



- 4116 NSAG / DNSAG is responsible for authorisation of work in the Shiplift Facility to ensure that nuclear safety is not compromised. All work within the Facility that is not in accordance with approved documentation is subject to NSAG / DNSAG approval through the Nuclear Safety Clearance Form in accordance with the Clyde Management System.
- 4117 The NSAG / DNSAG is responsible for approving maintenance concession requests for equipment with maintenance periods of 3 months or greater in accordance with the Clyde Management System.
- 4118 The Facility Operator and the Design and Safety Justification Group are represented on the DNSAG/NSAG.

#### **Strategic Weapons System Procedure Authorisation Group (SWSPAG)**

- 4119 The primary purpose of the Strategic Weapons System Procedure Authorisation Group (SWSPAG) is to authorise, monitor and control all activities associated with the Strategic Weapons System (SWS) within HMNB Clyde. The SWSPAG is responsible to the FO to ensure the documentation they approve maintains the design intent of the SWS, falls within the boundary of the Site and Facility Safety Cases, and adequately addresses the requirements of SWS safety and ALARP.
- 4120 All work related to the SWS is undertaken under procedures (SPs) approved by SWSPAG. The FO or his representative is required to be a signatory on all SPs.
- 4121 The operation of the SWS is set out in SWSPAG-POL-001 (Ref.<sup>47</sup>).

#### **Nuclear Justification Appraisal Group (NJAG)**

- 4122 The NJAG constitutes a reporting and appraisal forum on decisions made and issues identified at other meetings. Chaired by Site Safety Justification Manager (SSJM) on behalf of the Authorisee and accountable to NBC's Base Board, its purpose is to appraise the Authorisee of both the NSSJ development and key high-level safety issues. The purpose is further to ensure that Nuclear Site Safety Justification (NSSJ) development is consistent with the agreed Site Safety Strategy and that Regulatory expectations and key Safety Significant issues are being given appropriate priority.
- 4123 The TOR for the NJAG are contained in Reference <sup>48</sup>.

#### **Vessel and Crew Support Operations Working Group (V&CSOWG)**

- 4124 The Vessel Support (VS) Programme exists to ensure that HMNB Clyde is ready at all times to manage and deliver all of the engineering support, update and maintenance services that meet the agreed requirements of submarines and surface ships based at, visiting or undertaking operational sea training from HMNB(Clyde) during Fleet Time.
- 4125 The purposes of the V&CSOWG is to maintain and direct the Vessel and Crew Support Programmes, to provide SQEP advice and support to the Vessel Support and Crew Support Output Programme Directors.



- 4126 The VS Hold Point Control Document (HPCD) and Logic is the methodology that Superintendent Fleet Maintenance (SFM), the VS Permissioning Director, uses to ensure that each key phase or activity of the VS programme is conducted safely and within the constraints of the Site's nuclear and conventional safety management arrangements. The V&CSOWG is responsible to SFM for the functional management of the Hold Point Control processes and associated risks.
- 4127 The V&CSOWG is chaired by the Vessel Support Capability Manager (VSCM).
- 4128 The TOR for the V&CSOWG is contained within Reference <sup>49</sup>.

## QUALITY ASSURANCE STRUCTURE

### Corporate Quality

- 4129 The Clyde Management System Manual (Ref.3) defines NBC's policy and commitment to quality and provides a detailed description of the full suite of documentation within the Clyde Management System.
- 4130 A full description of the Senior Level organisation and key responsibilities for quality against specified elements and work activities are provided within the Clyde Management System Manual (Ref.3).
- 4131 The Head of Health, Safety, Environment and Quality (HHSEQ) is the appointed person for the Clyde Management System and is responsible to NBC Clyde, through the Babcock Business Services Director and Managing Director for:
- Generating and maintaining the Clyde Management System Manual and managing its implementation on behalf of NBC Clyde.
  - Ensuring that a management system is developed implemented, audited, reviewed, continually improved and maintained in accordance with BS EN ISO 9001 (Ref. <sup>50</sup>), BS EN ISO 14001 (Ref <sup>50</sup>) and other relevant requirements with appropriate input from a range of specialist quality, safety and environmental managers.
- 4132 The Quality Manager (QM) is accountable to HHSEQ for the continued Base certification to the ISO 9001:2008 standard (Ref. 50) & other management requirements. He is responsible for maintaining and developing the Base Quality System in accordance with regulatory, legal and requirements of BS EN ISO 9001 (Ref. 50) and as defined within the Clyde Management System Manual (Ref.3).
- 4133 The Shiplift Facility is operated strictly in accordance with the Clyde Management System as defined within the Clyde Management System Manual (Ref.3). The FO/FM and staff are responsible for the performance, management and verification of their work activities. They are also responsible for providing feedback to management to enable continuous improvement of the processes.

### Control of Change

- 4134 Control of management changes are conducted to meet the requirements of AC 36 in accordance with CMSPM CMS-PM-015 (Ref. <sup>51</sup>).



- 4135 The arrangements in place for the amendment review and re-issue of Shiplift operating documentation is described within Process Map DOC-PM-004 (Ref. <sup>52</sup>). The control, review and approval of physical modifications to the Shiplift Facility are contained within the Clyde Management System and outlined below.
- 4136 Design and Safety Justification -
- The HMNB Clyde Design Authority is made up of the Naval Base Design Department (NBDD) (Technical Authority) and the NSADT Approving Authority. The Design Authority is the focal point for all Shiplift platform and non-platform design related issues including a liaison with other DAs.
  - The Safety Justification Group is responsible for the maintenance and development of the Shiplift Facility Safety Case
- Requests for design and safety management services are conducted in accordance with CMSPM NSAD-PM-005 (Ref. <sup>53</sup>).
- 4137 Design Control. - Design control of the Shiplift Facility is exercised by the Clyde Design Authority in accordance with CMSPMs NBDD-PM-010, NBDD-PM-006, NSAD-PM-007 and NSAD-PM-004 (Ref. <sup>54</sup>).
- 4138 SDCC. - The Faslane SDCC is a sub-committee of the CNSC that assess any changes with implications on the design safety case, ensuring that the consequences of change to the systems, equipments and structures are thoroughly considered and actions arising properly controlled. The TOR for the Faslane SDCC are contained in the Clyde Management System Manual (Ref.3).
- 4139 NSSSC - The Faslane NSSSC is a sub-committee of the CNSC that assess any changes with implications on the nuclear site safety justification, ensuring that the consequences of change to the justification are thoroughly considered and actions arising properly controlled. The TOR for the Faslane NSSSC are contained in the Clyde Management System Manual (Ref.3).
- 4140 NWSSSC - The Faslane NWSSSC is a sub-committee of the CNSC that assess any changes with implications on the nuclear weapons safety justification, ensuring that the consequences of change to the justification are thoroughly considered and actions arising properly controlled. The TOR for the Faslane NWSSSC are contained in the Clyde Management System Manual (Ref.3).

