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Thu, 09 April 2020

Coronavirus: DRDO, ITI to team up to manufacture portable ventilators

The Defence Research and Development Organisation (DRDO) and the Indian Telephone Industries (ITI) are likely to ink a deal soon to produce portable ventilators, a first of its kind in India, following the Coronavirus or Covid-19 outbreak

By Muntazir Abbas

New Delhi: The Defence Research and Development Organisation (DRDO) and the Indian Telephone Industries (ITI) are likely to ink a deal soon to produce portable ventilators, a first of its kind in India, following the Coronavirus or Covid-19 outbreak.

"DRDO wants ITI to manufacture portable ventilators and is transferring technology to us. Once, we come up a final product and after due test procedures, we'll be able to produce such ventilators," ITI Chairman Rakesh Mohan Agarwal told ETT.

In the wake of the ongoing pandemic, medical experts say that India would require several thousand ventilators and its absence may impair the country's healthcare system to respond to rising epidemic cases.

With a population of 1.33 billion, India has nearly 50,000 ventilators.

Agarwal said that ITI is well poised to fast-track the production amid the present Covid-19 situation, and have plans to undertake manufacturing in its Bangaluru facility.

ITI is a state-owned electronics product manufacturer under the Department of Telecommunications (DoT) that produces radio modems, optical networks, smart metres, and Wi-Fi access points, with the defense sector contributing to a third or nearly 35% of its overall revenue.

"Once we come up with the product prototype, ITI will be able to produce portable ventilators within the next 30 to 60 days," the top official said and added that the apparent challenge would be on the component sourcing front.

The state-controlled telecom technology company is signing the Memorandum of Understanding (MoU) with DRDO this week.

"The only thing that worries us is component sourcing. We will require components locally as well as from other countries which appears to be a cumbersome task during the current lockdown," he added.

Since March 24, India is under a 21-day lockdown to prevent community transmission of novel Coronavirus that has so far killed 150 individuals with nearly 6,000 confirmed infection cases.

Agarwal further said that portable ventilators could not be used merely in the present Covid-19 crisis but would be required in the future by the army and paramilitary forces and defense hospitals.

Meanwhile, taking a cue from carmakers worldwide, Mahindra Group, Maruti Suzuki India, and Hyundai Motor Company have expressed their keenness to manufacture ventilators locally amid the Coronavirus pandemic.

With a strong order book worth about Rs 20,000 crore, the state-owned ITI is expecting to continue with a growth momentum of nearly 35%.

In Q3, 2019, the public sector firm posted a turnover of Rs 979 crore, up 53% over the same quarter last year.

<https://telecom.economictimes.indiatimes.com/news/coronavirus-drdo-iti-to-team-up-to-manufacture-portable-ventilators/75048424>



Coronavirus pandemic: DRDO's disinfection chamber deployed at AIIMS; check features

The chamber, called the Personnel Sanitation Enclosure (PSE), has been designed at DRDO's Vehicle Research and Development Establishment (VRDE) in Ahmednagar

By Bulbul Dhawan

Coronavirus in India: DRDO's disinfection chamber now deployed at AIIMS! In order to limit the spread of coronavirus in India, several public and private institutions have pitched in to aid the government fight the pandemic. One of these organisations is the Defence Research and Development Organisation (DRDO), which has taken upon itself the task of developing equipment and technologies which will help in tackling COVID-19. One of the equipment developed by the DRDO is the disinfection chamber that was deployed at AIIMS Delhi on Tuesday, as reported by news agency ANI.

The chamber, called the Personnel Sanitation Enclosure (PSE), has been designed at DRDO's Vehicle Research and Development Establishment (VRDE) in Ahmednagar. It is a full body disinfection chamber meant to decontaminate the personnel one person at a time, the DRDO said in a statement.

Coronavirus Pandemic: Features of DRDO's Disinfection Chamber

According to a press release by the DRDO, the chamber has the following features.

- The system is equipped with soap and sanitizer and when triggered, it creates a mist of hypo sodium chloride to disinfect the personnel.
- The chamber is fitted with tanks having a total capacity of 700 litres, with the ability to disinfect around 650 personnel before requiring a refill.
- The system, the DRDO said, has been designed within a span of four days.
- It has glass panels on the side walls for monitoring the operation of the chamber. A separate cabin for the operator has also been provided for monitoring purposes.
- To ensure smooth functioning of the system at night, the chamber has been fitted with lights.

The chamber can be placed at the entry and exit points of sensitive places like hospitals, malls and office buildings to disinfect the personnel and avoid the spread of coronavirus, the press release further said.

COVID-19: What Else has DRDO done to Fight the Pandemic?

The DRDO has been working with industry members to produce critical supplies like sanitizers, masks, personal protective equipment (PPEs), detection kits and ventilators. The following steps have been taken by the organisation, another release highlighted.

