



Defence
Safety
Authority

DNSR ANNUAL REPORT 2014/2015

SECTION 1 – EXECUTIVE SUMMARY

Performance

1.1. The arrangements and management of nuclear safety across the Defence Nuclear Programme (DNP), comprising both the Naval Nuclear Propulsion Programme (NNPP) and the Nuclear Weapon Programme (NWP), must meet the exceptionally high standards required by applicable legislation, Defence Policy and of the nuclear industry. DNSR has made an evidence based judgement that those responsible for delivering the DNP, over the period 1 April 2014 to 31 March 2015, have satisfactorily achieved these exceptionally high standards of nuclear and radiological safety for the submarine crews, the defence workforce, the public and the protection of the environment.

1.2. This judgement aligns with the Duty Holders' (Navy Command and Defence Equipment and Support(DE&S)) own assessment of nuclear safety performance and broadly equates to "Substantial Assurance"¹ against the Defence Internal Audit levels of assurance. Whilst a number of initiatives have delivered safety improvements these have been offset by reduced performance in other areas, resulting in an overall judgement of steady and satisfactory performance.

Issues

1.3. The 2 key strategic issues from regulation of the DNP in 2014/15, requiring sustained attention to ensure continued safe delivery of the DNP over the medium to long term are:

a. Nuclear Suitably Qualified and Experienced Personnel. The ability of the Department to sustain a sufficient number of nuclear suitably qualified and experienced personnel (NSQEP), both civilian and Royal Navy, remains the principal threat to the delivery of nuclear safety. A number of initiatives are ongoing and there is evidence that these are now beneficially impacting on the recruiting and retention of civilian NSQEP personnel. However, vulnerability remains in this small and highly skilled group and whilst safety has not been compromised the lack of resilience increases the potential for project and programme delays.

b. Organisational Capability. Fundamental to understanding the requirement for NSQEP are robust organisational baselines which justify the roles and resource needed to safely deliver outputs. In addition, should either the organisation or the demands placed upon it change then a management of change process needs to be adopted prior to implementation of that change. DNSR considers there have been significant developments in the organisational baselines across the DNP and their change management processes but this requires continued focus.

1.4. DNSR Annual Report 2013/14 (AR13/14) identified a further 6 key strategic issues but this year this had been reduced to 3. DNSR has retained 'Ageing Plant, Facilities and Infrastructure' and 'Quality of Product' but has combined 'Safety Case Improvement & Safety Management Arrangements' and 'Fukushima Response' into a new strategic issue of 'Demonstration of Safety'; this reflects improvements in each of the individual issues. Two strategic issues from DNSR AR13/14, 'Nuclear Liabilities' and 'Transport and Package Approvals', have been removed from this year's strategic issues list to reflect progress made in the safe management of these issues. That said, there remains a focus to ensure progress on the timely defuelling of laid up submarines and a resource constraint in DNSR's ability to certify package applications requiring continued prioritisation across the DNP.

1.5. Recognising the strategic nature of all 5 of DNSR's strategic issues, it is to be expected that improvements will be delivered over a number of years. DNSR will continue to

¹ System of internal control established and operating effectively with some minor weaknesses.

undertake targeted inspections and audits to confirm appropriate action is being taken and to monitor progress.

Regulatory Health

1.6. Overall, the health of the DNSR is assessed as satisfactory: DNSR currently has sufficient resources, both internally and by contract, to undertake the full range of its responsibilities and has an appropriate regulatory framework. DNSR has implemented a number of improvements to its processes, particularly relating to strategic planning and consistency of approach across the team, as a result of the International Atomic Energy Agency (IAEA) Integrated Regulatory Review Service (IRRS) type inspection of DNSR that was undertaken in 2013. In addition, following a competitive tender exercise a new contract commencing 1 April 2015 has been awarded for continued regulatory support to DNSR.

1.7. One of the key challenges to DNSR, as it is to the wider DNP, is the continued availability of suitably qualified and experienced personnel to regulate all aspects of a DNP which currently has a very high level of programme activity. To mitigate this risk, DNSR has 2 current MOD NSQEP training posts to assist the development of potential regulators in their experience in the nuclear weapon regulatory area. A placement from the Office for Nuclear Regulation (ONR) into DNSR from the start of April 2015 has been agreed to enhance the understanding and coherence at the inspector level between DNSR and ONR.

