

July
2022

समाचार पत्रों से चयित अंश Newspapers Clippings

A Daily service to keep DRDO Fraternity abreast with DRDO
Technologies, Defence Technologies, Defence Policies,
International Relations and Science & Technology

खंड : 47 अंक: 130 09-11 जुलाई 2022

Vol.: 47 Issue: 130 09-11 July 2022



रक्षा विज्ञान पुस्तकालय

Defence Science Library

रक्षा वैज्ञानिक सूचना एवं प्रलेखन केंद्र

Defence Scientific Information & Documentation Centre

मेटकॉफ हाउस, दिल्ली - 110 054

Metcalfe House, Delhi - 110 054

CONTENTS

S. No.	TITLE	Page No.
	DRDO News	1-1
	DRDO Technology News	1-1
1.	Defense Research Laboratory Tezpur Participates in East Tech-2022	<i>The Sentinel</i> 1
	Defence News	2-29
	Defence Strategic: National/International	2-29
2.	Indigenous Aircraft Carrier Vikrant	<i>Press Information Bureau</i> 2
3.	Aircraft Carrier Vikrant Completes Last Phase of Trials; Mig-29k Fighter, Dhruv Helicopter Seen on Deck	<i>Indian Defence News</i> 2
4.	IAF Participation in Tactical Leadership Programme in Egypt	<i>Press Information Bureau</i> 3
5.	INS Tarkash – Long Range Overseas Deployment	<i>Press Information Bureau</i> 4
6.	First Ever ‘Artificial Intelligence in Defence’ Exhibition & Symposium to be Held in New Delhi on July 11	<i>Press Information Bureau</i> 5
7.	Indian Armed Forces Aiming to Go Big with Artificial Intelligence	<i>Indian Defence News</i> 6
8.	Rajnath Singh to Launch 75 Newly-Developed AI-Enabled Defence Products	<i>The Times of India</i> 7
9.	Navy Warships to Get Indigenous Satcom Terminals	<i>Indian Defence News</i> 8
10.	Defence Minister Rajnath Singh to Launch P17A Stealth Frigate on July 15	<i>The Economic Times</i> 8
11.	India's First 'Production' Tejas MK-1A Made a Secret Maiden Flight: Report	<i>Indian Defence News</i> 9
12.	IAF'S Older Generation MI-17 Helicopters in for Major Upgrade	<i>Indian Defence News</i> 10
13.	How IAF Swung into Action after a Chinese Jet Flew Near LAC in Ladakh Sector	<i>Indian Defence News</i> 11
14.	HAL, Safran Sign Pact to Create JV for Developing Helicopter Engines	<i>Indian Defence News</i> 11
15.	HAL, Safran Explore Opportunities to Assemble M88 Turbofan Engine	<i>Indian Defence News</i> 12
16.	BDL Contribution to Make in India Atmanirbhar in Defence is Commendable: Defence Minister	<i>Indian Defence News</i> 13
17.	Army Aviation Augments Combat Power While Ageing Cheetah, Chetaks Await Replacement	<i>The Hindu</i> 14
18.	India’s Defence Exports Touch Rs 13,000 Cr, Private Sector Leads Way with Aerospace Manufacturing	<i>The Print</i> 16
19.	India Defence Exports at Record Rs.13,000 Crore, US Biggest Importer	<i>Mint</i> 17
20.	Agnipath scheme complements IAF’s long-term vision of ‘lean & lethal’ force: Air Chief Marshal	<i>Financial Express</i> 17
21.	Agnipath is a New Path to Meritocracy, will Make Our Defence Forces Best in World After a Decade	<i>News 18</i> 19
22.	Army Focuses on Imparting Mandarin Language Training to its Personnel	<i>The Economic Times</i> 20

23.	After Putting American Predator Drone Deal on Hold, India Eyeing Indo-Israeli Armed UAV	<i>Indian Defence News</i>	21
24.	Dassault Rafale vs Boeing F/A-18 Super Hornet - Which is the Best Fighter Jet?	<i>Indian Defence News</i>	22
25.	Beijing Steadily Increases Combat Aircraft Flying into Taiwan's Air Defence Identification Zone	<i>Indian Defence News</i>	23
26.	Russia Says it Destroyed Two British-Supplied Anti-Ship Missile Systems	<i>Indian Defence News</i>	24
27.	With China on Mind, France, Australia, India will Enhance Security Cooperation	<i>Indian Defence News</i>	25
28.	Russian Navy Receives 1st Submarine Carrying Nuclear-Powered Drones	<i>Indian Defence News</i>	26
29.	With eye on Indian Ocean, China and Pakistan kick off naval, air drills to jointly deal with maritime threats	<i>The Economic Times</i>	28

Science & Technology

29-33

30.	Imaging Satellites will now be Owned by Private Entities as Well, says ISRO Chairman Dr S Somanath	<i>Indian Defence News</i>	29
31.	ISRO Plans Gaganyaan Test Demonstration by December	<i>Indian Defence News</i>	30
32.	MIT Quantum Sensor can Detect Electromagnetic Signals of Any Frequency	<i>SciTechDaily</i>	31
33.	Inspired by Honeybees, Scientists Teach Robots to Communicate with 'Waggle Dance'	<i>The Indian Express</i>	32



Fri, 08 Jul 2022

Defense Research Laboratory Tezpur Participates in East Tech-2022

Defense Research Laboratory (DRL-DRDO), Tezpur participated in the East Tech-2022, jointly organized by Eastern Command, SIDM & CII at the Biswa Bangla Mela Prangan, Kolkata on July 7 and July 8. Senior official and dignitaries from Indian Army, Indian Air Force and CAPF interacted and showed keen interest in DRL products and technologies, especially Bio Toilet, capsispray, capsigrenade and water purification technologies, meant to support armed forces deployed/operating in resource-limited locations of India, official sources said.



<https://www.sentinelassam.com/north-east-india-news/assam-news/defense-research-laboratory-tezpur-participates-in-east-tech-2022-601433>



**Press Information Bureau
Government of India**

Ministry of Defence

Sun, 10 Jul 2022 7:07 PM

Indigenous Aircraft Carrier Vikrant

Completion of 4th Phase of Sea Trials

The fourth phase of Sea Trials for IAC has been successfully completed on 10 Jul 22, during which integrated trials of majority of equipment and systems onboard including some of the Aviation Facilities Complex equipment were undertaken. The ship's delivery is being targeted in end Jul 22, followed by commissioning of the ship in Aug 22 to commemorate 'Azadi ka Amrit Mahotsav'. The Indigenous design and construction of Aircraft Carrier by Indian Navy and Cochin Shipyard Ltd is a shining example in the Nation's quest for 'AatmaNirbhar Bharat' and 'Make in India Initiative' with more than 76% indigenous content. This has led to growth in indigenous design and construction capabilities, besides development of large number of ancillary industries, with employment opportunities for over 2000 CSL personnel and about 12000 employees in ancillary industries. Maiden Sea Trials of IAC were successfully completed in Aug 21. This was followed by second and third phases of Sea Trials in Oct 21 and Jan 22 respectively. During these three phases of Sea Trials, endurance testing of propulsion machinery, electrical & electronic suites, deck machinery, lifesaving appliances, ship's Navigation and Communication systems was undertaken.

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=1840608>



Mon, 11 Jul 2022

Aircraft Carrier Vikrant Completes Last Phase of Trials; Mig-29k Fighter, Dhruv Helicopter Seen on Deck

The fourth phase of sea trials for Indigenous Aircraft Carrier has been successfully completed on July 10, Indian Navy said. During the drill, trials of the majority of equipment and systems onboard including Aviation Facilities Complex equipment were undertaken. Defence Minister

Rajnath Singh will launch the second P17A stealth frigate manufactured by warship manufacturer Garden Reach Shipbuilders and Engineers (GRSE) on July 15 in order to bolster the maritime capabilities of the Indian Navy, a senior official announced on July 9.

The cutting-edge vessel will be outfitted with the most recent technology and put through rigorous testing by GRSE, which was hired to build three stealth frigates as part of Project 17A, before being sent to the Indian Navy for commissioning into service. "Defence Minister Rajnath Singh will launch the ship on July 15 at the GRSE Main Complex here on the bank of Hooghly river," the GRSE official told journalists. The warship is undergoing paint shop work as it nears completion of construction. The wife of the then-chief of the defence staff, General Bipin Rawat, Madhulika Rawat, launched the first P17A frigate constructed by GRSE in December 2020.

According to the official, P17A ships are guided-missile frigates that are 149 metres long, weigh about 6,670 tons, and travel at a speed of 28 knots. Seven stealth frigates were ordered by the Navy, of which four were delivered to Mazagon Dock Ltd (MDL) and three to GRSE. The largest order GRSE has ever received is the Rs.19,294 crore contract for the construction of the three stealth frigates under Project 17A, the official said. According to him, the Kolkata-based defence PSU now has an order book of almost ₹24,000 crore.

Although GRSE engages in other manufacturing operations including building Bailey bridges and a diesel engine facility in Ranchi, the official noted that shipbuilding accounts for roughly 95% of the company's revenue. The company at present is working on six projects, comprising the construction of 23 ships that include one passenger ship for Guyana and six patrol vessels for Bangladesh, he said.

<http://www.indiandefensenews.in/2022/07/aircraft-carrier-vikrant-completes-last.html?m=1>



Press Information Bureau
Government of India

Ministry of Defence

Fri, 08 Jul 2022 7:21 PM

IAF Participation in Tactical Leadership Programme in Egypt

Indian Air Force contingent is reaching the midway point of the Tactical Leadership Programme (TLP) at Egyptian Air Force (EAF) Weapon School in Egypt (Cairo West Airbase). The programme commenced on 24 Jun and will culminate on 23 Jul 22. IAF is participating with three Su-30 MKI aircraft. Two C-17 aircraft were used for induction of the contingent. IAF Su-30 MKI aircraft undertook a non-stop ferry of six hours from Jamnagar airbase (India) to Cairo West airbase (Egypt), overflying four countries enroute.

Tactical Leadership Program is a unique exercise, wherein IAF is participating with its aircrew as instructors. This exercise provides a good opportunity to showcase the reach and capability of the IAF. It will also assist in enhancing defence cooperation between the two countries and

exchange of best practices. During the first two weeks of the exercise IAF aircraft participated in missions by day and night, involving air to ground & air to air combat scenarios and Combat Search and Rescue (CSAR) activity alongside Egyptian F-16, Rafale and Mig 29 aircraft.

