



CURRENT AFFAIRS



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Maiden Flight of FOC Standard LCA Tejas

The first Light Combat Aircraft in FOC standard (SP-21) took to the skies for maiden flight here. Piloted by Air Cmde. K.A Muthana(Retd), Chief Test Flying (Fixed Wing), the aircraft took-off from HAL Airport at around 1230 hours. It was airborne for 40 minutes. This flight signifies exemplary team work between various stakeholders of LCA Tejas programme such as HAL, DGAQA, CEMILAC, IAF, ADA etc., says Shri R Madhavan, CMD, HAL. HAL achieved the momentous feat within a record time of 12 months after release of Drawing Applicability List (DAL) and SOP by CEMILAC. This would pave way for production of remaining 15 fighters from the FOC block which are planned to be delivered during the next financial year. The FOC aircraft are equipped with advanced features such as Air-to-Air refueling, Beyond Visual Range (BVR) missile system, etc. It imbibes a lot of manufacturing improvements which were based on the operational feedback of LCA IOC fleet with IAF.

Source: <https://hal-india.co.in/>

CURRENT AFFAIRS

At the edge of a new nuclear arms race

In mid-April, a report issued by the United States State Department on “Adherence to and Compliance with Arms Control, Nonproliferation, and Disarmament Agreements and Commitments (Compliance Report)” raised concerns that China might be conducting nuclear tests with low yields at its Lop Nur test site, in violation of its Comprehensive Nuclear-Test-Ban Treaty (CTBT) undertakings. The U.S. report also claims that Russia has conducted nuclear weapons experiments that produced a nuclear yield and were inconsistent with ‘zero yield’ understanding underlying the CTBT, though it was uncertain about how many such experiments had been conducted. Russia and China have rejected the U.S.’s claims, but with growing rivalry among major powers the report is a likely harbinger of a new nuclear arms race which would also mark the demise of the CTBT that came into being in 1996 but has failed to enter into force even after a quarter century. What does CTBT ban mean? For decades, a ban on nuclear testing was seen as the necessary first step towards curbing the nuclear arms race but Cold War politics made it impossible. A Partial Test Ban Treaty was concluded in 1963 banning underwater and atmospheric tests but this only drove testing underground. By the time the CTBT negotiations began in Geneva in 1994, global politics had changed. The Cold War had ended and the nuclear arms race was over. By this time, the U.S. had conducted 1,054 tests and Russia, 715. Negotiations were often contentious. France and China continued testing, claiming that they had conducted far fewer tests and needed to validate new designs since the CTBT did not imply an end to nuclear deterrence. France and the U.S. even toyed with the idea of a CTBT that would permit testing at a low threshold, below 500 tonnes of TNT equivalent. This was one-thirtieth of the “Little Boy”, the bomb the U.S. dropped on Hiroshima on August 6, 1945 — its explosive yield was estimated to be the equivalent of 15,000 tonnes of TNT. Civil society and the non-nuclear weapon states reacted negatively to such an idea and it was dropped. Some countries proposed that the best way to verify a comprehensive test ban would be to permanently shut down all test sites, an idea that was unwelcome to the nuclear weapon states. Eventually, the U.S. came up with the idea of defining the “comprehensive test ban” as a “zero yield” test ban that would prohibit supercritical hydro-nuclear tests but not sub-critical hydrodynamic nuclear tests. Once the United Kingdom and France came on board, the U.S. was able to prevail upon Russia and China to accept this understanding. After all, this was the moment of the U.S.’s unipolar supremacy. At home, the Clinton administration in the U.S. satisfied the hawks by announcing a science-based nuclear Stockpile Stewardship and Management Program, a generously funded project to keep the nuclear laboratories in business and the Pentagon happy. Accordingly, the CTBT prohibits all parties from carrying out “any nuclear weapon test explosion or any other nuclear explosion”; these terms are neither defined nor elaborated. Why it lacks authority The Comprehensive Nuclear-Test-Ban Treaty Organisation (CTBTO) runs an elaborate verification system built around a network of over 325 seismic, radionuclide, infrasound and hydroacoustic (underwater) monitoring stations. The CTBTO has refrained from backing the U.S.’s allegations. Competition is back The key change from the 1990s is that the U.S.’s unipolar moment is over and strategic competition among major powers is back. The U.S. now identifies Russia and China as ‘rivals’. Its Nuclear Posture Review asserts that the U.S. faces new nuclear threats because both Russia and China are increasing their reliance on nuclear weapons. The U.S., therefore, has to expand the role of its nuclear weapons and have a more usable and diversified nuclear arsenal. The Trump administration has embarked on a 30-year modernisation plan with a price tag of \$1.2 trillion, which could go up over the years. Readiness levels at the Nevada test site that has been silent since 1992 are being enhanced to permit resumption of testing at six months notice. Russia and China have been concerned about the U.S.’s growing technological lead particularly in missile defence and conventional global precision-strike capabilities. Russia has responded by exploring hypersonic delivery systems and theatre systems while China has embarked on a modernisation programme to enhance the survivability of its arsenal which is considerably smaller. In addition, both countries are also investing heavily in offensive cyber capabilities. The new U.S. report stops short of accusing China for a violation but refers to “a high level of activity at the Lop Nur test site throughout 2019” and concludes that together with its lack of transparency, China provokes concerns about its intent to observe the zero-yield moratorium on testing. The U.S. claims that Russian experiments have generated nuclear yield but is unable to indicate how many such experiments were conducted in 2019. It suggests that Russia could be testing in a manner that releases nuclear energy from an explosive canister, generating suspicions about its compliance

