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CONTENT

S. No.	TITLE	Page No.
DRDO News		1-8
COVID-19: DRDO's Contribution		1-6
1.	DRDO COVID-technology transfer for MSME manufacturing: Know more about the terms & conditions	1
2.	Bhopal: UV blasters to sanitise city buses; AC buses to stay off roads for now	2
3.	Interest in biometric time tracking with facial recognition up as people return to work	3
4.	Adapting fast to make PPEs, Punjab apparel industry eyes gains despite slowdown	5
5.	Punjab Minister urges Centre to allow export of PPE kits	6
DRDO Technology News		7-8
6.	UJTS: A golden opportunity tailor-made for HAL Tejas	7
Defence News		8-19
Defence Strategic National/International		8-19
7.	Indian Army concerns over quality control, weekly ammunition-related accidents: Why Centre is pushing to corporatize OFB	8
8.	Army aims for more local production of specialised ammunition as it works on import ban list	11
9.	"Import ban won't stop forces from procuring niche tech"	12
10.	Atmanirbhar in Defence: Old wine in new bottle	13
11.	Rafale syndrome: Why IAF needs to focus on weapons not platforms	14
12.	Lack of consensus in MoD grounds Navy's acquisition of 111 copters for now	15
13.	Indian Navy asks personnel to wear colour-coded masks matching with uniform	16
14.	Army Chief visits Ladakh after border skirmish at LAC	16
15.	Indian Ocean becoming new focus of activity after South China Sea, need to augment security: Defence Secretary	17
16.	China hikes defence budget to \$179 billion, nearly three times that of India	18
Science & Technology News		19-30
17.	IAM to play pivotal role after Indian astronaut-selects return from Russia	19
18.	A disturbing space flight amid the pandemic	22
19.	Patent for ISRO process to make moon soil simulant	24
20.	Researchers create global arsenic in groundwater maps to highlight threats	25
COVID-19 Research News		26-30
21.	Bengaluru start-up uses AI to come up with potential Covid drug	26
22.	Oxford University submits research papers for second stage of coronavirus vaccine	27
23.	Why we need to study asymptomatics and mild COVID19 cases	28
24.	Covid-19: ठीक होने के बाद दोबारा नहीं हो रहा कोरोनावायरस का संक्रमण, शोध में खुलासा	29

DRDO COVID-technology transfer for MSME manufacturing: Know more about the terms & conditions

Interestingly, the Force Majeure Clause yet does not contain 'Pandemic' as a Term and commercial partner of ToT may like to consider including this for the success of his business

By Huma Siddiqui

Recently Defence Research and Development Organisation (DRDO) has listed 35 (approximately 13 major items) technologies related to COVID-19 pandemic for manufacturing, marketing and sale as per the specifications mentioned on its website. The concept detailed there is to ensure that DRDO developed 'Counter Covid-19 Technologies' are available in every part of the country to fight COVID-19. DRDO plans to transfer these technologies to industries through Licensing Agreement for Transfer of Technology (LATOT) to be signed on an Rs 500/- Stamp Paper, between industries and the concerned lab of DRDO with no charges for ToT or for the royalty when sold in India. However, such items shall attract a royalty of two per cent of invoice value when exported.

It is expected that the signing of LATOT shall provide the Indian industries benefits like becoming a bonafide ToT holder of DRDO and use of DRDO logo on the final product. However, DRDO has restricted itself to transfer of technology Papers only (viz. Bill of Material, complete know-how, processes, Quality processes etc.). Any upgrades of technology shall be made available to the industry without any charges. In the case of selection by a foreign customer, the export of these products too shall be easier. Already few industries have been listed for manufacturing of these items, however, the number is observed to be low, when compared to the overall requirement of the country.

The terms and conditions are very specific for the ToT to the private sector, MSMEs and others.

The research organization states that due to emergency in production, it can consider giving manufacture support to its ToT partner firm and take over the responsibilities of testing and Specification checks for all COVID related manufacturing with its own ambit. A hands-off approach with the Industry may be discouraging to a small manufacturer. Travelling an extra mile to support the country in times of crisis is required, while DRDO staff is already available on attendance in their respective Offices.

It also states that for any technical assistance given beyond this Technology Transfer period for deputation abroad "Name of the Company" shall pay the consultation charges of \$ 500 (Five



The terms and conditions are very specific for the ToT to the private sector, MSMEs and others.

Hundred US Dollars) per man-day to DRDO. “Name of the Company” shall also bear the transport and lodging costs of the scientists and staffs, as per Government rules.

“Such conditions during COVID crisis seems to be against the logic of Make in India support, and mention of charges in the US Dollars is beyond the grasp and are on the higher for DRDO personnel (already being on Government salaries),” opines an industry source.

According to the terms and conditions, a product developed by DRDO and manufactured and marketed by “Name of the Company” shall have following markings “Product Developed by DRDO” or words to this effect DRDO, the logo shall be visibly displayed.

Sharing his views, in industry source stated, “The products which are being manufactured by the MSMEs or the private sector with the ToT from DRDO are not easily available in the market. This means that the marketing aspect of such products needs to be given more focus.”

“Our defence minister Rajnath Singh has been urging the DRDO and OFB to share technology to enable the private sector and MSMEs to do mass production. Proper marketing, easier procedures for the ToT from both DRDO and OFB will help in making the medical kits, PPE, sanitizers a huge success.”

Force Majeure Clause

Under this, neither party shall be liable for any failure of performance, due to causes beyond such party’s reasonable control, including but limited to acts of God, fire, flood or other natural catastrophes; any law, order, regulation, direction, the action of any civil or military authority, national emergencies, insurrections, riots, wars, strikes, lock-outs, work stoppages or other labour difficulties provided however the party to which the force majeure has happened shall use commercially reasonable efforts to eliminate such an event.

Interestingly, the Force Majeure Clause yet does not contain ‘Pandemic’ as a Term and commercial partner of ToT may like to consider including this for the success of his business.

According to the source quoted above, “The ToT Agreement can be made more Industry friendly during such emergency times, instead of being written as per ‘normal’ circumstances. A sensitivity in understanding the ground situation and re-structuring the ToT Agreement Terms shall surely encourage Industries at MSME level to explore the manufacturing of Technology made by DRDO for COVID-19. This is important as the DRDO is not a manufacturing unit for any product.”

With the MoD urging all DPSUs, DRDO and OFB to work together in these tough times, perhaps it will also encourage that the DRDO and OFB may consider encouraging MSMEs to utilize their spaces so as to have true spirit of ToT implemented. “Such a step will also go a long way in helping the MSMEs who are pitching in with the mass production of the COVID-related products may save their expenses in rentals, travel charges of DRDO personnel etc. for by such measures and Industry shall welcome this new concept of close hand-holding in such testing times,” the source urged.

<https://www.financialexpress.com/defence/drdo-covid-technology-transfer-for-msme-manufacturing-know-more-about-the-terms-conditions/1967656/>

THE TIMES OF INDIA

Sat, 23 May 2020

Bhopal: UV blasters to sanitise city buses; AC buses to stay off roads for now

Bhopal: Buses of Bhopal City Link Limited (BCLL) could soon be sanitised by using ultraviolet (UV) blasters. The disinfection technology, that has been reviewed by Defence Research and Development Organisation (DRDO) provides for rapid and chemical-free disinfection of high Covid-19 infection-prone areas.

"Before the bus service resumes, we are contemplating various measures to curb the spread of Covid-19. For now, air-conditioned buses would be offline, given its high propensity to virus spread. Use of UV sanitiser or any latest technology that is safe and economical would be employed," said BCLL CEO, Pawan Singh.

Use of the UV sanitising tech has been limited to laboratories and offices, where gadgets and other lab tech is disinfected. Unlike chemical approaches to water disinfection, UV light provides rapid, effective inactivation of micro-organisms through a physical process, explained innovator Dharmendra Choubey.

By increasing the nm wavelength or the propensity for the UV-C light to beam, the device can clear 99% of bacterial infection in a bus, he claimed. The device consists of six lamps at 254 nm wavelength for 360 degree light, with each lamp having a capacity of 43 watts of UV-C power.

A room of about 12x12 feet size can be disinfected in about 10-15 minutes and 400 square feet of room in 30-40 minutes by placing the equipment at various places within the room, he added.

Industry expert Ankur Parikh, said a mobile UVGI sanitiser has been developed in response to Covid-19 pandemic. It is ideally suited to sanitise isolation wards, hospitals, offices, quarantine centres and factories.

<https://timesofindia.indiatimes.com/city/bhopal/bhopal-uv-blasters-to-sanitise-city-buses-a/c-buses-to-stay-off-roads-for-now/articleshow/75890869.cms>



BIOMETRIC
UPDATE.COM

Sat, 23 May 2020

Interest in biometric time tracking with facial recognition up as people return to work

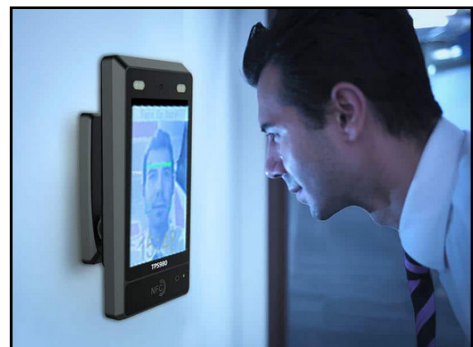
By Launa Pascu

WorkMax sees facial biometrics for time and attendance tracking as a way for organizations around the world to improve cost efficiency as employees return to work, and Timecentric has added the biometric capabilities of a time and attendance competitor by acquiring it. Meanwhile an Indian government defense agency has developed its own facial recognition system for contactless workforce control, and Lathem has announced a major boost in demand for its face scanning-based products.

Biometrics could help contractors reduce overpay

Time tracking applications equipped with biometric facial recognition can help the construction industry solve labor shortage challenges, improve productivity, free up resources and reduce cost, writes Mike Merrill, co-founder and COO of WorkMax, in a guest post with For Construction Pros.