Sanitizers

The DRDO labs, in compliance with the World Health Organization (WHO) guidelines, carried out the in-house production of over 1.5 lakh bottles of sanitizers at a cost of Rs 120 per litre and supplies these to Indian Armed Forces, the Union Ministry of Defence, the Delhi Police, the Parliament as well as security establishments. The method has been shared with industry partners so that they can undertake mass production of over 30,000 litres a day and provide sanitizers to the country in bulk.

Face Masks

DRDO's Gwalior lab developed N-99 mask, which is five-layered and uses the nano web filter layer. The production is being undertaken by two industry partners, DRDO said, and the



manufacturing is in progress to initially create 1 lakh masks within 5 to 6 days, and then this capacity is planned to be increased to 2 lakh a week.

PPEs

Several labs of the DRDO simultaneously worked and created different bio suits for multiple purposes. The production of these bio suits is now being undertaken by two industry partners and initially 20,000 suits will be available in a week. Later, the production capacity will be increased to 15-20,000 suits a day.

Ventilators

The DRDO labs have developed a ventilator and passed on the technology to industry partners. Moreover, one of the labs has taken the initiative to produce those critical components of the ventilators which are not available in India. The production of these ventilators can go up to 10,000 units a month.

Sample testing

The DRDO lab in Gwalior is also testing as a COVID-19 testing centre and it has been authorized by the Centre to carry out the confirmatory test for COVID-19, like the one being done in Pune's National Institute of Virology.

<https://www.financialexpress.com/lifestyle/health/coronavirus-pandemic-drdo-disinfection-chamber-deployed-at-aiims-check-features/1922256/>

Telangana Today

Thu, 09 April 2020

DRDO installs disinfection chamber at AIIMS on trial basis

A senior DRDO officer told IANS, "It has been installed on trial basis. We are looking how it is working." The officer explained that once successful, it will also install as per demands from the respective organisations

New Delhi: In the ongoing fight against COVID-19 pandemic, the Defence Research and Development Organisation (DRDO) has installed its newly developed full body disinfection chamber at All India Institute of Medical Sciences (AIIMS).

The chamber will help in controlling the spread of coronavirus.

A senior DRDO officer told IANS, "It has been installed on trial basis. We are looking how it is working." The officer explained that once successful, it will also install as per demands from the respective organisations.

Last week, DRDO developed the full body disinfection chamber called as Personnel Sanitization Enclosure and face protection mask.

The Vehicle Research and Development Establishment in Ahmednagar, a DRDO Laboratory, had designed the full body disinfection chamber called as personnel sanitization enclosure.

"The walk through enclosure is designed for personnel decontamination, one person at a time. This is a portable system equipped with sanitizer and soap dispenser," the DRDO had stated.

The decontamination is started using a foot pedal at the entry. On entering the chamber, electrically operated pump creates a disinfectant mist of hyposodiumchloride.

The mist spray is calibrated for an operation of 25 seconds and stops automatically indicating completion of operation.

As per procedure, personnel undergoing disinfection will need to keep their eyes closed while inside the chamber.

The system consists of roof mounted and bottom tanks with a total of 700 litres capacity. Approximately 650 personnel can pass through the chamber for disinfection until the refill is required.

“The system has see through glass panels on side walls for monitoring purpose and is fitted with lights for illumination during night time operations. A separate operator cabin is provided to monitor overall operations,” it said.

“The system has been manufactured with the help of Dass Hitachi Ltd, Ghaziabad, within a time span of four days. This system can be used for disinfection of personnel at the areas of controlled ingress and egress such as entry and exit to hospitals, malls, office buildings and critical installations,” DRDO said.

<https://telanganatoday.com/drdo-installs-disinfection-chamber-at-aiims-on-trial-basis>



Thu, 09 April 2020

AIIMS gets DRDO’s disinfection chamber

New Delhi: The Defence Research and Development Organisation (DRDO) has installed a newly developed disinfection chamber at All India Institute of Medical Sciences (AIIMS) to fight against COVID-19 pandemic.

The chamber is designed by ‘Vehicle Research Development Establishment’ (VRDE), Ahmednagar, a DRDO laboratory.

“This system can be used for disinfection of personnel at the areas of controlled ingress and egress such as entry and exit to hospitals, malls, office buildings and critical installations,” a senior DRDO official said.

“This walk through enclosure is designed for personnel decontamination, one person at a time. This is a portable system equipped with sanitiser and soap dispenser. Electrically operated pump creates a disinfectant mist of hyposodiumchloride for disinfecting on entering the chamber,” he said.

The mist spray is calibrated for an operation of 25 seconds and stops automatically, indicating completion of operation. As per the procedure, personnel undergoing disinfection will need to keep their eyes closed while inside the chamber.