### **Audit**

- 4141 The Clyde Management System at HMNB Clyde is subject to continuous scrutiny from the external regulatory and certification bodies and to the comprehensive internal audit programmes in accordance with CMSPM CMS-PM-009 (Ref. <sup>55</sup>).
- 4142 Audits, assessments, inspections and compliance checks are undertaken in accordance with Process Map CMS-PM-009 (Ref. 55).
- 4143 The Activity Integration Assurance Manager (AIAM) implements the Assurance Department AC Inspection Programme to provide assurance that AC compliance is adequate. He is also responsible for monitoring the results of internal/external audits on nuclear matters, and to identify additional audit requirements as necessary.

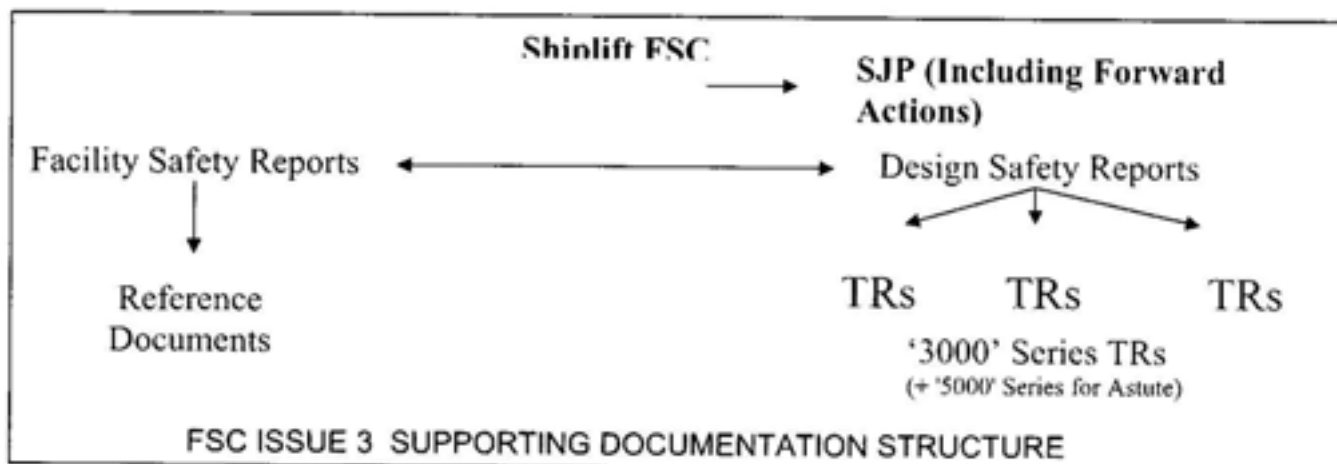
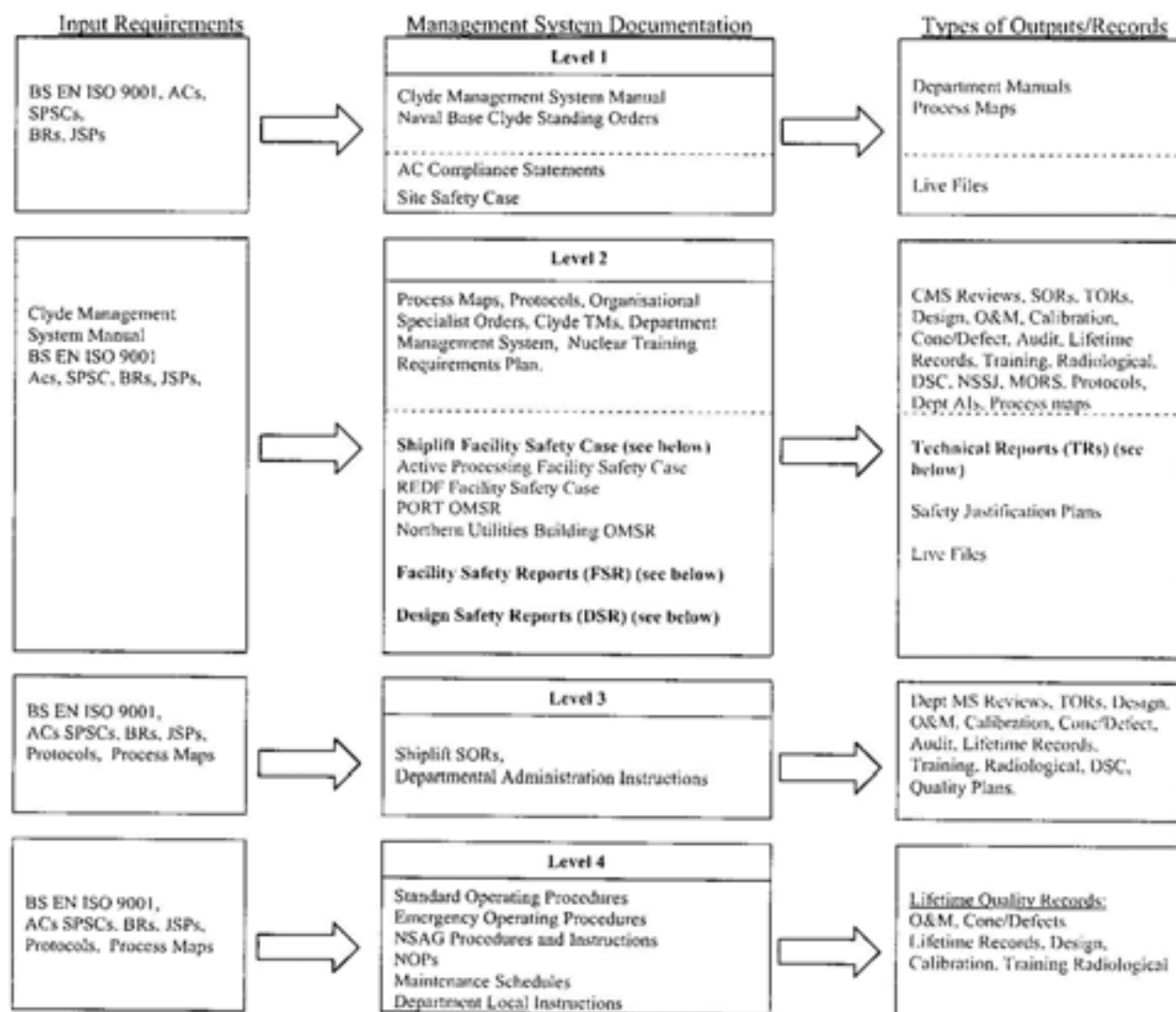


