



Ministry
of Defence

DNSR ANNUAL REPORT 2013/2014

Defence Nuclear Safety Regulator
An Independent Regulator in Defence

SECTION 1 – EXECUTIVE SUMMARY

Performance

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 2013 to 31 March 2014, 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.

Issues

2. The 2 key strategic issues from regulation of the DNP in 2013/14, requiring sustained attention to ensure continued safe delivery of the DNP over the medium to long term are:

a. Nuclear Competent Personnel. The ability of the Department to sustain a sufficient number of nuclear suitably competent personnel, also termed nuclear suitably qualified and experienced personnel (NSQEP), is a long standing issue and is again raised as the principal threat to the maintenance of safety in the DNP. A number of focussed initiatives continue but pressure from the civil nuclear market will continue to drive vulnerability in this small and highly skilled group. Safety has not been compromised, but the loss of resilience increases the likelihood of project delays.

b. Organisational Capability. The risk from strategic Organisational Change has reduced from last year: a process has been implemented to allow the safety implications of such strategic changes to be reviewed, prior to implementation, at an appropriate level within the MOD and the way ahead with 2 significant strategic organisational change projects has been agreed. However, continued Duty Holder involvement is required to ensure that organisation capability remains robust and that any changes to organisational arrangements are assessed for their impact on safety prior to implementation.

3. As per the DNSR Annual Report 2012/13, additional strategic issues are: Ageing Plant, Facilities and Infrastructure; Safety Case Improvement and Safety Management Arrangements; Quality of Product; Transport and Package Approval, Nuclear Liabilities and Fukushima Response. Recognising the strategic nature of all 8 of these issues, it is to be expected that improvements will be delivered over a number of years. DNSR will continue to undertake targeted inspections and audits to confirm appropriate action is being taken and to monitor progress.

Regulatory Health

4. Overall, the health of the DNSR is assessed as satisfactory: DNSR has the resources, both internally and by contract, to undertake the full range of its responsibilities and has an appropriate regulatory framework, as assessed by an external regulatory review. The objective of the external review, which was based upon the established practice of the International Atomic Energy Agency (IAEA) Integrated Regulatory Review Service (IRRS), was to compare the DNSR regulatory framework with relevant national and international guidelines. The review team considered that the regulatory framework is appropriate, that DNSR is operating effectively and that resourcing was then adequate. As expected, the review team identified some opportunities for improvement, particularly relating to strategic planning and consistency of approach within DNSR. An independent reviewer had oversight throughout; he considered that the report is a fair and reasonable summary and agrees with

its conclusions and recommendations. Work is well underway to address the review team recommendations and suggestions.

5. One of the key challenges to DNSR, as it is to the wider DNP, is the availability of suitably qualified and experienced personnel to regulate all aspects of the growing DNP. To mitigate this risk, DNSR has had a training placement to the civil regulator, the Office for Nuclear Regulation (ONR), to gain experience and develop one of its more junior inspectors. In addition, a development post has been established that will place a trainee in various aspects of the NWP, starting in DNSR, to develop his/her nuclear weapon NSQEP across the programme. A further placement from ONR into DNSR is being actively pursued to enhance the understanding and coherence at the inspector level between DNSR and ONR.

6. Over the reporting year, DNSR has undertaken over 60 planned inspections, reviewed over 110 documented safety submissions, approved 7 transport packages for the transport of Defence nuclear materials, permissioned 50 significant nuclear activities and assessed 19 Nuclear Emergency Response demonstration exercises. DNSR has also produced updates of Joint Services Publication (JSP) 518 for the Regulation of the NNPP and JSP 538 for the Regulation of the NWP with publication due by end of Jul 14.

SECTION 2 – OVERVIEW

1. I am required to provide an Annual Report to the Permanent Under Secretary (PUS) which includes a summary of nuclear and radiological safety and environmental protection performance in the Defence Nuclear Programme¹ (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. This report covers the period from 1 April 2013 to 31 March 2014 to align with wider Defence safety assurance reporting requirements; it also considers work that is ongoing to support future safety improvements across the DNP. The report is a development from the DNSR Annual Report 2012/13² 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.

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

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) and 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. The NIA is not applicable to nuclear activities controlled by the Crown (i.e. MOD) and nuclear submarines ('reactors in a means of transport') whilst nuclear weapon design is excluded from licensing by ONR. Consequently, 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.

¹ Comprising the Naval Nuclear Propulsion Programme and the Nuclear Weapon Programme.

² Covering the period 1 Jan 12 to 31 Mar 13.

³ CADMID Life Cycle: Concept/Assessment/Demonstration/Manufacture/In Service/Disposal.

- 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.

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*'.

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. DNSR also liaises and works closely with the EA, SEPA and other MOD 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

6. Over the life of the Naval Nuclear Propulsion Programme (NNPP), there has been a steady development in UK Naval Pressurised Water Reactor (PWR) technology with attendant improvements in nuclear safety. DNSR has gained assurance that both PWR 1⁷ and PWR 2⁸ meet all of the required safety standards. NGNPP⁹ will deliver further improvement in NRP design, offering reduced crew, workforce and public risk from nuclear and platform hazards.

7. The UK is committed to an enduring submarine programme which will see the remaining 5 of the 7 Astute Class SSNs progressively enter service over the next decade and the first Successor SSBN enter service in the late 2020s. Due to delays in build and commissioning of the Astute Class SSNs, there has been a requirement to extend the Trafalgar Class SSNs beyond their original design life in order to maintain the SSN operational capability. The Naval Reactor Plant Authorisee (NRPA) has undertaken a programme of plant life extension safety justifications, including additional inspections and maintenance, to maintain safety standards. DNSR has gained assurance, through effective regulatory permissioning regimes, that these older nuclear plants remain safe.

8. The NGNPP Project continues to progress and the development of robust technical governance processes and their integration, where relevant, with nuclear safety management arrangements has continued to mature slowly. This has impacted upon concurrence between the emerging NGNPP design and supporting safety substantiation. The NRPA is fully cognisant of this and has introduced 'Hold Point' control to manage the risk; DNSR supports this proven approach. The NRPA's workload associated with governance of the emerging NGNPP design is rapidly increasing as the Project heads towards Critical Design Review (CDR) but, despite a previous uplift in Project staffing, DNSR considers there remains a high risk to achieving CDR objectives to project timescales given the projected workload increase.

