THOUSAND ISLAND DRESSING

Traditional and non-traditional threats, as well as financial constraints, are pushing Asia-Pacific navies to select increasingly modular designs for their corvettes. This is turning escort vessels into both patrol and war fighting platforms.

by **Dr. Alix Valenti**

By common naval standards, ships are classified in relation to their displacement and their length. For corvettes, this would therefore imply, as indicated in the 16th edition of *The Naval Institute Guide to Combat Fleets of the World* published by the US Naval Institute, that we are talking about "surface combatants of less than 1500 tons but more than 1000 full load displacement." The increasingly regional and non-traditional nature of the security challenges faced by nations in the Asia-Pacific has however been challenging this definition for the past decade. "There are currently two responses to corvettes in the Asia-Pacific," says Matthew Caris, a senior associate at Avascent, a consultancy based in Washington DC. Large navies, such as the Japan Maritime Self-Defence Force (JMSDF), the Republic of Korea Navy (RoKN) or the Royal Australian Navy (RAN), which can afford large vessels "are looking to retire their corvettes to procure frigates."

The Indonesian Navy has recently furnished itself with new corvettes in the form of its 'Bong Tomo' class of vessels. Three ships comprise the class including the KRI John Lie pictured here.

US Navy

However, for smaller navies with more restricted budgets, such as the Royal Malaysian Navy (*Tentera Laut DiRaja Malaysia*/TLDM) or the Indonesian Navy (*Tentara Nasional Indonesia-Angkatan Laut*/TNI-AL), corvettes play a more significant role. While retaining the characteristics that originally made them popular for patrolling, such as their long range, they have evolved to deliver "a potent Anti-Surface Warfare (ASuW) punch that is well above their weight and better than that of Offshore Patrol Vessels (OPVs)," Mr. Caris continues. Furthermore, the sonars, torpedoes and guns that can be fitted on the platforms allow them to fulfil, albeit to a more limited extent, Anti-Submarine Warfare (ASW) and air defence tasks. In combination with their sophisticated Combat Management Systems (CMSs), corvettes serve these smaller navies for both patrolling and warfare at a lesser cost than frigates. This means that what now distinguishes vessels classes "depends on what mission they are outfitted to perform," says Collin Koh Swee Lean, an associate research fellow at the S. Rajaratnam School of International Studies in Singapore.

Bangladesh

Bangladesh's large coastline, increasingly prone to flooding and its 34694 square nautical mile (119,000 square kilometre) Economic Exclusion Zone (EEZ) in the Bay of Bengal present it with a wide range of both traditional and non-traditional security threats. On the one hand it requires patrol vessels that can counter piracy, illegal fishing and trafficking (of humans, narcotics and arms). On the other hand it needs ships with war fighting capabilities to be able to protect the country's interests (oil and gas) in its EEZ against competing claims from Burma and India. To this end, in 2009 Bangladesh launched a ten-year programme to develop a three-dimensional navy (surface, underwater and naval aviation) which was integrated in 2013 in the 'Forces 2030' Bangladesh Armed Forces modernisation programme.

The two corvettes, BNS *Shadhinota* and BNS *Prottoy* Bangladesh received on 11 December 2015 from the China Shipbuilding Industry Corporation (CSIC) will aim to fulfil such a role. Based on the 'Type-056/Jiangdao' class corvettes currently in service in the People's Liberation Army Navy (PLAN), Bangladesh's new corvettes retain most of the sensor and weapon systems of the original Chinese design, minus their ASW equipment. This will include four China Aerospace Science and Industry Corporation (CASIC) C-802 Anti-Ship Missiles (AShMs), one China Aviation Industry Corporation FL-3000N Surface-to-Air Missile (SAM) system and one Zhengzhou Electrical Engineering H/PJ-26 76mm main gun. With a relatively strong firepower for the size of the ships, Bangladesh's new corvettes will be the key assets of the country's littoral fleet. As such, according to local sources in September 2015 the Bangladesh Navy has formally ordered a second pair of corvettes.

China

As well as constructing corvettes for Bangladesh, in the past decade the People's Republic of China's (PRC) People's Liberation Army Navy (PLAN) "has moved from a passive inshore defence naval strategy to an active offshore defence one," says Mr. Koh Swee Lean: "The connotation of this switch is clearly a move towards a more offensive strategy," Mr. Koh Swee Lean continues, "which requires vessels such as corvettes for fast projection into the open sea." The 'Type-056/Jiangdao' class corvettes the PRC has been building since 2012 are the direct outcome of this more aggressive strategy, for their modular design, the first of such kind in the PRC, allows them to be deployed as either an Offshore Patrol

The 'Kamorta' class corvette replaces the Indian Navy's existing 'Kora' class ships, with four vessels being procured from Garden Reach Shipbuilders and Engineers to this end.

