

Chapter 1:

Warship Building

-An overview -



1.1 Background

India is a major maritime nation with vital economic and security interests linked to the seas. Although the Indian Navy's major role revolves around deterrence of security threats yet by virtue of India's emergence as an economic power and its geography, the Indian Navy's role has expanded considerably during peace-time as well. Given its large area of operation, the Navy has, in its Maritime Capability Perspective Plan (MCP), formulated in 2005, projected a 160 ship-strong navy, including 90 front-line combat platforms¹. The Indian Navy also has in place a detailed ship-building plan which has been prepared after considering specific requirements for ships, funds availability, and decommissioning schedule of various ships.

Traditionally navies world-wide, take longer periods to develop and consolidate in comparison to other wings of the armed forces. This is because naval ships are complex defence systems, using advanced designs with state-of-the-art weapons, communications and navigation technologies. The long construction periods coupled with huge capital

¹ Includes major warships like aircraft carriers, destroyers, frigates and corvettes

investments are notable characteristics of ship-building processes that are complicated, intensive and require close co-ordination with a number of entities. Indian Navy has based its vision of ship acquisition on construction of its ships at Indian shipyards. More than 85 ships and submarines have been built indigenously.



Frigate Class (Project 17)

The Ministry of Defence has three major shipyards², the Mazagon Dock Ltd. (MDL) in Mumbai, Goa Shipyard Ltd (GSL) in Goa and Garden Reach Shipbuilders & Engineers Ltd. (GRSE) in Kolkata. MDL is the premier shipyard of India and is engaged in the construction of major warships like destroyers, submarines, stealth frigates, etc. Goa Shipyard Ltd (GSL), once a part of MDL, is today one of India's leading shipyard, building medium- sized sophisticated vessels for the Indian Navy, while GRSE has been building warships and other vessels for Indian Navy and Coast Guard. Besides shipbuilding GRSE also undertakes manufacture of various engineering products and deck machinery for onboard use.

Between September 1986 and March 2003, the competent financial authority (CFA), approved the indigenous construction of 16 frigates,

