IMDEX ASIA

DAILY NEWS

16-18 MAY 2017 | CHANGI EXHIBITION CENTRE, SINGAPORE

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Singapore doubles submarine order

Photo: Adam Wakeling

STAND P03

Defence Minister Ng Eng Hen announced on 16 May that the Republic of Singapore Navy (RSN) will acquire an additional two Type 218SG diesel-electric submarines from German shipbuilder Thyssenkrupp Marine Systems (TKMS).

This takes the total Type 218SG boats on order to four. The TKMS design was originally selected in November 2013, with an order for two and options for two more. The first pair of boats is already under construction at the company's shipyard in Kiel, Germany, and will be delivered in 2020-21.

Speaking to *IMDEX Asia Daily News*, Thies Stüber, Type 218SG project manager at TKMS, said that the two extra submarines would be delivered in 2024-25. He added that boats three and four would have 'slight upgrades' to their electronic systems because five to ten years between designs is a long time.

Stüber was unable to elaborate on what the upgrades would be, but said that the basic ship design has not changed so that the boats can keep the same logistics supply chain.

The production of two more boats 'fits well in the flow of production and we can get higher synergies in the programme', he continued, as the TKMS and RSN teams are set up with a high level of cooperation.

Boat 1 started construction in June 2015 and is completing outfitting in Kiel, while boat 2 is in the steel construction phase, Stüber confirmed. The former is due for delivery in 2021, but there will be 'substantial harbour and sea trials beforehand', he added.

Stüber said that by exercising the option for two, this would bring down the overall price of each boat, as the only costs would be for the slightly different technology and construction. He added that the programme can take advantage of the logistics synchronisation of more units and keep the logistics effort stable.

An RSN team based in Kiel is continually working on requirements and TKMS has a team in Singapore where it is discussing future support of the boats.

An in-service support contract has yet to be signed, so TKMS is preparing to provide domestic support in partnership with Singaporean industrial partners.

Stüber said the RSN was developing the thinking on what that industrial support arrangement would look like in terms of local and international partners.

The RSN already has two *Archer*-class (former Royal Swedish Navy *Vastergotland*-class) submarines in service since earlier this decade, equipped with air-independent propulsion that replaced its older *Challenger*-class boats..

With these latest orders, the RSN will eventually field a fleet of six submarines, reflecting the trend across the Asia-Pacific region for enhancing sub-surface capabilities in what is technically a submarine arms race.

By Tim Fish

DAY TWO

17 MAY 2017

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ST Marine lifts veil on new platforms

STAND N03

ST Marine is highlighting its latest Endurance 170 design, a landing helicopter assault (LHA) ship that measures 170m long, at IMDEX Asia 2017. It is an evolution of the Endurance 160, of which a scale model was on display.

Far more capable than the four-ship *Endurance* class currently operated by the Republic of Singapore Navy (RSN), ST Marine said it had a 'potential customer' for the Endurance 170. While the shipbuilder would not be drawn on who its client was, *IMDEX Asia Daily News* reported yesterday that the RSN has talked since 2014 of acquiring a larger Joint Multi-Mission Ship.

There are five landing spots on the LHA's full-length 4,200m² flight deck, plus a below-deck hangar deck can accommodate ten medium-sized helicopters. Tan Ching Eng, senior vice president of ST Marine's engineering design centre II, said, to save deployment time, helicopter rotor blades can be fully deployed before the aircraft ascend either of the LHA's two elevators.

The Endurance 170 has a full load displacement of 19,000t, is 170m in length and 30.8m in width. Its ship crew numbers 140 plus 150 for the air crew. It can also carry up to 400 troops. Maximum speed is listed as 20kt, its range as 7,000nm and an endurance of 30 days.

The well deck can accommodate four landing craft plus up to 17 tanks on the vehicle deck. Another deck can fit 16 30t armoured vehicles. A 1,000m² medical facility, with three operating theatres, ten intensive care unit beds and 17 wards, is integral to the design.

Weaponry being promulgated, dependent on customer preference, includes a 76mm gun, 30mm remote-control weapon systems, close-in weapon systems and a vertical-launch missile system.

ST Marine is also promoting its Vanguard series encompassing an 80m patrol vessel, 95m naval research and support vessel, 105m OPV and 120m frigate. The company said the series of platforms 'deliver multiple modular capabilities with one design'. This commonality reduces design and engineering costs, allows a focus on mission systems development and reduces acquisition and life-cycle costs.

Image: ST Marine

Photo: author

The newest design still being developed in-house is a 120m frigate with stealth characteristics, for which the Singapore shipbuilder is looking for a 'launch customer' and is fielding 'ongoing enquiries'.

A feature offered on the Vanguard series is what ST Marine calls an Integrated Modular Mast (IMM) that optimises performance, minimises electromagnetic interference and enhances safety, according to Tan. This IMM can fit on any vessel of the class, reducing a ship's radar cross-section in the process.

Also on offer for its family of naval vessels is ST Marine's proprietary Nerva ship management system that employs open architecture and commercial off-the-shelf hardware and software. According to Sim Chee Chong, assistant director of EDC – automation at ST Marine, it 'provides centralised control and monitoring of platform sensors and systems'.

Nerva manages all aspects of ship systems such as fire-fighting, propulsion and electrical system. As well as fixed consoles, a mobile tablet version is available to give the commander or other senior officers better situational awareness.

Another key aspect of Nerva is its sense-making system 'able to perform equipment health monitoring and predictive diagnostics on platform machinery'. It converts data analysis into predictive advisory actions for the crew too by predicting component failure.

All kinds of data is sent ashore for monitoring and to allow fleet-wide analytics. In the event of a fire, for instance, an automatic SMS and email is sent to alert personnel ashore.

While Nerva can be retrofitted to vessels, it is particularly well suited to new-build ships.

By Gordon Arthur

Seagull sets sail from Singapore


Photo: Elbit Systems

STAND M22

The main highlight at Elbit Systems' booth is a live demonstration of its Seagull unmanned surface vessel (USV), with an operator positioned at IMDEX Asia 2017 remotely controlling the craft in Haifa Bay in Israel.

This is the second time that Elbit has conducted such a demonstration, Yaron Levi, the vice president of naval systems business line – UAS, told *IMDEX Asia Daily News*, although it is the first in Asia.

The Seagull is connected via SATCOM to a control console at the Changi Exhibition Centre. If a line-of-sight data link alone was employed, the control range for the Seagull is about 30nm. The platform was designed from the ground up as a multi-mission USV optimised for underwater tasks. Levi said this fact differentiates the Seagull from competitors like Rafael's Protector.

Although designed to perform underwater missions such as mine countermeasures and anti-submarine warfare, the Seagull based on a 12m composite/aluminium hull can perform surface missions such as electronic warfare, force protection, hydrographic survey as well as maritime patrol.

Modular payload suites such as a dipping sonar, towed side scan sonar, mine neutralisation and torpedoes are available.

The Seagull can autonomously launch and recover remotely operated vehicles too, as well as UAVs. Development of the Israeli USV was completed earlier in 2017. Elbit's extensive experience in developing UAVs has assisted with the Seagull, as there are obvious technological overlaps. In fact, the same control station can be used to control UAVs or the Seagull.

The vessel has a four-day endurance and can travel at speeds of up to 32kt via two diesel engines. It can operate in up to Sea State 4 and survive Sea State 7.

Levi noted that the demonstration signalled the platform is operational, even though he declined to say who current customers are.

He said the Seagull was receiving interest from Asia, North America and Europe. Indeed, a mine-clearing demonstration for the Dutch and Belgian navies will occur next month in Belgium.

A further demonstration of the Seagull via a SATCOM link is expected to take place at the Pacific maritime exposition in Sydney, Australia, in October.

By Gordon Arthur

Austal up-guns LCS to frigate standard

STAND H05

A new model of a trimaran vessel from Austal USA is on display that could be one of the designs on offer for the US Navy's future frigate programme.

The frigate design uses the same platform as the *Independence*-class Littoral Combat Ship (LCS) that the company has already built for the US Navy, but with increased lethality and greater multi-mission capabilities installed for sea control missions.

Austal states in its specifications that the frigate would displace 3,500t – just 200t more than the LCS – although its speed would likely be less than tthe 40kt of the latter. There are more berths for up to 130 personnel, but a smaller mission bay of 7,000ft² compared to the LCS, which has 18,000ft².