- 4144 All activities within the Shiplift are subject to regular systematic and independent examination to determine whether those activities and related results comply with documented arrangements and whether those arrangements are satisfactorily implemented.
- 4145 All identified areas of non-conformity are managed in a timely manner within the Facility and corrective actions are regularly presented for assessment and closure in accordance with the requirements of CMSPM CMS-PM-009 (Ref. 55).
- 4146 Assessment of the Facility activities and performance are presented at the Site Services Management Reviews, and subsequently to NBC (Authorisee) Management Reviews for assessment and identification of recommendations or required corrective actions in accordance with CMSPM CMS-PM-005 (Ref. 56).

**Document Structure**

- 4147 The structure and hierarchy of the Clyde Management System developed for HMNB Clyde is shown within the Clyde Management System Manual (Ref.3). The document hierarchy is split into four levels cascading down from the top level Clyde Management System Manual to operating procedures relevant to Facility operations and is presented at Figure 4.4 below.

Figure 4.4 – CMS Documentation Structure





### FSC Supporting Documentation

- 4148 The Facility Safety Reports (FSRs) provide a unified presentation of Facility wide issues as distinct from the Design Safety Reports which are focussed on individual areas of equipment. These reports are:
- Facility Hazard Assessment
  - Facility Safety Functional Requirements
  - Facility Conditions and Limits of Safe Operation
  - Facility Probabilistic Risk Assessment
  - Facility Fault Recovery Guidance. Note: Currently under further development to provide fault specific recovery guidance.
- 4149 FSR - Facility Hazard Assessment (Ref. <sup>57</sup>) - The Facility Hazard Assessment brings together a presentation of the following safety case building blocks:
- Hazard Identification
  - Hazard Log
  - Preliminary Hazard Review
  - Hazard Assessment
- 4150 The Facility Hazard Assessment report captures, by reference, all of the sources of information from which hazards have been identified and consolidated into the safety case. By explaining the relationship between this report and other documents with which it interfaces, the reader is able to follow each hazard from its source, through to the determination of its significance, its assessment, and how it is swept-up in the risk assessment.
- 4151 FSR - Safety Functional Requirements (SFR)(Ref. <sup>58</sup>) - The functions of systems and structures, which are required to ensure nuclear safety, are identified together with any withstand capabilities and/or performance and/or reliability characteristics.
- 4152 This FSR identifies the SFRs for the facility as a whole systematically and comprehensively. The SFRs are listed and the report explains their relationship to the hierarchy of safety requirements which exists in terms of the higher level requirements specified at the facility level, and at the NRP level. The report tabulates the SFRs that require to be substantiated in order to ensure a robust safety case.
- 4153 FSR - Facility Conditions and Limits of Safe Operation (Ref. <sup>59</sup>) - The FSC is required to identify the Conditions and Limits within which the Facility requires to be operated in order that safe operations are maintained and, importantly, that potential nuclear/radiological risks are controlled in accordance with the Facility safety case, to levels that are considered acceptable within the regulatory framework.
- 4154 FSR - Facility Probabilistic Risk Assessment (Ref. <sup>60</sup>) - The PRA document presents the risks of radiological consequences that could potentially arise in the event of fault conditions, including impingement of hazards, occurring during Current Class SSBN/SSN operations at the Clyde Shiplift Facility. The analysis provides the risks for three dose groups (the public, site workers, and ships crew) in order to support this FSC in demonstrating that the risks presented are tolerable ALARP. Furthermore, the risk data in the PRA allows a comparison with the BSL and BSO from the MoD SPSC to be made in the Site Safety Justification.
- 4155 FSR - Fault Recovery Guidance (Ref. <sup>61</sup>) – This FSR provides a fault recovery roadmap and sets out a framework for the development of documented procedures the adoption of which provides a robust basis for demonstrating that an appropriate



decision process had been implemented to cater for recovery actions in the event of an emergency action within the Shiplift.

Note: Reference 61 is currently under further development to provide fault specific recovery guidance.

- 4156 Design Safety Reports – The DSRs support this FSC by demonstrating that the systems covered within the DSRs are constructed, operated and maintained to a standard appropriate to their nuclear safety significance. The DSRs are reviewed and approved by NBDD, the NSSSC and the CNSC. The DSRs follow a consistent format, taking all of their requirements, including hazard withstand requirements, from the FSR SFR report (Ref. 58) and the hazards to be considered from the FSR FHA report (Ref. 57).
- 4157 This FSC then contains a summary presentation of the overall safety and design justification together with the Clyde safety management arrangements and organisation relevant to the safe operation of the Facility.

