May
2020

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Volume: 45 Issue: 123 28 May 2020

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COVID-19: DRDO's Contribution

livemint

Thu, 28 May 2020

IIT develop lighter, breathable PPE kit to fight COVID-19

- ***The new PPE kit developed by IIT Delhi free of bacteria or virus penetration***
- ***Priced at ₹905 (including GST), the PPE overall would cost around ₹300 for one time given the option to reuse***

New Delhi: Department of Textile and Fibre Engineering at Indian Institute of Technology Delhi has developed a breathable and light-weighted PPE (Personal Protective Equipment) to fight COVID-19.

The Head of the Department Professor Dr SM Ishtiaque along with his PhD student, Biswa Ranjan Das, Scientist 'D' and Assistant Director, DMSRDE (DRDO), Kanpur, developed an advanced version of PPE.

"We have covered all the basic aspects and it meets the criteria specified by the Ministry of Health and Family Welfare. It is free of bacteria or virus penetration. Our PPE is equipped to cover 99.8 per cent bacteria," said Dr Ishtiaque.

He further said that they consulted more than 150 doctors and the most pressing issue was that it was uncomfortable to wear.

"We have made the overalls more breathable than what doctors use now, with no compromise on safety. There is a minimum requirement of 3.5 kPa (kilopascals) but our PPE has the property of 15 kPa," explained the professor.

Speaking about the material used, he said, "The fabric we used is very soft. When you wear it and work for long hours, you would want it to be comfortable and light. Our PPE weighs 300 grams while other PPEs weighs anywhere between 400-450 grams. We also emphasised on the reuse factor. The PPE can be washed twice and could be used thrice which in turn brings down the cost of purchase by three times."

Priced at ₹905 (including GST), the PPE overall would cost around ₹300 for one time given the option to reuse.

He also spoke about the stitching of the overalls. "That was of utmost importance. A smallest of the hole could be hazardous. We made sure that the garment is sealed carefully in order to avoid virus penetration," he added.

However, the feedback from the doctors is yet to come.

"We are eagerly waiting for their feedback. However, I wore it myself for five hours without any issue," the professor said.

https://www.livemint.com/news/india/iit-develop-lighter-breathable-ppe-kit-to-fight-covid-19-11590548959953.html

Thu, 28 May 2020

India, Israel to carry out joint research for rapid Covid-19 testing

The two nations discussed joint Research & Development for rapid diagnosis of COVID-19 based on big data and artificial intelligence

By Navya Singh, Shubhendu Deshmukh, Abhishek M

India and Israel, in a joint effort, will conduct research based on big data and artificial intelligence for rapid testing of COVID-19 to enable normalisation of life, the embassy of Israel said on Monday, May 25.

Image Credit: NDTV

"India and Israel to conduct joint R&D for rapid testing to allow normalisation of life under COVID-19," Avigail Spira, the spokesperson of the embassy, tweeted.

"I'm proud to connect brilliant minds from India and Israel so they can jointly develop life-changing solutions for the whole world, and especially in fighting the #COVID19 pandemic," Israel's envoy to India Ron Malka tweeted.

PSA Prof. K Vijay Raghavan, officials from India's Defence Research Development Organisation (DRDO), Council for Scientific and Industrial Research and Sanjeev Singla and the Indian Ambassador to Israel participated in the discussions with the head of the Directorate of R&D in Israel's Ministry of Defence Daniel Gold and Malka.

"Discussed joint R&D for rapid diagnosis based on big data & AI technology, to enable a rapid return to routine. This is part of the vision of @IsraeliPM & @PMOIndia for wide-ranging scientific cooperation between India and Israel."

Israeli Defence Minister Naftali Bennett, earlier this month, said that the scientists at the country's main biological research institute have made a significant breakthrough in developing an antibody to the novel coronavirus.

In 2018, during Israel's Prime Minister Benjamin Netanyahu's visit to India, the two nations decided to step up cooperation in the field of science and technology, including big data analytics in health care and security in cyberspace.

https://thelogicalindian.com/news/india-israel-covid-19-testing-21330?infinitescroll=1

Thu, 28 May 2020

भारतीय वायुसेना की शक्ति और बढ़ी, एलसीए तेजस को किया गया शामिल

बेंगलुरु स्थित हिंदुस्तान एयरोनॉटिकल लिमिटिड के बनाए गए लड़ाकू विमान एलसीए तेजस को वायुसेना में शामिल कर लिया गया है।

कोयंबटूर: भारतीय वायुसेना ने बुधवार को पहला हल्का लड़ाकू विमान (एलसीए) तेजस एफओसी (फाइनल ऑपरेशनल क्लीयरेंस) मानक शामिल किया और शहर के बाहरी हिस्से सुलूर में स्थित वायुसेना केंद्र में 18 वीं स्क्वाड्रन "फ्लाइंग बुलेट्स" का संचालन किया।

तेजस एमके-1 को शामिल करने के मौके पर अंतर-धार्मिक प्रार्थना भी हुई। यह विमान बेंगलुरु स्थित हिंदुस्तान एयरोनॉटिकल लिमिटिड (एचएएल) ने बनाया है। इसके अध्यक्ष और प्रबंध निदेशक आर माधवन ने विमान के कागजात वायुसेना प्रमुख एयर चीफ मार्शल आर के एस भदौरिया को सौंपे। तेजस को शामिल करने के दौरान नारियल भी तोड़ा गया।

भदौरिया ने पहले एलसीए तेजस एमके-1 एफओसी की चाबी ग्रुप कैप्टन मनीष तोलानी को सौंपी जो सुलूर के वायु सेना स्टेशन में नंबर 18 स्क्वाड्रन के कमांडिंग अधिकारी है। इससे पहले भदौरिया ने इनिशियल क्लीयरेंस ऑपरेशन (आईओसी) विमान उड़ाया जो वायुसेना की 45वीं स्क्वॉड्रन का हिस्सा है।

तेजस चौथी पीढ़ी का एक स्वदेशी टेललेस कंपाउंड डेल्टा विंग विमान है। 45वीं स्क्वाड्रन के बाद 18वीं स्कवाड्रन दूसरी टुकड़ी है जिसके पास स्वदेश निर्मित तेजस विमान है। यह फ्लाई-बाय-वायर विमान नियंत्रण प्रणाली, इंटीग्रेटेड डिजिटल एवियोनिक्स, मल्टीमॉड रडार से लैस है और इसकी संरचना कंपोजिट मैटेरियल से बनी है।

यह चौथी पीढ़ी के सुपरसोनिक लड़ाकू विमान के समूह में 'सबसे हल्का और छोटा' विमान भी है। 1965 में गठित 18वीं स्क्वाड्रन पहले मिग 27 विमान उड़ाती थी। इस स्क्वाड्रन ने पाकिस्तान के साथ 1971 के युद्ध में सक्रिय रूप से भाग लिया था। सुलूर में इस साल एक अप्रैल को इस स्क्वाड्रन का पुनर्गठन किया गया था।

अपने संबोधन में भदौरिया ने उद्योग से भारतीय वायुसेना की आवश्यकताओं को पूरा करने के लिए मिलकर काम करने का आग्रह किया। नए संस्करण की डिजाइनिंग और निर्माण में शामिल वैज्ञानिकों और अन्य लोगों की सराहना करते हुए, उन्होंने कहा कि तेजस का यह मॉडल अब दुनिया में इस वर्ग में सबसे अच्छा है।

वायुसेना प्रमुख ने कहा कि कोविड-19 की स्थिति की वजह से यह विमान मिलने में देरी हुई। अब वायुसैनिकों की जिम्मेदारी है कि वह इसका इस्तेमाल करें। उन्होंने कहा कि वायुसेना को 83 एलसीए की जरूरत है। माधवन ने कहा कि एचएएल अगले 36 महीनों में 16 तेजस एफओसी की आपूर्ति वायुसेना को करेगा।

उन्होंने बताया कि वायुसेना ने 20 आईओसी मानक विमान और 20 एफओसी मानक **विमान** का ऑर्डर दिया था। इस बीच वायुसेना प्रमुख एयर चीफ **मार्शल** आर के एस भदौरिया ने बुधवार को सुलूर वायुसेना स्टेशन पर एक सीट वाला हल्का तेजस विमान उड़ाया। **अधिकारियों** ने बताया कि तेजस विमान विकसित करने वाली टीम में शामिल रहे भदौरिया ने विमान उड़ाया, जो वायुसेना की 45वीं स्क्वॉड्रन का हिस्सा है।

तेजस को वैमानिकी विकास **एजेंसी** और हिंदुस्तान एयरोनॉटिक्स लिमिटेड (एचएएल) **द्वारा** विकसित किया गया है। जेट का जीवनकाल किसी भी अन्य फ्रंट-लाइन लड़ाकू विमान की तरह न्यूनतम 30 वर्ष होगा।

https://www.abplive.com/news/india/indian-air-force-strength-increased-lca-tejas-included-1411365

THE HINDU

Thu, 28 May 2020

IAF operationalises second LCA squadron, inducts first LCA Tejas in FOC standard

The first Light Combat Aircraft Tejas Mk-1 was formally inducted into service on Wednesday in a function held at Air Force Station, Sulur near Coimbatore

By Wilson Thomas

Coimbatore: The Indian Air Force (IAF) formally inducted into service the first Light Combat Aircraft (LCA) Tejas Mk-1 in Final Operational Clearance (FOC) standard on Wednesday, and operationalised its second LCA squadron No. 18 'Flying Bullets'.

Chief of the Air Staff, Air Chief Marshal (ACM) R.K.S. Bhadauria, received the first FOC standard LCA from Hindustan Aeronautics Limited (HAL) in a function held at Air Force Station, Sulur near Coimbatore, in Tamil Nadu.

The Final Operational Clearance version of LCA Tejas Mk-1 | Photo Credit: M. Periasamy

"We are proud to deliver a much lethal aircraft than the Initial Operational Clearance (IOC) block. Apart from all the capabilities of IOC aircraft, the FOC variant additionally comes with air to air refuelling capability, close combat gun, additional drop tanks, Beyond Visual Range (BVR) missile capability, updated avionics and flight control software suite," HAL Chairman R. Madhavan said in a statement.

A 'Sarva Dharma Pooja' (inter-faith prayer) was performed before the induction of the new fighter into the force. Before the ceremony, ACM Bhadauria flew a sortie on an Initial Operational Clearance (IOC) aircraft from the No. 45 squadron 'Flying Daggers'.