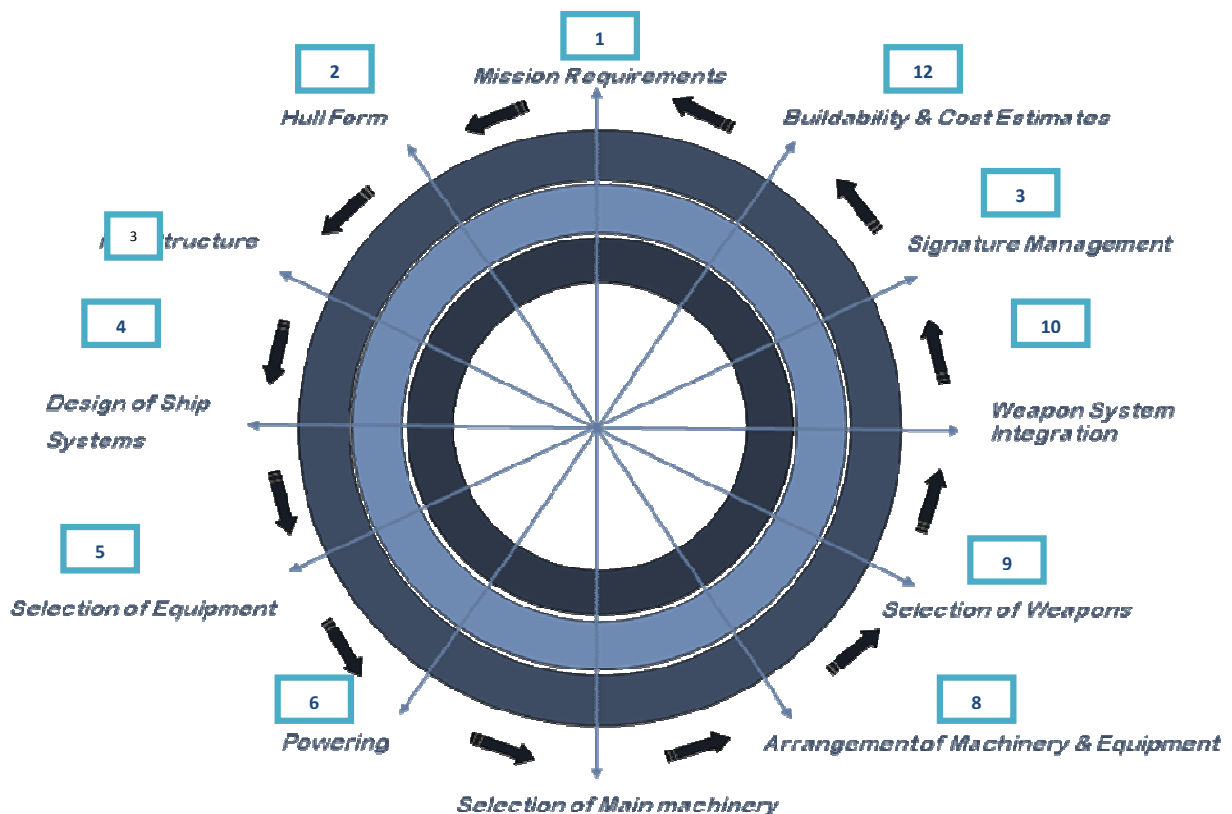
² DPSUs – Defence Public Sector Units

destroyers and corvette class ships to be built in the DPSU³ shipyards under Project 15A, 16A, 17, and 28⁴.

1.2 Warship Building Practices and Processes

A ship construction programme has a number of elements which interact with each other, including feasibility studies, design issues, system integration, construction, tests and trials. It also involves technology application and transfer, selection of equipment, development of new equipment, identification