

PM sets \$5bn Defence export target in 5 years

Modi inaugurates DefExpo, pushes for self-reliance

By Virendra Nath Bhatt

Lucknow: Prime Minister Narendra Modi inaugurated India's largest ever DefExpo 2020 in Lucknow on Wednesday and set a target of defence exports worth \$5 billion (Rs 35,000 crore) in the next five years.

Stressing the need for India to attain self-reliance in military needs to face present and future security challenges, Modi said unless the country controls its massive defence import bill, the dream of becoming a \$5 trillion economy could not be realised.

"India has been a major military power in the past but post-Independence the country failed to capitalise on its historical capabilities of indigenously producing its defence needs. India is the largest democracy in the world, has the second largest Army, fifth largest economy and is also the biggest arms importer. How long can we heavily rely on imports," asked the PM.

However, Modi observed that India's pursuit of self-reliance was to secure its national interests, especially against the backdrop of threats it faced in the region, and not targeted against any nation.

"India never had expansionist ambitions and never attacked any country nor will we ever do it. Besides our own defence, we have also obligations towards the security of our neighbours in Indian Ocean region. We are not interested in warfare, but welfare," Modi pointed out.

The PM said from defence exports valued at Rs 2,000 crore a few years back, the nation had achieved defence exports worth Rs 17,000 crore so far. "But our target is to hit \$5 billion in the next five years," he said.

"India has always been a trusted partner for world peace and contributed during the two World Wars despite having no direct stakes in these conflicts. Nearly 6,000 Indian security personnel were currently deployed in the UN Peace Keeping missions in African nations," Modi said.

Underlining the importance of "Make in India", the PM said DefExpo 2020 is among the biggest defence shows globally and would contribute immensely towards showcasing India as an ideal investment destination for military hardware. "India is not only a big market, but offers huge business opportunities," Modi told foreign investors and assured that their investments would provide good returns and help India become self-reliant in defence needs.

The PM further said that Defence Research and Development Organisation (DRDO) was helping defence sector start-ups to scale up and develop new products based on modern technologies, including artificial intelligence (AI) etc.

Meanwhile, Modi espoused the development of defence manufacturing capacity in domestic private sector and talked about enabling policies, including liberal licensing regime, implemented by Central Government and defence establishments to promote collaboration. "The DRDO was facilitating free transfer of defence technologies and created five new testing labs for start-ups to promote innovation," he said.

Referring to Defence Manufacturing Corridors in Tamil Nadu and Uttar Pradesh, Modi said that these hubs would not only help India become self-reliant in defence manufacturing but also help micro, small and medium enterprises (MSME).

He said that Indian Space Research Organisation (ISRO) was exploring outer space for public welfare and not for warfare, while DRDO was developing capabilities to protect these outer space assets from potential threats.

The Prime Minister said his Government has introduced several reforms in the Defence Ministry and implemented ease of doing business (EODB) resulting in sharp increase in number of licence issued by the Ministry from 210 to 460 in the last five years.

“India today is building several defence equipment like artillery guns, aircraft carriers, submarines, frigates, light-combat aircraft, and combat helicopters,” he said.

Modi cited misuse of technology, terrorism and cyber threat as challenges facing the world and said that defence forces were eyeing new technology considering new threats. “India is not behind others. A roadmap has been finalised to use application of artificial intelligence in defence sector,” he said.

Modi said that the creation of the post of Chief of Defence Staff and Department of Military Affairs would boost the overall defence production.

Earlier, Defence Minister Rajnath Singh made a detailed presentation about the plans of his Ministry and said that it was pursuing three Ps - policies, promotion and partnership.

The 11th edition of biennial DefExpo 2020 during February 5-9 will feature 1,000 exhibitors, including 165 foreign companies from the US, France, Germany, Russia, Israel, Australia etc, making it the largest ever defence show surpassing the 10th edition of DefExpo 2018 in Chennai, when about 700 exhibitors participated.

