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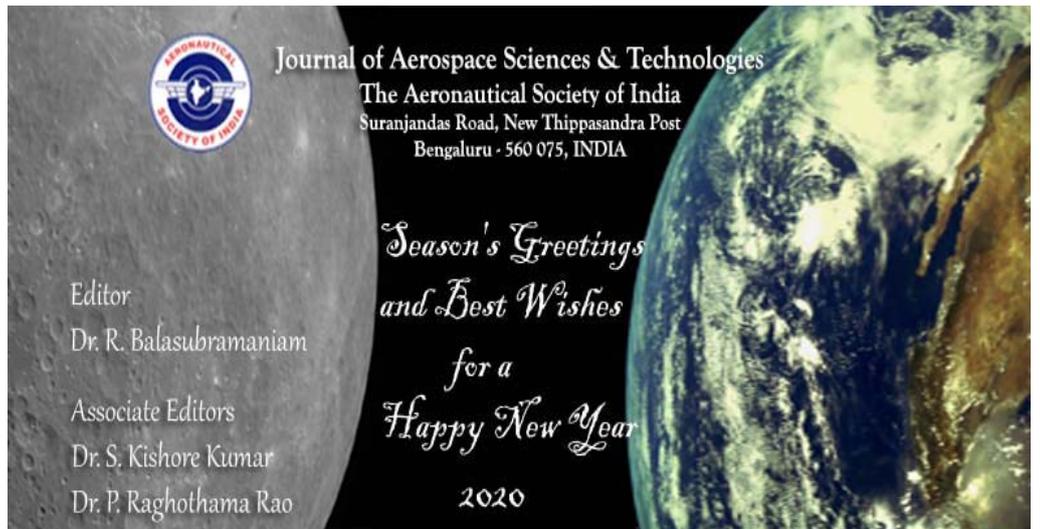
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Successful flight test of two Pinaka missiles in salvo mode

As part of the series of flight trials of Pinaka missile system, two test firings have been conducted by Defence Research and Development Organisation (DRDO). The first trial was conducted on December 19, 2019, wherein one missile was fired at 75 kilometre range. The second trial was successfully conducted today at 1100 hrs from Integrated Test Range, Chandipur, off the Odisha coast. The mission objective of today's trial was to test low range, functioning of live warhead along with its proximity initiation and salvo launch. Two Pinaka missiles were launched in salvo mode with 60 seconds interval between two firings. Both the missiles were fired to engage a target located at 20 kilometre range and high accuracy was achieved. The missile was integrated with live warhead with proximity fuse and was tracked by multiple range systems viz. telemetry, radars, Electro-Optical Tracking System (EOTS), which confirmed the text book flight performance. Secretary Department of Defence R&D and Chairman DRDO Dr G Sathesh Reddy has congratulated the entire DRDO community for successful trials of the missile.



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CURRENT AFFAIRS

GSLV-F11 successfully launches GSAT-7A

Indian Space Research Organisation's (ISRO) Geosynchronous Satellite Launch Vehicle (GSLV-F11) successfully launched the communication satellite GSAT-7A from the Satish Dhawan Space Centre (SDSC) in Sriharikota today. The GSLV-F11 lifted off from the Second Launch Pad at SDSC at 04:10 pm IST, carrying 2250 kg GSAT-7A and about 19 minutes later, injected GSAT-7A into a Geosynchronous Transfer Orbit (GTO) of 170.8 km x 39127 km which is very close to the intended orbit. An ISRO team led by Chairman Dr K Sivan, Vikram Sarabhai Space Centre (VSSC) S Somanath, U R Rao Satellite Centre (URSC) Director P Kunhikrishnan, Space Applications Centre (SAC) Director D K Das, SDSC Director S Pandian, Liquid Propulsion Systems Centre (LPSC) Dr V Narayanan and ISRO Propulsion Complex (IPRC) Director T Mookiah witnessed the launch. Mission Director Mohan M and Satellite Director Killedar Pankaj Damodar oversaw the launch proceedings. Soon after the separation of the satellite, ISRO's Master Control Facility (MCF) at Hassan in Karnataka took over the command and control of GSAT-7A. The satellite's health parameters are normal. In the next few days, scientists at MCF will perform various orbit-raising manoeuvres, using GSAT-7A's onboard propulsion system, to place the satellite in its final geostationary orbit. In his post-launch televised address, Dr Sivan said the team has achieved another spectacular milestone by launching GSAT-7A. "In the last 35 days, ISRO has successfully launched three missions from SDSC starting with GSLV MkIII-D2 on November 14, PSLV-C43 on November 29 and finally GSLV-F11 today. GSLV has successfully injected GSAT-7A into a super synchronous transfer orbit," Dr Sivan said. He said GSAT-7A is the heaviest satellite being launched by GSLV with an indigenously developed cryogenic stage. "The cryogenic stage of this vehicle has been modified to increase the thrust rate. GSAT-7A is an advanced communication satellite with a Gregorian Antenna and many other new technologies. The testing and realisation of this satellite has been carried out meticulously by ISRO team. We have signed off year 2018 on a high and positive note," Dr Sivan added. GSLV is ISRO's fourth generation launch vehicle with three stages. The four liquid strap-ons and a solid rocket motor at the core form the first stage. The second stage is equipped with a high thrust engine using liquid fuel. The cryogenic upper stage forms the third and final stage of the vehicle. GSLV-F11 was the seventh flight carrying indigenously developed cryogenic upper stage. GSAT-7A is the 39th Indian communication satellite of ISRO to provide services to the users in Ku-band over the Indian region. Most of the functional requirements of the communication payloads and the other systems have been derived from ISRO's earlier geostationary INSAT/GSAT satellites. Today's launch was the 7th mission of ISRO from SDSC in the year 2018. This was the 13th flight of GSLV-MkII.

