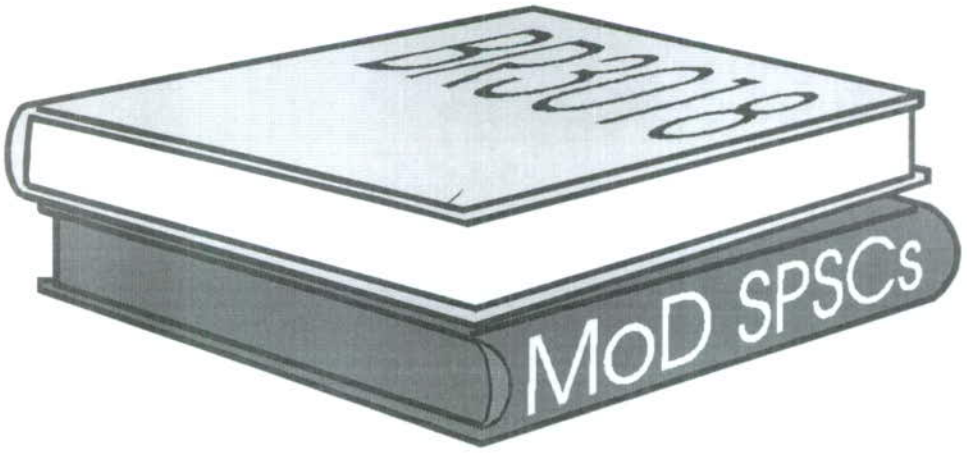
PART 2

Requirements



PART 2

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2005 The principal safety functional requirements of the Shiplift Facility flow from the overriding safety requirements that submarine NRP and weapons systems are maintained in a safe state when either berthed at 12 Berth or docked in the Shiplift.

2006 For a submarine at 12 Berth, the principal safety functions to be met are:

a. The provision of safe means of mooring

b. The provision of adequate overside electrical services

c. The provision of adequate cooling supplies for decay heat removal

d. The safe handling of loads over the submarine

e. The provision of safe access and egress for people and equipment

f. The provision of a safe environment for Strategic Weapons System (SWS) and Tactical Weapons Systems (TWS)

2007 For a submarine docked in the Shiplift, the principal safety functions to be met are:

Structural support of the submarine in a stable and defined manner at all times

The provision of adequate overside electrical services

The provision of adequate cooling water and fire suppression supplies to the connectors on the hull

The safe handling of loads over the submarine and Shiplift platform

The provision of safe access and egress for people and equipment

The provision of a safe environment for SWS and TWS.

2008 The high level requirements stated above have been developed in a set of detailed safety functional requirements for the Facility in Ref. [5]. These detailed requirements have been developed on a hierarchical basis taking the NRP Critical Safety Functions (CSFs) as fundamental drivers which require to be maintained in order to assure an appropriately high level of safety.

2009 In addition to the above, Facility activities must not present an unacceptable risk to individuals in the three population groups i.e. crew, site worker and the general public. The Facility must meet the dose criteria for normal operations expressed within the MoD SPSCs as contained in JSP 518 (Ref. 2), for the effective dose to an individual and the average effective dose to the radiation workers. It is not a requirement for the Facility to meet the planning targets and limits for collective dose for radiation workers because they apply at the whole site level. Dose consequences must also be As Low As Reasonably Practicable (ALARP). The assessment of risk and dose is addressed in Part 5 of this FSC.

2010 Conditions and limits of safe operation necessary to control risk consistent with the requirements of the Authorisation Conditions and the SPSCs and their management is set out in Part 4 of this FSC.

SAFETY AND PERFORMANCE REQUIREMENTS

2011 In order to substantiate the high level safety requirements identified above, a suite of Facility Safety Reports (FSRs) and Design Safety Reports (DSRs) has been developed which set out the safety and performance requirements on each of the Facility's safety related systems and demonstrate that these have been met. This tier of supporting documentation, which is integral to the Facility safety case is listed and referenced in Part 1 of this FSC. All of the FSR and DSR documentation, together with the numerous detailed technical reports that underlie it, has been established through due process. This supporting documentation has been updated in accordance with any revisions to safety and performance requirements made in response to equipment modifications or Safety Case developments as SIP Phase 3 has developed.

SAFETY PRINCIPLES

2012 To facilitate the development of the Shiplift FSC the SPSCs have been supplemented by an interpretative document, the Shiplift SPP (Ref. [6]). The Shiplift SPP (Ref. 6) embodies an agreed interpretation of the Safety Principles specific to the Shiplift Facility, which recognises the Facility as an Existing Facility. A compliance schedule that sets out the principles in full, together with the response provided by this issue of the FSC, as interpreted for the Shiplift Facility, is presented in Annex A.

2013 Three concepts are developed within the Shiplift SPP (Ref.), which have particular significance for this Safety Case, Development and Assessment Guidelines, Design Capability and Design Demonstration. The DAGs complement the Shiplift SPP (Ref. 6) by providing a common basis for the development and acceptance of the safety case. The Shiplift SPP (Ref. 6) introduces the concept of Design Capability in setting the standard required to demonstrate the Shiplift Facility's ability to withstand all normal operations and reasonably foreseeable faults. This concept is extended by Design Demonstration which introduces a probabilistic treatment of structures in order to identify the level of demand and frequency at which the response of particular structures/components have safety factors reduced below unity under the lower frequency fault conditions.

2014 The concepts of Design Capability and Design Demonstration are primarily required to demonstrate the capability of the Shiplift platform in the context of it being part of an Existing Facility. These concepts are set out in Part 5 of this FSC together with an overview of their implementation and summaries of the results from the relevant analyses.

REFERENCES

[1] N.2522.49	HMNB Clyde Site Safety Case – Issue 3
[2] JSP 518	Regulation of the Naval Nuclear Propulsion Programme Issue 2
[3] SAPs	Safety Assessment Principles for Nuclear Facilities. 2006 Edition. Revision 1. (HSE)
[4] NRPA-4-1-2	Naval Nuclear Safety Principles. Issue 2. June 2009. (Naval Reactor Plant Authorisee)
[5] N.2522.189	Shiplift Facility – Facility Safety Report, Safety Functional Requirements – Issue 1
[6] SSCPMT-TR-522	HMNB Clyde Shiplift Safety Principles Paper – Issue 6, February 2001