Chief of the Air Staff, Air Chief Marshal RKS Bhadauria (left) handing over a representational key of the first LCA Tejas Mk-1 fighter to Group Captain Manish Tolani, Commanding Officer of No. 18 Squadron at Air Force Station, Sulur. | Photo Credit: M.

The handover and induction of the LCA FOC aircraft got delayed due to COVID-19 and the lockdown restrictions. Four more FOC aircraft in advanced stages of production and testing and are expected to join the squadron soon, HAL said. The FOC certificate for the LCA was handed over during the 'Aero India' air show at Bengaluru in February last year.

Praising the latest LCA as 'best-in-class', ACM Bhadauria said that combat capabilities of the aircraft and the two squadrons will become core of the strength of Air Force.

Mr. Madhavan said that HAL was expecting cabinet clearance for the deal of 83 LCA Mk-1A fighters by the third quarter of this year. The clearance was expected by August which got delayed due to COVID-19 situation, he said, adding that HAL was looking at exports of LCA and some countries had expressed interests.

Girish S. Deodhare, Programme Director (Combat Aircraft) and Director of Aeronautical Development Agency, said that LCA Mk-2, a bigger variant aircraft with bigger engine, was under design stage and test trials of the aircraft were expected to happen by 2022.

"Already a lot of designing has been done and all the specs have been frozen. Air Force requirements have now included. With that we are continuing the detailed design and realizing the aircraft," he said.

The first LCA squadron with IOC standard aircraft was operationalised in July 2016. IAF has so far placed orders for 20 IOC standard aircraft and 20 FOC standard aircraft including eight twin seater trainers. The trainer variant of LCA have not been handed over to the IAF yet.

The No. 18 Squadron was originally formed on April 15, 1965 and got number plated on April 15, 2016 after the Mig-27 aircraft it was flying then were retired. The Squadron was resurrected on April 1 this year, at Sulur. The No. 18 squadron saw active combat during the 1971 war and Flying Officer Nirmal Jit Singh Sekhon was posthumously awarded the highest gallantry award 'Param Vir Chakra'.

There is also an order for 83 LCA in MK-1A configuration with four major and several minor upgrades which ACM Bhadauria termed a 'high priority' in a recent conversation with *The Hindu*. The deal, estimated to be worth around ₹38,000 crore, is expected to be signed in the next three months.

HAL is setting up a second assembly line in collaboration with the private industry to increase the production rate of the LCA from current eight to 16 meet the delivery timelines.

https://www.thehindu.com/news/national/tamil-nadu/iaf-operationalises-second-lca-squadron-inducts-first-lca-tejas-in-foc-standard/article31685568.ece

Business Standard

Thu, 28 May 2020

IAF gets second Tejas squadron; Air Chief shows the way with solo sortie

Air force chiefs, including Pakistan's recently, often go up for a spin to boost the morale of their fighter pilots

By Ajai Shukla

New Delhi: In a statement of confidence in the indigenous Tejas light combat aircraft (LCA), the Indian Air Force (IAF) boss, Air Chief Marshal RKS Bhadauria climbed alone into the cockpit of a Tejas fighter on Wednesday, revved up its powerful turbofan engine and took off for a solo flight around Coimbatore.

Air Chief Marshal RKS Bhadauria climbed alone into the cockpit of a Tejas fighter on Wednesday, revved up its powerful turbofan engine and took off for a solo flight around Coimbatore. Photo: PTI

Air force chiefs, including Pakistan's recently, often go up for a spin to boost the morale of their fighter pilots. But they usually do so in twin-seat aircraft, with the squadron's top fighter jock controlling things from the front seat. Bhadauria – a veteran test pilot who has flown multiple fighters during his 40-year career – had the confidence to fly alone.

Bhadauria's solo flight from Sulur Air Base in Tamil Nadu marked the birth of the IAF's second Tejas squadron –

Number 18 Squadron, called the “Flying Bullets”. After the flight, the air force chief inducted into service the squadron’s first Tejas fighter, handed over by Hindustan Aeronautics Ltd (HAL).

While the first Tejas squadron – 45 Squadron (Flying Daggers) – operates 16 Tejas Mark 1 fighters built to “initial operational certification” (IOC) standards, 18 Squadron will fly a more capable version that conforms to “final operational certification (FOC)” standards.

“Apart from all the capabilities of IOC aircraft, the FOC variant additionally comes with air-to-air refueling capability, close combat gun, additional drop tanks, beyond-visual-range (BVR) missile capability, updated avionics and flight control software suite”, stated R Madhavan, HAL’s chairman.

“The FOC variant will reduce the [Tejas fighter’s] maintenance man-hours and turn-around-time, resulting in enhanced support for IAF missions,” stated a HAL release.

HAL says 18 Squadron will receive its next two Tejas fighters in July. Two more after that are “in the advanced stages of production and testing.” HAL has also commenced training for maintenance crew for the FOC standard aircraft and positioned trained personnel with 18 Squadron.

Alongside building 16 single-seat Tejas Mark 1 fighters for 18 Squadron, HAL will also build eight twin-seat, trainer version Tejas Mark 1 fighters – four of which will go to each of the two squadrons.

After building a total of 40 Tejas Mark 1 fighters by 2023 to equip the first two squadrons, HAL will then start building 83 Tejas Mark 1A fighters for the IAF’s next four Tejas squadrons. Equipped with airborne electronically scanned array (AESA) radar and sophisticated jammers, the Mark 1A will be significantly more capable than the Mark 1.

The next capability jump will involve the production of the Tejas Mark 2. Several enhancements the IAF has demanded will make it a 17.5 tonne medium fighter –bulkier and more powerful then the 14.5 tonne Mark 1.

A major boost to the Tejas Mark 2 will come from its General Electric F-414 engine, which will be significantly more powerful than the Mark 1 fighters’ GE F-404IN engines. This will allow the Mark 2 to carry a beefy 6.5 tonnes of payload, consisting of weapons and external fuel.

https://www.business-standard.com/article/defence/iaf-gets-second-tejas-squadron-air-chief-shows-the-way-with-solo-sortie-120052800096_1.html

Outlook
THE FULLY LOADED MAGAZINE

Thu, 28 May 2020

IAF operationalises no.18 Squadron, equips it with LCA Tejas

Coimbatore: The Indian Air Force on Wednesday inducted the first Light Combat Aircraft (LCA) Tejas FOC (Final Operational Clearance) standard and operationalised its Squadron 18 "Flying Bullets" at the Air Force Station at Sulur in the city"s outskirts. An Inter faith prayer was performed before induction of Tejas Mk-1, manufactured by Hindustan Aeronautical Ltd, Bengaluru, whose Chairman and Managing Director, R Madhavan handed over its documents to Air Chief Marshal and Chief of Air Staff R K S Bhaduauria. A coconut was also broken to mark the induction of Tejas today. Bhadauria handed over a representational key of the first LCA Tejas Mk-1 FOC fighter to Group Captain Manish Tolani, Commanding Officer of No. 18 Squadron at the Air Force Station, Sulur. Earlier, Bhaduria flew a sortie on an Initial Clearance Operation (IOC) aircraft from the 45 Squadron Flying Daggers. Tejas is an indigenous fourth generation tailless compound delta wing aircraft. The No.18 Squadron will be the second one to have the home-made Tejas, after the 45 Squadron based here. The aircraft is equipped with fly-by-wire flight control system, integrated digital avionics and multi-mode radar, while its structure is made

of composite material. It is the lightest and smallest in its group of fourth generation supersonic combat aircraft. The No 18 Squadron, formed in 1965 with the motto "Teevra aur Nirbhaya" meaning "Swift and Fearless," was earlier flying MiG 27 aircraft. The Squadron "actively participated" in the 1971 war with Pakistan and had earned the sobriquet "Defenders of Kashmir Valley" by being the first to land and operate from Srinagar. The Squadron was "resurrected" on April 1 this year at Sulur. In his address, Bhaduaria urged the industry to work together to fulfill the requirements of IAF. Lauding the scientists and others behind the designing and manufacture of the new version, he said this model of Tejas was the best in this class in the world now. The FOC variant has air-to-air refuelling facility, close combat gun, updated avionics and flight control software among others, he said. Though there was a delay in handing over the aircraft due to the COVID-19 situation, it was now the responsibility of Airmen to make use of it, he said, adding, there was a requirement of 83 LCA to IAF. Madhavan said that HAL will be delivering 16 Tejas FOC to the IAF in another 36 months, even as the production of four FOC aircraft was in the advanced stage. IAF has placed an order for 20 IOC standard aircraft and 20 FOC standard aircraft, the HAL chief said. Among others, the FOC variant will reduce the maintenance man hours and turn around time, resilting in enhanced support for IAF missions. Its features include additional drop tanks and BVR missile capabaility. Meanwhile, Bhadauria flew a Tejas single-seater LCA at the Sulur air force station. Officials said Bhadauria, who worked with the team that developed the Tejas jet, flew the aircraft which is part of the IAF"s 45 Squadron. The Tejas has been developed by the Aeronautical Development Agency and the HAL. The lifespan of the jet would be a minimum of 30 years just like any other front-line combat aircraft. Combat jets are classified under various generations depending on their avionics, capability and weapons systems. The current fleet of fighter jets with the IAF range from three-and-half generation to the fourth generation. *(Disclaimer: This story has not been edited by Outlook staff and is auto-generated from news agency feeds. Source: PTI)*

https://www.outlookindia.com/newsscroll/jhansi-on-alert-against-locusts-fire-brigade-ready-to-spray-insecticide/1847555?scroll

DEFENCE AVIATION POST

Your Connect To The World Of Defence And Aviation

Thu, 28 May 2020

As 2nd Tejas squadron takes off, IAF looks at more indigenous LCA to fill up shortage of fighters

Air Chief Marshal RKS Bhadauria flew the Light Combat Aircraft (LCA) Tejas as the second squadron of the indigenous fighter got inducted in Sulur on Wednesday. This was the veteran pilot’s first solo sortie after taking over as IAF chief. The first squadron of the Light Combat Aircraft, Tejas was raised in 2016.

The Light Combat Aircraft Tejas, indigenously designed by Aircraft Development Agency (ADA) under the Defence Research and Development Organisation (DRDO) and manufactured by Hindustan Aeronautics Limited (HAL), is expected to be the backbone of the Indian Air Force in future as the mantra is self-reliance by reducing imports.