The frigate can also launch two 7m-long RHIBs in up to Sea State 3 and has a smaller hangar for just one H-60 helicopter and an MQ-8C UAS. The propulsion system is the same, but the real difference is in the combat systems and sensors.


An illustration of Austal's proposed frigate design. (Image: Austal)

Unlike the LCS, the frigate has electronic surveillance systems and a variable depth sonar in addition to the 3D search radar, two navigation radar and EO/IR systems. It also has a COMBATSS 21 combat management system, an AN/SQQ-89 undersea warfare system and an integrated bridge control system with automated machinery and damage control.

Armaments include the SeaRAM system, Mk110 57mm gun, six .50cal machine guns, Nulka decoys, two 25/30mm cannon, Hellfire AGM-114 missiles, torpedo countermeasures, two Mk41 launchers and 16 over-the-horizon missiles for an anti-surface capability.

Austal plans to capture cost efficiencies from its LCS version to reduce the potential price tag of the frigate while retaining some of the benefits of the trimaran design.

According to the company USS *Jackson* (LCS 6) just completed SeaRAM anti-air defence testing in April and USS *Montgomery* (LCS 8) completed final contract trials in March, before introduction to fleet operations.

The USN is conducting a study to see whether it can further enhance the LCS designs for its future frigate requirement including increased air defence and anti-submarine warfare capabilities.

Meanwhile, Austal USA initiated its Singapore operations in January with the opening of an office near Changi Naval Base, and the US Navy announced three *Independence*-variant LCSs will be forward-deployed in 2018.

By Tim Fish

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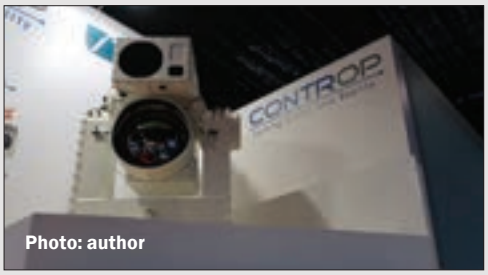

Photo: author

STAND M17

Controp is using this year's IMDEX Asia exhibition to promote its line of sensors for the small- to medium-sized boat market.

The Israel-based company specialises in the development and production of EO/IR systems for surveillance, defence and homeland security on air, land and maritime installations.

Johnny Carni, VP marketing for East Asia, said the company's sensors are unique for their size and yet have the same stabilisation and precision that are normally offered at a higher cost than its competitors.

Several were on display at this year's show. The first was the iSea10U for unmanned surface vessels and small boats in the 9-20m range. The low-cost system can detect boats at a range of 1nm. The high-performance payload includes an uncooled thermal imaging camera with continuous optical zoom lens. The iSea10U has drawn interest from special forces, who can outfit the sensor on rigid-hulled inflatable boats.

The second was the iSea30HD compact day/night observation system, configured for maritime patrol applications in the 15-90m boat range. Sensors include thermal imaging, with 250mm focal length and a 12.5x continuous zoom lens, and HD camera with a 20x zoom lens. The system has an automatic target tracker.

The third system on display was the long-range SPEED-ER, equipped with three sensors that provide a range of 30-40km.

The sensors allow for three channels: visible, thermal and short-wave infrared (SWIR). The combination of visible and SWIR allows the operator to penetrate haze, fog and pollution.

By Wendell Minnick

IAI Ramta showcases Super Dvora Mk 3

STAND M03

IAI Ramta, a division of Israel Aerospace Industries, is promoting the latest Mk 3 variant of the 50t Super Dvora fast patrol boat for the Southeast Asian market at IMDEX Asia.

The new Mk 3 has been in Israeli military service for three years now, noted a company representative. The Mk3 variant can carry surface-to-surface missiles, with ranges of 8km and a CEP of less than 1m.

The precision can be attributed to the integrated day/night EO sensor suite that also gives the bow gun the same strike capability. The boat can be outfitted with a 20/23mm cannon and a 7.62mm machine gun, both manned.

There is no guess work with the Mk 3, he said, adding that the Dvora has a long combat history to back up its claims.

The representative said that Israel has threats coming from near its coastal borders, and in order to avoid collatoral damage to Israeli citizens, it must get close and be accurate.


Photo: Tim Fish

The answer was a multi-mission patrol and interdiction craft capable of tight manoeuvring while still maintaining a system of stabilisation that allows for accurate targeting.

The Mk 3 can travel up to speeds of 45kt via its articulating surface drive and has a range of 1,000nm. The Mk 3 is a high-speed, high-endurance platform for the diverse mix of missions, such as off-shore patrol, exclusive economic zone control, law enforcement, naval intelligence, command and control, and boarding of suspect targets, as well as non-military missions, such as search and rescue, humanitarian assistance and disaster relief.

By Wendell Minnick

A26 sub goes vertical

STAND P21

Sweden's Saab is displaying a model of its A26 conventional submarine (SSK) fitted with vertical launch missile tubes at IMDEX Asia.

This version of the boat is designed to emphasise the modular capability of the submarine with the installation of a 10m section containing three launchers, each containing six missiles.

It is the first time that a conventional diesel-electric-powered submarine has been designed with the Tomahawk Land Attack Missile capability (TLAM). Existing boats that have TLAM – the US Navy and UK Royal Navy submarines – are all nuclear-powered (SSN).

The only other land attack capability that is fitted to conventional submarines has had to be through missiles fired through the torpedo tubes.

It is no small feat to install a vertical launch land attack capability onto an SSK, but the modular design means that a 10m section can be relatively easily installed. The modular section could also instead contain more batteries or AIP depending on the customer requirements.

Saab has received interest from customers that want a land attack capability in a smaller conventional submarine, but would not disclose what countries.

Naturally, the country would have to be a close US ally due to the restrictions in the sale of cruise missiles. Most countries that could procure an A26 of this type either would not be allowed to buy TLAM or have already selected other submarine designs for their sub-surface capability.

Poland, however, is one country that may fit the bill as it is still looking for a submarine capability, has close relations with Sweden, and is also a close ally of the US being a part of NATO.

As a part of a wider naval expansion programme Poland wants to acquire three submarines from 2023 and Saab is bidding alongside European rivals, DCNS and TKMS.

By Tim Fish

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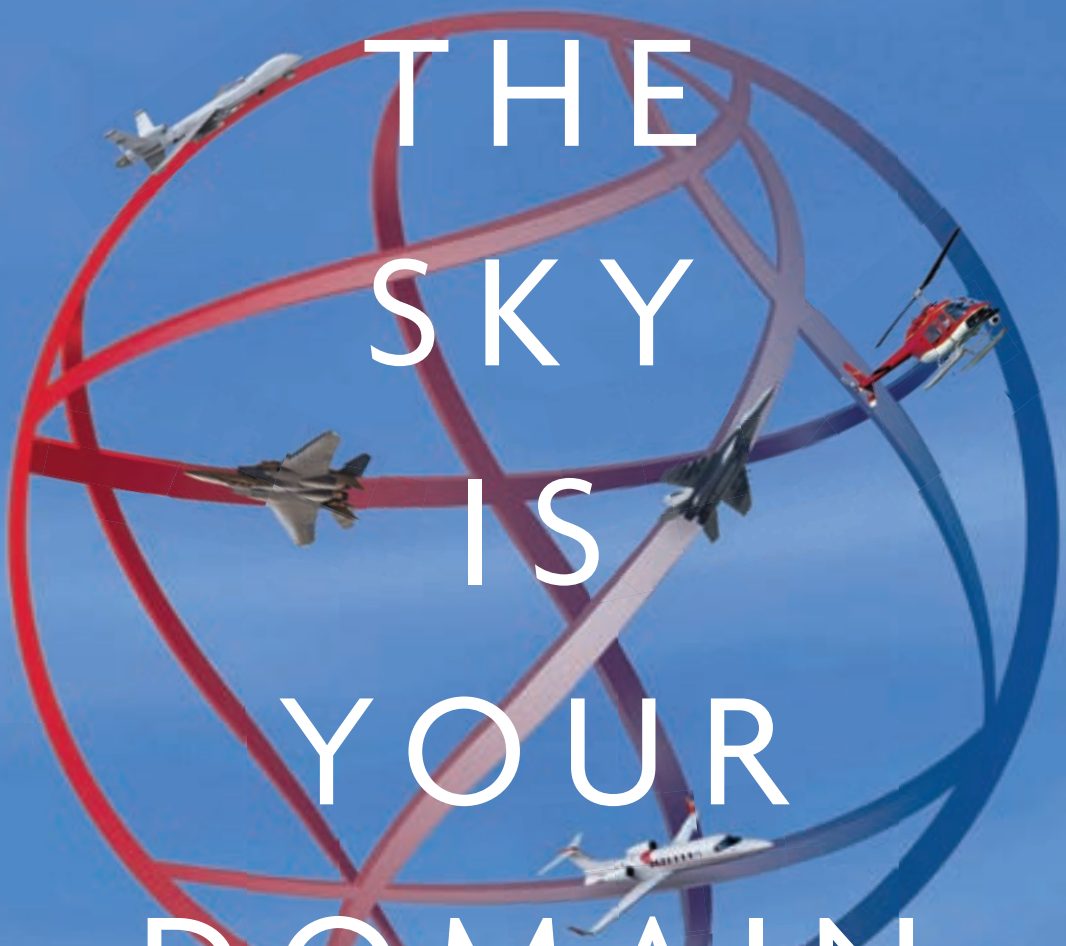