⁴ DNSR Strategy 2013-2023 Version 1.0 dated 31 Oct 13.

⁵ Ibid.

⁶ When no equivalent in the civil nuclear programme

⁷ As fitted in Trafalgar Class SSNs.

⁸ As fitted in Vanguard Class SSBNs and Astute Class SSNs.

⁹ Next Generation Nuclear Propulsion Plant is also termed PWR3 and is to be fitted in Successor SSBN.

9. An issue with the chemistry of the cooling water surrounding the prototype core of the Naval Reactor Test Establishment (NRTE) at Dounreay in Scotland was identified in January 2012; DNSR was immediately notified. Further controlled monitoring and testing was undertaken, within the constraints of the extant NRTE safety case and agreed by DNSR, and this confirmed that low levels of radioactivity, normally contained within the clad surrounding the fuel, was entering the cooling water: a microscopic breach in a small area of the cladding had occurred. The safety implications for continued operation with this cladding issue were reviewed and DNSR judged that a robust demonstration was provided that the safety of workers, the public and the environment will be maintained. Extra technical and administrative controls were required by DNSR and the implementation of these arrangements was inspected and found to be satisfactory. DNSR has continued to inspect the arrangements at NRTE and monitor the benefits being gained from continued operation of the plant against the low levels of radioactivity in the cooling water. DNSR remains satisfied that the safety of the site workers, the public and the environment has been maintained and that the issue is being managed appropriately.

10. Investment in Devonport continued throughout the reporting period. SSN docking facility upgrades were made in parallel with the production of a modern standards safety case for the operational SSN dock. Work has also started to modernise the safety case for the first SSBN Deep Maintenance Project for HMS VANGUARD, now including a refuel following the announcement by the Secretary of State for Defence on 6 Mar 14, and the new SSN defueling facility is now in production. The ONR Chief Nuclear Inspector Annual Report 2013¹⁰ made Devonport Royal Dockyard Limited (DRDL) a Priority 2 site, one requiring enhanced levels of regulatory attention. This prioritisation was to ensure that DRDL meet modern standards with regard to the design, construction and safety management of their new build projects and that they have the required organisational capability, and apply the appropriate resources, to integrate them into the site's current operations.

11. Whilst the BAES Barrow shore facilities constructed in the 1980s for the build of Vanguard Class submarines have, in general, remained adequate for the build of Astute Class further modification and enhancement will be necessary to support the build and commissioning of the Successor SSBN. That said, an emergent issue with the Wet Dock Quay safety substantiation resulted in ONR seeking to 'permission' the release of the Programme Hold Point on the undocking of HMS ARTFUL¹¹; this issue is undergoing due process for resolution.

12. At Clyde, the Valiant Jetty was released into service for First Nuclear Use in Sep 13 to provide an SSN berthing facility for Astute and Trafalgar Class submarines. Additionally, infrastructure improvements have been implemented to support continued operations of HMNB Clyde waste management facilities, which have been judged as meeting best practicable means through tri-regulatory inspection by DNSR, ONR and SEPA. The conduct of emergency response demonstration exercises for operational berths identified that the HMNB Clyde management arrangements needed additional resources for emergency response planning and these are now being put in place. DNSR is content that the challenges facing the emergency response planning organisation were not systemic across the base's safety management arrangements and, therefore, did not have wider safety implications.

Nuclear Weapon Programme

13. The 2006 White Paper on the Future of the UK's Nuclear Deterrent¹² identified that the UK's existing Trident warhead design was expected to last into the 2020s and the programme of investment in sustaining capabilities at AWE, the Nuclear Warhead Capability

¹⁰ ONR Chief Nuclear Inspector's Annual Report 2013 published Oct 13.

¹¹ Astute Class Regulatory Hold Point Control Document, Issue 32, Dated 19 Sept 13 (eDMS 1222904).

¹² "The Future of the United Kingdom's Nuclear Deterrent: Defence White Paper 2006 (Cm6994)" dated December 2006.

Sustainment Programme (NWCSP), would continue to ensure that the UK can maintain the existing warhead for as long as necessary.

14. 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. Significant DNSR engagement continues to provide the necessary regulatory scrutiny to the introduction of the Mk 4A warhead modification programme.
- b. AWE has implemented an extensive organisational transformation, introducing a matrix based structure designed to enhance delivery of the MOD customer requirements. DNSR and ONR jointly reviewed the organisation change proposal, in advance, and concluded that there were safety benefits from such a change and agreed to its implementation.
- c. International collaboration between UK and France on a new hydrodynamic experimental test facility (Project TEUTATES) continues to develop.
- d. Progress continues to be made in the delivery of the NWCSP and DNSR will maintain coherent regulatory oversight with ONR and other regulators of both current and new facilities and equipment.

15. This progress has been achieved against a backdrop of concerns regarding the continued sustainment of nuclear weapon SQEP and the development of appropriate organisational baselines across the NWP. However, the ONR Chief Nuclear Inspector Annual Report 2013¹³ also made AWE (Aldermaston and Burghfield) a Priority 2 site, one requiring enhanced levels of regulatory attention. This was mainly to ensure that they meet modern standards with regard to their design, construction and safety management of new facilities and operations and that they have the required organisational capability, and apply the appropriate resources and integrate them into the site's current operations.

¹³ ONR Chief Nuclear Inspector's Annual Report 2013 published Oct 13.

SECTION 3 – KEY ISSUES

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. The prioritisation has been updated from DNSR Annual Report 2012/3 to re-focus the emphasis on Duty Holder attention and DNSR intervention.

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

2. Overall, this Issue is assessed as Priority 1 (Situation Steady); sustained Duty Holder attention is required to ensure maintenance of adequate safety performance. *This continues DNSR 2012/13 Issue No.1 – Resource and NSQEP.*

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 programme, by a largely ageing demographic and the pull from other high consequence industries, such as off shore oil and gas.