Indian Air Force current fleet is down to 30 squadrons — way below the sanctioned strength of 42. Each squadron comprises 18 fighter jets.

This year in March, the Ministry of Defence gave the go-ahead for the purchase of 83 Tejas Mark 1A aircraft for the Indian Air Force at a cost of Rs 38,000 crore, bringing down the price from earlier Rs 56,000 quoted by the Hindustan Aeronautics Limited (HAL).

This was a major breakthrough as after cost negotiations for over three years between the Ministry of Defence and Hindustan Aeronautics Limited, the price for procurement of advanced variant of the indigenously made Light Combat Aircraft Tejas has been slashed by nearly Rs 18,000 crore.

https://www.defenceaviationpost.com/2020/05/as-2nd-tejas-squadron-takes-off-iaf-looks-at-more-indigenous-lca-to-fill-up-shortage-of-fighters/

Arunachal24.in

Thu, 28 May 2020

Tejas FOC Aircraft handed over to IAF

New Delhi**:** The Indian Air Force (IAF) on Wednesday inducted Tejas Mk-1 FOC aircraft into the recently resurrected No 18 Sqn, the "Flying Bullets" at Air Force Station Sulur, marking yet another important step towards enhancing the operational capability of the Air Force. The Squadron is the first in the IAF to induct this platform. This is also an important milestone in the country's indigenous fighter aircraft program and a significant boost to the 'Make In India' initiative. Tejas Mk-1 FOC is a single engine, light weight, highly agile, all weather multi role fighter aircraft capable of air-to-air refueling thus making it a truly versatile platform.

The Squadron was operationalised by Chief of the Air Staff (CAS) Air Chief Marshal RKS Bhadauria. Air Officer Commanding in Chief of the Southern Air Command, Air Marshal Amit Tiwari, and the Commodore Commandant of 18 Sqn, Air Marshal TD Joseph, Mr R Madhavan CMD HAL, Dr Girish S Deodhare, PGD (CA) and Director, Aeronautical Development Agency were also present during the ceremony. While addressing the personnel at AF Station Sulur, the CAS congratulated them and lauded the efforts put in by Southern Air Command and AF Station Sulur towards the induction of the new airborne platform. He complimented Chairman HAL, ADA, DRDO labs, DPSUs, MSMEs and all agencies involved in the production of LCA for achievement of this historic milestone.

The occasion was marked by the presentation of aircraft documents of the Tejas FOC version by the HAL CMD to the CAS. The CAS further handed these over to the Commanding Officer of 18 Squadron Group Captain Manish Tolani, along with the ceremonial keys to the unit. The event commenced with a fly past comprising of a helicopter formation of the Mi 17 V5 and the ALH, An-32 transport aircraft and Tejas Mk-1 fighters.

No 18 Sqn was raised at Ambala on 15 Apr 1965 with the Folland Gnat Aircraft. Flying Officer Nirmal Jit Singh Sekhon, the only Param Vir Chakra recipient of the Indian Air Force was a part of the Squadron during the 1971 Indo-Pak War. The Squadron also has the unique distinction of having operated two HAL made aircraft, the Tejas and the Ajeet which it also operated from the same station. Over the years it also operated MiG-27 ML aircraft from various bases across the country. The Squadron was number plated in Apr 2016. The Squadron falls under the operational control of Southern Air Command which is responsible for integrating the Squadron into the IAF Concept of Operations.

Before the induction ceremony, the Chief of the Air Staff (CAS) Air Chief Marshal RKS Bhadauria PVSM AVSM VM ADC flew a sortie in the Tejas Mk I fighter with 45 Sqn.

http://arunachal24.in/tejas-foc-aircraft-handed-over-to-iaf/

Business Today

Thu, 28 May 2020

LCA Tejas joins IAF 18 Squadron today; Air Chief Marshal RKS Bhadauria flies fighter

LCA Tejas IAF (Indian Air Force) News: All you need to know about the newly inducted combat aircraft Tejas. Air Chief Marshal RKS Bhadauria flies fighter jet Tejas in his first solo sortie as IAF Chief

The fourth generation light combat aircraft (LCA) has been inducted into the number 18 squadron, "Flying Bullets" of the Indian Air Force today. An all faith prayer ceremony was also organised in Sulur, Tamil Nadu, and a coconut was broken to mark the induction of Tejas.

Air Marshall RKS Bhadauria flew the Light Combat Aircraft (LCA) Tejas as the fighter aircraft got inducted into the second squadron. Number 18 squadron is however, not the first one to get the home-made Tejas. Number 45 squadron of the Indian Air Force was armed with this made-in-India light combat aircraft last year. This is also the veteran pilot's first solo sortie as the Indian Air Force chief.

Tejas is also the "lightest and smallest" in its group of fourth generation supersonic combat aircraft

Light combat aircraft, Tejas is indigenously manufactured by Aircraft Development Authority (ADA) under the supervision of Defence Research and Development Organization (DRDO) and manufactured by Hindustan Aeronautics Limited (HAL). According to an India Today report, Tejas is expected to be the backbone of the IAF in the near future keeping in line with PM Modi's Atma Nirbhar Bharat initiative. Tejas is equipped with fly-by-wire flight control system, integrated digital avionics and multimode radar, while its structure is made of composite material. Tejas is also the "lightest and smallest" in its group of fourth generation supersonic combat aircraft.

https://www.businesstoday.in/latest/trends/lca-tejas-joins-iaf-18-squadron-today-air-chief-marshal-rks-bhadauria-flies-fighter/story/405105.html

ORF OBSERVER RESEARCH FOUNDATION

Thu, 28 May 2020

Could a US nuclear test be a fortuitous opportunity for India?

By Manoj Joshi

A Report last week in The Washington Post highlighting that the US government was considering the resumption of nuclear weapons tests could be good news for India. If the US breaks the informal ban that it has in place since its last test in September 1992, it provides India an opportunity to also follow suit, and confirm the design of its thermonuclear bomb, something it failed to do in 1998 tests. This remains a critical gap in India's nuclear force posture.

A test carried out by the U.S. military in Nevada on May 25, 1953 Source: Department of Defence

Suspicions in the US that Russia and China may be breaching their commitments not to test have been around for the past two decades at least, with

some of the issues related to the interpretation of the Comprehensive Test Ban Treaty (CTBT) in relation to hydronuclear and sub-critical testing.

But it is only now that the US has acted in a range of areas. The Trump Administration which terminated the Intermediate Range Nuclear Forces (INF) treaty last year and has also taken the decision to fabricate low-yield nuclear weapons also believes that both Russia and China have been conducting very low-yield nuclear tests. The US itself does sub-critical tests with a zero yield, as required by the CTBT, which can test the components of a weapon. It also has a huge National Ignition Facility (NIF) that enables it to "maintain the reliability and safety of the US nuclear deterrent without full-scale testing."

Though, officially, India claims that it has thermonuclear weapons, the reality is that the test conducted on May 11 1998 was a fizz. Not only was it not picked up by anyone else in the world, it was not even picked up by an Aviation Research Centre (ARC) facility in Karnal, near Delhi, which has been around since the 1960s to detect Chinese nuclear tests.

Thermonuclear weapons are a key element of India's nuclear doctrine, which in essence, says that any attack on India will be met with "massive retaliation." The Draft Nuclear Doctrine of August 1999 had declared that "any nuclear attack on India and its forces shall result in punitive retaliation with nuclear weapons to inflict damage unacceptable to the aggressor."

India's official nuclear policy which came as a press statement of January 4, 2003 following a Cabinet Committee on Security discussion says that India would adopt a posture of "no first use" and that nuclear weapons would "only be used in retaliation against a nuclear attack on Indian territory or on Indian forces anywhere." Further that India's retaliation to "a first strike will be massive and designed to inflict unacceptable damage."

India's commitment to "massive retaliation" received indirect confirmation in April 2013 through a speech of the convener of the National Security Advisory Board, Shyam Saran. In the remarks, clearly in response to the development of small tactical nuclear weapons by Pakistan, Saran reiterated that India would not be the first to use nuclear weapons, but regardless of the size of the attack, India's retaliation "will be massive and designed to inflict unacceptable damage on the adversary." The word "massive" has a context in nuclear strategy literature, and usually pertains to what are called "city busting" strikes, as against those that target military facilities.

The problem is that from the outset there have been question marks about whether or not the Indian thermonuclear test worked. There was considerable debate and discussion in the aftermath of the Pokhran II tests on this issue, with Department of Atomic Energy scientists claiming they had purposefully kept the yield of the device low so as not to damage nearby villages. After months of study, senior US nuclear intelligence analysts, however, concluded that the thermonuclear test was a failure.

In August 2009 K Santhanam, DRDO's point man in the nuclear programme revealed that the test had indeed been a failure. At the time he was head of the Institute of Defence Studies and Analyses (IDSA), the Ministry of Defence think tank, and the remarks were made at an off-the-record meeting. But when the story hit the media, Santhanam took a diplomatic stance, arguing that no country had managed to get its thermonuclear weapons right in the first test. But later in an article with Ashok Parthasarthi he came out clearly with his stand that the test "actually failed".

It turned out that the government was given a report by the DRDO, based on its instrumentation at the Pokhran site, confirming the fizzle. The other report was based on seismic readings provided by the ARC's various facilities, including the one in Karnal that had been set up to monitor Chinese nuclear tests. Santhanam's view was backed by people like P K Iyengar, whose analysis of the tests indicated that the secondary of the thermonuclear device worked at just about 10 percent efficiency.

So, as Santhanam and Parthasarthi concluded, India's nuclear weapons had been tested only to a yield of 25 kilotons, where the need of the doctrine was of weapons of 150-350 kilotons.

To come back to the US development, we could now be at an important juncture with regard to our flawed "credible minimum nuclear deterrent." India needs to be prepared for a strategy to

exploit any step the US may take to break the moratorium. Given the way the US works, it is more than likely that it will make one set of rules for itself, and another for India.

Equally, we will have to understand that any resumption of testing means the end of the Indo-US nuclear deal. That may not be such a great loss, now that we have seen that it has not quite worked the way it was intended to. In another set of circumstances, it could have damaged India-US relations. But things are rapidly changing and that may not happen.