Indian Navy

The Indian Navy's 'Kora' class of corvettes (pictured) will begin to reach the end of their service lives in circa 2030. By this time, they will have been progressively replaced by the force's new 'Kamorta' class corvettes.

US Navy

Vessel or as a frigate. They will, over the next five years, replace the PLAN's 'Type-054A/Jiangkai' class frigates in their patrolling role, freeing them for deployment further away from the PRC, to support anti-piracy operations in Somali waters, for example.

The 'Type 056/Jaingdao' class corvettes, with their full load displacement of 1365 tons, are equipped to deliver a potent punch. The ships accommodate HQ-10 SAMs (a Chinese version of the Almaz-Antey S-300PMU-1 SAM) with up to eight missiles ready-to-fire, whilst four CASIC sea-skimming anti-ship cruise missiles and two sets of 324mm triple torpedo tubes provide the vessel with its ASuW and ASW capabilities. In terms of sensors and radars, they include a Yangzhou Marine Electronic Instruments Research Institute Type 360 naval surveillance radar and Type LR-66 fire control radar. Although it remains unclear exactly how many of these vessels the PRC intends to build, the NATO Association of Canada (NAC) indicated in a May 2015 report that estimates put the final total of corvettes at between 40 and 50. The first ship was commissioned in February 2013 and the 25th example has just been commissioned in this February.

India

According to its 2009 Maritime Doctrine, control of the Indian Ocean "is the central concept around which the (Indian Navy) is structured." To this end, in recent years, the Indian Navy has been undergoing a modernisation programme, which appears to be strongly centred on replacing a wide variety of ageing surface vessels such as aircraft carriers, frigates and destroyers. Similarly, indigenously-built 'Kamorta' class corvettes constructed by Garden Reach Shipbuilders and Engineers (GRSE) will replace the Indian Navy's existing 'Kora' class guided-missile corvettes currently in service with the Indian Navy. Although no specific date has been given, replacement could occur from circa 2035 based on these vessels' 30-year lifespan.

Like many of its neighbours, India is becoming increasingly concerned by the submarine race that has been taking place in the Asia-Pacific region in the past few years with nations such as Australia, Malaysia, the PRC, Taiwan and Vietnam, to name just five, having either recently acquired, or having existential plans to acquire, ultra-quiet conventional hunter-killer boats. This concern is reflected in the 'Kamorta' class corvettes having a design optimised for ASW, but also including ASuW and air defence capabilities. With a displacement of 2500 tons, the class is equipped with the Finmeccanica/OTO Melara 76mm Super Rapid Gun as well as two KBP Instrument Design Bureau AK-630 CIWS (Close-In Weapon Systems). Also fitted is a 16-cell vertical launching system for firing Israel Aerospace Industries (IAI)/Rafael Advanced Defence Systems' Barak-1 SAMs. The ASW role is ensured by the RBU-6000 anti-submarine rocket launchers and triple torpedo tubes mounted on the vessels. In terms of sensors, the vessels are equipped with a Defence Research and Development Organisation

The TLDM's KD Kelantan 'Kedah' class OPVs will be supplemented by the force's new LCS/Second Generation Patrol Vessels, which will reinforce the navy's littoral capabilities.

Revati naval surveillance radar and an IAI ELTA Systems EL/M-2221 fire control radar. According to recent local press reports, the Indian Navy will receive a total of four vessels. The first example, the INS *Kamorta* commissioned in August 2014, and was followed by the INS *Kadmatt* in January. The INS *Kiltan* should commission in September with the INS *Kavaratti* following by the end of 2017.

Malaysia

Beyond South Asia, with nearly 2537 nautical miles (4700 kilometres) of coast to protect and bordering the Strait of Malacca, infamous around the world for acts of piracy, the TLDM plays a significant role in the country's security and defence. The fact that Malaysia is one of the five nations (along with Brunei Darussalam, the Philippines, the PRC, Taiwan and Vietnam) currently disputing maritime and territorial claims in the South China Sea around the Spratly and Paracel islands, only adds to the challenges currently facing the TLDM. To tackle these issues, in the eleventh Malaysia Plan of 2016-2020, which outlines government spending priorities, the chief of the TLDM has requested the acquisition of six Littoral Combat Ships (also known as the Second Generation Patrol Vessel), worth $2.2 billion, from local contractor Boustead Naval Shipyard (BNS).