<https://www.dailypioneer.com/2020/page1/pm-sets--5bn-defence--export-target-in-5-years.html>

दैनिक जागरण

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हाईजैकर पर निशाना साधेगी फ्रेंजीबिल बुलेट

ज्ञान बिहारी मिश्र • लखनऊ

रक्षा अनुसंधान एवं विकास संगठन (डीआरडीओ) ने प्लेन हाईजैक के दौरान आतंकियों से निपटने के लिए नई बुलेट का इजाद किया है। इस बुलेट का नाम फ्रेंजीबिल बुलेट रखा गया है। इसकी खासियत ये है कि प्लेन हाईजैक के दौरान फायरिंग में अगर टारगेट मिस हो जाता है जो जहाज को कोई नुकसान नहीं पहुंचेगा। फ्रेंजीबिल से बुलेट न केवल आतंकियों का खात्मा किया जा सकता है बल्कि यात्रियों की जान भी बचाई जा सकेगी।

कंधार हाईजैक के बाद उठी थी मांग: डीआरडीओ के वैज्ञानिक अनिल कुमार ने बताया कि कंधार प्लेन हाईजैक के बाद सेना ने इस तरह के बुलेट को तैयार करने की मांग की थी। सेना की मांग पर डीआरडीओ ने इसे

डीआरडीओ का आविष्कार



फ्रेंजीबिल बुलेट • जागरण

तैयार किया है।

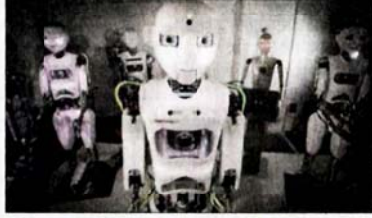
ऐसे किया बुलेट का आविष्कार: डीआरडीओ ने नाइन एमएम फ्रेंजीबिल बुलेट बनाई है। यह कॉपर और टीन पाउडर को मिक्स कर बनाया गया है। इस गोली के लगने से इंसान की मौत हो जाएगी। हालांकि जहाज की बोर्डी से टकराने पर यह बुलेट नष्ट हो जाती है। डिफेंस एक्सपो में बुधवार को पहली बार इसकी प्रदर्शनी लगाई गई।

छिपे आतंकियों से निपटेगी तीन रोबोट की टीम

सुरक्षा बलों को ऑपरेशन में मिलेगी मदद

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लखनऊ : तीन रोबोट की टीम जल्द ही तैयार होने जा रही है। डीआरडीओ इसे तैयार कर रहा है और रोबोट की ये टीम आतंकियों का मुकाबला करने में सुरक्षा बलों के लिए बेहद मददगार साबित होगी। कश्मीर जैसे इलाकों में छिपे आतंकी पर नजर रखने और उसकी जानकारी सुरक्षा बलों को देने का काम ये रोबोट करेंगे। लखनऊ में शुरू हुए डिफेंस एक्सपो में डीआरडीओ की टीम इन रोबोट्स को भी दिखा रही है। किसी भी ऑपरेशन में सुरक्षा बलों को क्या दिक्कत डेलनी पड़ती है और कैसे तकनीक के जरिए उन्हें मदद दी जा सकती है, ऐसे कई प्रोजेक्ट पर डीआरडीओ काम कर रहा है। इन रोबोट के बारे में बताते हुए डीआरडीओ के एक साइंटिस्ट ने कहा कि अगर सुरक्षा बलों को किसी जगह पर आतंकी छिपे होने की खबर मिलती है। तो यह तीन रोबोट की टीम उन्हें खत्म करने के ऑपरेशन में मदद कर सकती है। ऐसे किसी भी ऑपरेशन में सबसे अहम पहलू होता है सटीक जानकारी मिलना। यह पता करना कि अंदर कितने आतंकी है, कितने जगह है उनकी क्या पॉजिशन है। तब हमारी फोर्स को नुकसान कम हो। अक्सर ऐसे ऑपरेशन में आतंकियों को खत्म करने के साथ ही उनके हमले से बचना भी एक चुनौती होती है। डीआरडीओ के तहत आने वाला सेंटर फॉर आर्टिफिशियल इंटेलिजेंस एंड रोबोटिक्स (CAIR) आर्टिफिशियल इंटेलिजेंस, रोबोटिक्स, कमांड और कंट्रोल सिस्टम, नेटवर्किंग के क्षेत्र में काम कर रहा है।



