

NAVY PLANS

THE INDONESIAN NAVY

THE BEGINNING OF A LONG MODERNISATION PROCESS

In 2003, a Ministry of Defence White Paper, "Defending the Country: Entering the 21st Century" elevated both the status and funding levels of the Indonesian Navy (*Tentara Nasional Indonesia Angkatan Laut, TNI-AL*). After 20 years of indifferent modernisation and few major new acquisitions, the sea service was now cited as "the" major player in defence of Indonesia and its territorial waters (*see figure 1*). Modernisation of the TNI-AL's aging 196-ship fleet will remain an urgent priority if the country's sea services are to fulfill the demanding mission of patrolling the maritime nation's vast archipelago and Economic Exclusion Zone (EEZ).

STRATEGY AND PROCUREMENT

Shortfalls in the TNI-AL's capabilities have been highlighted by rising smuggling and piracy in the Straits of Malacca and a series of maritime disasters over the past decade – notably during the Tsunami of 2004. With the age of Indonesian naval platforms ranging from 25 to 40 years, many naval assets are reported to be falling below 50 percent operational availability.

Attempting to reverse the overall decline, Indonesian President Susilo Bambang Yudhoyono announced a 36 percent Ministry of Defence budget increase for Fiscal Year 2012 targeting replacements for aging

weapons, systems, and platforms – specifically naval assets.

The TNI-AL has already received US\$1.95Bn for procurement of up to 24 naval vessels through 2013. These initial funds marked the beginning of a long modernisation process as significant numbers of new ships beyond 2013 will be needed to replace the aging fleet.

As plans for a fleet of new frigates, submarines, patrol and amphibious vessels take shape, the country's naval modernisation will support the country's dual aims of national defence and economic development. Navy modernisation plans centre on a Minimum Essential Force (MEF) that provides updated capabilities for transport, air and sea defence.

The procurement policy behind the MEF strategy seeks maximum domestic involvement and technology transfer to further internal economic development. In particular, the TNI-AL acquisition strategy aims to develop capabilities for Indonesia's most prominent domestic naval shipbuilder, PT Pal.

Given Indonesia's growth in commercial ports and shipping, the protection of the archipelagic sea lanes is vital to the country's national interest (*see figure 2*). The sea service's 2005 "Green-Water-Navy" blueprint enables the defence strategy, calling for 274-ship force to be in active service by 2024, with minelaying capacity and submarines as top priorities. Focusing on sea control and limited amphibious power projection

within the country's EEZ, the TNI-AL's Archipelagic Sea Defence Strategy (*Strategi Pertahanan Laut Nusantara, SPLN*) refers to "strategic funnels" (*corong strategis*) located at both ends of Indonesia's three north-south archipelagic sea lanes (ASL). These funnels are looked at as potential future points of friction.

FLEET STRUCTURE AND ORGANISATION

Organised into four command authorities, the TNI-AL has approximately 45,000 naval personnel, including 1,000 in the aviation component and 15,000 Marines. Command of the sea service's three flotillas, Central, Western and Eastern, falls to Central Fleet Command. The Western Flotilla is based at Tanjung Pinang in Sumatra, the Central Flotilla at Makassar in South Sulawesi, and the Eastern Flotilla at Sarong in Papua. A new Fleet Command Headquarters is located in Makassar. Training, Marine Corps, and Sealift forms separate naval command structures.

The naval fleet is based at installations located in Tanjung Priok (North Jakarta), Ujung (Surabaya), Sabang and Belawan in North Sumatra, Ujung Pandang (South Sulawesi), Balikpapan (East Kalimantan), Jayapura (Irian Jaya), Tanjung Pinang and Bitung in North Sulawesi, Kupang (West Timor), Teluk Ratai (South Sumatra) as well as Banjarmasin and South Kalimantan.