The system consists of roof mounted and bottom tanks with a total of 700 litres capacity. Approximately 650 personnel can pass through the chamber for disinfection until a refill is required.

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As per procedure, personnel undergoing disinfection will need to keep their eyes closed while inside the chamber.

<https://www.dailypioneer.com/2020/state-editions/aiims-gets-drdo---s-disinfection-chamber.html>

डीआरडीओ (DRDO) ने एम्स में डिसइंफेक्शन चैम्बर स्थापित किया

नई दिल्ली: कोरोनावायरस महामारी के खिलाफ जारी लड़ाई में रक्षा अनुसंधान और विकास संगठन (डीआरडीओ) ने अखिल भारतीय आयुर्विज्ञान संस्थान (एम्स) में पूरे शरीर को संक्रमणरहित करने वाला चैम्बर स्थापित किया है।

डीआरडीओ ने यह चैम्बर खासतौर से विकसित किया है। चैम्बर कोरोनावायरस के प्रसार को नियंत्रित करने में मदद करेगा।

डीआरडीओ के एक वरिष्ठ अधिकारी ने बताया, "यह परीक्षण के आधार पर स्थापित किया गया है। हम देख रहे हैं कि यह कैसे काम कर रहा है।" अधिकारी ने समझाया कि एक बार सफल होने के बाद, यह संबंधित संगठनों में मांग के अनुसार स्थापित किया जाएगा।

पिछले हफ्ते, डीआरडीओ ने पूरे शरीर को संक्रमणरहित करने वाला चैम्बर विकसित किया, जिसे कार्मिक स्वच्छता संलग्नक और फेस प्रोटेक्शन मास्क कहा जाता है।



अहमदनगर स्थित डीआरडीओ की एक प्रयोगशाला, वाहन अनुसंधान एवं विकास प्रतिष्ठान ने पूरे शरीर को संक्रमण मुक्त करने वाले इस चैम्बर को डिजाइन किया है, जिसे पर्सनल सैनिटाइजेशन एन्क्लोजर कहते हैं।

डीआरडीओ ने कहा, "यह चैम्बर एक समय में एक व्यक्ति को संक्रमणरहित करने के लिहाज से डिजाइन किया गया है। यह एक पोर्टेबल सिस्टम है, जो सैनिटाइजर और साबुन मशीन से सुसज्जित है।"

इस चैम्बर में प्रवेश करने के बाद पैर से एक पैडल को चलाने से शरीर की सफाई शुरू हो जाती है। चैम्बर में प्रवेश करने पर, विद्युतीय रूप से संचालित पंप हाइपोसोडाक्लोराइड का एक संक्रमणनाशक धुंध बनाता है।

धुंध स्प्रे 25 सेकंड के ऑपरेशन के लिए कैलिब्रेट किया जाता है और स्वचालित रूप से ऑपरेशन पूरा होने का संकेत देता है।

प्रक्रिया के अनुसार, संक्रमणशोधन से गुजरने वाले कर्मियों को चैम्बर के अंदर रहते हुए अपनी आंखें बंद रखने की आवश्यकता होगी।

सिस्टम में कुल 700 लीटर की क्षमता के साथ छत के बीचो-बीच एक टैंक लगा है। रिफिल की आवश्यकता होने तक लगभग 650 कर्मचारी संक्रमणशोधन के लिए चैम्बर से गुजर सकते हैं।

उन्होंने कहा, "सिस्टम में मॉनिटरिंग के उद्देश्य के लिए साइड की दीवारों पर ग्लास लगा हुआ है, जिसे पैनेलों के माध्यम से देखा जा सकता है और रात के समय के संचालन के दौरान रोशनी के लिए यह रोशनी से भी लैस है। समग्र संचालन की निगरानी के लिए एक अलग ऑपरेटर केबिन प्रदान किया गया है।"

डीआरडीओ ने कहा, "इस प्रणाली का निर्माण गाजियाबाद में डास हिताची लिमिटेड की मदद से चार दिन में हुआ है। इस प्रणाली का उपयोग प्रवेश और निकास जैसे स्थानों पर कर्मियों के संक्रमण शोधन के लिए किया जा सकता है।"

<http://www.samaylive.com/nation-news-in-hindi/416626/drdo-installs-disinfection-chamber-at-aiims.html>

Thu, 09 April 2020

DRDO develops various sanitising gadgets to fight corona

The Centre for Fire Explosive and Environment Safety (CFEES), Delhi has developed two configurations of sanitising equipment. These are spinoffs from technologies developed for fire suppression applications, said a Press release issued by the DRDO.

The equipment developed are Portable Backpack Area Sanitisation Equipment and Trolley Mounted Large Area Sanitisation Equipment.

The CFEES, Delhi with the help of its industry partner has developed portable sanitisation equipment for spraying decontamination solution consisting of one per cent hypochlorite (HYPO) solution for sanitisation of suspected area.