1.8. Over the reporting year, DNSR has undertaken 58 planned inspections, reviewed 63 documented safety submissions, approved 6 transport packages for the transport of defence nuclear materials, permissioned 39 significant nuclear activities and assessed 13 Nuclear Emergency Response demonstration exercises. DNSR has also published updates of Joint Services Publication (JSP) 518 for the Regulation of the NNPP and JSP 538 for the Regulation of the NWP. A new General Agreement between MOD and ONR was signed in January 2015 incorporating a separate Letter of Understanding between ONR and DNSR detailing the high level intentions for coherent, complete and seamless regulation of the DNP. DNSR has contributed to the project to achieve initial operating capability of the Defence Safety Authority (DSA) formed through the merger of the Defence Safety & Environment Authority and the Military Aviation Authority on 1 April 2015.

SECTION 2 – OVERVIEW

2.1. I am required to provide an Annual Report to review the nuclear and radiological safety and radiological environmental protection performance in the Defence Nuclear Programme² (DNP), the identification of issues and an account of the health of regulation undertaken by the Defence Nuclear Safety Regulator (DNSR). DNSR's high-level conclusions on safety performance emerge from its work in regulating elements of the DNP; the statutory regulators (the Office for Nuclear Regulation (ONR), the Environment Agency (EA) and the Scottish Environment Protection Agency (SEPA)) provide complementary regulation in the DNP, and their conclusions are integrated, where relevant, in the report. The report supports briefing to the Defence Board on Defence safety and environmental protection performance and is provided to Duty Holders in the DNP to make them aware of regulatory conclusions.

2.2. This report covers the period from 1 April 2014 to 31 March 2015. The report is a development from the DNSR Annual Report 2013/14 and all the key issues identified in that report remain extant over this reporting period; this is to be expected noting that these issues are strategic in nature and therefore will have a long response time. This report is set in the context of high and increasing programme loading at a time of significant pressure on nuclear skilled resource. The Submarine Enterprise (including the Atomic Weapons Establishment (AWE)) is safely delivering: continued operation of current classes of SSBN and SSN and maintaining Continuous at Sea Deterrence; new build infrastructure, facilities and submarines; the design of the Next Generation Nuclear Propulsion Plant (NGNPP); the Nuclear Warhead Capability Sustainment Programme (NWCSP); and the introduction of the Mk4A warhead modification. Ageing infrastructure is being safely managed and continued progress has been maintained on key decommissioning and disposal programmes.

2.3. Those responsible for delivering the DNP have satisfactorily achieved the required exceptionally high standards of nuclear and radiological safety for the submarine crews, the defence workforce, the public and the protection of the environment.

Regulation of the Defence Nuclear Programme

2.4. DNSR regulation of the DNP essentially derives from the fact that it is a Defence programme which has exemptions from relevant legislation, such as the Nuclear Installations Act 1965 (NIA). The primary objective is to ensure that the Secretary of State for Defence's (SofS') Health, Safety and Environmental Protection Policy is delivered taking into account the mobility of the Naval Reactor Plant (NRP), the nuclear weapon and the military operational context. Where Defence has exemptions or dis-applications from health, safety and environmental protection legislation, the policy requires the achievement of outcomes that are, so far as is reasonably practicable, at least as good as those required by UK legislation. DNSR's primary responsibilities are:

- a. Regulation, through life³, of the nuclear reactors used for nuclear submarine propulsion.
- b. Regulation, through life, of the nuclear weapon.
- c. Regulation of Authorised Defence Sites and Activities where nuclear activities are controlled by the Crown or are on submarines with a nuclear reactor as a means of transport.
- d. Competent Authority for the transport of Defence Nuclear Material.

² Comprising the Naval Nuclear Propulsion Programme and the Nuclear Weapon Programme.

³ CADMID Life Cycle: Concept/Assessment/Demonstration/Manufacture/In Service/Disposal which includes activities within the supply chain.

Moreover, DNSR's through life responsibilities continue irrespective of the location of the nuclear reactor plant or weapon. Thus the DNSR Mission⁴ is 'To regulate the nuclear hazards of the Defence Nuclear Programme, as a trusted independent regulator in Defence' in order to deliver the DNSR Vision⁵: 'Nuclear capability which is demonstrably safe and available to meet Defence needs'.

2.5. DNSR operates a non-prescriptive, permissioning regulatory regime and has established a mature system of Authorisation which is analogous to ONR Licensing under the NIA. The regulatory requirements are defined in 40 Authorisation Conditions and Further Authorisation Conditions⁶, akin to ONR's Licence Conditions. DNSR's principal regulatory processes are similar to those employed by statutory regulators and include: inspection; assessment of safety documentation and emergency response demonstrations; and permissioning of nuclear activities. DNSR has a principal regulatory interface with ONR and effective and efficient regulation is achieved by DNSR and ONR working together to ensure coherent, complete and seamless oversight of all DNP activities. A new General Agreement between MOD and ONR for regulation of the DNP signed in January 2015 captures this relationship incorporating a revised Letter of Understanding between ONR and DNSR expanded to include the respective roles and responsibilities for transport of radioactive materials for the DNP. Additionally the Agreement identifies an enhanced level of senior level engagement between ONR and the MOD. DNSR also liaises and works closely with the EA, SEPA and other Defence regulators with common interests. DNSR draws upon specialist support from within the MOD, such as radiological protection and submarine medical expertise, and from industry.