### Ships Operating Procedures

- 4158 Ships Operating Procedures provide procedures for the normal and emergency operation of nuclear submarine equipment, including the NSRP. The relevant Atomic Books (ABs) provide information on the principles and philosophy of NSRP operation and the technical background used in the production of Ships Operating Procedures, for the current Class vessels. Ships Operating Procedures and ABs are specific to each class of submarine and are written, developed, amended and approved in accordance with BR 3018 (1) (Ref.17).

### ADMINISTRATIVE CONTROL OF ACTIVITIES

- 4159 The administrative controls relevant to this FSC associated with activities permitted within the Shiplift Facility are as detailed below.

### Berthing / Docking / Unberthing

- 4160 Controls for berthing activities are described in CMSPMs (Ref.13). The degree of control of such activities is indicated by a berth colour code system defined within the POMSR (Ref.24). The status is distributed daily in accordance with PAG-POL-001 (Ref. 43).
- 4161 Berthing / docking / unberthing operations are conducted in accordance with the approved SOPs and are fully described within Part 3 of this FSC.

### Craneage

- 4162 Instructions relating to procedures for operations performed by the Shiplift Facility Cranes are described in FD SOP 943(N) (Ref.<sup>62</sup>) and FD SOP 760(N) (Ref.<sup>63</sup>).
- 4163 The Crane Director and Crane Driver are functionally responsible to the FM for ensuring all crane pre-operational checks and operations are conducted in accordance with FD SOP 943(N) (Ref. 62) and FD SOP 760 (N) (Ref. 63).

### Shore Service Connection / Disconnection

- 4164 Northern Utilities Building Control Engineers (NUB CEs) are responsible for provision of shore services electrical supplies and communications from the NUB as defined within the NUB OMSR (Ref. 25) and described within the NUB DSR (Ref. 64). The duties and responsibilities of the NUB CEs are defined within their Terms of Reference.
- 4165 Utilities Engineer (Mechanical)(UE(M)) is functionally responsible to the FM for the provision of shore services mechanical supplies and those services described within the Shiplift Miscellaneous Services DSR (Ref. 65). Duties and responsibilities of the UE(M) are described within their Terms of Reference. The Duty Mechanical Shift Manager supports UE(M) in the provision of supplies.
- 4166 Utilities Engineer (Electrical) (UE(L)) is functionally responsible to the Facility Operator for the provision of shore services electrical supplies described within the NUB DSR (Ref. 64).
- 4167 The Head of Logistics is functionally responsible to the FO for the provision of transport and the operation and maintenance of the Diesel and Oil supplies to the Facility. These activities are conducted in accordance with appropriate Oil Fuel Depot work instructions.

### Facility Maintenance

- 4168 Co-ordination of maintenance, defect repair and testing of all NSI equipment within the Facility is the overall responsibility of the FM. Responsibilities for operation, maintenance and design are defined in the Shiplift SOR (Ref.1).
- 4169 UOM and M&E MM have divided responsibility to the FO for M&E maintenance in accordance with the NUB SOR (Ref. 26). EMM is accountable to the FO for B&CE maintenance in accordance with CMS.
- 4170 Control - The release of NSI equipment, systems or structures as defined within Shiplift SOR (Ref.1) in support of NSRP for maintenance or repair is strictly controlled by the FM in accordance with the Clyde Management System.
- 4171 A Planned Preventative Maintenance (PPM) database (Clyde Integrated Maintenance Management System (CIMMS) is maintained for all designated M&E non-NSI and NSI plant. Authorisation for the release of NSI systems or equipment for maintenance is given by the FO.
- 4172 Maintenance Documentation - The maintenance schedules for the Facility Equipment and structures have been developed from manufacturers O&M documentation. The maintenance schedules are reviewed by the NBDD with regard to the DSSC via the Maintenance and Operational Requirements Schedule (MORS) database.
- 4173 Maintenance schedules are issued, controlled and periodically approved by the NSAG /DNSAG in accordance with the Clyde Management System.
- 4174 All maintenance records are held by the Site Services Technical Information Centre (TIC) within the Lifetime Records.
- 4175 Maintenance Defects - Defects are reported by the Operating or Maintenance Authority and assessed by the Design Authority, and reported in accordance with the



Defect Reporting System (DRS) defined within the CMSPM NBDD-PM-004 (Ref.16).

- 4176 Where defect work is carried out on NSI Plant or Systems and replacement parts or consumables are required, they must comply with the original design specification. If for any reason there is a requirement to change the design or specification, then a Design Change Request (DCR) is submitted in accordance with CMSPMs NSAD-PM-001 and NSAD-PM-002 (Ref.<sup>66</sup>).
- 4177 Missed/Outstanding Maintenance - Missed/outstanding maintenance or overdue maintenance is controlled in accordance with NSAG-PM-003 (Ref.27).
- 4178 Any risks presented during the requirements to miss maintenance on NSI systems are assessed by the FO and approved through NSAG / DNSAG in accordance with NSAG-PM-003 (Ref.27).
- 4179 Inspection and Testing - All testing and trials on NSI shore services within the facility are conducted in accordance with NSAG / DNSAG approved Procedures or Instructions.
- 4180 UOM/M&E MM and EMM conduct Technical Inspections and professional structural appraisals on behalf of the FO/FM on a rolling programme.
- 4181 The Regulatory Systems Engineer is functionally responsible to the FO to meet the statutory test requirements of the Facility Cranes and lifting equipment. Additionally, the Regulatory Systems Engineer is responsible for maintaining a central register of all cranes, lifting appliances and lifting gear. Testing is also carried out beyond the SWL of the cranes to check the SWL indicators and alarms. Proof testing is only carried out after significant alterations or repairs and consists of running tests to 125% maximum SWL.
- 4182 Surveys - Surveys on major equipment and structures defined as NSI in Shiplift SOR (Ref.1) are conducted at specified intervals and controlled in accordance with the Clyde Management System. The survey report findings and recommendations are assessed, categorised and advised by the NBDD.
- 4183 All Facility cranes undergo a programme of surveys in order to detect potential weaknesses or defects. An independent authority conducts these surveys with particular attention being focussed on load path items.