अंधेरे में भी कर सकेंगे काम

तीन रोबोट लगातार लाइव विडियो सुरक्षा बलों को कमांड सेंटर पर भेजेंगे। ऑपरेशन एरिया के बाहर तैनात संतरी रोबोट चक्कर लगा लगाकर हर हरकत को कैद कर विडियो भेजेंगे। जो एक रोबोट अंदर जाएगा वह ऊपर-नीचे चढ़ उतर सकता है, जिससे वह अंदर के हालात की सटीक जानकारी दे सकता है। यह अपने हाथ से वहां पड़ी चीज निरंश मिलने पर उठा भी सकता है और गिरा भी सकता है। इन रोबोट्स में सेंसर और इन्फ्रारेड लेंस हैं जिससे यह अंधेरे में भी काम कर सकते हैं, विडियो ले सकते हैं। ये रात में होने वाले ऑपरेशन में अहम साबित होंगे। अभी ये वाईफाई के जरिए विडियो रियल टाइम में सेंटर भेज सकते हैं।

PM ने कहा- 200 नए डिफेंस स्टार्टअप शुरू करेंगे

विशेष संवाददाता, लखनऊ :



प्रधानमंत्री मोदी ने देश के रक्षा निर्यात को अगले पांच साल में बढ़ाकर 35,000 करोड़ रुपये करने के लक्ष्य की घोषणा की। 200 नए डिफेंस स्टार्टअप शुरू होंगे। यूपी और तमिलनाडु में दो बड़े डिफेंस कॉरिडोर बनाए जा रहे हैं, जिनसे युवाओं को रोजगार के लाभांश अवसर मिलेंगे। यहां डिफेंस एक्सपो की शुरुआत करते हुए प्रधानमंत्री नरेंद्र मोदी ने कहा कि डिफेंस मैनुफैक्चरिंग न हमें सिर्फ आत्मनिर्भर बनाएगी बल्कि हम अपने क्षेत्रीय मित्र देशों को भी सुरक्षा देने का दायित्व निभाने के लिए तैयार रहेंगे। पीएम ने कहा कि भारतीय उपमहाद्वीप के अलावा कई हिस्सों में मानवता को जिंदा रखने

की जिम्मेदारी भी हमारी है। पीएम ने कहा कि 2014 में जहां हमारा डिफेंस एक्सपोर्ट 2000 करोड़ का था वहीं पिछले दो साल में यह 17 हजार करोड़ तक जा पहुंचा है। उन्होंने कहा कि हमारा लक्ष्य पांच साल में इसे बढ़ाकर 35 हजार करोड़ रुपये करने का है। उन्होंने कहा कि 2014 के बाद हमने कई पॉलिसी रिफॉर्म किए और आज भारत का मंत्र है- मेक इन इंडिया, फॉर इंडिया एंड फॉर द वर्ल्ड।

दैनिक जागरण

जमीन से अंतरिक्ष तक मेक इन इंडिया की धमक

दुनिया के सबसे तेज क्रूज मिसाइल का तमगा हासिल कर चुकी मेक इन इंडिया ब्रह्मोस, चंद्रयान और गगनयान। भारतीय तकनीक का लोहा दुनिया जमीन से अंतरिक्ष तक मान रही है। डिफेंस एक्सपो में भारत की सैन्य क्षमताओं का नए आयाम दे रहे वैज्ञानिक और संस्थान अव भविष्य की सेना तैयार करने में लगे हैं जो किसी भी तरह की चुनौती के लिए तैयार रहेगी। मेक इन इंडिया और पूरी तरह स्वदेशी तकनीक के दम पर तेजस जैसा लड़ाकू विमान बनाने वाले भारत के हथियारों की ओर आज दुनिया के तमाम देश देख रहे हैं।

सर्जोव बाजपेयी • लखनऊ

दुनिया के सबसे तेज क्रूज मिसाइल का तमगा हासिल कर चुकी मेक इन इंडिया ब्रह्मोस मिसाइल दुश्मन के लिए और घातक और अचूक होने जा रही है। आवाज से भी तेज रफ्तार से दुश्मन को नेस्तनाबूद करने वाली ब्रह्मोस-2 जल्द ही पांच मैक से अधिक रफ्तार हासिल कर



पहला हाइपरसोनिक क्रूज मिसाइल बनने की ओर अग्रसर है। रूस की मदद से तैयार की गई ब्रह्मोस 290 किलोमीटर की दूरी तक दुश्मन के ठिकाने को ध्वस्त करने की क्षमता रखती है। ब्रह्मोस की खासियत है कि इसे जहाज, पनडुब्बी,