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=1840177>



**Press Information Bureau
Government of India**

Ministry of Defence

Fri, 08 Jul 2022 6:07 PM

INS Tarkash – Long Range Overseas Deployment Visit to Djibouti and Maritime Partnership Exercise with Sudan Navy

Indian Navy's stealth frigate INS Tarkash, visited Djibouti as part of her long range overseas deployment followed by Maritime Partnership Exercise with Sudan Navy. The ship is on a deployment to Rio de Janeiro, Brazil, which is intended to coincide with the Independence Day enabling her to hoist the tricolour in South America on the occasion as part of Azadi ka Amrit Mahotsav. At the strategically-vital port, Captain Abraham Samuel, Commanding Officer of the ship, called on Shri Ramachandran Chandramouli, Hon'ble Ambassador of India to Djibouti. The Indian Navy maintains continuous presence in the Gulf of Aden region as part of its mission-based deployment philosophy.

INS Tarkash also conducted a Maritime Partnership Exercise with Sudan Navy ships Almazz (PC 411) and Nimer (PC 413) in the Red Sea near the Sudan Naval Base on 07 July 2022. The exercise included manoeuvres, flying operations for vertical replenishment, visit and board operations, and communication procedures. It provided opportunity for exchange of professional experiences and strengthening maritime cooperation between the two countries. INS Tarkash is a state-of-the-art platform and has a weapon-sensor fit that enables her address threats in all dimensions. The ship is part of the Indian Navy's Western Fleet and functions under the operational command of the Flag Officer Commanding-in-Chief, Western Naval Command.

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=1840153>



Press Information Bureau
Government of India

Ministry of Defence

Fri, 08 Jul 2022 5:31 PM

First Ever ‘Artificial Intelligence in Defence’ Exhibition & Symposium to be Held in New Delhi on July 11

Raksha Mantri Shri Rajnath Singh to Launch 75 Newly-Developed AI Products

Raksha Mantri Shri Rajnath Singh will inaugurate the first ever ‘Artificial Intelligence in Defence’ (AIDef) symposium and exhibition, organised by Department of Defence Production, Ministry of Defence, in New Delhi on July 11, 2022. The event will feature an exhibition to showcase the cutting edge AI-enabled solutions developed by the Services, research organisations, Industry and start-ups & innovators and launch of AI products for the market.

Addressing a press conference on the event, Defence Secretary Dr Ajay Kumar said it is a big event where 75 newly-developed AI products/technologies, having applications in defence, will be launched, as part of the celebrations marking 75 years of Independence ‘Azadi Ka Amrit Mahotsav’ and to promote ‘Aatmanirbharta’ initiative in Defence. The products are in the domains of automation/unmanned/robotics systems, cyber security, human behaviour analysis, intelligent monitoring system, logistics and supply chain management, speech/voice analysis and Command, Control, Communication, Computer & Intelligence, Surveillance & Reconnaissance (C4ISR) systems and Operational Data Analytics. Besides the 75 products being launched, another 100 are in various stages of development.

In addition, two top defence exporters one each from public & private sector will be felicitated during the event. During the Press conference Additional Secretary Shri Sanjay Jaju, responding to a question said that defence exports have crossed the highest ever figure of Rs 13,000 crore in Financial Year 2021-22, with 70% contribution coming from the private sector and the remaining 30% from the public sector. The event will also witness panel discussions on ‘Deploying AI in Defence’, ‘GenNext AI solutions’ and ‘AI in Defence – Industry Perspective’, with active participation from the Services, academia, students, research organisations and Industry.

A ‘GenNext AI’ Solutions Competition has been organised to get bright innovative ideas from students on futuristic AI solutions. The top three ideas curated by AI experts will also be felicitated. An exhibition of AI products has also been organised. The event is likely to be attended by dignitaries from friendly foreign countries, senior officials from Ministry of Defence and other Ministries of Government of India, representatives from research institutes, academia and the Industry. It may be recalled that an AI task force on Defence was established in 2018 to provide a road map on promoting AI in defence. Acting on its recommendations, a Defence AI Council, headed by Raksha Mantri, is spearheading the effort.

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=1840142>

Mon, 11 Jul 2022

Indian Armed Forces Aiming to Go Big with Artificial Intelligence

From silent sentries to gesture recognition for determining if an approaching individual is a friend or foe – the armed forces are set to embrace artificial intelligence-based technologies in a big way. Another AI-based system would help the Indian Army reduce its heavy road accident toll, which is the number one cause of casualties in peacetime. Defence minister Rajnath Singh on Monday will unveil 75 AI-based products that the army, air force, navy and coast guard will use in the coming days. Another 100 such products are under development. With road accidents causing nearly 300 deaths (2015) each year in the Indian Army, Bengaluru-based Bharat Earth Movers Limited has come out with a Driver Fatigue Monitoring System to alert the authorities on when to change a driver.

The real-time, non-intrusive AI-based system will accurately predict and identify situations where drowsiness and fatigue in a driver may be setting in. The intelligent system detects such signals in the driver, while the vehicle is in motion, defence ministry sources said. While a camera inside the cabin films the driver continuously, the detection system analyses the movie frame by frame and determines whether the driver's eyes are open or closed. The system continuously look out for symptoms of drowsiness, while considering physical cues like yawning, drooping eyelids, closed eyes and increased blink durations by using percentage of eyelid closure over the pupil against the time algorithm.

Another Bangalore-based public sector unit Bharat Electronics Limited has developed an AI enabled gesture recognition system that will inform the guards of a military unit if a person approaching the place is a friend or enemy. The system that can be easily integrated on a network of IP enabled cameras, uses deep-learning to identify gestures like a human walking with or without a gun, crawling with or without a gun and crouching with or without a gun. A third key technology would be the silent sentry developed by the Indian Army to plug the gaps in surveillance networks. They are rail mounted robots that would be used as additional eyes and ears on the perimeters of units and installations to enhance the surveillance grid. Such robots are being used by South Korea and Israel to man their borders. Other AI-based technologies include target tracking systems for the navy, deep sight canopy inspection for fighter jets and a predictive maintenance suite for the coast guard. Overall the AI products to be used by the armed forces relate to unmanned and robotics systems, cyber security, human behaviour analysis, intelligent monitoring system, logistics and supply chain management, speech and voice analysis and Command, Control, Communication, Computer and Intelligence, Surveillance and Reconnaissance (C4ISR) systems, and operational data analytics. Several such technologies would be showcased at a conference and exhibition that the Defence Ministry is organising here on Monday.

<http://www.indiandefensenews.in/2022/07/indian-armed-forces-aiming-to-go-big.html?m=1>

Rajnath Singh to Launch 75 Newly-Developed AI-Enabled Defence Products

Defence Minister Rajnath Singh will launch the first artificial Intelligence in Defence' (AIDef) symposium and exhibition organised by the Department of Defence Production, Ministry of Defence on July 11 at Vigyan Bhawan in the national capital. The event will feature an exhibition to showcase the cutting-edge AI-enabled solutions developed by the services, research organisations, Industry and start-ups and innovators and the launch of AI products for the market. Briefing about the event, Defence Secretary on Friday said it is a big event where 75 newly-developed AI products/technologies, having applications in defence, will be launched, as part of the celebrations marking 75 years of Independence 'Azadi Ka Amrit Mahotsav' and to promote 'Aatmanirbharta' initiative in Defence. "Nature of modern warfare is changing and AI will play a significant role in warfare. These products are tested and soon to be deployed in the safety and security of the nation," Kumar said.

He further said that the products are in the domains of automation/unmanned/robotics systems, cyber security, human behaviour analysis, intelligent monitoring system, logistics and supply chain management, speech/voice analysis and Command, Control, Communication, Computer and Intelligence, Surveillance and Reconnaissance (C4ISR) systems and operational data analytics "Besides the 75 products being launched, another 100 are in various stages of development," he added. In addition, two top defence exporters one each from the public and private sector will be felicitated during the event. During the press conference Additional Secretary Sanjay Jaju, responding to a question said that defence exports have crossed the highest ever figure of Rs 13,000 crore in Financial Year 2021-22, with 70 per cent contribution coming from the private sector and the remaining 30 per cent from the public sector.

The event will also witness panel discussions on 'Deploying AI in Defence', 'GenNext AI solutions' and 'AI in Defence - Industry Perspective', with active participation from the Services, academia, students, research organisations and Industry. A 'GenNext AI' Solutions Competition has been organised to get bright innovative ideas from students on futuristic AI solutions. The top three ideas curated by AI experts will also be felicitated. An exhibition of AI products has also been organised. The event is likely to be attended by dignitaries from friendly foreign countries, senior officials from Ministry of Defence and other Ministries of Government of India, representatives from research institutes, academia and the Industry. It may be recalled that an AI task force on Defence was established in 2018 to provide a road map on promoting AI in defence.

<https://timesofindia.indiatimes.com/india/rajnath-singh-to-launch-75-newly-developed-ai-enabled-defence-products/articleshow/92760054.cms>

Sun, 10 Jul 2022

Navy Warships to Get Indigenous Satcom Terminals

The Ministry of Defence (MoD) has okayed a programme for indigenous development of satellite communication (SATCOM) terminals that are housed on warships, submarines and naval planes. The SATCOM terminals connect the Navy's sea-going platforms with the naval satellite, GSAT-7 (Rukmini), which is connected to ground stations and relays the real-time information and data. Originally sourced from Israel, the SATCOMs are being maintained by Bharat Electronics Limited, a public sector undertaking.

Most of these SATCOMs are now more than 10-12 years old, hence the field units have reported problems pertaining to product support and slowness in data transfer. The Navy is looking at SATCOM terminals that have C-band and Ku-band compatibility with greater speeds of data and communication. The MoD has granted in principle approval to manufacture these in India under the 'Make-II' category of the Defence Acquisition Procedure. 'Make—II' implies the industry will fund the development of the project, including prototype for which no government funding will be provided. Once a product is okayed for testing, the Navy will examine it to see if it withstands humidity and vagaries of the sea. It will be followed by material testing that will include checking downlink and uplink speeds.

Weighing nearly 2,650 kg, the GSAT-7 satellite was launched in August 2013 for the exclusive use of the Navy and it provides seamless communication with its 3,500-km wide footprint across the Indian Ocean. It was the first military communication satellite developed by the Indian Space Research Organisation for the defence forces. It has allowed the Navy to monitor the sea better.