Naval Nuclear Propulsion Programme

2.6. The UK currently has 4 Vanguard Class ballistic missile submarines (SSBNs), delivering Continuous At Sea Deterrence, and 6 operational nuclear powered attack submarines (SSNs): 4 Trafalgar Class and 2 Astute Class. Further Astute Class submarines are in various stages of build with the intent to replace all Trafalgar Class whilst the replacement of the Vanguard Class, Successor, is in design. Each successive Class of submarines has an improved, reactor plant design, offering reduced crew, workforce and public risk from nuclear and platform hazards.

2.7. The Next Generation Nuclear Propulsion Plant (NGNPP) to be fitted in Successor has reached the stage of producing a Pre Construction Safety Report (PCSR). This is undergoing the due process of assessment by the Authorisee and DNSR prior to permissioning the reactor build. In advance, certain long lead items are in course of production under regulatory hold point control, whilst other components, especially those not unique to NGNPP, are being procured at project risk.

2.8. In Devonport, HMS VENGEANCE's Long Overhaul Period (Refuel) has continued whilst preparations are in hand for HMS VANGUARD's forthcoming Deep Maintenance Project (Refuel). SSN maintenance work has progressed in parallel with Reactor Access House build for the SSN defuelling facility. DNSR take assurance from the Licensee's (DRDL)⁷ nuclear safety culture improvement programme, developed in response to the 2013 ONR Improvement Notice (IN), and from their response to the ONR IN issued following an incident in the NEMSFAC⁸. This safety cultural improvement has the potential to take DRDL out of ONR's Priority 2 classification. DNSR annual permissioning of operations continues on the Naval Base, pending the rewrite of the Tidal X Berths safety case.

⁴ DNSR Strategy 2013-2023 Version 1.0 dated 31 October 2013.

⁵ Ibid.

⁶ When no equivalent in the civil nuclear programme.

⁷ Devonport Royal Dockyard Limited.

⁸ New Equipment Maintenance & Storage Facility.

2.9. At BAESM⁹ Barrow, HMS ARTFUL was successfully launched and will commence reactor testing in the short term and the design for new build facilities for Successor continues. A joint ONR/DNSR SIN associated with the adequacy of the demonstration of suitable qualifications and experience for staff undertaking safety related work was issued in December 2014. A wider review of arrangements is underway which has the potential to deliver the necessary improvements by December 2015.

2.10. At Clyde, the Valiant Jetty is now fully operational to support SSN berthing of the 2 operational Astute Class and a number of Trafalgar Class submarines to undergo their planned work packages. The Nuclear Emergency Response Organisation has made step change improvements with the introduction of the Integrated Command & Control Centre at Clyde and increased staff recruitment, training and development. Improvement has been demonstrated through successfully exercising Clyde Authorisee's emergency response during Evening Star 14 and Bowline 14, which were jointly assessed by DNSR and ONR.

2.11. NRTE Vulcan continues to operate with the intention to shutdown at the end of 2015. Planning for defuelling, examination, fuel removal from site and post operation site clean up is at varying stages in keeping with the programme date for each activity. DNSR is engaged with these projects and with ONR and SEPA regarding the future regulatory environment post clean up.

Nuclear Weapon Programme

2.12. Engagement across the weapon design and 4 operational life cycle phases has provided a sound regulatory basis for the continued safe delivery of the Nuclear Weapon Programme (NWP). Of note are:

- a. The significant DNSR engagement that has been provided to enable progress against the staged regulatory permissioning requirements for the introduction of the Mk 4A warhead modification.
- b. The international collaboration between the UK and France on a new hydrodynamic experimental test facility (Project TEUTATES).
- c. Commencing the Periodic Review of Safety for the Trident Re-Entry System.
- d. Commencing a trials programme to deliver data necessary to substantiate continued approval of current transport package design; appropriate early regulatory engagement and prioritisation in the design of new transport packages across the DNP and progress towards a single organisation responsible for transport operations across the DNP.

2.13. Progress continues to be made in the delivery of the Nuclear Warhead Capability Sustainment Programme. However, slippage to replacement facility delivery programmes has continued thereby further extending the period of operation required in the current facilities. To facilitate improvements in programme management, DNSR Head together with leads from ONR, the EA and both the MOD Project Team and AWE have engaged as a leaders group in order to enable safe, secure and environmentally sound delivery of continuously available warheads. The focus is on ensuring a through life management perspective of those facilities needs to deliver the required outcome, with early regulatory engagements to allow advice and guidance to be offered before formal engagement.