4. There remains a pressure to reduce the total of military and civilian numbers within the MOD but the specific competent manpower requirements to sustain the DNP have to date been safeguarded. Whilst this remains the case, there are still a number of areas where the functional skill set is operating on a “one man deep” basis and the sustainability of the NSQEP skill set remains fragile.

5. The DNP continues to pursue actively a number of initiatives to address the NSQEP issue in the short to medium term:

- a. For MOD civilians, this has been through initiatives under the direction of Director Submarines (DSM)¹⁴ undertaken by the Head of the Nuclear Profession and Submarine Workforce Management Team. The MOD civilian NSQEP sustainability model is now better understood and is being managed accordingly to bring increased stability to the DNP. The most significant initiative this year was the introduction of an enhanced Retention and Recruitment Allowance (RRA) for all MOD civilian personnel who occupy a post which require an essential nuclear competence¹⁵ to discharge their nuclear responsibilities. This has addressed some of the disparities between MOD salaries and civil market salaries and is evidence the Department and wider

¹⁴ As the Senior Responsible Officer for civilian NSQEP across the MOD.

¹⁵ As defined in the MOD's Nuclear Competence Framework.

Government acknowledge the importance of recruiting and retaining nuclear experience in the DNP. The issue of developing experience as well as knowledge for the longer term sustainability of the NSQEP within the DNP is being addressed through 20 development posts (ring fenced for NSQEP), including secondment posts and an intake of 15 graduates per annum with a specific nuclear engineering systems anchor¹⁶. DNSR also welcomes the initial steps to establish a similar scheme specifically to develop nuclear weapon SQEP.

b. The Royal Navy (RN) initiatives to mitigate manpower risks have continued under the Sustainable Submarine Manning Project (SSMP), a long term strategic change programme.

Whilst there is some cause for optimism over the current interventions regarding Departmental Nuclear skills, there is, as yet, little direct evidence of improvement.

6. The NSQEP threat extends to the DNP's industrial partners, where specialist engineering skills recruitment and retention is recognised as a key challenge to meet future programme demands. Retaining the valuable experience of the ageing blue collar workforce is a recognised issue and potentially the most vulnerable demographic during the build phase of new civil nuclear power stations. The MOD and the key industry partners in the Submarine Enterprise have been collaborating on understanding and pursuing, where appropriate, a common technical skills agenda through skills-based objectives overseen by the Submarine Enterprise Engineering Directors Forum (EDF). The Nuclear Industry Council (NIC), which the MOD attends as an observer, has agreed that the main agent for addressing the UK's nuclear skills agenda is the industry-led National Skills Academy Nuclear (NSAN) and the MOD has a member representation on the NSAN.

7. Safety has not been compromised but the ability to deliver the DNP could be undermined with inadequate suitably competent personnel. A growing DNP, alongside the pressure from an emerging civil nuclear market, will challenge the available SQEP resource and even the enhanced RRA may not be sufficient to retain the small but highly skilled MOD group. The difficulties in maintaining a sustainable community of suitable nuclear competent staff has been, and is again, raised by DNSR as the principal risk to maintaining safety in the DNP. The loss of NSQEP resilience is of concern and increases the likelihood of programme impact.

8. **Summary. The ability of the Department to sustain a sufficient number of nuclear suitably competent personnel is a long standing issue and is again raised as the principal threat to safety in the DNP. A number of focussed initiatives continue but pressure from the civil nuclear market and an expanding DNP will continue to drive vulnerability in this small and highly skilled group. Safety has not been compromised but the loss of resilience increases the likelihood of programme delays. Recognising the strategic nature of this issue it is expected that improvement will be delivered over a number of years.**

Issue 2 – Organisational Capability

9. Overall, this issue is assessed as Priority 2 (Situation Improving); Duty Holder attention is required to ensure maintenance of adequate safety performance. *This progresses DNSR 2012/13 Issue No.2 – Strategic Organisational Change* but has been widened to include the broader assessment of organisational capabilities and **all** organisational changes.

10. There are 6 MOD Authorisees; all were hosted in DE&S and authorised for specific nuclear activities but 2, Naval Base Commander Clyde and Naval Base Commander Devonport, transferred to Navy Command on 1 Apr 14. Three Submarine Enterprise

¹⁶ On the DE&S Graduate Scheme.

partners are also Authorised for defence nuclear activities. As the controlling mind for these nuclear activities, Authorisees need to be in effective day-to-day control and must understand the implications sufficiently to fulfil their legal responsibility to ensure that the associated risk is ALARP.

11. This report is set in the context of a way forward for the 2 key strategic organisational changes identified in the DNSR 2012/13 Annual Report that could have fundamentally re-shaped the environment for safety delivery across the DNP:

a. The DE&S Materiel Strategy (MatStrat) presented a possible DE&S Government Owned, Contractor Operated (GOCO) organisation option which would have moved DE&S into the commercial sector requiring new approaches to delivering nuclear safety responsibilities across the MOD. However, it has now been decided that this option will not be taken forward, at this stage, and DE&S is being developed as a bespoke trading entity within Government from 1 Apr 14. This resulted in a much less significant change to the current organisational construct for the safe delivery of the DNP than the GOCO option would have. Although DNSR does not have a role to formally approve strategic change in Defence above Authorisee level, suitable regulatory engagement early in the process for the DE&S GOCO option was initiated as an effective safeguard to manage the risk of unintended nuclear safety and regulatory impact. Departmental safety policy¹⁷ is that, before being introduced, change to organisational arrangements is to be properly assessed for its impact on safety and is to be suitably managed. As a result of the MatStrat options, it has been agreed that forthwith the Defence Environment and Safety Committee (DESC), chaired by PUS, will consider the impact of strategic organisational change proposals on safety; this is a welcome development and ensures the SofS's Safety Policy is achieved.

b. The transfer of Naval Bases, from DE&S to Navy Command, was considered to have the potential to affect lines of authority, control of activities and management of nuclear safety at HMNB Clyde and HMNB Devonport. Through 2013, DNSR has been engaged in reviewing the developing proposals and Authorisee submissions have been made to justify the proposed minor organisational changes in accordance with standard due process. Following consideration of these submissions, including an on site readiness review, DNSR was content that the proposed arrangements were at least as good in delivering nuclear safety as the extant arrangements and have, therefore, approved the transfer from 1 Apr 14. Consequently, the risk from this transfer has been appropriately managed.