Biometric facial recognition can solve time tracking problems related to unreliable information, supervisor oversight and deficient project forecasts. Contractors pay for 4.5 hours beyond those worked by each employee, on average, due to inaccurate information, Merrill writes, citing a survey by Robert Half.



A time tracking app with face recognition captures data in real-time and compares it to the profile picture already available in the system. Any accuracy or identity errors are reported to a supervisor, who handles each notification separately. Internet connection is not mandatory, so a lack of connection would not affect the time tracking app or the facial recognition function, which can synchronize with the database as soon as it has internet access. The time tracking app would have GPS and geo-fence tracking and management, and be user-friendly, according to Merrill.

Timecentric buys TimeRack time and labor management software developer

HR investment group Timecentric has purchased California-based Time Rack, a company that develops time and labor management software. Time Rack is the company's first acquisition. The software platform helps companies monitor and keep track of the number of hours worked.

Data collection options with Time Rack's TR 365 flagship offering include web, biometrics, badge, proximity and geolocation for secure data management. Human resources departments can centralize processes ranging from onboarding, certification management, expense management, position management, benefit management, secure document management and much more. Due to an open API framework, it can be easily integrated with payroll systems.

Indian government agency develops facial biometrics system to track attendance

The Defense Research and Development Organization (DRDO) in India is working on an AI-based facial recognition system to track employee attendance amid the COVID-19 health crisis, to prevent reliance on paper sheets or biometric machines that require physical contact, writes The Tribune India.

The system is allegedly developed by the DRDO's Defense Bio-engineering and Electro-medical Laboratory, and, if proven successful, will be implemented across other labs. It would leverage a database of employee photos taken from multiple angles and personal details. The employee's or visitor's face would be captured with a camera when walking in or out of the office and be marked with a timestamp to keep a record.

Indian Military Intelligence is working on an automated biometric facial recognition to identify enemies from photographs or real-time videos. Last year, the Border Security Force started installing an access control system with facial recognition at the border with Pakistan. The Ministry of Home Affairs also developed a biometric system to track criminals, linked to the national database.

Biometric facial recognition clock sales increase amid COVID-19

Lathem has registered a major sales increase of its biometric facial recognition clock for employee tracking since the COVID-19 pandemic started, selling five times as many compared to its fingerprint clocks, the company announced.

An alternative to conventional fingerprint, iris scan and hand reader time clocks, FaceIN uses facial recognition to register employees' faces, identify 64 unique points which it stores in the system instead of a photo. It confirms employee identity and keeps track of time punches.

"FaceIN face recognition provides a hygienic, touchless solution for employee time and attendance, a crucial aspect of keeping employees safe and businesses running," said Lance Whipple, vice president, Sales & Marketing, Lathem, in a prepared statement. "As businesses reopen, they are looking for ways to protect the health and safety of their workers, and FaceIN allows them to do that."

One customer is quoted as saying the technology has reduced processing time for company payroll from multiple hours to thirty minutes. Another company recently purchased 40 FaceIN clocks for all five locations in Alaska, which have between 200 and 300 employees each, according to the announcement.

<https://www.biometricupdate.com/202005/interest-in-biometric-time-tracking-with-facial-recognition-up-as-people-return-to-work>

Adapting fast to make PPEs, Punjab apparel industry eyes gains despite slowdown

As many as 58 PPE suit manufacturers in Punjab, 54 of which are based in the leading textile hub Ludhiana, have obtained certification from SITRA or DRDO

By Ranjeet S Jamwal

Chandigarh: Turning the Coronavirus crisis into an opportunity, Punjab apparel industry are set to fulfill the shortage of Personal Protection Equipment (PPE) kits for the fight against Covid-19 by fast making changes in their units to create capacity for manufacturing the much needed protective gear worn by health and sanitation professionals to minimize exposure to the deadly infection.

As many as 58 PPE suit manufacturers in Punjab, 54 of which are based in the leading textile hub Ludhiana, have obtained certification from South India Textiles Research Association (SITRA) or Defence Research and Development Organisation (DRDO).

As these 58 manufacturers already have orders for lakhs of PPE kits and their existing capacity is more than the requirement in India, Punjab industries minister Sunder Sham Arora has urged Union minister of commerce and industry Piyush Goyal to consider allowing its exports to other countries in need.



(Representational image: iStock)

In his letter to the Union minister, Arora highlighted stupendous role played by state industry in coming forward and manufacturing PPEs considered most vital in fight against deadly virus in bulk, and are now in a position to export these quality products to foreign countries on order. He said 58 PPE suit manufacturers in Punjab have obtained certification from SITRO or DRDO, and are ready to start processing orders for PPEs.

“In view of the capacity of above mentioned manufacturers to produce PPE suits and quality of the products, I shall be grateful if you kindly consider allowing export of PPE suits from India,” the minister wrote.

As there was shortage of PPEs in the country and abroad, the apparel industry in Punjab wasted little time in shifting to the business and getting due clearances for their samples from the testing agencies. Though initially their samples failed to get the approval, improving their fabric quality, stitching and taping requirements helped in getting the due approvals from SITRA and DRDO.

The Centre intends to procure two crore PPE kits from the country’s apparel industry but banned PPE exports as there was shortage of the same within the country. But as the PPE kit manufacturing capacity has gone up much above the domestic demand, apparel industry is hoping for the Centre to allow export of PPEs which will help them get business in the international market currently dominated by China, Bangladesh and Vietnam.

<https://www.thestatesman.com/coronavirus/adapting-fast-to-make-ppes-punjab-apparel-industry-eyes-gains-despite-slowdown-1502891282.html>

Punjab Minister urges Centre to allow export of PPE kits

By Mmonika Malik

Chandigarh: The shortage of personal protective equipment (PPE) kits may be throwing doctors out of gear in Punjab and the rest of the country, but nearly 15 out of 58 firms, diagnosed with the capabilities of producing the much-needed protective gear worn by health and sanitation professionals to minimize exposure to the deadly infection, have received the orders.

The state's remaining three dozens of manufacturing units, whose samples have been approved and certified by South India Textile Research Association (SITRA)/Defence Research and Development Organization (DRDO) to make PPE bodysuit and coveralls, are, as of now, have no orders in hand.

Amidst the current situation, the State has already requested other states to order PPEs from Punjab. On Friday, the state Industries Minister Sunder Sham Arora has urged the Union Minister of Commerce and Industry Piyush Goyal to consider allowing exports of PPEs to other countries in need "to utilize Punjab capacity in manufacturing of PPEs to fullest".

The letter to the Union Minister came a day after Arora had shot of separate letters to the Chief Ministers of all others states requesting them to direct their respective Health Departments to order PPEs from Punjab's units whenever needed at the HLL (HLL/Lifecare Limited) rates.

In an apparent attempt to turn the Covid-19 challenge into an opportunity, the state Industries Department had made persistent efforts to persuade several textile and technical textile manufacturing units to manufacture life saving PPEs, N-95 and N-99 masks. Maximum of 54 units in the state's industrial town, Ludhiana, has received the go ahead.

Notably, Punjab is a textile hub with 14 percent of the total cotton yarn in India being produced in the State. Besides, Punjab is the largest producer of blended yarn and is ranked fourth in the country in spinning capacity with Ludhiana being the biggest manufacturing cluster for textiles in North India.

The textile industry accounts for about 19 percent of the total industrial production of the State and contributes about 38 percent of the total exports from the State to USA, United Arab Emirates (UAE), Iran, Bangladesh, and Saudi Arabia.

Arora, in his letter to the Union Minister on Friday, highlighted stupendous role played by state industry in coming forward and manufacturing PPEs considered most vital in fight against deadly virus in bulk, and are now in a position to export these quality products to foreign countries on order.

The Minister pointed out that 58 PPE suit manufacturers in Punjab have obtained certification from SITRO/DRDO, and are ready to start processing orders.

"In view of the capacity of above mentioned manufacturers to produce PPE suits and quality of the products, I shall be grateful if you kindly consider allowing export of PPE suits from India," the Minister wrote.

<https://www.dailypioneer.com/2020/state-editions/punjab-minister-urges-centre-to-allow-export-of-ppe-kits.html>



Sat, 23 May 2020

UJTS: A golden opportunity tailor-made for HAL Tejas

By Animesh Mishra

The U.S. Navy has issued a Request for Information (RFI) on May 14 for its Undergraduate Jet Training System (UJTS) program to procure a new jet trainer aircraft to replace its current fleet on 194 T-45 Goshawk aircraft. About the programme, US Navy is seeking a non-developmental (existing) land-based jet trainer aircraft design that is capable of performing Field Carrier Landing Practice (FCLP) events and Carrier touch-and-go events, and the corresponding effects of these high sink rate landings. The Navy doesn't want its new trainer jet to land and take off from the aircraft carrier, i.e., no arrestment or catapult launches. The current T-45 fleet is able to conduct carrier landings and launches.

The USN wants a two-pilot aircraft with ejection seats. The jet should be able to be flown from either cockpit. Each example of the next-generation trainer is expected to fly 400h per year. The USN wants to conduct field carrier landing practices at an annual rate of 1,200 per aircraft. It also wants each trainer to perform carrier touch-and-go landings 45 times per year. The service ceiling of the aircraft should be 41,000 ft.



The prime contenders for that are supposed to take part in the competition are Boeing-Saab T-7A, which won the US Air Force's T-X competition; Lockheed Martin's T-50A with Korea Aerospace Industries and the Italian Leonardo's T-100. However, none of these aircraft have been tested on an Aircraft Carrier.

HAL can change this situation; I have four reasons to support my argument. Firstly, the HAL LCA Tejas is the only new single engine 4th generation aircraft that has demonstrated it is capable of operating on an aircraft carrier, this gives NLCA Tejas a very strong edge against the other aircraft in the race.