The portable system can be mounted as a backpack and can be carried by the operations personnel. This system incorporates low pressure twin fluid (air and disinfectant liquid) technology to generate very fine mist. The system is capable of disinfecting up to 300 square metre area. The application areas can include hospital reception, doctor chambers, office spaces dealing with general public, corridors, pathways, metro and railway stations, bus stations, etc.

The Centre with the help of its industry partner has also developed a higher capacity which is carried on a trolley. The system incorporates low pressure single fluid (disinfectant liquid) technology generating very fine mist. It is capable of disinfecting up to 3,000 square metre area.

It has a tank capacity of 50 litres and has a lancing (throw) distance of 12-15 metres. This is useful for disinfecting hospitals, malls, airports, metro stations, isolation areas, quarantine centres and high risk residential areas.

Two of these systems are being provided to Delhi Police for immediate use. These can be made available to other agencies with the help of industry partners, the release mentioned.

<https://www.defenceaviationpost.com/2020/04/drdo-develops-various-sanitising-gadgets-to-fight-corona/>

*Thu, 09 April 2020*

DRDO disinfection chamber put up at AIIMS for Covid control

New Delhi: A disinfectant chamber developed by the Defence Research & Development Organisation (DRDO) was on Tuesday put up at the All India Institute of Medical Sciences (AIIMS) in New Delhi.

The chamber uses a solution that is known to kill the Covid-19 virus and help control the spread of the infection.

The system has been manufactured with the help of M/s DH Ltd, Ghaziabad, within a time span of four days. This system can be used for disinfection of personnel at the areas of controlled ingress and egress such as entry and exit to hospitals, malls, office buildings and critical installations.

Vehicle Research Development Establishment (VRDE), Ahmednagar, a DRDO laboratory, has designed the full body disinfection chamber called PSE.

This walk through enclosure is designed for personnel decontamination, one person at a time. This is a portable system equipped with sanitiser and soap dispenser.

The decontamination is by started using a foot pedal at the entry. On entering the chamber, electrically operated pump creates a disinfectant mist of hypo sodium chloride for disinfecting.

The mist spray is calibrated for an operation of 25 seconds and stops automatically, indicating completion of operation. As per the procedure, personnel undergoing disinfection will need to keep their eyes closed while inside the chamber.

The system consists of roof mounted and bottom tanks with a total of 700 litres capacity. Approximately 650 personnel can pass through the chamber for disinfection until a refill is required. The system has see-through glass panels on side walls for monitoring purpose and is fitted with lights for illumination during night time operations. A separate operator cabin is provided to monitor overall operations.

<http://www.daijiworld.com/news/newsDisplay.aspx?newsID=694026>



Thu, 09 April 2020

ITR team sanitises Baleswar town

Baleswar: To combat the menace of COVID-19, the ITR (Integrated Test Range) based at Chandipur, a premier DRDO laboratory, has risen to the societal need and emerged as a significant contributor towards preventing the deadly disease using novel ideas and innovative technologies.

As a nodal DRDO laboratory for disaster mitigation in the eastern region, a team has been formed by ITR Chandipur which is assigned with developing and implementing different mitigation measures for COVID-19 infection.

The team is constantly working towards developing and implementing innovative ideas for prevention and containment of any infection within technical premises of ITR, Defence Residential Colonies at Chandipur and Baleswar as well as various critical public places and facilities within Baleswar Town, said director ITR Dr BK Das.

The Special Task Team (STT) undertook a mass sanitization operation to disinfect not only its own areas but also other public places of Baleswar town. The team sanitised already Fandi square, District Headquarters Hospital(DHH) premises, Sahadevkhunta Police Station, JCDA office and Proof Park at Station etc .

Four numbers of in-house developed mist spray system spurting 0.5% Sodium Hypochlorite (Hypo) solution were deployed and operated by ITR fire fighting personnel under the supervision of Fire Station officials and a team of medical experts from ITR Health Care Centre.

“All emergency discussions required at the laboratory are being held over video conferencing to avoid movement of personnel. Other than the skeletal manpower other employees are working from home. A shadow office has been created within the residential colony with all technical aids to carry out office work without having the need to travel up to Chandipur,” said Dr Das.

<https://www.dailypioneer.com/2020/state-editions/itr-team-sanitises-baleswar-town.html>



Thu, 09 April 2020

Agni-V ICBM could enter in service in this year

The latest generation of Indian-made nuclear-capable ICBM InterContinental Ballistic Missile Agni-V could enter in service in 2020 after a few additional firing tests. On December 10, 2018, India has successfully test-fired its ICBM Agni-V, according to a statement from the Indian Ministry of Defense (MoD).

The last launch operations of the Agni-V were carried out and monitored by the Strategic Forces Command (SFC) in the presence of Scientists from Defense Research and Development Organization (DRDO) and other associated officials.

