

Classification Rules for Naval Warships: Heralding a Change

Kapil Narula and Nitin Agarwala*

26 August 2015

The Indian Navy's Maritime Capability Perspective Plan (MCP) provides for 200 ships by 2027 from the present strength of 137¹. With a theme of 'Make in India' and the vision of transforming the Indian Navy from a buyer's navy to a builder's navy, 41 orders² for ships have been placed with the Defence Public Service Units (DPSUs), leaving 22 more ships and submarines to be built by 2027. With the order books of DPSUs full, the focus has shifted to the PSUs and private shipbuilders. The recently released Indian Naval Indigenization Plan (INIP)³ 2015-2030 also encourages domestic industries to participate in construction of ships and associated naval equipment in the country.

In light of the above, development of "*Rules and Regulations for Construction and Classification of Indian Naval Combatant Ships*", released⁴ by the Indian Register of Shipping (IRS) in June 2015 is a significant step towards helping the domestic private industries attain a level playing field to design and build naval ships.

Classification of Ships

Shipping is a global industry without borders. In order to ensure that ships follow a minimum acceptable standard of structural safety, ships have been classified by specialized organizations, called the 'classification societies', since the 1700s. These

classification societies formulate rules, validate designs, ensure maintenance of technical standards during construction, apart from undertaking periodic surveys during the life cycle of the ship to ensure compliance to laid down rules, thus ensuring safety of the ship at sea. It is important to mention that classification societies do not certify fitness or seaworthiness of a ship for sailing. Rather they certify that the ship complies with the required codes. A ship today either meets the relevant class rules or it does not.

There are more than 50 leading ship certification authorities in the world of which 12 are members of the International Association of Classification Societies (IACS), which ensures uniformity of application of standards across the globe. These members include American Bureau of Shipping (ABS, U.S.), Det Norske Veritas (DNV, Norway) - Germanischer Lloyd (GL, Germany), Lloyd's Register (LR, UK), Class NK (Japan), Bureau Veritas (France), Russian Maritime Register of Shipping (Russia), Registro Italiano Navale (RINA, Italy), China Classification Society (China), Indian Register of Shipping (India), Korean Register of Shipping (Korea), Polish Register of Shipping (Poland) and Croatian Register of Shipping (Croatia).

During the construction phase, a ship builder can approach any of these classification societies for classification of the new ship. There is no binding by the location where the ship is build or by the flag state where ships would be eventually registered. Usually this decision is based either on the cost considerations or according to the preference of the owner. A sizeable number of Indian flagged ships are classified by the IRS, which was established in 1975 and is based at Mumbai.

The Classification Process

Once the classification society has been identified, the ship designer approaches this society for approval of design and subsequent drawings. Observations and comments according to class rules are incorporated as the project develops. The classification society, through its offices and network, spread across various countries, ensures inspection of materials, components, machinery and statutory items prior to use. This is

to ensure that the end product conforms to the technical standards laid by the class. Once in service, the ship is subjected to periodic surveys to maintain classification till it reaches the end of life and is recycled. These procedures are well established and documented by the classification societies.

Issues such as safety, floatability and pollution which are statutory and based on the International Maritime Organisation (IMO) conventions are incorporated in the class rules to form a comprehensive and coherent set of standards for design, construction, maintenance and operation of ships. The class rules are applicable to:

- The structural strength of all essential parts of hull and its appendages.
- The safety and reliability of the propulsion, steering system and other auxiliary systems.
- All machinery (including electrical and control systems).
- Fire safety and structural fire protection including fire fighting systems.
- Rules and material to be used for special types of vessels with specific requirements.

Classification Rules for Naval Combat Ships

Warships are not bound to follow rules and regulations promulgated by the IMO conventions as also rules that have evolved under national jurisdiction. Hence, naval ships have traditionally not been classified as the requirement is not mandatory. However, over the past two decades, leading classification societies such as ABS and LR in collaboration with their national navies have developed special rules for warships in an attempt to adopt the best of commercial and naval practices. For navies with limited technical resources, qualified manpower and ever shrinking budgets, partnering with classification societies has allowed for the continuation of ship building programs.

The French Navy was the first navy to implement warship classification rules for its naval vessels⁵. The ‘Mistral’ class vessels (built by the DCN (naval shipyard) and Chantiers de l’ Atlantique (civilian shipyard)) were the first combatants to be classification rules compliant. Soon after, the FREMM program (27 European multi-purpose frigates) also adopted a set of classification rules developed by BV and RINA. The ongoing joint development of an aircraft carrier between France and UK is also poised to follow two different set of rules, ‘BV Naval Rules 2006’, will be used for the French project while ‘Admiralty Defence Standards’, will be applied to the Royal Navy.

Several other warships have been classed by BV which include BPC landing platform helicopter and landing ship docks for the Russian and French navy, patrol vessels for Spain, Tunisia, Algeria, Morocco (built at French shipyards), frigates for the Malaysian Navy (built at a Malaysian shipyard) and the tanker ship for the Pakistan Navy (built at Karachi shipyard). It is of interest to note that the 15 Fast Intervention Crafts (FIC) imported by the Indian Navy were built at Couach, France and are certified under BV class rules⁶.