अपने बूते अंतरिक्ष से यंत्रियों को वापस लाएगा गगनयान

कभी भारत के लिए अंतरिक्ष एक सपना था, लेकिन वैज्ञानिकों ने चुनौतियों को पीछे छोड़ते हुए अपने बूते अंतरिक्ष यात्री भेजने की ओर कदम बढ़ा दिया है। चंद्रयान दो भले ही अपने मिशन में कामयाब नहीं हो सका लेकिन भारत की अंतरिक्ष की ताकत का लोहा पूरी दुनिया में माना है। डिफेंस एक्सपो में डीआरडीओ के पवेलियन में गगनयान की खासियत जानने को हर कोई बेताब है। एरियल



एडीआरडी निदेशक एके सक्सेना •

विमान और जमीन आधारित लांचर से छोड़ा जा सकता है। डिफेंस एक्सपो में दुनिया भर के खरीदारों की नजरें इस पर लगी हैं। यही वजह रही कि कई विदेशी कंपनियों और सैन्य विशेषज्ञ ब्रह्मोस के बारे में जानकारी लेते दिखे। भारत के इस अचूक अस्त्र को और घार देने की

डिलीवरी रिसर्व डेवलपमेंट के निदेशक एके सक्सेना के मुताबिक भारत का अंतरिक्ष कार्यक्रम तेजी से आगे बढ़ रहा है। कोशिश है कि 2022 में गगनयान के जरिए ही अंतरिक्ष यंत्रियों की सफुशल वापसी करई जाए। दरअसल, इससे पहले गगनयान को कई जटिल प्रक्रियाओं से गुजरना होगा। इसका परीक्षण कई चरणों में सुपर सोनिक स्पीड पर होता है जिसे आइटीआरएस प्रणाली से किया जा रहा है।

तैयारी है। ब्रह्मोस एयरोस्पेस के चीफ जनरल मैनेजर प्रवीण पाटक का कहना है कि इसे हाइपरसोनिक बनाने पर तेजी से काम चल रहा है। परीक्षणों के बाद ब्रह्मोस न केवल हाइपरसोनिक होगी बल्कि अधिक दूर तक निशाने को भेदने में सक्षम होगी।

डोर व्रीटिंग डिवाइस से आसान होगा रेस्क्यू ऑपरेशन

मुंबई में ताज हमले में सेना को आतंकियों से निपटने और बंधक बनाए गए लोगों को रेस्क्यू करने में काफी समस्या आई थी। इसका कारण यह था कि उन्हें इस बात की जानकारी नहीं थी कि बंद दरवाजे के पीछे कौन और कितने लोग हैं। दरवाजे को विस्फोटक से तोड़ने के दौरान बंधक बनाए गए लोगों की जान का खतरा भी रहता था। ऐसे में डीआरडीओ ने रेस्क्यू ऑपरेशन के दौरान किसी भी प्रकार के दरवाजे को तोड़ने के लिए रिमोट से संचालित होने वाली डोर व्रीटिंग डिवाइस तैयार की। इस डिवाइस की मदद से जरूरत के हिसाब से दरवाजे के किसी हिस्से को तोड़ा जा सकता है। इससे भीतर मौजूद लोगों को कोई नुकसान नहीं पहुंचेगा और वहां की गतिविधि का अंदाजा भी लग जाएगा।

AMCA could fly undetected during dangerous missions

By Anantha Krishnan M

Lucknow: India's inspiring attempt to develop a 5.5. generation, twin-engine, single seater, multi-role fighter Advanced Medium Combat Aircraft (AMCA) will enter a crucial phase with the detailed data generation process for making prototypes set to begin in the second half of this year.

This state-of-the-art supersonic beast is expected to fly with loads of home-grown, gen-next weapons currently under development at various laboratories of Defence Research and Development Organisation (DRDO).

The aircraft that can be operated in manned, unmanned, stealth and non-stealth modes carries many advance technologies making it lethal and apt for dangerous missions.

The sanction for the design phase was accorded in December 2018 with an allocation of Rs 400-crore plus after successful completion of conceptual design and feasibility.

Ahead of this, Rs 90-crore plus was allocated for the feasibility study.

The AMCA is being designed and developed Aeronautical Development Agency (ADA).

Sources privy to information about this highly-sensitive programme confirmed to Onmanorama that the design phase is nearing completion.

The scientists have made few changes to AMCA design and are now focussing on fine-tuning plans ahead of wrapping up the design phase.

In the next two to three months the design for AMCA will be completed.

ADA plans to develop five AMCA prototypes and will be seeking the government approval towards the end of this year.

The sanction will be critical for making the prototypes, flight-testing and configuration.