2.14. The overall NSQEP resource has increased within the MOD project, achieved in part by the secondment of personnel from AWE. Whilst this provides a short term palliative the supporting NWP development programme will need to continue in parallel for some time to come.

⁹ BAE Systems Maritime – Submarines.

SECTION 3 – KEY ISSUES

3.1. A summary of key issues across the DNP is provided in tabular form at Annex A. The following paragraphs provide a more detailed commentary, using the following assessment metric:

- a. Priority 1 - Significant and sustained Duty Holder attention is required to ensure maintenance of satisfactory safety performance. DNSR regulatory focus with significantly enhanced level of regulatory attention.
- b. Priority 2 - Duty Holder attention is required to ensure maintenance of satisfactory safety performance. Enhanced level of DNSR attention.
- c. Priority 3 - Safety performance is considered satisfactory. Routine level of DNSR attention expected, relative to the hazard of the issue.

The priority is an indicator of the need for Duty Holder attention and the intended DNSR regulatory focus to the issue over the forthcoming years.

Issue 1 – Nuclear Suitably Qualified & Experienced Personnel (NSQEP)

3.2. Overall, this Issue is assessed as Priority 1 (Situation Steady); sustained Duty Holder attention is required to ensure maintenance of adequate safety performance.

3.3. The ability of the Department to sustain a sufficient number of military and civilian NSQEP has been a DNSR issue since 2006. The developing UK civil nuclear programme is ensuring that nuclear skills are increasingly at a premium in the broader market place. Industry is forecast to increase its recruiting activity and there is evidence that this has begun. The situation is compounded further, across both the Civil and Defence Nuclear Programmes, by a largely ageing demographic and the pull from other high consequence industries, such as off shore oil and gas.

3.4. The DNP continues to pursue actively a number of initiatives to address the NSQEP issue in the short to medium term. For the civilian NSQEP, a significantly enhanced Recruitment and Retention Allowance (RRA) was introduced in December 2013. DNSR note that the filling of NSQEP posts has improved, with the RRA providing a significant financial incentive, and that the outflow of highly skilled personnel has reduced. DNSR acknowledges the continued reliance on AWE for nuclear weapon SQEP and limited options to improve this position until specific development posts are identified and delivered. DNSR recognises that there remains issues around the scope of those entitled to the RRA and supports the review that is being undertaken.

3.5. DNSR also recognises the engagement of the DNP at the highest level with the Nuclear Owners Group and Nuclear Industry Council to ensure that Defence's voice is heard in the UK wide NSQEP debate and that solutions for shortfalls in civil NSQEP take account of MOD requirements.

3.6. The DNP is also dependent on sufficient Royal Navy NSQEP to deliver nuclear safety and notes that there are ongoing challenges with sustaining this. There are various mitigations in hand, including: financial incentives, the Sustainable Submarine Manning Project and reviews into the training of RN NSQEP. DNSR supports the Authorisees' clear statements that operator standards are absolute, but agrees that the means for achieving these standards may be reviewed.

3.7. **Summary.** The ability of the Department to sustain a sufficient number of nuclear suitably qualified and experienced personnel (NSQEP) remains the principal threat to the delivery of nuclear safety. A number of initiatives are ongoing and there is evidence that these are now impacting on the recruiting and retention of Civilian

NSQEP. However, vulnerability remains in this small and highly skilled group and in the RN NSQEP manning and whilst safety has not been compromised the lack of resilience increases the potential for project and programme delays.

Issue 2 – Organisational Capability

3.8. Overall, this issue is assessed as Priority 2 (Situation Steady); Duty Holder attention is required to ensure maintenance of adequate safety performance.

3.9. Fundamental to understanding the requirement for NSQEP are robust organisational baselines which justify the roles and resource needed to safely deliver outputs. The Nuclear Industry Code of Practice¹⁰ and associated Technical Assessment Guides¹¹ provide relevant good practice on organisational baselines and has regulatory support. Progress on baselines continues to be made across the DNP and a good culture has developed in managing organisational change through the AC36 – Organisational Capability change processes. However, as highlighted last year, less well embedded is an understanding of the impact on organisations of changes on their required outputs and a similar rigorous approach to reviewing organisational capabilities to deliver safely prior to committing to additional new work, or on completion of projects, needs to be adopted. Furthermore, assessment of performance as an intelligent customer for contracted safety output indicates that baselines are not necessarily robust in terms of numbers or degree of SQEP or both.