These vessels are based on DCNS' 'Gowind' class corvettes, adapted to local requirements with a displacement of 3000 tons. DCNS is working in close partnership with BNS, in their shipyard in Lumut, north-western Malaysia, to achieve "a solid transfer of technology", says Philippe Darche, DCNS marketing manager for OPVs and corvettes, "in the field of design, production and combat system integration." These new multi-mission corvettes will be able to serve the TLDM in both littoral patrolling, against illegal fishing, piracy and terrorism, and in high-intensity naval combat if necessary. As such, it "provides the high performance warfare capabilities of a light frigate, including comprehensive and consistent ASW … powerful and long-range surface and shore attack sensors and weapons … and extended point defence systems against air and missiles threats," indicated Mr. Darche. Open sources note that these ships will be equipped with a BAE Systems/Bofors Defence 57mm main gun, MSI Defence Systems' DS30M Mk.2 30mm gun, the Kongsberg Naval Strike Missile for ASuW and land attack, plus a vertical launch system for SAMs. Sensors will include the Thales SMART-S Mk.2 naval surveillance radar and Thales CAPTAS-2 ASW hull and towed array sonar. DCNS, meanwhile, will provide the ship's SETIS CMS. Furthermore, it was announced during the Defence Services Asia exhibition in Kuala Lumpur, held in mid-April, that Rohde and Schwarz would provide its Voice-Over-Internet-Protocol based communications system for the first vessel in the class. "Construction of the first vessel started in March 2015," specified Mr. Darche, with delivery expected to the TLDM in 2018.

Philippines

As noted above, the Philippines is one of the countries involved in the Spratly and Paracel archipelagos maritime and territorial disputes. The Philippines itself is an archipelago comprising over 7100 islands, which require, like all its regional neighbours, constant patrolling against illegal fishing and trafficking. The *Hukbong Dagat ng Pilipinas* (HDP/Philippine Navy), however, is generally characterised by its obsolete capabilities, given its use of decommissioned ships from other navies, such as the 'Hamilton' class cutters, formerly of the United States Coast Guard, acquired from the force from 2011.

As a first step to palliate this significant gap, local sources report that at the beginning of April 2016 the HDP tasked GRSE to build two 'Kamorta' class corvettes for approximately $324.6 million (*see above*). The contract has yet to be signed, as the Philippines Department of Defence still has to ensure that GRSE meets the ships' post-qualification requirements. As the HDP modernisation plan progresses, with its first phase currently in progress, and the next two to take place in six years blocks, it is to be expected that there will be more requests for such vessels in the near future.

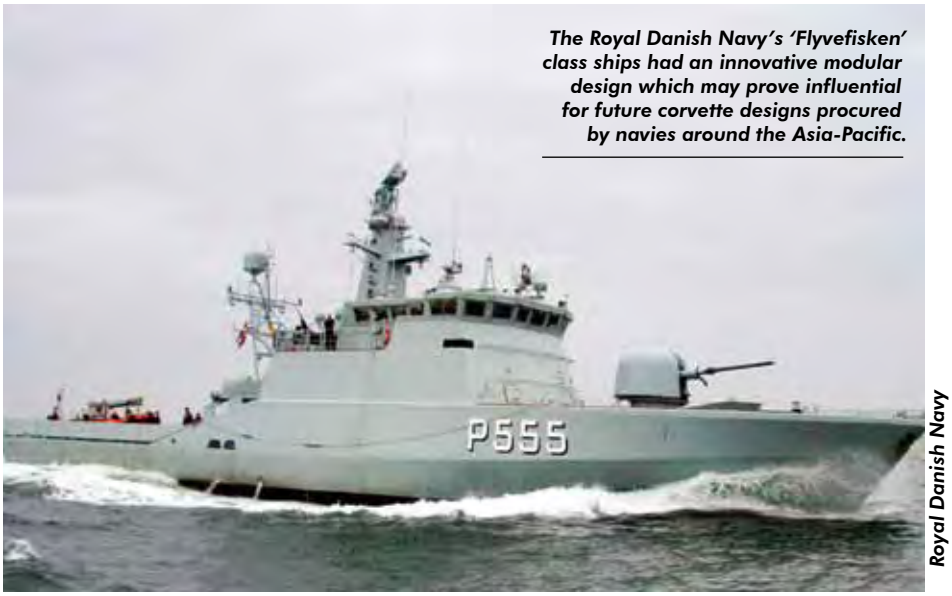
Singapore

While defence budgetary issues have challenged the HDP to ensure that its fleet remains modern, Singapore has long prided itself on maintaining one of