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Fig. 1: The "Diponegoro" class (SIGMA 9113) patrol vessel "Sultan Iskandar Muda" conducting gunnery exercises with the PARCHIM-I corvette KRI "Silas Papare" and the US Coast Guard's national security cutter USCGC "Waesche" during the multinational exercise Cooperation Afloat Readiness and Training (CARAT) 2012 Indonesia in the Java Sea.

(Photo: Courtesy of US Navy)

FLEET FORCE STRUCTURE DEVELOPMENTS

Major modernisation and replacement programmes have historically been slow to materialise due to political and economic instability and being low priority with the services. Since 2003 funding has been made available to begin addressing shortcomings identified in the Ministry of Defence's White-Paper. Naval plans through the next two decades include a combination of modernisation programmes and new construction.

Submarine Service: Two "Cakra" class (Type 209/1300) submarines, in service since

1981, make up the current TNI-AL subsurface component. Initially refit at the PAL Indonesia Shipyard from 1993 to 1999, the pair received weapons control system updates, battery replacements, and engine refurbishment. A US\$60M contract with South Korea's Daewoo Shipbuilding and Marine Engineering (DSME) in 2004 provided the second major upgrade for KRI "Cakra", completed in 2006. The second of the class, KRI "Nanggala", was again overhauled from 2009 to 2012 at an estimated US\$75M. The refit included replacement of the boat's entire upper structure, propulsion system components, sonar, radar, and combat management system. Upgrades have resulted in a submerged speed increase from 3.5 knots, and the capability to launch up to four independently targeted wire-guided torpedoes simultaneously.

The size of the TNI-AL's submarine fleet will soon increase in both numbers and capability with the delivery of three Type 209 ("Chang Bogo" class) diesel-electric submarines on order from DSME. At an estimated acquisition cost

of US\$367M per hull, the first two boats will be built in South Korea with initial delivery in 2015. PT Pal will assemble the third domestically with technology transfer and the technical assistance provided by DSME, delivery expected by 2018.

As far back as 2006, the Indonesian Ministry of Defence indicated that 10 new submarines would be acquired as part of its naval roadmap. Training and preparing submariners in sufficient numbers to crew and maintain the new "Chang Bogo" class boats may prove difficult; historically the TNI-AL has maintained an undersea force organised to handle only two boats.

Frigates and Corvettes: The Indonesian Navy maintains a **frigate** inventory of six upgraded "Ahmad Yani" (ex-Dutch "Van Speijk" class) frigates and one "Ki Hajar Dewantara" class training frigate built in the former Yugoslavia. In TNI-AL service from the late 1980s, the offensive capability of the "Ahmad Yani" class was increased with the installation of Chinese-made C-802 anti-ship missiles while air defences were improved with MBDA MISTRAL surface-