<https://www.ISRO.gov.in/>

India's heaviest communication satellite GSAT-11 launched successfully from French Guiana

Indian Space Research Organisation's (ISRO) heaviest and most-advanced high throughput communication satellite GSAT-11 was successfully launched from the Spaceport in French Guiana during the early hours today. The launch vehicle Ariane 5 VA-246 lifted off from Kourou Launch Base, French Guiana at 02:07 am (IST) carrying India's GSAT-11 and South Korea's GEO-KOMPSAT-2A satellites, as scheduled. Ariane 5 is one of three launch vehicles operated by Arianespace along with Soyuz and Vega. After a 30-min flight, GSAT-11 separated from the Ariane 5 upper stage in an elliptical Geosynchronous Transfer Orbit. The achieved orbit was very close to the intended one. The 5854-kg GSAT-11 will provide high data rate connectivity to users of Indian mainland and islands through 32 user beams in Ku-band and 8 hub beams in Ka-band. "GSAT-11 will boost the broadband connectivity to rural and inaccessible Gram Panchayats in the country coming under the Bharat Net Project, which is part of Digital India Programme," ISRO Chairman Dr K Sivan said. The Bharat Net Project aims to enhance the public welfare schemes like e-banking, e-health, e-governance among others. He said GSAT-11 will act as a forerunner to all future high throughput communication satellites. "Today's successful mission has boosted the confidence of the entire team," Dr Sivan added. Post-separation, ISRO's Master Control Facility at Hassan in Karnataka took over the command and control of GSAT-11 and found its health parameters normal. The scientists will undertake phase-wise orbit-raising manoeuvres in the days ahead to place the satellite in the Geostationary Orbit (36,000 km above the equator) using its on-board propulsion systems. GSAT-11 will be positioned at 74-degree east longitude in the geostationary orbit. Subsequently, the two solar arrays and four antenna reflectors of GSAT-11 will be deployed in orbit. The satellite will be operational after the successful completion of all in-orbit tests. In the last 21 days, ISRO successfully completed three satellite and two launch vehicle missions.

<https://www.ISRO.gov.in/>

Anti Hijacking Exercise conducted by Southern Naval Command

The Indian Navy, in collaboration with Indian Coast Guard, Cochin Port Trust and all other concerned stake holders, conducted a large scale Anti Hijacking Exercise off the Port of Kochi on 18 Dec 19. This was the first time that such a large scale exercise involving all stake holders has been conducted in Kerala. The Exercise code named "Apharan" saw participation of multiple agencies, including more than 12 ships and helicopters of the Indian Navy, Indian Coast Guard and Cochin Port Trust. As part of the scenario, interdiction of a 'rogue' vessel outside Kochi port and insertion of Marine Commandos onto the rogue/hijacked vessel through boarding operations, as well as slithering down onto its deck from a Sea King helicopter, were exercised. The Exercise 'Apharan' was aimed at streamlining the response mechanism/ preparedness to thwart any attempt by Anti-National Elements to hijack a merchant vessel or attempt forced entry of a rogue/commandeered merchant vessel into Kochi harbour. Within the ambit of Coastal Security architecture, hijacking of a merchant vessel is one of the challenging scenarios, response to which requires synergy of resources, assets and efforts of all stake holders including the State Govt. The exercise was conducted under the aegis of the Commander-in-Chief, Coastal Defence (Flag Officer Commanding-in-Chief, Southern Naval Command), Kerala. The exercise provided an opportunity to all stakeholders to assess the preparedness of their respective organisations, identify gaps to address them on priority as well as to formulate an integrated Crisis Management Plan for Kochi Port.