3.10. **Summary. Continued vigilance and Duty Holder involvement is required to ensure the maintenance of robust Organisational Capabilities and any change to organisational arrangements, or the outputs they are required to deliver, must be assessed for its impact on safety and approved prior to implementation.**

Issue 3 – Ageing Plant, Facilities and Infrastructure

3.11. Overall this Issue is assessed as Priority 2 (Situation Steady); Duty Holder attention is required to ensure maintenance of adequate safety performance.

3.12. Life extension of both Trafalgar and Vanguard Class submarines have been required to support the delivery of operational outputs until their replacement submarines, the Astute Class and Successor respectively, enter service. DNSR is content that the life extensions are being appropriately managed and justified, including the conduct of additional inspections and maintenance, and that nuclear safety is being demonstrably maintained.

3.13. Many of the facilities used to build and support Vanguard Class are intended to support Successor and they will require considerable life extensions. In addition, to support Successor build a number of new infrastructure developments are required at Barrow and Rolls Royce, Raynesway. Furthermore, there is an extensive programme of facility replacement and upgrade at AWE. However, slippage to the delivery of key projects will necessitate the continued use of current facilities for an extended period. All stakeholders are working together to deliver a through life management perspective of the needs of those facilities to deliver the required outcome, with early regulatory engagements to allow advice and guidance to be offered before formal engagement. Altogether, there is considerable enhancement to the DNP infrastructure, as evidenced by the UK Safety Improvement Programme (SIP), and this will further reduce the DNP risk. That said, through life management plans are crucial to ensure that the programme of infrastructure upgrades and replacements is coherent with the required operational programmes and that planning and Periodic Review of Safety (PRS) horizons are appropriate to the level of programme risk involved in each project.

¹⁰ Nuclear Industry Code of Practice – Nuclear Baseline and the Management of Organisational Change, 2nd edition dated March 2014.

¹¹ Such as NS-TAST-GD-065 Revision 2 - Function and Content of the Nuclear Baseline.

3.14. **Summary.** Life extension of both Trafalgar and Vanguard Class submarines is required to support continued operational outputs until their replacement and this is being appropriately addressed. A significant infrastructure development and refurbishment programme is planned to support build of Successor SSBN, and whilst slippage has occurred in specific projects, an extensive programme of facility replacement and upgrade is already well advanced at AWE. Duty Holder commitment and attention is required to safely manage ageing plant, facilities and infrastructure across the DNP and to support submarine reactor maintenance until the replacement/upgraded facilities are ready for use and to ensure coherence across the various projects and programmes.

Issue 4 – Demonstration of Safety

3.15. This is a new title and brigades the previous issues of Safety Case Improvement and Safety Management Arrangements and Fukushima Response. This brigading reflects improvements in each individual issue. Overall this Issue is assessed as Priority 2 (Situation Improving); Duty Holder attention is required to ensure maintenance of adequate safety performance.

3.16. **Safety Case Improvement.** Generally, safety case improvement is being delivered across the DNP but a lack of availability of qualified safety case authors¹² to support the programme will impact on the rate of progress. DNSR notes that the first Safety Case 2025 meeting was held to undertake learning from experience and bring coherence and improvements to the DNP's demonstration of safety via the safety case. DNSR considers there are 2 key development themes:

a. **Safety Case Informed Design.** The evolving safety case should inform the design process and therefore the two must be developed together. Allowing the design to be frozen before the safety case is completed is not good practice and, more often than not, results in a less than optimal outcome which is less safe. Agreeing safety cases in advance of permissioning procurement is a standard regulatory approach adopted by DNSR to reduce the risk of 'reverse ALARP'. DNSR's involvement with Authorisee's projects remains robust to reduce this risk but further work is required to ensure that project plans incorporate the stages required for this iterative approach prior to "design freeze".

b. **Periodic Review of Safety (PRS).** PRS continues across the DNP, taking account of proposed plant and facility life extensions. The timely and rigorous close out of identified actions arising from PRS is a specific area for attention. The new generation of safety cases being produced to modern methodologies as part of the PRS will provide better understanding and articulation of safety issues, and inform improved safety management. The PRS work, which incorporates many of the findings of the Fukushima stress tests, will continue to require significant effort across the DNP to deliver in a timely manner.

3.17. **Internal Challenge.** Effective internal Authorisee challenge is a vital factor in ensuring nuclear safety and DNSR considers that whilst there has been improvement in year, most notably at AWE, there remains the opportunity for further improvements across the DNP and learning from across the various sites and activities, to deliver a consistently strong performance.

3.18. **Summary.** Safety case improvement continues to be delivered but additional focus is required on planning for safety case informed design and on the PRS process. Internal Authorisee challenge arrangements are improving but there is opportunity for further improvement and more consistent application.