Virus Impact | First batch of Rafales for India likely to fly in late

The arrival of the first batch of Rafale fighter jets for the Indian Air Force is likely to be delayed by around three months due to the COVID-19 pandemic, as France battles rising infections and deaths, and continuing lockdown restrictions, which have also impacted the training schedule, defence sources said. "In mid-March there were 8-9 weeks of training left before the first major group could move to India for starting operations here. Some logistic support equipment and test equipment were also to be flown to Ambala beginning April, which is postponed as of now due to the lockdown and restrictions on flights imposed by India," a defence source told The Hindu on condition of anonymity. 'No clear timeframe' :: In addition, the lockdown restrictions are expected to continue in France at least till the end of April due to severity of the outbreak. "So, it is only obvious that we expect corresponding delay," the two sources separately stated. "Taking in the delay due to the lockdown in France, followed by any restrictions on flights and personnel coming from Europe imposed by India, we could be looking at July[for the arrival of the aircraft]," the first source stated, adding that the timeframe was not clear yet. In October 2019, on a visit to France for the second India-France ministerial-level annual defence dialogue, Defence Minister Rajnath Singh took formal delivery of the first Rafale jet built for the IAF at the Dassault Aviation's facility in Merignac. The jets were scheduled to arrive in India by May 2020. In addition, the Defence Ministry had stated that during the dialogue the "French side has agreed to consider the Indian request for 8-10 Meteor missiles to be given to India by 2020 with the first four aircraft". May 2020 deadline :: In November, Minister of State for Defence Shripad Naik said in a written reply to Parliament that three Rafale aircraft have been handed over to the IAF. By May 2020, 24 IAF pilots along with engineers and technicians were scheduled to be trained on the Indian jets in France. Three IAF pilots and two technical officers were trained earlier on French Air Force (FAF) Rafales as per the terms of the contract. France has been badly hit by the COVID-19 pandemic with over 90,000 confirmed cases and over 13,800 deaths as. It has been under lockdown since March 17. The French armed forces have also been affected with the French Defence Ministry confirming that 50 crew members onboard their sole aircraft carrier, the nuclear-powered Charles de Gaulle, have tested positive. Diplomatic sources said a civilian staff of Italian origin and two family members with recent travel history had tested positive for COVID-19 at an FAF base outside Paris and the FAF has imposed a series of measures to prevent further spread, including several precautions, curtailed flying and working in shifts. India has contracted 36 Rafale multi-role fighter jets from France in fly-away condition with 13 India Specific Enhancements (ISE) under a \$7.87 billion Inter-Governmental Agreement (IGA) signed in September 2016. As per the IGA, deliveries begin 36 months from signing of contract and will be completed in 67 months. Last September, the IAF had resurrected the 17 Squadron 'Golden arrows' at Air Force station Ambala which will operate the first Rafale squadron while the second squadron would be based at Hasimara in West Bengal. The Indian standard Rafale with all ISE is operationally expected to be ready latest by September 2021.