#### NSRP Activities

- 4184 The CO is functionally responsible to the FO for ensuring that all NSI work onboard the submarine is controlled by the Nuclear Logic. Proposed by the Ships Staff, the Nuclear Logic takes into account all the authorised limitation of the NSRP and the Facility. Work associated with the Nuclear Logic is reviewed by the PAG against the authorised limitation and the Nuclear Logic is then approved and endorsed by the PAG Chairman and FO.
- 4185 The CO is responsible for ensuring that all operations on board and work relating to the NSRP complies with the requirements of NRPA 1-1(Ref.17), SSC (Ref.4) and this FSC. He is responsible to NBC for nuclear safety through the FO.
- 4186 The PAG Chairman is responsible for the management of the risk of operation of the NSRP on site in accordance with the principle of achieving the lowest reasonably

achievable risk of exposure of Naval Personnel, Civilian Personnel and the general public to the inherent radiological hazards.

- 4187 Radioactive Operations Manager (ROM) is functionally responsible to the FO for all operations involving the movement of the MKIV PET, described within the PET DSR (Ref.<sup>63</sup>), and the transfer of radioactive liquid effluent discharges from a berthed / docked nuclear submarine in accordance with NOP 203(A) (Ref.<sup>65</sup>) and NOP 203(B)(Ref.<sup>69</sup>).

#### **Vessel Non NSRP Activities**

- 4188 Control of Access to the Facility - All activities conducted within the facility are controlled by Facility Staff in accordance with the Safety Policy (Ref.15).
- 4189 Control of Diving - QHM is responsible for the approval for all diving activities within the Site in accordance with CMSPM HO-PM-025 (Ref.<sup>70</sup>). The FO is made aware of and is required to provide approval for all diving activities within the vicinity of the Facility in accordance with Reference 70. (Ref.70).
- 4190 Harbour Operations Affecting Facility Activities - These activities and the safeguards in place are defined within Clyde Management System Process Maps (CMSPMs) (Ref.<sup>71</sup>) as justified within the POMSR (Ref.24).

#### **Store Transfer and Vehicle Movement**

- 4191 Vehicles are limited to 5mph when travelling along 12 Berth to reduce the risk of collision or impact to the vessel.
- 4192 The use of all Mechanical Handling Equipment (MHE) such as Forklift Trucks and vehicle mounted lifting arms is limited and strictly controlled by the FM applying the Nuclear Safety Clearance controls within Clyde Management System as appropriate.

#### **Communications and Alarm Systems**

- 4193 Communications systems provided in the Shiplift Facility are fully described and justified in the Faslane Communications Systems DSR (Ref.23) and are also briefly described in part 3 of this FSC.

#### **ABNORMAL OPERATIONS**

- 4194 Any emergency operations within the vessel, including those associated with the NSRP, are controlled in accordance with Ships Emergency Operating Procedures (EOPs) and any authorised nuclear procedure emergency action.
- 4195 Facility Cranes abnormal operations are controlled in accordance with SSD SOP 602(N) (Ref.<sup>72</sup>) and FSD SOP 942(N)(Ref.<sup>73</sup>)
- 4196 In the event of an emergency affecting Shore supplies from the NUB, the NUB is operated in accordance with FD SOP 723(N) (Ref.<sup>74</sup>), FD SOP 729(N) (Ref.<sup>75</sup>), FD SOP 731(N) (Ref.<sup>76</sup>) and FD SOP 732(N) (Ref.<sup>77</sup>).
- 4197 Actions taken in the event that communications to a berthed submarine are lost are described in Part 6 of the Faslane Communications Systems DSR (Ref.23)
- 4198 In the event of a total or extended loss of DIRAMS, fallback procedures are described in NOP 402A (Ref.<sup>78</sup>).



### Fault Recovery

4199 In the event of an unexpected event during operations the FO will make reference to the Fault Recovery Guidance Document (Ref.61) or the established EOPs. The Fault Recovery Guidance Document (Ref.61) provides guidance to the DNSAG on the process for fault recovery in the event of abnormal operations. In addition, the EOPs provide readily followed checklists and flow charts that detail the decision making process to enable fault recovery.

Note: The Fault Recovery Guidance Document (Ref. 61) is currently under further development to provide fault specific recovery guidance.

This process addresses:

- a. The investigation and identification of faults:
  - i. Procedural checks to enable a return to operations in accordance with normal SOPs, where appropriate for certain predefined instances.
  - ii. The writing, authorising and implementation of suitable procedures for defect repair/fault recovery.

4200 If a fault condition occurs at any time during operations, the operation is to cease and the condition is to be investigated. In the short term, EOPs will return systems to a safe state for the DNSAG to consider. The DNSAG Chairman is available throughout all nuclear docking and undocking evolutions and the DNSAG can be rapidly convened.

### Fault Recovery Procedures

- 4201 EOPs are approved by the DNSAG. They may be used at all times and as required during dockings. Currently, EOPs exist for the following situations and are maintained in an approved status. As discussed, recovery procedures are subject to specific approval by the relevant Authorisation group. The aim of EOPs is to leave the vessel in a safe state.
- a. SSD EOP 925(N) (Ref.<sup>79</sup>) Roadbridge Control. - The actions to take to transfer roadbridge control from the Shiplift Control Room (SCR) Console to the roadbridge panel (and vice-versa).
  - b. SSD EOP 928(N) (Ref.<sup>80</sup>) Transfer of Platform Control. - The actions to take to transfer Platform control from SCR Console to the Relay Panel following loss of the SCR Console (and revert).
  - c. FD EOP 929(N) (Ref.<sup>81</sup>) Loss of Roadbridge Panel. - The actions to take to transfer control of the Roadbridge from OWS to MCC3 and MCC6 following loss of the Roadbridge Panel.
  - d. SSD EOP 930(N) (Ref.<sup>82</sup>) Vessel Emergency Alert. - Shiplift Facility response to a precautionary vessel emergency alert.
  - e. FSD EOP 974(N) (Ref.<sup>83</sup>) Spearfish Weapon Incident. - Actions in the event of a Spearfish weapons incident on a nuclear vessel docked in the Shiplift.
  - f. SSD EOP 975(N) (Ref.<sup>84</sup>) Firefighting. - The actions to take in the event of a fire in the Shiplift including when a vessel is docked.