<http://www.indiandefensenews.in/2022/07/navy-warships-to-get-indigenous-satcom.html>

THE ECONOMIC TIMES

Sat, 09 Jul 2022

Defence Minister Rajnath Singh to Launch P17A Stealth Frigate on July 15

Strengthening the maritime capabilities of the Indian Navy, the second P17A stealth frigate built by warship maker Garden Reach Shipbuilders and Engineers (GRSE) will be launched by Defence Minister Rajnath Singh on July 15, a senior official said here on Saturday. The state-of-the-art ship will be fitted with the latest gadgets and undergo extensive trials by GRSE, which was contracted to build three stealth frigates under Project 17A, before being handed over to the Indian Navy for commissioning into service. "Defence Minister Rajnath Singh will launch the ship on July 15 at the GRSE Main Complex here on the bank of Hooghly river," the GRSE official told journalists. The warship is in the final stages of construction and is undergoing paint shop work.

The first P17A frigate built by GRSE was launched in December 2020 by Madhulika Rawat, the wife of then Chief of Defence Staff General Bipin Rawat. P17A ships are guided-missile frigates, each of which is 149 metres long with a displacement of approximately 6,670 tonnes and a speed of 28 knots, the official said. The Navy had placed orders for seven stealth frigates, four of which went to Mazagon Dock Ltd (MDL) and three to GRSE. The Rs 19,294-crore contract for construction of the three stealth frigates under Project 17A is the largest-ever order for GRSE, the official said.

The Kolkata-based defence PSU has an order book of around Rs 24,000 crore at present, he said. Though GRSE has other production activities like a diesel engine plant in Ranchi and bailey bridge construction, nearly 95 per cent of its revenues are generated from shipbuilding, the official said. The company at present is working on six projects, comprising the construction of 23 ships that include one passenger ship for Guyana and six patrol vessels for Bangladesh, he said.

<https://economictimes.indiatimes.com/news/defence/defence-minister-rajnath-singh-to-launch-p17a-stealth-frigate-on-july-15/articleshow/92772291.cms?from=mdr>



Sat, 09 Jul 2022

India's First 'Production' Tejas MK-1A Made a Secret Maiden Flight: Report

Indian authorities have announced that the first prototype of the TEJAS MK-1A, which is actually the planned mass-production version of the TEJAS and the basis for all others, has secretly made its maiden flight. The Indian Ministry of Defence reported that Hindustan Aeronautics Limited [HAL] conducted the test flight in an area near their production facility reports an international internet defence platform. HAL first upgraded the aircraft with serial production number SP-25 to MK-1A level which was at the level of TEJAS MK-1. The SP-25 will act as a test platform for the entire production line of the MK-1A version and will undergo certification tests over the next 30 months.

After completion of tests, deliveries of the TEJAS MK-1A will begin from March 2024. The delivery of 83 aircraft ordered for the Indian Air Force is scheduled to be completed in 2029. TEJAS MK-1A is the best-developed version of TEJAS MK-1 which reached full operational capability [FOC] in 2020. MK-1A is equipped with Israeli Elta EL/M-2052 AESA radar or Indian Uttam AESA radar, a self-defence system, radar receiver warning, and an external muting unit. The MK-1A will have a lower weight compared to the MK-1. One of the most important changes made compared to the MK-1 is that the Indian-made Astra 1 and Astra-2 Beyond Visual Range Air-Air Missiles [AAM] will be used in the MK-1A. Currently, only MK-1 FOCs can fire Derby Oversight Air-Air Missiles.

The Export Potential of TEJAS

India bought single-engine TEJAS fighter jets totalling \$4.5B India takes major steps in exporting TEJAS aircraft. India's largest export customer is expected to be Egypt. According to Indian sources, India has recently submitted a proposal to Egypt to open a mass production facility for Dhruv and LCH helicopters in Egypt, along with TEJAS MK-1A aircraft. In line with this offer, the Egyptian authorities are expected to visit HAL's facilities soon. Egyptian authorities announced plans to purchase 70 TEJAS MK-1A aircraft at the 2021 Dubai Air Show. The TEJAS is also competing with the TAI-developed HURJET [Turkey] in the Malaysian LIFT/LCA tender. India, which is offering TEJAS MK-1A aircraft to Malaysia, allows Malaysia only "depot-level support". However, Malaysia wants the 18 light attack aircraft to be manufactured with at least 30% Malaysian parts.

<http://www.indiandefensenews.in/2022/07/indias-first-production-tejas-mk-1a.html>



Mon, 11 Jul 2022

IAF'S Older Generation MI-17 Helicopters in for Major Upgrade

The IAF reportedly operates over 220 Mi-17 series helicopters extensively used for tactical missions. The IAF's older generation Mi-17 medium lift helicopters are in for a major upgrade, with plans being firmed up on retrofitting them with advanced avionics and electronic warfare suits. Under the project, 86 helicopters will be modified, which includes 54 Mi-17 and 32 Mi-17 1V variants. The works will be outsourced to the industry and undertaken at the IAF establishments in Chandigarh, Guwahati and Yehalanka.

“The upgrade is aimed to facilitate Mi-17 and Mi-17 1V helicopters with state-of-the-art and advanced electronic warfare and surveillance equipment. The modification work comprises fitment of 14 systems on Mi-17 and MI-17 1V each. Further, there are about 41 mechanical and 67 electrical installations for MI-17 and 46 mechanical and 73 electrical installations for MI-17 1V,” a request for proposal issued by the IAF on July 9 states. The IAF reportedly operates over 220 Mi-17 series helicopters that form the backbone of its vertical lift component which are extensively used for tactical missions such as troops transport, assault, special operations, ferrying and air dropping supplies in high altitude areas, search and rescue and disaster management.

These began entering service in 1991 and gradually replaced the earlier Mi-8. In 2001, 40 of the more powerful 1V variants were procured. In 2012, the IAF began inducting the advanced V5 version after assembling them at Chandigarh, of which over a 100 are reported to be in service. The move to upgrade the older versions comes in the backdrop of a recent initiative by the IAF to involve the industry in the overhaul of the Mi-17 V5 in view of its limited in-house capability. The modifications listed out for the Mi-17 involves removal of some existing avionics, electronic systems and navigation aids and replacing them with smart multi-function displays, weather radar, traffic collision and avoidance system and air data systems.

The new electronic warfare suite to be installed on both types includes a radar warning receiver, missile approach warning system and a flare and chaff dispensing system as well as an identify friend and foe system. The existing GPS will be replaced by GPS-GLONASS, a Russian navigation system, along with a tactical air navigation system, instrument landing system and omni-directional radio navigation aid. The modification project is expected to be complete in about four years, with 24 helicopters being upgraded in a year. The IAF has earlier carried out various modifications on the Mi-17 to meet specific operational requirements.

<http://www.indiandefensenews.in/2022/07/iafs-older-generation-mi-17-helicopters.html>



Sat, 09 Jul 2022

How IAF Swung into Action after a Chinese Jet Flew Near LAC in Ladakh Sector

The Chinese People's Liberation Army Air Force (PLAAF) flew its aircraft close to the Indian positions at one of the friction points at the Line of Actual Control (LAC) in eastern Ladakh in the last week of June, it has been learnt. In response, the Indian Air Force activated its assets as per standard operating procedures. The aircraft, which flew near the Indian position early morning at 4 am, was detected by the men on ground and Indian radars. This led to the Indian Air Force activating its assets for any eventuality. This incident happened as the Chinese military is carrying out exercises involving its fighter jets and other assets, including the Russian S-400 air defence system near the Ladakh sector.

The Indian Air Force responded swiftly as per standard operating procedures. The incident took place at around 4 am on one of the days in the last week of June and after the aircraft was spotted by men on ground and was also picked up by indigenous radars deployed in the border area, sources said.

<http://www.indiandefensenews.in/2022/07/how-iaf-swung-into-action-after-chinese.html>



Sat, 09 Jul 2022

HAL, Safran Sign Pact to Create JV for Developing Helicopter Engines

The said company will be dedicated to the development, production, sales, and support of helicopter engines, and “one of its main objectives will be to meet the requirements of HAL and Ministry of Defence's future helicopters, including the 13-ton IMRH (Indian Multi-Role Helicopter)”. Hindustan Aeronautics Limited (HAL) announced on July 8 that it has signed a pact with Safran Helicopter Engines to create a new joint venture for the purpose of developing

helicopter engines. Through a Memorandum of Understanding (MoU) signed by HAL CMD R Madhavan and Safran CEO Franck Saudo, in the presence of Olivier Andries, Safran CEO, both partners agreed to extend their “long-lasting partnership by establishing a new aero-engine company in India”, Hindustan Aeronautics said in an exchange filing.

The said company will be dedicated to the development, production, sales and support of helicopter engines, the filing added, stating that “one of its main objectives will be to meet the requirements of HAL and Ministry of Defence's future helicopters, including the 13-ton IMRH (Indian Multi-Role Helicopter)”. The companies said in a statement: “This MoU demonstrates once again the commitment of both Safran Helicopter Engines and HAL to the Indian Government's vision of “Aatmanirbhar Bharat” or achieving self-reliance- particularly in defence technologies.” Commenting on the endeavour, Madhavan said: “Safran Helicopter Engines has been our valued partner for several decades. We now look forward to utilise this opportunity to leverage HAL's experience in manufacturing of more than 15 types of aircraft and helicopter engines to jointly co-develop and manufacture engine with immediate focus on IMRH and its naval variant the Deck Based Multi Role Helicopter (DBMRH). This partnership will involve and utilize the Indian Defence manufacturing ecosystem within India.”

“The creation of this new joint venture marks a turning point in our relationship with HAL and the Indian MoD with the development and production of a new generation of helicopter engine,” said Franck Saudo, CEO of Safran Helicopter Engines. Notably, HAL and Safran Helicopter Engines already have multiple partnerships, including the Shakti engine, which powers HAL-produced helicopters, including the Dhruv, Rudra, and the Light Combat Helicopter (LCH). The Ardiden 1 U variant also powers the new Light Utility Helicopter (LUH). More than 500 Shakti engines have already been produced jointly. Additionally, through the HE-MRO joint venture in Goa, HAL and Safran Helicopter Engines will also provide MRO (Maintenance, Repair and Overhaul) services for TM333 and Shakti engines in service with Indian Armed Forces. It will be operational by the end of 2023.