While the final cost is still being worked out, the expected funding could be in excess of Rs 10,000 crore.

The first few prototypes will be to check the stealth systems on board AMCA. Advanced technologies will be progressively introduced into the prototypes.

AMCA will be embedded with the Diverterless Supersonic Intake (DSI) system that would give it more stealth and better performance in supersonic flight.

"Futuristic weapons pack, including those capable of delivering high-energy hits will make AMCA a dreadful flying machine. It will carry cruise and many air-to-air missiles," says a source.

In non-stealth mode, there will be 10 weapon stations. With one mid-air refuelling, AMCA will be able to fly cover distances that are really long.

The fighter has advanced active and passive sensors integrated with electronic warfare suit.

Body-conformed antennas, flushed electro optical sensors and stealth features ensure that AMCA could fly undetected over dangerous territories.

As reported by Onmanorama earlier, AMCA will be initially powered by a 90kN GE F414 engine and later by one with higher thrust of 110kN, which is yet to be developed. If all blocks fall into place, then the first AMCA prototype will fly by 2025.

Features like suppression of enemy air defence (SEAD) and destruction of enemy air defence (DEAD), vehicle monitoring system (IVHM), serpentine air intake, infrared search and track (IRST) and missile approach warning system (MAWS) will make AMCA ideal for extended missions.

The Indian Air Force (IAF) is backing the AMCA mission to the hilt with Air Chief Marshal R K S Bhadauria tracking the developments closely.

"The IAF's keenness on AMCA is definitely pushing the project with renewed direction," adds an official.

At DefExpo2020, models of AMCA in stealth and non-stealth modes are being displayed at the DRDO stall.

<https://english.manoramaonline.com/news/nation/2020/02/05/amca-could-fly-undetected-during-dangerous-missions.html>



Thu, 06 Feb 2020

DRDO restructuring: Need for defence technology commission

On the occasion of 71st Republic Day, the nation gratefully paid tributes and salutations to our brave Armed Force personnel, including their families, who make an immense sacrifice for safeguarding the national security. There are also some silent heroes who have made outstanding Research and Development contributions, working tirelessly for strengthening our self-reliance in defence technology.

In the past five decades, DRDO has evolved to be a very strong R & D organisation not only in the country but also at the global level and has made path-breaking contributions to develop critical defence technologies which, even with all the money, a nation cannot acquire. Besides, building the core competence, knowledge and quality weapon system development, DRDO has designed, developed and produced through the Indian industry, both PSUs and private, defence equipment and systems worth more than Rupees two lakh crore. Many of these have already been inducted into services.



Defence scientists have provided the nation with a credible and reliable strategic defence to provide second-strike capability, to include land, air, water and underwater with nuclear weapons, having signed the self-moratorium of "No First Use".

Today, the country can be proud of having acquired strong missile capabilities. DRDO has developed a family of missiles including Agni, Prithvi, Akash, Nag, Astra, Brahmos, interceptor missile, submarine-launched missile and more recently anti-satellite missile. These have been achieved in an environment of technology control regimes which prevent collaboration with any foreign country in these fields.

In the field of aeronautics, DRDO scientists have developed Light Combat Aircraft (LCA) christened as Tejas which is a State of the Art 4th generation fighter aircraft with modern avionics, fly by wire, digital cockpit, sensors and weapon integration.

In the recent 71st Republic Day parade, Airborne Early Warning and Control System (AEW&C) displayed capability for surveillance capabilities. Defence scientists have already developed Unmanned Aerial Vehicle (UAV) including Rustom for surveillance and reconnaissance.

Another achievement in aeronautics is the development of a family of parachutes for dropping men, material and heavy vehicle. The country poised to develop the technology for building the best gas turbine engines for fighter aircrafts. Though it has not yet reached the thrust required to power LCA, it has proven its technological prowess to develop a fighter aircraft engine which may have spin-off benefit for Navy and Air Force applications.

In the armament domain, the country could achieve the development of Pinaka, multi-barrel rocket launcher, rifles, guns, ammunition and high energy materials. Main battle tank, Arjun developed by DRDO and produced by Heavy Vehicle Factory (HVF) have already been inducted in Army and the Mark-2 version of MBT is undergoing evaluation. Bridge layer tank, infantry combat vehicle, armoured ambulance and armoured amphibious vehicle are yet other success stories of defence research.

