

“Where will our knowledge take you?”

General Naval Specification

Part 2 - Sample Document

This document is to be used for illustrative purposes only. The content is condensed and only the first three tiers are shown.



TITLE	FUNCTIONAL STATEMENT	DESCRIPTION
100 Platform		
101 Hull Structure		
101.1 General		
101.1.1 Hull Structure	Hull structure shall be designed in accordance with LNSR...	LNSR apply to sea going monohull ships of normal form, proportions and speed...
101.2 Functional / Performance Requirements		
101.2.6 Beach Landing	Areas of the hull <insert shall or shall not> be strengthened due to risk of grounding during beach landing operations...	Additional strengthening need only be applied to those areas of the hull at risk from grounding during beach landing operations...
101.2.7 Bow Doors	<insert statutory regulations> shall be adhered to in the design of bow doors...	Examples of sources of statutory regulations include Statutory Instruments and MCA Guidance and Regulations...
101.2.8 Centre of Gravity	The hull structure shall lead to an acceptable vertical, longitudinal and transverse centre of gravity for the whole ship...	MAP 70 Surface Ship and Submarine Margins Guidance Document provides guidance on margins requirements...
101.2.9 Fatigue	Design of construction details shall take account of fatigue life requirements...	Guidance may be found in LR's Structural Detail design Guide (part of LR's ShipRight software package), BS7608, BS5400 Part 10 and IACS 56...
101.2.10 Space	The hull Structure shall provide adequate volume and area for the operational specification including any requirement for design and/or growth margins...	MAP 70 Surface Ship and Submarine Margins Guidance Document provides guidance on margins requirements...
101.2.11 Margins and Tolerances	The hull structure shall be designed and manufactured to <insert requirements here> margin and tolerances requirements...	Acceptable standards will be agreed subject to LR and Naval Authority Requirements, IACS Recommendation 47 provides useful guidance on tolerances with MAP 70 Surface Ship and Submarine Margins Guidance Document provides guidance on margins requirements...
101.2.12 Forepeak Access	Access <shall or shall not> be fitted in the collision bulkhead...	Access through the collision bulkhead is undesirable and should only be incorporated where it would be impractical to arrange an alternative and justification has been established...
101.2.14 Ship Husbandry	The hull structure shall be arranged to take into account preservation, servicing and maintenance...	Design and layout is to be simple to facilitate conditions for the maintenance of a clean ship...

TITLE	FUNCTIONAL STATEMENT	DESCRIPTION
101.2.15 Vehicle and Aircraft Loads	Vehicles and aircraft loads associated with lifting, emergency landing, parking, manoeuvring and take-off/landing shall be as specified in <insert requirements here>...	Loads associated with vehicles and aircraft are defined in manufacturers specifications and product guides...
101.2.16 Watertight Integrity	The pressure head taken to calculate the watertight structural scantlings shall be determined by the damage stability analysis and limit of watertight integrity...	The impact of additional weight associated with the requirement for a watertight damage control deck (DCD) may need the designer to consider the capability of the structure beyond yield for the damage condition and/or use of a stepped DCD...
101.2.17 Wave Impact	There <insert shall or shall not> be an allowance for permanent set of plating for wave impact loads...	An example of a functional statement in this area may take the form: There will not be an allowance for permanent set of plating due to wave impact loads...
101.2.18 Weight Groups	The weight breakdown used shall be in accordance with Def Stan 08-140...	
101.2.19 Welding	Welding of hull structure shall be in accordance with <insert required standards>...	Abrupt changes of section are to be avoided where plates of differing thicknesses are butt welded...
101.3 Non-Functional Requirements		
101.3.1 None		
101.4 Acceptance		
101.4.1 Acceptance Method	(1.1) Design - Pull Through (1.2) Design - Design Review/Documentation (1.3) Design - Modelling/CAD/VR Demo...	
101.5 References		
101.5.1 GNS Part 1 Interfaces	(1.1) Role - Military (1.2) Role - Constabulary (1.3) Role - Benign...	
101.5.2 GNS Part 2 Interfaces	001 - Standards 002 - Design Information 003 - Certificates...	
101.5.3 Design References	Def Stan 08-140, Classification of Weight Groups for Surface Ships...	