<http://www.indiandefensenews.in/2022/07/hal-safran-sign-pact-to-create-jv-for.html>



Sat, 09 Jul 2022

HAL, Safran Explore Opportunities to Assemble M88 Turbofan Engine

Under the terms of the MOU, HAL and SAFRAN Aircraft Engines intend to explore opportunities to assemble the SAFRAN M88 engine and manufacture components for the engine with HAL for additional batch of Rafale Aircraft for India and for any aircraft manufactured in India by HAL fitted with M88. The transfer of a significant amount of technology in the assembling/manufacturing programs is also contemplated. The MOU also encompasses collaboration between HAL and SAFRAN Aircraft Engines for indigenization programs relating to design and development of high thrust engines of 110 kN power and above with transfer of key technology in the framework of this development.

“We are looking forward to expanding our collaboration with HAL, by exploring opportunities in strategic areas”, said Jean-Paul Alary, Chief Executive Officer of Safran Aircraft Engines. “Broadly, we remain committed to supporting the “Make in India” policy through major investments, synergy, and high skilled job creation.” “SAFRAN is our key partner in respect of Engines in HA’Ls Helicopters like Chetak, Cheetal, Light Utility Helicopter, Light Combat Helicopter and Advanced Light Helicopter. HAL and SAFRAN have successfully co-developed ‘Shakti’ Engine for Advanced Light Helicopters and Light Combat Helicopter. We have manufactured more than 450 Shakti engines in India at HAL Engine Division in Bangalore, which is testimony of success of our collaboration. Both HAL and SAFRAN are keen to take this partnership to next level by exploring new avenues.

HAL and SAFRAN are interested in exploring opportunities for strategic business cooperation that leverage the complementary talents and capabilities of the Parties and support development of a robust ecosystem for aero-engines in India, consistent with the goals of the Government of India’s Make in India initiative”, said Mr R Madhavan, Chairman & Managing Director, HAL. Both companies also teamed up in 2005 to create an equally-owned joint venture in Bangalore which produces pipes for aero-engines. The MOU is significant as it will enable India to access very complex and niche technology mastered by very few countries and to build capability in the design and development of high thrust engines. Considering the country’s future requirement of fighter aircraft, this augurs well for self-reliance in the engine domain and also opens up possible opportunities for India to export.

SAFRAN is an international high-technology group, operating in the aviation (propulsion, equipment and interiors), defence and space markets. Its core purpose is to contribute to a safer, more sustainable world, where air transport is more environmentally friendly, comfortable and accessible. SAFRAN has a global presence, with 81,000 employees and holds, alone or in partnership, world or regional leadership positions in its core markets. SAFRAN Aircraft Engines designs, produces, sells, alone or in partnership, commercial and military aircraft engines offering world-class performance, reliability and environmental-friendliness. Through CFM International*, SAFRAN Aircraft Engines is the world's leading supplier of engines for short and medium haul commercial jets. (* CFM is a 50/50 joint company between SAFRAN Aircraft Engines and GE).

<http://www.indiandefensenews.in/2022/07/hal-safran-explore-opportunities-to.html>



Sun, 10 Jul 2022

BDL Contribution to Make in India Atmanirbhar in Defence is Commendable: Defence Minister

Defence Minister Rajnath Singh on Saturday said the contribution made by Bharat Dynamics Limited (BDL) to make India Atmanirbhar in Defence was commendable. The Defence Minister, who visited the BDL Bhanur Unit in Telangana, expressed happiness to note that the company was keeping itself future ready by upgrading its strategic infrastructure, as well as the skills of its human resources. The Union Minister wished the Management for achieving more laurels to

make the nation Atmanirbhar in the coming years. BDL CMD Commodore Siddharth Mishra said the BDL, under the Atmanirbhar Bharat mission initiated by the Government of India, has taken several measures to contribute to the realisation of a self-reliant India.

The manufacturing facilities being inaugurated today by DM, are among these measures taken up by BDL. The facilities meet international standards and have been completed in record time. He also stated that BDL products have high export potential and the Company has received leads for export from several countries. As an endeavour to contribute towards realisation of Atmanirbhar Bharat in Defence sector, BDL has set up a warhead manufacturing facility at its Bhanur Unit. With the setting up of this facility, BDL will be one more step towards self-reliance as the facility will be used both for its current as well as futuristic missiles.

An amount of Rs 44 crore has been invested by the company in setting up the facility, he added. Earlier, besides unveiling the statue of Mahatma Gandhi at BDL premises, the Defence Minister inaugurated the Warhead facility followed by virtual inauguration of RF (Radio Frequency) Seeker facility located at BDL, Kanchanbagh Unit, Central Storage facility at BDL Visakhapatnam Unit, which have been set up towards realisation of Atmanirbharta in Defence manufacturing by the Company, a BDL statement said. Rajnath also inaugurated virtually the infrastructure facilities (viz Multipurpose Community Hall, Gymnasium, Science Laboratories at Govt Junior College, nine additional class rooms at Zilla Parishad School, two additional class rooms at elementary school) in Military Madhavaram village, West Godavari District, Andhra Pradesh, which have been constructed by BDL, as part of Corporate Social Responsibility initiatives of the company.

<http://www.indiandefensenews.in/2022/07/bdl-contribution-to-make-in-india.html?m=1>



Sun, 10 Jul 2022

Army Aviation Augments Combat Power While Ageing Cheetah, Chetaks Await Replacement

The Army Aviation Corps is in the process of a major augmentation of its fire power with the induction of the indigenous Light Combat Helicopter (LCH) underway, and Apache attack helicopters from 2024 onwards. However, its fleet of ageing Cheetah and Chetak helicopters, which are a lifeline for high altitude areas, are in dire need of replacement. Of the 190 Cheetahs and Chetaks in service, around 134 helicopters or over 70% of them are over 30 years old.

“While combat potential has increased manifold and is on an upswing, reconnaissance and surveillance capabilities are going to take a hit unless induction of Ka-226T and indigenous Light Utility Helicopter (LUH) take place simultaneously to replace the ageing fleet,” a defence official said on condition of anonymity. The LUH, designed and developed by Hindustan Aeronautics Limited (HAL), has come up well, but it will take time for sufficient numbers to come in, the official stated. The Air Force is also scheduled to raise its first LCH squadron shortly. However, the deal with Russia for 200 Ka-226T utility helicopters has been stuck for several years over indigenisation issues and is now on the verge of cancellation with the

availability of the LUH and the global situation compounded by the war in Ukraine, two defence officials independently confirmed. The Indian Army and Indian Air Force (IAF) together have a requirement of over 400 helicopters of this class.

LCH squadron

On June 1, 2022, the Army raised its first LCH squadron at Bengaluru. “It will move to Eastern Command on completion next year,” the official stated adding that, in all, seven LCH units are planned, each having 10 helicopters for combat roles in the mountains. The Army has three Aviation Brigades at Leh, Missamari and Jodhpur. It operates around 145 indigenous Advanced Light Helicopters (ALH), 75 of which are the Rudra weaponised variants. Another 25 ALH Mk-III are on order and will be inducted within two years, another official said. The Cabinet Committee had sanctioned the procurement of 39 AH-64 Apache attack helicopters from the U.S. Following this, the IAF procured 22 Apaches under a deal signed in September 2015. The government has decided that any further Apache procurements would go to the Army. In line with this, India signed a deal for six more Apaches to cost around \$800 million in February 2020. “There is a delay in the deliveries of these due to the COVID pandemic. They are now scheduled to begin deliveries in early 2024,” the first official said.

In August 2021, Army Aviation got control of the Army’s Unmanned Aerial Vehicles (UAV), which were earlier under the Artillery. The Army has over 30 Herons UAVs procured from Israel and a major upgrade plan for weaponisation and facilitation of satellite communication for them at an estimated cost of over Rs. 6000 crore has been delayed, officials said. This is part of a comprehensive upgrade of all Israeli drones with the three Services that is in the works and estimated to cost Rs. 21,000 crore, officials stated. In addition, with the deal for armed Predator drones from the U.S. stuck, the Army is looking at procuring long range Hermes 900 UAVs from Israel, which are manufactured in India by Adani Group.

Ageing fleet

Army Aviation currently operates around 190 Cheetah, Chetak and Cheetal helicopters, with five of them, the oldest, being over 50 years old. A bulk of the fleet, close to 130 of the 190, are between 30 to 50 years old, an official in the know said. This fleet is the lifeline in transporting supplies and for evacuations in high altitude areas, including the Siachen glacier. In addition to the Army, the Navy and IAF too operate these helicopters. For instance, the IAF has around 120 Cheetah and Chetak helicopters, and around 18 of the more recent Cheetals. As reported by The Hindu earlier, the total technical life of these helicopters will start ending from 2023 onwards, which will only further exacerbate the existing deficiencies.

<https://www.thehindu.com/news/national/army-aviation-augments-combat-power-while-ageing-cheetah-chetaks-await-replacement/article65623822.ece>

India's Defence Exports Touch Rs 13,000 Cr, Private Sector Leads Way with Aerospace Manufacturing

India's defence exports touched a record Rs 13,000 crore in the 2021-2022 fiscal, said Defence Secretary Ajay Kumar Friday, with the private sector playing an important role in aerospace manufacturing — both manned and unmanned aircraft. "The total defence export in 2021-2022 stands at Rs 13,000 crore," Defence Secretary Kumar said, while speaking to a group of journalists at the South Block. Sanjay Jaju, additional secretary in the Department of Defence Production, said the increase in exports stood at "eight times" of what it was around five years ago. When asked what is the ratio of exports between government-owned defence public sector undertakings (PSU) and private firms, Kumar said while it stood at 10:90 earlier, it is at 30:70 currently.

Rs 35,000 crore export in next five years

Sources said the reason behind rise in defence PSU share from 10 per cent to 30 per cent is the nearly Rs 2,500 crore deal that India made with Philippines for the BrahMos missiles. Sources also said that a majority of the country's defence export is in the aerospace sector, where Indian firms have been manufacturing several parts, including fuselage for foreign companies. For example, all fuselages of American attack helicopter Apache sold across the world are now made in India by a joint venture between Boeing and Tata. Similarly, companies like Adani Defence and Lohia Group are making fuselages for several Israeli drones.

While India inked the high-profile BrahMos deal with the Philippines this year, the biggest beneficiary of India's defence exports in the last five years has been Myanmar. According to Stockholm International Peace Research Institute data on international arms transfer trends, roughly 50 per cent of India's defence exports from 2017 to 2021 were to Myanmar, followed by Sri Lanka at 25 per cent, and Armenia at 11 per cent. In 2020, the Narendra Modi government had set a target of Rs 35,000 crore (\$ 5 billion) export in aerospace, and defence goods and services in the next five years. This is part of the turnover of Rs 1.75 lakh crore (\$ 25 billion) in defence manufacturing by 2025 that the government is aiming to achieve.