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Coronado shows Asian promise

The USS *Coronado* has been deployed in Singapore since last October, the first time the *Independence* class has been witnessed in Asia. (Photos: USN)

On 16 October 2016, USS *Coronado* pulled alongside its new berth at Singapore's Changi Naval Base. This was the first US Navy *Independence*-class Littoral Combat Ship (LCS) to forward-deploy to Singapore since the rotational programme started in 2013.

Initially, USS *Freedom* deployed to Singapore from April to November 2013, although this *Freedom*-class deployment was marred with technical difficulties.

Following that, USS *Fort Worth*, also a *Freedom*-class LCS, was stationed at Changi from December 2014 to August 2016, although it also suffered a serious propulsion breakdown near the end of its phase there.

Although USS *Coronado* (LCS 4) suffered a technical hiccup during her initial days out from Pearl Harbor, her tour to Asia-Pacific with the new capabilities and features of the *Independence* class is looking promising. With an aluminium alloy hull, the trimaran built by Austal is 500t lighter than its sister class, but it has a wide beam of 31.6m that enables a spacious 1,410m² mission bay.

The larger hangar and helicopter deck mean that this LCS has provision and space to carry a Sikorsky MH-60S helicopter and two enhanced MQ-8B Fire Scout UAVs.

It also marks the first time a radar-equipped MQ-8B has deployed to the Asia-Pacific region and as a composite element with the MH-60S.

The enhanced MQ-8B is fitted with a commercial off-the-shelf Telephonics AN/ZPY-4(V)1 maritime radar, giving the Fire Scout radar detection capabilities that were not present in the USS *Fort Worth's* deployment in 2015.

'We can also [have a] hunter-killer mentality using the Fire Scout to find, identify and track targets, and take them out with the MH-60S,' Lt Cdr Evan Young, the HSC-23 Detachment 4 officer in charge, told *Shephard* in October 2016.

'It's a force multiplier as we can operate the Fire Scout at the ship's radar operating limit, turn on the AN/ZPY-4 radar and extend the maritime picture, or pass the information for a Harpoon engagement.'

USS *Coronado* is also the first LCS to be fitted with a true anti-ship capability. Installed with two Harpoon Block 1C launchers on the forecastle, the LCS experienced its first live Harpoon firing during Exercise *RIMPAC 2016*, plus it will likely put the missile into play in coming drills.

It was recently reported that forward maintainers from Logistics Group Western Pacific, Task Force 73 had studied prior maintenance issues and reorganised its processes to reduce turnaround time from two weeks to four days.

Additionally, the crew has completed an engineering operations certification, which tests the proficiency of the engineering department through monitored drills and evolutions, this being administered by a team from Engineering Assessments Pacific.

Flexing muscles ahead

USS *Coronado* is a part of the IMDEX Asia exhibition this year and the vessel also participated in the inaugural Singapore International Maritime Review to celebrate the Republic of Singapore Navy's (RSN) golden jubilee.

Prior to IMDEX Asia, the LCS participated in a trilateral *Combat Afloat Readiness and Training* (*CARAT*) exercise with the Royal Thai Navy and RSN, conducting live-fire drills in the South China Sea.

CARAT Singapore will take place later this year, involving intense ASW, anti-air and anti-surface serials. The 2015 iteration saw the live firing of torpedoes from both partners against simulated underwater targets.

The LCS will also take part in a joint exercise with the RSN in waters off Guam this August. Codenamed *Pacific Griffin*, the two-week exercise is 'higher-end' and will enjoy live-firing opportunities.

The USN revealed that the exercise will see a 'whole bunch of RSN and USN assets'. *Pacific Griffin* could see air assets deployed from Guam, and it will exploit the large expanse and deep waters of the Pacific.

Moving ahead, commander of Logistics Group Western Pacific Don Gabrielson said 'multiple' LCSs will be simultaneously deployed in Singapore from next year, although the number and class is still being finalised.

This deployment to Singapore was permitted after an in-principal agreement between the defence heads of both nations in 2012, with Singapore supporting a US request to deploy up to four LCSs on a rotational basis.

By Chen Chuanren

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WHEN RESULTS MATTER

A blueprint for change?

The four-corvette *Laksamana* class was built by Fincantieri, originally for Iraq. The ships displace 675t without missile armaments. (All photos: Gordon Arthur)

In a bid to reap efficiency and cost-saving rewards, the Royal Malaysian Navy has set out an ambitious plan of expansion and streamlining for its naval fleet, but this is not without its challenges. **By Dzirhan Mahadzir**

Shortly after assuming command of the Royal Malaysian Navy (RMN) in November 2015, Adm Ahmad Kamarulzaman announced his '15 to 5 Fleet Recapitalisation Plan', an initiative that has the objective of paring down the RMN's potpourri of different ship classes.

The Malaysian naval fleet currently stands at 15 classes, comprising a total of 47 surface ships – a figure that includes six Littoral Combat Ships (LCSs) under construction – and two submarines. However, the targeted goal is five ship classes, an ideal fleet size of 51 ships and four submarines that would carry the RMN to beyond 2030.

By implementing this plan, the RMN would be able to phase out a number of vessels from its ageing fleet, many of which have been in service for 40 years or more and also cost the service a significant chunk of its budget to maintain. At the same time, a reduction in ship classes would allow the RMN to simplify maintenance and logistics, decreasing costs.

The blueprint's end state would include: two more submarines to add to the current pair; six more LCSs to join the six under construction (although known as LCSs, the RMN's ships are technically frigates based on the DCNS Gowind design); 12 more *Kedah*-class Next Generation Patrol Vessels (NGPVs) to supplement the six in service (although these new ships would be more heavily armed by adding anti-surface, anti-submarine and anti-air capabilities); a class of 18 new Littoral Mission Ships (LMSs); and a class of three new Multi-Role Support Ships (MRSSs).

A viable plan?

It remains to be seen, however, as to how far this goal can be achieved, particularly given the cost entailed in building new ships. Nevertheless, the concept for the '15 to 5' plan is that these targeted ships will mostly be constructed locally and thus cost less. The additional LCSs and the improved *Kedah* class will be built domestically as Malaysia owns the rights to construct them. The yet to be selected MRSSs are planned to be built in-country as well, while the LMSs will initially be a split build between Malaysia and China with two ships each.

Still, the reduced costs may not be as significant as envisaged due to the fact that virtually all the ship systems, equipment and weapons will have to come from foreign OEMs, and a number of tasks related to warship construction have to be done overseas. This was evidenced by the LCS programme, where even steel cutting had to be performed in the Netherlands due to the lack of capability in Malaysia.

Considering retirement

The contract for the six LCSs signed in 2014 was worth $2.07 billion, but it is questionable

whether subsequent ships will cost less due to efficiencies from building the same design, or more, due to the depreciation of the Malaysian currency that correspondingly makes foreign equipment more expensive.