Classification Rules for Indian Naval Ships by IRS

The process of development of the rules for Indian naval ships commenced after the Indian Navy and IRS joined hands to develop Naval Rules in 2006. In the first instance, rules were drawn up and published for ‘non-combatant’ vessels in 2007 and were revised in 2010, in the light of experience gained in their usage. Following the release of rules for ‘non-combatants’, the development of IRS naval rules for ‘combatants’ was taken up. These rules have greater focus on the military aspects of ship design and include additional defence specifications. With the release of the IRS rules, it is hoped that the future ships of the Indian Navy will adhere to the laid down standards, which would improve the interoperability, ease of construction and will lead to cost cutting during the manufacturing stage.

Advantages for the Indian Navy

The Indian Naval warship construction program is spear-headed by the Directorate of Naval Design (DND) with inputs from respective professional directorates. The DND designs the ship using Naval Combatant Design Specifications (NCDS), Electrical Engineering Documents (EED), Defence Standards (DefStan), Military Specifications (Mil Specs), Indian Naval Book of Reference (INBR) and Naval Engineering Standards (NES). Based on this design, the DPSU shipbuilder produces production level drawings which are verified and approved by the DND prior to use during construction. The Warship Overseeing Team (WOT) located in the respective DPSU is responsible for conducting inspections to ensure compliance in accordance with the approved drawings and maintaining the requisite standards during the construction phase of the ship.

The Indian Navy is now looking to outsource design and construction of naval ships to private shipyards that are unfamiliar with the rules and regulations associated with the design and construction of naval ships. The class rules released by the IRS would therefore act as a single stop document. By adopting IR class rules, naval ships will accrue significant advantages, such as:

- Readily understandable and interoperable technical standards for design and construction of ships.
- Standardization of design against the internationally and commercially accepted and understood criteria.
- Opens up the possibility of third party surveys during construction to satisfy if the ship is built in accordance with the approved design and rules.
- Offloading surveys during construction and in-service inspection to a recognised organisation with requisite skills and experience resulting in freeing up of limited manpower.
- With materials and components used during the construction of the ship being traceable, a baseline would be available for establishing records for in-service phase of the ships operational life.
- Facilitate better relationship with private ship-builders and enable cooperation between different navies which design and operate ships.

- It would be useful in making design choices for selecting ‘off-the-shelf’ equipment which are ‘type approved’ by the classification society thus reducing the cost of the platform.
- It would give impetus to private ship building industry and would leverage the best civilian practices in the field of ship construction.
- Availability of best practices in shipbuilding from across the globe since these rules shall be continuously updated with feedback from vessels in service.

Conclusion

Naval ship building in collaboration with private partners is poised to grow in India. Development of rules and regulations for construction and classification of naval ships in 2010 and for naval combatant ships in 2015, by the IRS, hints at the possibility of adoption of classification rules by Indian Naval Ships. Adoption of class rules by naval ships is a right step and will ensure many benefits for the Indian Navy especially in offloading some of the work load to civilian design agencies. Such a step would also be a progressive one, in line with other navies, which have achieved a higher degree of integration between the civilian and defence ship building industry. This would also guarantee a ‘third party’ certification of the safety of naval vessels. It is now just a matter of time before the class rules are adopted for the Indian Naval Ships and are integrated seamlessly in the design and construction process.

* Commander Kapil Narula is an Electrical Engineer and is posted as a Research Fellow at the National Maritime Foundation. Commander (Dr) Nitin Agarwala is a Naval Architect and is presently the Officer-in-charge of the structures group at the Directorate of Naval Design. The views expressed are the authors’ own and do not reflect the official policy or position of the Indian Navy, the NMF or the Government of India. The authors can be reached at kapilnarula@yahoo.com and nitindu@yahoo.com respectively.

Notes

¹ “Navy Aiming at 200-ship Fleet by 2027”, July 14, 2015, at <http://www.newindianexpress.com/nation/Navy-Aiming-at-200-ship-Fleet-by-2027/2015/07/14/article2920149.ece> (accessed August 10, 2015).

² Chief of Naval Staff Admiral R K Dhowan commented that the Indian Navy was the only force which was close to 100% indigenisation of its military assets. As on November 2014, 41 ships were under construction at various Indian Shipyards. “41 warships currently Under Construction - All Made in India” November 30, 2014, at [http://defencenews.in/defence-news-internal.aspx?id=si9vrbW\\$\\$\\$\\$wo=](http://defencenews.in/defence-news-internal.aspx?id=si9vrbW$$$$wo=) (accessed August 04, 2015).

³ The Navy issued its first 15-year indigenisation plan in 2003 and then revised it in 2008 (valid for the period 2008-2022). The latest revision was done to dovetail it with the ‘Make in India’ pitch and the Navy wants to involve private industry in a big way in this initiative. The Navy has individual plans for capacity augmentation – the Indian Maritime Capability Perspective Plan for fleet augmentation, Maritime Infrastructure Augmentation Plan and the Maritime Cooperation Roadmap all of which are from 2012 to 2027. <http://indiannavy.nic.in/sites/default/files/INIP%20%282015-2030%29.pdf> (accessed August 05, 2015).

⁴ “IR Class Rules for Indian Naval Combatant ships released by Chief of the Naval Staff Admiral R K Dhowan”, June 10, 2015, at IR Class, Indian Register of Shipping. http://www.irclass.org/news/press_release/irclass-rules-indian-naval-combatant-ships-released-chief-naval-staff-admiral-r-k (accessed August 06, 2015).

⁵ “Classification of naval vessels” http://www.bureauveritas.com/wps/wcm/connect/25847cd3-e4ae-42d3-a6db-2540bc580ea7/BV_NM_2014.pdf?MOD=AJPERES (accessed August 07, 2015).

⁶ Ibid.