12. Robust baselines which justify the roles and resource needed to safely deliver outputs are an essential demonstration of the adequacy of an organisation to discharge its safety responsibilities and a precursor to any organisational change process. The Nuclear Industry Code of Practice¹⁸ and associated Technical Assessment Guides¹⁹ provide relevant good practice on organisational baselines and has regulatory support. Progress on baselines continues to be made across the DNP, notably the updates of HMNB Clyde's and HMNB Devonport's organisational baselines that were precursors to the change proposals for the transfer of these Naval Bases to Navy Command. That said, it is apparent that certain baselines are not sufficiently robust to respond to shocks and sustain programme developments: safety has not been compromised but programme slippage has occurred in

¹⁷ JSP 815 Part 2 – Safety, Health, Environmental Protection & Sustainable Development in Defence: A Policy Statement by the Secretary of State for Defence.

¹⁸ Nuclear Industry Code of Practice – Nuclear Baseline and the Management of Organisational Change, First Edition dated October 2010.

¹⁹ Such as NS-TAST-GD-065 Revision 2 - Function and Content of the Nuclear Baseline.

the reporting period, such as the routine reviews of safety management arrangements and Periodic Reviews of Safety in the nuclear weapons area.

13. Authorisee management of change processes have matured and are being effectively used, as demonstrated by the Naval Base transfers. In the period, a follow up inspection of the strategic MOD/ABL Alliance organisation at RNAD Coulport was undertaken jointly by DNSR and ONR, the inspection resulted in the conclusion that the MOD remains in control of the site and that the current Authorised regulatory regime is appropriate. In addition, implementation at AWE of the Target Operating Model (TOM) matrix based organisational structure has provided improvements in the deployment of specialist NSQEP resources to support priority programme requirements.

14. **Summary. Overall, the risk from strategic Organisational Change has reduced from last year. Continued vigilance and Duty Holder involvement is required to ensure the maintenance of robust Organisational Capabilities and any change to organisational arrangements must be assessed for its impact on safety and approved prior to implementation.**

Issue 3 – Ageing Plant, Facilities and Infrastructure

15. Overall this Issue is assessed as Priority 2 (Situation Steady); Duty Holder attention is required to ensure maintenance of adequate safety performance. *This continues DNSR 2012/13 Issue 3 - Ageing Plant, Facilities and Infrastructure.*

16. The phasing out of PWR1 plant has been slower than intended due to the delayed entry into service of the Astute Class. As a result, the Trafalgar Class is operating beyond its original design life. The NRPA has produced appropriate safety justifications to extend submarine reactor operations, requiring additional inspections, surveys and maintenance, and as a result, safety has been maintained. The Vanguard Class is also undergoing a Plant Lifetime Extension (VPLEX) project as a result of the SDSR decision to extend the life of the Class and re-profile the Successor SSBN build programme. The VPLEX Project is planning to address predicted and potential effects in a suitable and sufficient manner; DNSR remain content with development of the programme.

17. The reinvigoration of the UK Safety Improvement Programme (SIP), to manage a holistic approach to infrastructure investment across the DNP through the Submarine Enterprise Infrastructure Forum (SEIF), continues. To date, no prioritisation has occurred or been required but the programme highlights the volume of activity that MOD has committed to, both on Naval Bases and with our Industry Partners, to further reduce the risk from the DNP. This includes an extensive programme of facility replacement and upgrade which is well advanced at AWE, infrastructure developments at Barrow, Clyde and RR Raynesway to support Successor and further investment in Devonport. Complementing the SIP, Babcock Marine at Devonport, in concert with the MOD, have developed a through life infrastructure capability planning process and HMNB Devonport are following suit with a Level 0 plan. DNSR welcomes these developments. Safety justifications are in place for continued operation of current facilities across the DNP, however should extended operational periods be required to mitigate replacement project slippage then further justification may be required, increasing the demands on limited NSQEP resources.

18. In response to DNSR assessment activities, Navy Command (as a Duty Holder to NRPA) has implemented improvements of emergency response arrangements at 2 Operational Berths (OB): at Loch Ewe and Loch Goil. All approved UK OBs are available for use by Nuclear Powered Warships; adequate emergency response arrangements are in place and have been demonstrated in accordance with relevant legislative requirements²⁰ at all locations. DNSR has also overseen the 3 yearly update of the MOD Hazard Identification and Risk Evaluation (HIRE) Submission for the NRP to the ONR.

²⁰ Radiation (Emergency Preparedness and Public Information) Regulations 2001.

19. **Summary.** Trafalgar Class submarines are operating in an approved extension period beyond their original design life; this is being appropriately managed by the NRPA in order to maintain nuclear safety. Vanguard Class will also be operated beyond their original design life and effective planning is in place to address predicted and potential effects. A targeted infrastructure development and refurbishment programme is planned to support Successor SSBN, while 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.

Issue 4 – Safety Case Improvement and Safety Management Arrangements

20. Overall this Issue is assessed as Priority 2 (Situation Improving); Duty Holder attention is required to ensure maintenance of adequate safety performance. *This continues DNSR 2012/13 Issue No.4 – Safety Case Improvement and Safety Management Arrangements.*

21. **Safety Case Improvement.** Developments are being progressed across the DNP including upgrading to modern standards safety cases, improved demonstration of ALARP, periodic reviews of safety and staged safety demonstration:

a. **ALARP Demonstration.** A fundamental requirement of UK safety legislation is that a Duty Holder shall reduce risks to the workforce and the public (who may be affected by an activity) so far as is reasonably practicable (SFAIRP aka ALARP). Whilst some progress has been made over this reporting period, DNSR will continue to seek improvements in the written demonstration and implementation of ALARP across the DNP.