Secondly, US Armed forces purchasing a foreign origin aircraft is not a new thing. The USAF recently selected the American-Swedish T-7 for Training Role. So, If an Indian Jet is selected, I suppose it won't open a pandora's box as this is an ongoing practice. Also, the NLCA uses the GE F404 American engine which is the same as the F/A-18 Hornet and similar to that of the F/A-18 Super Hornet fleet, thus making the maintenance easier, all while the F404-IN20 provides more thrust than F404-102 (78.7 kN) and F404-103 (76.0 kN) used on the T-50 and T-7 respectively.

Thirdly, HAL already has partnership with Boeing India to manufacture F/A-18 Super Hornet in future for the IAF and Indian Navy. HAL can again partner up with Boeing for this new contract. Boeing and SAAB's T-7 won the T-X Programme, but I believe the T-7 would not be a strong contender for US Navy because of limited Naval experience and historically USAF and USN have operated different trainer aircraft because of their different needs. Boeing will have a much stronger chance of winning if it partners with HAL instead of SAAB.

Lastly, converting an air force aircraft to naval requirement is easier said than done, as this can be avoided by going with NLCA, HAL NLCA NP1 and NP2 had demonstrated their capability in January of this year. It fits all the technical parameters and is one of the safest aircraft programmes out there.

HAL has been aspiring to make its presence felt in the global market, and what better way to do so than entering the UJTS program. I am an optimist and a firm believer that HAL becoming a global firm is no longer a distant dream but a reality just inches away from its grasp, all it needs is an opportunity and supportive leadership that ceases that opportunity.

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<https://idrw.org/ujts-a-golden-opportunity-tailor-made-for-hal-tejas/#more-227867>

Defence News

Defence Strategic: National/International

Firstpost.

Sat, 23 May 2020

Indian Army concerns over quality control, weekly ammunition-related accidents: Why Centre is pushing to corporatize OFB

By Yatish Yadav

After an accident at Rajasthan's Mahajan field firing range on 2 February, 2019, due to defects in ammunition of L-70 air defence guns, a meeting was called by senior Indian Army officials.

Two officers from the manufacturer, the Ordnance Factory Board (OFB), were invited to discuss the reasons for the accident.

Both failed to turn up for the meeting on 14 February, which triggered serious discussion within the defence establishment about lackadaisical approach of OFB in resolving the quality concerns of armed forces. The apprehension was not just about fatalities, injuries and damage to equipment due to defects but also on the overall preparedness for the Indian Army.

An assessment report with the defence ministry unraveling the poor quality control of OFB stated that since 2014, there has been an ammunition-related accident once a week. So, when



File image of Nirmala Sitharaman. Image courtesy: CNBC-TV18

Finance Minister Nirmala Sitharaman announced corporatization of OFB to improve autonomy, accountability and efficiency, it was not surprising.

Though the government move is facing opposition from OFB workers union, which wrote to Prime Minister Narendra Modi in September and requested him to shelve the proposal, it nevertheless went ahead with the plan, which puts the OFB performance under the scanner.

Chinks in armour

According to the internal assessment report with the defence ministry reviewed by *Firstpost*, serious concerns related to OFB products have not been resolved despite periodic investigations and recommendations in the last two decades.

Besides accidents, there are issues of defects in ammunition, slow development, delay in production of ammunition required by Indian Army, poor packaging and high return for rectification.

The report further said there is an ammunition-related accident every 5.5 days on average. It also pointed to a large number of accidents involving 130mm guns firing full variable charge ammunition with range of 27.5 km.

The report said: “Non-availability of reliable full variable charge 130mm ammunition has serious operational ramification as maximum range of 130mm guns reduces from 27.5 km to 16.5 km. In spite of number of committees ordered, with the first one more than 20 years ago, issue of accidents with ammunition of 130mm guns remains unresolved.”

According to sources, in 2016, the Shardendu Committee recommended dynamically balancing 130mm shells.

“The exercise of dynamically balancing of 130mm ammunition was done on a trial basis,” sources said. “However, validation firing for dynamically balanced full variable charge and reduced variable charge ammunition, when conducted at Mahajan field firings range in October 2018, failed and resulted in accidents and damage to two guns. Currently, 5.7 lakh non-dynamically balanced full variable charge ammunition of 130mm is held with Indian Army.”

Sources further added that there is a shortage of replacement components which aren't fit to use. This affects operational readiness and also leads to shortage and safety issues.

The report further noted that a clear surge was noticed in accidents in light field guns and Indian field guns related to barrel burst, barrel bulge, and chipping of muzzle brake, due to faulty ammunition and eight accidents were reported in 2018.

“Director General, Artillery expressed his concern over a series of mishaps in 155mm Calibre guns involving Nashem design 155m extended range full bore ammunition being manufactured by Ordnance Factory, Nalanda,” the report observed.

A detailed questionnaire sent to Hari Mohan, chairman, Ordnance Factory Board, did not elicit any response.

C Srikumar, general secretary, All India Defence Employees Federation, said OFB alone cannot be blamed for quality control and delay in production because many a time ordnance factories receive the order at the eleventh hour which leads to various other complications with suppliers of raw materials.

“Past investigations into accidents also revealed problems with storage or mishandling of weapons,” Srikumar said. “But this aspect was never highlighted. Corporatization is not the answer to the problem. We came together to fight COVID-19 and manufactured PPE kits, mask, sanitisers, but the government took advantage of the crisis and announced this decision without considering our suggestions. We have written letters to prime minister and defence minister opposing this move. On Thursday, OFP employees sent 82,000 emails to the government requesting this decision be reversed. We are government employees and cannot be converted into private employees. All the labour unions are with us on this issue.”

OFB unable to meet demand

As per reports, the Indian Army is dependent on OFB for its ammunition requirements but it has failed to deliver certain category of critical ammunition. The Indian Army had to outsource detonators for hand grenades to private industry after OFB failed to deliver. Similarly, OFB was supposed to manufacture anti-tank mines with improved design but there has been serious lack of ownership on the part of OFB and the project has been delayed despite intervention by the defence ministry, as per reports.

There are 41 Ordnance Factories involved in manufacturing of wide variety of products such as tanks, armoured vehicles, artillery guns, small arms along with ammunition used by the Indian Armed Forces. The defence ministry note for Cabinet Committee on Security (CCS) had observed that OFB has largely remained as a production centre with transfer of technology from foreign Original Equipment Manufacturers (OEMs) and according to a rough estimate, nearly 75 to 80 percent of the production by OFB units is based on imported technology while the capacities in the factories remain underutilised.

Among the critical ammunition delayed by OFB, the internal assessment report observed that Indian Army is facing a severe shortage of Mine NMM 14. This is relatively simple to manufacture but the Chanda Ordnance Factory near Nagpur delayed the production despite push from the Master General Ordnance Branch.

“Four category of 40 mm under barrel grenade launcher ammunition has been under development by Ammunition Factory, Khadki, Pune since last 8 years. It needs to be expedited being the main ammunition of T-72 / T-90 Tanks. It is of serious concern that even after a series of defects, accidents in particular ammunition OFB and Directorate General Quality Assurance (DGQA) are unable to arrest the problem and user continues to suffer accidents and casualties during firing,” the internal assessment report observed.

Sources said poor quality control, archaic infrastructure coupled with lack of accountability of OFB is considered to be the major reasons for recurring accidents and defects in ammunition.

“Indian Army is solely dependent on OFB for ammunition and that's why it can get away with substandard products,” sources further added. “It's rare that production of ammunition is stopped due to deficiency in material, process or quality, which exhibits lack of accountability in OFB. The ordnance factories mission should be to compete with global leaders in ammunition industry but that will not happen unless serious reform measures are undertaken by the government. Accidents are causing loss of precious lives and have serious operational ramifications.”

It has been suggested in the assessment report that OFB must strive to provide ammunition quality which is on par with the best in the world and prevent cases of blackening, deterioration of primes, carts driving bands and other components.

“Same if not addressed, shall lead to accidents, defects, reduction of shelf life, early replacement or disposal, all of which is avoidable. There is an urgent need to ensure stringent quality assurance, control measures during entire process of manufacturing to restore user (army) confidence,” the report stated.

R Srinivasan, general secretary of Indian National Defence Workers' Federation, however, said the OFB is entering the global market which shows quality is improving.

“Government says there is problem with efficiency, quality and accountability but OFB is receiving export orders which means the all-round improvement is visible on the ground. This decision goes against the hard work put in by OFB employees. Corporatization will lead to privatization which is not in the interest of national security,” Srinivasan said.

<https://www.firstpost.com/india/indian-army-concerns-over-quality-control-weekly-ammunition-related-accidents-why-centre-is-pushing-to-corporatize-ofb-8399641.html>

Army aims for more local production of specialised ammunition as it works on import ban list

Armed forces are identifying weapons & platforms that will be placed on an import ban list as Modi govt has announced a slew of measures to boost 'Make in India'

By Snehash Alex Philip

New Delhi: The Indian Army is looking at localised production of specialised ammunition that it currently imports as the force has been working on a negative list of import items.

Addressing an online seminar organised by the Society for Indian Defence Manufacturers (SIDM), in partnership with the Department of Defence Production, Army Vice-Chief Lt Gen S.K. Saini said the negative list will help the indigenous industry and provide micro, small and medium enterprises (MSME) the opportunity to fulfill the defence needs of the force.

He, however, assured that the import ban list will not restrict the forces from procuring niche technologies abroad.

As ThePrint reported on 16 May, the armed forces are identifying weapons and platforms that will be placed on an import ban list as the Narendra Modi government has announced a slew of measures to boost the 'Make in India' programme in the defence sector.

Perceptible shift from OFBs to private entities

Lt Gen Saini said there is a perceptible shift of dependence in the Army, from the state-run Ordnance Factory Boards (OFBs) to private entities in terms of non-core activities and even in certain types of critical ammunition.