<https://theprint.in/defence/indias-defence-exports-touch-rs-13000-cr-private-sector-leads-way-with-aerospace-manufacturing/>

India Defence Exports at Record Rs.13,000 Crore, US Biggest Importer

A top defence ministry said on Friday that India, in 2021-22, exported defence items and technology worth a record Rs. 13,000 crore, an impressive 54.1 per cent rise over the previous year. India's defence exports are chiefly to the United States, the Philippines and other countries in the South-East Asia, the Middle-East and Africa. Sanjay Jaju, Additional Secretary in the Department of Defence Production (DDP), told a press briefing, "In 2021-22, we have recorded Rs.13,000 crore of exports which is the highest ever exports number that we have recorded in defence." Sanjay Jaju also said that the exports in 2021-22 were almost eight times of what they were about five years ago.

India's defence exports were worth Rs. 8,434 crore in 2020-21, Rs.9,115 crore in 2019-20 and Rs.2,059 crore in 2015-16. "There has been good progress. Of course, two years of COVID-19 was a bit of a setback. But this year, we have been able to record this number (of Rs.13,000 crore)," Sanjay Jaju noted. He also said that defence exports registered a record Rs.13,000 crore with 70 per cent contribution coming from the private sector and the remaining 30 per cent from the public sector.

Sanjay Jaju also said that private sector companies dominate the defence exports market with a share of almost 90 per cent. At an event titled "Artificial Intelligence in Defence" on Monday, the defence ministry will reward a private sector organisation and another from the public sector that performed the best in defence exports, he said.

<https://www.livemint.com/news/india-defence-exports-at-record-rs-13-000-crore-us-biggest-importer-11657369829286.html>



Agnipath scheme complements IAF's long-term vision of 'lean & lethal' force: Air Chief Marshal

The Agnipath scheme complements the Indian Air Force's long-term vision to become a "lean and lethal" force with the best manpower and the new recruitment model will in no way reduce its operational capability, Air Chief Marshal V R Chaudhari said on Sunday. The Chief of Air Staff said the reform initiative will enable the IAF to meet all its national security mandate and the force envisaged its seamless implementation with a restructured training pattern that is contemporary, technology-based and tailor-made for its operational requirements.

Air Chief Marshal Chaudhari told PTI that 13 teams will take care of enrolment, employment, assessment and training of recruits within the four-year engagement period. He said any savings in pensions and other expenditures through the implementation of the scheme are only incidental and not the reason for initiating the reform. The Agnipath scheme furthers the IAF's manpower optimisation drive that has been ongoing for a decade wherein we have reviewed many human resource policies and organisational structures," he said. Nearly 7,50,000 candidates have registered for around 3,000 positions in the IAF under the new scheme. The scheme complements the IAF's "long-term vision of being a lean and lethal force with the best human resource as we strongly believe that the men and women behind the machine make all the difference when it matters," the Chief of Air Staff said.

The scheme, announced on June 14, seeks to recruit youths between the age bracket of 17-and-half years and 21 for only four years with a provision to retain 25 per cent of them for 15 more years. For 2022, the upper age limit has been extended to 23 years. Several parts of India witnessed violent protests last month against the scheme with the agitators demanding its rollback as the new model does not provide a job guarantee to 75 per cent of recruits. "With evolving technology, the basic requirements from an air warrior have also seen a qualitative shift. We feel that the youth of today brings along a different and much-required set of skills as well as adeptness with technology," he said.

Air Chief Marshal Chaudhari said the synergy of organisational requirements and the aspirations of the youth shall provide the IAF with an "ideal amalgam" to be an effective force in the future. "With a restructured training pattern that is contemporary, technology-based and tailor-made for our operational commitments, we envisage the implementation to be seamless," he said. The IAF chief noted that the need for transformation in the human resources in the services has been widely deliberated and steps have been taken to gradually address the recommendations of the Kargil Review Committee.

"This human resources transformation caters to the requirements of the impact of changing technology, the complexity of machines, automation and optimisation of resources including manpower of the IAF," he said. Describing the Agnipath scheme as a major "human resources transformation" for the armed forces, he said the IAF has already received an overwhelming response for this scheme. "The process of selection is in progress. We have formulated 13 teams for seamless enrolment, training, role, employment, assessment and training of Agniveers within the four-year engagement period," he said. "The HR transformation in no way reduces the operational capability that we possess. In fact, this would provide the armed forces with the advantage of attracting talent and engaging with the youth who are keen to serve the nation," the IAF chief said.

He said the "objective assessment" of Agniveers shall provide IAF with the best workforce. "In the long term, this scheme will benefit the individual, the Armed forces and the society as a whole," Air Chief Marshal Chaudhari said. "This scheme shall provide a balance to our forces by blending youth with experience and enable IAF to meet all its national security mandates," he added. "Our experience in modular training and 'just-in-time' training concepts have given us insightful knowledge to achieve the necessary skills for our air warriors," he said. The government has been maintaining that the Agnipath scheme aims to ensure a youthful profile of the armed forces, bring technically adept people and make them future-ready to deal with any challenges facing the nation.

Under the scheme, the three services are planning to recruit 46,000 soldiers this year. The youths to be recruited under the new scheme would be called 'Agniveer'. A major objective of the scheme is to bring down the average age of military personnel. The announcement of the new scheme came in the backdrop of recruitments into the military remaining stalled for over two years amid the coronavirus pandemic.

<https://www.financialexpress.com/defence/agnipath-scheme-complements-iafs-long-term-vision-of-lean-lethal-force-air-chief-marshal/2589182/?lite=1>



Sun, 10 Jul 2022

Agnipath is a New Path to Meritocracy, will Make Our Defence Forces Best in World After a Decade

As we advance in the coming decade, a new approach to nation building has to emerge. India needs to base its ecosystem on meritocracy as against continuing on the path of mediocrity. This is needed in all echelons of the government, be it at the Central or the State level. To ensure that the new approach of meritocracy emerges and becomes a national norm, we will have to revamp our educational system, our skill development and skill enhancement system and also the way we look towards jobs. While private sector has some mechanisms in place to weed out non-performers, the Governments have not entered this domain, despite there being existence of enabling mechanisms. It has resulted in a situation wherein a Government-run establishment or PSU-run establishment fails, while the same shines once it enters the private sector.

The defence forces are our last bastion of hope as well as our saviour on multiple counts, whether it is fighting the external aggressors or insurgency or extending a helping hand to the civil administration during calamities. To ensure that the defence forces are able to execute the assigned tasks in sync with the rising challenges, human resources of the defence forces have to be given a new look altogether. A human resource based on absolute merit from each and every part of the nation is the need of the hour for an empowered soldier to join the defence forces. While the current method of recruitment does allow the entry of the best youth out of the available lot of youth who volunteer to join the defence forces, however, once they join, there is a tendency to get comfortable with the surety of a permanent job followed by a handsome pension. Of course, he/she is willing to lay down his/her life and gives the best and performs to the best of the ability.

Despite being emotionally involved with the organisation and the nation, not all of them are able to enhance their qualitative edge while in the service, more so, at a time when technical growth in warfare is substantial. Knowingly or unknowingly, a state of mediocrity sets in the organisation, resulting in repetitive training, but still leaving large gaps in the desired capability. This state results in heavy burden on officers and compromises our ability to lead small team operations both during peace and war when these recruits become Non-Commissioned Officers

(NCOs), whereas this should not be the case as these recruits need to form the backbone of a future-ready defence force. Not only that, a majority of the soldiers find it pretty difficult to handle and operate technologically advanced equipment as well as lack the ability to function in a networked environment, an emerging need wherein future wars are transiting from the kinetic domain to the hybrid domain of warfare.

Agnipath scheme is an excellent initiative which conceptually strikes at mediocrity in the defence forces, wherein the best of the available in the country are recruited as Agniveers initially and then trained for four years, including on the job training with units posted. An objective and transparent criteria thereafter will select only the very best 25% to be retained and thus a major boost is given to meritocracy which is the crying need of the hour. While meritocracy is needed everywhere, it is of the most critical need in the defence forces as in war there are no runner-ups and only those who are at the ace game must be its part. While the current selection system for officers looks at this issue, albeit only to some extent and requires further refinement, it is almost negligible amongst personnel below officers rank (PBOR).

It is the first time that merit has been given due attention both at the entry level as Agniveer and thereafter a major merit surge, wherein only 25% top performing recruits are taken ahead making transformational changes in the defence forces. While the scheme may have certain challenges in other domains and hopefully all those will get addressed in due course of time, but on the front of meritocracy, it is a master stroke and a much-needed reform. Once we look at our defence forces after a decade, we will be the best in the world on all counts.

<https://www.news18.com/news/opinion/agnipath-is-a-new-path-to-meritocracy-will-make-our-defence-forces-best-in-world-after-a-decade-5527693.html>

THE ECONOMIC TIMES

Sun, 10 Jul 2022

Army Focuses on Imparting Mandarin Language Training to its Personnel

In the backdrop of the lingering border row in eastern Ladakh, the Army has upscaled its efforts to impart Chinese language training to its personnel as part of the overall strategy to ramp up surveillance along the over 3,400-km Line of Actual Control. A slew of measures has been undertaken to improve its in-house Mandarin expertise with an aim to empower junior and senior commanders to engage with Chinese military personnel as and when the situation demands, sources in the security establishment said on Sunday. On Saturday, the Army issued a notification for recruiting Mandarin language experts into the Territorial Army. The source said various Mandarin language courses are being run at the language schools at the Northern, Eastern and Central Commands. The Indian Army is also using Artificial Intelligence-based solutions for the translation of various scripts or literature from the Mandarin language.

"With improved Mandarin skills, Indian Army personnel will be better empowered to convey their points in a much more cogent manner," said one of the sources. As per inputs, the Indian

Army now has a significant pool of Mandarin-qualified personnel drawn from all ranks, including officers and junior commissioned officers (JCOs). "With recalibration of the Indian Army's strategic outlook towards Northern borders, the Indian Army has upscaled its Chinese language training and has synergistically enmeshed appropriate scaling of Chinese linguists within its overall strategy," said another source. The sources said the Chinese language experts are a functional requirement at the tactical level and are required for providing analysis at the operational and strategic level while catering for futuristic needs.