¹² The shortage in SQEP safety case authors is generally coupled with limited experience of safety case writing by the MOD Project Contract Manager responsible for delivery of the fit for purpose safety case.

Issue 5 – Quality of Product (incorporating Control of Work)

3.19. Overall this Issue is assessed as Priority 2 (Situation Steady); Duty Holder attention is required to ensure maintenance of adequate safety performance.

3.20. Key to through life safety (and performance) of both the nuclear reactor propulsion plant and the nuclear weapon is the quality of the product at build and in maintenance; this is more than safeguarding the workforce and public on the day. A 'right first time' quality product initiative continues to be pursued to support the delivery, as well as safety, of the DNP. DNSR has undertaken a number of focused interventions to review control of work and ensure learning from experience across the DNP. A number of these interventions have been undertaken in advance of planned significant work packages to ensure product quality at every stage of its life, and to reinforce the need for everyone charged with safe delivery of the DNP to understand their responsibilities.

3.21. DNSR welcomes the continued implementation of a number of safety culture initiatives, including the following:

- a. The Nuclear Reactor Plant Authorisee (NRPA) seeking explicit mutual assurance from NNPP Authorisees, and directing effort (through regular face to face meetings) of the Repair Authorities, to reinforce the need for 'right first time'.
- b. The re-introduction of the Naval Nuclear Propulsion Programme Operating Experience Learning Group (NNPP OELG), which targets NNPP matters in a more detailed manner than may be discussed at its national counterpart.
- c. The re-introduction of meetings amongst the Chairs of the Site Procedure Authorisation Groups (PAGs), who are responsible for controlling the work on the NNPP.
- d. Quality and right-first-time manufacturing initiatives in submarine and reactor build at Barrow are showing beneficial results, though there continues to be significant levels of rework. This is recognised by the Authorisee.
- e. The enhanced presence of project team staff and associated governance arrangements at AWE Burghfield.

3.22. There have been no events reported in year that were individually significant to the continued safety of the individuals concerned, the crew, the workforce or the public. The continued high level of Duty Holder attention that is afforded to 'control of work' across the DNP is supported by DNSR.

3.23. **Summary. A 'right first time' quality product continues to be essential to support the delivery, as well as safety, of the DNP. Various initiatives are being progressed to ensure this and continued, robust and timely Duty Holder attention is required to manage and direct safe control of work.**

Previously identified Issues

3.24. Two strategic issues have been retired this year:

- a. Nuclear Liabilities. The MOD Nuclear Liabilities Strategy continues to be progressed with generally steady progress. The Submarine Dismantling Project has built momentum and the first Low Level Waste should be removed from a laid up submarine in 2015/16 with Intermediate Level Waste (ILW) programmed to be removed from 2019 after an ILW interim storage solution has been agreed. Fuelled laid up submarines, with an extant safety case, are berthed in Devonport whilst awaiting the completion of the new defuelling facilities. DNSR notes the delay to the

defuelling programme exacerbated by the requirement to refuel HMS VANGUARD and potentially HMS VICTORIOUS. Good practice would be to defuel the laid up submarines as soon as reasonably practical and DNSR encourages the ongoing programme review and recommends action is taken to minimise any extended delays to the defuelling programme.

b. Transport and Package Approval. DNP nuclear material continues to be transported safely and good engagement has been sustained with respect to the development of a number of new packages and the introduction of trial programmes to substantiate continued use of current package designs. DNSR's key issue is the limited SQEP available to process package and transport applications but this is now fully understood by the DNP.

SECTION 4 – REGULATORY ACTIVITY

4.1 The purpose of this Section is to provide details of the regulatory activity conducted by DNSR to support its assessment of safety performance across the DNP. It includes: the main activities undertaken; the status of DNSR's organisation and resources; and an update on engagement with other regulatory bodies.

4.2 Activity Summary. In regulating the DNP during this reporting period, DNSR has:

- a. Permitted 39 significant nuclear activities.
- b. Reviewed 63 documented safety submissions.
- c. Conducted 58 planned inspections (many in conjunction with ONR).
- d. Approved (as Competent Authority) 6 transport packages for the transport of defence nuclear materials.
- e. Assessed 13 Nuclear Emergency Response demonstration exercises.

No Safety Improvement Notices or Immediate Safety Requirements have been raised by DNSR during the reporting period. Early engagement is one of DNSR's values¹³ and it seeks to ensure that regulatory expectations are understood from the outset of projects, and facilitates the provision of appropriate advice when required.