"It is hoped that other ammunition varieties including those that were being imported currently, based on the response of the defence industry, will also be added in the list of items to be manufactured indigenously," he said.

The Ministry of Defence had in December 2017 approved manufacturing of eight select ammunition under the Make in India initiative.

This included the 30mm ammunition used by infantry carrying vehicles, 125mm armour piercing types and 40 mm grenades that can be machine launched.

Army sources said while eight have been identified for local manufacturing, more ammunition like the 40mm used by Air Defence and those for Anti Material Rifles continue to be imported.

'Finance minister's announcement will have positive impact'

Lt Gen Saini echoed the call for 'Atmanirbhar Bharat' by Prime Minister Narendra Modi and said the defence production and policy announcements, made by Finance Minister Nirmala Sitharaman on 17 May, will have a huge positive impact on India's defence acquisition and sustenance. He said 80 per cent of the Army's capability development and more than 92 per cent of its sustenance budget was based on indigenous products and services.

Lt Gen Saini urged startups and MSMEs to come up with sophisticated technical solutions to military challenges and advised that the use of these technologies concurrently in the civil domain will help bring down their costs, making them financially viable in the medium and long term.

He also asked larger enterprises to act as major hubs of R&D, manufacturing and integration, which in turn will provide impetus to the smaller MSMEs to provide them with ancillary support, creating a self-sustaining ecosystem in the long run.

<https://theprint.in/defence/army-aims-for-more-local-production-of-specialised-ammunition-as-it-works-on-import-ban-list/427321/>

"Import ban won't stop forces from procuring niche tech"

New Delhi: Appreciating the self-reliant policy of the government and increase in Foreign Direct Investment in defence sector, Indian Army Vice Chief Lieutenant General S.K. Saini said on Friday that import ban list will not restrict armed forces from procuring niche technologies from abroad.

In an webinar organised by the Society for Indian Defence Manufacturers (SIDM), Vice Chief of the Army Staff speaking during the "Opportunities in Capital and Revenue Requirements of Indian Army" echoed the call for "Atmanirbhar Bharat" by the Prime Minister.

He said that the announcements made by the Finance Minister on May 17, related to defence production and policy reforms will have a huge positive impact on India's defence acquisition and sustenance.

Lieutenant General Saini explained that 80 per cent of the army's capability development and more than 92 per cent of its sustenance budget was based on indigenous products and services.

"Amongst the game changing reforms planned to improve India's defence capacity are the increase in FDI limits from 49 per cent to 74 per cent, corporatisation of Ordnance Factory Boards, indigenisation of imported spares among other policy norms," the Army vice chief said.

He also said that a negative list of import items was also being prepared where large number of indigenous industry and Ministry of Micro, Small & Medium Enterprises (MSMEs) would be given adequate opportunity to fulfill the defence needs.

He also said that there was a perceptible shift of dependence of the army from OFBs to private entities in terms of non-core activities and even in the case of certain type of critical ammunition.

He expressed hope that other ammunition varieties, including those that were being imported currently, based on the response of the defence industry, will also be added in the list of items to be manufactured indigenously.

The Indian Army vice chief, however, assured that the import ban list will not restrict the forces to procure niche technologies from abroad.

He urged the startups and MSMEs to come up with sophisticated technical solutions to military challenges and advised that the use of these technologies concurrently in the civil domain will help bring down their costs, making them financially viable in the medium and long term.

He said that the larger enterprises will have to act as major hubs of research and development, manufacturing and integration which in turn will provide impetus to the smaller MSMEs to provide them with ancillary support, creating a self sustaining eco system in the long run.

(Disclaimer: This story has not been edited by Outlook staff and is auto-generated from news agency feeds. Source: IANS)

<https://www.outlookindia.com/newscroll/import-ban-wont-stop-forces-from-procuring-niche-tech/1842757>



Sat, 23 May 2020

Atmanirbhar in Defence: Old wine in new bottle

By Anand SG

New defense reforms to help make the Indian Defence Sector 'Atmanirbhar' just seems to be Old Wine in New Bottle with little or nothing actually for defense sector in India to work from scratch as so-called "Negative List" which bars Indian forces from acquiring weapons and systems from foreign countries has very limited and insignificant items to be called major reform policy of the government in the Countries defense sectors.

Leaving Artillery systems, the list consists of Ammunitions and Remotely Piloted Drones systems which most of the countries could build locally in the country anyways. The so-called "Negative List" does not has Fighter jets, Main Battle Tanks, Submarines, or even Assault rifles and other expensive defense items that usually leave a hole in the pocket of the country.

Atmanirbhar in Defence still allows foreign-made weapons to be manufactured locally in India under previous Make In India initiative which was announced years ago and under which India has been manufacturing Assault rifles, fighter jets, Main Battle Tanks and even Submarines under Transfer of Technology (ToT) from foreign vendors at an inflated price with substandard results for decades now by government-owned Public sector companies.

While Many Private sector companies have lauded PM's Atmanirbhar in Defence but many are still not sure what else is prohibited and major defense company L&T even sought clarity on the list of banned weapons to provide a clear road-map for the Indian industry to build capacity and capability, even Armed forces are allowed to buy foreign weapons under Make In India route then so-called "Negative List" makes little sense unless high ticket items like Assault rifles, fighter jets, Main Battle Tanks and even Submarines are also included in them.

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<https://idrw.org/atmanirbhar-in-defence-old-wine-in-new-bottle/#more-227864>



Sat, 23 May 2020

Rafale syndrome: Why IAF needs to focus on weapons not platforms

By Deepak Hilori

If we had Rafales, we'd have shot down 4-5 Pakistani jets after Balakot said IAF ex-chief Dhanoa but the exact same was said for Sukhoi-Su-30MKI jet since its induction in early 2001 to many Indians that it is the best fighter jet in the whole of Asia and technical performance in par to the best what World can offer and can dominate skies of Asia. India's defense ministry even has listed several reasons for the higher costs of the Su-30 fighter jets supplied to the Indian Air Force (IAF) from the local production line, in comparison to those supplied directly by the original Russian manufacturer.

While we were paying more for a local product without actually investing in the right kind of weapons for the aircraft in question to make it always lethal in the sky. The inability of the Two Su-30s to down PAF F-16s and not even firing a single shot only confirms that platform alone can't win your battles unless you invest in the right weapons for the platform too.

Today Rafale is what IAF desires since it comes with a silver bullet called Meteor BVRAAM, while IAF can dominate the skies but will Meteor BVRAAM always remain superior 10-20 years down the line? unless IAF keeps investing in the right weapons for Rafale down the line too, or 5th generation Chinese planes with ultra-long BVRAAMs will put Rafale in the same position as Two Su-30s were against PAF F-16s.

IAF had every opportunity to arm their Su-30 fighter fleet with superior BVRAAM and WVR missile of the west or even from Russia but it stuck to the famed R-77 BVRAAM even though they have been multiple CAG reports highlighting poor performance of the missile system. IAF continued to focus on acquiring multiple billion dollars 36 Dassault Rafale then arming the existing fighter fleet with superior weapons to maintain the edge in the skies.

Same is IAF's Story with the AWACS Fleet which is bigger on the other side than that of India due to the IAF chasing Platform then the capabilities. 'NETRA' Airborne Early Warning and Control System (AEW&CS) induction were curtailed at 2 so that imports of the IL-76 Based AEW&CS could be allowed and now focus remains on Airbus A330 based AWACS instead of inducting more NETRA AEW&CS which might take a decade to come.

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<https://idrw.org/rafale-syndrome-why-iaf-needs-to-focus-on-weapons-not-platforms/>

Lack of consensus in MoD grounds Navy's acquisition of 111 copters for now

These helicopters will replace the ageing Chetaks and would to be used for search and rescue operations, casualty evacuation, low-intensity marine operations and torpedo drops

New Delhi: With Ministry of Defence unable to decide on who would be the Indian partner -- a private company or a Public Sector Undertakings (PSU) -- Indian Navy's acquisition of 111 helicopters under the strategic partnership model remains grounded for now.

The acquisition, estimated to be worth Rs 21,738 crore, of Naval Utility Helicopter (NUH) is the first one being processed under the new Strategic Partner procurement model. It is aimed to boost domestic manufacturing in collaboration with foreign firms.

Earlier, Indian Navy had shortlisted three foreign and four private Indian companies. But now discussion over making state-owned Hindustan Aeronautics Limited (HAL) the strategic partner has delayed the entire acquisition process.

"There is a lack of consensus within the Ministry of Defence as to whether Hindustan Aeronautics Limited (HAL) should be made the strategic partner or private firms," said a source in the ministry.

This has further delayed the issuance of the Request for Proposal (RFP) for Naval Utility Helicopters.

In 2019-end, the Defence Acquisition Council headed by Defence Minister Rajnath Singh was expected to give a final clearance next week for the Request of Proposal (RFP) after having identified the Indian firms and foreign manufacturers who will get together for the production of the helicopters.

But it did not happen and the matter was referred back to Indian Navy to consider the proposal of involving Defence PSUs.

The decision to go with private Indian industry was taken in August 2018. Out of the 111 helicopters, 95 will be manufactured in India by the selected Indian Strategic Partner.

These helicopters will replace the ageing Chetaks and would to be used for search and rescue operations, casualty evacuation, low-intensity marine operations and torpedo drops.

Sources said that Navy has lost around five Chetak helicopters in the last seven years. Further, Chetaks' availability with the Navy will reduce by 2023 considerably. To procure helicopters was first proposed in 2008. The procurement was under 'buy global' category.

It was only in 2014 that the DAC directed the Indian Navy to withdraw the earlier procurement process and initiate a new proposal under 'buy and make Indian' category. Later it was decided to go for strategic partnership model.

Through the strategic partnership model, the government has aimed at reducing defence imports that currently account for 60 per cent of military acquisitions.