The US itself is taking the lead in dynamiting a succession of arms control, as well as other multilateral agreements. It wants to now remake the world order on a different 'plurilateral', rather than multilateral framework. The US has torpedoed a number of arms control agreements with Russia, and walked away from a number of international agreements, the Paris Climate Change treaty, the Iran nuclear accord, UNESCO, the UN Human Rights Council and now it has got the WHO in its cross-hairs. It has also virtually supported the annexation of Palestine by Israel. A second Trump term could well see a burial of the already dead CTBT, and, if we get lucky, even the Nuclear Non Proliferation Treaty (NPT). We should be prepared for what could well be a dystopian future in which each country has to look out for itself.

(The views expressed above belong to the author(s).)

https://www.orfonline.org/expert-speak/could-a-us-nuclear-test-be-a-fortuitous-opportunity-for-india-66831/?amp

Defence News

Defence Strategic National/International

THE FINANCIAL EXPRESS

Thu, 28 May 2020

Indian Air Force gets 15 deadly and heavyweight Chinook Helicopters! To help operations in the Northeast Region

Sources in the Indian Air Force (IAF) have confirmed to Financial Express Online that "The final five of the 15 Chinook heavy-lift helicopters were handed over to the IAF at the Air Force Station, Chandigarh, just before the countrywide lockdown."

By Huma Siddiqui

The US-based aerospace giant Boeing completed deliveries of its CH-47F (I) Chinooks to the Indian Air Force (IAF) in March just before the nation-wide lockdown in India. Sources in the Indian Air Force (IAF) have confirmed to Financial Express Online that "The final five of the 15 Chinook heavy-lift helicopters were handed over to the IAF at the Air Force Station, Chandigarh, just before the countrywide lockdown."

These helicopters have come to India through the Foreign Military Sales (FMS) route and as per the contract between the governments of India and the US; the delivery of these helicopters was to be completed by March 2020.

In September 2015, a deal worth $3 billion which included 22 Boeing AH-64E Apache Longbow attack Helicopters and 15 Chinook heavy-lift machines were signed and it has an inbuilt clause for follow-on orders for 11 more Apaches and seven Chinooks. The contract for the Chinook helicopters was for $1.1 billion.

Chinooks are used by the US Army and by the armed forces of more than 19 countries around the world, many of which have been operating Chinooks for several decades. (Photo credit: Boeing)

More about the CH-47F (I)

The H-47 Chinook is an advanced multi-mission helicopter that provides the Indian Air Force with unmatched strategic airlift capability across the full spectrum of combat and humanitarian missions.

It contains a fully integrated glass cockpit for mission management, a digital advanced flight control system to enhance aircrew safety, and advanced cargo-handling capabilities that allow aircrews to quickly and easily shift from moving cargo to transporting people and vehicles. All of these features are designed to increase aircrew safety while reducing crew workload and operational risk.

Chinooks are used by the US Army and by the armed forces of more than 19 countries around the world, many of which have been operating Chinooks for several decades.

Why are Chinooks critical for IAF?

Coming with a payload capability of 10 tonnes and high altitude performance, these helicopters have filled the gap in IAF's heavy-lift helicopter capability. Till these helicopters arrived IAF had been depending on its small fleet of Russian built Mi-26 helicopter.

For Operations in the Indian environment, the machines made in the West or in Russia have to go through gruelling demands when they fly at 20000 ft., unlike in other parts of the world where it would average between 5000 and 10000 ft, and with an exception of 15000 ft.

In flying at high altitudes there are severe demands on the engines, there is a reduction in payload and lastly and most importantly it impacts the total technical life.

The primary role of the helicopters is for transportation of troops, artillery, equipment, and fuel.

The Indian Army is also keen on getting these for transportation and deployment of its recently procured M-777 Ultra-Light howitzer artillery guns from the BAE Systems, US, in the Himalayan border regions with China.

These helicopters have been of great help in the construction of infrastructure and border road projects especially in the North East.

https://www.financialexpress.com/defence/indian-air-force-gets-15-deadly-and-heavyweight-chinook-helicopters-to-help-operations-in-the-northeast-region/1972582/

THE TIMES OF INDIA

Thu, 28 May 2020

IAF Chief calls for big push to indigenous defence production

By Mayilvaganan

Coimbatore: Chief of Air Staff Air Chief Marshall R K S Bhadauria called upon the defence manufacturing industry to grab the opportunity presented by the current situaion and work together with IAF to "change the face of Indian defence industry".

Operationalizing No 18 Squadron of the Air Force, equipped with indigenously made final operations clearance (FOC) version of light combat aircraft (LCA) Tejas Mk1 at Sulur in Tamil

Nadu on Wednesday, Bhadauria urged the defence industry to synergize with other stakeholders to design and develop aviation systems suitable for air force.

Addressing members of the squadron, delegates from Hindustan Aeronautics Limited and Aeronautics Development Agency after the official ceremony, Bhaduaria said a lot of work was happening in IAF in order to fine tune its capabilities. This fine tuning on technology and capability fronts was being done as far as possible within the country. "Only when it is absolutely essential, we seek capability outside,'' he said, underlining the significant role the defence industry could play in the current phase to cater to the needs of the IAF to design and develop suitable indigineous defence systems. "So much is possible within the country,'' he said.

Noting that IAF was close to signing the contract for 83 Tejas Mk 1A fighter crafts with HAL, he said the mission and requirement of IAF for the next two to three decades was to seek indigenously made systems, from Tejas Mk 2 crafts, radars and technologies among other things.

Bhadauria stressed more than once on the need for synergy and working together by defence design, development, production sectors with the Air Force.

"We should be able to grab this opportunity and change the face of defence industry in the country in the next 10 to 20 years. If you do not act now, you will lose time and opportunity,'' he said. Bhadauria noted that in trying to change the face of the defence industry, budget will be an issue, but budget constraints should not become an excuse for the industry to not take off.

Earlier, Bhadauria said the operationalization of No 18 squadron was a moment of pride for Sulur Air Force Station, the Air Force and the defence manufacturing industry.

With the operationalisation of "Flying Bullets" and induction of Tejas, Sulur now has two squadrons equipped with Tejas. "Flying Daggers", the No 45 squadron operationalised at Sulur in 2018, was the first to induct Tejas, but an initial operational clearance (IOC) version. The current version inducted into No 18 squadron is an improvised one, after incorporating the feedback given by airforce pilots.

HAL chief managing director R Madhavan, Girish S Dheodhare, Director of ADA, and Air Marshal Amit Tewari, Air officer commanding-in-chief of Southern Air Command were present. The famed No. 18 Squadron which participated in 1971 Indo – Pakistan war was formed 1965 but was decommissioned in 2016 and has been resurrected now at Sulur.

"As time goes on, No 18 and No 45 sqaudraons will become the core of our growth in terms of combat capabilities,'' Bhaduaria said.

https://timesofindia.indiatimes.com/city/coimbatore/iaf-chief-calls-for-big-push-to-indigenous-defence-production/articleshow/76049514.cms

THE NEW INDIAN EXPRESS

Thu, 28 May 2020

Stay firm on LAC infra, Defence Minister Rajnath Singh tells army

Earlier, Rajnath Singh chaired a meeting with the three service Chiefs and the Chief of Defence Staff General Bipin Rawat

By Mayank Singh

New Delhi: In the first political reaction on the Sino-Indian stand-off, Defence Minister Rajnath Singh on Tuesday said the Army must give a matching response on the border with China and should not slacken the ongoing infrastructure improvement on the Indian side of the Line of Actual Control (LAC), the de facto border between the two countries.

Later in the day, there were reports of Prime Minister Narendra Modi taking stock of the LAC situation in a meeting with National Security Adviser Ajit Doval, Chief of Defence Staff General Bipin Rawat and the three service chiefs, but it could not be independently confirmed.

Defence Minister Rajnath Singh (Photo | Rajnath Singh Twitter)

Earlier, Rajnath Singh chaired a meeting with the three service chiefs and the Chief of Defence Staff General Bipin Rawat. "The minister was briefed on the situation and the steps taken by the Army," a source said, adding that the meeting went for a little more than an hour. While it was affirmed that the situation will eventually be resolved through diplomatic means, India will maintain its hold on the ground on its side of the border.

It was decided road construction along the LAC will continue.China initiated the stand-off by objecting to the construction activity on the Indian side between Finger 3 and Finger 4 and also on an arterial link to Galwan Valley being built as an offshoot of the 255 km-long Darbuk-Shyok and DBO road. China also forcefully stopped the Indian Army patrol on the intervening night of 5-6 May at Finger 5 on the Northern Flank of the Pangong Tso Lake.

https://www.newindianexpress.com/nation/2020/may/27/stay-firm-on-lac-infra-rajnath-tells-army-2148483.html

india.com

Thu, 28 May 2020

'Powerful role model': Indian Army Major Suman Gawani to be honoured with UN gender advocate award

Major Suman Gawani along with Brazilian Naval Officer Commander Carla Monteiro de Castro Araujo will receive the award on May 29

New Delhi: An Indian Army officer and woman peacekeeper, who has served with the UN Mission in South Sudan (UNMISS), and a Brazilian woman commander have been selected for the prestigious United Nations Military Gender Advocate of the Year Award (2019), with UN Chief António Guterres describing them as "powerful role models."

Major Suman Gawani and Brazilian Naval Officer Commander Carla Monteiro de Castro Araujo will receive the award during an online ceremony presided over by United Nations Secretary-General Guterres on May 29, the International Day of UN Peacekeepers.

Gawani has recently completed an assignment in South Sudan apart from her stint with the UNMISS while Araujo is working in the United Nations' Multidimensional Integrated Stabilization Mission in the Central African Republic (MINUSCA).

"These peacekeepers are powerful role models. Through their work, they have brought new perspectives and have helped build trust and confidence among the communities we serve,"Guterres commended Gawani and Araujo.

"Through their commitment and innovative approaches, they embrace a standard of excellence that is an inspiration to all blue helmets everywhere. As we confront today's challenges, their work has never been more important or relevant."

This is the first time the UN Military Gender Advocate award has gone to an Indian peacekeeper.

Created in 2016, the award recognises the dedication and effort of an individual military peacekeeper in promoting the principles of UN Security Resolution 1325 which is on women, peace and security in a peace operation as nominated by Heads and Force Commanders of peace operations. For the first time, two peacekeepers will receive the award jointly.

About Suman Gawani

Gawani joined the Indian Army in 2011 where she graduated from the Officers Training Academy, then joined the Army Signal Corps.