the most modern navies in the region. Geographically situated at one of the key regional maritime chokepoints, at the southern tip of the Strait of Malacca, Singapore has long placed significant importance on developing a navy capable of ensuring safe passage for maritime commerce. Thus it has launched a programme to replace its eleven 'Fearless' class patrol vessels with eight indigenously built and designed Littoral Mission Vessels (LMVs).

The LMVs, jointly designed by Saab and ST Marine, and built in Singapore by ST Marine, are multimission corvettes that "can perform multiple functions including peacetime surveillance and enforcement, ASuW, ASW and mine countermeasure tasks, all thanks to modular payloads that can 'plug and play' as circumstances require," says Mr. Koh Swee Lean. With a displacement of 1250 tons, the LMVs are equipped with a wide range of weapons, including a Finmeccanica/OTO Melara 76mm gun, Rafael Typhoon 25mm gun and a Finmeccanica/OTO Melara Hitrole 12.7mm weapon. They are also fitted with MBDA MICA SAMs launched via a twelve-cell vertical launching system. The sensor suite includes a Thales NS100 naval surveillance radar, Kelvin Hughes SharpEye navigation radar and a STELOP 360 degree optronics package. The first ship, the RSS *Independence*, was launched on 2 July 2015, and more recently in April 2016 the second ship, the RSS *Sovereignty*, was launched and is expected to be commissioned by 2017. The remaining six ships of the class should be launched between 2017 and 2018 and are all expected to be commissioned by 2020, according to local media reports.

DCNS' 'Gowind' class design forms the basis for the TLDM's Littoral Combat Ship/Second-Generation Patrol Vessel currently under construction.



The Royal Danish Navy's 'Flyvefisken' class ships had an innovative modular design which may prove influential for future corvette designs procured by navies around the Asia-Pacific.

Royal Danish Navy

Taiwan

Also seeking to modernise its fleet is Taiwan which is under pressure from the PRC's military modernisation and from maritime and territorial claims in the East China Sea over the Senkaku/Diaoyu islands (which are also disputed by Japan, the PRC and the Republic of Korea). Limited in its budget, however, Taiwan has been focusing on deterrence and asymmetrical strategies, given that the country cannot compete on a vessel-for-vessel basis with the PLAN. Key to these strategies is the development of multimission vessels such as the 'Tuo Chiang' class corvette.

This class of 500-ton corvettes is built by the Lung-De Shipbuilding Corporation, with the eponymous vessel commissioned in April 2015. Using a catamaran design, intended to generate a low radar cross section, these catamarans are designed with a minimal radar signature and are armed with Chungshan Institute of Science and Technology Hsiung Feng-II/III anti-ship missiles. They are also fitted with a Finmeccanica/OTO Melara 76mm main gun, four General Dynamics/US Ordnance M2HB 12.7mm machine guns and a Raytheon Phalanx CIWS. Local media reports have stated that up to twelve more catamarans could be ordered in the near future.

Conclusion

Throughout the programmes reviewed in this article, it is evident that what is referred to as a 'corvette' can no longer be limited to a measure of displacement: from India to the PRC, today's corvettes have a displacement that varies between 1250 tons and 3000 tons. What is more, one of the key features of the new generation of corvettes is their modularity, which allows them to play both the roles of patrol and combat vessels, thus making it clear that in the future "lines will continue to blur between OPVs, corvettes and frigates," says Mr. Caris.

As is often the case, the real distinction now lies in the cost. "These days ships are more expensive to acquire, operate and maintain," says Mr. Koh Swee Lean, but many governments face financial constraints that can hinder the replacement of their ageing fleet. As such, "navies seek to procure less but more flexible ships to do more and for a longer service life," he continues. We are therefore witnessing a return to the concept, initially pioneered by the Royal Danish Navy with the 'Flyvefisken' class of OPVs conceived and built in the mid-1980s/1990s. These ships employed modular, containerised payloads which could be added and removed from the vessel according to the mission she was to undertake. "As a number of Asia-Pacific nations are developing good shipbuilding capabilities thanks to technological transfer," according to Mr. Caris, such an approach will become increasingly possible. AMR