Furthermore, the current LCS contract is scheduled to only be paid off fully during the time frame of the 12th Malaysia Plan (2021-24), even though all six ships are scheduled to be delivered by 2021. It is therefore likely, barring any delays in the programme, that the contract will have to be paid off in 2021.

So far, the Malaysian government has not indicated an intention to order any more LCSs, and it is likely this will only be considered towards the end of the current batch construction. Once the LCSs have formally entered service and begun operations, it is debatable as to whether the two BAE Systems-built *Lekiu*-class frigates and two *Kasturi*-class corvettes will be retired in favour of the new LCSs, or retained due to the need to maintain fleet numbers.

The *Lekiu* class had some of its electronics systems modernised in 2016, but no programme has been initiated to replace the obsolete Sea Wolf missile system carried aboard them, while the *Kasturi* ships completed a service life extension programme in 2014 that will enable them to continue in operation for 15 more years. The RMN's lack of urgency in replacing the Sea Wolf is likely tied to the fact that, under the '15 to 5' plan, the *Lekiu* frigates would be phased out. Hence, it would not make sense to mount a new missile system on the ships, although it does leave the door open on their future by not setting a projected date of retirement.

Facing challenges

The problem with the '15 to 5' project is that, so far, only 16 of the 51 ships targeted will definitely be in service in coming years, namely the six LCSs under construction by Boustead, the six *Kedah*-class ships already in service and the four LMSs being built. The remaining 35 ships are all hypothetical paper statistics.

"The RMN already faces a shortage with only 41 ships to carry out its current tasks."

The RMN already faces a shortage with only 41 ships to carry out its current tasks. This is complicated by the fact that the nation is split into Peninsula Malaysia and East Malaysia, which necessitates the RMN also splitting its forces. The navy made this division an organisational formality with the establishment of the Western and Eastern Fleet Commands on 27 April this year.

The RMN faces six significant area-based operational challenges. These are: ensuring security along the Malaysian part of the Malacca Straits; safeguarding security in the southeast waters of Peninsula Malaysia that border Singapore, which have seen an increase in piracy and sea robberies; maintaining a presence around Malaysia's claims in the Spratly Islands; preserving a presence and monitoring Chinese activities around Malaysia's EEZ at James Shoal and Luconia Breakers; preventing incursions into Eastern Sabah; averting piracy and hijackings in the Sulu Sea by armed groups operating out of the Philippines; and, finally, patrolling Malaysia's EEZ off the eastern coast of Peninsula Malaysia.

Therefore, with only ten ships definitely coming into service in the near future, the RMN is unlikely to phase out its four biggest ships anytime soon, particularly given the age of ▶

the 14 fast attack craft and patrol craft it currently operates, all of which entered service in the mid and late 1970s.

Kamarulzaman has provided scant detail about how the RMN plans to reorganise its fleet after the entry of the LCSs from 2019 onwards, which is understandable considering that this is dependent on the new class achieving its scheduled entry date. In addition, Kamarulzaman will reach the mandatory retirement age of 60 in 2019, making it moot for him to talk about decisions that will likely be made by whoever succeeds him as chief of the RMN.

Malaysia's two *Scorpene* submarines were commissioned into service in 2009. The French-built boats are homeported at Sepanggar in Sabah, East Malaysia.

Submarine action

The '15 to 5' initiative also calls for two more submarines to add to the pair of *Scorpenes* the RMN already has.

An official infographic released by the RMN only depicts the new submarines as a general class rather than a specific type, and thus does not make clear whether the RMN wants two additional *Scorpene*-class boats or two more submarines of any class.

The RMN's goal for its submarine fleet was always four boats from the outset, although the service settled for only two *Scorpenes* due to financial limitations. Practically speaking, buying two more submarines for the RMN remains questionable given the fiscal limitations that Malaysia faces, plus the current costs of maintaining and operating its two in-service boats.

Chinese source

Under the contract for four LMSs signed in March this year, China will deliver two ships in 2019 and 2020, with Boustead Naval Shipyard delivering two more in 2022. The '15 to 5' plan projects another 14 ships of this class for a total of 18, but it is uncertain whether this goal will be fulfilled.

The Malaysian NGPV programme, which resulted in the *Kedah* class, had an ultimate target of 27 ships. This did not materialise owing to a combination of mismanagement by the initial shipbuilder, which resulted in the Malaysian government having to restructure the construction arrangements along with injecting additional funds to complete the six contracted vessels, and funding shortages and reprioritisations that resulted in additional *Kedah*-class ships not being considered.

Acquiring the additional LMSs to make the projected 18 ships under the '15 to 5' plan is an open-ended question.

The Malaysian government could just leave the programme at four ships, or it could commit to an additional 14. It is difficult to judge the capabilities of the LMS design given that it has not been built or operationally deployed. While a capability for a 20ft mission module container is said to be present, there has been no indication as to what would actually be in the module or who would be building it.

Kamarulzaman told *Shephard* last year that future LMSs would, while based on the same hull design, specifically be built and outfitted to carry out particular mission roles such as mine-hunting. The LMS is ultimately meant to replace the four classes of fast attack and patrol craft that Malaysia operates – a total of 14 ships – and the four *Mahamiru*-class minehunters.

There has also been consideration given by the RMN to the possibility of retiring its four *Laksamana*-class corvettes once the four LMSs enter service. The ships were originally ordered by Iraq as the *Assad* class, but were held following Saddam Hussein's 1991 invasion of Kuwait and then purchased by Malaysia, entering service in 1997-99. The Otomat surface-to-surface missiles and Aspide surface-to-air missiles of all four ships are no longer operational, and the RMN has yet to initiate any programme to replace them.

It is likely that the RMN is waiting to see what the situation is like during the operational entry of the LCSs and LMSs before making any decision to upgrade or phase out these corvettes.

With regards to any additional 12 *Kedah*-class boats under '15 to 5', it is well to remember that the RMN is yet to secure funding to upgrade the existing *Kedah*-class ships with surface-to-surface and surface-to-air missile capabilities, so procuring additional hulls and a more heavily armed *Kedah* class seems highly unlikely in the immediate future.

Multirole support ships

The MRSS programme dates back to 2006 but there has been little progress to date. Nevertheless, recent reports from the Indonesian media state that PT Pal is working on a design for Malaysia, despite Malaysian officials being disinclined to comment on these reports.

Again, the issue might boil down to costs, particularly with a target of three such ships, although Malaysia could purchase them individually based on its available finances rather than award a contract for all three in a specified period.

The RMN's hydrographic ships are also set to be phased out soon, with the navy already signing a contract with a civilian company to provide a vessel for such work.

Strangely, the '15 to 5' blueprint seems to overlook the fact that the two delayed *Samudera*-class training ships are expected to enter service soon and thus add another class to the RMN roster. The arrival of these ships will allow the navy to phase out the training frigate KD *Hang Tuah*.

Overall, much remains to be seen on how the 15 to 5 plan will be implemented and, given Malaysia's finances, it seems unlikely that the targeted number of ships will ever be achieved or that the downsizing to five classes will happen.

However, the RMN will be able to reduce some of its ship classes once the LCSs and LMSs fully enter service. ■

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This *Soryu*-class submarine of the Japan Maritime Self-Defence Force employs the secretive ZYQ-31 CMS produced by Mitsubishi Electric. (All photos: author)

Riding the waves

Responsible for the coordination of a complex array of capabilities, the combat management system is essential to a vessel's smooth operation, with many countries determined to invest in the best. **By Gordon Arthur**

Navies in the Asia-Pacific region are growing in capability with new vessels being commissioned and older ones being upgraded.

This is providing plenty of opportunities for purveyors of combat management systems (CMS) to do business regionally. The system must be flexible and robust enough to handle complex warfighting environments, including networking with friendly assets, as a CMS is at the heart of a naval vessel's capability. In this article, we examine some recent CMS developments in the Asia-Pacific region.

Southeast Asia

The Republic of Singapore Navy (RSN), via ST Marine, is building a new class of eight Littoral Mission Vessels (LMV).

RSS *Independence*, the first of class, was commissioned in early May, while the final ship will arrive by 2020. With a complement of just 23 personnel, the LMV relies on automation and remote monitoring. Its integrated command centre combines the ship's bridge, combat information centre (CIC) and machinery control spaces.