She holds Bachelor of Telecommunication Engineering and a Bachelor of Education degrees from Military College of Telecommunication, and the Government Post Graduate College in Dehradun respectively.

Since her deployment to the UNMISS in December 2018, Gawani mentored over 230 UN Military Observers (UNMO) on conflict-related sexual violence and ensured the presence of women military observers in each of the mission's team sites.

"By providing support, mentoring, guidance and leadership, she helped to create enabling environment for UN Peacekeepers," the statement said, adding that Gawani also trained the South Sudanese government forces and helped them launch their action plan on conflict-related sexual violence.

Gawani expressed her gratitude for her work being recognised.

"Whatever our function, position or rank, it is our duty as peacekeepers to integrate an all-genders perspective into our daily work and own it in our interactions with colleagues as well as with communities," she said in a statement issued here.

What is Military Gender Advocate of the Year Award?

The Military Gender Advocate of the Year Award is underpinned by the principles outlined in United Nations Security Council Resolution 1325 and follow-up resolutions on women, peace and security.

The resolutions call on actors to mainstream a gender perspective in all aspects of peacekeeping and peacebuilding and to ensure women's participation in peace and political processes.

They also call for the protection from and prevention of conflict-related sexual violence and for an expansion of the role and contribution of women in UN operations, including of uniformed women peacekeepers.

The statement said that about 6.4 per cent of the 85,000 uniformed peacekeepers serving currently in the UN missions are women.

The UN is working with member states to increase the number and percentage of women military, police and justice and corrections personnel.

It added that in this context promoting the participation of women, both in peacekeeping and within the societies in which we serve, is at the centre of the UN's efforts.

https://www.india.com/viral/powerful-role-model-indian-army-major-suman-gawani-to-be-honoured-with-un-gender-advocate-award-4041185/

The Dispatch

Thu, 28 May 2020

The Indian Army's 'Tour of Duty' proposal: A review (Part-II)

The author assesses the proposed changes to the Indian Army's recruitment and manning patterns in this two-part commentary

By Lt Gen (Retd) Syed Ata Hasnain

At the outset, a misnomer must be set aside: that the entire Indian Army will be manned on the proposed 'Tour of Duty' (ToD) terms and conditions. Some analysts have even interpreted it as conscription; but that is not possible with our population base and the perpetual need for a professional army.

Apart from officers, the ToD system is also proposed for a limited number of *jawan*s. In their case, the proposal is more for savings in the budget since there is no shortage in quality and no existing deficiency such as the one in the officer cadre. A soldier on a three-year contract as against one for 17 years will obviously have far lesser investment and no obligations for pension and gratuity, which translates to an average lifetime saving of INR 11.5 crores. It will also lead to better promotional avenues for the permanent cadre of soldiers below officer rank since that cadre too will shrink to an undetermined percentage of the whole. Ideally, below officer rank, the right ratio between ToD and permanent cadre will need to be established with financial considerations being matched against operational efficiency. *Jawan*s under ToD can also have provisions for absorption by industry, state civil services or the Central Armed Police Forces (CAPF) if possible.

These proposals are yet at a nascent stage. Some have interpreted the proposed numbers of 100 officers and 1000 *jawan*s as the limit and have thus questioned the viability of the entire exercise with such small numbers. However, these numbers are only for initial trial and experimentation. What needs to be remembered is that the Indian Army's budgetary constraints demand greater prudence in revenue costs so that the capital expenditure on modernisation can be enhanced. The proposed experiment is a reasonable step in that direction. It is workable as long as the Indian Army can ensure that short period of training or deployment in no way compromises its frontline efficiency. That is the issue being analysed and commented upon very deeply by a majority of veterans and deserves a more detailed look.

Proposed ToD for Officers

The period of training cannot be included in in the proposed three-year period. Having an entrant train for a year to deliver for three years defies rationality. Reducing training to six months and then denying further centralised training (courses of instruction) during the tenure of three years will leave a relatively untrained officer to lead the sub-units. There is a temptation to compare the concept of some foreign armies. We need not attempt to do that because our conditions of service, terrain, threats and social environment from which we draw our aspirants is so uniquely Indian that comparisons are pointless.

Deployment of ToD Entrants

Deployment of ToD entrants must be only for operational areas with an enhanced engagement for four years instead of three, two each in different areas. Their leave entitlement will have to be reviewed as also their training needs. Short Service Commission (SSC) officers in the past, on only five-year engagements, attended army level courses of instruction in development of skills but not career courses. However, they attended the Young Officers (YO) course to prepare them for leadership roles. ToD officer entrants will either need to be further trained in formation level cadres or restricted to perhaps just one army level course even if their tenure of engagement is enhanced to four years. Anything more than that will compromise their residual availability to

frontline units. More cadres at formation level will need investment in facilities far more than exist today and improvisation in this is the last thing which needs to be adopted.

Unit Functional Efficiency

It will have an impact on unit functional efficiency since the unit is the army's main entity of effectiveness. A mix of entries at the level below officers is not desirable. However, if it has to be done, new challenges in the realm of leadership will emerge, with a need for greater sensitivity amongst officers. Over time, this will be overcome provided the ratio between the different entrants is kept optimal. That figure is initially difficult to arrive at and will need to be kept flexible with trial and error.

Infantry

If service of such officers and *jawan*s is only with units deployed in operational environment, per force it will be infantry which will bear the brunt. This aspect needs greater thought. Four years of operational service by these personnel will be higher than the operational service and experience of many other regular personnel from the permanent cadre. In due course, there will be awkward demands for compensation against risks undertaken and these may not be denied from a legal perspective.

Looking Ahead

There are a range of thoughts that come to mind when such change is proposed for a complex organisation such as the Indian Army where personnel management is sometimes even more challenging than operational deployment. What the Indian Army's leadership needs to do is to hold extensive consultations and refer these proposals for reviews by different organisations; the College of Defence Management is just one of them. Wide consultation without constraints of time is necessary if path breaking changes are to be effectively executed with no hiccups at a later stage.

https://www.thedispatch.in/the-indian-armys-tour-of-duty-proposal-a-review-part-ii/

THE ECONOMIC TIMES
WWW.ECONOMICTIMES.COM

Thu, 28 May 2020

India, Australia bilateral virtual summit on June 4

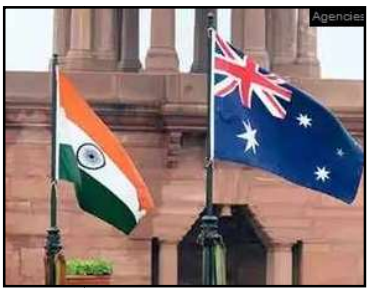
The two sides at the meet are expected to conclude agreements to develop reliable supply chains in key strategic sectors, including medical goods, technology and critical minerals, besides a mutual logistics support pact for the two navies, ET has learnt. A new education partnership is also on the agenda to help overcome Australian universities' dependence on Chinese students

By Dipanjan Roy Chaudhury

New Delhi: Prime Minister Narendra Modi will hold his first virtual bilateral summit on June 4, as he hopes to expand the strategic partnership with Australia in the backdrop of China's renewed efforts to step up aggression in the Indo-Pacific region.

The summit is happening also amid new tensions between China and Australia over Canberra's call for a global inquiry into the origin of the coronavirus.

Australian PM Scott Morrison has described India as a natural partner. The two sides at the meet are expected to conclude agreements to develop reliable supply chains in key strategic sectors, including medical goods, technology and critical minerals, besides a mutual logistics support pact for the two navies, ET has learnt. A new education partnership is also on the agenda to help overcome Australian universities' dependence on Chinese students. Australia is looking to expand agricultural exports to India, including of barley, as China imposes trade barriers.



The summit is happening also amid new tensions between China and Australia over Canberra's call for a global inquiry into the origin of the coronavirus.

Morrison was scheduled to visit New Delhi in January, but had postponed it due to the bush fires in Australia. The rescheduled plan for May was put on hold due to the outbreak of Covid-19.

Modi has so far been part of virtual summits in the Saarc and G-20 formats but this will be the maiden bilateral summit held through a virtual domain.

The Australian PM and Modi have been in touch with each other to discuss measures to contain the pandemic. During a phone call in April, both leaders agreed to remain attentive to the wider significance of the India-Australia partnership, including in the Indo-Pacific region, even as they focused on solving the current health crisis. They agreed on the importance of bilateral experience-sharing in the context of this health crisis, including through collaborative research efforts.

Australia has felt that it could do more with India in global and regional responses to the threat of terrorism besides widening the scope of their Indo-Pacific partnership to stabilise the Indian Ocean Region through the logistics support agreement for their defence forces. The agreement was originally scheduled to be signed in January during Morrison's visit.

Logistics sharing agreements with nations like Japan and Australia will significantly enhance the capability of the Indian Navy to operate eastwards, which is an increasing area of interest. However, sources have cautioned that the agreements should not be seen in the context of the 'Quad' initiative (quadrilateral security dialogue among the US, Japan, Australia and India).

https://economictimes.indiatimes.com/news/politics-and-nation/india-australia-bilateral-virtual-summit-on-june-4/articleshow/76048711.cms

INDIAN DEFENCE RESEARCH WING

Thu, 28 May 2020

L&T delivers critical nuclear power plant equipment to global customers during lockdown

Engineering and construction firm Larsen & Toubro on Wednesday said it has delivered critical nuclear power plant equipment to its global clients during the lockdown. The company's heavy Engineering arm delivered these equipment to global clients in Abu Dhabi, France and other places, Larsen & Toubro said in a statement.

"The Heavy Engineering arm of Larsen & Toubro ensured dispatch of critical reactors, coke drums and sub-assemblies of nuclear fusion reactor for their global clients during the lockdown period in India from beginning of last week of March," the company said. During this period, a final consignment of four out of a total package of 16 ARDS reactors for refinery modernisation project for clean, environment friendly fuels to ADNOC, Abu Dhabi were delivered by the company, it said.

"The final 4 Coke Drums part of package of critical Hydrocracking Reactors for DUQM Refinery in Sultanate of Oman & 2 Ethylene Oxide Reactors for LPCL Petrochemical Complex in China were delivered on time," the statement said.

The sub-assemblies for International Thermonuclear Experimental Reactor (ITER) France were delivered on an urgent basis during the lockdown to ensure uninterrupted assembly of Cryostat in reactor pit in southern France, it added.

The compay said it is noteworthy to mention that L&T Heavy Engineering has delivered key assemblies towards realising full fusion power by manufacturing the world's largest high-vacuum pressure chamber Cryostat and in wall shields for $25 billion multinational ITER project.