and purchase of large number of items including weapons and sensors, from numerous indigenous and foreign suppliers. The warship build procedure commences with mission requirements and culminates with build ability and cost estimates. This is depicted in the figure.

WARSHIP BUILD - DESIGN SPIRAL



Indian Navy Ship

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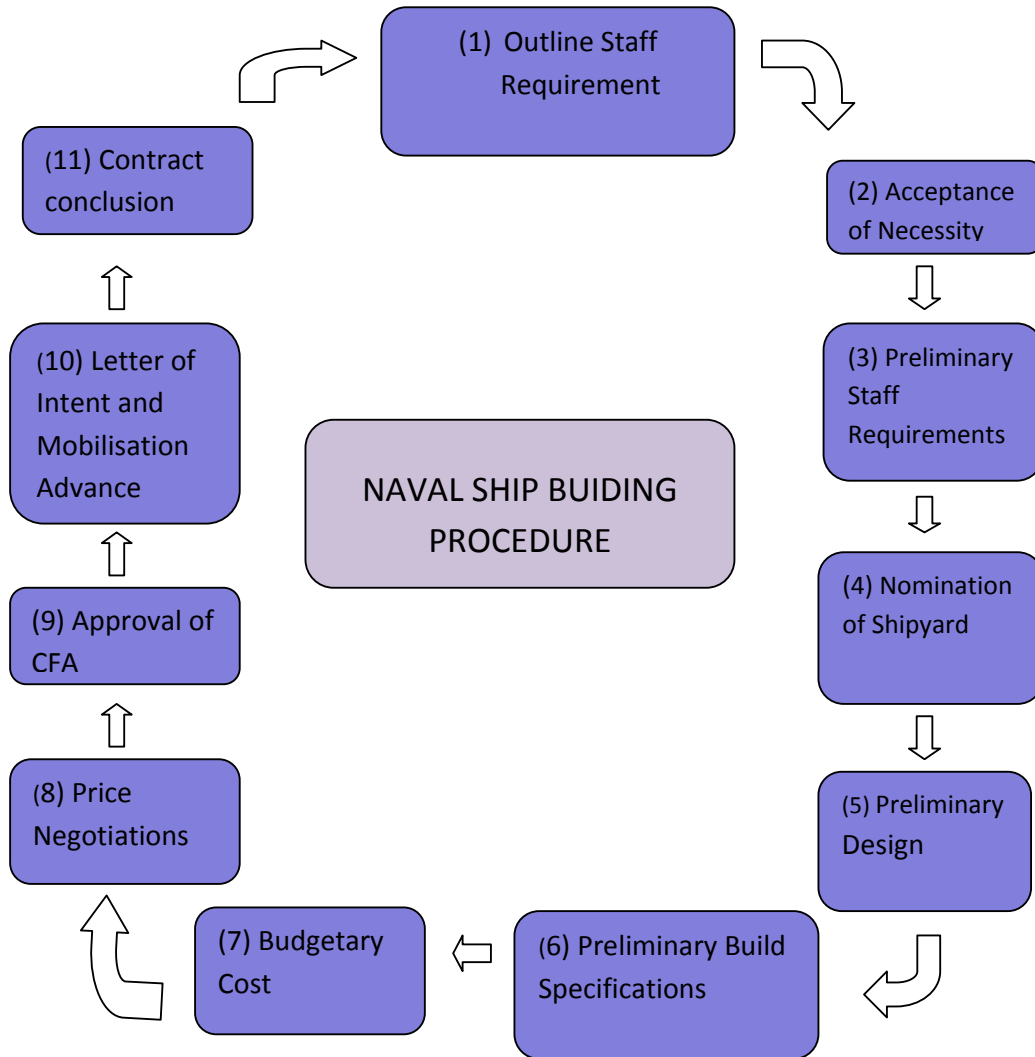
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³ Defence Public Sector Units
⁴ P 15A, P17 and P28