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

Australia informs India about cancellation of premier multilateral air combat training exercise Pitch Black 2020

Australia has informed India that their premier multilateral air combat training exercise Pitch Black 2020 scheduled from July 27 to August 14 has been cancelled due to the COVID-19 situation, defence sources said. This was conveyed by Air Marshal Meg Hupfeld, Chief of the Royal Australian Air Force (RAAF), in a letter to Air Chief Marshal RKS Bhadauria, in mid-April. "The RAAF Chief informed of his decision to cancel the exercise this year due to the current and anticipated impacts of the worldwide pandemic of COVID-19," a defence source told The Hindu. He also noted that while the IAF was not participating with aircraft, Ex Pitch Black 2020 would have provided an opportunity for engagement between our personnel, the source said. The exercise is also an opportunity to interact with forces from across the globe, a second defence source said. The next edition of Pitch Black is scheduled in 2022. In the last edition of Pitch Black in 2018, the IAF for the first time deployed fighter aircraft which it had said would "provide a unique opportunity for exchange of knowledge and experience with these nations in a dynamic warfare environment". The contingent consisted of 145 personnel, four Su-30MKI fighters, one C-130 and one C-17 transport aircraft which went to Australia via Indonesia and during the transit had constructive engagements with Indonesian and Malaysian Air Forces as well. The defence and strategic engagement with Australia has steadily gone up in recent years especially on the bilateral front with naval cooperation at the forefront. The bilateral naval exercise AUSINDEX early last year saw participation of the largest Australian contingent ever to India with over 1,000 personnel. The Mutual Logistics Support Agreement (MLSA) has been long pending and is expected to be concluded soon as well as a broader maritime cooperation agreement including the Maritime Domain Awareness (MDA) to elevate the existing strategic partnership. Last week,

Australian High Commissioner-designate Barry O'Farrell made a pitch for trilateral cooperation among India, Australia and Indonesia to "identify new ways that our three countries can collaborate to be the best possible custodians of the Indian Ocean". The defence cooperation between India and Australia is underpinned on the Memorandum on Defence Cooperation 2006, the Joint Declaration on Security Cooperation 2009 and the bilateral Framework for Security Cooperation 2014.

Source: <https://www.defencenews.in/>

Aero India 2021 to be held from February 3 to 7 in Bengaluru

The department of Defence Production evening announced the date of India's biennial aviation exhibition and air show February 3 to 7, 2021. And this time too, it is decided to be held in the state capital Bengaluru. In a short one lined statement, the Defence Exhibition Organisation also announced that the 13th edition of Aero India will be held at Air Force Station, Yelahanka, Bengaluru. However, no other details were divulged. In 2019, the five-day air show had quite a rough start, after the collision of Surya Kirans that were rehearsing for the show. While several global events have seen an indefinite delay in deadlines, the announcement of the dates and location of Aero-India brings a fresh breeze of good boding to many. "Sufficient time is necessary to arrange the logistics to plan for the event so it was imperative to announce the information and ensuring good participation from companies from many countries. With it being a defence programme, there is also a requirement for inter-governmental coordination. It only goes on to show India's firm decision to plan ahead for one of the most important sectors for India," said a former Defence PSU employee.