The country has developed very high capability in the field of Radars with a family of radars starting with Indira PC Radar, Rajendra Phase Array radar, Central Acquisition Radar, Revathi and Rohini. Some of these have already been inducted into service. Electronic Warfare (EW) system for interception and jamming, denying the enemy's sensing have already been developed for all three services. These include Samyukta for Army, Sangraha for Navy, Airborne EW for Air Force.

Navy is actively involved with DRDO in developing sonars, torpedoes and advanced naval materials. DRDO has made significant contributions in developing the nuclear-powered submarine Arihant for strengthening the underwater operation.

The country has developed a considerable level of self-reliance in development and inducting technology, equipment and systems to combat chemical, biological, radiological and nuclear (CBRN) threat. The capability covers technologies for early detection, personal protection, collective protection, decontamination and medical management for CBRN eventuality.

Our soldiers operate in extremes of environmental and operational conditions such as high altitude-up to an altitude of 22,000 feet, deserts, underwater, aerospace and low-intensity conflict environment. A large number of life support technologies developed by our defence scientists, and inducted in Army, Navy and Air Force, have enhanced the health and operational efficiency of troops with lots of spin-off benefits to the society at large.

“Karma Yogis” of DRDO needs to be further supported and motivated to augment the Self Reliance Index.

The government need to consider establishing a Defence Technology Commission (DTC) and placing DRDO directly under the ambit of Prime Minister's Office (PMO) as is the case with the other two serving departments of Atomic Energy and Space. This will boost and hasten further self-reliance in Defence Technology.

(Dr W. Selvamurthy, Ex-Chief Controller R&D, DRDO)

<https://bharatshakti.in/drdo-restructuring-need-for-defence-technology-commission/>

Working on Rs 38,000-crore deal to sell 83 jets to IAF, says HAL Chief

The deal was earlier expected to be worth around Rs 50,000 crore but it had turned out to cheaper as the air force had reduced its requirements for spares and support facilities for the fighter jets, said the HAL Chief

By Rahul Singh

Lucknow: State-run aircraft maker Hindustan Aeronautics Limited is hoping to hammer out a Rs 38,000-crore deal with the Indian Air Force by April for 83 Light Combat Aircraft Mk-1A jets, HAL Chairman R Madhavan told Hindustan Times on Wednesday.

He said the order was crucial for the HAL to prevent a complete halt of production at its facilities. HT reported on January 11 that HAL's order books are empty beyond 2021-22 and new orders from the armed forces are critical for continuity in production.

"Price negotiations are over. We estimate the deal to be worth around Rs 38,000 crore. We hope to sign the deal in two months. It's an important deal for both HAL and IAF (which is battling a shortage of fighter squadrons)," Madhavan told HT at DefExpo 2020, a defence systems exhibition being attended by more than 1,000 Indian and foreign firms.

The deal was earlier expected to be worth around Rs 50,000 crore but it had turned out to cheaper as the air force had reduced its requirements for spares and support facilities for the fighter jets, he said. Military affairs expert Air Marshal (retd) PS Ahluwalia said the LCA Mk-1A would be an important asset in plugging the shortfall in combat potential of the IAF. "These will be state-of-the-art aircraft to replace the retiring ones," he said.

The IAF plans to buy 83 LCA Mk-1A jets, taking the total number of Tejas variants ordered to 123.

The 40 LCAs already ordered by the IAF, of which 16 have been delivered, are in the initial operational clearance (IOC) and the more advanced final operational clearance (FOC) configurations. The LCA Mk-1A will come with additional improvements over the FOC aircraft, making it the most advanced Tejas variant so far.

The Mk-1A variant is expected to come with digital radar warning receivers, external self-protection jammer pods, active electronically scanned array radar, advanced beyond-visual-range missiles and significantly improved maintainability. HAL is expected to deliver the first Mk-1A jet to the IAF three years after the deal is signed.

Madhavan said only two fighter production lines were open at HAL --- one for Sukhoi-30s and the other for LCA Tejas. "We have to keep one line running," he said.

The Sukhoi-30 line is expected to shut after HAL delivers 12 fighter jets to IAF as part of an order likely to be signed later this year.

Another order that HAL is eyeing is the supply of 70 locally produced basic trainers to the IAF. If it gets the order for the Hindustan Turbo Trainer-40 (HTT-40), HAL could begin production of the trainers by early 2021. In a report tabled in Parliament in December 2019, the Parliamentary standing committee on defence said "all-out steps" should be taken to ensure that the "order book position" of defence public sector units such as HAL improved in the coming years and the ministry should extend full cooperation to achieve that.