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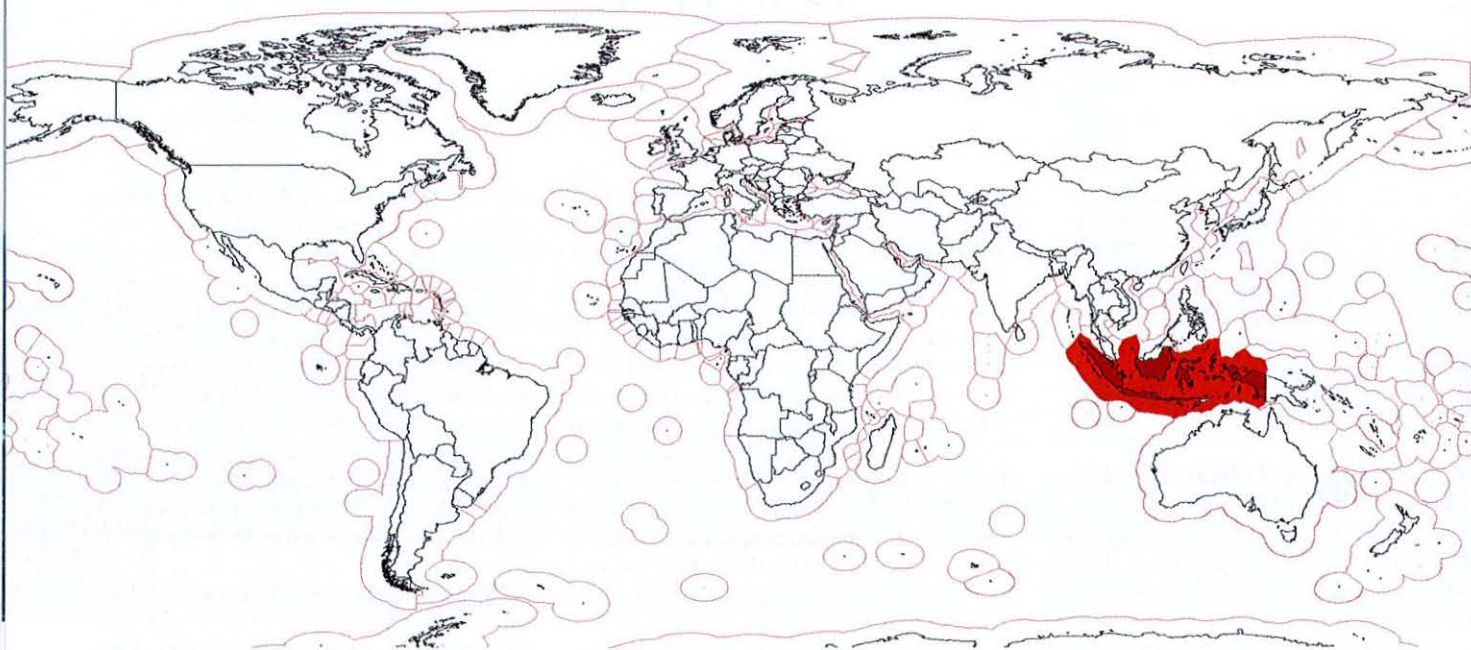


Fig. 2: The total area of Indonesia, including its EEZ, comprises some 7.9 million km². It encompasses an estimated 17,508 islands, 6,000 of which are inhabited. (Graphic: Internet)

to-air missiles mounted on SINBAD launchers. Diesel engines replaced the original steam propulsion system further, extending useful service life. One hull of the class, KRI "Oswald Siahaan", was equipped with four vertical launch cells to house Russian-made M-55 YAKHONT (SS-N-26) supersonic anti-ship cruise missiles. On 20 April 2011, the missile system was test-fired, according to the TNI-AL, the M-55 traveled 250km in under six minutes before impacting and sinking a target ship. Indonesia acquired a number of YAKHONT missiles in 2007. Modifications to KRI "Oswald Siahaan" may be for test purposes with the intention of later deploying the M-55 in a domestically built vessel.

The TNI-AL **corvette** force is equipped with 16 former East German PARCHIM-I vessels obtained in 1991, three "Fatahillah" class vessels acquired from the Netherlands between 1978 and 1979, and two 1950's vintage "Samadikun class" (ex-US Navy destroyer escorts) that were redesigned as corvettes. Efforts to replace these aging 60+ year old hulls began in 2007-2009 with the delivery of four new Damen Schelde Naval Shipbuilding (DSNS) SIGMA 9113 class corvettes – known as the "Diponegoro" class (see figure 3). Armed with MM40 EXOCET Block II anti-ship missiles, these corvettes are the most modern surface combatants in TNI-AL service.

Indonesia is currently employing these new SIGMA corvettes to support UN peacekeeping in Lebanon. In May 2012, one unit of the class, KRI "Sultan Hasanuddin" is scheduled to transport and support the relief force for the currently deployed Indonesian peacekeeping contingent. The ocean-going SIGMA corvette has the unique capacity to support humanitarian

operations by carrying up to 100 personnel in addition to the crew.