All these significant orders for process plant and nuclear power mega projects were secured against global competition with stiff delivery requirements.

"During the lockdown our young engineers quickly adapted to new normal and ensured uninterrupted customer service following all safety precautions.

"We thank the government authorities for providing special permissions to carry these challenging dispatches. The customer appreciation once again proves L&T Heavy Engineering's unparalleled manufacturing excellence to promote honorable PM's vision of 'Make in India," L&T Heavy Engineering Executive Vice President and Head Anil V Parab said.

L&T Heavy Engineering has fully integrated manufacturing facilities at Hazira (Surat), Powai (Mumbai) and Vadodara.

Larsen & Toubro is an Indian multinational engaged in technology, engineering, construction, manufacturing and financial services with over $21 billion in revenue. It operates in over 30 countries.

https://idrw.org/lt-delivers-critical-nuclear-power-plant-equipment-to-global-customers-during-lockdown/#more-228173

Thu, 28 May 2020

Will this be New Avtaar of HS 748 Avro in IAF

By Deepak Hilori

While the Indian Air Force (IAF) wants to retire its Hawker Siddeley HS 748 turboprop Transport aircraft which was originally designed and initially produced by the British aircraft manufacturer Avro and later license-produced by the State-owned Hindustan Aeronautics Limited (HAL) but HAL has other plans to keep them going for next two decades more as it plans to modernize and upgrade them to the latest safety and standards.

While IAF categorically has rejected HAL proposed Upgrade plans to modernize its HS 748 Avro fleet and has even selected Airbus developed C295 as its replacement but HAL has been arguing that since Avor was designed as a medium-sized turboprop airliner it still has plenty of life still left in them and aging of the fleet has nothing to do with the airframe of the aircraft more to do with the technological obsoletion of the fleet.

According to HAL, the last 20 series 2M built with a large freight door has been used for over little 30% of its airframe life and since it was primarily developed as for the airline industry it still has plenty of airframe life left in them to be used for another two decades. HS 748 Avro fleet due to lack of Rear Ramp Door largely has been used to Transport Troops and VVIPs then as a Logistical transporter in the IAF fleet which explains its lack of usage.

HAL owned HS 748 Avro aircraft too has been used for movement of its Senior Executives and VVIPs between Plants all these years and a demonstration aircraft, HAL plans to upgrade its own HS 748 Avro aircraft with new turboprop engine with FADEC System and Cockpit with new avionics and electronics their by removing the technological obsoletion from the aircraft which was one of the major factors behind why IAF wants to phase them out.

Even with HAL's proposed upgrades and modernization, Utility of the HS 748 Avro fleet makes no sense for the IAF since it will again be limited to VVIP or Troop Transportation and due to lack

of Rear Ramp can't be used as Logistical mover like seen with other Transporter aircraft like An-32 and C295 which IAF will buy to replace its Avro fleet.

HS 748 Avro has been used as Technological demonstrator for LCA Tejas Avionics like Radar and electronics it was also used a Testbed for the rotor domed based indigenous airborne early warning aircraft but many have raised the question of the platform usage due to safety concerns after AWACS Testbed crashed in 1999 killing eight scientists and the aircrew.

HAL needs to carry out detailed brainstorming and come up with other roles of the HS 748 Avro fleet which IAF will be ready to accept or it will be retired as planned.

https://idrw.org/will-this-be-new-avtaar-of-hs-748-avro-in-iaf/

Science & Technology News

onmanorama

Thu, 28 May 2020

COVID-19 and lockdown will delay India's space missions, says ISRO chief K Sivan

Indian Space Research Organisation (ISRO) Chairman K Sivan has said that COVID-19 pandemic and the lockdown will delay some of India's space exploration missions. He said ISRO has been collaborating with nearly 500 industries and the lockdown has affected their functioning. "They will get back to normal operations after some time. Moreover, there is an expected budget cut as the country is facing an extraordinary economic situation. Definitely there will be some delays," he said. Sivan stated this while answering select questions from Malayalam Panorama's child readers through its 'Hay Kids' initiative. Read the edited questions and answers.

Will COVID-19 pandemic and the resultant lockdown delay India's planned space missions?

ISRO chairman K Sivan.

During the present lockdown, ISRO centers worked as per government directives. We carried out essential and critical activities. But many of our major works are being done by nearly 500 industries spread across India. Lockdown has affected industries and they will get back to normal operations after some time. Our launch operations also require people travelling from all ISRO centers to Salish Dawn Space Centre (SDSC) Sriharikota Range. This means that we will have to wait till restrictions on interstate travels are eased. Moreover, there is an expected budget cut

as the country is facing an extraordinary economic situation. Definitely there will be some delays. But we all are geared to face any demand from the nation and will try to make up the schedule delays.

How is ISRO helping India to fight COVID-19?

Three ventilator designs from ISRO are being evaluated at hospitals. Some centres developed automatic hand sanitizer dispensers, while some other manufactured and distributed hand sanitizers. Staff organisations at ISRO have supplied aid to the needy with the help of local authorities.

Which upcoming project excites you the most?

The most exciting project is the Gaganyaan mission. Chandrayaan-3 (that aims to demonstrate soft landing on the Moon) and Aditya Mission (that will study the corona of the Sun and its impact on earth) are also important.

Is it possible to study the Sun without having a close look at it?

Optics technology has improved tremendously. Aditya Mission will study the Sun from a special point in Earth-Sun system called Langrangian Point L1. At a Langrangian point, the gravity-pull between Earth and Sun balance out each other. As you all know that average distance between the Earth and the Sun is approximately 150 million kilometres. The L1 point lies at a distance of 1.5 million kms from Earth.

Elon Musk has said that he wants to die in another planet. Do you think it will be a reality anytime? Do you nurture such dreams?

I agree with Elon Musk that we, as a civilisation, are on the threshold of technology required to colonise other planets. But I won't put it as "to go there to die". I would rather say that "go there to expand the footprint of human civilisation".

https://english.manoramaonline.com/news/nation/2020/05/27/covid19-lockdown-delay-india-space-missions-isro-chief-sivan-manorama.html

EurekAlert!

Thu, 28 May 2020

Skoltech scientists get a sneak peek of a key process in battery 'life'

Researchers from the Skoltech Center for Energy Science and Technology (CEST) visualized the formation of a solid electrolyte interphase on battery-grade carbonaceous electrode materials using in situ atomic force microscopy (AFM). This will help researchers design and build batteries with higher performance and durability.

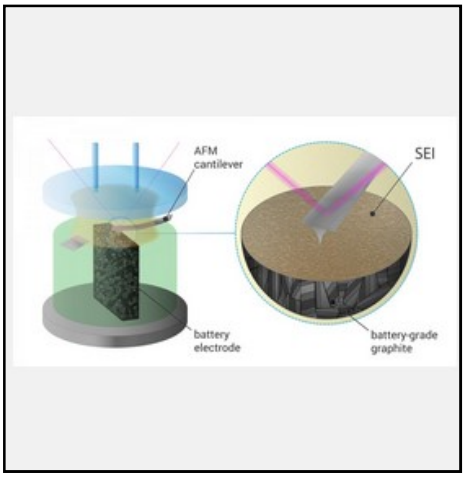


Image: A principal outline of the experiment.

A solid electrolyte interphase (SEI) is a thin layer of electrolyte reduction products formed on the surface of a lithium-ion battery anode during several initial cycles. It prevents further electrolyte decomposition, stabilizing the electrode/electrolyte interface, and ensures a long battery life. Forming a SEI film takes time and energy, and its quality largely governs battery performance and durability: a poorly formed SEI results in rapid degradation of battery performance.

Still, the formation of SEI remains poorly understood, and scientists use in situ atomic force microscopy that allows direct observation of this process. Until

now, most of these measurements were carried out on Highly Oriented Pyrolytic Graphite (HOPG), a very pure and ordered form of graphite which has a clean and atomically flat basal plane surface. However, HOPG is a poor replacement for actual battery-grade electrode materials, so the process is significantly different from what happens inside a commercial battery.

A Skoltech team led by research scientist Sergey Luchkin and professor Keith Stevenson succeeded in visualization of SEI formation on battery-grade materials. For this, they had to design an electrochemical cell that allowed the measurements necessary for this direct observation of SEI formation.

"Battery-grade materials are powders, and visualizing dynamic processes on their surface by AFM, especially in liquid environment, is challenging. A standard battery electrode is too rough for such measurements, and isolated particles tend to detach from substrate during scanning. To overcome this issue, we embedded the particles into epoxy resin and made a cross section, so the particles were firmly fixed in the substrate," says Luchkin.

The researchers found that the SEI on battery-grade materials nucleated at different potential than that on HOPG. It was also more than two times thicker and mechanically stronger. Finally, they were able to demonstrate that SEI was better bound with the rough surface of battery-grade graphite than with the flat surface of HOPG.

"Spatially-resolved investigations of battery interfaces and interphases detailed in this work provide significant new insights into the structure and evolution of the anode SEI. Therefore, they provide firm guidelines for rational electrolyte design to enable high performance batteries with improved safety," adds Stevenson.

https://www.eurekalert.org/pub_releases/2020-05/sios-ssg052720.php

EurekAlert!

Thu, 28 May 2020

Search-and-rescue algorithm identifies hidden'traps' in ocean waters

Method may help quickly identify regions where objects -- and missing people -- may have converged

By Jennifer Chu

The ocean is a messy and turbulent space, where winds and weather kick up waves in all directions. When an object or person goes missing at sea, the complex, constantly changing conditions of the ocean can confound and delay critical search-and-rescue operations.

Now researchers at MIT, the Swiss Federal Institute of Technology (ETH), the Woods Hole Oceanographic Institution (WHOI), and Virginia Tech have developed a technique that they hope will help first responders quickly zero in on regions of the sea where missing objects or people are likely to be.

The technique is a new algorithm that analyzes ocean conditions such as the strength and direction of ocean currents, surface winds, and waves , and identifies in real-time the most attracting regions of the ocean where floating objects are likely to converge.

The team demonstrated the technique in several field experiments in which they deployed drifters and human-shaped manikins in various locations in the ocean. They found that over the course of a few hours, the objects migrated to the regions that the algorithm predicted would be strongly attracting, based on the present ocean conditions.