Source: <https://www.newindianexpress.com/>

TECHNOLOGY

Training of Gaganyaan astronauts in Russia put on hold due to lockdown: Sources

The training of Gaganyaan's four prospective astronauts in Russia has been put on hold as the facility where the exercise is being undertaken has been temporarily shut in the wake of coronavirus outbreak, sources said. The four test pilots of the Indian Air Force, chosen for India's manned mission to space, have been undergoing training at the Yu.A.Gagarin Research and Test Cosmonaut Training Centre near Moscow since February. However, since last week the centre has been shut due to coronavirus outbreak, sources said. "Our (prospective) astronauts are fine. They are currently in hostel. We have been told the centre will open by the end of the month," a source said. When asked whether the suspension of training for nearly four weeks will hurt the training programme, the sources added that although the training programme spans over 12 months, they had kept a buffer of three months to factor in exigencies. India's first manned mission to space — Gaganyaan — is planned around 2022.

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

Gaganyaan: From 3D tech for space to inflatable habitats, ISRO calls for experiments

Reiterating that India is eyeing more than just landing a probe on Moon or sending astronauts only to low earth orbit (LEO), the Indian Space Research Organisation (ISRO) is looking at technologies for inflatable habitats, in-situ 3D manufacturing for space and among the 18 experiments from which it will choose to send as part of Gaganyaan. It is also looking for proposals in the field on human psychology for long-term missions. "The human space programme requires innovations and creative technologies for space explorations which will lead to widening of scientific knowledge, economic growth, value addition to the quality of life of a common man and thus national development. There is a need to build capabilities to derive scientific benefits from the programme," ISRO said, as part of its announcement of opportunities (AO) that will let national institutes and labs to send experiment proposals. TOI was the first to report, as early as in January 2019, that ISRO may be looking beyond just sending astronauts to LEO, and that it was planning on a space station and eventually even sending humans to Moon. "Gaganyaan is only the beginning, we're not going to stop there. We'll continue this programme with plans to send people to the Space Station and to Moon. Work on this will happen parallel to Gaganyaan," Sivan had said. The kinds of experiments ISRO is looking to carry on Gaganyaan is in line with these plans. At present though, the space agency's priority is to launch the Gaganyaan mission by 2022

as announced by Prime Minister Narendra Modi, and four astronaut-elects picked by the Institute of Aerospace Medicine (IAM) are currently in Russia for training. The AO call by ISRO is looking at technologies that can establish long term research as well as plan for necessary facilities, human resource developments for optimal utilisations of experimental applications and technological developments for societal usage. All national research/academic institutions can send in the proposals to the space agency and the last date for submission is July 15. Among other key areas in which ISRO is looking for experiments are space food and related technologies, debris management and mitigation, space bioengineering, bioastronautics and so on (see full list in below).

Areas of Experiments:

1. Radiation Hazards Characterisation and Mitigation Techniques
2. Space Food and Related Technologies
3. Inflatable Habitats Technology
4. Human Robotic Interfaces
5. Thermal Protection Systems
6. Environmental Control And Life Support Systems
7. Green Propulsion
8. Advanced Materials
9. Debris Management And Mitigation
10. Energy Harness And Storage
11. In-situ 3D Manufacturing Technologies For Space
12. Fluid Technology and Management
13. Space Bioengineering
14. Bioastronautics
15. Simulated Gravity Technologies
16. Human Psychology For Long Term Missions
17. Space Medicine And Diagnosis
18. Any Other Relevant Technology Related To Human Space Program

