



## COMMENTARY

# A Case for a New Warship-Building Strategy

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## Indigenous Warship Projects – A Review

A few months ago, India's Defence Minister, Shri A.K. Antony presented an elaborate overview of the current status of indigenous warship-building projects, to the parliament. He pointed out that each of the programmes has suffered severely due to enormous cost and time over-runs. All indigenous warship-building projects with the three leading defence shipyards of the country have registered cost escalations ranging between 157% and 260%. He informed the parliamentarians that "Acceptance of Necessity" for the acquisition of the six next-generation submarines under Project-75(I), has been accorded by the Defence Acquisitions Council. The proposal is being progressed. Cost details would be available on finalisation of contracts. However, it will take at least two to three years for the contract to be finalised and another seven years before the first submarine is rolled out. Clearly, the time-estimate for fruition of the project would be detrimental to the rapidly-dwindling force-levels of the Indian Navy's submarine combat arm.

While he did not quantify the time over-runs of the indigenous projects, it is well-known that assigning warship projects to the three defence shipyards by nomination

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has resulted in their order books getting choked beyond their capacity, for the next 15–20 years. The other prominent reasons ascribed were the delayed availability of critical construction material, delays in finalising propulsion systems and equipment, their acquisitions from abroad, and also delays in finalising indigenous substitutes and their availability.

At the insistence of Naval Headquarters, each shipyard was compelled to initiate modernisation plans to induct newer shipbuilding technologies, however, existing facilities, practices, processes, capacity upgrades, infrastructure augmentation and the execution of modernisation plans have caused protracted delays. Slow and tedious decision-making, procurement and acquisition processes are also attributable for these inordinate delays. The objectives of planned modernisation of defence shipyards are the following:

- (a) qualitative and quantitative augmentation of building and delivering quality warships;
- (b) competitive costing of shipbuilding;
- (c) shorter construction and delivery periods; and
- (d) increased capacity and product mix.

Regrettably, these objectives have fallen well short of the pronounced aspirations of improving productivity. Exhorting the need for imbibing newer concepts in naval ship design and construction at a seminar, Cdr Douglas C. Deans, a former naval architect of repute, recommended modules and the blocks that follow are built to very tight and exacting tolerances. They are continuously monitored during construction and assembled to form the platform at exact positions using laser trackers. Cdr D. C. Deans exhorted, “The Shipbuilding Industry and the associated R&D Organisations are in need of a major renaissance and reformation led by young dynamic and innovative professionals who can think boldly and act outside the conventional box. Like Lego sets, the next generation of ships designs can be reconfigured for new missions within weeks and even assembled, if the built modules are available at selected locations.”

## **Developments Elsewhere**

With intense market competition and unpredictable economic conditions threatening their survivability, the global naval shipbuilding industry is compelled to re-strategise

their long-term goals and corporate perspectives. The modularity concept in shipbuilding has emerged as the game changer in “tailoring” warships according to operational needs. This resulted in a qualitative and quantitative jump in production levels to a significant 1.5 frigates per year.

Globally renowned naval shipyards that have demonstrated dynamism in their futuristic corporate policies and planning, have reaped rich dividends by adopting R&D and construction philosophies, emerging concepts and IT tools. The common thread of these success stories were bold entrepreneurial initiatives launched efficiently to counter the future uncertainties. Technology-driven tools and practices were grasped with vision while creating commensurate infrastructure and suitable empowerment of human resources to brace for emerging challenges in the industry.

Navantia, the Spanish shipbuilders, has emerged as a world-reference in the design, construction and integration of warships, including new-generation submarines. They are engaged in the design and manufacture of integrated platform management systems, fire control systems, command and control systems, propulsion plants and the lifecycle support for naval ships. It is one of the very few shipyards that has a complete capacity in the fields of design, development, production, integration and integrated logistic platform support, propulsion and naval combat systems as well as the ability to deliver fully-operational ships. Navantia’s Cartagena aspires to be a reference point in the design and construction of air independent propulsion (AIP) submarines. A different system of integrated modular construction is used in building these submarines, as opposed to the one for building surface ships, with the pressure-resistant hull being the first thing to be built prior to the subsequent installation in the interior sections of pre-fabricated blocks.

The DCNS Group is a leading European player in the world market for naval defence systems. To meet customer demands for more comprehensive and integrated solutions, DCNS acts as the prime contractor for naval shipbuilding and support by combining its own development, marketing and production capabilities with those of selected partners.

The MEKO family of ships includes frigates, corvettes and ocean-going patrol boats. It is a fine exposé of modern naval shipbuilding with modularity of weapons, electronics, ancillary machinery and other equipment, all designed to reduce costs in the running, maintenance and initial cost of acquisition.

Other examples of this concept are the La Fayette and Mistral classes, which are light multi-mission frigates built by DCN. These ships were built with a modular inner structure from pre-fabricated modules that were completed at workshops and then delivered to the shipyard for final assembly. This technique reduced the construction time to less than two years. BVT Surface Fleet, the joint venture between BAE Systems and VT Group, use pre-fabricated modular cabins that reduce on board outfitting time and consequently shorten the shipbuilding cycle.