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 will continue to require significant effort across the DNP to deliver in a timely manner. A staged approach for PRS delivery has been developed at HMNB Clyde that should make the process easier to deliver, reducing peak loading and align it with wider MOD resource planning timelines; such an approach may be adopted across the wider DNP. Whilst significant confidence continues to be provided by the regular programme of design safety reviews, Duty Holder prioritisation is required to support timely delivery of the PRS for equipment approved and activities undertaken by the Nuclear Weapon Approving Authority and the AWE Warhead Design Organisation.

c. **Staged Safety Demonstration.** Maintenance of a staged safety demonstration programme suitably aligned with a staged design development programme is vital to mitigate the risk associated with demonstrating adequate equipment safety performance and possible late regulatory challenge²¹. Authorisees are expected to adopt a safety informed approach to design to ensure that safety risk reduction options are considered and to maintain early engagement in programmes to gain assurance that ALARP considerations are being suitably prioritised in design development.

22. Generally, safety case improvement is being delivered across the DNP but a lack of availability of qualified safety case authors²² to support the programme will impact on the rate

²¹ Late regulatory challenge is mitigated by early declaration of regulatory requirement and continuous engagement thereafter.

²² 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.

of progress. Nevertheless, the continued drive for robust safety justification remains vital. There is a requirement to learn from recent approaches to updating safety cases to modern standards, such as the Devonport 15 Dock safety case (PSC220), to inform future updates of other safety justifications and for various PRS lessons to be disseminated.

23. **Internal Challenge.** Effective internal Authorisee challenge is a vital factor in ensuring nuclear safety. The robustness of these internal challenge arrangements remains variable across the DNP but, of note, there is evidence of strong and mature internal challenge at HMNB Clyde. DNSR consider that improved internal challenge arrangements have an important role in addressing many of the issues associated with the development of safety cases and ALARP consideration and is an area for continuing development.

24. **Summary. In general, safety case improvement is being delivered; however, the quality and timely delivery of safety cases needs continued attention. Sustained focus on a safety informed approach to design is key to ensuring the sound application of the ALARP requirement. The robust application of PRS processes, that reflect relevant good practice, remains a vital objective. Internal Authorisee challenge arrangements are currently variable, as is the response within Project, and both have a major role in improving: safety cases; ALARP demonstration; and PRS application. Overall, Duty Holder attention is required to ensure maintenance of satisfactory safety performance.**

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

25. Overall this Issue is assessed as Priority 2 (Situation Steady); Duty Holder attention is required to ensure maintenance of adequate safety performance. *This continues DNSR 2012/13 Issue No.5 – Quality of Product (incorporating Control of Work).*

26. 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. This issue has received considerable attention across the DNP and a 'right first time' quality product initiative has been pursued to support the delivery, as well as safety, of the DNP. The training introduced by Babcock Marine (BM) in Devonport and at HMNB Clyde is seen as an exemplar for ensuring that the workforce understands the potential long term implications of their actions on the future safe operation of the submarine. BAES continues to implement their wide ranging improvement programme at its Barrow shipyard and DNSR will continue to monitor build quality, maintaining its scrutiny of supervision of operations and application of processes. There is an ongoing need for the SQEP workforce to be responsible and accountable for their actions; the continued safety of the DNP requires vigilance to pervade throughout every activity and for a questioning attitude to be the mainstay of the way people approach their work

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

- a. The second cycle of Submarine Enterprise Safety Culture Peer Reviews concluded in 2013 with Navy Command; the third cycle is well developed and aims to build further upon the developments established to date.
- b. DNSR has seen improvements in the timeliness and quality of the learning from experience (LfE).
- c. 2013 saw the 5th Submarine Safety Symposium, held at Barrow, an event held every 2 years. The theme was adopting project delivery behaviours that ensure safety whilst maintaining quality. It attracted some 200 attendees drawn from across those who deliver the DNP. DNSR considers that this is a very good

example of a cross programme safety learning event and that it is going from strength to strength.

28. 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. Whilst BM at DRDL was served an Improvement Notice (IN) by the ONR²³ for breaches of operational rules, dealing with both the immediate causes and cultural issues, it was successfully closed out on 31 Mar 14 following a joint inspection by ONR and DNSR but further work will be required to embed and spread the good practice.

29. **Summary. A 'right first time' quality product is essential to support the delivery, as well as safety, of the DNP. Various initiatives have been progressed to address quality delivery across the programme. Continued, robust and timely Duty Holder attention is required with respect to 'control of work'; it is only through rapid reporting of the lessons from events that learning can be delivered and, in many cases, shared.**

Issue 6 – Transport and Package Approval

30. Overall this issue is assessed as Priority 2 (Situation Improving); Duty Holder attention is required to ensure maintenance of adequate safety performance. *This continues DNSR 2012/13 Issue 6 – Transport and Package Approval.*

31. Defence Radioactive Materials (RAM) transport convoys continue to be conducted in a safe and secure manner. Transport nuclear emergency response capability has been shown by 3 successful demonstrations this year. However, the response plans, in particular the immediate response forces and public protection advice, should be reviewed to take account of technological developments and to consider the possibility that some assumptions driving the response arrangements may be overly pessimistic.

32. DNSR is well established as the Competent Authority for DNP RAM transport packaging and continues to liaise with industry bodies and with ONR in relation to developments in the field²⁴. To facilitate the package approval process DNSR has issued a technical guide on achieving regulatory approval of transport package designs. There is an increasing workload as new packages are proposed to support the requirements of the expanding DNP: there has been significant and early engagement with the designers of a number of new packages. The regulatory effort required for the approval of such new package designs is significantly greater than that required for periodic reviews of safety of existing package designs and, recognising resource limitations across the DNP, there is a continuing need for clear prioritisation of packaging and container requirements by users.

33. **Summary. DNP RAM convoys continue to be conducted in a safe and secure manner. A number of new packages are in development, with early regulatory engagement with duty holders. However, it is likely that clear approval prioritisation requirements across the DNP will be essential in the long term to ensure both maintenance of extant approvals and establishment of new approvals.**

Issue 7 – Nuclear Liabilities

34. This Issue is assessed as Priority 3 (Situation Steady); there has, in general, been satisfactory performance in addressing decommissioning and disposal issues. *This continues DNSR 2012/13 Issue No.8 – Nuclear Liabilities.*

35. The MOD Nuclear Liabilities Management Strategy continues to be progressed with generally steady progress being maintained across the varied range of MOD Nuclear Liabilities. The Submarine Dismantling Project has decided on a staged dismantling

²³ ONR Improvement Notice I/2013/ONR/GM/001.