The algorithm can be applied to existing models of ocean conditions in a way that allows rescue teams to quickly uncover hidden "traps" where the ocean may be steering missing people at a given time.

"This new tool we've provided can be run on various models to see where these traps are predicted to be, and thus the most likely locations for a stranded vessel or missing person," says Thomas Peacock, professor of mechanical engineering at MIT. "This method uses data in a way that it hasn't been used before, so it provides first responders with a new perspective."

Peacock and Pierre Lermusiaux, also a professor of mechanical engineering at MIT, who oversaw the project, and their colleagues report their results in a study published today in the journal *Nature Communications*. Their coauthors are lead author Mattia Serra and corresponding author George Haller of ETH Zurich, Irina Rypina and Anthony Kirincich of WHOI, Shane Ross of Virginia Tech, Arthur Allen of the U.S. Coast Guard, and Pratik Sathe of the University of California at Los Angeles.

Hidden traps

Today's search-and-rescue operations combine weather forecasts with models of both ocean dynamics and the ways in which objects can drift through the ocean, to map out a search plan, or regions where teams should concentrate their search.

But the ocean is a complicated space of unsteady, ever-changing flow patterns. Coupled with the fact that a missing person has likely been continuously floating through this unsteady flow field for some time, Peacock and his colleagues say that significant errors can accumulate in predicting where to look first, when using a simple approach that directly predicts the trajectories of a few drifting objects.

Instead, the team developed a method to interpret the ocean's complex flows using advanced, data-driven ocean modeling and prediction systems. They used a novel "Eulerian" approach, in contrast to more commonly used "Lagrangian" approaches -- mathematical techniques that involve integrating snapshots of the ocean velocity due to waves and currents to slowly generate an uncertain trajectory for where a missing person or object may have been carried.

The new Eulerian approach uses the most reliable velocity forecast snapshots, close to the point where a missing person or object was last seen, and quickly uncovers the most attracting regions of the ocean at a given time. These Eulerian predictions are then continuously updated when the next batch of updated velocity information becomes available.

The team has named their approach TRAPS, for its goal of identifying TRansient Attracting Profiles, or short-lived regions where water may converge and be likely to pull objects or people. The method is based on a recent mathematical theory, developed by Serra and Haller at ETH Zurich, to uncover hidden attracting structures in highly unsteady flow data.

"We were a bit skeptical whether a mathematical theory like this would work out on a ship, in real time," Haller says. "We were all pleasantly surprised to see how well it repeatedly did."

"We can think of these 'traps' as moving magnets, attracting a set of coins thrown on a table. The Lagrangian trajectories of coins are very uncertain, yet the strongest Eulerian magnets predict the coin positions over short times," Serra says.

"The key thing is, the traps may not have any signature in the ocean current field," Peacock adds. "If you do this processing for the traps, they might pop up in very different places from where you're seeing the ocean current projecting where you might go. So you have to do this other level of processing to pull out these structures. They're not immediately visible."

Out at sea

Led by WHOI sea-going experts, the researchers tested the TRAPS approach in several experiments out at sea. "As with any new theoretical technique, it is important to test how well it works in the real ocean," Rypina says.

In 2017 and 2018, the team sailed a small research vessel several hours out off the coast of Martha's Vineyard, where they deployed at various locations, an array of small round buoys, and manikins.

"These objects tend to travel differently relative to the ocean because different shapes feel the wind and currents differently," Peacock says. "Even so, the traps are so strongly attracting and robust to uncertainties that they should overcome these differences and pull everything onto them."

The team ran their modeling and prediction systems, forecasting the ocean's behavior and currents, and used the TRAPS algorithm to map out strongly attracting regions over the course of the experiment. The researchers let the objects drift freely with the currents for a few hours, and recorded their positions via GPS trackers, before retrieving the objects at the end of the day.

"With the GPS trackers, we could see where everything was going, in real-time," Peacock says. "So we laid out this initial, widespread pattern of the drifters, and saw that, in the end, they converged on these traps."

The researchers are planning to share the TRAPS method with first responders such as the U.S. Coast Guard, as a way to speed up search-and-rescue algorithms, and potentially save many more people lost at sea.

"People like Coast Guard are constantly running simulations and models of what the ocean currents are doing at any particular time and they're updating them with the best data that inform that model," Peacock says. "Using this method, they can have knowledge right now of where the traps currently are, with the data they have available. So if there's an accident in the last hour, they can immediately look and see where the sea traps are. That's important for when there's a limited time window in which they have to respond, in hopes of a successful outcome."

This research was primarily funded by the National Science Foundation's Hazards SEES program, with additional support from the Office of Naval Research and the German National Science Foundation.

https://www.eurekalert.org/pub_releases/2020-05/miot-sai052720.php

THE HINDU

Thu, 28 May 2020

Coronavirus | Social distancing norms of 6 feet insufficient, virus can travel nearly 20 feet: study

Novel coronavirus can spread up to three times further in cold and humid weather, according to the researchers

Scientists have modelled the spread of infectious droplets from coughing, sneezing, and breathing under different atmospheric conditions, and found that the novel **coronavirus** can spread up to three times further in cold and humid weather.

According to the researchers, including those from the University of California (UC) Santa Barbara in the U.S., droplets carrying the virus can travel up to 20 feet, making the current social distancing norms of six feet insufficient to contain its spread.

Based on previous research, they said as many as 40,000 respiratory droplets can be generated by sneezing, coughing, and even normal talking, with initial speeds ranging from a few metres per second to more than a hundred meters per second.

From these past studies, the scientists said both the aerodynamics of the droplets, and their heat and mass exchange process with the environment can determine the effectiveness of virus propagation.

In the yet-to-be peer reviewed study, published as a preprint in *medrXiv*, the scientists used a comprehensive mathematical model to explore the evaporation, heat transfer, and projectile motion of respiratory droplets under different temperature, humidity, and ventilation conditions.

They found that the transmission pathway of COVID-19 through respiratory droplets is divided into short-range droplet contacts, and long-range aerosol exposure.

“While large droplets usually settle onto a surface within a limited distance due to gravity, smaller droplets evaporate rapidly to form aerosol particles that are able to carry the virus and float in air for hours,” the scientists wrote in the study.

According to their analysis, the effect of weather conditions on this pathway is not the same every time.

Low temperature and high humidity facilitates droplet contact transmission, while high temperature and low humidity promotes small aerosol-particle formation, the researchers said.

“Our model suggests that the 6 feet of social distance recommended by the Center for Disease Control and Prevention (CDC) may be insufficient in certain environmental conditions, as the droplet spreading distance can be as long as 6 metres (19.7 feet) in cold and humid weather,” the scientists wrote in the study.

The researchers warned that the current pandemic may not stop in the summer of the northern hemisphere without proper intervention since there is an increasing chance of aerosol transmission in these parts of the world.

The study noted that in hot and dry weather, respiratory droplets more easily evaporate into aerosol particles capable of long-range transmission.

It said these small particles can infiltrate deeply into the lungs, and have a longer suspension time in these conditions.

According to the researchers, many public spaces implement air-conditioning systems that can still operate at temperature and humidity set points that favour droplet transport, preventing long range transmission.

While ventilation can effectively dilute the accumulation of infectious aerosol particles, improper design of these systems may void the effort of social distancing by enabling the aerosol-size particles to travel further, they said.

However, wearing a face mask can effectively lower the chance of transmission via aerosol particles, the scientists said, adding that the risk of infection from large droplets can be mitigated by practising social distancing.

The infection range of large droplets, they said, is limited to a relatively short distance, since they are more sensitive to gravity and can settle on a surface before drying.

If these droplets happen to land on the upper body of another person, viruses can easily enter them by face-touching and eye-rubbing, which can be prevented by practising social distancing, the researchers explained.

However, citing the limitations of the study, the scientists said the survivability of the virus itself under different weather conditions remains unknown.

Environmental factors like temperature and humidity are known to affect the survival and transmission of viruses, the scientists said, citing the example of the SARS pandemic of 2002-03 and influenza, which have shown strong dependence on seasonality.

However, whether COVID-19 also shows a similar seasonal pattern is still unclear.

"To this end, the impact of different weather conditions on the infectivity of SARS-CoV-2 is still inconclusive," the researchers noted in the study.

https://www.thehindu.com/sci-tech/science/coronavirus-social-distancing-norms-of-6-feet-insufficient-virus-can-travel-nearly-20-feet-study/article31687126.ece

TIMESNOWNEWS.COM

Thu, 28 May 2020

COVID-19 impact on human body: Researchers find how coronavirus affects lungs differently from the flu

While the lungs of bot coronavirus and flu victims did show some common features, the distinctive features related to blood vessels damage were seen largely in COVID-19 patients.

By Anushree Gupta

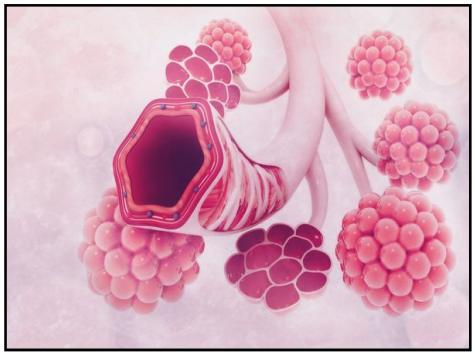
Key Highlights

- ***The coronavirus and flu virus are similar, but the severity of lung damage caused due to the two viruses varies***
- ***Coronavirus can affect the blood vessels, causing severe damage to not just the lungs, but other vital organs of the body as well***
- ***Research has found how lung damage due to the two diseases can differ in severity and structure***

New Delhi: The novel coronavirus, and the infection caused due to it, is relatively very new to the medical experts, and the world. While the virus does have more than 60 per cent similarity to the SARS virus that caused the outbreak in 2003, new information suggests that SARS-CoV-2 is, in fact, more intelligent than most viruses that the world has seen in the past.

The virus, which was initially known to cause a pneumonia-like illness is now known to cause extensive damage to various vital organs and systems of the human body. These include the heart, brain, liver, kidneys, olfactory system, toes, among others. However, the lungs continue to remain one of the most affected organs, and irreparable damage to the lungs is often the cause of death in many COVID-19 patients. Recent autopsy reports and researches have shown how the lung damage caused due to COVID-19 is different from damage caused due to flu.

How coronavirus affects lungs differently from the flu



COVID-19 impact on human body: Researchers find how coronavirus affects lungs differently from the flu | Photo Credit: iStock Images

According to new research, the novel coronavirus may affect the lungs way more severely than the seasonal flu virus. This is because the coronavirus can attack the inner lining of blood vessels.