- g. SSD EOP 976(N) (Ref. <sup>83</sup>) Platform Trips. - The actions and logic to be followed to identify and rectify any platform trip whilst docked including the use of recovery procedures as required.
- h. SSD EOP 977(N) (Ref. <sup>86</sup>) Operation of Docked Submarine Diesels in Abnormal Circumstances. - The actions to be taken following reduced S/M battery levels or loss of diesel extraction system.
- i. SSD EOP 978(N) (Ref. <sup>87</sup>) Loss of Cooling and Fire Fighting Water. - The actions to be taken to restore cooling to a docked submarine including use of the FFFF system.
- j. SSD EOP 979(N) (Ref. <sup>88</sup>) EOT Crane Failure. - The actions to be taken to make an EOT crane load safe including the use of hand winding.
- k. EOP 983 (N) (Ref. <sup>82</sup>) Gale and Storm Warnings. - Shiplift Facility actions in the event of gale and storm warnings.

### MANNING LEVELS

- 4202 The manning levels of operations within the Shiplift Facility are the responsibility of the FO/FM, or the delegated operator and/or maintainer for the system/activity.
- 4203 The manning levels in the Facility vary according to the evolution being conducted and the FO/FM exercises a judgement if manning levels are sufficient.

### TRAINING AND QUALIFICATION

- 4204 Nuclear Safety Assurance Manager (Clyde)(NSAM(C)) is functionally responsible to the FO for the approval and maintenance of the HMNB Clyde Nuclear Training Requirements Plan (NTRP) (Ref. <sup>90</sup>) and for the assessment and approval of Individual Record Sheets in accordance with CMSPM CCT-PM-001 (Ref.10).
- 4205 The required nuclear qualifications and experience for shore based posts within the Naval Nuclear Propulsion Programme (NNPP) including NARO personnel are presented within JSP 518 (Ref.5), and detailed explicitly in the Nuclear Training Requirements Plan (NTRP) (Ref.90).
- 4206 The training requirements of JSP 518 (Ref.5) and other local requirements have been incorporated into Training Post Profiles.
- 4207 The Training Organisation is functionally responsible to the FO for the provision of all Safety Training to satisfy the requirements of the Health and Safety at Work Act.
- 4208 Individual training records, including applications for temporary and permanent waivers are maintained for all relevant Facility personnel by the Training Organisation.
- 4209 Continuation training is conducted to ensure the necessary skills are maintained and exercised at regular intervals as identified at 6 monthly review intervals conducted under Performance Development Report (PDR) arrangements. New skill requirements are also identified at this stage.
- 4210 The M&E personnel involved in the maintenance and repair of NSI equipment and systems are qualified fitters with the required level of qualification, certification and



competence for the tasks to be undertaken. The respective line managers provide familiarisation training and continued monitoring of individual personal competence.

- 4211 Where contractors are used for maintenance activities or inspections the employing management authority is responsible for verifying the qualifications of personnel involved. The FO reserves the right to confirm the qualifications of contractors working within the Shiplift Facility.

## **FACILITY OPERATING CONTROLS AND LIMITS**

### **Facility Conditions and Limits of Safe Operation**

- 4212 Conditions and Limits of Safe Operation – These are the CLOSO that are the physical conditions and limits in the interest of safety, as distinct from the written “Operating Instructions” or “Safety Mechanisms, Devices or Circuits” used to enforce them. Conditions and Limits refer to both operator controlled and external (e.g. extreme weather) physical conditions and limits, and the following has been considered when defining them:
- Calculated limits of performance.
  - Limits of analysis, beyond which the performance of the system is unknown.
  - Limitations in the scope of the safety case.
  - Limits and conditions derived from the design basis of the NSRP or Facility.
- 4213 A full list of Shiplift conditions and limits of safe operation is detailed within the Facility Safety Report – Conditions and Limits of Safe Operation (Ref.59). This report also refers to the Operating Instructions that have been established in order to ensure that the CLOSOs are not breached. These Operating Instructions are embodied within the SOPs, as identified in the CLOSO FSR, and managed in accordance with the HMNB Clyde Management System.

## **ACCIDENT AND INCIDENT ARRANGEMENTS**

- 4214 In accordance with the requirements of BR 3019(1) (Ref.18) and as described within the SSC (Ref.4) a Nuclear Accident Response Organisation (NARO) is established at HMNB Clyde to initiate and control the emergency procedures and appropriate countermeasures to safeguard the workforce (civilian and service) and the local population from the hazards resulting from a nuclear accident. The efficiency and competence of the NARO is tested by regular nuclear reactor accident exercises.
- 4215 In the event of a nuclear accident or incident occurring at HMNB Clyde, the Base Emergency Alarm will be sounded and instructions will be broadcast over the Site Broadcast System. Upon hearing the nuclear accident alarm, all personnel not within the vicinity of the accident berth will follow signs to the nearest shelter station where they will take shelter and await follow up instructions from the Incident Commander.
- 4216 If the accident submarine is within the Shiplift Facility, personnel in the vicinity will evacuate to an assembly point in the General Services Building (GSB). This assembly point is short term prior to the transfer of personnel to the Sportsdrome, which is the nominated Exclusion Zone Reception and Decontamination Centre (EZRDC). If the accident submarine is within the Northern Area berths, personnel in the vicinity will remain in the Shiplift and await follow up instructions from the

Incident Commander. The Sportsdrome provides initial reception, medical and decontamination facilities for personnel evacuated from the accident berth. If the Sportsdrome is in the downwind sector, it may have to be evacuated. In this event, the GSB is nominated as the alternative EZRDC.