<https://www.newindianexpress.com/nation/2020/may/22/lack-of-consensus-in-mod-grounds-navys-acquisition-of-111-copters-for-now-2146708.html>

Indian Navy asks personnel to wear colour-coded masks matching with uniform

As per the instructions issued in the Kochi-based command, personnel have been asked to put on white masks with white uniforms and black or navy blue masks with other ceremonial uniform

New Delhi: In a bid to bring in uniformity in uniforms put on by its personnel, Indian Navy's Southern Naval Command has asked its men to put on colour-coded masks to match with their uniforms.

As per the instructions issued to the personnel in the Kochi-based command, personnel have been asked to put on white masks with white uniforms and black or navy blue masks with other ceremonial uniform, Navy officials told ANI.

The Defence Security Corps and fire services personnel wearing khaki uniform have been asked to put on Khaki masks while on duty, they said.

Officials said that fines have also been defined where a person not wearing a mask would be charged Rs 200. While for the second time, they would be charged Rs 2,000.

On the need for wearing the colour-coded masks, officials said this was required as personnel were wearing masks of different colours which was not going well with uniforms.

A number of these cotton masks have been prepared by the Navy Wives Welfare Association while others are providing it at a very low cost, the officials said.

Sources said the cotton masks have been mandated in Kochi due to the excessive heat in Kerala as synthetic cloth masks would be causing some discomfort to personnel.

<https://www.newindianexpress.com/nation/2020/may/22/indian-navy-asks-personnel-to-wear-colour-coded-masks-matching-with-uniform-2146751.html>



Navy Chief Admiral Karambir Singh (Photo | EPS)

ज्ञान प्रसार एवम् विस्तार
hindustantimes

Army Chief visits Ladakh after border skirmish at LAC

The visit came a day after India rejected China's allegation that Indian troops initiated tensions and crossed LAC in Ladakh and Sikkim sectors and accused the Chinese army of hindering patrols on the Indian side

By Rahul Singh

New Delhi: Army Chief General Manoj Mukund Naravane on Friday visited Leh, the headquarters of 14 Corps in Ladakh, for a security review of the sensitive sector amid tensions between India and China along the disputed Line of Actual Control (LAC), two officials said on the condition of anonymity. He returned to Delhi later in the day.

The visit came a day after India rejected China's allegation that Indian troops initiated tensions and crossed LAC in Ladakh and Sikkim sectors and accused the Chinese army of hindering patrols on the Indian side.

Soldiers on both sides are showing restraint and efforts were underway to de-escalate, said one of the officials cited above.

India and China have deployed additional troops, especially in Ladakh's Galwan Valley, after a face-off near Pangong Tso on May 5-6. India bolstered its troop levels after the Chinese side brought in reinforcements and also reportedly pitched tents and erected temporary positions in the Galwan Valley as part of its efforts to establish a presence there.

China's foreign ministry first accused Indian troops of trespassing across LAC on Tuesday, saying Beijing had to take "necessary countermeasures" after the Indian army allegedly obstructed normal patrols by Chinese troops.

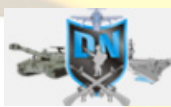
A government spokesperson on Thursday said, "Any suggestion that Indian troops had undertaken activity across LAC in the western [Ladakh] sector or the Sikkim sector is not accurate."

HT was the first to report on May 10 about tensions flaring up between India and China in north Sikkim, where 150 soldiers were involved in a standoff a day earlier. Four Indian and seven Chinese soldiers were injured during the confrontation.

Scores of soldiers from the two countries clashed near Pangong Tso on the night of May 5-6 and a few were injured in the scuffle that involved around 250 men. While a flare-up was avoided as both armies stuck to protocols to resolve the situation, tensions spread to other parts of eastern Ladakh, including the Galwan Valley.

Talks between local commanders have failed to ease tensions and diplomatic channels are at work to end the standoff, officials said. The current situation along LAC marks the first major flare-up since the 73-day standoff between India and China at Doklam near the Sikkim border in 2017.

<https://www.hindustantimes.com/india-news/army-chief-reviews-ladakh-situation/story-YwgqYvq7Aq1hENEZsJlaoI.html>



DefenceNews

Sat, 23 May 2020

Indian Ocean becoming new focus of activity after South China Sea, need to augment security: Defence Secretary

After the South China Sea, the Indian Ocean Region is becoming the new focus of activity and India needs to augment security so that the blue economy involving fishing, mineral and energy exploration can be supported, Defence Secretary Ajay Kumar has said.

Giving the example of China, the top bureaucrat said that while the neighbouring nation has become a world leader when it comes to deep sea fishing, the Indian side remains confined to coastal areas and is not even fully exploiting the Exclusive Economic Zone and there is a lack of security apparatus to support it.

"We are still not even looking at going beyond our own territorial waters. Our fishermen are not trained, they don't have the craft. And, we don't have the security umbrella for our fishermen to be going deeper and for tapping resources even in our EEZ," the Defence Secretary said at a webinar organised by the Manohar Parrikar Institute of Defence Studies and Analysis.

Kumar said that after the South China Sea, the IOR has become "an important theatre for activity" and national security plans need to cater for this. "Maybe it will require naval resources or some air capabilities need to be created to deal with the Indian Ocean. The fact is that security of the IOR has to be addressed," the bureaucrat said in response to a question posed by ET.

He added that for developing the blue economy, the 1382 island territories of India need to be integrated as well as they are strategically placed.

There has been increasing concern over the past few years on the upswing in Chinese activity in the Indian Ocean Region. Besides creation of infrastructure in nations like Sri Lanka and Bangladesh, China has activated its first overseas base in Djibouti and has been conducting regular patrols in the region.

Chinese movement includes nuclear submarine patrols and frequent port visits to Pakistan as well. Officials believe it is only a matter of time before the first Chinese aircraft carrier group sets sail for the region as the PLA Navy has been rapidly expanding its reach.

<https://www.defencenews.in/article/Indian-Ocean-becoming-new-focus-of-activity-after-South-China-Sea,-need-to-augment-security-Defence-Secretary-840697>

THE TIMES OF INDIA

Sat, 23 May 2020

China hikes defence budget to \$179 billion, nearly three times that of India

Beijing: China, the second-largest military spender after the US, has hiked its defence budget from last year's 177.6 billion to \$179 billion, nearly three times that of India, the lowest increment in recent years apparently due to the heavy disruption caused to its economy by the Covid-19, according to the official media.

China, which has the world's largest military of two million troops, will continue to lower its defence budget growth rate to 6.6 per cent in 2020, according to a draft budget report presented on Friday to National People's Congress (NPC), the country's top legislature.

The 2020 defence budget continues to see single-digit growth for a fifth consecutive year. It is the lowest growth rate in recent years, the state-run Xinhua news agency reported.

China's this year's defence budget will be around 1.27 trillion yuan (about \$ 179 billion) against last year's 177.61 billion, according to the draft submitted to the NPC.

China's total defence spending in 2019 only amounted to a quarter that of the United States, the world's largest defence spender, while the per capita expenditure was just about one-seventeenth, the report said.

On Thursday Zhang Yesui, spokesperson for the NPC in a media briefing played down criticism about lack of transparency in China's defence expenditure which defence analysts say considering the rapid expansion of Beijing's military and modern weapons is far higher than what is announced.

Zhang said China had no "hidden military spending".

China has been submitting reports on its military expenditures to the United Nations every year since 2007, he said.

"From where the money comes from to how the money is used, everything is accounted for," Zhang said.

According to Stockholm International Peace Research Institute (SIPRI), the military expenditure figures of China's defence spending in 2019 amounted to \$232 billion.

While China compares its defence expenditure with the US, whose defence budget according to SIPRI was \$732 billion, Beijing's massive defence modernisation drive is pushing India and a number of other countries to hike their own defence budgets to ensure reasonable balance of power.

India's budget for 2020 amounted to \$66.9 billion (Rs. 4,71,378 crore) according to a write-up in Indian Institute for Defence and Analysis, (IDSA). China's latest budget of \$179 billion is amounted to about 2.7 times more that of India.

China's defence spending has been staying at around 1.3 per cent of its gross domestic product for many years, well below the world's average of 2.6 per cent, Zhang said.

China's defence budget in recent years acquired limelight as it embarked on a massive modernisation which included a number of aircraft carriers, stealth aircraft, rapid development of modern naval frigates.

Since Chinese President Xi Jinping came to power, China has revamped its defence forces, cutting the army by three lakh troops and enhanced its naval and air power as Beijing expanded its influence abroad.

China currently has one aircraft carrier, the second one is undergoing trials while the third is being built. According to official media reports, China plans to have five to six aircraft carriers in near future to challenge the US all around the world including in Beijing's backyard the South China Sea (SCS).

China claims all most all of the SCS as its territory. Vietnam, Philippines, Malaysia Brunei and Taiwan have counterclaims on it.

China is engaged in hotly contested territorial disputes in both the South China Sea and the East China Sea. Beijing has built up and militarised many of the islands and reefs it controls in the region. Both areas are stated to be rich in minerals, oil and other natural resources and are also vital to global trade.

<https://timesofindia.indiatimes.com/india/china-hikes-defence-budget-to-179-billion-nearly-three-times-that-of-india/articleshow/75885182.cms>

Science & Technology News

onmanorama
40 ORGANISATION

Sat, 23 May 2020

IAM to play pivotal role after Indian astronaut-selects return from Russia

By Anantha Krishnan M

Bengaluru: The COVID-19 has put brakes on the ongoing preparations for India's manned space mission Gaganyaan. Those linked to the project say that similar to other aerospace missions world over, Gaganyaan too will take a temporary hit due to the restrictions in place.

"These are unprecedented times. Nobody could have anticipated this. There are many developments in the industry over which we have limited control. Hence we will take things in our stride and see how we can absorb the delays," says an Indian Space Research Organisation (ISRO) scientist.

He said the in-house design activities were progressing through the lockdown period.



