
Submarine Surge

Dr Michael Raska, a research fellow at the Institute of Defence and Strategic Studies in Singapore, talks about how geopolitical factors are influencing submarine modernisation in East Asia.

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East Asia's strategic assessments and debates currently focus on five key issues: the pace, character, and direction of China's military modernisation; the struggle for dominance by the region's two great powers (China and Japan); the future of the Korean Peninsula; intra-regional competition in territorial disputes in East China and South China Seas; and perhaps most importantly, the contours of long-term regional strategic competition and rivalry between China and the U.S.

In each conflict area, maritime security issues and naval modernisation are increasingly

important. In particular, it is the introduction of new classes of conventionally powered, diesel-electric submarines (SSKs) in East Asia that are becoming 'platforms of choice' for regional navies, providing force multiplier capabilities in diverse missions and against superior forces.

Defense spending

This trend is driven, first and foremost, by China's qualitative military modernisation. With the economic, political and military rise of China – embedded in three decades of relentless economic growth – China's power-projection capabilities are increasingly visible in virtually every military-technological domain. In 2014, China spent \$131 billion on its defence budget, up 12.2% on the previous year, marking 17 consecutive years of near double-digit increases in defence spending. The cumulative effects of these increases are substantial, with China's catalogues of air, land and naval platforms becoming more sophisticated and operationally effective.

As China expands its national interests in search of 'great-

power' status and seeks to reassert its regional geopolitical importance, its People's Liberation Army Navy (PLAN) is shifting away from traditional coastal defence and a potential conflict with Taiwan, towards a regional blue-water navy capable of force projection into China's 'near seas', defined by the 'first island chain' (consisting of the Kuril Islands, Japan and Taiwan). By 2030, China envisions extending its strategic reach into the 'second island chain', which includes US bases on Guam.

To do so, the PLAN is gradually acquiring both defensive and offensive anti-access/area-denial (A2/AD) capabilities, limited expeditionary capabilities and supporting air power. This comprehensive strategy, which China calls 'counter-intervention', is interpreted by the US and other regional powers as an attempt to restrict the access and freedom of action of their respective forces in areas of 'core interest' to China.

New submarines

An important aspect of China's A2/AD strategy is the PLAN's new classes of submarines, both

nuclear and conventional. These have been introduced alongside advances in other weapons systems and platforms, such as submarine-launched anti-ship and land-attack cruise missiles, anti-submarine weapons and advanced ISR sensors. Together, these provide enhanced maritime capabilities for the PLAN, allowing its submarines greater flexibility, endurance, reach and lethality.

China is currently operating up to 50 submarines based on six different classes: two classes of indigenous SSKs and four nuclear classes. Since 2004, China is believed to have launched 12 Yuan-class indigenous SSKs, which have been progressively modified to carry more advanced high-frequency sonar; upgraded weapons systems; noise reduction; and air independent propulsion (AIP) technologies to increase the time between snorkel operations (through which the batteries are recharged) to two weeks or more. Accordingly, AIP extends the range and inherent stealth of submerged operations (with its lower acoustic, bow wave and wake signature), and can thus decrease the risk of being detected.



China's PLAN is shifting away from traditional coastal defence towards a **regional blue-water navy** capable of **force projection** into its 'near seas'

The PLAN may introduce up to 20 additional Yuan-class submarines utilising other technologies selectively adapted from Russian boats and imported German diesel-electric engines. Since the mid-1990s, China has procured up to 12 Kilo-class submarines from Russia, and is reportedly interested in the purchase of at least four fourth-generation Amur (Lada)-class or possibly a fifth-generation

Kalina-class, currently in the early phases of development in Russia.

Neighbouring response East Asian countries are responding to China's military modernisation by revamping their own force-modernisation priorities, alliances and overall strategic choices. The result is not a regional 'arms race' per se (involving an action–reaction cycle of arms acquisitions based on

mutually adversarial relationships). Instead, it is a gradual 'arms competition' or 'arms dynamic' characterised by a mix of co-operative and competitive pressures, continued purchases of advanced weapon platforms, the introduction of new weapon types and, therefore, the development of unprecedented power projection capabilities.

In northeast Asia, Japan is rethinking its strategic and

national defence posture, seeking to overcome the limitations imposed by its pacifist post-war constitution in order to exercise greater strategic adaptability and operational flexibility in responding to regional contingencies involving China – particularly in the dispute over the Senkaku/Diaoyu Islands. In November 2013, Japan's Cabinet launched the country's first National Security Council, followed by the approval of the first National Security Strategy and a reinterpretation of Japan's pacifist constitution.

Meanwhile, South Korea's ongoing defence reforms and acquisition programmes are aimed not only at strengthening capabilities vis-à-vis North Korean asymmetric threats, but also at developing joint air and naval capabilities to complement the long-term strategic interests of the US, which, through its policy of 'rebalancing', intends to bolster its position as a major Pacific power.