<https://www.hindustantimes.com/india-news/working-on-rs-38-000-crore-deal-to-sell-83-jets-to-iaf-says-hal-chief/story-eci73OIZVo8LNOq07XekRI.html>

Singapore Airshow 2020: India moves on arming nuclear submarine

By Neelam Mathews

New Delhi: The Defence Research and Development Organisation (DRDO) successfully test-fired India's first submarine-launched ballistic missile, the K4 SLBM, from underwater on 19 January.

Measuring 10m long with a range of 3,500km, the SLBM is destined for the indigenous nuclear submarine INS Arihant.

Having been trialled many times in the past seven years, this landmark test was carried out off the coast of Visakhapatnam from a submerged platform. It is expected to be the mainstay for the Indian Navy's (IN's) submarine-based missiles. Titled the 'Black Project', the programme remained classified for a long time.

'The K-4 SLBM, with its very low circular error probability [CEP] and the ability to carry a variety of strategic warheads, adds strength to India's projection of power in the Indian Ocean area,' Rahul Gangal, a partner at consulting firm Roland Berger, told *Shephard*. The K-4 is believed to have a CEP of less than 40m.

'The test augments India's focus on creating a powerful deterrent on the front with China. It also underlines how the IN is making sustained progress, with a larger number of programmes achieving operational maturity as compared to the other two wings of the Indian military establishment,' added Gangal.

Commissioned in 2016, *Arihant* is capable of accommodating four K-4 missiles or 12 K-15s. The submarine displaces 6,000t and is powered by an 80+MW light water reactor.

Then defence minister Nirmala Sitharaman said after one milestone was achieved in 2018: 'India has achieved completion of her nuclear triad with the first successful deterrence patrol by INS *Arihant*. This places India in the league of the few countries that can design, construct and operate strategic-strike nuclear submarines.'

The K-4 is one of four K-series SLBMs named after former President A.P.J Abdul Kalam. The Sagarika/K-15, with a shorter range of between 700-1,500km, is the SLBM version of the land-based Shourya missile. To be integrated with *Arihant*-class submarines, it will have access to the Indian Regional Navigation Satellite System.

The K-5 missile is reportedly being developed by the DRDO for Indian strategic underwater platforms. The K-6 missile, with a 6,000km range, is also reportedly under development by the DRDO's Advanced Naval Systems Laboratory in Hyderabad.

<https://www.shephardmedia.com/news/naval-warfare/singapore-airshow-2020-india-moves-arming-nuclear-/>





Thu, 06 Feb 2020

Navy to get third Scorpene submarine in December

The third Scorpene submarine, Karanj, will be delivered to the Indian Navy by December and all six submarine deliveries would be completed by 2022, Nicolas de La Villemarque, Vice President India, Asia and Pacific of Naval Group, said on Wednesday.

Mr. Villemarque said discussions were on to fit Air Independent Propulsion (AIP) modules on all Scorpene submarines beginning 2023. “The Scorpene submarine has the ability to be equipped with an AIP system. The first AIP will be equipped during the first refit of the first Scorpene,” he said in a conversation with The Hindu at Defexpo 2020, which began here on Wednesday.



Talks were underway with the Defence Research and Development Organisation (DRDO), Mazagon Dock Shipbuilders Limited (MDL) and the Navy. A design agreement was expected to be signed with the DRDO by the year end, he stated.

Karanj was launched into water in January 2018 and is currently in advanced stages of sea trials. The first Scorpene, Kulvari, was commissioned in 2018 and it would go for a normal refit after six years in 2023, during which time the AIP would be installed. Second Scorpene Khanderi was inducted in September last.

An indigenous fuel cell-based AIP module is currently under development by the DRDO. The project reached a milestone in October 2019 with the successful operation of a land-based prototype engineered to the form-and-fit of a submarine. The DRDO has expressed confidence that the module will be ready in time for installation on Kulvari.

An AIP module gives stealth and extended endurance to diesel-electric submarines by allowing them to stay submerged longer.

Mr. Villemarque said they would do design simulations to “work out the technicalities of the project which involves Jumboisation, the process of cutting, joining and putting various blocks together.”

<https://defenceaviationpost.com/navy-to-get-third-scorpene-submarine-in-december/>