Building Procedure

The Naval Ship Building Procedure⁵ outlines the following steps as shown in the figure. The details have been given in Annexe I.

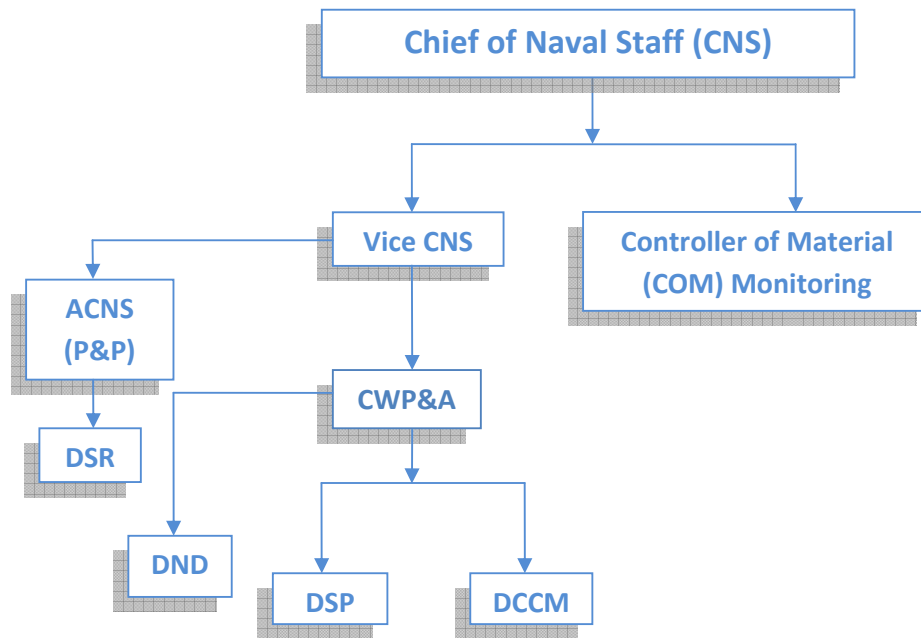


1.3 Organisational Structure

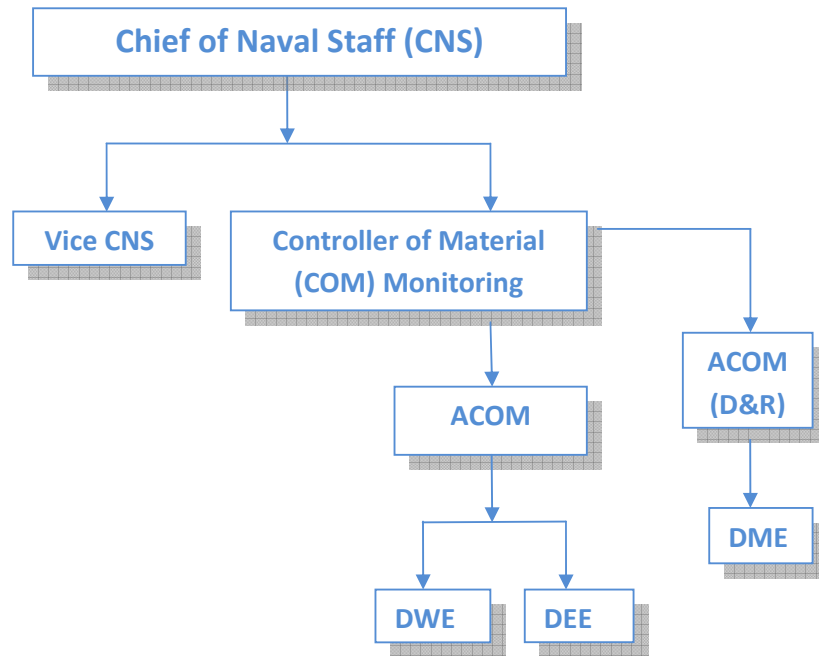
Various Directorates are involved in the construction and monitoring of shipbuilding as depicted in the figure. At Naval Headquarters, the activities of construction and monitoring are separated in two wings.

⁵ This Procedure was implemented with effect from 1st July 2005. This Procedure has been used as a guide towards understanding warship-building in India, however, deviations from this Procedure were not necessarily construed as irregular for the purposes of this Performance Audit as many activities like CFA sanction, LOI issue took place prior to it becoming effective.

The Vice Chief of Naval Staff (VCNS) is concerned with all activities regarding the activities leading upto sanction and construction of warships. The Controller of Material Monitoring is responsible for monitoring the construction activities. Both report to the Chief of Naval Staff (CNS).



The Assistant Chief of Naval Staff (Policy and Plan) is responsible to the VCNS for promulgation of all perspective, force level, financial and infrastructure plans and programmes of the Navy. The Directorate of Staff Requirements (DSR) is responsible for formulation of Staff Requirements of all ships and on-board weapons etc. The Directorate of Naval Design (DND) has a team of engineers who undertake the design of various ships. The Directorate of Ship Production (DSP) functions as project manager for each class of ship. Both DND and DSP are under the Controller of Warship Production and Acquisition (CWP&A). The Directorate of Cost and Contract Management (DCCM), also under the CWP&A, exercises the budget control and coordinates the signing of contract for ships under construction. Thus, together, these directorates are responsible for design, production, equipment / material procurement and financial control related to the ships under construction.



The Controller of Material Monitoring is responsible for the management of various types of equipment on-board ships. The Assistant Chief of Material (Dockyard and Refits) is responsible for planning and co-ordination of induction, exploitation and management of hull and hull related equipment and systems as well as Marine Engineering equipment and systems for which the Directorate of Marine Engineering under him is responsible for undertaking systems integration of Marine Engineering Systems on ships and drawing up specifications for their selection, procurement, tests, acceptance and maintenance schedules. The Assistant Chief of Material (Information Technology and Systems) is responsible to the COM for identification and induction of emerging technologies in the field of information Technology, Electronics, Electrical, Weapons, Sensors and missiles in consonance with the Naval Staff Requirements promulgated by Staff Branch. The Directorate of Electrical Engineering (DEE), which reports to him, is responsible for all technical matters pertaining to Inspection, Acceptances, Testing and Tuning and Maintenance of Electrical, Electronics, Sensors and Communication Systems, whereas, the Directorate of Weapon Equipment (DWE) is responsible for technical evaluation for acquisition of new weapons and sensors.

Warship Production Superintendent (WPS), the official representative of Naval HQ and head of the Warship Overseeing Teams exercises financial control, monitors progress of production schedules and ensures assurance of quality in respect of ships under construction at the shipyards. WPS and the team under him acts on behalf of, and corresponds directly with NHQ in regard to all new construction ships.

1.4 Financial outlays

The Ministry of Defence has been releasing funds under various projects to the three shipyards as depicted in the figure. Between 2003-04 and 2009-10, the Ministry of Defence released ₹ 5240 crore for P17 Frigates ships, ₹ 3132 crore for P15A Destroyer ships and ₹ 948.07 crore for P28 Corvette ships.