The researchers compared the lungs of people who died due to COVID-19, to those who died due to flu. While both the viruses belong to the same category and infect the lungs causing multiple clots, the extent of damage to the lungs differs.

The findings of the study were published in the journal – The New England Journal of Medicine. The study found that since the coronavirus damages the capillaries' inner lining, it disrupts the movement of carbon dioxide, produced by the lungs after oxygen goes in, which causes shortness of breath, one of the most common and initial symptoms of COVID-19.

The study also surprisingly found the growth of new blood vessels in the lungs of COVID-19 patients.

"Patients with COVID-19 showed widespread blood clotting as well as new vessel growth – the latter likely a result of the body's response to the virus," said the researchers.

While the lungs of bot coronavirus and flu victims did show some common features, the distinctive features related to blood vessels damage were seen largely in COVID-19 patients.

The coronavirus has caused some unusual symptoms and results in various age groups – COVID toes, Kawasaki disease, inflammatory disorders, liver failure, and death due to blood clots have been some common observations noticed weeks or months after the coronavirus pandemic began.

https://www.timesnownews.com/health/article/covid-19-impact-on-human-body-researchers-find-how-coronavirus-affects-lungs-differently-from-the-flu/597580

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Thu, 28 May 2020

बैक्टीरिया मारेगा वायरस / मच्छर के बैक्टीरिया से कोरोना वायरस को खत्म करने की तैयारी, चीन और अमेरिका के वैज्ञानिकों ने मिलकर की रिसर्च

- ***चीनी और अमेरिकी शोधकर्ताओं ने मिलकर की रिसर्च, कहा- इस प्रोटीन का इस्तेमाल एंटीवायरल ड्रग बनाने में किया जाएगा***
- ***शोधकर्ताओं को एडीज एजिप्टी प्रजाति के मच्छर के अंदर मिली बैक्टीरिया, जिसका जीनोम सिक्वेंस देखा गया***

बीजिंग: चीनी और अमेरिकी शोधकर्ताओं ने मिलकर दो ऐसे बैक्टीरिया खोजे हैं जो खास तरह का प्रोटीन बनाते हैं। ये प्रोटीन कोरोनावायरस के अलावा डेंगू और एचआईवी यानी एड्स वायरस को भी निष्क्रिय कर सकता है। शोधकर्ताओं का कहना है कि इस प्रोटीन का इस्तेमाल एंटीवायरल ड्रग में बनाने में किया जाएगा। क्लीनिकल ट्रायल के बोझ को कम किया जा सकेगा।

मच्छर में मिला बैक्टीरिया

bioRxiv जर्नल में प्रकाशित शोध के मुताबिक, ये बैक्टीरिया शोधकर्ताओं को एडीज एजिप्टी प्रजाति के मच्छर के अंदर मिले हैं। बैक्टीरिया के जीनोम सिक्वेंस का विश्लेषण करने के बाद उसमें से निकलने वाले प्रोटीन को पहचाना गया। शोधकर्ताओं ने दावा किया कि यह प्रोटीन कई तरह के वायरस को निष्क्रिय करने में सक्षम है।

2010 में एक और प्रोटीन पर रिसर्च हुई थी

बैक्टीरिया का प्रोटीन, लाइपेज से लैस है। लाइपेज एक तरह का एंजाइम है जो प्रोटीन वायरस को निष्क्रिय करने की क्षमता रखता है। 2010 में हुए एक शोध में पाया गया था कि लिपोप्रोटीन लाइपेज नाम का रसायन हेपेटाइटिस-सी वायरस को निष्क्रिय करता है। इसके बाद 2017 में हुई एक रिसर्च के मुताबिक, नाजा मोसाम्बिका नाम के सांप के जहर में फॉस्फो लाइपेज प्रोटीन मिला, यह हेपेटाइटिस-सी, डेंगू और जापानी इन्सेफेलाइटिस को निष्क्रिय करता है।

ये शोधकर्ता रहे शामिल

रिसर्च में बीजिंग की शिंघुआ यूनिवर्सिटी, एकेडमी ऑफ मिलिट्री मेडिकल साइंस और शेंजेन डिसीज प्रिवेंशन एंड कंट्रोल सेंटर के शोधकर्ता शामिल हैं। इसके अलावा अमेरिका की कनेक्टिकट यूनिवर्सिटी के वैज्ञानिक भी रिसर्च में शामिल रहे हैं।

फेफड़े में बना रह सकता है कोरोना

चीनी शोधकर्ताओं के नए शोध के मुताबिक, कोरोना के इलाज के बाद वायरस फेफड़ों में लम्बे समय तक छिपा रह सकता है। उनके मुताबिक, चीन में ऐसे मामले भी सामने आए जब हॉस्पिटल से डिस्चार्ज होने के 70 दिन बाद मरीज पॉजिटिव मिला। साउथ कोरिया में इलाज के बाद 160 लोग कोरोना पॉजिटिव मिले। ऐसे ही मामले चीन, मकाऊ, ताइवान, वियतनाम में भी सामने आ चुके हैं।

हो सकता है जांच में पकड़ में न आए

कोरिया सेंटर्स फॉर डिसीज कंट्रोल एंड प्रिवेंशन के डायरेक्टर जियॉन्ग यूं-कियॉन्ग का कहना है, कोरोनावायरस दोबारा मरीज को संक्रमित करने की बजाय री-एक्टिवेट हो सकता है। साउथ चाइना मॉर्निंग पोस्ट की रिपोर्ट के मुताबिक, कोरोनावायरस फेफड़े में अंदर गहराई में रह सकता है। ऐसा भी हो सकता है कि यह जांच रिपोर्ट में पकड़ में न आए।

https://www.bhaskar.com/coronavirus/news/coronavirus-hiv-latest-research-updates-by-chinese-and-us-scientists-127342365.html

Live हिन्दुस्तान .com

Thu, 28 May 2020

जोर से बात करने पर हवा में फैल सकता है कोरोनावायरस

वाशिंगटन: एक हालिया शोध के अनुसार, जो लोग जोर-जोर से बात करते हैं उनके मुंह से निकली हजारों बूंदें गायब होने से पहले आठ से 14 मिनट तक हवा में रह सकती हैं। यूएस नेशनल इंस्टीट्यूट ऑफ हेल्थ के साथ किए गए इस शोध को पीएनएएस पत्रिका में प्रकाशित किया गया है। इस शोध से कोविड-19 के फैलाव की हमारी समझ में काफी महत्वपूर्ण साबित हो सकती है।

श्वास संबंधी वायरस जैसे सार्स-कोव-2 या तो संक्रमित से सीधे संपर्क में आने पर फैलते हैं या फिर संक्रमित के मुंह से निकली बूंदों के हवा में तैरने के कारण। इसी वजह से खांसने और छींकने को इस प्रसार में अहम माना जाता है।

लेकिन, सिर्फ बोलने से भी हवा में हजारों बूंदें निकलती हैं और शोधकर्ता यह देखना चाहते थे कि बोलने से मुंह से कितनी बूंदें निकलती हैं और कब तक हवा में मौजूद रहती हैं।

कैसे किया अध्ययन

शोधकर्ताओं ने लोगों से वाक्यांशों को दोहराने के लिए कहा और संवेदनशील लेजरों का उपयोग उनके द्वारा उत्पादित बूंदों को देखा। उन बूंदों को एक बंद, स्थिर हवा के वातावरण में क्षय होते हुए भी देखा गया। पूर्व शोध में यह पता लगाया गया था कि कोविड-19 से संक्रमित मरीज के मुंह से निकली बूंदों में कितने वायरल आरएनए पाए जाते है। इस शोध के आधार पर नए शोध में पता चला है कि एक मिनट तक जोर-जोर से बोलने पर कम से कम 1000 वायरस युक्त बूंदें मुंह से बाहर निकल सकती हैं। उनके अवलोकनों से पता चलता है कि ये बूंदें आठ मिनट से अधिक समय तक हवा में रहती हैं, और कभी-कभी 14 मिनट तक भी रह सकती हैं। इस शोध को एक स्थिर हवा वाले कमरे में किया गया है इसलिए इसके परिणाम खुली हवा वाले वातावरण में कितने समान होंगे, इसके बारे में अभी और शोध करने की जरूरत है।

बात करना भी हो सकता है खतरनाक

इस शोध से यह चिंता भी बढ़ गई है संक्रमित व्यक्ति के सिर्फ बात करने से भी घातक कोरोनावायरस को प्रसार हो सकता है। शोधकर्ता लिखते हैं कि उनके अनुमान रूढ़िवादी हैं। कुछ मरीज़ औसत से बहुत अधिक मात्रा में वायरस का उत्पादन करते हैं, जो कि वायरस युक्त बूंदों की संख्या को 100,000 से अधिक प्रति मिनट तक बढ़ा सकता है। इस शोध के निष्कर्षों से पता चलता है कि किसी भी परिस्थिति में मास्क पहनना अनिवार्य है ताकि किसी भी तरह से संक्रमण का प्रसार रुक सके।

जर्मनी में कोयर गायन पर लगा प्रतिबंध

कोरोनावायरस के कारण चर्च में गाए जाने वाले कोयर (प्रार्थना गायन) पर भी प्रतिबंध लगा दिया गया है। नौ मार्च को जब बर्लिन केथेड्रल कोयर अभ्यास के लिए जुटा था तब देश में कोरोनावायरस के सिर्फ 50 मामले थे। लेकिन, पांच दिन बाद 80 में से एक गायक ने निर्देशक टोबिस ब्रोमान को बताया कि वह कोविड-19 पॉजिटिव है। दो हफ्ते के अंदर 30 सदस्यों को पॉजिटिव पाया गया और अन्य 30 में भी लक्षण दिखाई देने लगे। कोयर गायन से कोरोनावायरस फैलने का खतरा काफी ज्यादा है क्योंकि इससे मुंह से बड़ी मात्रा में बूंदें निकलती हैं। एमस्टर्डम में भी 102 गायकों के कोयर समूह में सभी के बीमार पड़ने की बात सामने आई है। विशेषज्ञों ने गायन को महामारी के संबंध एक उच्च जोखिम वाली गतिविधि करार दिया है।

https://www.livehindustan.com/international/story-coronavirus-can-spread-in-the-air-when-spoken-loudly-3243199.html