For the better part of a decade, the sea service has planned for an indigenous frigate to begin replacing and streamlining its mixed inventory. The resulting *Nasional Korvet Program (NKP)* is also expected to expand domestic shipbuilding capabilities. Kicking off the programme, a Request for Proposal (RfP) was issued to DSNS and Fincantieri in 2009. In May 2010, DSNS was selected as the supplier for the initial pair of NKP frigates. In April 2011, PAL Indonesia, in cooperation with DSNS, began designing the new frigate, largely based on the DSNS Naval Patrol Series 10513 and similar to the Moroccan Navy's single SIGMA 10145 frigate "Tarik Ben Ziyad".

The TNI-AL's steel-hulled SIGMA 10514 design is 105m in length with a displacement of 2,400 tons with a landing platform and hangar for one medium-sized helicopter. Powered by two SEMT-Pielstick 20 PA6 B STC diesel engines, it will be the largest warship built by PAL Shipbuilding. Construction for the first is expected to start by 2013 with a second commencing in 2015, each commissioning by 2017 and 2019. At least twenty hulls are scheduled for the NKP, the total number dependent on consistent workflow at PAL and stable TNI-AL shipbuilding budgets.

Armament for the NKP will include four MBDA MM40 EXOCET Block II anti-ship missiles on twin launchers and one Oto Melara 76mm/62-calibre Super Rapid gun. The THALES Nederland SCOUT radar is the anticipated choice for surface search. Two sextuple vertical launchers will house MBDA's VL MICA surface-to-air missiles. A hull-mounted, medium frequency, active/passive sonar and two

B-515 324mm triple torpedo tubes for Eurotorp MU90 torpedoes are expected to comprise the ASW suite. The Terma SKWS decoy system will provide a soft-kill countermeasures capability. Each National *Korvette* is estimated to cost US\$350M with the 20-hull procurement expected to run as high as US\$7Bn. The type will be capable of operating naval helicopters already in service or unmanned aerial vehicles although none are in the naval acquisition pipeline.

Fast Attack Craft: The TNI-AL has a requirement for a modern force of 75 fast attack craft (FAC) to conduct independent, joint surveillance, and strike operations against surface shipping and armed surface adversaries in the Indonesian littoral. Currently four 1979-vintage, Chinese-made "Dagger" class and 12 Lürssen PB 57 design variants, some fitted with the C-802 anti-ship missile, comprise TNI-AL's fast attack capability. New types are slated to replace the aging inventory with the Kapal Cepat Rudal-40 (KCR-40) FAC already joining the fleet. The first KCR-40, KRI "Clurit", was delivered in April 2011, and the second, KRI "Kujang" in February 2012. Based on a DSME design, the craft are built domestically by PT PAL with a total of 40 planned through 2024. Including systems, each KCR-40 FAC is valued at US\$20M.

Domestically built armed trimarans will accompany the KCR-40 class as older FAC hulls are retired. Based on the X3K from Indonesia's North Sea Boats (Division of PAL Shipbuilding), the trimaran is a carbon fibre composite design (see figure 4). The first three units of a planned 35 will be commissioned in 2014. Armed with four Chinese C-802 anti-ship missiles and a 30mm cannon, each is estimated to cost US\$22M, including weapons, sensors, and

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systems. At 63m in length, four Caterpillar C32 diesel engines provide a 40 knot top speed with a 3,200km range. Total programme costs are expected to approach US\$770M.

In 2011, following operational and maintenance training, the Brunei Navy FAC KDB "Waspada" and KDB "Pejuang" were passed to the TNI-AL. Recommissioned as the "Selawaku" class, the craft serve as training platforms, conveniently armed with MBDA MM38 EXOCET anti-ship missiles already in the TNI-AL inventory.

Amphibious Capability: In 2011, the TNI-AL decommissioned half of its fleet of WW II era tank landing ships. Five "Makassar" class dock landing platform (LPD) vessels have filled the role (*see again figure 3*). Since, reports have emerged of high-level HNI-AL interest in a specific naval decoy defensive system for the "Makassar" class.