As space exploration activities get back to the full mode in phases, we shift the spotlight in this edition of 'Gaganyaan Unplugged' on Institute of Aerospace Medicine (IAM), a premier wing under of IAF in Bengaluru.

This is the fourth part of Onmanorama's series on the Human Space Programme (HSP), capturing various aspects of the manned mission, including the roles being played by various stakeholders.

The four astronaut-selects for Gaganyaan from Indian Air Force (IAF) who are currently undergoing a year-long training at the Gagarin Research & Test Cosmonaut Training Center (GCTC) in Russia, are expected to join IAM early next year, to undergo further training at IAM.

Training has resumed at GCTC for the four Test Pilots (TPs) on May 12 after a lockdown from March end. However, their online classes were on during the lockdown period.

Galvksosmos officials say that theoretical classes have begun on the basics of astrogation, manned spacecraft control and in the Russian language.

With Covid-19 virtually rewriting the script of mankind, Gaganyaan training will undergo some changes with new protocols setting in.

Systematic Approach Key

Onmanorama held several interactions with experts in the field of aerospace medicine to understand India's preparedness for the Gaganyaan mission.

IAM's role will be very critical for the success of Gaganyaan mission. Many in the know-how of manned space explorations believe that training for astronaut-selects will have to be systematic and in a decent-paced manner.

"Ahead of finalising the four TPs, there were several levels of the selection process. Level-0 was the preliminary one, Level-1 more advanced training and Level-2 was the advanced aeromedical evaluation. However, the levels had to be merged for lack of time and owing to the urgency to send the TPs to Russia. The distinction was certainly lost and we hope it will be a different story in future," says an official part of the Gaganyaan team from IAF.

He said more than the technology, it is the training given to the astronauts that will eventually do the work for the missions.

"The technology works the same way in space as it functions on earth. If you go by the records and read various studies by NASA, it is estimated that about 40 per cent of the technology made for space doesn't work. So it is going to be a challenge for India as we do not yet have the expertise to deliver space tech that can cater to human beings," he says.

Right now the four astronaut-selects are only undergoing generic space training at GCTC.

"The pilots will have to know every system onboard and also every situation that they will encounter. The in-depth system training will happen when they return to IAM. Now they are getting training on Souyz spacecraft and once they are back they will get simulator training on Gaganyaan-specific module," says the official.

The simulators have to come up at IAF with the help of HAL's Aerospace Division and ISRO Telemetry, Tracking and Command Network.

The astronaut-selects will also get the training for G-forces and motion sickness at IAM, for which some facilities are already up and running.

"IAM has the expertise in the selection of astronauts from 1982, ahead of Rakesh Sharma's space mission. Over the years, IAM has been doing regular selection-related programmes for pilots and Navy observes. Even when the EU, Japan and Canada gave up their manned space missions, IAM was constantly undertaking various studies in this regard, knowing that India would embrace the manned space mission one day," says another official overseeing the Gaganyaan mission.

Clarity Needed

Air Vice-Marshal (Dr) Pankaj Tyagi, (Retd), former Commandant of IAM and founder CEO of Space Aviation Medicine and Engineering Creative Solutions Plus (SAMECSPlus) says that the time has now come to clearly define the areas in which work needs to be done to achieve the Gaganyaan's overall objectives.

"Gaganyaan to me is a bigger programme, while ISRO is only an existing resource, not equipped for the moment to deliver all requirements purely on its own. It must grow in multiple

fields requiring time and investment in infrastructure, research and huge funds. Presently it is purchasing minimal required used technological platforms from Russia,” says AVM Pankaj (Retd)

According to him, the components of the space programme can be generally classified into travel, explore, discover, claim and inhabit.

“We are at the travel stage for the moment. After reaching space, what is it that we are going to do is more important and yet to be thought, to get max value for money for the first flight. There needs to be complete clarity on the broad aims of this national programme,” he says.

He says that space expedition by India for the moment means travel – our ability to reach space and come back safely, repeatedly on our platforms from our own soil on our own schedules.

“Exploration is the process of treading new zones yet unknown. Discovering is unravelling new finds. Claiming is creating ownership of your own space. Inhabiting is making a new place one’s home. Observing, understanding, absorbing, adjusting, adapting, optimising are the skills used for all the steps. A strong human-machine combination appropriate for the mission with enough redundancies is the key to success,” he adds.

IAM’s Expertise

For the Gaganyaan mission, IAM has certain expertise and capable of providing training for acceleration stress, orientation issues, stress due to haemodynamic changes, hypoxic stress, space motion sickness and vibration stress. Besides, IAM can also provide the following:

- Anthropometric dimensions for Indian population of space capsule design.
- Human engineering inputs for the design of space capsule, including habitable space, control systems and safety.
- Safety inputs for accelerations, hypoxia, CO2 levels, toxic gases, waste disposal etc.
- Inputs on systems required for life support in space.
- Inputs on training required for life support systems.

Interestingly all MD students at IAM are taught approximately 40 hours of lessons linked to aerospace medicines. Experts from Roscosmos and NASA have approved the selection at IAM and said that the institution is cleared to conduct medicals for all future astronauts.

India’s dreams of HSP took wing in 2006 when the Centre wanted to understand the pros and cons of the mission. ISRO began the pre-programme phase in 2006 and in 2009 IAM and Vikram Sarabhai Space Centre signed an MoU for the same.

The MoU was to build a facility for HSP and also to determine what would get into the selection of astronauts and what kind of training is required to go to space.

After PM Modi announced about Gaganyaan officially on August 15, 2018, the IAF and ISRO inked an MoU for selection, training and other aspects of the Gaganyaan mission on May 28, 2019.

Following are some of the key areas where IAM’s expertise will be put to use as the mission slowly and steadily gain momentum.

- Selection of vehicle and spacecraft
- Selection of vehicle crew and training
- User and technical manuals to be used for Environment Control and Life Support System (ECLSS)
- Human engineering workstation design for the crew module
- Isolation and psychological management
- Human factors considerations in the manned space programme
- Microgravity research
- Gravitational stress management in various phases of space flight
- Clinical space medical and surgical management
- Radiation protection
- Toxicology in space

- Emergency survival system design
- Space station life support system
- Extravehicular activity (EVA) design
- Heat stress management
- Operational space medicine
- Scientific and technical manpower management
- Infrastructure development related to aero-medical support of HSP

Complex Mission

IAF brains hooked to space and aerospace medicine term human spaceflight as an incredibly complex mission, with rockets being only a small part of the story.

“The Ariane-5 first flew in 1998 and has had 103 successful launches, the Falcon-9 first flew in 2010, and the heaviest rocket in the world Japanese H-2A first flew in 2001. Yet none of these could be converted to human spaceflight. The important issue is to sustain life in space, something in which ISRO has no expertise.

This requires an incredible amount of research and understanding, as no successful country shares expertise in this area. Even when it does, as NASA shared with Space-X and Boeing, it still takes a large amount of research to integrate systems,” says an official.

Many agree that ISRO has done some amount of research into the human rating of rocket systems, which is a huge positive. However, they feel that the amount of research done towards other essential systems in the two years since the PM’s announcement of the Gaganyaan programme needs scaling up.

“A successful programme is not possible without research. Also, the ultimate aim for Gaganyaan is to enhance the level of science and technology in India, inject scientific rigour and give India her rightful place in the comity of nations. None of this would be achieved without scientific progress,” says the official.

IAM is one agency with some expertise in the area. There are several national agencies with the capability to come up with targeted solutions for Gaganyaan.

“It may be worthwhile to have one lead agency for rocket systems, which rightfully would be ISRO and another for human systems, for which IAM is ideally suited,” says the official.

<https://english.manoramaonline.com/news/nation/2020/05/22/gaganyaan-unplugged-isro-indian-astronauts-space-mission.html>

The Tribune

Sat, 23 May 2020

A disturbing space flight amid the pandemic

Apart from the bizarreness of the timing and the context, the announcement is deeply disturbing for independent functioning of India’s premier space agency — the Indian Space Research Organisation. The substance of the announcement is questionable, in any case. The announcement is indicative of a total erosion of the independence and autonomy of a scientific agency. This has been happening over the past few years and now the process seems to have reached its zenith

By Dinesh C Sharma

When the news first trickled down about opening up inter-planetary space travel to the private sector as part of the Covid-19 stimulus package announced over the weekend, it sounded like a crude joke. At a time when television screens, newspaper front pages and social media timelines are filled with images of poor migrants walking and cycling on highways, the government is looking to space as a possible solution.

Even if it is taken as a new policy announcement to boost the sagging economy, should it have been clubbed with the relief package for the pandemic which is a grave health and social crisis? Of course, space technology can help alleviate the suffering of people in multiple ways like telemedicine, but Finance Minister Nirmala Sitharaman was not talking about such applications.

She specifically talked about ‘travel in outer space’ and ‘exploration of new planets’ by the private sector. It almost sounded like: “If they don’t have bread, why don’t they eat cake?” If you don’t have access to a bus or train on the ground, why don’t you look to inter-planetary spaceships or satellite to the farthest exoplanet?



Strange: Inter-planetary travel has been opened to the private sector as part of the stimulus package.

Apart from the bizarreness of the timing and the context, the announcement is deeply disturbing for independent functioning of India’s premier space agency — the Indian Space Research Organisation (ISRO). The substance of the announcement is questionable, in any case.

The announcement is indicative of a total erosion of the independence and autonomy of a scientific agency. This has been happening over the past few years and now the process seems to have reached its zenith. While it was inappropriate for the announcement to be made as part of an economic package for the pandemic because ISRO is not a revenue-earning (or sick) public sector enterprise, with which the Finance Minister or the government can tinker in a whimsical fashion. ISRO is a national asset and a key element of the strategic-cum-geopolitical armament of the Indian state.

The agency has earned this place through sheer hard work and determination of its scientific workforce under very adverse circumstances, such as technology denial and moratoriums crafted by western powers. ISRO has climbed up the technology ladder step by step, while carefully balancing national interests and exploration of outer space.

