and off-site plans (managed by local authorities) for the naval bases and two operational berths. Both Devonport (in Exercise SHORT SERMON) and Clyde have held successful demonstrations of the updated plans.

33. 20 nuclear accident response demonstration exercises were conducted in 2010 including the Grade A SHORT SERMON exercise. For the first time since 2003 US Forces participated in a demonstration of the response to the crash of a US Special Airlift Assignment Mission (Exercise ASTRAL BEND) which was preceded by a revision of the Integrated Joint Operating Plans. The demonstration programme provided confidence that emergency response is being generally maintained at an acceptable level, and given the churn in personnel, provided the live events which are essential and irreplaceable if defence duty-holders are to sustain this capability.

## REGULATORY ACTIVITY

34. **Organisation and resources.** DNSR is hosted in the DE&S TLB within the Director Safety & Engineering (DS&E) operating centre. However, I am established by delegation from 2<sup>nd</sup> PUS, as DNSR's sole customer and its source of delegated regulatory authority which thus guarantees DNSR's independence. The Regulator's professional strength was increased as a result of PR10 measures by 3 to 23 posts: three inspectors joined during the year and training to competence requirements remains a key obligation. However, two of the new posts (created in April) and one more recent (September) vacancy remain unfilled; all are NSQEP designated, and despite apparent exemptions, DE&S restrictions have effectively prevented DNSR recruiting; a further long-term sickness means that DNSR's actual complement at year end is 19. Whilst the level of churn is slightly below recent years, the overall staffing situation presents DNSR with considerable challenges in maintaining the necessary level of corporate competence.

35. The essential contracted support from Serco RSD and Dstl has been maintained,

[REDACTED] Based in Warrington and providing support to NII, [REDACTED]

36. **Activity Summary.** In regulating the defence nuclear programmes and seeking assurance about safety DNSR has:

- a. permissioned 42 (cf. 2006-9 average = 24) significant nuclear activities;
- b. reviewed at least 101 (154) documented safety submissions;
- c. conducted 97 (82) planned inspections (many jointly with NII) and 2 (7) reactive inspections and investigations in response to unplanned events;
- d. assessed 20 (15) emergency response exercises including SHORT SERMON and 2 (3) re-demonstrations;

- e. approved, as Competent Authority, 3 (5 in 2009) packages for the transport of defence nuclear materials;
- f. issued two Safety Improvement Notices (see paras 24 & 10 above);
  - one Notice was withdrawn on satisfactory conclusion of necessary actions;
  - one Notice remains (on NRPA in respect of organisational baselines);
  - one Notice remains from 2006 (on SW PT in respect of the air transport of highly enriched uranium loads)<sup>11</sup>.

37. Intervention strategies and plans for all authorisees have been further developed and updated in consultation where appropriate with NII which leads the process where the authorisee is also a licensee. A tiered structure of regulatory interface meetings is now more consistently applied with all of the duty-holders that DNSR regulates; where appropriate these include other regulators, both statutory and MOD.

38. **Freedom of Information.** Until earlier this year DNSR had routinely approached requests for release of its documents by applying for redaction of regulatory “findings” under the s36 exemption (prejudice to the effective conduct of public affairs). With the rejection of the public interest argument in a ministerial submission in March, the practice has changed, and DNSR no longer seeks to use this exemption. There has been a considerable increase in requests for information, letters to Ministers and Parliamentary Questions, to the extent that one member of the team is now occupied in servicing the demand almost full time. Media articles, including in national newspapers, have resulted.

39. **Joined-up Regulation.** At the suggestion of the DNSC, a new meeting has been instigated under the title “Defence Nuclear Programmes Regulators’ Forum” which seeks to improve the existing co-operation (noted in previous reports) between DNSR, the Naval Authority and the Chief Inspector Explosives (MOD). Further discussion is underway between Defence Security and DNSR in respect of enhanced mutual assurance: credit for existing security measures should be claimed in safety submissions and safety assessments could provide assurance of technical security measures. The collaboration between statutory nuclear safety and security regulators could provide an informative model.

40. **Independent MOD Regulation.** DNSR has actively participated in the (post Haddon-Cave) work requested by the DESB to explore the options for the future of MOD regulation and has shared its practices, developed over more than a decade, with the community. There would be advantages for DNSR in transferring into a “Defence Safety Authority” (the most likely option), and few, if any, difficulties in so doing.

41. **Office of Nuclear Regulation (ONR).** A review of proposals to create this new body (comprising NII and DfT’s radioactive materials team among others) was called for by the incoming government; this has confirmed the principle, but the exact status of the ONR has yet to be confirmed. Since there is no change proposed to the intent of the key pieces of legislation, there should be little impact on working relationships between DNSR and the statutory regulators with whom it works.

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<sup>11</sup> There has been no operational need to move such loads in the intervening period; equipment issues prevented the resolution of this issue in late 2010.

42. An Agreement between MOD and SEPA, under which a Memorandum of Understanding on nuclear / radiological environment regulation can be formed, has still to be concluded.

43. **Legislation and Regulatory Policy.** My remit to identify emerging legislation and standards relevant to the DNESB's domain is discharged through the collaboration between SSSC and DNSR in the (re-titled) Nuclear and Radiation Legislation Group (NARLG) which includes DSM staff. The Group will seek to have the appropriate influence on future UK legislation and departmental guidance, on EU directives and UN standards.

44. Amendments made to JSPs 518 and 538 were published in September at Issue 3.10 and Issue 2.10 respectively; the opportunity was taken to incorporate guidance on the interpretation of Authorisation Conditions for the NRPA in its Approving Authority capacity. DNSR Technical Assessment Guide (TAG) 005 (Numerical Targets) was published and others related to NWR Safety Assessment Principles are nearing conclusion. DNSR continues to assist in the NII's TAG revision programme.

## **PRIORITIES FOR 2011**

45. I consider that in 2011 those responsible for implementing the nuclear programmes should respond to all the Issues identified earlier in this report. In future years of constraint for Defence, the keys to this will be:

- a. to formulate robust organisational baselines to justify (and thus defend) the resources required to deliver the DNP safely; to pursue with renewed vigour the NSQEP career management initiatives; be enabled to recruit to full complement (Issues 1 and 2);
- b. to continue to develop safety analyses for reactor and weapon which can inform activity safety cases and improve the demonstrability that risk is ALARP, for both current and future programmes (Issue 4);
- c. to act on learning gained from safety Culture Peer Reviews and other feedback from operating experience to improve safety culture and control of work (Issue 5);
- d. to deliver the Decommissioning and Disposal Strategy; to pursue funding allocation in particular for early implementation of the demonstration phase of the submarine dismantling project (Issue 7);
- e. to improve DNSR's visibility of reactor design arrangements for the Future SSBN (Issue 8).

46. In 2011, in addition to routine regulatory activity, DNSR should:

- a. be enabled to recruit to full complement;
- b. continue to engage with and influence the development of revised arrangements for MOD regulation;
- c. pursue compliance with FAC1 (Issue 6 refers);

- d. lead on changes to the regulatory framework for the propulsion programme (para 31 refers).

*Signed by*

Howard Mathers CBE BSc MSc CEng FRINA MCMi RCNC  
Chairman, Defence Nuclear Environment and Safety Board