Development of the Agni-V began in 2008. The ICBM features indigenously designed navigation and guidance systems including a ring laser gyroscope based inertial navigation system.

According to Indian military sources, the Agni-V ICBM is a three-stage solid-fueled missile with an approximate range of 5,500-5,800 kilometers. The exact range remains classified,

but it is assumed that the missile could have a range from 6,000 to 7,500 kilometers, and can carry a 1,500 kg nuclear warhead. India has reportedly also been working on multiple independently targetable reentry vehicles (MIRV) for the Agni-V in order to ensure a credible second-strike capability.

The Agni-V can be mounted on a launcher vehicle which is known as the Transport-cum-Tilting vehicle-5. It is a 140-ton, 30-metre, 7-axle trailer pulled by a 3-axle Volvo truck according to DRDO, Indian Defence Research and Development Organisation.

<https://www.defenceaviationpost.com/2020/04/agni-v-icbm-could-enter-in-service-in-this-year/>



Thu, 09 April 2020

Indian Air Force continues its support towards fight against corona virus

Indian Air Force continues its support against Novel Corona virus wherein medical supplies are being transported to equip the state governments and supporting agencies to combat the contagion effectively and efficiently.

During the last few days, IAF airlifted essential medical supplies and commodities from nodal points to Manipur, Nagaland and Gangtok in North Eastern region; and the Union Territories of J&K and Ladakh. In addition, An-32 aircraft, on 06 Apr 2020, airlifted personnel and 3500 kg of medical equipment of ICMR from Chennai to Bhubaneswar for setting up of testing labs and facilities in Odisha.

IAF has earmarked aircraft at nodal points to airlift medical supplies and equipment at short notice to proactively support operations against COVID-19.

<https://www.defenceaviationpost.com/2020/04/indian-air-force-continues-its-support-towards-fight-against-corona-virus/>

Coronavirus outbreak: Centre relaxes procurement rules for armed forces, allows purchase of supplies from outside govt e-marketplace

By Yatish Yadav

New Delhi: The Ministry of Defence has invoked emergency powers in the wake of the coronavirus outbreak to expedite the procurement of supplies required to establish and run quarantine and isolation facilities for the Indian Armed Forces and as well other facilities requested by the civil administration across the country.

The move, cleared by Union Minister of Defence Rajnath Singh, will ensure swift and smooth purchase of stores, equipment, rations, chemicals, medicines and also their speedy transportation by the armed forces.

A Ministry of Defence note reviewed by *Firstpost* said that the emergency powers will provide three important exemptions in the existing procurement rules — exemption from long-drawn bidding procedure, dispensation of procurement from Government e-Marketplace (GeM) and making 100 percent advance payment to suppliers after due diligence — to procure necessary supply in the fastest possible manner.

The Indian Army is already setting up facilities for troops and also extending help to local authorities upon request. The army is currently running the largest military quarantine facility at Jaisalmer in Rajasthan and also strengthening its capabilities in states like Telangana, Uttar Pradesh, Andhra Pradesh, Bihar, Maharashtra, Kerala, Tamil Nadu, Karnataka and Assam.

The Ministry of Defence's directive, approved by Singh, said that the prevailing health emergency requires immediate procurement of certain items in quantities, which may not be available with a single supplier or within the time-frame in which they are needed.

The ministry also noted that certain items of equipment are currently in global short supply and are effectively in a sellers' market, and there are also variations in specifications within the same category of item and hence price differences may sometimes also reflect differences in specifications or quality.

“Being a national health emergency of unprecedented and historic scale, delays in procurement will result in loss of lives of citizens. Hence, there is a paramount public interest in ensuring that the necessary supplies are procured in the fastest manner and financial procedures have to adapt accordingly,” the directive added.

As per the directive, army units too have been exempted from government financial rules which makes it mandatory for them to purchase provisions through GeM.

It has been argued that in the present situation of lockdown, vendors under GeM, even if orders are placed, may not always be able to effect deliveries of supplies on time and at desired locations, due to closure of factories and stoppage of normal transportation services.

The ministry said that the rules related to GeM purchase will not be applicable to emergent purchases, medical and other supplies related to COVID-19 operations.

“Procurement may be simultaneously undertaken from more than one source if the entire quantity required is not available or is not immediately available from one source,” the Ministry of Defence said.

The army formations have also been exempted from lengthy bidding procedure by relaxing the existing rules. The normal bidding procedure for procurement is a long-drawn process but in this pandemic situation, the Ministry of Defence has allowed to receive bids by email or fax instead of

e-procurement portals. The army formations will verify the authenticity of the firms and bidding time will be reduced as per the emergent requirement. More importantly, the Ministry of Defence has directed that limited tender or single tender enquiry can be entertained, irrespective of the amount of the tender. This will ensure the supplies are not hit in this crisis.