²⁴ For instance, computer modelling as opposed to the physical testing of models and prototypes is gaining in importance.

approach, removing low level waste at next planned docking and then removing ILW when an ILW storage solution has been agreed²⁵ that will allow safe interim storage until it can be disposed of in the UK's planned Geological Disposal Facility (GDF). The ILW removal is the major task, and will be achieved by removing from each submarine the intact Reactor Pressure Vessel (RPV) which contains all the ILW at that stage. This methodology is supported by DNSR as it progresses the disposal of the NNPP nuclear liabilities, while minimising unnecessary handling resulting in dose uptake and secondary waste generation. Noting that the intent is to demonstrate the initial dismantling process by removing all radioactive waste from a submarine at Rosyth and then dismantle the remaining submarines at both Rosyth and Devonport, a joined up approach with all regulators (DNSR, ONR, EA and SEPA) has been agreed. Separately, the project to defuel out of service nuclear submarines by DRDL has progressed with commencement of the on site construction of the new SSN defuelling Reactor Access House whilst decommissioning of the legacy decontamination systems in DRDL is nearing completion.

36. Current reactor core testing at NRTE Vulcan is scheduled to complete in 2015/16 and there are no current plans for NGNPP prototyping at the site, although the SofS in his statement of the 6 Mar 14 said that he had asked the Chief Scientific Adviser to review again the evidence on which the decision not to operate a test reactor was based. The Vulcan decommissioning strategy and plans continue to be developed and the regulatory approach between DNSR, ONR and SEPA remains under discussion, although the expectation is that the defuel will remain an Authorised activity.

37. Options for spent NRP fuel have developed since publication of the MOD Nuclear Liabilities Management Strategy following closer engagement with NDA which is expecting to manage other types of "exotic" spent fuel from research reactors and the like. However, ultimate disposal options remain open and are likely to do so for an extended period leading to a potential need to develop intermediate storage options.

38. Whilst progress in other areas across the DNP has been steady, AWE was not able to comply with an ONR licence instrument which required them to make 1,000 legacy intermediate level waste (ILW) waste drums passively safe for interim storage by Feb 14. ONR are investigating the licensee's failure and will consider action in accordance with their enforcement policy.

39. **Summary. Progress in addressing decommissioning and disposal issues has been steady and safety performance is generally considered satisfactory. Maintenance of the momentum generated on decommissioning and disposal is vital as part of a holistic approach to through life safety management.**

Issue 8 – Fukushima Response

40. This issue is assessed as Priority 2 (Situation Steady); Duty Holder attention is required to maintain an adequate pace of progress in evaluating and addressing "considerations" drawn from the Fukushima event. *This continues DNSR 2012/13 Issue 8 – Fukushima Response.*

41. As recorded in the previous Annual Report, the regulatory requirements and the responses from Authorisees in the DNP mirrored those in the civil nuclear sector; in particular, the application of the ENSREG²⁶ Stress Tests to plant and facilities. These tests required Authorisees to evaluate the response of their facilities against extreme external events, irrespective of their estimated probability. DNSR was content with the responses from all Authorisees which identified a small number of considerations for further review and

²⁵ SDP announced ILW Storage Site provisional shortlist in Feb 14.

²⁶ European Nuclear Safety Regulators' Group (ENSREG).

sentencing. DNSR's view of the resilience of the DNP was set down in a report²⁷ published in July 2012.

42. DNSR noted that, in many respects, the NRP are resilient to the type of external events which triggered the Fukushima incident. The supporting docks and berths, though exposed, are designed against extreme weather in support of their function, and improvements had recently been made to facilities supporting Nuclear Emergency Response at both HMNB Clyde and Devonport Dockyard.

43. Turning to an operating submarine, it was recognised that, by its function in an enclosed environment, it was protected from extreme natural events. However, DNSR and the NRP Authorisee (NRPA) recognised that lessons from the Fukushima incident should be applied and should consider events, or combinations of events, which might previously have been considered beyond the Design Basis. Accordingly, the NRPA and DNSR agreed a list of Stress Tests to be applied to the NRP taking account of its particular operating environment and the threats which this might generate, of particular value for informing the design of the Successor SSBN. These NRP Stress Tests are now supporting the design evolution of the Successor SSBN and its reactor plant, NGNPP, and provide a valuable supplement to earlier hazard identification activities. To date, this work has not provided any findings which affect or can be "back-fitted" into operational or in-build submarines.

44. The work of the Fukushima Sub Group formed under the auspices of the Enterprise Safety Directors Forum (ESDF) to take a Submarine Enterprise wide perspective on sentencing Fukushima considerations has largely completed and the group meetings have been scaled back. The Sub Group drove the sentencing of considerations and the identification of items and issues to be addressed as part of the normal PRS process. Conscious of the reliance that Authorisees have placed in their PRS processes, DNSR considers there is a need to continue monitoring progress on these items and issues.

45. The Defence Resilience initiative aimed at supporting a national emergency response organisation by identifying defence assets which might be available and useful in the event of a nuclear emergency remains ongoing. The approach adopted in the civil field, with the acquisition of specific emergency response assets, offers the potential for a combined response but also highlights the need to progress further the Defence Resilience initiative.

46. **Summary. To date, the DNP responses to lessons drawn from the Fukushima event have been satisfactory, as has the sentencing of considerations. However, the responses place considerable reliance upon the Authorisees' PRS processes to sentence issues and DNSR will continue to monitor progress. In addition, the Defence Resilience initiative needs to be progressed.**

Previously Identified Issues

47. A summary of the key issues identified in Defence Nuclear Environment and Safety Board²⁸ (DNESB) and DNSR Annual Reports over the past 5 years (2007 to 2012) was provided in the DNSR Annual Report 2012/13. The nature of regulatory issues often means that suitable mitigating action requires a significant timescale, for example, those relating to *adequacy of resource* to deliver the DNP and those relating to *safety case improvement*. These issues remain priorities for DNSR and progress has been discussed earlier.