4.3 DNSR has responded to 2 formal information requests with 2 documents being placed in the House of Commons Library. We have worked effectively with DE&S and other areas of the MOD to respond to these requests and numerous DNP related requests handled elsewhere in the MOD in which DNSR input has been required. However, the management of nuclear information requests remains a challenge, noting the tension between being open and transparent to inform the public about the regulatory approach, whilst needing to protect DNP related information which if released could be detrimental to the defence of the UK.

4.4 Organisation and Resources. As of 31 March 2015, DNSR's professional complement is at 100%. In addition, DNSR has 2 MOD nuclear development personnel: one a graduate trainee and the other on return from an ONR secondment. Furthermore, DNSR and ONR have agreed an ONR secondee to DNSR starting 7 April 2015. This additional resource is assisting with the challenge of regulating the current DNP. However, the limited response during the recent recruitment campaigns is a potential concern for the future identifying an apparent reluctance for NSQEP'd staff to move from DE&S into DNSR. Whilst the underlying reasons are not yet clear, any divergence in the "terms and conditions" of employment between DE&S and DSA will impact on the sustainability of DNSR NSQEP.

4.5 Joined-Up Regulation. There have been a number of developments in joining up regulation of the DNP:

- a. The Defence Nuclear Programme Regulatory Forum (DNPRF) continues to support a coherent regulatory approach in the DNP; members include DNSR, the Defence Maritime Regulator (DMR) and the Defence Ordnance, Munitions and Explosives Safety Regulator (DOSR).
- b. The joined-up regulatory approach with ONR is fundamental to coherent, complete and seamless regulation of the DNP. The approach has been successfully maintained throughout the reporting period and DNSR's focus on through-life safety of the DNP continues to complement ONR's regulation. A new General Agreement

¹³ DNSR Values, articulated in the DNSR Strategy 2013-2023, are: competent, consistent, proportionate, targeted, informed, transparent, joined-up, timely and learning.

between MOD and ONR for regulation of the DNP signed in January 2015 captures this relationship incorporating a revised Letter of Understanding between ONR and DSNR expanded to include the respective roles and responsibilities for transport of radioactive materials for the DNP. Additionally, the Agreement identifies an enhanced level of senior level engagement between ONR and the MOD.

c. DSNR has worked with the EA and undertaken joint inspections at various sites, including Devonport and AWE, to ensure that these sites are compliant with the various environmental permissions and permits which they have been issued.

d. Joint environmental inspections have also taken place between DSNR and SEPA at HMNB Clyde and at Vulcan. A review of the MOD/SEPA Agreement¹⁴ was undertaken in the period and both parties agreed to develop a more detailed LoU between DSNR and SEPA to assist inspectors to provide a more coherent and consistent regulation of the DNP in Scotland.

Progress Against Priorities for 2014-2015

4.6 The DSNR Annual Report 2013/14 identified particular DSNR focus on a number of issues in addition to routine regulatory activity during FY14/15. Progress against these is reported below:

a. Complete actions arising from the DSNR IRRS type review Recommendations and Suggestions and consider timing for a follow up audit. Complete – each recommendation and suggestion has been reviewed and assessed to agree the required action and to implement the required changes. The updates were primarily related to DSNR strategic planning and ensuring consistency of approach across the DSNR team.

b. Contribute to the project for the development of common management arrangements for DSEA and the MAA. Complete in terms of declaration of Initial Operating Capability of the Defence Safety Authority (DSA) on 1 April 2015. Further work is ongoing to support a Defence Safety Regulatory Review (DSRR) to define requirements for Full Operating Capability of the DSA.

c. Re-issue JSP 518 and JSP 538 with updated Part 2s (Guidance). Ongoing. The revised format for Part 2s has been agreed and these will be updated for subsequent publication.

d. Input to the ONR review of nuclear site Licence Conditions and consider impact on DSNR's Authorisation Conditions. Ongoing. DSNR is part of the Steering Group for the project.

e. Work with the DNP to bring greater coherence and coordination to the reporting of DNP nuclear safety events. Ongoing. Much work has been undertaken to review reporting frameworks and understand the difference between Defence and Civil reporting. A proposal for further work is being developed as part of the DSRR.

¹⁴ "Agreement between the MOD and SEPA on Matters Relating to Radioactive Substances" dated 24 September 2012.