- 4217 The NARO and detailed nuclear accident/incident arrangements for the Shiplift are contained in within the Site Safety Case (Ref.4).

### **RADIOLOGICAL HAZARD CONTROLS**

- 4218 The arrangements for the control of radiological hazards at HMNB Clyde, including the Shiplift Facility, are identified in the SSC (Ref.4). All activities, which have radiological implications, take account of the ALARP principle.

### **Health Physics Controls**

- 4219 Health Physics controls within the Shiplift Facility are provided by the Engineering Support (Health Physics) (ES(HP)) in accordance with IRR99 (Ref.6) and HMNB Clyde RPSOs (Ref. <sup>91</sup>). The Facility Radiological Risk Assessment is contained in HMNB Clyde RRA No. 18 (Ref. <sup>92</sup>).
- 4220 When a nuclear submarine is docked or berthed within the Shiplift Facility, a designated area will be established by ES(HP) in the vicinity of the Reactor Compartment (RC) as required by IRR99, and formally handed over to the Facility Radiation Protection Supervisor (RPS). Entry into a controlled area is strictly controlled and is only permitted for operational reasons with the prior approval of the FM. Personal dosimetry will be issued to personnel working in a controlled area by the ES(HP) as required. During work requiring access to the Shiplift platform before a controlled area is established, operators are issued with suitable dosimetry.

### **Control of Radiological Inventory**

- 4221 Control of the radiological inventory of the Shiplift Facility is described in Part 3 of this FSC. The Shiplift and 12 Berth has no inventory of radioactive materials, the potential for radiological hazards is only due to the occasional presence of a nuclear powered submarine in the Facility.

### **Waste Management Arrangements**

- 4222 The arrangements in place at HMNB Clyde for the collection, movement and ultimate disposal of solid and liquid radioactive waste arisings from nuclear submarines berthed or docked within the Shiplift Facility are controlled in accordance with PAG procedures (NSAG procedures in respect of the movement of radioactive material) as described in APF FSC (Ref. <sup>93</sup>) and REDF FSC (Ref. <sup>94</sup>).

### **CONCLUSION**

- 4223 Authority and responsibility has been placed at the correct level in people with the competence, experience and understanding to manage the operation and maintenance of the Shiplift facility safely. Clear lines of accountability and efficient and timely systems of communication exist to enable those with ultimate responsibility for safety to discharge their responsibility.



- 4224 Normal and abnormal operations have been exercised and reviewed to give assurance of adequate competency, experience and resource levels to deal with all foreseeable events.
- 4225 Operations and control and information systems have been reviewed and amended to assist operators in having an accurate understanding of the Shiplift at all times, and in making the correct decisions during unexpected events.
- 4226 Details of the above activities are provided through discussions presented within Part 3 of the FSC.
- 4227 The management system of the safety committees ensures feedback and lessons learnt are noted and acted on. Through the reporting system described in the Clyde Management System all levels of management are aware of operating performance and can take appropriate action for instigating improvement measures.
- 4228 The system of event reporting encourages an honest and comprehensive feedback of information, which over time enhances the conduct of safety management in the Shiplift.

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## REFERENCES

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| <sup>1</sup> SOR-SHIPLIFT/12 BERTH | Shiplift Statement of Responsibility.  |
| <sup>2</sup> DM(S)-TOR-001         | Shiplift Facility Manager - Dockmaster (DM(S)) Terms of Reference. Rev. 3.   |
| <sup>3</sup>                       | Clyde Management System Manual.  |
| <sup>4</sup> N.2522.49             | HMNB Clyde Site Safety Case - Issue 3  |
| <sup>5</sup> JSP 518               | Regulation of the Naval Nuclear Propulsion Programme - Issue 2   |
| <sup>6</sup> IRRs                  | Ionising Radiation Regulations 1999.   |
| <sup>7</sup> NW-ACCS               | Nuclear Weapons Authorisation Conditions Compliance Statements. HMNB Clyde.  |
| <sup>8</sup> MODBM-SD-016          | HMNB Clyde Statement of Provision of Services to the Fleet 2009.   |
| <sup>9</sup> HDSJ-TOR-001          | Head of Design and Safety Justification Terms of Reference   |
| <sup>10</sup> CCT-PM-001           | Clyde Management System Process Map CCT-PM-001 Management of the Nuclear Training Requirements Plan (NTRP).  |
| <sup>11</sup> NARO                 | Nuclear Accident Response Orders.  |
| <sup>12</sup> NSA-POL-002          | HMNB Clyde Nuclear Safety Committee, Sub-Committees and Working Groups. Policy Statement.  |
| <sup>13</sup> CMSPM                | Clyde Management System Process Maps:<br>a. BO-PM-001 Berth Allocation – Planning Process<br>b. BO-PM-002 Berth Allocation – ENEQ Considerations<br>c. BO-PM-003 Berth Allocation – Out of Hours - Faslane |
| <sup>14</sup> CMSPM                | CRA-PM-001 Crane Co-Ordination (Jetties).  |
| <sup>15</sup> HSE-POL-045          | Management of Contractors Safety Policy  |
| <sup>16</sup> CMSPM                | NBDD-PM-004 Defect Trend Identification and Analysis.  |
| <sup>17</sup> NPRA 1-1             | NRPA Roles and Responsibilities.   |
| <sup>18</sup> BR 3019(1)           | Nuclear Reactor Accidents - Volume 1.  |
| <sup>19</sup> JSP 471              | Defence Nuclear Accident Response.   |
| <sup>20</sup> JSP 440              | Defence Manual of Security.  |
| <sup>21</sup> CMSPM                | Clyde Management System Process Map NARO-PM-003 Preparation, Review and Production of NARO Instructions.   |
| <sup>22</sup> CMSPM                | Clyde Management System Process Map NARO-PM-002 Planning and Management of NARO Exercises.   |