The Ministry also noted that due to very limited availability of suppliers for items required for COVID-19 emergency, the suppliers may ask for full advance. To meet this situation, the ministry has relaxed the existing rules and empowered the army formations to decide the quantum of advance based on the merit of the case. In case of procurement through government-owned public sector units or Indian Council of Medical Research (ICMR), 100 percent advance may be given, if the suppliers agree to deliver in a time-bound manner. In case of private vendors, the advance may be decided at the discretion of the concerned officials to meet the developing requirement.

In a very significant move, the Ministry of Defence has also empowered the concerned officials to do away with bank guarantee which has been put in place as a safeguard.

The Ministry of Defence, however, has cautioned that while exercising the emergency powers for purchase of supplies, due diligence and financial propriety should be followed scrupulously by the competent financial authority.

<https://www.firstpost.com/health/coronavirus-outbreak-centre-relaxes-procurement-rules-for-armed-forces-allows-purchase-of-supplies-from-outside-govt-e-marketplace-8240501.html>

THE TIMES OF INDIA

Thu, 09 April 2020

Army, air force personnel defend the poor & needy from Covid double blow

Chennai: The air force and Army have risen to the occasion and are helping people cope up with coronavirus pandemic and the nationwide lockdown. Personnel from Air Force Station in Avadi distributed rice to the needy while army personnel provided water and cooked food to the poor and homeless in the city.

The Indian Air Force has set up a 100-bed quarantine facility in its camp in Avadi and is planning to set up another 100-bed facility in the air force school and a Kendriya Vidyalaya. The quarantine centre will have indoor games, television sets, magazines, internet facility and a disinfectant facility, said an official.

The move comes as the air force station is surrounded by densely populated villages — Mittanamalli and Muthpudupet. The air force is also spraying chemical disinfectants using fire tenders on streets and buildings. As part of its efforts to help the needy, the station has so far distributed 2,500kg rice to women who had been involved in housekeeping before the lockdown.

The official added that the Air Force Wives Welfare Association has taken up door delivery of provisions to all houses and has also launched a special vegetable market. Cloth masks are also being prepared for distribution. The air force is also mulling manufacturing low-cost ventilators at its Avadi R&D facility.

Meanwhile, Army personnel distributed cooked food, water, groceries, sanitation material through the week to daily wagers, guest workers and the homeless at Wallajah Road, Rajaji Salai, Broadway, Anna Salai and areas adjacent to Fort railway station. Government representatives helped the Army in identifying those in need and the material they required. The Army also provided groceries to the NGO Food Bank Chennai, for further distribution to the needy, said a press release. The initiative was coordinated by Army Wives Welfare Association (AWWA). Food and provisions were distributed among the poor at Coonoor, Wellington, Kotagiri and Ooty in the Nilgiris.

<https://timesofindia.indiatimes.com/city/chennai/army-air-force-personnel-defend-the-poor-needy-from-covid-double-blow/articleshow/75055732.cms>

Wed, 08 April 2020

Refining Draft DPP 2020: Some Suggestions

By Laxman Kumar Behera, Amit Cowshish and Vinay Kaushal

The Ministry of Defence (MoD), on March 20, 2020, released the draft Defence Procurement Procedure 2020 (DPP-2020), soliciting public comments by April 17.¹ The draft, over 700-page long, is the culmination of a review process which was set in motion by Defence Minister Rajnath Singh in August 2019 under the Chairmanship of Director General (Acquisition).² The draft builds upon DPP-2016, which itself has undergone 47 amendments as part of the Business Process Reengineering.

The new draft intends to achieve two broad objectives: hastening the procurement process by removing procedural bottlenecks and promoting Make in India in defence. The draft has revised the existing procurement categories, increased the requirement of indigenous content (IC) under various categories, and incorporated some new concepts of defence procurement. Besides, it has also revised the existing offset guidelines and made changes in the contract template and other provisions of the document. This policy brief raises some issues for consideration by the MoD before the finalisation of the draft. It, however, begins with an analytical overview of the major changes incorporated in draft DPP-2020.

Part-I

Draft DPP-2020: An Overview

Revised Procurement Categories and Indigenous Content

As Table 1 shows, the draft has added a new category, Buy (Global-Manufacture in India), to the existing five prioritised procurement categories in DPP-2016, besides increasing the IC requirement by 10 percentage points in almost all the categories. These changes are intended to promote the Make in India initiative in defence, with the new category providing an opportunity to the foreign vendors to manufacture in India through their subsidiaries.

Apart from the new prioritised category, several stand-alone categories/sub-categories have been created. One of these is 'Leasing', which is intended to enable the armed forces to possess and operate costly equipment like transport and trainer aircraft and simulators without having to own them. This will save the initial capital cost of acquisition of items required in smaller numbers and probably for specific periods. The procedure for leasing of equipment is designed to be faster than the normal acquisition process.