The TNI-AL also has a requirement for a modern force of medium landing ships (LSM) to provide support for ground force and cargo movements throughout coastal area and islands. The sea service is expected to begin a domestic LSM replacement programme for its 12 former East German FROSCHE-I by 2014, with

Fig. 3: The Indonesian Navy's SIGMA corvette KRI "Sultan Iskandar Muda" and the "Makassar" class LPD KRI "Banda Aceh" seen here during ship formation exercises with the US Coast Guard in the Java Sea. (Photo: Courtesy of US Navy)



Fig. 4: Measuring 63m in overall length, the Indonesian Navy's newest surface ship, the trimaran KRI "Klewang" built by North Sea Boats Ltd., was launched on 31 August 2012. (Photo: Courtesy of Agus Suparto)

construction expected to be underway by 2018. A foreign design will likely be acquired and built in a domestic yard. Ship-to-shore connector requirements for the "Makassar" class LPDs, and the increased size of the TNI-AL Marine Corps call attention to replacements for 54 aging utility landing craft (LCU).

Auxiliaries: Nearing the end of effective service life, a new-build replacement for the TNI-AL's single "Rover" class replenishment ship (AOR) appears doubtful. The AOR require-

ment is a very low priority due in part to the Navy's defensive strategy calling for operations within the Indonesian EEZ. Requirements to replace and consolidate a mix of two "Pulau Rengat" class (Tripartite) coastal minehunters, nine ex-East German KONDOR-II coastal minesweepers, and one "T-43" class ocean minesweeper have also been shelved. With availability an abundant selection of late model mine warfare vessels, the TNI-AL may seek a less costly solution through the used international market. Some 27 auxiliary ships and craft round out the fleet's supporting assets.

NAVAL AIR GROUP

Ship procurement has brought acquisition of new naval aviation assets to a standstill. The

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Indonesian Navy's Air Arm currently has a force of 84 fixed-wing aircraft and helicopters. With 16 of 21 NOMAD MPA due for retirement by 2014, Indonesian Aerospace (IaE) has announced plans to develop an ASW variant of the CN235-220 MPA. Air bases located throughout the archipelago's numerous islands facilitate coverage by the current group of four Air Force-owned CN235-220 and three local NC212-200 MPA conversions. TNI-AL-operated fixed-wing transport assets include two CN235 medium-range tactical transports, four PA-34 SENECA liaison aircraft, and two De Havilland DHC-5D BUFFALO short take-off and landing utility transports. Six Piper TOMAHAWK and four North American Rockwell COMMANDER 100 aircraft serve in a training role.

Given the increasing number of submarines operating around the region, the sea service may be spurred to procure an advanced ASW helicopter to counter the emerging and growing undersea capabilities of Australia, China, Malaysia, Singapore, and Vietnam. Although

no RfP has been issued, in 2011 the acquisition of Kaman SH-2G SUPER SEASPRITE ASW platforms was considered. Currently, three Indonesian Aerospace-assembled Eurocopter AS332 SUPER PUMAs and nine Augusta Westland HAS 1 cover the ASW mission. Three Eurocopter EC-120B COLIBRI helicopters are used in the naval observation support role. Six locally assembled MBB NB-105 and NB-212 helicopters together with eight Mil Mi-2 and four Mil Mi-8 Russian-made utility helicopters provide the bulk of the TNI-AL's vertical flight capability.

SUMMARY AND OUTLOOK

The TNI-AL has an ambitious goal to enlarge its sea service to up to 275 hulls comprised of modern designs and built domestically by 2024. Success in achieving this goal will depend on two factors.