The Australian government has awarded a contract to Tenix Defence (now BAE Systems) for the construction of two large amphibious landing ships. Tenix has entered into a partnership agreement to build the ships as per Navantia's design. As per the agreement, around 25% of the value of the project involving construction of the superstructures for the ships would be undertaken in Williamstown, Victoria. After completion of the hulls for the amphibious ships at Navantia's shipyard, these will be transported to Australia. The superstructures will then be constructed, fitted out and integrated with the hulls at BAE Systems' Williamstown Dockyard. The combat system is to be provided by Saab Systems, Australia, which will also integrate the combat management system. The communications systems will be supplied by L-3 Communications. This model seems to be a success story of multinational collaboration in warship-building over transoceanic boundaries.

The Virginia class of submarines being built by Northrop Grumman Shipbuilding incorporates advanced acoustic technology, but with increased use of commercial off-the-shelf (COTS) components and modular construction that promises a substantial cost reduction.

## **The Indian Perspective**

The global shipbuilding industry focuses on evolving technologies, sophistication and complexity of equipment and systems, thus making warship projects highly capital-intensive and high-risk ventures. Nonetheless, the inevitability of capacity upgrades and infrastructure augmentation by shipyards, inhibit solo ventures due to large financial burdens involved, laced with uncertainties of commercial orders. These challenges have forced cost reduction measures in the shipbuilding industry. Modularity in warship designing seems to have assumed prominence and widened the scope for integration of capacities, facilities and infrastructure through cooperation,

collaboration and consolidation among the industry. In the Indian context, this concept perpetuates a strong case for a meaningful cooperation and integration of capabilities and capacities through the public–private partnership (PPP) model to emulate globally seen successes.

India's Defence Production Policy of January 2011 was formulated by the Ministry of Defence to achieve self-reliance in defence production in substantive terms and to synergise and enhance the national competence in producing state-of-the-art defence products in a globally competitive manner. The policy allowed for adoption of all viable approaches such as formation of consortia, joint ventures (JV) and public–private partnerships within the approved framework.

On the other hand, with the objective of making the public sector more efficient and competitive, the Department of Public Enterprises (DPE) has granted enhanced autonomy and delegation of powers for the formation of JVs and subsidiaries by profit-making Navratna and Mini-ratna Public Sector Enterprises (PSEs) and for the formation of technology JVs and strategic alliances by Navratna PSEs. As a sequel to this empowerment, the Ministry of Defence was to issue JV guidelines.

The Defence Production Policy of January 2011 did contain provisions for using PPP in creating JVs, in tune with successful models elsewhere in the world. A few months later, pioneering baby steps were initiated through the announcement of a JV between Mazagon Docks Ltd (MDL) and Pipavav Shipyard, a private sector venture, for expediting production to clear the backlog of orders of the Indian Navy. The trend-setting initiative spread the right message within the shipbuilding industry, infusing much-desired interest among other defence shipyards. On expected lines, the Garden Reach Shipbuilders & Engineers (GRSE) and the Hindustan Shipyard Ltd. (HSL) immediately followed suit by floating letters of interest to leading private-sector shipyards in the country, for forming JVs with identical intents. There was an immediate response to the tenders from eight to 10 private shipyards. Regrettably, the JV between MDL and Pipavav Shipyard fell through even before its formation, although it appears that the last has not been heard about this initiative. Formalising the provisions of the Defence Production Policy within six months, the Union Cabinet, has approved the guidelines for establishing JV companies by Defence Public Sector Undertakings (DPSUs), on February 9, 2012, with the following

salient features that are critical for strengthening the indigenous warship-building capability:

- enhancing fairness and transparency in the selection of the JV partner;
- ensuring a well-defined nature and scope of the JV;
- retention of the affirmative right of the DPSU for prior approval to key JV decisions such as amendments to the Articles of Association of the JV company, declaration of dividend, sale of substantial assets, and formation of further JVs/subsidiaries;
- exit provisions for the DPSU; and
- regular reporting and monitoring of the functioning of the JV company.

The guidelines provide a streamlined, fair and transparent framework for DPSUs entering into JVs, with better risk-management, greater efficiency and shorter delivery timeframes. Board-managed DPSUs will henceforth undertake the formation of JVs within the framework of the JV guidelines.

## **Conclusion**

Indeed it is in India's national interest that the defence shipyards that have developed expertise in building warships over the past several decades, consolidate and share their domain expertise by collaborating and integrating the resources and infrastructure assets available with several high-end shipyards in the private sector. The sole objective should be of harnessing the emerging dynamism of the private sector and other opportunities for obtaining advanced technologies through the PPP approach by DPSUs.

Although the approved guidelines on JV by the Ministry of Defence propagate transparency in formulating an open competitive structure on formation of JVs, it must be read and interpreted as a replacement of existing policy of assigning warship projects through plain nominations. The time is opportune and the environment conducive for cultivating meaningful JVs between shipyards of both sectors, to consolidate and beef up infrastructural assets available within the country and improve productivity.

Strategic considerations on the formation of JVs must factor in the locations and availability of shipbuilding infrastructural assets on either side of Indian peninsula to

synergise build-potential and capabilities. A long-term vision and perspective needs to be incorporated into the new strategy, for not just clearing the existing log-jam of order books, but also substantially contributing towards making available the approved force development plans for the Indian Navy. Macro-level corporate objectives should be the creation of image and reputation of JVs and consortia matching the global standards.