They said an increasing number of Mandarin experts are required for better exchange of viewpoints and understanding of the Chinese PLA's version of their activities during various interactions such as Corps Commander level talks, flag meetings, joint exercises, and Border Personnel Meetings (BPMs) etc. The Indian Army has already concluded a Memorandum of Understanding (MoUs) with Rashtriya Raksha University (RRU), Central University of Gujarat (CUG) and Shiv Nadar University (SNU) for imparting Mandarin proficiency to its personnel. Simultaneously, in-house efforts include increasing the vacancies at the Army's Training School at Pachamari and the School of Foreign Languages, Delhi. The sources said proficiency level testing of trained soldiers is being conducted through civilian institutes like Langma School of Languages in Delhi to assess the competence level of linguists as per international standards.

The armed forces have taken a series of measures in the last two years to increase overall surveillance along the LAC following the military standoff in eastern Ladakh. The border face-off between the Indian and Chinese militaries erupted on May 5, 2020, following a violent clash in the Pangong lake areas. The standoff escalated after the Galwan Valley clashes on June 15, 2020. Both sides gradually enhanced their deployment by rushing in tens of thousands of soldiers as well as heavy weaponry. As a result of a series of military and diplomatic talks, the two sides completed the disengagement process last year in the north and south banks of the Pangong lake and in the Gogra area. Each side currently has around 50,000 to 60,000 troops along the LAC in the sensitive sector.

<https://economictimes.indiatimes.com/news/defence/army-focuses-on-imparting-mandarin-language-training-to-its-personnel/articleshow/92785104.cms?from=mdr>



Sun, 10 Jul 2022

After Putting American Predator Drone Deal on Hold, India Eyeing Indo-Israeli Armed UAV

The Central government is now considering the acquisition of an indigenous long-range unmanned aerial vehicle after putting the American predator drone deal on hold due to a push for the Make in India initiative. Armed with strike capabilities, the Indo-Israeli long-range armed UAV is being developed by a private Indian firm in partnership with an Israeli defence manufacturer. The American predator drone deal was put on hold and a committee headed by a Lieutenant General was asked to review the entire deal which was coming out to be very expensive at around USD 4.5 billion for 30 drones. "With the deal not moving ahead and almost

all import cases being put on hold, we are now considering an armed UAV developed by an Indian private defence firm along with an Israeli defence manufacturer,” top government sources told ANI.

India was planning to acquire 30 American Predator high-altitude long-endurance drones equipped with strike capability, including missiles, which were to be equally distributed among the three services. All three services have requirements for these armed drones which can be used for surveillance as well as attacking enemy targets from standoff distances. Almost all the defence deals planned through the import route had either been scrapped or put on hold by the Defence Ministry on the directions of the Prime Minister’s Office in favour of indigenous weapon systems.

India currently operating two predator drones which were hired on lease from an American firm and they have been helping the Navy to keep track of activities in the Indian Ocean Region. India has acquired 12 American P-8I anti-submarine warfare and surveillance planes for keeping an eye on the IOR and was working on getting six more planes. However, after the government’s instructions on import programmes, the government would soon decide on the project too shortly.

<http://www.indiandefensenews.in/2022/07/after-putting-american-predator-drone.html>



Fri, 08 Jul 2022

Dassault Rafale vs Boeing F/A-18 Super Hornet - Which is the Best Fighter Jet?

A comparison of the French-made Dassault Rafale and American's Boeing F/A-18 to understand how they stack against each other for the Indian Air Force and Indian Navy? The Indian Navy is looking to replace ageing MiG-29k naval fighter jets. Navy recently conducted trials for Rafale M and F/A-18 E/F fighter jets. Both the jets are also in competition for the Indian Air Force. After the Indian Air Force getting its hands on modern fighter jets like TEJAS, Rafale, and placing another massive order of more than 100 fighter jets to replace the ageing fleet, now the Indian Navy is looking for an overhaul. The Navy requires a new batch of modern fighter aircraft to operate from its aircraft carriers. The Indian Navy had initiated the process to acquire 57 multi-role combat aircraft for its aircraft carrier around four years ago. However, they will induct about 30 advance fighter jets in the fleet and replace the ageing Mig-29k, the naval version of the jet.

Recently, the navy carried out trials with the Dassault Rafale M, which is a French-made 4.5 gen fighter jet already in service with the IAF and also US-made Boeing F/A-18 Super Hornet, to check the operational capabilities of these jets on aircraft carriers. Both the jets get Air Force as well as Naval versions. The Indian Navy is also working on the TEDBF program which is the Twin Engine Deck Based Fighter program for made-in-India fighter jets based on the HAL Tejas LCA. Since these jets will take time to develop and will eventually replace foreign fighter jets in the fleet, Navy needs some modern machines in the interim to replace the Russian MIGs. Here

we compare the French Rafale and American F-18 to understand how they stack against each other for the Indian forces?

Dassault Rafale Marine

Rafale is a French word meaning "gust of wind" and is a twin-engine multirole 4.5 gen fighter aircraft manufactured and designed by Dassault Aviation. The Indian Air Force has placed a massive order to induct 36 Rafale jets to form two Squadrons, one in North India and another in South India. The Rafale Marine is the Naval version of the Rafale fighter jets with similar configuration. The Dassault Rafale has a delta wing design and is capable of higher G-forces as much as 11G and is available in both single and dual seating cabin configurations. The Rafale is 15.27 metre long and a wingspan of 10.80 metre. The Rafale has GIAT 30M/719B cannon mounted on it with the capability of controlled 0.5 or 1 second bursts at 2,500 RPM. Rafale is equipped with a primary missile as the multi-target, fire-and-forget, air to air MBDA MICA missile. In BVR(Beyond Visual Range) air-to-air missile, Rafale has MBDA Meteor.

Boeing F/A-18 E/F Super Hornet

The Navy's F/A-18E Super Hornet, developed by Boeing Company has a 20% larger airframe, with 41% more range and improved General Electric F414 engines (an upgrade over the Hornet's F404), providing 35% more thrust. Just so you know, Boeing has been pitching the F-18 to the Indian Air Force as well. The one for the Navy is the Naval version of the F-18 called the F/A-18 E/F Super Hornet. The F-18 Super Hornet has Mach 1.8 speed, similar to the Rafale thanks to the GE sourced dual engines and is equipped with M61A1 Vulcan rotating cannon that can fire 6,000 rounds per minute. Super Hornet has semi-active radar homing Air Intercept Missile (AIM-7 Sparrow) missile. In BVR (Beyond Visual Range) air-to-air missile, Super Hornet has AIM-120 AMRAAM.

<http://www.indiandefensenews.in/2022/07/dassault-rafale-vs-boeing-fa-18-super.html>



Mon, 11 Jul 2022

Beijing Steadily Increases Combat Aircraft Flying into Taiwan's Air Defence Identification Zone

China has stepped up its incursions activities into Taiwan's air defence identification zone (ADIZ) by sending its combat planes to the region. According to Taiwan's defence ministry, the People's Liberation Army conducted 555 sorties in the first six months of the year, of which 398 involved combat aircraft, compared with 187 in the same period last year. Defence analysts say the mainland's forces are developing their ability to control the skies over a longer range as part of preparations for a possible conflict. China sent 29 warplanes into Taiwan's ADIZ in late June this year, according to media reports, marking the third-largest fly-by in the country this year.

The warplanes including 17 fighter jets, six bombers and other supporting aircraft, entered the island's air defence identification zone, The Star newspaper reported citing the island's defence

ministry. While the fly-bys were generally seen as one of Beijing's tactics to intimidate the island, the increased use of combat planes was worth noting, observers said. But in recent months, the PLA had stepped up training exercises with its combat aircraft in the airspace near Taiwan and further south to the Bashi Channel, an important gateway to the western Pacific, Wang said. Beijing has been sending patrols into Taiwan's ADIZ on almost a daily basis since late 2020 to ramp up pressure on the island. China had breached Taiwan's air defence identification zone in January also when 35 of its military aircraft, including J-16s and one H-6 bomber joined four other support planes entered its ADIZ.

At the end of May, 22 fighter jets joined eight other support planes in breaching Taiwan's ADIZ area. The issue of Taiwan has been at the forefront of US-China relations in recent months. Tensions between Washington, which is committed to supporting the island's self-defence, and Beijing over Taiwan were in the open earlier this month when their respective defence chiefs met at the Shangri-La Dialogue defence conference in Singapore. Taiwan and mainland China have been governed separately since the defeated Nationalists retreated to the island at the end of the Chinese civil war more than 70 years ago. But China's ruling Chinese Communist Party (CCP) views the self-ruled island as part of its territory -- despite having never controlled it.

Beijing has not ruled out military force to take Taiwan and has kept the pressure on the democratic island over the past few years with frequent warplane flights into the island's ADIZ. An ADIZ is unilaterally imposed and distinct from sovereign airspace, which is defined under international law as extending 12 nautical miles from a territory's shoreline.

<http://www.indiandefensenews.in/2022/07/beijing-steadily-increases-combat.html?m=1>



Sun, 10 Jul 2022

Russia Says it Destroyed Two British-Supplied Anti-Ship Missile Systems

Russia's defence ministry said in a briefing on Friday that Russian forces had destroyed two British-supplied Harpoon anti-ship missile systems in Ukraine's Odesa region overnight. Reuters was unable to independently verify the claim. The US-designed missile systems are one of several weapons supplied to Ukraine by NATO countries since Russia sent its armed forces into the country on Feb 24.

<http://www.indiandefensenews.in/2022/07/russia-says-it-destroyed-two-british.html>

Sun, 10 Jul 2022

With China on Mind, France, Australia, India will Enhance Security Cooperation

France and Australia have decided to ramp up security and strategic cooperation with India in the Indo-Pacific and Indian Ocean Region (IOR) in what is being viewed as a big and effective strategy of the three nations to deal with challenges resulting from China's aggressive agenda. On the sidelines of the G-20 Foreign Ministers' Meeting in Bali, External Affairs Minister S. Jaishankar and his counterpart from France, Catherine Colonna held bilateral talks during which this issue came up, The Sunday Guardian has learnt from top diplomatic sources who were present in the Indonesian city.

"Jaishankar and the French Foreign Minister focused on various aspects of bilateral ties as well as ways to deal with major global challenges in the face of geopolitical turmoil," sources said. The global challenges that the two ministers discussed also included China's challenge in the Indo-Pacific and Indian Ocean Region, sources added. Top sources told The Sunday Guardian that the ministers stressed on the need to enhance cooperation in the security and strategic fields to tackle whatever challenges are there in the regions. With Australian Prime Minister Anthony Albanese and French President Emmanuel Macron having given their nod already for stepping up cooperation with India in IOR and Indo-Pacific in revival of the trilateral, the foreign ministers discussed the ways on how to go about it, sources said.