Autonomy is in the DNA of the space programme. In the 1960s, all space-related research and programmes were part of the Department of Atomic Energy and the Physical Research Laboratory (PRL) based in Ahmedabad. This activity was directed by Vikram Sarabhai at PRL and DAE where he was appointed secretary after the death of Homi Jehangir Bhabha. PRL was the hub of satellite design, space applications and planning for launch station at Sriharikota. The death of Sarabhai on the night of December 31, 1971, necessitated a change in this set-up.

The then Prime Minister Indira Gandhi decided to create a separate Department of Space and appointed Satish Dhawan, who was director of the Indian Institute of Science (IISc) in Bangalore as its first secretary. Dhawan put a condition: he would continue to work at IISc. So, the Department of Space should be based in Bangalore. He reasoned that it was a scientific department which should be free from Delhi’s bureaucratic interference.

That’s how space programme moved to Bangalore, much the same way as the DAE was founded in Bombay so that Bhabha, its first secretary, could continue as Director of the Tata Institute of Fundamental Research (TIFR), which he had founded. In 1972, another new wing — Department of Electronics (DoE) — was formed and was allowed to function from Bombay because its secretary MGK Menon (who was Director at TIFR) wanted it to be so.

The point is that the government of the day recognised and accepted the need for the autonomous functioning of scientific departments.

However, autonomy does not mean lack of control from the government. Keeping this in mind, a new mechanism was devised in 1948 when the atomic energy activity started. While the DAE was conceived as a government department for administrative purposes, the Atomic Energy Commission was established as a policymaking body.

In addition, Bhabha had argued that given the strategic nature of atomic energy, the new department needed a high degree of autonomy in terms of government procedures and financial regulations. The commission model could ensure this. The commission had wider representation from within the government as well as outside. The same model was followed for the departments of space and electronics as well. The Electronics Commission was abolished years ago, but the Space Commission exists.

It is unclear from the Finance Minister's diktat about private sector participation in a strategic area of activity if the Space Commission or the Department of Space were party to this. It does not seem to be so, going by the first — and only — reaction of ISRO to the announcement. In a cryptic tweet a few hours after the announcement, the space agency said: “Department of Space will follow government guidelines and enable private players to carry out space activities in the country.”

The tweet made it clear that it has been issued on behalf of the DoS, and that it is merely following ‘government guidelines’ regarding private sector participation. The DoS or the Finance Ministry are yet to make public what these ‘guidelines’ are and if indeed such guidelines existed when the announcement was made.

Sitharaman also said that the government “will allow private sector to use ISRO facilities.” Unless defined, ‘ISRO facilities’ could mean anything from an auditorium to a rocket launcher, and ‘private sector’ could imply anyone from Ambani to Elon Musk.

As of now, India does not have a national space policy that allows the private sector to participate in inter-planetary space travel or use any of numerous facilities of ISRO. The private sector is currently a supplier of equipment and components and user of space applications. If the announcement made by Sitharaman is taken as the new space policy, then the pandemic would prove to be a blessing — and not a curse — for some private sector biggies who have been eyeing ISRO assets for long.

<https://www.tribuneindia.com/news/comment/a-disturbing-space-flight-amid-the-pandemic-88772>

hindustantimes

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Patent for ISRO process to make moon soil simulant

On May 18, the Indian Patent Office granted patent to Isro for the method of manufacturing highland lunar soil simulant. The patent is valid for 20 years from the date of filing the application, i.e., May 15, 2014

Chennai: The Indian space agency has got the patent for its method of manufacturing highland lunar soil simulant or simply lunar/Moon soil. As a part of its Moon landing mission Chandrayaan-2, the Indian Space Research Organisation (Isro) had to prepare an artificial moon surface so that the Vikram lander and Pragyaan rover could be tested.

On May 18, the Indian Patent Office granted patent to Isro for the method of manufacturing highland lunar soil simulant. The patent is valid for 20 years from the date of filing the application, i.e., May 15, 2014.

The inventors are I Venugopal, SA Kannan, Shamrao, V Chandra Babu (all from Isro), S Anbazhagan, S Arivazhagan, CR Paramasivam, M Chinnamuthu (all from the Department of Geology, Periyar University, Salem, Tamil Nadu) and K Muthukkumaran from the National Institute of Technology, Tiruchirappalli, Tamil Nadu.

“The surface of the Earth and that of the Moon are entirely different. So we had to create an artificial moon surface and test our rover and lander,” M Annadurai, who retired as director, UR Rao Satellite Centre (URSC), formerly Isro Satellite Centre, said.

Importing lunar soil like substance from the US was a costly affair and Isro looked for a local solution as its need was about 60/70 tonnes of soil.

Many geologists had told Isro that near Salem in Tamil Nadu, there were anorthosite rocks that would be similar to the features of Moon soil or regolith.

Isro decided to use anorthosite rocks from Sithampoondi and Kunnamalai villages in Tamil Nadu to produce its moon soil simulant. The rocks were crushed to the required size and moved to Bengaluru, where Isro's Lunar Terrain Test Facility is located, and a test bed was created.

<https://www.hindustantimes.com/ht-school/patent-for-isro-process-to-make-moon-soil-simulant/story-UuOGkPZLEl8wKEKqg3sbKP.html>



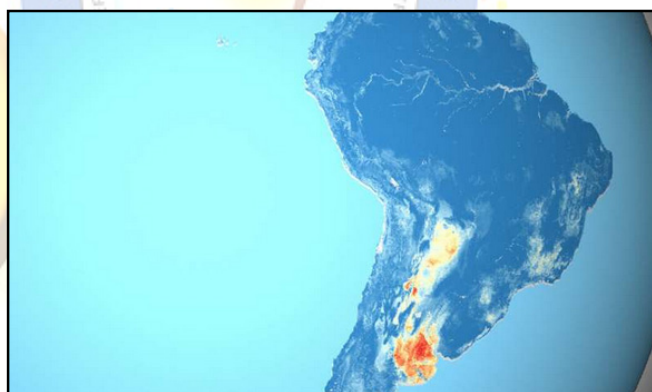
Sat, 23 May 2020

Researchers create global arsenic in groundwater maps to highlight threats

By Bob Yirka

A pair of researchers at the Swiss Federal Institute of Aquatic Science and Technology has created a global map that highlights areas where there are likely dangerous levels of arsenic in groundwater. In their paper published in the journal *Science*, Joel Podgorski and Michael Berg describe combining data from a variety of sources to train a machine learning algorithm to highlight possible hot spots on a global map. Yan Zheng, with Southern University of Science and Technology has published a Perspective piece outlining the work by the research pair in the same journal issue.

The current pandemic has captured the attention of the world, and for good reason. But other threats continue to put millions of people at risk. One of these, as Zheng notes, is arsenic consumption. Commonly known as a type of poison used to kill rivals, arsenic is a metalloid that, when consumed, can cause serious medical problems and, of course, death. It is also a chemical element that is commonly found in soil and rocks. In some cases, conditions exist that allow arsenic to make its way into groundwater, where it can be pulled up and consumed, putting people at risk.



Scientists have been aware of the problem of arsenic poisoning groundwater in such places as Argentina, Bangladesh and Vietnam. The WHO is also aware of the problem—they have set a concentration of 10 micrograms per liter as a safety limit in consumable water. In this new effort, Podgorski and Berg, an environmental scientist and hydrologist respectively, suspected that there are likely more hotspots than are currently known, so they set themselves the task of revealing likely hotspots around the world by analyzing vast amounts of data.

The work involved assembling data from over 80 studies and then using a machine learning algorithm that processed the data and made estimates on the likelihood of arsenic levels in groundwater for 1-km²-patches covering the entire globe. They then used the predictions to create a map showing arsenic threat levels. The map showed that up to 220 million people around the globe may be at risk of drinking water contaminated with dangerous levels of arsenic.

<https://phys.org/news/2020-05-global-arsenic-in-groundwater-highlight-threats.html>

Bengaluru start-up uses AI to come up with potential Covid drug

This is the second breakthrough in the fight against COVID-19 in India

By Aksheev Thakur

Bangalore: A Bangalore-based start-up Sravathi has discovered a new potential drug for COVID-19 by using Artificial Intelligence and other advanced computing techniques, even as the whole world is reeling under the life threatening effects of this deadly virus.

This is the second breakthrough in the fight against COVID-19 after the Indian Institute of Science (IISc) that is working on the vaccine to combat the pandemic.

Sravathi, which was started by technocrats with vast industrial experience, has come up with more than 100 new molecules that are completely new chemical entities and validated through various physics and mathematics-based models. The start-up further selected molecules & customised them to check for its effectiveness as a cure for COVID-19.

Dr. Kishan Gurram, MD & CEO, Sravathi said, "We have used multi-disciplinary experts to get synergy and understand entire mechanism to come up with several new drug like inhibitors. Within a short time, Sravathi scientists designed 250,000 molecules and were able to come up with several effective molecules which inhibit the enzyme".

He added, "Further, we have predicted various chemical, fingerprint, biological and toxicity properties using advanced techniques to down select final molecules."

The aim of this year-old startup is to develop new breakthrough technologies using advanced tools such as Artificial Intelligence, flow chemistry and modeling techniques. It believes in multi-disciplinary experts to solve problems and has built capabilities accordingly.

Sravathi has started exploring external partnerships to continue its efforts in the entire drug development cycle and bring the drug to the market at earliest after appropriate required approvals.

Meanwhile, the researchers of SN-Life Sciences, in collaboration with TESP India at Bangalore Bio Innovation Centre, have developed a programmable robotic machine that will bring down the cost of COVID-19 testing to Rs 500 from the current Rs 4,500. The innovation team was headed by Dr Harsh Vardhan Batra, the former DRDO director.