<https://pib.gov.in/>

Demise of Last MiG-27 Unit Stalls IAF 42-Squadron Plan

The retirement of the last squadron of MiG-27s from Indian Air Force (IAF) has further reduced the overall strength of the service, with no immediate fix in sight the last 43 Mikoyan-Gurevich MiG-27MLs ("Flogger Js") in the IAF's arsenal, the remnants of 165 machines license-produced by Hindustan Aeronautics Limited (HAL) were mothballed. Their removal from the IAF's order of battle further reduces the number of combat aircraft in the IAF's arsenal, leaving a significantly capability deficit in comparison to aircraft fielded by India's immediate rivals, China and Pakistan. Tellingly, however, the retirement of these venerable, Soviet-era, single-engined, swing-wing fighter-bombers, marks a doctrinal shift away from delineating combat aircraft by role. India is following the global trend of equipping air units with machines which can fulfill a variety of roles. Acquisition of multi-role aircraft has been a Chinese goal, which has disdained fighter-bombers. Over the last decade, Beijing has 473 such fourth-generation fighter aircraft, in comparison to India which has 290 (on-hand). Meantime, India is still saddled with 132 fighter-bombers, all of them obsolete MiG-21s. Pakistan, meantime, has 212 fighter-bombers, many of them obsolete Mirage 5s or IIIs. More importantly, the number-plating of the air force's last MiG-27 unit, No 29 "Scorpions" Squadron, which until was active at Jodhpur Air Force Station, reduces the number of combat-capable squadrons in the IAF from 34 to 33, which is significantly less than the 42 squadrons envisaged by the service. This is the number of combat units which IAF doctrine postulates as being necessary to fight a two-front war against China and Pakistan. This squadron strength is set to further drop to 27 over the next two years as the IAF prepares to retire its MiG-21 squadrons, even as India's MMRCA 2.0 acquisition programme encounters delays and even as the IAF only adds a further 30 Sukhoi Su-30MKIs and 36 Dassault Rafales to its arsenal. The current requirement by the Indian Air Force as far as MMRCA 2.0 goes is 114 fighters, 96 of which are to be built in India. There is an additional requirement for 57 fighters for the Indian Navy. However, talks regarding procurement are still in their preliminary phase. In the meantime, the air force continues to soldier on with its stalwarts, including the equally aging Jaguar strike fighter. Attrition to accidents and crashes are set to further reduce service strength. As an indication, over the last five years alone, the IAF lost 26 fighter aircraft (or the equivalent of a whole squadron) to non-combat mishaps. Meantime, the MiG-27's retirement from air forces around the world has been steady. With its passing from the IAF, the type remains operational only in Kazakhstan and Sri Lanka. While the aircraft has been lauded for its role during the Kargil war, packing as it did, a formidable 30 mm cannon and its ability to haul 4,000 kgs of munitions, it was rapidly showing its age. Some 13 machines were lost in crashes since 2001, according to IAF data.

<https://www.deccanherald.com/>

US Aircraft Launch Gears for carriers mistakenly land in Gujarat

Two aircraft launching gears meant for 'Royal Saudi Land Forces' have illegally landed at a private port in Kutch district of Gujarat through Pakistan, sending security forces into a tizzy. The load — 'military grade' aircraft launching gears —

were, intriguingly, not declared on two containers in which they were stuffed and packed aboard Kyoto Express ship at a New York port on November 8. The containers were shown as 'empty'. But when customs officers at Mundra port opened them, they found aircraft launching gears — essentially used in aircraft carriers to assist takeoff of jets from the deck. That there is something fishy about containers was first detected by a surveyor of the shipping line when it was moved to the yard, customs department sources told ET on conditions of anonymity. What has raised eyebrows in the customs and other security agencies such as the Directorate of Revenue Intelligence (DRI) is why the two containers were not offloaded like some others after berthing the Kyoto Express — a carrier owned by Hapag-Lloyd Aktiengesellschaft, Hamburg in Germany — at Jeddah port? "Officials could not figure out what it was from the literature and other papers lay in the containers after both were opened," said a senior officer aware of the development. "Subsequently, shipping line was asked to get bill of lading from its main office in New York." During the initial probe, custom officials realised that the bill of lading procured from shipper DHL Global Forwarding of United States clearly stated that the consignee is 'Royal Saudi Land Forces' and the gears were to reach: 'Prince Sultan Road, HWY 156 Jizan Saudi Arabia', documents accessed by ET show. But, in the import general manifest (IGM), which the shipping line files with the customs department, these two containers were declared "empty". The vessel departed from New York and sailed through three to five ports, including Karachi, before dropping 300 odd empty containers, including the two suspicious ones, at Mundra port. An inquiry by the ET pointed out that Hapag-Lloyd official website showed the containers were unloaded at Mundra at 22.22 pm on December 20. The Saudis, however, do not have an aircraft carrier in their fleet. Diplomats at Saudi Arabia embassy here were not available for comments, despite attempts by ET. The customs department at Gujarat has sent a detailed report informing its Delhi-based nodal national agency, the Central Board of Indirect Taxes and Customs, about the mysterious landing of catapults for jets. Sanjay Agarwal, principal commissioner of customs for Mundra port, said, "Before reaching to any conclusion I would not like to reach to any conclusion whether it's a mischief or something else due to sensitivities involved."

