



## PAKISTAN NAVY'S EMERGING UNDERWATER THREAT

**Capt HPS Sodhi**  
**Senior Fellow, CAPS**

Pakistan Navy's concept of operation against India has always been centred on employment of its forces for 'Sea Denial'. During the 1971 war, Pakistan Navy's (PN) focus was on targeting Indian ships with its submarines till India was able to blockade Karachi harbour, its leading commercial port and economic hub. But, PN was successful in its efforts when INS Khukri, a frigate of the Indian Navy was sunk off the coast of Diu, Gujarat by the Pakistan Navy Daphné-class submarine Hangor on 09 Dec 1971. This was the first warship sunk in action by a submarine since World War II. In the last few decades, while India has embarked on the path of naval modernisation and development, and expanded its force with inclusion of aircraft carriers, destroyers, submarines and aviation assets to achieve the status of a blue water navy, Pakistan continue to lay emphasis on the instruments of sea denial to take on the stronger adversary.

One of the Pakistan Navy's clearest and most achievable areas of modernisation and growth are in regards to its submarine fleet. Presently, the Pakistan Navy operates five French submarines, which include three Agosta 90Bs (Khalid Class) and two older Agosta 70 (Hashmat Class) of 1970s vintage. The three Agosta 90-B submarines of French design form the core of Pakistan's current submarine fleet. PNS Hamza, one of the three Agosta 90-B submarines was commissioned and assembled at the Karachi Shipyard and Engineering Works (KSEW) in 2008. The other two Agosta 90-B submarines — PNS Khalid and PNS Saad were indigenously overhauled and retrofitted with air-independent propulsion (AIP) systems in 2011. PN was on lookout for quite some time to replace its now retired Daphne and ageing Agosta 70 class submarines. In fact, it was very close to procuring three Type 214 submarines from Germany in 2009, but for the economic reason the deal was scuttled.<sup>1</sup>

Continuing with this priority, on 23 July 15, Pakistan approved purchase of eight S20 class submarines from China for \$5 billion.<sup>2</sup> This acquisition will augment the Pakistan Navy submarine fleet in a big way. S 20 is the export version of the PLA Navy's Type 039 A/041(NATO name: Yuan class) diesel electric submarine. Although, the S 20 export version is not equipped with the Air Independent Propulsion (AIP) system which the original Type 039 has, but due to its modular design it can be integrated based on customer's requirement. Pakistan's Minister for Defence Production, Rana Tanveer Hussain has confirmed that four submarines under this project will be built in China and the balance will be simultaneously constructed in Pakistan at KSEW, Karachi under the transfer-of-technology agreement.<sup>3</sup>

The Yuan class incorporates some of the best features of the Song and Kilo class SSKs. This 2300 ton submarine has a range of 8000 NM at 16 Knots cruising speeds and capable of operating up to 300 m water depths. The double hull design is integrated with advanced noise reduction techniques including anechoic tiles, passive/active noise reduction and asymmetrical seven-blade skewed propeller. These techniques have resulted in making this boat a quiet diesel-electric submarine, which is difficult to track. On top of that, it is expected that Pakistan will certainly opt for the AIP version equipped with Stirling engines, which is another form of AIP technology.<sup>4</sup> Availability of AIP technology would

give them greater operational flexibility through increased endurance. In any case, PN has gained adequate experience and technical expertise in operating AIP systems on board the existing Agosta 90 B submarines.

Pakistan Navy's biggest gain will be in the form of the submarine launched cruise missile (SLCM) capability acquired with this induction. The Type 039A has the normal anti-submarine/anti-ship weapon capability of six 533 mm torpedo tubes and short range YJ-82 ASCMs. It is speculated that the submarine will be equipped with the supersonic YJ-18 missile, currently under development. These missiles have a reported range of 220 km and, represent a real A2/AD force multiplier.<sup>5</sup> It is not yet clear whether these boats will be equipped with the capability to launch submarine launched cruise missiles with light plutonium-based nuclear warheads.<sup>6</sup> But, if it comes through, it will give Pakistan an assured nuclear second-strike capability, in the form of Babur land attack cruise missile (LACM), based on these underwater assets.

Most of the analysts believe that Yuan-class submarine was designed primarily as an attack submarine with a secondary role as an anti-ship cruise missile (ASCM) platform capable of operating in shallow littorals.<sup>7</sup> Additionally, looking at its large size, particularly for a non-nuclear boat, it certainly has the capability to operate beyond coastal waters. Moreover, its

sonar and other combat fitments are well suited for deep waters also; hence the PN will have the flexibility of deploying these boats around choke points off Indian coast, on defensive tasks off Makaran coast or on mid ocean targeting tasks against Indian merchant marine/ warships. In a conventional role, because of its modern sonar and the tactical flexibility provided by the AIP system it will undoubtedly be an effective ASCM platform against enemy's ships. However, a limitation in the form of missile load may restrict its effectiveness as an ideal ASCM platform. In the absence of any vertical launch system (VLS), it is obvious that the existing six torpedo tubes will be used to load a mix of missiles and torpedoes. With the present fitment of short-ranged YJ-82 missile, a Yuan-class submarine may be better of engaging the target with its primary weapon of torpedoes at close ranges. Even after the induction of the long range YJ-18 ASCM, the restrictive factors of the torpedo room's capacity and the limited number of launchers will make it very hard for the submarine to saturate an enemy ship's air defences with only four, or at most five, missile salvos.<sup>8</sup>