TITLE	FUNCTIONAL STATEMENT	DESCRIPTION
200 Propulsion		
201 Diesel Engine/Diesel Generators Sets		
201.1 General		
201.1.1 Diesel Engine / Generator	Diesel Engines shall be used as a prime mover for either propulsion and/or generation of electrical power...	Diesel Engines may be utilised to perform a prime mover function or a power generation role matched to an appropriate alternator...
201.2 Functional / Performance Requirements		
201.2.1 Electrical Load	<Number of DGs minus 1> of the <Number of DGs> DGs shall provide <Maximum scenario electrical load plus margins> of electrical power...	The combined rated power of all but one of the DGs will be enough to supply the electrical load demands of the operating requirements in (but may not be limited to) the following scenarios plus growth margins: a...
201.2.2 Electrical Generation Location	The Electrical Generation Plant Locations shall be separated by <number of separating water tight bulkheads> watertight bulkheads, with each location comprising <number of generators> electrical generators...	DGs are a simple and efficient form of power generation, ideally suited for use on ships...
201.2.3 Emergency Generator	1 electrical generator shall provide <Emergency electrical load of the ship> of electrical power...	The rated power of a single generator will be enough to supply the emergency electrical load demands of the operating requirements...
201.2.4 Diesel Propulsion Engines	<enter number here of > Diesel Engines shall be used in the Propulsion arrangement, each Diesel Engine is to have a power rating of <enter engine rating in MW here>MW...	Diesel Engines are traditionally used as a prime mover in a Ship's Propulsion Arrangement, driving the propeller either directly or through a Gearbox...
201.2.5 Starting	All Diesel Engines shall be started from <enter power source here>...	Diesel Engines and their systems must be configured so that they are able to start from a 'dead ship' condition without external aid (the worst case scenario)...
201.2.6 Fuel Supply	Diesel (Marine Gas Oil to ISO 8217 or Nat F76) shall be delivered to each Diesel Engine at the rate of <enter rate here> m ³ /hr with the maximum particulate size of <enter particulate size> micron and maximum water content of <enter water content here as a %>...	Each Diesel Engine needs a dedicated supply of clean diesel fuel delivered under pressure...

TITLE	FUNCTIONAL STATEMENT	DESCRIPTION
201.2.7 Lubricating Oil	Lubricating Oil Type <enter type of oil here> shall be delivered to each Diesel Engine at the rate of <enter rate here>m ³ /hr with the maximum particulate size of <enter particulate size> micron and maximum water content of <enter water content here as a %>...	Each Diesel Engine is to have an independent supply of clean lubricating oil...
201.2.8 Cooling Water	Cooling Water shall be delivered to each Diesel Engine at the rate of <enter rate here> m ³ /hr...	Each Diesel Engine is to have a dedicated supply of water for engine cooling...
201.2.9 Induction Air	Each Diesel Engine shall be provided with <enter volume of air required here> m ³ /hr of inducted air for combustion between a minimum pressure of <enter minimum pressure here> and a maximum pressure of <enter max pressure here>...	Each Diesel Engine is to be provided with a ducted air supply...
201.2.10 Exhaust	Each Diesel Engine shall have its own connection to the Exhaust System, a maximum back pressure of <enter max back pressure here> mm water gauge is permissible at the engine exhaust outlet flange...	To prevent exhaust back flow from one engine interfering with the performance of another, shared exhaust ducts are not to be used and a separate gastight exhaust system is to be fitted for each engine...
201.2.11 Control System	Each Diesel Engine shall be fitted with a comprehensive control and surveillance system which is to be integrated into the Integrated Platform Management System...	The control and surveillance system which is to be integrated into the Integrated Platform Management System and must fulfil (but may not be limited to) the following functions: a...
201.2.12 Control System (Back Up)	The Diesel Engine shall be fitted with a Control System that will allow the operation at Maximum Continuous Power for <enter length of operational time here> shall the system develop a fault or fail...	Diesel Engines and their service systems are to be capable of operation at maximum continuous power (for a given period using a back up system) after failure of the normal control system...
201.2.13 Health Monitoring System	A Diesel Engine health Monitoring system shall be fitted to each engine and this is to be compatible with the Integrated Platform Management System...	To monitor the state of each Diesel Engine, a state of the art Health Monitoring System is to be fitted...
201.2.14 Engine Warning Devices	To provide protection and warnings, trips and alarms shall be fitted to each Diesel Engine...	In addition to any surveillance instrumentation, all Diesel Engines are to be fitted with protection devices...
201.2.15 Engine Protection Devices	In addition to Diesel Engine Warning/Trip devices, Diesel Engine Protection devices shall be fitted to each engine...	Diesel Engines are to be fitted with (but may not be limited to) the following engine protection devices: ...
201.2.16 Acoustic Enclosures	Occupational Health - Meet regulatory occupational health requirements - To improve habitability and the ship's noise signature, Diesel Engines that create airborne noise above <enter value here in dB> dB shall have an Acoustic Enclosure fitted...	This will reflect the application of occupational health legislation and regulation to naval shipping...