There will be more high-level meetings at the level of defence and foreign policy officials in the near future to finalise the modalities about how to increase joint presence in the Indo-Pacific, sources said. Macron and Albanese have agreed to mend ties and leave behind the differences over AUKUS in what works to the advantage of India vis-à-vis the growing challenges from China in the Indo-Pacific. Needless to say, both France and Australia are the key partners of India in the Indo-Pacific region. "If the France, Australia and India trilateral is revived, which is a possibility now, it will be of a great help to India in IOR amid the worries over China's aggressive agenda," officials say. The Australian PM's recent visit to Paris paved the way for it. The EAM and his French counterpart also discussed it to clear the ways, added the officials. In fact, the trilateral had been put on the backburner after Australia's decision to scrap the submarine deal and launch AUKUS to acquire nuclear-powered submarines with US and UK assistance. Paris was said to be upset over the development. India was also closely watching the development when Albanese visited France to meet Macron. The Australian Prime Minister had welcomed what he called was a "new start" in relations with France.

"Australia and France will shape a new defence relationship and strengthen our collaboration and exchange on shared security interests, including through operational engagement and intelligence sharing." This was said in the joint statement issued following talks between the leaders of Australia and France. "We are determined to be active in regional fora and to enhance security cooperation with Pacific countries, in particular on maritime surveillance with regional agencies, and in the Indian Ocean, including in partnership with India." This was a welcome development

for India, which was waiting for the two countries to come forward and join hands with New Delhi to enhance cooperation in the Indian Ocean. Sources said that the French FM shared with the EAM the views expressed in the joint statement.

France and Australia will support each other's deployments and conduct more joint maritime activities in support of the rules-based global order, in what signals their intense strategic cooperation with India in the ocean region. According to sources, the stage is now set for India to restart its trilateral dialogue with the two nations. The focus will be on maritime security in the Indian Ocean Region, where China has been flexing its muscles violating all international laws and ignoring the protocols of the global order. S. Jaishankar and his counterparts from Australia and France held the first trilateral dialogue in May 2012. Then, they had committed to working together to achieve a free, open, inclusive and rules-based Indo-Pacific. But the second round of talks among the ministers could not take place so far as the relations between Australia and France plummeted. With the ties between Canberra and Paris back on track, India has a reason to be happy as the trilateral will be functional again and the joint strategic cooperation among the three countries will be good for New Delhi's plan to counter China.

<http://www.indiandefensenews.in/2022/07/with-china-on-mind-france-australia.html>



Sun, 10 Jul 2022

Russian Navy Receives 1st Submarine Carrying Nuclear-Powered Drones

A “doomsday” submarine with nuclear torpedoes “the size of a school bus” that are so potent they may trigger a “radioactive tsunami” was handed to the Russian Navy yesterday. According to US Naval Institute News, the 184m (604ft), 30,000-ton Belgorod submarine is the biggest one to be built in 30 years and can accommodate six 80ft long Poseidon nuclear torpedo drones that are equipped with a 100-megaton nuclear warhead. These autonomous weapons are designed to inflict “devastating” widespread radioactive contamination similar to a cobalt bomb and might cause a wave up to 500m (1,650ft) high.

According to a leaked Russian paper that the BBC translated in 2015, Poseidon torpedoes are intended to “destroy” economically significant coastal cities by “producing broad regions of radioactive pollution, leaving them unsuitable for military, economic, or other activity for a long period.” The ship is believed to be equipped with up to six nuclear-armed torpedoes, each capable of carrying warheads with an explosive power of up to 100 megatons – which could cause radioactive devastation if used against coastal cities. The 80ft long Poseidon torpedo drones can carry a warhead up to 100 megatons according to leaked reports from 2015. These unmanned weapons could produce a tsunami up to 500m (1,650ft) high and are designed to cause widespread radioactive contamination akin to a cobalt bomb.

The weapon's hundreds of mile range were also disclosed.

According to Russian military analysts, the 2015 leak was a warning to the US since a warhead of this magnitude would completely demolish the US coast with a massive wave and radioactive fallout. State-run Russian news agency TASS announced in May 2020 that the payload may be up to two megatons with an operation depth of more than 1 kilometre to “destroy enemy naval bases.” At the submarine’s delivery ceremony yesterday, July 8, Russian Navy Commander-in-Chief Nikolay Tevmenov stated that it will be used for “research and scientific excursions.” “The submarine Belgorod gives new prospects for Russia in holding numerous research studies and aids in carrying out diverse scientific expeditions and rescue operations in distant sections of the World Ocean,” he stated.

The vessel was yesterday handed to the Severodvinsk headquarters of the Russian Navy’s Northern Fleet after being constructed at the Sevmash Shipyard, the country’s largest shipyard. The Russian Navy received the ship after it allegedly started its maiden sea testing last year under the cover of the Main Directorate of Undersea Research following threats to scuttle British and American warships in the Black Sea. The Belgorod is an Oscar-II missile cruise submarine, which is modified to conduct covert missions and carry large Poseidon nuclear torpedoes ‘On July 8, 2022, a special ceremony was held at the Sevmash Production Association (part of the United Shipbuilding Corporation), Russia’s largest shipbuilding enterprise, to sign a certificate of the acceptance/delivery of the Belgorod research submarine to the Navy,’ the Shipyard said in a statement reported by TASS.

The Russian Navy said in January that they will get the “special-purpose sub with nuclear-armed drones” on July 31 of this year, three weeks earlier than expected. While the navy will run it, President Vladimir Putin will decide on its duties. According to defence expert HI Sutton, who called the Belgorod submarine a “doomsday submarine,” the Belgorod sub was spotted on the surface of the White Sea on June 26 with the second-largest sub in the world, the Dmitry Donskoi. These submarines are enormous, bigger than anything in the West, even the Ohio Class of the US Navy, he declared. One of the earliest pictures of the 604ft Belgorod, the largest submarine of its kind of the last 30 years. It was delivered to the Russian Navy yesterday, July 8, after years of testing

The submarine may also be equipped with “unique” drones built for clandestine tasks like disrupting underwater phone and internet connections, which would be extremely damaging to Western economies. The fleet of unmanned underwater vehicles (UUVs), according to Dr. Sidharth Kaushal from the Royal United Services Institute, may have strategic importance for President Putin, he told The Mail on Sunday last year. The Belgorod is big enough to serve as a mother ship for a special group of smaller ships with deep-diving skills and the capacity to tamper with underwater infrastructure, according to Dr. Kaushal.

‘It’s well equipped for sabotage and clandestine operations. Its Poseidon nuclear torpedoes could also be a very effective means of attacking an aircraft carrier in wartime – one against which at present no defence exists. ‘The Belgorod will not be part of the Russian Navy per se, meaning its covert and aggressive actions will effectively be deniable.‘The submarine appears set up for non-attributable Special Forces warfare with its commanders answering directly to the [political] leadership and bypassing the Russian naval command structure.’

<http://www.indiandefensenews.in/2022/07/russian-navy-receives-1st-submarine.html>

With eye on Indian Ocean, China and Pakistan kick off naval, air drills to jointly deal with maritime threats

All-weather friends China and Pakistan on Sunday kicked off their 'Sea Guardians-2' drills off the Shanghai coast by deploying their new high-tech naval ships and fighter jets to "jointly deal with maritime security threats," as their navies stepped up cooperation in India's backyard, the Indian Ocean. The Chinese People's Liberation Army (PLA) Navy and the Pakistan Navy, will hold the joint naval exercise in maritime and aerial spaces off Shanghai in mid-July, Captain Liu Wensheng, a spokesperson for the PLA Navy, said in a statement. The two navies held an opening ceremony for the second edition of the Sea Guardian drills on Sunday, official media here reported.

The exercise is a "normal arrangement according to an annual schedule, and it is not aimed at a third party," Liu said. The PLA Eastern Theatre Command Navy sent the frigate Xiangtan, the corvette Shuozhou, the comprehensive supply ship Qiandaohu, a submarine, an early warning aircraft, two fighter jets and a helicopter for the drill while the Pakistan Navy's frigate Taimur joined the exercise, state-run Global Times reported. Taimur is the second of four powerful Type 054A/P frigates built by China. It was delivered to the Pakistan Navy in Shanghai on June 23. The first ship in the Type 054A/P-class, the Tughril, joined the Pakistan Navy Fleet in January, according to the daily's report.

Themed "jointly dealing with maritime security threats," the exercise will feature training courses including the joint strike against maritime targets, joint tactical manoeuvring, joint anti-submarine warfare and joint support for damaged vessels, Liu said. The drill's goal is to enhance defence cooperation, conduct professional and technical exchanges, deepen traditional friendship between the two countries and the two navies, and promote the development of the all-weather strategic cooperative partnership between China and Pakistan, Liu said. China and Pakistan face non-traditional security threats including piracy and maritime terrorists in regions like the Indian Ocean, so it has become necessary that the two countries enhance cooperation in these aspects, Wei Dongxu, a Chinese military expert, told the Global Times.

The two countries also need to jointly demonstrate their capabilities in safeguarding strategic sea lanes that transport energy and goods, Wei said. The first edition of the 'Sea Guardians' exercise was held in January 2020 in the North Arabian Sea off Karachi. The Arabian Sea region is strategically important as major Indian ports including Kandla, Okha, Mumbai, Mormugao, New Mangalore and Kochi are located there. The Arabian sea provides entry to the Indian Ocean where China currently has built a logistics base at Djibouti in the Horn of Africa. Observers say Sino-Pakistan military cooperation in recent years focussed more on the Navy as China gradually stepped up its naval presence in India's backyard, the Indian Ocean. Besides building its first military base in Djibouti in the Horn of Africa in the Indian Ocean, China has acquired Pakistan's Gwadar port in the Arabian Sea which connects with China's Xinjiang province by land in the USD 60 billion China Pakistan Economic Corridor (CPEC).

China is also developing Sri Lanka's Hambantota port after it acquired it on 99 years lease. The modernisation of the Pakistan Navy coupled with the acquisition of the naval bases was expected to shore up the Chinese Navy's presence in the Indian Ocean and the Arabian Sea. The newly delivered Taimur's participation in the drills indicates its high technical maturity, the success in the Pakistani sailors' training as well as the rich experience accumulated by the Tughril, Chinese analysts said. Zhang Junshe, a senior research fellow at the Chinese People's Liberation Army (PLA) Naval Military Studies Research Institute, told the Global Times that the Type 054A, on which the Type 054A/P is based, is China's most advanced frigate. Besides acquiring four modern naval frigates from China, Pakistan will also be getting eight Chinese submarines as part of efforts to the modernisation of the Pakistan Navy, its Chief Admiral M Amjad Khan Niazi told Chinese media earlier. The Pakistan Navy has contracted the construction of four Type 054A/P frigates from China in 2017.