The machine performs the function of RNA isolation from clinical samples of sputum/swab without using the imported kit and it can do eight samples simultaneously.

<https://www.deccanchronicle.com/nation/in-other-news/220520/bengaluru-start-up-uses-ai-to-come-up-with-potential-covid-drug.html>



Oxford University submits research papers for second stage of coronavirus vaccine

*The University of Oxford has submitted the research papers
for the second stage of the coronavirus vaccine.*

London: The world is eagerly waiting and is in dire need of coronavirus vaccine. Many companies are working on a solution. University of Oxford researchers working on a vaccine to protect against coronavirus on Friday confirmed that they are moving to the next level as they begin recruiting over 10,000 people for the second phase of human trials.

The first phase of the trial began last month with 1,000 healthy adults aged 55 and under as volunteers. Now more than 10,200 people, including over 70s and five to 12-year-olds, will be enrolled in the study, to see the effects on their immune system.

A recent study had found that the vaccine, named ChAdOx1 nCoV-19, had shown some promising results in a small study with monkeys.

The Covid-19 vaccine trial team have been working hard on assessing the safety and immunogenicity of ChAdOx1 nCoV-19, and preparing to assess vaccine efficacy, said Sarah Gilbert, professor of vaccinology at the university's Jenner Institute who is leading the research.

Covid-19 vaccine: The process

We have had a lot of interest already from people over the age of 55 years who were not eligible to take part in the phase I study, and we will now be able to include older age groups to continue the vaccine assessment. We will also be including more study sites, in different parts of the country, she said.

ChAdOx1 nCoV-19 is made from a virus (ChAdOx1), which is a weakened version of a common cold virus (adenovirus) that causes infections in chimpanzees, that has been genetically changed so that it is impossible for it to replicate in humans.

For the latest set of volunteers, researchers will be assessing the immune response to the vaccine in people of different ages, to find out if there is variation in how well the immune system responds in older people or children.

"The clinical studies are progressing very well and we are now initiating studies to evaluate how well the vaccine induces immune responses in older adults, and to test whether it can provide protection in the wider population, said Professor Andrew Pollard, head of the Oxford Vaccine Group.

The Phase III part of the study involves assessing how the vaccine works in a large number of people over the age of 18.

This group will assess how well the vaccine works to prevent people from becoming infected and unwell with Covid-19. Adult participants in both the Phase II and Phase III groups will be randomised to receive one or two doses of either the ChAdOx1 nCoV-19 vaccine or a licensed vaccine (MenACWY) that will be used as a control for comparison, the university said.

Experts give assurance about Covis-19 vaccine

Mene Pangalos, Executive Vice President for BioPharmaceuticals R&D at AstraZeneca, which has a partnership with the university for the production of the vaccine if it is proved effective, said: The speed at which this new vaccine has advanced into late-stage clinical trials is testament to Oxford's ground-breaking scientific research.

We will do everything in our power to engage with governments, multilateral organisations and partners around the world to increase production and distribution and ensure rapid, fair and equitable distribution of a globally accessible vaccine.

Aim of study: Covid-19 vaccine

The study aims to assess how well people across a broad range of ages could be protected from Covid-19 with this new vaccine. It will also provide valuable information on the safety aspects of the vaccine and its ability to generate good immune responses against the virus.

When will Covid-19 vaccine hit market?

The team behind the vaccine have previously said they are aiming to have at least a million doses of a coronavirus vaccine by September this year.

However, the UK government has repeatedly warned that there are no guarantees a vaccine will be discovered against the deadly virus.

The Oxford University trial is among several experimental vaccines being developed worldwide to try and combat the spread of Covid-19 and help lift strict restrictions on human movement in place in most countries.

<https://www.indiatoday.in/education-today/news/story/oxford-university-submit-research-papers-for-second-stage-of-coronavirus-vaccine-1680943-2020-05-22>

The Indian EXPRESS

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Why we need to study asymptomatic and mild COVID19 cases

Such studies will yield better picture of community transmission, yield better insights into peculiarities of the epidemic in India

By Nerges Mistry

New Delhi: The Indian Council of Medical Research (ICMR) has transitioned from dismissing community transmission into accepting that it could be a reality. A big gap in our knowledge of COVID-19 is the variety of immune responses that it may engender in different individuals and the possibility of the presence of viral carriers.

As reported by researchers from Columbia University, asymptomatic infections were first seen in China and then in Germany and Italy. They were measured to be 55 per cent less contagious than those with symptoms. But, they were shown to be the source of nearly 80 per cent of all infections.

Given their importance in tracking the transmission of COVID-19, the restricted sampling strategy pertaining to those admitted in hospitals with Severe Acute Respiratory Infections (SARI) should be questioned. This is especially because details such as duration of illness of many patients before testing is obscure in many localities. In line with the recommendation of Harvard University's Ashish Jha, an epidemiology-based random sampling of asymptomatic individuals in parts of COVID19 clusters may yield a better picture of the extent of community transmission. Such sampling might also yield better insights into the immune features of people in the Indian epidemic.

If we do rigorous surveillance in the country, in all likelihood, we would find that individuals with no overt, or extremely mild, symptoms are in a carrier or quasi carrier state. It would be logical to hypothesise that these would be young people, healthy enough to not fall prey to the cytokine storm set off by the virus, but not capable of preventing the spread of the virus. What would be their predominant age group, their health profile and reasons for their innate immunity? Could we not pick up correlates of protective immunity from these individuals which would help in

the evaluation of a vaccine – apart from a robust IgG (the antibody that protects against viral and bacterial infections) response.

Moreover, a deep study of viral genomics from viral isolates from such individuals would be salutary. Are these isolates any different from those that infect individuals who have increased severity of symptoms, normalised for age, and health profiles?

The recovering Chinese population in Wuhan, on many of whom such retrospective data would have been recorded, would be an excellent source for the study of the above-mentioned issues. Such studies would give an impetus to the creation of a viral repository. Do our national agencies such as the ICMR and Department of Biotechnology have the foresight to create such a viral repository that is complete with valuable metadata?

Whilst we fight the epidemic with conventional measures, the search for helpful knowledge that illuminates how our species and other protected species react to COVID-19 over a period of time should not be belittled or postponed. The ICMR could have instituted a dedicated cell for basic research to understand the features of the COVID 19 epidemic in India — for example, rapid genomics to understand the virus make-up and its evolution, the significance of antibody responses in COVID infection and the protective co-relate of the human response to COVID-19.

This knowledge will contribute significantly to our survival in the next pandemic when it comes. It's not a question of "if".

<https://indianexpress.com/article/opinion/why-we-need-to-study-asymptomatics-and-mild-covid19-cases-6422900/>

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Sat, 23 May 2020

Covid-19: ठीक होने के बाद दोबारा नहीं हो रहा कोरोनावायरस का संक्रमण, शोध में खुलासा

एजेंसी,सियोल: जो लोग कोरोनावायरस से ठीक होने के बाद दोबारा टेस्ट में पॉजिटिव पाए जा रहे हैं, वे दरअसल दोबारा कोरोनावायरस से संक्रमित नहीं हो रहे हैं। एक हालिया अध्ययन में यह खुलासा किया गया है।

दक्षिण कोरिया के अस्पतालों से डिस्चार्ज किए गए मरीजों की टेस्ट रिपोर्ट दोबारा पॉजिटिव आने के बाद यह चिंता बढ़ गई थी कि लोगों को दोबारा कुछ ही दिनों के अंदर एक से ज्यादा बार कोरोनावायरस का संक्रमण हो जा रहा है। लेकिन, कोरोनावायरस टेस्ट के लिए उपयोग की जाने वाली प्रक्रिया में वायरस के जेनेटिक मटीरियल की जांच की जाती है।

एक पॉजिटिव परिणाम इस बात का संकेत नहीं है कि व्यक्ति वायरस फैला रहा है या दूसरों को संक्रमित कर रहा है। सक्रिय संक्रमण में मरीज दूसरों तक इस बीमारी को फैलाने में सक्रिय होता है।

19 मई को कोरियन सेंटर्स फॉर डिजीज कंट्रोल और प्रीवेंशन की तरफ से आई एक रिपोर्ट में कहा गया है कि दोबारा संक्रमित हुए व्यक्तियों के नमूनों संक्रामक नहीं पाए गए। इस निष्कर्ष से पता चलता है कि टेस्ट में असंक्रामक और मृत वायरस के जेनेटिक मटीरियल की भी पहचान हो जा रही है।

शोधकर्ताओं ने कहा, संक्रामक वायरस की कमी का मतलब है कि ऐसे लोग वर्तमान में संक्रमित नहीं हैं और कोरोनावायरस नहीं फैलाएंगे। कोलंबिया यूनिवर्सिटी के विरोलॉजिस्ट एंजेला रासमुससेन ने इस अच्छी खबरा बताया। उन्होंने कहा, ऐसा लग रहा है कि लोग दोबारा संक्रमित नहीं हो रहे और वायरस दोबारा सक्रिय नहीं हो रहा है।

कैसे किया शोध

शोध के दौरान शोधकर्ताओं ने दोबारा पॉजिटिव पाए गए 108 मरीजों के नमूनों से संक्रामक कोरोनावायरस को पृथक करने की कोशिश की। पृथक नमूनों को टेस्ट करने से ये सभी नेगेटिव पाए गए। वैज्ञानिकों ने जब इनमें से 23 मरीजों के शरीर में एंटीबॉडी की जांच की, तो सभी में एंटीबॉडी पाए गए जो वायरस को कोशिकाओं में जाने से रोकती है। यह प्रतिरक्षा प्रतिक्रिया लोगों को दोबारा संक्रमित होने से बचा सकती है। रासमुससेन ने कहा, अब हम दोबारा संक्रमित होने की चिंता से मुक्त हो सकते हैं।

<https://www.livehindustan.com/lifestyle/story-covid-19-research-reveals-coronavirus-infection-not-recur-after-recovery-3232906.html>