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<sup>23</sup> N.2522.61	Faslane Communication Systems, Design Safety Report Issue 1.
<sup>24</sup> N.2522.53	Port Operational and Management Safety Report Issue 2.
<sup>25</sup> NUB OMSR	Northern Utilities Building, Operational Management Safety Report
<sup>26</sup> NUB SOR	Northern Utilities Building, Statement of Responsibilities
<sup>27</sup> NSAG-PM-003	Control of NSI Maintenance Concessions within HMNB Clyde
<sup>28</sup> VS-HPCD-001	Vessel Support and Crew Hold Point Control Logic
<sup>29</sup> VS-TOR-001	Vessel and Crew Support Operational Working Group, Terms of Reference
<sup>30</sup> NSSJ-MGMT-PM-001	Production, Control and Administration of Safety Justification and Nuclear Site Justification
<sup>31</sup> SFSCWG-TOR-001	Terms of Reference for Shiplift Facility Safety Case Working Group
<sup>32</sup> NSSSC-TOR-001	Terms of Reference for Nuclear Site Safety Sub-Committee
<sup>33</sup> NSAD-PM-003	HMNB Clyde NSSSC Safety Justification Documentation
<sup>34</sup> NWSSSC-TOR-001	Terms of Reference for Nuclear Weapons Site Safety Sub-Committee
<sup>35</sup> NWSSSC-PM-001	Review of Nuclear Weapon Safety Justification Documentation by NWSSSC
<sup>36</sup> SDCC-TOR-001	Terms of Reference for Safety Design Control Committee
<sup>37</sup> NSAD-PM-001	SDCC Review and Endorsement of NSI Design Changes, Concessions, Substantiation Reports and Associated ITA
<sup>38</sup> NSAD-PM-002	SDCC Review, Revision, Extension and Close Out of Design Changes and Design Concessions
<sup>39</sup> CNSC-TOR-001	Terms of Reference for Clyde Nuclear Safety Committee
<sup>40</sup> SJ-STAN-004	Base Standard 04, Nuclear Safety Categorisation and Classification
<sup>41</sup> BSC-TOR-001	Terms of Reference for Berthing Services Committee
<sup>42</sup> BSTG-TOR-001	Terms of Reference for Berthing and Services Test Group
<sup>43</sup> PAG-POL-001	The Operation of the Procedure Authorisation Group (PAG) at HMNB Clyde.
<sup>44</sup> PAG-TOR-001	Terms of Reference for Procedure Authorisation Group (PAG)



<sup>45</sup> NSAG(F)-TOR-002	Terms of Reference for Nuclear Services Authorisation Group (Faslane) (NSAG(F))
<sup>46</sup> DNSAG-TOR-001	Terms of Reference for the Docking Nuclear Services Authorisation Group (DNSAG)
<sup>47</sup> SWSPAG-POL-001	The Operation of the Strategic Weapons Systems Procedure Authorisation Group at HMNB Clyde
<sup>48</sup> NJAG-TOR-001	Terms of Reference for the Nuclear Justification Appraisal Group (NJAG)
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<sup>50</sup> BS EN 14001: 2004	Environmental Management Systems - Requirements with Guidance for Use
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<sup>53</sup> NSAD-PM-005	Process Map. Request for Safety Justification/Project/Design Services
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<sup>61</sup> N.2522.52/4	Shiplift Facility, Facility Safety Report – Fault Recovery Guidance - Issue 1
<sup>62</sup> FD SOP 943(N)	Control and Operation of the 55t / 2t EOT Cranes (A&B) located in the Shiplift.




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<sup>63</sup> ID SOP 760(N)	Operation of 20t Crane on 12 Berth.
<sup>64</sup> N2522.60	Northern Utilities Building Design Safety Report. Issue 1
<sup>65</sup> N2522.83	Shiplift Miscellaneous Services Design Safety Report Issue 2
<sup>66</sup> CMSPM	NSAD-PM-001 – SDCC Review and Endorsement of NSI Design Changes, Concessions, Substantiation Reports and associated ITA. NSAD-PM-002 – SDCC Review, Revision, Extension & Close-Out of Design Changes and Design Concessions
<sup>67</sup> N.2522.73	Primary Effluent Tank Design Safety Report Issue 2.
<sup>68</sup> NOP 203(A)	To supply and return a Primary Effluent Tank.
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<sup>71</sup> CMSPM	Clyde Management System Process Maps: a. HO-PM-002 Alongside Radio/Radar Transmissions (RADHAZ) b. HO-PM-003 Muzzle Hatch Movements c. HO-PM-004 Sonar Transmissions Alongside d. HO-PM-005 Conduct of Torpedo Water Shots Alongside e. HO-PM-006 Basin Trials Alongside f. HO-PM-007 Deconfliction and Promulgation of Ammunitioning Alongside (Faslane)
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<sup>74</sup> SOP 723(N)	NUB Emergency Operating Procedures.
<sup>75</sup> SOP 729(N)	The Control of Frequency Changers from the Emergency Control Room.
<sup>76</sup> SOP 731(N)	The Control of Diesel Alternators from the Emergency Control Room.
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<sup>78</sup> NOP 402(A)	Exclusion Zones whilst in Plant State A HMNB Clyde, Faslane
<sup>79</sup> EOP 925(N)	Transfer of Roadbridge Control
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<sup>81</sup> EOP 929(N)	To Operate the Roadbridge on Loss of the Roadbridge Panel
<sup>82</sup> EOP 930 (N)	Shiplift Response to a Precautionary Vessel Emergency Alert

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<sup>83</sup> EOP 974(N)	Shiplift Response to a Spearfish Weapon Incident
<sup>84</sup> EOP 975(N)	Incident Response to a Fire in the Shiplift Facility/ Berthed or Docked Vessel
<sup>85</sup> EOP 976(N)	Platform Trips.
<sup>86</sup> EOP 977(N)	Operation of a Vessel's Diesel Generators in the Shiplift under Abnormal Circumstances
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<sup>88</sup> EOP 979(N)	Shiplift EOT Crane Failure
<sup>89</sup> EOP 983(N)	Shiplift Response to Gale and Storm Warnings
<sup>90</sup> NTRP	Nuclear Training Requirements Plan for HMNB Clyde
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