The MINDEF noted: 'The LMVs' combat management system features a fusion and identification engine to better identify, track and manage contacts, and a threat evaluation weapon assignment engine to prioritise and assign the relevant weapons to counter threats.'

The CMS integrates sensors such as a Kelvin Hughes SharpEye navigation radar, Thales NS100 3D surveillance radar, Sagem gun fire control system and STELOP 360° camera package. Singapore's military also noted: 'The LMVs will be connected to the larger Integrated Knowledge Command and Control network in the Singapore Armed Forces to share information with deployed forces, and tap into the expertise from shore HQ in areas such as operations and engineering support.'

Indonesian upgrades

Neighbouring Indonesia announced last October that it was upgrading the combat system of its corvette KRI *Malahayati* for $18 million. A Navantia and Indra consortium is assisting indigenous shipbuilder PT Pal to modernise sensors, integrating them with a modern CMS and Dorna fire control system from Navantia.

The first-of-class KRI *Fatahillah* was upgraded via a 2013 contract with Ultra Electronics Command & Control Systems, replacing the CMS, sonar and other electronic equipment. It is interesting that the Indonesian Navy later switched to a different contractor for the second upgrade in this class.

The Indonesian Navy's newest warships are two 2,365t Sigma 10514 PKR frigates. They were manufactured by Damen Schelde Naval Shipbuilding and PT Pal, and feature the Thales Tacticos CMS. Tacticos will also be installed aboard Thailand's

second 90m OPV, along with Thales sensors, integrated bridge and integrated communications.

In fact, Thales is the mission system integrator for this OPV, which is being built by BAE Systems in conjunction with Bangkok Dock. The fire control system on Thailand's M58 patrol gun boats is also based on Tacticos.

Fertile ground

Whilst on the topic of Thailand, the kingdom has been an extremely happy hunting ground for Saab, with Dan-Ake Enstedt, president of Saab Asia-Pacific, highlighting in an earlier interview the firm's successes.

'We got a contract in 2011 to upgrade the two frigates *Naresuan* and *Taksin*, and the year after that we got a contract to upgrade the aircraft carrier *Chakri Naruebet*,' he said.

Saab's efforts on these aforementioned Chinese-built 2,900t Type 25T frigates were extensive, with total replacement of their combat suites, SAMs and anti-ship missiles. The Royal Thai Navy's (RTN) *Naresuan* class originally used weapon systems and engines mostly from Europe and the US, but they had a Chinese ZKJ-3T CMS. The RTN divided its *Naresuan* upgrade into three phases, with the overhaul beginning by removing all Chinese systems, including the sonar and CMS. The upgrade concluded last year, and it now features Saab's 9LV Mk 4 CMS, Sea Giraffe AMB radar, and Link E and Link RTN tactical data links.

Saab made similar changes to the light carrier HTMS *Chakri Naruebet*, although not to the same extent as the frigates.

'We changed the CMS, main radar, some navigation, and integrated short-range surface-to-air missiles,' Enstedt explained. 'We also did something unique – working with them we developed a new tactical data link they own themselves, and so now they have links between their vessels and aircraft. All of them are now connected to a network... Very few nations have this kind of system.' Indeed, using Saab's proprietary 9LV system, these ships can exchange tactical information with the Royal Thai Air Force's JAS 39 Gripens and Saab 340 airborne early warning aircraft.

Additionally, Saab received a $134 million contract in 2013 to act as combat system integrator and install its 9LV CMS and Sea Giraffe phased-array radar aboard a 3,650t frigate being built by Daewoo Shipbuilding and Marine Engineering. The ship was launched on 23 January, and a second frigate order is expected.

Saab has hitherto not had a major presence in the Philippines, but local shipbuilder Propmech is currently upgrading an Emilio *Jacinto*-class corvette in partnership with the Swedish firm. A scaled-down version of Saab's 9LV and an EOS EO fire control director are being fitted under a contract awarded at the turn of 2016.

A service life extension programme worth $207 million for the Royal Malaysian Navy's two German-built *Kasturi*-class corvettes was awarded to Boustead Naval Shipyard in 2009. The Thales Tacticos CMS replaced the incumbent Signaal SEWACO Daisy command system, and it now integrates the 57mm Bofors gun, MSI-Defence DS30B 30mm single-barrel guns, electronic support measures suite, Lockheed Martin Sippican decoy launching system, sonar and MBDA MM38 Exocet missiles.

Malaysia surprised many by its November 2016 announcement that it would buy four Littoral Mission Ships from China. The aim will be to maximise local content on the vessels, so they will employ a mixture of Chinese and Western systems. An exact breakdown of equipment and subsystems is not yet available, but this approach could be problematic as Western sensors may not easily integrate into a Chinese CMS.

East Asia

The three industrial giants China, Japan and South Korea all have domestic solutions installed in their warships. Mitsubishi Electric produces what are called combat designation systems (CDS) for surface warships of the Japan Maritime Self-Defence Force (JMSDF). The newest variant, the OYQ-13, will be installed on two 5,100t *Asahi*-class destroyers.

The first ship will be commissioned in March 2018, and it will boast a gallium nitride-based active electronically scanned array (AESA) multi-function radar.

Japanese systems have undergone spiral development since the first domestic OYQ-3 and OYQ-4 systems appeared, these being more accurately tactical data-processing systems not connected to weapons.

The OYQ-10 and beyond were the first CDSs to incorporate AESA radars. Four *Akizuki*-class destroyers boast the OYQ-11, the first warships equipped with an indigenously developed Advanced Technology Command System. The latter uses distributed computing architecture, with AN/UYQ-70 workstations and Link 16 data links. SATCOM also links the ships to Superbird satellites as part of the Maritime Operation Force (MOF), the JMSDF's C4I system. The destroyers also accommodate Global Command and Control System (Maritime) terminals, with GCCS-M being the American equivalent of MOF, to give networking interoperability with its US ally.

Japanese submarines have a Mitsubishi Electric CMS too, with the *Oyashio* class using the ZYQ-3 and the *Soryu* class, currently in production, employing the ZYQ-31.

Both Japan and South Korea field warships containing Lockheed Martin's Aegis combat system, whose heart is the AN/SPY-1 radar.

Lockheed Martin was awarded a $69.7 million contract modification in May 2015 to develop and test Aegis modernisation baseline computer programs and equipment on ▶

ROKS *Yulgok I*, one of South Korea's three *Sejong the Great*-class destroyers, uses the Lockheed Martin Aegis combat system and AN/SPY-1D(V) multi-function radar.

the JMSDF's two 7,700t *Atago*-class destroyers. The work, slated for completion by March 2017, raised the ships' Aegis suites to Advanced Capability Build 12 with Technology Insertion 12 capability, enabling them to fire SM-3 Block IIA missiles.

Home and abroad

Elsewhere, the US Defense Security Cooperation Agency notified Congress in June 2015 that it had approved the sale of three Aegis systems to South Korea for an estimated $1.91 billion. Equipment will be installed aboard three destroyers to be built for the Republic of Korea Navy (ROKN).

The service already operates three 8,500t *Sejong the Great*-class destroyers (KDX-III) equipped with Aegis but, confronted with North Korea's ongoing missile programme, it is expanding its fleet of anti-ballistic missile warships. The 165m-long KDX-III is the largest platform in the world to carry Aegis, and three extra Aegis destroyers would allow the ROKN to operate three mobile task fleets.

In April 2015, South Korea's Defense Acquisition Program Administration listed Aegis warships as one of ten weapon systems to be indigenised under a 2015-19 plan.

Hanwha is the sole provider of CMSs to the ROKN in the shape of Naval Shield, which is used on KDX-I, II and III destroyers, PKG-A patrol boats, FFX-I *Incheon*-class frigates, LST-IIs, *Dokdo*-class helicopter carriers and KSS-III submarines. Naval Shield's heritage stems from Tacticos thanks to a joint venture between Thales and Samsung Techwin (later Hanwha Techwin), before the joint venture subsequently dissolved last year.

Taiwan is pursuing indigenous technologies because of dire political straits that discourage Western countries from supplying key military equipment. Most Taiwanese warships are second-hand vessels from the US, so in the past there was little need to develop an indigenous CMS.