<https://economictimes.indiatimes.com/>

With Rafale jets, India won't have to cross the border to 'eliminate terror camps' in Pakistan: Rajnath Singh

With the induction of Rafale fighter jets in the air force, India will not have to cross the borders to "eliminate the terror camps" in Pakistan but can do it from the country itself, Defence Minister Rajnath Singh said here. Singh arrived in the US for the US-India 2+2 Ministerial Dialogue in Washington on December 18. Addressing members of the Indian community at an event organised by the Consulate General of India at the educational organisation, Asia Society, he applauded the courage and valour of India's armed forces and recalled his France visit in October to receive the first of the 36 Rafale fighter jets at a facility of Dassault Aviation in the French port city of Bordeaux. Now that India will have the jets, "if we have to eliminate the terror camps, there will be no need to take the planes to Pakistan. We can do it from India", Singh said amid loud applause from the audience. Replying to a member of the audience who commented that Singh had said that if talks are held with Pakistan, it will now only be on Pakistan-occupied Kashmir (PoK), the defence minister said, "Baat kya hogi, PoK toh apna hai hi (What is there to talk, PoK is ours)", amidst loud cheers from those present. Singh had said that if talks were held with Pakistan in future, it would be only on PoK. Singh said India's military strength is increasing, but the country also takes precaution even when dealing with Pakistan. He said if India wanted, it could have attacked the military establishments and civilian areas in Pakistan but that would have resulted in a lot of casualties. "But we took precaution and decided that we have to target and eliminate only those places where there are terror training camps. Not a single civilian was killed and neither did we attack any Pakistani military establishment. We never want to attack a country's sovereignty. This is our character," he said. Singh said India wants to have good relations with Pakistan. He referred to former Prime Minister Atal Bihari Vajpayee going to Lahore in 1999. "But what did Pakistan give to us in return - Kargil." Prime Minister Narendra Modi had also decided to invite Heads of State and government of neighbouring countries to his oath-taking ceremony in 2014. During his first term on 2014, Modi had extended invitation to SAARC leaders, including the then Pakistan premier Nawaz Sharif, to his oath-taking ceremony. "This signifies the thought process of our Prime Minister. We should have good relations with our neighbouring countries...but how Pakistan behaves with us, you can see," Rajnath said.

<https://economictimes.indiatimes.com/>

Metal-cutting for Tejas MK-II fighter jets to begin in February 2020

Metal cutting, the first step in the start of commercial production, of the of indigenously made single-engine fighter plane Tejas (Mk-II) is scheduled for February 2020, according to Dr Girsh S Deodhare, director of the Aeronautical

Development Agency (ADA) and head of the Tejas programme. The Mk-II will have more advanced sensors including a powerful radar, empowering the fighter for operations beyond the visual range, and improved avionics. The fighter will be able to fly with more weapons and fuel than its predecessors Mk-1 and Mk-1A. The IAF is buying 123 Mk-1 and Mk-II fighters. The Tejas Mk-II will be several tons heavier and is designed to fit into the medium weight categories of fighters. Recently the IAF told the government that it is ready to buy more indigenous fighters to replace its aging fighter fleet. The Tejas (Mk-II) are slated to replace the existing French-made Mirage -2000 and Russian -made MiG-29 class of fighters. "The detailed designing stage is over; drawings are frozen," Dr Deodhare said. Both the Indian Air Force (IAF) and the Defence Research and Development Organisation (DRDO) are looking at the Tejas as a replacement for the the French-made Mirage-2000 class of fighters, around a dozen of which were pressed into action on February 26 to bomb a Jaish-e-Mohammed terrorist camp in Balakot, Pakistan, in reprisal for the February 14 terrorist attack in Pulwama that killed 40 Central Reserve Police Force (CRPF) troopers. The prototype of the Tejas (Mk-II) is expected to be flying in about two years. The metal cutting will take about a year to 18 months. Tejas Mk -II, which will be fitted with a GE-414 engine, is scheduled to make its first flight in 2024. . The DRDO has been criticized and even ridiculed for slow progress made in key military programmes, especially the Tejas light combat aircraft (LCA) programme, which has taken about a decade-and-a-half to mature. Nonetheless, the Tejas has the unique distinction of not being involved in a single crash or accident till date despite hundreds of hours of flying. Using learnings from the past and in an effort to shorten the manufacturing and maintenance process, the DRDO has decided to build the Tejas (Mk-II) in a modular fashion and plans to lean on the private sector more than it did in the past. Modular construction, where components like the fuselage, wings and landing gear area built separately but are put together in the final assembly line, increases the speed of construction and shortens delivery time. Modular construction requires detail exacting design of each component and allows more than on unit to be involved in the production process. It also helps maintenance and reduces time between sorties.