²⁷ "Japanese Earthquake and Tsunami: Implications for the UK Defence Nuclear Programme – A Regulatory Assessment by the Defence Nuclear Safety Regulator" dated 17 July 2012.

²⁸ The DNESB has been replaced by the Defence Nuclear Regulation Stakeholder Committee (DNRSC).

SECTION 4 – REGULATORY ACTIVITY

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.

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

- a. Permitted 50 significant nuclear activities.
- b. Reviewed 114 documented safety submissions.
- c. Conducted 63 planned inspections (many in conjunction with ONR).
- d. Approved (as Competent Authority) 7 transport packages for the transport of Defence nuclear materials.
- e. Assessed 19 Nuclear Emergency Response demonstration exercises,

3. No Safety Improvement Notices or Immediate Safety Requirements have been raised by DNSR during the reporting period. Early engagement is one of DNSR's values²⁹ 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. DNSR has responded to 7 formal information requests³⁰, including responding to 4 Freedom of Information requests and 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 to DNP related requests handled elsewhere in the MOD in which DNSR has an interest. 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.

5. Organisation and Resources. As of 31 Mar 14, DNSR's professional complement is at 95%; one Inspector post is gapped out of 22 such posts. The appointment of a new Principal Inspector Operational Reactors post at the Commander RN level addressed the short term gapping reported last year whilst continued manning of the Principal Inspector Clyde & Fleet post has been achieved. Furthermore, a new DNSR transport inspector has been recruited and is being trained up to assist the Principal Inspector Transport. Vulnerabilities exist in specific technical areas and DNSR is planning a number of initiatives to mitigate the impact of any loss of expertise: for instance, DNSR has placed an inspector with ONR for 3 months to develop his knowledge with respect to civil emergency response planning. An NSQEP development post has also been used in year within DNSR to develop the competencies that will enable the individual to compete for forthcoming inspector posts. However in year, 2 DNSR senior inspectors, including the previous Head of DNSR, left to join ONR. It is anticipated that this continuing attraction from the civil regulatory organisations and external resourcing pressures will continue to challenge DNSR's complement.

6. IRRS Style Review. In common with international civil practice, DNSR initiated a review of the MOD's nuclear regulatory framework. The objective of the review, which was based upon the established practice of the International Atomic Energy Agency (IAEA) Integrated Regulatory Review Service (IRRS), was to compare the DNSR regulatory

²⁹ DNSR Values, articulated in the DNSR Strategy 2013-2023, are: competent, consistent, proportionate, targeted, informed, transparent, joined-up, timely and learning.

³⁰ Including Freedom of Information Act requests, Parliamentary Questions and press enquiries.

framework with relevant national and international guidelines. The review team considered that the regulatory framework is appropriate, that DNSR is operating effectively and that resourcing is currently adequate. As expected, the review team identified some opportunities for improvement, particularly relating to strategic planning and consistency of approach within DNSR. An independent reviewer had oversight throughout; he considered that the report is a fair and reasonable summary and agrees with its conclusions and recommendations. Work is well underway to address the review team recommendations and suggestions.

7. Security Informed Nuclear Safety (SINS). A combined DNSR and ONR view on requirements for SINS in the Defence sector was introduced to stakeholders in the DNP in early 2012. Work has progressed in understanding the interfaces between safety and security and a tiered approach to SINS has been agreed between Defence Nuclear Safety Regulators and the Director Business Resilience - Defence Security and Principle Security Advisors. This approach includes the introduction of a Nuclear Safety and Security Regulatory Interface Group to ensure that there is a coherent approach to the setting and delivery of nuclear safety and security requirements and to provide a venue to ensure any conflicts between these requirements are suitably reconciled; the first of these meetings has been held and was productive.

8. 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. An updated Letter of Understanding between ONR and DNSR is in production, recognising the transfer of ONR to a Public Corporation from 1 Apr 14. Effective working relationships at all levels has ensured that coherent regulator programmes and strategies are produced and implemented. Both regulators intend to continue to work to enhance the effectiveness of the working relationships and DNSR has contributed to the review of ONR Safety Assessment Principles.

c. DNSR 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 DNSR and SEPA at HMNB Clyde and at Vulcan. A review of the MOD/SEPA Agreement³¹ was undertaken in the period and both parties agreed to develop a more detailed LoU between DNSR and SEPA to assist inspectors to provide a more coherent and consistent regulation of the DNP in Scotland.

9. Openness and Transparency. DNSR is seeking to develop its approach to openness and transparency, recognising the approach being taken by other regulators (e.g. ONR). However, a careful balance must be struck in Defence with the need to protect national security and international relations.

³¹ "Agreement between the MOD and SEPA on Matters Relating to Radioactive Substances" dated 24 September 2012.

10. International Collaboration. A good working relationship continues to develop between DNSR and the French Defence Nuclear Safety Regulator, DSND³², regarding cooperation in the regulation of Project TEUTATES. Meetings have been held both in the UK and France. DNSR and DSND will also continue to work closely to ensure that the safety management arrangements for the project meet the expectations of both regulators.

11. Organisational Change Assessment. DNSR has been particularly active in the area of strategic organisational change, promoting the need for prior assessment of the impact on safe delivery of outputs with suitable MOD Authority consideration. A route has now been established within MOD for the consideration of such strategic changes, through the DESC.

12. Joint Service Publications (JSPs). JSP 518³³ and JSP 538³⁴ have been reviewed and updated in year and, following final consultation through the Defence Nuclear Regulatory Forum (DNRF), amended versions will be issued by end of July 2014.