Talking about the strategic aspect of this induction, Pakistan Navy could be preparing itself to take on the new challenge of having a potent platform at sea with strategic weapons. As the Indian Navy (IN) is at the threshold of inducting its first indigenous nuclear powered ballistic missile submarine (SSBN) – the INS Arihant, which will form the nucleus of India's

sea-based deterrence, Pakistan's Minister for Defence Production, Rana Tanveer, feels that they have found the answer. According to him, three or four Yuan class AIP submarines armed with nuclear or conventional land attack cruise missiles might offer the best choice for Pakistan in existing circumstances.<sup>9</sup> Although, not all eight Yuan class boats may be put on strategic deterrence tasks, this new induction can be called as the sea-based arm of Pakistan's nuclear triad.

Keeping in mind the PN concept of operations, it is expected that quite a few of these boats, along with the older Agosta 90 B, will be on conventional patrol duties fulfilling the traditional sea denial role, against the expanding and modern Indian naval armada. It is also heard that a Turkish state-owned defence contractor has won a contract for the mid-life upgrade and modernization of the three Agosta 90B-class submarines.<sup>10</sup> With these developments, the PN submarine force will be a big threat to the Indian Navy's fleet aiming to establish sea control in the north Arabian Sea. Inadequacy of credible anti-submarine capabilities has always been a cause of concern for the Indian maritime forces. Although, considerable progress has been made in this regard with the fitment of indigenous high performance sonars on board ships and induction of P-8I long range anti-submarine warfare (LRASW) aircraft, a lot more needs to be done to tide over this capability gap. While the distant ASW support to the fleets can be

provided with the P-8Is, the provision of close support in the form of integral ASW aircraft element needs attention. With the existing inventory of insufficient number of integral ASW helicopters in both the fleets, the surface ships, including aircraft carriers, are under considerable submarine threat.

China, in its recent drive to achieve maritime supremacy, has started deploying its submarines in the Indian Ocean region. During one of its deployments in 2015, to support its ongoing anti-piracy campaign in the Gulf of Aden, a Yuan-class submarine called on Karachi port. That visit, probably, was the first indication of the new acquisition by Pakistan Navy. The sale of Chinese submarines along with transfer of technology to Pakistan is certainly not based on commercial benefits only. This could be a step in China's possible ambitions to have a toehold in the Indian Ocean.<sup>11</sup>

The PN decision, to acquire eight new AIP & ASCM equipped submarines from China and mid-life update of their Agosta 90-B, has once again brought in to focus, the importance of underwater threat to Indian naval forces. No doubt, the new induction is India-centric for which AIP-equipped submarines provide a cost-effective solution in terms of maintaining a possible nuclear deterrent at sea. Indian Navy will have to lay emphasis on acquisition of additional and credible anti-submarine assets to bridge over this critical capability gap. The recent

government approval to procure four more P-8I LRASW aircraft is a welcome step in this direction. Further, the ongoing procurement process, to acquire integral (ship borne) ASW helicopters for the fleets, must be expedited to mitigate the submarine threat.

*(Disclaimer: The views and opinions expressed in this article are those of the author and do not necessarily reflect the position of the Centre for Air Power Studies [CAPS])*

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#### Notes

<sup>1</sup> Bilal Khan, Is it finally the Pakistan Navy's turn? 03 Oct 2015, <http://quwa.org/2015/10/03/is-it-finally-the-pakistan-navys-turn/> accessed on 26 Jun 2016.

<sup>2</sup> Pakistan, China Finalize 8-Sub Construction Plan, 11 Oct 2015, <http://www.defensenews.com/story/defense/naval/submarines/2015/10/11/pakistan-china-finalize-8-sub-construction-plan/73634218/>

<sup>3</sup> Ibid.

<sup>4</sup> Note 1 *ibid.*

<sup>5</sup> Capt. Christopher P. Carlson, USN (Retired), Inside the Design of China's Yuan-class Submarine, 31 Aug 2015, <https://news.usni.org/2015/08/31/essay-inside-the-design-of-chinas-yuan-class-submarine>

<sup>6</sup> Note 1 *ibid.*

<sup>7</sup> Note 5 *ibid.*

<sup>8</sup> *Ibid.*

<sup>9</sup> Note 2 *ibid.*

<sup>10</sup> Franz-Stefan Gady, Turkey to Modernize Pakistan's Attack Submarine Fleet , 24 June 2016, <http://thediplomat.com/2016/06/confirmed-turkey-to-modernize-pakistans-attack-submarine-fleet/>

<sup>11</sup> Benjamin David Baker, Revealed: Why China Is Selling Submarines to Pakistan , 28 Sep 2015, <http://thediplomat.com/2015/09/revealed-why-china-is-selling-submarines-to-pakistan/>