The 'Make' category, introduced for the first time in DPP-2006, was split into two sub-categories in DPP-2016: 'Make I (Government Funded)' and 'Make II (Industry Funded)'. A third sub-category, 'Make III (Indigenously Manufactured)', has been added to these two. Besides this, the ambit of this category has been expanded by creating a similar category called 'Innovation', which is also split into three sub-categories (see Table 2). The 'Innovation' category brings the existing two schemes, Innovation for Defence Excellence (iDEX) and Technology Development Fund (TDF), under the ambit of capital acquisition.³

The chapter on Strategic Partnership Model (SPM), which was introduced for the first time in DPP-2016 to promote private sector participation in big-ticket defence manufacturing, has not been included in draft DPP-2020 as no changes have been made therein.

The increase in IC percentage in various procurement categories is accompanied by a pragmatic methodology for verification of the IC content. As per the new methodology, the prime vendor is required to capture import content of its own items and items supplied by its vendors equivalent to a minimum of 80 per cent of the main contract value. The methodology should ease the industry's burden of computation of IC in all supplies down to the smallest of the sub-suppliers

in the value chain, whose numbers runs into several thousands in some of the big defence contracts.

Table 1. Prioritised Procurement Categories & IC Requirement, DPP-2016 and Draft DPP-2020

DPP-2016		Draft DPP-2020	
Prioritised Procurement Category	IC	Prioritised Procurement Category	IC
Buy (Indian-IDDM)	≥ 40% if Indigenous Design; Otherwise ≥ 60%	Buy (Indian-IDDM)	≥ 50% & Indigenous Design
Buy (Indian)	≥ 40%	Buy (Indian)	≥ 50% if Indigenous Design; Otherwise ≥60%
Buy & Make (Indian)	≥ 50% of the ‘Make’ Portion	Buy & Make (Indian)	≥ 50% of the ‘Make’ Portion
Buy & Make	N.A.	Buy & Make	≥ 50% of the ‘Make’ Portion
---	---	Buy (Global Manufacture in India)	≥ 50%
Buy (Global)	Nil for Foreign Vendor; ≥ 30% for Indian Vendor	Buy (Global)	Nil for Foreign Vendor; ≥ 30% for Indian Vendor

Source: Adapted from DPP-2016 and Draft DPP-2020, *Ministry of Defence*, Government of India.

Table 2. Key Features of Make and Innovation Categories/Sub-Categories

Category & Sub-Category		Feature
Make	Make-I (Government Funded)	MoD funding assistance upto 70%; Buy (Indian-IDDM) category for acquisition post successful development with ≥ 50% IC
	Make-II (Industry Funded)	Provision to buy from single source; Buy (Indian-IDDM) category for acquisition post successful development with ≥ 50% IC; Provision for suo-moto proposal from industry
	Make-III (Indigenously Manufactured)	Procurement through Buy (Indian) with ≥60% IC; Provision for suo-moto proposal from industry
Innovation	(Innovation for Defence Excellence (iDEX))	Grants from government; Provision for suo-moto proposal from industry; Procurement through Buy (Indian-IDDM) category
	Open Competition	User-led projects in which the prototype development is possible within two years. Provision for suo-moto proposal from industry; post successful development, procurement through Buy (Indian-IDDM) category
	Technology Development Fund (TDF)	Procurement through Buy (Indian-IDDM) category

Source: Adapted from Draft DPP-2020, *Ministry of Defence*, Government of India.

To further improve IC in defence production, the draft includes provisions for greater use of indigenous military materials and software, the latter being a strong forte of Indian software industry. Provision has been made in the tendering process and elsewhere to identify these critical inputs and promote their greater use through various incentive mechanisms to achieve higher self-reliance. At present, a large proportion of the materials used for domestic arms production are imported.

The draft refers to aero-engines and FAB (fabrication facilities to manufacture silicon wafers) as projects of national importance and calls for their procurement, even if there is only a single source of supply. The purchase assurance is likely to incentivise potential players to invest in these areas which require huge upfront investment.

Streamlining Procurement Process

The draft DPP-2020 includes several features to overcome the procedural bottlenecks and speed up acquisition. In a major step, it envisages constitution of a multi-disciplinary Services Qualitative Requirement Formulation Committee (SQRFC)⁴ under the chairmanship of a Brigadier level officer for preparation of Qualitative Requirements (QRs). This should help in the formulation of realistic QRs which has been problematic in the past, resulting in delays, cost overrun and capability void.