<https://www.hindustantimes.com/>

India, Oman to sign maritime transport pact enabling Delhi to expand footprints

India and Oman will sign an agreement during Hon'ble Foreign Minister Mr S Jaishankar's visit for cooperation in the field Maritime Transport enabling Delhi to expand footprints in Western Indian Ocean, Persian Gulf and Eastern Africa. Ahead of Oman Mr Jaishankar will visit Iran for the Joint Commission meeting eyeing to safeguard India's interests in the region close on heels of Indo-US 2+2 meet. India has opened more ports to connect with Chabahar. Oman is a strategic partner of India and the two countries are linked closely by geography, history and culture and enjoy warm and cordial relations attributed to historical maritime trade linkages as well as close links of the Oman's Royal family with India. The visit of Prime Minister Mr Modi to Oman in February 2018 was path breaking and has led to further consolidation of our close ties as well as identifying new areas of cooperation. Oman has allowed India including Navy access to its Duqm port. India is among Oman's top trading partners. During 2018-19, bilateral trade was \$ 5 billion. In 2018, India was the second largest importer of crude oil from Oman. There are over 7,80,000 Indian citizens in Oman, second largest expatriate community in the country. This will be the first visit of External Affairs Minister to Oman after the new government in India took over in May 2019. The visit is in pursuit of India's objective of enhanced engagement with the Gulf region which is in India's extended neighbourhood. It will provide an opportunity to hold in-depth discussions with the political leadership on a wide range of bilateral, regional and global issues and will advance India's growing engagement with Oman and the region.

<https://economictimes.indiatimes.com/>

HSL poised to deliver India's first missile tracking ship in New Year

India's first missile tracking ship being built at Hindustan Shipyard Limited is in advanced stage of construction. It is expected to be New Year gift to the Indian Navy, if the indications available at the HSL, a Ministry of Defence enterprise, hold water. The project which was launched in 2014 directly under the supervision of the National Technical Research Organisation, the Prime Minister's Office and the National Security Advisor is being undertaken without a name due to secrecy attached to it. Built with an objective to provide a robust shield to India's nuclear missile shield, is referred to as VC 11184, the yard where the construction was taken up. It will be given a name only after its induction into the Navy. Sources seeking anonymity told The Hindu that the progress so far was very encouraging and after some more sea trials and installation of certain facilities, it will be handed over to the Navy. The project is expected to give a fillip to ballistic missile programme. "We have work for a month or two after which it will be ready for delivery," an official said

without elaborating further on VC 11184. The ship fitted with primary X band and secondary S band active electrically scanned array radar. It will have facility for 300 personnel, huge deck for landing of a helicopter and multiple missile tracking antennas. It will have a displacement capacity of 10,000 tonne with a speed limit of 26 knots. HSL, founded on June 21, 1941 by Scindia Steam Navigation Company Ltd, was transferred from the Ministry of Shipping to the Ministry of Defence in February, 2010 in recognition of its strategic importance. HSL is getting ready to construct five Fleet Support Ships at a cost of ₹ 9,045 crore and two Special Operation Vehicles valued at ₹ 5,000 crore from the Navy. It is also making a serious bid for medium refit and life certification of fourth EKM class submarine. The yard is also in the race for the construction of six submarines for the Navy under the Project 75 (I) by forming a joint venture with Adani Defence System Technologies Ltd after obtaining required clearances from the Ministry of Defence and Niti Aayog.

<https://www.thehindu.com/>

How air, land-attack versions of BrahMos missile are strengthening Indian defence forces

India successfully test-fired two BrahMos supersonic cruise missiles from land and air platforms to check its capability to hit targets with precision and accuracy. Land-attack missile fired from a mobile launcher : According to the officials, the land-attack missile was fired from Launch Pad-3 of the Integrated Test Range (ITR) at a base off the coast of Odisha by the Defence Research and Development Organisation (DRDO) and targeted a ship. Air version test-fired from IAF's Su-20MKI :: The air version of the missile was launched by the Indian Air Force (IAF) from Sukhoi-30MKI and it also successfully hit a target in the sea. During the test, the missile was gravity dropped from the air combat platform's fuselage and the two-stage weapons engine fired up and the missile straightway propelled towards the intended target positioned at the sea, piercing it with "pinpoint" accuracy, defence officials said in a statement. How it boosts IAF? BrahMos missile provides Indian Air Force with a much-desired capability to strike from large stand-off ranges on any target at sea or on land with pinpoint accuracy by day or night and in all weather conditions. Who developed the missile? A medium-range ramjet supersonic cruise missile, BrahMos can be launched from submarines, ships, fighter jets, or land. The missile has been developed as a joint venture between the DRDO and the Federal State Unitary Enterprise NPO Mashinostroyeniya (NPOM) of Russia.