Progress Against Priorities for 2013-2014

13. The DNSR Annual Report 2012/13 identified particular DNSR focus in 2013/14 on a number of issues in addition to routine regulatory activity. Progress against these is reported below:

a. Seek to establish full staff complement; complete a scoping exercise to examine DNSR's long term sustainability recognising wider MOD organisational developments; and support the review to inform possible DSEA/MAA operation under common management. Full staff complement was achieved and a review of the DNSR organisation and its long term sustainability has been completed. The DSEA/MAA common management arrangements review was deferred noting the potential impact of DE&S MatStrat on the Defence Regulatory environment; this review will now consider the formation of a 'Defence Safety Authority' and will take place in 2014/15.

b. Issue a DNSR Regulatory Strategy, including strategic themes. Completed and issued Oct 13. The DNSR Strategy 2013 – 2023 contains the DNSR Vision and Mission; DNSR Values, Quality Policy and Mission Delivery process; and a DNP illustrative 10 year forward look to provide a programme context. It also identifies the strategic issues highlighted by previous DNSR Annual Reports as requiring Authorisee attention to ensure safe delivery of the DNP over the medium to long term.

c. Complete an IRRS style review and establish a programme to suitably take forward any recommendations. Completed; recommendations and suggestions are being taken forward.

d. Continue to enhance the effectiveness of the joined-up working relationship with ONR, to include working together with the ESDF. Working in collaboration with ONR has continued and a new Letter of Understanding (LoU) between DNSR and ONR is in course of production, recognising that ONR became a Statutory Corporation on 1 Apr 14. This LoU builds on the output from a joint DNSR/ONR Study Day held in Nov 13.

e. Continue to lead and develop the DNPRF promoting a coherent regulatory approach across the DNP. DNPRF meetings held in 2013 to promote coherent regulation. In addition, DNSR has held routine meetings with SEPA, EA and ONR at a senior level.

³² Délégué à la sûreté nucléaire et à la radioprotection pour les activités et installations intéressant la Défense (DSND).

³³ JSP 518 – Regulation of the Naval Nuclear Propulsion Programme, Issue 3.10 dated September 2010.

³⁴ JSP 538 – Regulation of the Nuclear Weapons Programme, Issue 2.10 dated September 2010.

- f. Work with the Authorisees/Licensees to develop appropriate guidance in progressing SINS expectations. DNSR has had effective engagement with Director Business Resilience - Defence Security and Principal Security Advisors and has agreed an approach to progress SINS.
- g. Issue updates to JSP 518 and JSP 538. Updates of Part 1 (Directive) of JSP 518 and JSP 538 will be issued by end of Jul 14 and work continues on Part 2 (Guidance) of each JSP for up-issue by Apr 15. These issues incorporate the Defence Reform Unit new JSP structure.

SECTION 5 – PRIORITIES FOR 2014 – 2015

2. 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; pursue a succession planning approach for the MOD civilian nuclear community; pursue greater freedoms to recruit ex-military skills; and pursue 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. (*Issue 3*);
- d. Focus on the development and implementation of robust PRS processes; develop the strength of Authorisee internal challenge; and ensure a safety informed approach is taken in design avoiding late application of the ALARP process. (*Issue 4*);
- e. Pursue a Submarine Enterprise approach to development 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*);
- f. Engage early with DNSR on transport package development programmes and prioritise operational container approval requirements. (*Issue 6*);
- g. Maintenance of the momentum generated on decommissioning and disposal of defence nuclear liabilities. (*Issue 7*); and
- h. Continue to close out issues resulting from lessons drawn from the Fukushima event including the Defence Resilience initiative. (*Issue 8*).

3. In addition to routine regulatory activity, particularly focussed on the issues above, DNSR should:

- a. Complete actions arising from the DNSR IRRS type review Recommendations and Suggestions and consider timing for a follow up audit.
- b. Contribute to the project for the development of common management arrangements for DSEA and the MAA.
- c. Re-issue JSP 518 and JSP 538 with updated Part 2s (Guidance).
- d. Input to the ONR review of nuclear site License Conditions and consider impact on DNSR's Authorisation Conditions.
- e. Work with the DNP to bring greater coherence and coordination to the reporting of DNP nuclear safety events.

Head of Defence Nuclear Safety Regulator







ANNEX A – SUMMARY OF KEY ISSUES (2012/13 – 2013/14)

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 whether the assessment of regulatory priority 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 2012/13	Regulatory Priority 2013/14
1. Resources and Nuclear Suitably Qualified & Experienced Personnel (NSQEP) <i>Section 3, Paras 2–8</i>	<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 <i>Section 3, Paras 9–14</i>	<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. • Early regulatory engagement in strategic change initiatives 	Priority 1 	Priority 2 
3. Ageing Plant, Facilities & Infrastructure <i>Section 3, Paras 15–19</i>	<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 EIMT plans are robust and fully implemented. • Maintain a holistic approach to infrastructure investment across NNPP through the SEIF. 	Priority 2 	Priority 2 











Issue	Potential Mitigation	Regulatory Priority 2012-13	Regulatory Priority 2013-14
4. Safety Case Improvement & Safety Management Arrangements <i>Section 3, Paras 20–24</i>	<ul style="list-style-type: none"> • Focus on the implementation of robust PRS processes. • Ensure a safety informed approach is taken during design avoiding late application of ALARP process. • Implement 'Safety Case on a Page' methodology across DNP. • 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) <i>Section 3, Paras 25–29</i>	<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 BAES and RRS sites. 	Priority 2 	Priority 2 
6. Transport & Package Approval <i>Section 3, Paras 30–33</i>	<ul style="list-style-type: none"> • Engage early with DNSR on transport package development programmes. • Prioritise operational container approval requirements across DNP. 	Priority 2 	Priority 2 
7. Nuclear Liabilities <i>Section 3, Paras 34–39</i>	<ul style="list-style-type: none"> • Maintain the commitment and momentum generated on decommissioning and disposal recognising that the funding threat remains. • Maintain focus on delivering against commitments in the MOD's Nuclear Liabilities Management Strategy. 	Priority 3 	Priority 3 
8. Fukushima Response <i>Section 3, Paras 40–46</i>	<ul style="list-style-type: none"> • Progress issues assigned to the PRS process. • Progress the Defence Resilience initiative. 	Priority 2 	Priority 2 

Table A-1 Summary of Key Issues (2012 – 2014)