With changing strategic priorities, both Japan and South Korea aim to procure new types of submarines. South Korea's July 2014 launch of its fifth Type-214

submarine comes less than a year after the introduction of the 1,800-ton Son Won-il class, featuring AIP and advanced combat management systems. The South Korean Navy also has plans to bolster its current fleet of 14 submarines with nine indigenous 3,000t KSS-III submarines, a new type which will be AIP capable and equipped with a vertical-launch missile capability.

The Japan Maritime Self-Defense Force, for its part, launched the Kokuryu, the sixth of 10 planned Soryu-class boats, in October 2013. Equipped with the Stirling AIP system and Harpoon anti-ship missiles, these are considered the most advanced of Japan's current fleet of 16 conventional submarines.

Modern tactics

In southeast Asia, the relatively high acquisition costs and maintenance requirements have traditionally precluded many countries from acquiring submarines. Over the past decade, however, some Southeast Asian navies have begun to develop their submarine fleets by introducing more capable coastal SSKs and submarine-launched anti-ship and land-attack cruise missiles that provide limited yet unprecedented power projection capabilities.

By 2018, for example, Vietnam's subsurface fleet could be the largest undersea force in the region, following Russia's delivery of the last four of six Kilo-class SSKs, designed for diverse reconnaissance and patrol, anti-submarine and anti-ship missions, and equipped with 3M-54 anti-ship cruise missiles.

Indonesia, Malaysia and Singapore are also expanding or upgrading their submarine fleets. Between 2007 and 2009, Malaysia took delivery of two French-built Scorpène-class SSKs, equipped with underwater-launched SM-39 Exocet anti-ship missiles. Their permanent base at the Kota Kinabalu Naval Base in Sabah, East Malaysia indicates their primary mission is to protect Malaysia's sovereignty in the contested waters of the South China Sea.

Indonesia has ambitious plans to expand its submarine fleet to at least six, and ideally to 12 by 2024 – as a key aspect of the country's declared goal of developing a 'green-water' navy. In 2012, the Indonesian navy announced

INEC@IMDEX Asia 2015

Regional naval issues, challenges and more will be in the spotlight at the upcoming IMDEX Asia 2015 at the Changi Exhibition Centre in Singapore. The event, which will include the International Naval Engineering Conference (INEC) around the theme 'Adapt and Transform', will provide a comprehensive platform for regional maritime security experts, policymakers, and industry leaders.

IMarEST chief executive David Loosley said: "With attendees from naval delegations, industry and trade visitors, IMDEX Asia is an ideal place for the INEC to generate high-level exchanges and discussions on a wide range of naval technical topics relevant to the Asia Pacific region." INEC will be held from 20-21 May.

Other conferences at the event include the International Maritime Security Conference and the Asia Pacific Submarine Conference that provide insights on the latest maritime security and naval platform design trends and developments.

a \$1.1 billion contract for three South Korean-built Type-209/1400 SSKs, whose new German design will provide incremental technological and capability upgrades over the country's two existing German-built U-209/1300 submarines, in service since 1981.

Meanwhile, in November 2013, Singapore announced a contract with German shipbuilder ThyssenKrupp to acquire two advanced Type-218SG submarines designed for littoral, shallow-sea operations. Thailand, the Philippines and Burma have also displayed interest in acquiring submarines, although their ability to do so will likely be hindered by ongoing budgetary constraints and internal security challenges.

Long term planning

By acquiring such capabilities, East Asian navies are seeking greater operational flexibility, endurance, range and stealth, enabling them to conduct diverse missions, from anti-submarine warfare to force protection (in the form of close submarine escort), and from ISR to providing support for special forces, alongside other complementary deterrence and

defensive tasks in support of territorial defence.

This reflects East Asia's emerging strategic template – characterised by a range of mixed threats, including asymmetric A2/AD and low-to-high intensity conventional conflicts in traditional flashpoints such as the Taiwan Strait and the Korean Peninsula. These exist alongside a range of non-traditional security challenges, such as energy security and cyber-security, converging in intra-regional competition and territorial disputes in the East China and South China Seas.

Submarine assets

Submarines will become an increasingly valuable strategic asset for regional navies. For smaller, defence oriented navies in East and Southeast Asia, submarines enable a 'sea-denial' strategy – aimed at preventing an opponent from using the sea, rather than providing them with a degree of sea control that would facilitate their own power – or trade-projection. The stealth attributes of submarines also provide strategic advantages over surface ships vis-à-vis sea-based surveillance, particularly in the shallow coastal and littoral waters in the South China Sea and Java Sea. This means that, even if submarines are detected, it is not always possible to identify their type and nationality. This may consequently complicate an opponent's ability to respond.

As with any military innovation, however, the overall effectiveness of submarines, no matter how advanced, will be measured more than their technical specifications. It will be determined by how well they are integrated with organisational structures, doctrines and operational concepts.

Indeed, operationally ready submarines require a long-term organisational investment, highly skilled workforce, infrastructure development and relevant doctrine in order to create a modern navy that can produce commanding officers with up to 10 years of experience, and senior sailors, operators and engineers capable of managing and maintaining the submarines' weapons, propulsion and communications systems.

The key difference in the military effectiveness of these state-of-the-art submarines will therefore be in the experience, training and skill set of their operators. ■