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TECHNOLOGY

Raksha Mantri Shri Rajnath Singh launches DefExpo 2020 mobile app Over 880 exhibitors register for the DefExpo making it the largest ever

Raksha Mantri Shri Rajnath Singh launched the mobile app of the forthcoming DefExpo 2020 here today. The app is available on Apple App Store and Android Play Store. The main features of the app are 'inform, engage and feedback'. It provides detailed information about the day-to-day events; participating exhibitors; Defence Public Sector Undertakings (DPSUs), guest speakers of seminars/webinars; publications *i.e.*, electronic brochures and e-books; maps and directions of the venues and city weather. The app has been developed by Department of Defence Production, Ministry of Defence (MoD) with the aim to engage with the visitors as well as exhibitors. Business-to-Business Exhibitor Connect; Exhibitor Chat; Ticket booking; accommodation in Tented City; Push notifications and social media are some of its salient features. Feedback mechanism in the app is another essential feature to further improve operations during the event. Raksha Mantri also reviewed the preparations of DefExpo 2020. During the review meeting, senior officials informed him that a record number of over 880 exhibitors, including foreign companies, have registered so far, making it the largest ever defence exhibition surpassing the numbers of DefExpo 2018. The exhibition space booked by exhibitors has also gone up by 52 per cent to nearly 41,000 square metres compared to the last edition. Foreign delegations at the level of Defence Minister and Service Chief are confirmed from 18 countries. Dozens of MoUs are also expected to be inked during the Expo. Defence Secretary Dr Ajay Kumar, Secretary (Defence Production) Shri Subhash Chandra and other senior officials attended the review meeting. The DefExpo 2020 is scheduled to be held in Uttar Pradesh capital Lucknow between February 05-08, 2020. The theme of the expo is 'India: The Emerging Defence Manufacturing Hub'. Detailed information about DefExpo 2020 is available at www.defexpo.gov.in.

<https://pib.gov.in/>

Navy upgrading airfields with 24x7 surveillance and real-time alerting

The Indian Navy is working towards upgrading the security infrastructure of its naval airfields by planning to install systems providing continuous surveillance, real time alerting and immediate response to a threat. The matter came to light in a report of the Standing Committee on Defence which was presented to the Lok Sabha Speaker. The Navy is progressing a comprehensive case for upgrading the security infrastructure of its airfields. Six naval air stations are being addressed at a projected cost of Rs 500 crore. "This project will leverage technology to provide seamless 24x7 surveillance, physical barriers, real time incident alerting and swift response through a robust and secure command and control system," the Committee noted. The project has been taken up with the defence ministry to progress it under the revenue to capital route. The Committee has recommended that the upgradation of naval airfields is critical from surveillance and intelligence point of view, and the necessary action should be taken towards this. However, the move comes in the backdrop of the percentage share of the naval budget to the total defence budget witnessing a downfall in the current decade. In 2012-13, the share was 18.12 per cent and in 2014-15 it was 16.51 per cent, which plummeted to 14.47 per cent in 2018-19. The reduction is prominent in the capital segment, which declined from 10.41 percent in 2014-15 to 7.46 per cent in 2018-19. In the current financial year, it has been reduced to 13.66 per cent. The Committee added that the Navy's share of the defence budget has seen a steady decline from 18 per cent in the 2012-13 to 13 per cent in the current financial year. It stated that there is a need to enhance the Navy's share of the budget, in view of its increasing operational commitments. "Keeping in view the declining trend of Navy's budget over the years and growth of responsibilities, the Committee strongly desire that the Navy's budget share should be enhanced to 18 per cent of the overall defence budget," it said. The Navy needs more money both for induction of new warships and other assets, pay up committed liabilities and also for the revenue segment Navy Chief Admiral Karambir Singh earlier this month had stated that the force has projected its requirement to the government, while it remains committed to progress force modernisation, using the available resources optimally. In the face of shortages, it is emphasising on prioritisation, rationalisation and economy of expenditure. It has also had to rework its plan to have 200 warships by 2027. The army and air force are also reeling under budgetary constraints. Such as the shortfall in the budget for the air force is being felt in aircraft maintenance, serviceability and modernisation.