TITLE	FUNCTIONAL STATEMENT	DESCRIPTION
201.3 Non-Functional Requirements		
201.3.1 Weight	The Diesel Engine(s) shall be of weight no more than <insert maximum weight>...	The weight of these units should be kept to the minimum wherever possible...
201.3.2 Volume	The Diesel Engine(s) shall be a length, width and depth of no more than <insert maximum length, width and depth>...	The volume of these units should be kept to a minimum...
201.3.3 Space	Clearance of at least <minimum clearance distance> against all faces excluding bottom of the Diesel Engine shall be provided...	Space will be required for maintenance of the Engine and the alternator (if fitted)...
201.3.4 Emission Control		All Diesel Engines supplied to the MoD must be capable of meeting, as a minimum, the relevant extant emissions legislation in way of ALL environmentally harmful emission species...
201.4 Acceptance		
201.4.1 Acceptance Method	(1.1) Design - Pull Through (1.2) Design - Design Review/Documentation (1.3) Design - Modelling/CAD/VR Demo	
201.5 References		
201.5.1 GNS Part 1 Interfaces	(4.1) Mobility - Area of Operations and Environmental Conditions (4.3) Mobility - Speed (4.5) Mobility - Manoeuvring	
201.5.2 GNS Part 2 Interfaces	103 - Other Structural Items 112 - Acoustic and Thermal Insulation 202 - Shafts and Bearings	
201.5.3 Design References	Def Stan 02-313, Diesel Engines for marine propulsion and auxiliary machinery...	

TITLE	FUNCTIONAL STATEMENT	DESCRIPTION
300 Electrical		
301 Power Distribution Equipment		
301.1 General		
301.1.1 Power Distribution	The power distribution system shall be of a survivable configuration and layout, and safely deliver electrical power to the electrical consumers...	The power distribution will comprise main switchboards located in different zones of the ship...
301.2 Functional / Performance Requirements		
301.2.1 Electrical Supplies	The power distribution system shall provide the following supplies as required by the electrical consumer loads of the ship: <electrical power supplies required by the consumer loads>	An example of a functional statement in this area may take the following form: The power distribution system will provide the following supplies as required by the electrical consumer load of the ship: ...
301.2.2 Ingress Protection	All items of equipment relating to the power distribution system shall be ingress protected to at least <ingress protection rating>...	An example of a functional statement in this area may take the following form: All items of equipment relating to the power distribution system will be ingress protected to at least IP65...
301.2.3 Ingress Protection	All items of equipment relating to the power distribution system in areas where direct contact or immersion in water is likely shall be ingress protected to at least <ingress protection rating>...	A higher degree of IP is required where equipment is directly exposed to water...
301.3 Non-Functional Requirements		
301.3.1 None		
301.4 Acceptance		
301.4.1 Acceptance Method	(1.1) Design - Pull Through (1.2) Design - Design Review/Documentation (2.1) Build - Factory Test	
301.5 References		
301.5.1 GNS Part 1 Interfaces	(7.1) Survivability - Mission Level Survivability	