<https://economictimes.indiatimes.com/news/defence/with-eye-on-indian-ocean-china-and-pakistan-kick-off-naval-air-drills-to-jointly-deal-with-maritime-threats/articleshow/92786642.cms>

Science & Technology News



Sun, 10 Jul 2022

Imaging Satellites will now be Owned by Private Entities as Well, says ISRO Chairman Dr S Somanath

Under the Space Policy 2022, Imaging satellites will now be owned by private entities unlike before, when they were owned only by ISRO and Defence, said Indian Space Research Organisation (ISRO) Chairman Dr S Somanath on Saturday. He further informed that the small satellite launch vehicle (SSLV) will be launched by month's end or at the beginning of August. While talking to media persons in Coimbatore, he said, "Government wants to reform the space sector. Space Policy 2022 has been prepared in which we allow private entities to own and operate satellites. So far, imaging satellites are only owned by ISRO and Defence but now Private entities can also own them."

With regard to investment, it will be 100 per cent for Indian companies. FDI will be regulated and government permission is required if it's over 70 per cent, he stated. Private entities can own, develop and launch rockets also. They can build a launch pad also. Our goal is to create new avenues in the space sector. "There are many missions planned for this year. We will launch a recently developed small satellite launch vehicle (SSLV) by this month-end or at the beginning of August... Test and trials are on for the Gaganyaan program," he added.

<http://www.indiandefensenews.in/2022/07/imaging-satellites-will-now-be-owned-by.html?m=1>

Sun, 10 Jul 2022

ISRO Plans Gaganyaan Test Demonstration by December

The Indian Space Research Organisation (ISRO) has planned to launch the Gaganyaan test vehicle for a crew abort mission this year, its Chairman S. Somanath said here on Saturday. “Several tests are under way for crew module, crew escape system, electronics, intelligence, software at many centres. We are developing a crew module, a training module, astronaut training, display systems, crew training facilities and simulators. This year, we aim to demonstrate a crew escape system, which is the first step. Next year, we will do an unmanned crew mission and recover the module.

Then we will again test crew escape systems two times with improvements based on observation. Currently, we are targeting a human space flight in 2023,” he said during his visit to the Karunya Institute of Technology and Sciences. Mr. Somanath said, “Primarily, ISRO has been the only space agency [in India]. So they [the Central government] want private entities to come in not only as suppliers of space items but also as those who build rockets, satellites and applications on their own and operate them.” Prime Minister Narendra Modi in June announced a space policy. The ISRO Chairman said that under the Space Policy 2022, “we would allow private entities to own and operate satellites.

This is a very big change. All the satellites of India are currently owned only by ISRO. And every television broadcasting channel is linked only through ISRO, and this is going to change.” “This will change not only communication but also remote-sensing. Private entities can own imaging satellites, they can take photographic images, they can use value-added products...” he added. He said complete ownership would be allowed for Indian companies and foreign direct investments would be allowed up to 70%; government approval will be required for investments over and above the ceiling. “Private entities can design, develop and launch [rockets and satellites] also.

They can launch from Sriharikota. We will provide a launchpad or they can build a new launchpad.” “All this will create more markets and avenues in the space sector; that is our goal,” said Mr. Somanath, who is also the Secretary of the Department of Space. He said, “We are also planning a GSLV MK-III launch — for a commercial launch for the first time — for a web satellite in September or October this year. The agency plans a Small Satellite Launch Vehicle for private companies this year and the first launch will be at the end of July or the beginning of August. After this development, ISRO will not operate [the satellite]. We will transfer the operation to the private industry,” he said.

Two PSLV launches and a NavIC (Indian Regional Navigation Satellite System) satellite launch by the GSLV are planned before December, he said. On the new spaceport at Kulasekarapattinam in Tamil Nadu, he told The Hindu that land acquisition was under way and the State government had handed over 2,000 acres to ISRO. “We are in the process of securing it and we must also get many approvals and we have to tender out the facility for construction. It will take 24 months to build the whole facility...” When asked about the Agniveer scheme, he

told reporters that “Agniveer will be very useful to protect our nation and ISRO is working on rockets and satellites to protect our nation. One can find the connection there. Like every other institution that will recruit Agniveer after four years, ISRO will also employ them.”

<http://www.indiandefensenews.in/2022/07/isro-plans-gaganyaan-test-demonstration.html?m=1>



Sun, 10 Jul 2022

MIT Quantum Sensor can Detect Electromagnetic Signals of Any Frequency

MIT engineers expand the capabilities of these ultrasensitive nanoscale detectors, with potential uses for biological sensing and quantum computing. With the ability to detect the most minute variations in magnetic or electrical fields, quantum sensors have enabled precision measurements in materials science and fundamental physics. However, these sensors have limited usefulness because they are only been capable of detecting a few specific frequencies of these fields. Now, MIT researchers have developed a method to enable such sensors to detect any arbitrary frequency, with no loss of their ability to measure nanometer-scale features. The new method is described in a paper published in the journal *Physical Review X* by graduate student Guoqing Wang, professor of nuclear science and engineering and of physics Paola Cappellaro, and four others at MIT and Lincoln Laboratory. The team has already applied for patent protection for the new method.

Although quantum sensors can take many forms, at their essence they're systems in which some particles are in such a delicately balanced state that they are affected by even tiny variations in the fields they are exposed to. These can take the form of neutral atoms, trapped ions, and solid-state spins, and research using such sensors has grown rapidly. For example, physicists use them to investigate exotic states of matter, including so-called time crystals and topological phases, while other scientists use them to characterize practical devices such as experimental quantum memory or computation devices. However, many other phenomena of interest span a much broader frequency range than today's quantum sensors can detect. The new system the team devised, which they call a quantum mixer, injects a second frequency into the detector using a beam of microwaves. This converts the frequency of the field being studied into a different frequency — the difference between the original frequency and that of the added signal — which is tuned to the specific frequency that the detector is most sensitive to. This simple process enables the detector to home in on any desired frequency at all, with no loss in the nanoscale spatial resolution of the sensor.

In their experiments, the team used a specific device based on an array of nitrogen-vacancy centers in diamond, a widely used quantum sensing system, and successfully demonstrated the detection of a signal with a frequency of 150 megahertz, using a qubit detector with a frequency of 2.2 gigahertz — a detection that would be impossible without the quantum multiplexer. They

then did detailed analyses of the process by deriving a theoretical framework, based on Floquet theory, and testing the numerical predictions of that theory in a series of experiments. While their tests used this specific system, Wang says, “the same principle can be also applied to any kind of sensors or quantum devices.” The system would be self-contained, with the detector and the source of the second frequency all packaged in a single device. Wang says that this system could be used, for example, to characterize in detail the performance of a microwave antenna. “It can characterize the distribution of the field [generated by the antenna] with nanoscale resolution, so it’s very promising in that direction,” he says.

There are other ways of altering the frequency sensitivity of some quantum sensors, but these require the use of large devices and strong magnetic fields that blur out the fine details and make it impossible to achieve the very high resolution that the new system offers. In such systems today, Wang says, “you need to use a strong magnetic field to tune the sensor, but that magnetic field can potentially break the quantum material properties, which can influence the phenomena that you want to measure.” The system may open up new applications in biomedical fields, according to Cappellaro, because it can make accessible a range of frequencies of electrical or magnetic activity at the level of a single cell. It would be very difficult to get useful resolution of such signals using current quantum sensing systems, she says. It may be possible to use this system to detect output signals from a single neuron in response to some stimulus, for example, which typically includes a great deal of noise, making such signals hard to isolate.

The system could also be used to characterize in detail the behavior of exotic materials such as 2D materials that are being intensely studied for their electromagnetic, optical, and physical properties. In ongoing work, the team is exploring the possibility of finding ways to expand the system to be able to probe a range of frequencies at once, rather than the present system’s single frequency targeting. They will also be continuing to define the system’s capabilities using more powerful quantum sensing devices at Lincoln Laboratory, where some members of the research team are based.

<https://scitechdaily.com/mit-quantum-sensor-can-detect-electromagnetic-signals-of-any-frequency/amp/>



Mon, 11 Jul 2022

Inspired by Honeybees, Scientists Teach Robots to Communicate with ‘Waggle Dance’

An international team of researchers took inspiration from honeybees to teach robots to understand human gestures and relay them on with their own "waggle dance." Taking inspiration from honeybees, an international team of researchers have developed a gesture identification that will allow robots to communicate with each other by “dancing” with a coordinated set of gestures to convey information. The research has been published in the journal *Frontiers*. In nature, once a honey bee finds a patch of flowers where it can extract nectar, it goes back to the hive to alert other bees. Once there, it performs a “waggle dance” to tell other bees about the

location of the patch of flowers. Other bees interpret the dance's movements and duration to understand where the patch of flowers is, in relation to the beehive. The researchers used a similar technique to 'teach' two robots to communicate with a dance.

"A visual communication system is developed for robots with onboard cameras, using algorithms that allow the robots to interpret what they see. The humans and robots communicate using gestures, such as a raised hand with a closed fist," said Abhra Roy Chowdhury, senior author of the paper, to indianexpress.com, in an email interaction. Chowdhury is the head of the Robotics Innovation Lab at the Centre for Product Design and Manufacturing at the Indian Institute of Science In Bengaluru. Chowdhury and his co-author Kaustubh Joshi, a doctorate student and research assistant at the University of Maryland, developed a proof-of-concept for this communication system using two robots that served as proxies for package handling robots.

First, a human operator used hand gestures, such as a raised or clenched fist, to convey a coded message which contained the location of a 'package'. A robot detected these gestures and decoded the message to understand the package location based on a map of the environment that was encoded into it. It was then able to convey the same information to a second robot through a dance. The robots were able to successfully interpret and relay the information 93.33 per cent of the time during experiments. Robots typically communicate with each other using different digital networks, including wireless communication. But according to Chowdhury, there could be situations where network communications aren't available but robot labour is required, like in disaster zones or during spacewalks. Since the robots in the study used simple cameras to identify the gestures, the technology has the potential for scalability. Chowdhury told indianexpress.com that he and Joshi are now working on making the technology more accurate and more robust so that it can be used to convey more complex messages, tasks and instructions.

<https://indianexpress.com/article/technology/science/robots-communicate-honeybee-waggle-dance-7960466/lite/>

