

Russia, India to sign first contract with third state for export of BrahMos cruise missile in spring

The first contract to supply Russian-Indian BrahMos cruise missiles to a third nation is planned to be signed in spring, said Praveen Pathak, the chief general manager for marketing and export of the Russian-Indian joint venture BrahMos Aerospace.

"We expect [signing the agreement] sometime in April or May," he told reporters on Monday, without elaborating what country plans to acquire the Russian-Indian cruise missile.

According to Pathak, BrahMos Aerospace is currently discussing possible contracts with a number of other nations.

The BrahMos missile has been developed by Russia's Research and Production Association of Machine-Building (the town of Reutov near Moscow) and India's Defense Research and Development Organization (DRDO).

The missile's name comes from the names of two rivers: the Brahmaputra of India and the Moskva of Russia. The missile's first launch took place on June 12, 2001 from a coastal launcher. The missile's production has been arranged at enterprises in Russia and India. Its various versions are operational in the Indian Air Force, Army and Navy.

The OneIndia news portal earlier wrote citing own anonymous sources that the planned agreement on BrahMos is expected to be signed with the Philippines.

<https://www.defencenews.in/article/Russia,-India-to-sign-first-contract-with-third-state-for-export-of-BrahMos-cruise-missile-in-spring-808927>

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India's Tejas fighter just performed its first carrier landing—Does a twin-engine model have a future in the Indian Navy?

Or not...

By Sebastien Roblin

At 10:02 A.M. over the Arabian Sea on January 11, 2020, Commodore Jaideep Maolankar extended the arrestor hook on his delta-wing Tejas single-engine jet fighter and powered towards INS *Vikramaditya*, a former Soviet aircraft carrier refitted at great expense and commissioned into Indian Navy service in 2013.

The thirteen-ton jet's reinforced landing gear absorbed the shock as it hit the flight deck, and its arrestor hook snagged the first of three wire cables.

The cable stretched forward, arresting the Tejas's momentum and then yanked back the first domestically-built Indian aircraft to land on an aircraft carrier. You can see pictures and a recording of the moment here.

The following day, the same jet performed its first launch off the *Vikramaditya*'s curved "ski jump" ramp.

The Tejas Naval-Light Combat Aircraft prototype piloted by Maolankar was developed by India's Defense Research and Development Organization and the company Hindustan Aeronautics Limited.

But don't expect to see the Tejas Mark I enter service with the Indian Navy. After Tejas undergoing three decades of development, the Indian Navy rejected it in 2016, finding its performance mediocre due to its F404 turbofan engine lacking adequate thrust to propel the light jet off the deck of a carrier with a full fuel and weapon load.

Here's where things get complicated. Despite its own misgivings, the Indian Air Force did order 123 land-based Tejas Mark I jets and is looking forward to a major avionics upgrade variant, the Mark 1A.

HAL wanted to next develop a more powerful Tejas Mark 2 Medium Weight Fighter with F414 turbofans, boosting thrust by 20 percent. The hope was that the resulting performance improvement would rope in interest from both Navy and Air Force.

But in November 2019, Indian Navy made clear any single-engine fighter simply wouldn't be satisfactory. The service wants a more powerful twin-engine fighter that can still make it back to the carrier even after losing an engine. This notional aircraft is designated the Twin Engine Deck-Based Fighter (TE-DBF), and would eventually replace the forty-four twin-engine MiG-29Ks currently in Indian Navy service.

TE-DFB would be separate from the current competition to procure an additional fifty-seven new carrier-based fighters, likely either Boeing Super Hornets or Dassault Rafale-Ms. India will also commission its first domestically built aircraft carrier, the ski-jump deck *INS Vikrant*, around 2022, and plans to begin the construction of a new flat-deck carrier with electromagnetic catapults.

Enter the Twin-Engine Tejas?

The Indian Navy's requirement for a twin-engine fighter seemingly closed the book on the carrier-based Tejas. But on New Year's Eve in 2019, Indian test pilot Harsh Thakur posted concept art of a

twin F414 engine Tejas with large canards (a pair of small additional wings closer to the nose) overlapping above the wings.

This was actually one of several concepts under consideration, and several experts have already commented that the spacing between the engines seems inadequate. Nonetheless, it revealed that HAL was seriously looking to draft a twin-engine spinoff of the Tejas.

This “Super” Tejas would both be offered for the Navy’s TED-BF requirement and marketed to the Air Force as the “Omni-Role Combat Aircraft” (ORCA). As it would not require carrier-landing gear and folding wings, ORCA would be a ton lighter and slightly cheaper than the naval variant.

An article by Vishnu Som on *NDTV* outlines the proposed aircraft’s characteristics: weight would increase from the Mark 1’s 13.5 tons to 23 tons and maximum payload boosted from 4 tons on seven hardpoints to 11 tons on 13 hardpoints, while maximum speed would be Mach 1.6 (possibly a bit slower than the Tejas Mark 1.) This would put the design in the medium weight class of a Eurofighter Typhoon or Dassault Rafale. Avionics would include multi-mode AESA radar and sensors designed for networking with other Indian military platforms.

The DRDO has optimistically estimated that it could have a flying Tejas Mark 2 prototype by 2026 and begin production in the early 2030s at an estimated price of rupees 538 crore (\$75 million) per aircraft, in addition to 13,000 crore (\$1.8 billion) in development costs.

However, restructuring an airframe to accommodate an additional engine will effectively require a near-total redesign, with the accompanying risk of technical delays and cost overruns. Thus, the Indian military may be skeptical that the twin-engine Tejas can be completed on schedule, or perform up to expectations given its past experiences with the single-engine Tejas.

Indian defense journalist Shiv Aroor appraised the project thusly to *Hushkit.net*:

“I don’t think Indian Navy requirements have ever compelled major aircraft design decisions in the country — and they’re not about to start... The Indian Air Force might be more inclined towards a lower-risk [single-engine] LCA Mark 2/Medium Weight Fighter that was revealed in concept form a year ago. The IAF has only just begun warming to the Tejas Mk.1 and looks forward to the Mk.1A. I doubt it’ll be looking to see another development path towards a fourth-gen fighter.”

Indeed, the window of relevance for developing of a brand-new 4.5-generation (non-stealth) fighter designs may be closing in the 2020s. That would leave the twin-engine Tejas without much leeway for the kinds of tremendous delays that have bedeviled most major Indian aircraft programs in the last few decades.

The under-funded Indian Air Force may therefore prefer to concentrate research on the HAL AMCA domestic stealth fighter program. And the Indian Navy probably can’t foot the bill to develop a whole new twin-engine Tejas without IAF buy-in.

If the twin-engine Tejas is to ever takeoff, it must not only to overcome skepticism that the project can be executed on time and to specification, but also the steep financial, bureaucratic and technical challenges which give rise to that skepticism in the first place.

For now, however, Indians rest proud to be numbered amongst the handful of countries to have developed a supersonic jet fighter capable of landing on the short deck of a carrier at sea.

<https://nationalinterest.org/blog/buzz/india%E2%80%99s-tejas-fighter-just-performed-its-first-carrier-landing%E2%80%94does-twin-engine-model-have>