However, to become more self-sufficient, the National Chung-Shan Institute of Science and Technology is developing a new CMS. Called the Combat Command and Control System (CCS), and forming part of the Kuang Hua system integration programme, it will be installed in Taiwan's own future version of an *Oliver Hazard Perry*-class frigate. The new digital CCS is based on Honeywell's H-930 Modular Combat System.

It is difficult to ascertain technical details about Chinese CMSs, although it is suspected that the first examples used in People's Liberation Army Navy (PLAN) warships were copies of Italian and French systems. The ZKJ-5 CMS developed by the 709th Institute of the 7th Academy of the China Shipbuilding Industry Corporation is purportedly installed aboard Type 054A frigates. The ZKJ-5, a distributed system with duplex fibre-optic ethernet and video feed, is also believed to be fitted on Type 054-family destroyers.

The ZBJ-1, meanwhile, is the PLAN's fleet command system. It is installed aboard major combatants so they can act as command ships.

The first class to receive ZBJ-1 was the Type 051B destroyer, but the system proved unwieldy and was dropped until an improved version was fitted aboard Type 052C destroyers and the current Type 052D.

The ZBJ-1A supports amphibious task forces and is reputedly installed aboard Type 071 landing platform docks, while the ZBJ-2 is supposed to be used on the aircraft carrier *Liaoning*.

Australasian efforts

Valued at $38.5 billion, the most expensive shipbuilding programme for the Royal Australian Navy will be 12 new submarines under Project Sea 1000. DCNS is offering the Shortfin Barracuda Block 1A, a conventionally powered version of the Barracuda nuclear-powered attack submarine. Australian requirements will see boats equipped with an evolution of the General Dynamics AN/ BYG-1 combat system, which also happens to be fitted to current *Collins*-class submarines.

Lockheed Martin has been appointed combat system integrator, which may prove challenging as it will need to incorporate disparate systems into one hull.

Around 80% of data for a submarine's combat system comes from its sonar suite, illustrating how important such sensors are. Thales previously updated its Scylla sonar suite on the *Collins* class under a 2012 contract, and it now has a contract to design a totally new sonar suite under Project Sea 1439 Phase 6.

BAE Systems has been upgrading the anti-ship missile defence capabilities of eight Australian *ANZAC* frigates, with the final vessel completed earlier this year.

This Project Sea 1448 Phase 2 includes integration of a CEAFAR/ CEAMOUNT active phased-array radar (replacing a Sea Giraffe radar); an upgrade of the Saab 9LV 453 CMS to Mk 3E standard; and fitting of a Sagem Vampir NG IR search-and-track system. A software upgrade adds more fire channels and improved weapon/ sensor integration. Saab is acting as combat system integrator for this project.

From 2016-18 the Royal New Zealand Navy (RNZN) is upgrading the combat systems of its two *ANZAC*-class frigates.

In April 2014, under a $168.2 million contract, Lockheed Martin Canada was selected for this work, most of which will occur in Canada.

Speaking to *Shephard* earlier this year, Kevin Arthurs, director of naval programmes at Lockheed Martin Canada Mission Systems and Training, said this was the firm's first export of the Canadian-developed CMS 330.

New Zealand's upgrade expands upon work done on Canada's *Halifax*-class modernisation, and there is 70% commonality between the two. ■

Balance of power

There are questions over the US pivot of naval forces to the Western Pacific under the new White House administration, as China's occupation of the seas continues to grow. **By Wendell Minnick**

An old Chinese saying warns that 'two tigers cannot rule one mountain'. Today, there are genuine fears that the region is witnessing an intimidating rise of Chinese naval power that will result in not only the reintegration of Taiwan into the 'motherland', but the continued dismantling of US military power in the Asia-Pacific region.

Western regional naval power has been hit hard over the past 50 years. The end of the Vietnam War saw a withdrawal of US forces from that country, the closure of air bases in Thailand and then the dramatic diplomatic switch from Taipei to Beijing in 1979, which closed all US military bases in Taiwan. The Philippines struck next with the closure of Clark Air Base and Subic Bay Naval Base in 1991-92.

As Western powers reduced their presence, the Chinese began filling the void. Though there is tough talk in Washington defence circles of bringing the US Navy (USN) back to full strength in Asia-Pacific, it seems unlikely that the service can turn back the clock.

Addressing the rebalance

In response to the reduction in the USN's ability to both safeguard sea lines of communication and engage a rising Chinese military goliath, the Obama administration introduced the 'rebalance' of US military forces towards Asia.

Under this strategy, the USN would have 304 ships, of which 115 would be deployed worldwide by 2020, said Toshi Yoshihara, a strategist at the US Naval War College. 'It is 60% of that deployed force, no more than 66 ships, which would be forward-deployed to cover the vast Indo-Pacific region.'

Yoshihara warned that this estimate has almost certainly changed since it was first made, but it nonetheless makes the point that care should be taken when assessing the naval balance.

In comparison, China's navy is growing at a breathtaking pace, and Yoshihara said: 'Some projections suggest that China may have the largest navy in the world by 2020, counting surface combatants, combat logistics ships and submarines.'

He asked what the regional implications are once Beijing reaches this crossover point. How might regional perceptions of American and Chinese power change, if at all?

For others, the pivot can still save the day. Sam Tangredi, a professor of naval strategy at the US Naval War College, said the 60% pivot to the Western Pacific still makes sense.

'Although Russia has been trying to assure itself of great power status with some harassment of US ships and has established additional port facilities and forces in Syria, Pacific crises – if they develop – would be maritime in nature. It is China, not Russia, that is challenging the Western norm of freedom of the seas,' he said.

Still going on

Bernard 'Bud' Cole, author of the book, *The Great Wall at Sea*, said the pivot is seen by too many as strictly a military policy, but it was intended to be a whole-of-government policy.

'Unfortunately, I think the Obama administration mishandled both the initial announcement and follow-on publicity,' he said. 'I think it's still going on, although if Trump succeeds in destroying the State Department, then all US foreign policy will suffer severely, including the rebalance.'

As the US fleet grows smaller, decommissioned ships will be taken from the Atlantic Fleet and not the Pacific, and the only real gain so far is one aircraft carrier and three new attack submarines, Cole explained.

James Holmes, a strategist at the US Naval War College, said the pivot may proceed under a new name under the Trump administration and that it is far from unusual for a new president to rebrand his predecessor's initiatives and continue with them.

'In this case, I hope the rule stands, except that we should pivot more and more quickly. Shifting ten per cent of the navy to the Pacific over the course of several years was never going to send much of a message of deterrence to China, or of reassurance to allies and friends,' he said.

'If we sent more of a bigger fleet in short order, now that might dishearten those who need disheartening, while comforting those who need comforting. We will just have to watch. The fleet is not getting bigger for now and, best I can tell, our force disposition is about what it was under President Obama.'

Robert Haddick, a visiting senior fellow at the Mitchell Institute for Aerospace Studies, Air Force Association, is pessimistic about the Asia pivot's future – he called it 'irrelevant to strategists and defence planners' in Asia with everyone waiting for some clear sign of the Trump ▶

The pride of the USN is its ten aircraft supercarriers. Here, an F/A-18 Super Hornet takes off from the flight deck of USS *Ronald Reagan*, currently homeported in Japan. (Photo: Gordon Arthur)

administration's strategy for Asia's security issues.

Senior leaders have visited the region and reassured allies about the continuity of America's security commitments. 'But how the US will actually respond to specific pressures and possible crises, and what those responses would mean for America's allies and competitors, are questions without clear answers,' said Haddick.

This is problematic, as the longer these questions remain unanswered, the more likely it will be that players go their own ways for their security. That will increase the chances of miscalculation and a serious yet avoidable crisis, particularly the competition between the US and China over who will have the leading role in East Asia over the current flare-up over North Korea.

Current assets

At present, the US still has a sizeable force in the region, Cole said. The 7th Fleet is headquartered aboard USS *Blue Ridge*, homeported in Yokosuka, as is Destroyer Squadron 15, which currently numbers a cruiser or two and about four or five *Arleigh Burke*-class destroyers. There is an amphibious squadron in Sasebo with a mix of dock landing ships, amphibious assault ships, amphibious transport docks and mine countermeasure ships.

Air power is divided amongst the three branches, with a USN air wing and USMC air group at Iwakuni, a USAF F-16 squadron at Misawa, an air wing at Kadena and a transport aircraft unit at Yokota.