SECTION 5 – PRIORITIES FOR 2015 – 2016

5.1 The prioritisation of response across the DNP should reflect the assessment assigned to the issues in Section 3. The timescales to address the issues range from the short to long term and in particular they should:

- a. Continue to embed effective use of development posts; implement succession planning for the MOD civilian nuclear community; pursue greater freedoms to recruit ex-military skills; and facilitate lateral entry into the MOD civilian NSQEP community. (*Issue 1*);
- b. Continue to develop robust organisational baselines that justify the roles and resource needed to safely deliver, with sufficient resilience to address project perturbations; and prior consideration and approval of the impact on safety of organisational changes. (*Issue 2*);
- c. Continue to prioritise the commitment and attention to safely managing the existing ageing plant, facilities and infrastructure whilst delivering planned upgrades and replacement plant. (*Issue 3*);
- d. Implement integrated safety justification and design processes for new plant, and open and robust PRS processes. Strengthen and empower Authorisee internal challenge. (*Issue 4*);
- e. Pursue a Submarine Enterprise approach to achievement of a 'right first time' quality culture, and continue the safety culture development initiatives to firmly establish the characteristics of a high reliability and learning organisation. (*Issue 5*);

5.2 In addition, DNSR has the following specific targets for FY15/16:

- a. Contribute to the development of Full Operating Capability of the DSA, implementing proposals from the DSRR.
- b. Input to the ONR review of Licence Conditions.
- c. Permission HMS Artful reactor testing.
- d. Permission HMS Audacious initial loop fill and Cold and Hot Operations.
- e. Staged permissioning of the Mk4A warhead modification.
- f. Agree the staged Safety Case, PCSR1, for the new PWR3 design.

Head of Defence Nuclear Safety Regulator.

D C Langbridge.

ANNEX A – SUMMARY OF KEY ISSUES (2013/14 – 2014/15)

1. A summary of key issues across the Defence Nuclear Programme is provided in Table A-1. Within the Table, “Regulatory Priority” should be interpreted as follows:

- a. Priority 1. Significant and sustained Duty Holder attention is required to ensure maintenance of adequate safety performance. DNSR regulatory priority/focus with significantly enhanced level of regulatory attention.
- b. Priority 2. Duty Holder attention is required to ensure maintenance of adequate safety performance. Enhanced level of DNSR attention.
- c. Priority 3. Safety performance is considered adequate. Routine level of DNSR attention expected, relative to the hazard of the issue.

Arrows indicate a regulatory judgement on whether the situation is improving (upwards arrow), degrading or remaining steady.

2. The regulatory priority is an indicator of the intended DNSR attention to the issue across the DNP over the forthcoming years. It needs to be read in conjunction with the relevant narrative. The assessment definitions have been updated this year to reflect relevant good practice and to re-focus the emphasis on DNSR intervention.

Issue	Potential Mitigation	Regulatory Priority 2013/14	Regulatory Priority 2014/15
1. Resources and Nuclear Suitably Qualified & Experienced Personnel (NSQEP)	<ul style="list-style-type: none"> • Maintain continued senior management focus. • Embed effective use of development posts. • Pursue a succession planning approach for the MOD civilian nuclear community. • Pursue greater freedoms to recruit ex-military skills. • Recruitment via lateral entry into the MOD civilian NSQEP community. 	Priority 1 →	Priority 1 →
2. Organisational Capability	<ul style="list-style-type: none"> • Ensure holistic organisational sustainability and ‘intelligent customer capability’ is robustly considered. • Continue to develop robust organisational baselines. • Sound leadership and safety management. • Consistent application of sound organisational change processes. 	Priority 2 →	Priority 2 →
3. Ageing Plant, Facilities & Infrastructure	<ul style="list-style-type: none"> • Maintain senior management focus to reduce risk of slippage in plant/facility replacement projects. • Continued prioritisation to ensure safe management of existing ageing plant, facilities and infrastructure. • Ensure Examination, Inspection, Maintenance & Test (EIMT) plans are robust and fully implemented. • Maintain a holistic approach to infrastructure investment across NNPP through the Submarine Enterprise Infrastructure Forum (SEIF). 	Priority 2 →	Priority 2 →





Issue	Potential Mitigation	Regulatory Priority 2013-14	Regulatory Priority 2014-15
4. Demonstration of Safety (incorporating Safety Case Improvement & Safety Management Arrangements and Fukushima Response)	<ul style="list-style-type: none"> • Safety case informed design through staged approach, avoiding late application of ALARP process. • Implementation of robust PRS processes. • Safety Case 2025 developments • Pursue a 'right first time' safety case approach. • Ensure the strength of internal challenge. 	Priority 2 	Priority 2 
5. Quality of Product (incorporating Control of Work)	<ul style="list-style-type: none"> • Pursue a Submarine Enterprise (including AWE) approach to development of a 'right first time' quality culture. • Pursue quality delivery from the supply chain. • Maintain NRPA and MOD customer oversight of build quality at BAESM and Rolls Royce sites. 	Priority 2 	Priority 2 

Table A-1 Summary of Key Issues (2013/14 – 2014/15)