Source: <https://timesofindia.indiatimes.com/>

Indian Army develops remote-controlled trolley to deliver essential items

The Corps of Electronics and Mechanical Engineers (EME) of the Indian Army has created a remote-controlled vehicle to deliver essential items to frontline healthcare staff and others. In a Twitter post, the ADGPI Indian Army showcased several images of this remote operated trolley that comes equipped with a wash basin and dustbin. The trolley also has storage space which can be used in hospitals and isolation wards. "Indian Army EME as part of anti-covid measures has innovated a remotely operated vehicle which can deliver essentials to personnel from 100 feet as part of social distancing," it said in the Twitter post. The trolley looks basic and is improvised with electrical fittings to serve the purpose. "This will decrease human contact and chances of infection from spreading. We will fight COVID together," it said in another tweet. The Indian Army recently also as developed low-cost innovations to help medical workers fight the coronavirus disease. Indian Army's official Twitter handle '@adgpi' tweeted that it has developed innovative surgical masks, hand sanitiser, anti-aerosolization box and thermal scanner. This comes after the Indian Navy made a unique design for ventilators that can cater to six patients. Dubbed as the Portable Multi-feed Oxygen Manifold, the device can cater to six people from a single oxygen cylinder. Meanwhile, the Defence Research and Development Organisation (DRDO) has now tweaked fire fighting equipment into machines to spray disinfectants. These machines will be used to sanitise roads and other surfaces. Developed by the Centre for Fire Explosive & Environment Safety (CFEES), these machines are spin offs of fire suppressants. These portable sanitation equipment can be used to spray decontamination solutions consisting of 1% Hypochlorite (HYPO) solution for sanitisation of suspected areas. The DRDO has also made a bio-suit for medical professionals to help them fight coronavirus. Interestingly, the bio suit made by DRDO has a unique feature. The DRDO has prepared a special sealant as an alternative to seam sealing tape based on the sealant used in submarine applications, it said.

Source: <https://timesofindia.indiatimes.com/>

BUSINESS

Prominent Indian-American defence expert Vivek Lall part ways with Lockheed Martin

Vivek Lall, a prominent Indian-American aerospace and defence expert, who played key roles in some of the major defence deals between India and the US, has resigned from Lockheed Martin “to spend more time with family”. Mr Lall, 50, is currently posted as vice president of Aeronautics Strategy and Business Development at Lockheed Martin, an American security and aerospace giant. The company confirmed that Mr Lall is leaving the company. “We would like to extend our sincere appreciation to Dr Vivek Lall for representing Lockheed Martin and strengthening our commitment to international partners,” a spokesperson of Lockheed Martin told PTI. “We thank Vivek for his thought leadership and the many contributions he made to our team. We wish Vivek and his family all the best,” the spokesperson said. Known as the industry architect of US-India defence relationship because of his involvement in major defence deals between the two countries, Mr Lall expressed his “utmost gratitude” to Lockheed Martin for the unique opportunity to lead their aeronautics strategy and business development activities in international markets, including India. “I thank them for understanding my decision to spend more time with my family,” Mr Lall told PTI. “Lockheed Martin is truly shaping the future with world-leading advanced technologies and customer solutions. I firmly believe the F-21 is the best solution for India’s national security, Make in India industry partnerships advancing indigenous manufacturing, and India’s strategic relationship with the US,” he said. Mr Lall, who was born in Jakarta, the Indonesian capital, for over a decade has been instrumental in major US-India defence deals worth around USD 18 billion. The latest was the procurement of 24 MH-60R multi-role helicopters from Lockheed Martin for the Indian Navy. The USD 2.6 billion agreement was signed during President Donald Trump’s visit to India in February. In 2017, Mr Lall was the Chief Executive of Strategic Development at General Atomics during which he played a key role in the path breaking agreement by the White House to release category-1 unmanned aerial vehicles (UAVs) to India, a non-NATO country. The UAVs that can carry missiles fall under the category-1 classification. Mr Lall in his capacity as vice-president and India country head for Boeing Defence Space and Security in late 2000 was also instrumental in several multi-billion bilateral defence deals. Prominent among them were 10 C-17 strategic lift military transport aircraft worth USD 4 billion, P-8I anti-submarine warfare aircraft worth USD 3 billion, 28 apache helicopters and 15 chinooks worth USD 5 billion and 22 harpoon missiles worth USD 200 million. Appointed to the US Federal Aviation Advisory Committee two years ago, Mr Lall has overseen multiple campaigns as well as pan-India strategic industrial tie-ups. Mr Lall had also served as the founding co-chair of the US~CHECK~India Aviation Cooperation Programme launched in 2005.

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

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