Guam has seen a major build-up over the past few years, with three attack submarines and a rotation of bombers and strategic aircraft. The USMC is basically being evicted from Okinawa, but has found homes in Guam and Darwin, Australia.

'Counting assets provides a very incomplete picture,' said USMC Lt Gen (ret'd) Wallace 'Chip' Gregson. 'Recall that we said we'll fly, sail and operate wherever international law allows in the South China Sea. I don't think a carrier battle group, no matter how powerful, does much for Philippine and Vietnamese fishermen who have been shouldered out of their traditional fishing areas.

'The point here is that we need to decide what it is we are trying to do, and then get the right forces and resources forward to do this, with significant help from our allies and friends,' he added.

Part of the problem is that China is not trying to seize control of the sea and airspace off its coastline in the traditional way. It is seeking to control near seas from the land, where it has a massive arsenal of weapons accurate at distance, able to exploit today's ubiquitous surveillance.

"Even the best and largest forces will be ineffective if used without a carefully developed strategy."

'They are also deploying a very large paramilitary force – armed fishermen and a fast-growing maritime militia – to exercise control through a large, imposing presence of civilian vessels,' Gregson said, highlighting exploitation of the grey zone between peace and conflict. The Chinese navy is kept 'over the horizon' in case of escalation.

He also feels that the US military needs a strategy on the real level of prepared use of military force.

'Even the best and largest forces will be ineffective if used without a carefully developed strategy that includes a complete appreciation of the region's geography, technology's effect on the conduct of operations and warfighting, and of course our vital national interests.' He said nothing should ever be taken off the table.

Gregson pointed to the First Island Chain as the best way to defend against Chinese military expansionism. He explained that, given that ships and aeroplanes need to withdraw from time to time for rearming if not refuelling, the US will need a way to protect the logistics supply chain and have ground forces capable of deployment in formations that are agile, deadly with guided weapons accurate at distance, and thoroughly integrated at the operational and tactical level with forces at sea and in the air.

Tangredi is a big fan of the new 'arsenal ship concept' that serves as basically a vertical-launch intermediate-range ballistic missile platform capable of firing hundreds of conventional missiles, including the advanced SM-6, from positions too distant for enemy attack. The concept would be in response to China's own massive arsenal of conventional ballistic missiles such as the DF-21D 'carrier killer'.

This is part of a larger concept dubbed 'distributed lethality' and has not received praise from the USN, which favours the manoeuvrability of ships.

However, Tangredi said: 'If we are going to make distributed lethality a reality, we need to start "bending some steel" and put strike weapons on [amphibious vehicles].'

The USMC depends upon the USN for transportation, using its vessels such as the *Wasp*-class USS *Richard Bonhomme* pictured here in Hong Kong. (Photo: Gordon Arthur)

By hook or by crook

The primary thing that keeps China's surface ships and submarines restricted in the East China and South China seas is a classified USN programme using a chain of islets along the Ryukyu arc dubbed the Fish Hook Undersea Defence Line (FHUDL), said Grant Newsham, a retired USMC officer and a senior research fellow at the Japan Forum for Strategic Studies.

Perhaps the greatest research conducted on FHUDL was done by Richard Tanter and the late Desmond Ball. Their study documented not only the Fish Hook's ability to snag ships using seabed hydrophone arrays, but also to use ground-based ▶

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signals intelligence and electronic intelligence on islets that make up the Ryukyu chain from Japan to Taiwan.

Newsham described the system as 'indispensable' – being able to identify and locate enemy submarines is obviously a vital part of US and Japanese ASW efforts, an area where they still have a considerable advantage over the Chinese.

'Not surprisingly, the Chinese are trying to close the gap and one should not underestimate their ability to do so,' Newsham said. 'Indeed, it's not hard to imagine the Chinese eventually having their own equivalent ASW network covering the East China Sea and South China Sea – and potentially beyond into the Pacific and Indian Oceans.'

The Fish Hook is also a reminder that local geography is unfavourable to the Chinese military. 'For all the progress the Chinese have made militarily in the last decade... they are still hemmed in on the eastern side of both the East China and South China seas by the First Island Chain,' Newsham added.

The 'fish hook' can close off the exits from these seas. However, there is still a need for surface combatants, amphibious forces, air forces, land-based missiles, satellite and sensor networks, and even sea mines to close the exits and dominate maritime terrain quite a way into both the East China and South China Seas.

USS *Coronado*, an *Independence*-class Littoral Combat Ship, is now deployed in Singapore as part of an ongoing Southeast Asian regional presence for the USN. (Photo: USN)

The Japanese are sensibly 'arming' the Ryukyu arc to control exit points from the East China Sea into the Pacific. FHUDL is part of this defence network, but it does not yet appear that the three services are coordinating their efforts into a single coherent scheme just yet, Newsham said.

Despite Japan's military shortcomings, submarines and ASW are one niche area where its capabilities are world-class. 'Combined US and Japanese ASW capabilities cause the Chinese navy no end of worries,' he asserted.

Time could be running out to get all the ducks lined up. By the end of the year, after the 19th Party Congress, we should expect to see the PRC on the march again in the South China Sea, with Scarborough Shoal the next target for dredging and installation building, according to Newsham.

'We can now see that China's island building in the South China Sea has given it a valuable home-field advantage and greatly enhanced its anti-access/area denial strategy,' said Haddick. 'We have no idea how the US would respond to a new Chinese move on Scarborough Shoal.'

Haddick noted that the new administration in Washington has said little about the South China Sea, and the US military's activity there this year has been largely invisible.

The USN's 7th Fleet represents a powerful force, and is continually conducting exercises with partners around Asia-Pacific, including Malaysia, as seen in this photo. (Photo: Gordon Arthur)

Chinese strength

Chinese goals in the South China Sea could already be a fait accompli. Vasily Kashin, a Moscow-based China military specialist, said China's occupation of the sea is an 'irreversible change' that has allowed the navy to maintain a higher level of patrols and overall presence in the southern part of the sea.

'The US and its allies' freedom of navigation operation activities can challenge the Chinese claims of territorial waters and fishing areas within the inshore exclusion zones.'

However, Kashin said such claims are a secondary aspect of Chinese activities. 'The primary goal of the creation of military infrastructure has already been achieved,' he continued.

Indeed, there seems little to stop it. The Chinese have extensive harbours, airfields, radar and communication facilities on the Spratlys. Furthermore, they are continuing to fortify and improve infrastructure on the Paracels.

'They are not just strengthening the fleet, they are creating the whole new environment in the South China Sea,' Kashin said.

'If they start regular deterrent patrols of their nuclear-powered ballistic missile submarines, that will additionally raise the stakes in case of any crisis... Other players may be reluctant to make any moves which have potential to escalate into a nuclear crisis.' ■

More than words

Dr Collin Koh, research fellow in the maritime security programme at the S. Rajaratnam School of International Studies in Singapore, spoke to *IMDEX Asia Daily News* about the current state of Asia-Pacific maritime security.

Provding his thoughts on Asia-Pacific's contemporary maritime security environment, Koh began by differentiating between sub-regions.

East Asia's primary security threat, for example, is 'the risk of interstate armed conflict which extends to the sea dimension', whereas in Southeast Asia 'threats differ from country to country, though common challenges would be the problem of maritime terrorism'.

Koh agreed a naval build-up has occurred. Growth became discernible in the early 2000s, including the proliferation of new coast guard-type agencies plus the expansion of existing ones. 'This is largely in response to an increasingly complex maritime security environment that requires civilian-type law enforcement capacities at sea, while navies could focus more on their traditional deterrent and warfighting functions,' Koh pointed out.

Coast guards, now fielding better patrol and surveillance capabilities, are increasingly competing with navy counterparts for funding.

One aspect Koh finds interesting is an 'Aegis competition', as key navies acquire fleet anti-air warfare capabilities for sea-based ballistic missile defence or carrier fleet protection. 'We're also seeing that submarines being acquired or planned are growing in size to accommodate new capabilities and greater at-sea endurance,' he added.

At odds

For many, the South China Sea is a flashpoint as China asserts territorial sovereignty at odds with a landmark Permanent Court of Arbitration ruling last July.