<https://economictimes.indiatimes.com/>

Indian Navy's long-term plan is to have three Aircraft Carriers

The Navy's long-term plan is to have three aircraft carriers, Navy chief Admiral Karambir Singh and added that the first indigenous aircraft carrier will be fully operational by 2022. Admiral Singh, speaking at an annual press conference, also assured the nation that the Navy is fully prepared to deal with national security challenges. The Navy's long-term plan is to have three aircraft carriers, he said. The Navy chief also said the first indigenous aircraft carrier (IAC) will be fully operational by 2022 and will have MiG-29K aircraft. "The Navy's annual budget allocation has come down from 18 per cent to 12 per cent in the last five years," he noted. On the challenges in the neighbourhood, he said no action of any other player in the region should impact us. "We are ready to work with like-minded nations in the region," he said. Asked about the massive expansion of the Chinese Navy, Admiral Singh said they are moving at the pace they are capable of and "we are moving at the place we are capable of". Seven to eight Chinese ships are usually present in Indian Ocean region, he noted. The Navy chief also said India is playing a stabilising role in the Indo-Pacific region.

<https://www.thehindubusinessline.com>

Engines fired up on India's Indigenous Aircraft Carrier 'Vikrant'

The engines on board the first Indigenous Aircraft Carrier (IAC) being constructed at Kochi have been fired up and the Navy is starting on the next step of basin trials, with expectations that the warship would be ready for operations by 2022. The long-delayed project, which was to be completed by 2018, is now back on track, with senior officers saying that the 37,500-tonne aircraft carrier will initially operate MiG 29K fighters and could also feature indigenous combat aircraft. The carrier, the largest ever warship to be constructed in an Indian yard, is now in its final phase of construction and the Navy could consider operating a limited number of the maritime version of the Light Combat Aircraft (LCA) once it gets fit for service, said people aware of the matter. However, an indigenous fighter jet that would meet technical requirements of the Navy is unlikely to be ready for operational duty before 2026, which could put a strain on the fleet of MiG 29K fighter jets that are currently used for the INS Vikramaditya, India's only aircraft carrier. A key requirement of the Navy is a double engine jet to ensure safety of the crew at sea. "We have started the engine and hope to get the

hope to get the ship by 2021. It will take a year after that to get it operational. We plan to start with the MiG 29K fighter jets," a senior official told ET on condition of anonymity. With the Defence Research and Development Organisation (DRDO) promising a technically compliant fighter jet by 2026, the Navy would be open to using it for the second indigenous aircraft carrier that it plans to build. Though funds have not been cleared by the defence ministry, the Navy is hopeful of a speedy approval for its plan to construct a larger aircraft carrier at the earliest. The people cited earlier also said that the LCA Navy being developed could head for deck trials on the INS Vikramaditya soon, after it clears a series of test flights at the Shore Based Testing Facility (SBTF) in Goa. The fighter jet has undergone night trials as well as a launch with four air-to-air missiles on board in recent days. The 37,500-tonne Short Take off but Assisted Recovery (STOVAR) Carrier – named the Vikrant – has been in the works since it was sanctioned in 2003.

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BUSINESS

India set to sign \$930-mn deal for 6 additional Apache Attack Helicopters

India is all set to hammer out a deal with the United States for six Apache attack helicopters for the army, two government officials said. The army will deploy attack helicopters for the first time. The Boeing-manufactured helicopters and associated equipment cleared by the council are expected to cost around \$930 million. "The Apache purchase is before the cabinet committee on security for final clearance. The deal will be inked in early 2020," said one of the officials cited above, asking not to be named. The AH-64E Apache multi-role combat helicopters are being bought under the US foreign military sales programme, Washington's government-to-government method for selling US-built platforms. The deliveries of the helicopters will begin in 2022, the second official said. Armed with fire-and-forget Hellfire missiles, an Apache can track up to 128 targets a minute and prioritise threats. The missiles equip the gunships with heavy anti-armour capabilities. "Being the first deal after the government decision to give attack helicopters to the army, it is of significance. However, just six helicopters constitute a flight and would have limited operational value. The maintenance facilities of these six choppers should hopefully be dovetailed with the 22 Apaches that the IAF is acquiring - that's two full helicopter squadrons," said Air Vice Marshal Manmohan Bahadur (retd), additional director general, Centre for Air Power Studies. India placed orders worth \$3.1 billion for 22 Apache helicopters and 15 Chinook heavy-lift choppers in 2015 for its air force. The Indian Air Force has begun inducting these helicopters. The six army Apaches are being bought as a follow-on option to the 2015 contract. Attack helicopters have been on the army's wish list for several years, but IAF objected to the plan. The army says it requires more attack helicopters as it had moved a case to buy 39 Apaches a few years ago. Since 2008, India has bought or ordered military equipment worth \$15 billion from the US, including C-130J special operations planes, C-17 transport aircraft, P-8I submarine hunter planes, Harpoon missiles, helicopters, and M777 howitzers.