TITLE	FUNCTIONAL STATEMENT	DESCRIPTION
301.5.2 GNS Part 2 Interfaces	101 - Hull Structure 102 - Superstructure 103 - Other Structural Items...	
301.5.3 Design References	(1) JSP 520 UK MoD's Ordnance, Munitions and Explosives Safety management System; (2) Def Stan 00-101 Design Standards for Explosives Safety in MoD Ships and Submarine; (3) Def Stan 07-85 Design Requirements for Weapons and Associated Systems; ...	

TITLE	FUNCTIONAL STATEMENT	DESCRIPTION
400 C4I - Command and Control		
401 Command and Control Systems		
401.1 General		
401.1.1 Command, Control, Communication, Computer, Intelligence, Surveillance and Reconnaissance Systems (C4ISR)	The ship shall be provided with a fully compliant Command, Control, Communication, Computer, Intelligence, Surveillance and Reconnaissance (C4ISR) System...	Typically the C4ISR System uses Commercial standard Information Technology (IT) components and Open System Architecture (OSA) design except where the only existing solution cannot use the stated components or design, for multilayered access...
401.2 Functional/Performance Requirements		
401.2.1 Local Area Network (LAN)	A <Insert Figure> redundancy, Integrated Local Area Network (LAN), with the capability of meeting current Security Policies, shall be provided...	Typically each of the operational Local Area Network domains is fitted with (but may not be limited to): ...
401.2.2 Command Control and Information Management	A Command, Control and Information Management System shall be provided which interfaces with the LAN and which allows simultaneous conduct of <Insert Activities>...	Typically the Command, Control and Information Management System will have the following functional elements (but may not be limited to): ...
401.2.3 Combat Management Systems	A Command, Control and Information Management System shall be provided which interfaces with the Combat Management Systems...	Typically the Command, Control and Information Management System interfaces with Combat Management Systems which typically include all Surface, Sub-surface and Naval Fires Systems, including (but may not be limited to):
401.2.4 Navigation System	A Command, Control and Information Management System shall be provided which interfaces with the Navigation System...	Typically the Command, Control and Information Management System interfaces with all aspects of the Navigation System which provide configuration and positional data over the interface...
401.2.5 Communications Systems	A Command, Control and Information Management System shall be provided which interfaces with the <Insert Communication System> ...	Typically the Command, Control and Information Management System interfaces (but may not be limited to): a...
401.2.6 Surveillance Systems	A Command, Control and Information Management System shall be provided which interfaces with the <Insert Surveillance System> ...	Typically the Command, Control and Information Management System interfaces with Surveillance Systems which include (but may not be limited to): a...

TITLE	FUNCTIONAL STATEMENT	DESCRIPTION
401.2.7 Self Defence Systems	A Command, Control and Information Management System shall be provided which interfaces with the <Insert Self Defence System>...	Typically the Command, Control and Information Management System interfaces with Self Defence Systems which include (but may not be limited to): a...
401.3 Non-Functional Requirements		
401.3.1 Command, Control, Communication, Computer, Intelligence, Surveillance and Reconnaissance (C4ISR) System - Security	The Command, Control, Communication, Computer, Intelligence, Surveillance and Reconnaissance (C4ISR) System shall comply with the security requirements of JSP 440...	JSP 440 - The Manual of Protective Security, is defined as a key standard and as such provide the necessary guidance for security issues in this area...
401.4 Acceptance		
401.4.1 Acceptance Method	(1.1) Design - Pull Through (1.2) Design - Design Review/Documentation (1.3) Design - Modelling/CAD/VR Demo	
401.5 References		
401.5.1 GNS Part 1 Interfaces	(1.1) Role - Military (4.6) Mobility - Navigation (7.1) Survivability - Mission Level Survivability	
401.5.2 GNS Part 2 Interfaces	03 - Certificates 101 - Hull Structure 102 - Superstructure	
401.5.3 Design References	(1) Def Stan 00-55 Requirements for Safety Related Software in Defence Equipment; (2) Def Stan 07-85 Design Requirements for Weapons and Associated Systems...	