Is China to blame for these tensions? Koh assessed: 'Somewhat inevitably, the reason China has got most of the attention and flak is precisely because of its relative size and power compared to other claimants, which is thereby translated into the extent of activities it has undertaken – for example, the massive island-building and fortification programmes, and also the coast guard and naval build-ups in the area – compared to the equivalent but much smaller scale of activities undertaken by other claimants.'

Nevertheless, all players can play a constructive role. 'It needs pointing out that peace and stability in the South China Sea is a responsibility of every user, be it littoral states fringing the waters or international maritime user states.

'In this respect, therefore, it will be more pertinent to highlight that every claimant and non-claimant has the responsibility to tamp down on tensions by avoiding destabilising moves in the area.'

Koh explicated: 'It'll be misleading to view the South China Sea disputes as inevitably heading into conflict, because there are existing regional mechanisms to promote dialogue and practical security cooperation amongst, not just the claimants, but also non-claimant, extra-regional stakeholders. If anything, the economic interdependences and the international nature of sea lines of communication plying through the waters would also help ameliorate the urge to resort to war.'

Photo: Gordon Arthur

In danger

Danger still exists, though, with Koh warning that 'one should not overlook the possibility of an accidental or inadvertent armed clash at the local level – which could potentially escalate into a wider-scale confrontation between states'.

What about multilateral efforts to improve maritime security? 'ReCAAP [the Regional Cooperation Agreement on Combating Piracy and Armed Robbery against Ships in Asia] is certainly successful

Dr Collin Koh. (Photo: supplied)

because of its role against piracy and sea robbery – its information-sharing initiatives and capacity-building work are laudable in contributing to not just a better public understanding of the situation in Asia, but a discernible decline in attacks in the region.

'CUES [the Code for Unplanned Encounters at Sea] agreed between the navies in 2014 thus far has been generally well implemented by naval forces, and does contribute to ameliorating tensions between military forces at sea, though one could ponder over the prospects of extending it to coast guards and irregular forces.'

Slow progress

Progress on a South China Sea code of conduct has lagged, but a framework should be promulgated mid-year.

'Thus far, there has been no lack of effort by regional governments expressing the desire to cooperate, be it in confidence-building or practical collective solutions against common maritime challenges.'

However, Koh added: 'It's necessary to go beyond words and make use of the available room to enhance cooperation.' ■

IMDEX Asia 2017

Wednesday, 17th May 2017

Show Opening Hours

17th & 18th May	Exhibition	09.30am to 5.30pm

Technology Seminars (Complimentary Admission)

Attend the Technology Seminars to gain an in-depth understanding of the design and technological considerations behind the products or solutions on showcase. Also take the opportunity to network and exchange ideas with the presenters!

Time	Presentations
10.30am to 11.00am	**Compact Variable Depth Sonar System** By Curtiss Wright
11.15am to 11.45am	**ABS Naval Ship Code (ANEP 77) Compliance and Certification** By ABS
1.30pm to 2.00pm	**A New Approach to the Procurement of Future Naval Vessels** By MTG Marinetechnik GmbH
2.15pm to 2.45pm	**Wärtsilä Silent Propulsion Systems for Naval Vessels** By Wärtsilä
3.00pm to 3.30pm	**Anti-submarine Warfare Solutions in Littoral Waters** By SAES

Warships Display

Rare Opportunity to get up close with the largest ever warship showcase

A record total of 28 foreign warships from 20 participating navies are on display at the Changi Naval Base. Take the complimentary Warships Visit shuttle bus from Changi Exhibition Centre. Please refer to the Event Floorplan for the Shuttle Bus boarding point.

Date	Time
17 May 2017	10.00am to 12.30pm
	2.00pm to 4.30pm
18 May 2017	10.00am to 12.30pm

INEC@IMDEX ASIA 2017 – There is still time to register!

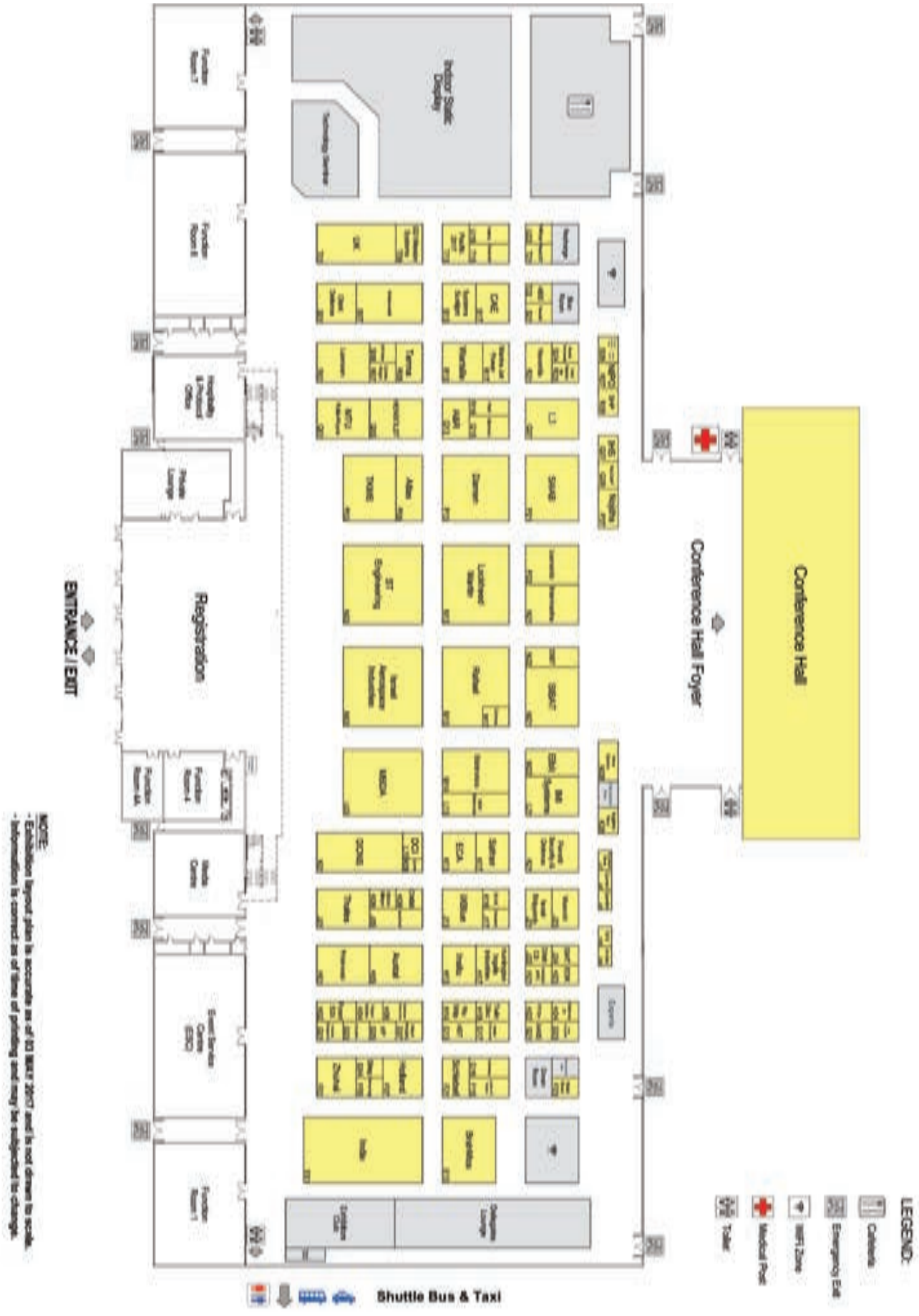
Robust Designs, Flexible Capabilities

INEC@IMDEX Asia 2017 is the platform of strategic and intellectual exchange, where delegates gain insight into future technologies and developments shaping the naval landscape. A must-attend conference for naval engineering professionals. You can still register to attend either one or both days of the Conference!

Conference Sessions

17th May 2017	
9.30am to 3.45pm	Opening Keynote Address and Plenary Sessions
4.00pm to 5.45pm	Visit to Littoral Mission Vessel (LMV)
18th May 2017	Technical Plenary Sessions

FLOOR PLAN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Conference Hall Foyer
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ENTRANCE / EXIT
Shuttle Bus & Taxi
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