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IAF planning 'swift trials' in Rs 1.5 lakh crore 114 fighter jet deal

In the over Rs 1.5 lakh crore deal for manufacturing 114 multirole fighter aircraft, the Indian Air Force (IAF) is planning to compress the time taken for carrying out trials of all the participants to less than a year to ensure that the force gets its new combat aircraft at a faster rate. Last time, when the Indian Air Force carried out trials of multiple fighter aircraft for the scrapped deal of 126 multirole fighter aircraft, the service had taken 18 months to complete the process in the contract which lingered on for several years before getting cancelled due to complications. "This time, the Indian Air Force is planning to hold trials of all the competitors who participate in the tender in less than a year so that time is saved. The fact that most of the systems and avionics of the participating firms have been tested will also help in shortening the time taken from trials," defence sources told ANI. All the major fighter aircraft manufacturers including Sukhoi and MiG from Russia, Lockheed Martin and Boeing from the United States of America, Eurofighter consortium from Europe and Saab group from Sweden have responded to the Request for Proposal for the deal expected to be the biggest ever in terms of quantity of aircraft and the amount of money to be spent on it. The Indian Air Force is expected to seek approval of the Defence Acquisition Council for the deal in the next few months for over Rs 1.5 lakh crore under

the strategic partnership policy as part of which Indian firms will have to tie up with foreign partners to build the aircraft in India. The deal is being considered as an important step in fulfilling the shortage of squadrons in the IAF which is looking for fighters to replace the MiG-21, MiG-23 and MiG-27 fighter planes some of which have already been phased out while others are on their way out of service in the next few years. The Russian-origin Sukhoi-30MKI with over 12 squadrons in service will be the mainstay of the force while the two squadrons of the Rafale fighters would be the most potent in terms of capability in the next decade for the force which is looking to indigenous routes for the fifth-generation fighter planes.

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ACHIEVEMENTS

Meet Sub Lieutenant Shivangi, the first woman pilot of the Indian Navy

Last week when a batch of three trainee officers of the 7th Dornier Conversion Course qualified as Dornier pilots and were awarded the much-coveted golden wings at INS Garuda, one of them created history—24 year-old Sub Lieutenant Shivangi. She became the first woman pilot of the Indian Navy. A Muzaffarpur (Bihar) native, she was commissioned into the Navy last year. Excerpts from an email interview where she speaks of the thrill of being a Naval officer, her love of flying and making dreams come true. I can't say adventurous but I was definitely someone who would try different stunts which as an adult you might find stupid. Things like jumping on sand piles from an under-construction house and climbing on trees. Coming from a landlocked state of Bihar where there is no exposure to the sea, why did you choose the Indian Navy? The idea of joining the Navy came to me in college when I saw Naval officers and a short video about the Navy. They had come for the University Entry Scheme. It was my first exposure to the defence forces, I tried and fortunately got selected. And not having the sea in Bihar doesn't mean that we can't like and dream of it. Goa has always been on my bucket list so you can imagine my love for sea.

Why aviation thereafter?

Actually aviation has always been on my mind even before the Navy, it has been since I was about 10 years old. And when I came to know about the Navy, it had started induction of women pilots. So luckily for me, through the Navy I got to make my dream come true. You have become an icon for the Indian woman, also for women from Bihar, which is still considered a backward state.

What do you have to tell women about the strength of a woman?

You should believe in yourself first. Don't think about society or your gender. You can do all those things that a man can do. Just be determined to achieve your goal. Work hard and leave everything else.

What were your thoughts and feelings after you were commissioned?

That it was the first time someone from my family was joining the Defence forces. I was very excited and so were my parents. They had come for my stripe shipping ceremony after my six months of training at Ezhimala. And after wearing those golden stripes I felt all the hard work and pain was all worth it.

You are not yet flying a combat aircraft. Are you ready if that is asked of you? Would you like to do that?

Of course! In defence we are trained to prepare for war, that is the ultimate goal. So given a chance I would love to be a part of it.

A lady officer in male domain....do you miss the stereotypical roles of a woman?

Not at all. People crave for this uniform and this life. I am living it. I don't miss anything. Golden stripes and wings are all I need.

How was your first day flying the Dornier aircraft as an officer of the Indian Navy?

It was different because the first stage of training was on Pilatus, a smaller aircraft compared to the Dornier, also in the Navy we fly over the sea so there is no reference (horizon). So it's a bit tough not to let yourself get disoriented. But with time, we get comfortable with the aircraft and now I love it.

You symbolise a seminal moment in the history of the Indian Navy. What do you have to say to your significant role in history?

I am just happy that more and more people will now come to know more about the Navy and get inspired. Also I think it will open up new opportunities for women in the Navy. I think the next step will be women on ships and fighters.

Now that you are a role model, who is your role model?

My parents. It is because of them that I am here.

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EVENT

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