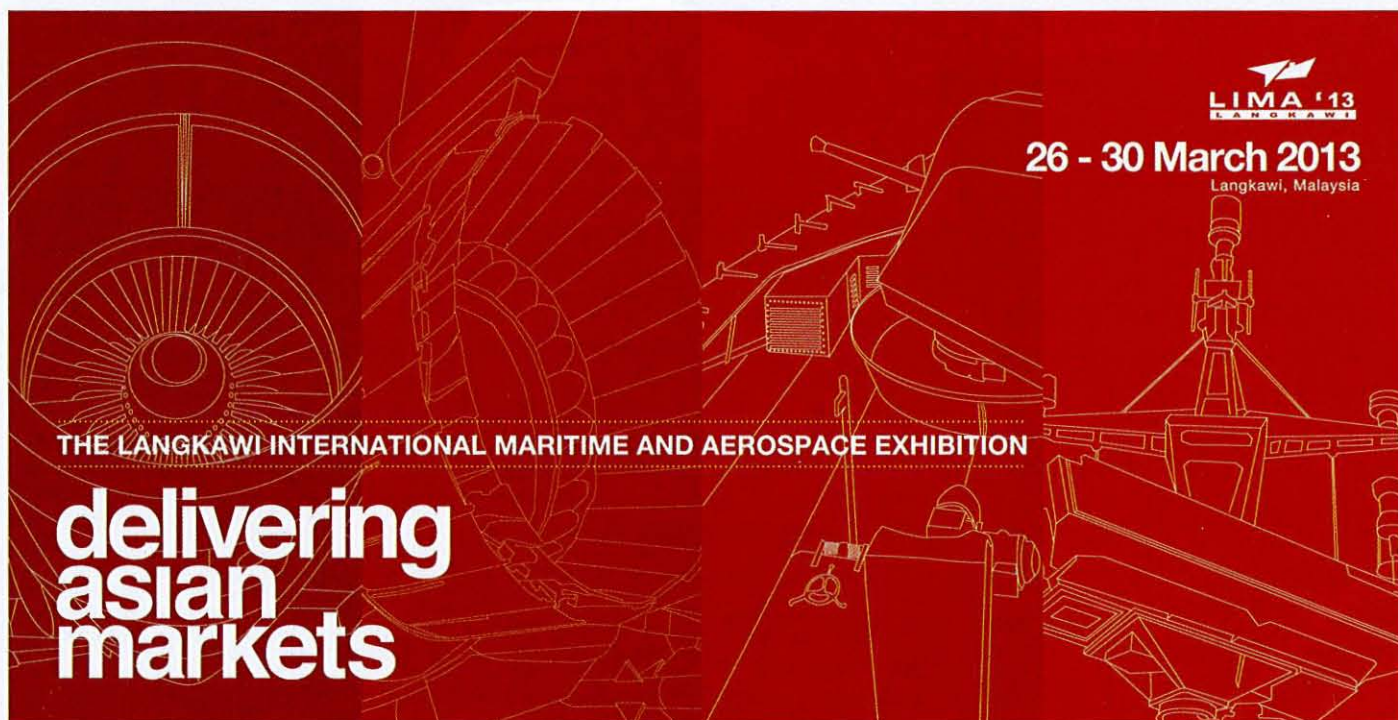
Domestic shipbuilding capacity and capability is a core requirement. Indonesian ship-builder PT PAL, among others, will have to

expand and modernise its facilities while recruiting, training, and retaining many new skilled personnel. The domestic industry is looking at substantial workloads with simultaneous production of submarines, frigates, landing ships, and fast attack craft.

At the same time, budget stability will be critical to sustaining naval modernisation. Future governments must maintain stable funding commitments to ensure disruptions to the growing shipbuilding industry are kept to a minimum. Indonesia's maritime challenges are considerable. As noted above, a majority of TNI-AL's 196-ship fleet are foreign-built vessels and craft, most of which are long past their effective service lives.

The current progress with new SIGMA corvettes, the *Nasional Korvet Program* and the new submarine programme are telling indicators that Indonesia is determined to modernise its fleet and create a domestically-built fleet structure well able to serve national maritime interests over the next decade and beyond.

NAFO



The poster for the LIMA '13 Langkawi Maritime and Aerospace Exhibition features a red background with white line art illustrations of a ship's propeller, a ship's hull, and a ship's superstructure. The text is in white and yellow. The event dates are 26 - 30 March 2013, and the location is Langkawi, Malaysia. The slogan 'delivering asian markets' is prominently displayed.

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