TITLE	FUNCTIONAL STATEMENT	DESCRIPTION
500 Auxiliary		
501 Air Conditioning, Ventilation, Refrigeration Systems and Equipment		
501.1 General		
501.1.1 Air Conditioning, Ventilation and Refrigeration	The Ship shall be provided with air conditioning, ventilation and refrigeration...	Air conditioning and Ventilation - Key Standard Def Stan 02-102 Requirements for Air Conditioning and Ventilation...
501.2 Functional/Performance Requirements		
501.2.1 Pipework/Trunking	Pipework/trunking shall be as direct as possible with the minimum number of bends, be readily accessible throughout its length and arranged not to restrict headroom...	Piping/trunking should be arranged in a neat and orderly manner and kept as short as possible consistent with the design requirements for access, flexibility and ease of maintenance...
501.2.2 Insulation	Air conditioning, ventilation and refrigeration piping/trunking shall be insulated...	Air conditioning and ventilation trunking should be insulated to prevent condensation forming and noise reduction...
501.2.3 Dry Provision Spaces	The Ship shall have a Dry Provisions Space installed	The Dry Provisions spaces should include (but may not be limited to): ...
501.2.4 Refrigeration Plant	The Ship shall be provide with refrigeration plant equipment...	Refrigeration plant equipment is required to maintain the Refrigeration Complex spaces at the requisite temperatures...
501.2.5 Refrigeration Spaces	The Ship shall have a Refrigeration Complex installed ...	Refrigeration spaces should be built-in or of a modular construction...
501.2.6 Refrigeration Complex Location	The Refrigeration Complex shall be located in one centralised location...	The complex should be adjacent to the main galley, either on the same deck or in the same vertical plane with a connecting lift so as to form part of the commissariat...
501.2.7 Refrigeration Complex Capacity	The Refrigeration Complex shall have sufficient storeroom capacity for the provisions required to support its designated role...	The internal capacity of the refrigerated compartments should be calculated on (but may not be limited to): a...

TITLE	FUNCTIONAL STATEMENT	DESCRIPTION
501.2.8 Ventilation	The fruit, vegetable, potato and any other room storing food with a respiratory heat load shall be fitted with a fresh air inlet and stale air outlet...	The inlet and outlet should terminate within the citadel, and where passing through watertight boundaries, ball valves should be fitted...
501.2.10 Refrigeration Complex Lighting	Incandescent watertight lighting fittings shall be used to illuminate the Refrigeration Complex...	There should be independent lighting in every room which cannot be switched off from the outside...
501.2.11 Refrigeration Alarms	The Ship shall be provided with an audio/visual system to indicate that someone is trapped in any of the Cold or Cool Rooms...	The audio/visual system should encompass a set of red warning lights fitted outside each compartment, with remote indication in the SCC or some other permanently manned compartment...
501.2.12 Temperature Monitoring	Remote reading thermometers shall be installed for all Refrigeration Complex spaces...	Room temperatures remote gauges for each of the Refrigeration Complex spaces should be positioned outside the rooms...
501.3 Non-Functional Requirements		
501.3.1 None		
501.4 Acceptance		
501.4.1 Acceptance Method	(1.1) Design - Pull Through (1.2) Design - Design Review/Documentation (2.1) Build - Factory Test	
501.5 References		
501.5.1 GNS Part 1 Interfaces	(2.3) Interoperability - Ship to Ship (2.4) Interoperability - Ship to Shore (3.1) Operability - Manpower	
501.5.2 GNS Part 2 Interfaces	001 - Standards 112 - Acoustic and Thermal Insulation 114 - Load Handling and RAS Equipment	
501.5.3 Design References	Def Stan 02-102, Requirements for Air Conditioning and Ventilation. Part 1. HM Surface Ships and Royal Fleet Auxiliaries...	