To streamline the QR formulation process further, Essential Parameters-A, which are parameters or features generally present in the contemporary equipment available in the market and form the core of QRs, have been divided into three sub-categories – Operational Parameters, Technical Parameters and Maintainability and Ergonomic Parameters. This is likely to bring greater clarity and objectivity in the formulation of specifications. In a departure from the previous DPP, amendment of QR parameters before the tender is issued to the vendors will also be permissible. The power to approve such amendments is vested in different authorities, depending on the nature of the amendment.⁵ This provision is likely to obviate the need for seeking fresh approval of the Acceptance of Necessity (AoN) according authority for every change in the QR parameters post-AoN.

To speed up procurement, a timeline of six months (from the date of receiving responses to the request for information) has been mandated for the formulation of QRs, and up to one year for seeking AoN from the competent authority. For all cases up to Rs. 300 crore, the Services Procurement Board (SPB)⁶ will have the authority to accord the AoN, while the Defence Procurement Board (DPB) will be the AoN-according authority for cases above this limit and up to Rs. 500 crore. All cases exceeding Rs. 500 crore will be placed before the Defence Acquisition Council (DAC) for obtaining AoN.

Along with the QR formulation, changes have been made in the trial and quality assurance processes. The trial process has been strengthened by mandating all field trials to be conducted under the aegis of dedicated Trial Wings to be set up within the existing training establishments run by the services.

Physical trials can also be substituted by documentation and certification, to the extent possible, as it serves the purpose for which the field trials are carried out. This has been described as promotion of competition and not elimination of vendors for the slightest of defects noticed during the trials. Towards this end, the vendors will be given an opportunity to carry out in-situ repairs, if any such defect is noticed during the trials, so as to meet QR requirements specified in the tender.

In regard to quality assurance, four major provisions have been made to make the process of acceptance of equipment more objective and transparent. One, broad Quality Assurance Plan (QAP), including the sample size, will be included in the request for proposal (RFP). Two, the vendors themselves will be required to submit draft Acceptance Test Procedures (ATP). Three, third party inspection will be allowed in certain cases. And four, there will be no repetition of quality assurance tests at different stages of acceptance – Pre-Dispatch Inspection (PDI) and Joint Receipt Inspection (JRI).

New Chapters

The DPP-2016 provided for acquisition of equipment designed and developed by the Defence Research and Development Organisation (DRDO), Defence Public Sector Undertakings (DPSUs) and the Ordnance Factory Board (OFB). A new chapter (Chapter III-A) has been added laying down the procedure in greater detail for obtaining AoN for such cases and monitoring the implementation of such projects. However, as has been the case so far, design and development would continue to be undertaken by these organisations as per their own procedures, after the AoN is accorded by the competent authority.

The chapter containing the procedure for defence shipbuilding (Chapter IV) has been split into two chapters, one dealing with shipbuilding and the other with refit and repairs. This is more or less a self-contained chapter, running into 200-odd pages, which will be of relevance to the Indian Navy and the Coast Guard.

Another new chapter (Chapter VIII) on post-contract management has been added to provide guidance to the contract operating agencies, ostensibly to ensure smooth execution of contracts. The chapter containing Fast Track Procedure (Chapter V), however, remains more or less unchanged.

New Procurement Concepts

In line with innovative practices followed by many countries, the draft includes several new concepts of procurement. This includes the Performance Based Logistics (PBL), Life Cycle Support Contract (LCSC) and Comprehensive Maintenance Contract (CMC). In a departure from the past, the services will now be required to procure, along with the main equipment, product support for at least three to five years beyond the warranty period. The services will also be required to take approval of the competent authority for the type of maintenance support they want to be included in the main contract. These steps are likely to improve the serviceability of the equipment being acquired.

Revised Offset Guidelines

The draft DPP makes a number of changes to give teeth to the existing offset guidelines. In a departure from the past, the focus of the revised offset guidelines is clearly on technology, investment and export of major platforms (as opposed to components). Towards this end, changes have been made in the avenues for discharge of offset obligations, the list of items eligible for offset transaction and multipliers⁷ applicable in various situations (see Table 3).

The avenues for discharge of the offset obligation have been modified to allow the Indian industry to receive technologies for which the foreign original equipment manufacturers (OEMs) will be entitled to receive direct credit. The higher technologies are, however, reserved for the government entities such as DRDO, DPSUs and OFB.

Offset banking, which has been an important feature of the offset guidelines since DPP-2008, has been removed from the guidelines, possibly to prevent vendors from claiming offset credits for the transactions undertaken as a part of their routine business. However, this seems to have been compensated by allowing vendors, other than the main supplier and their Tier-I vendors, to discharge the offset obligation on behalf of the main supplier. To improve transparency and accountability, the guidelines provide for online submission of offset discharge claims, timeframes for some key activities, and a mechanism to settle differences and disputes in a time-bound manner.

Table 3. Key Features of Draft Offset Guidelines 2020

Offset Discharge Avenue	IOP	Offset Discharge Subject To	Multiplier
Direct purchase of eligible defence products & Services	Both private and public sector including DPSUs / OFB	List of eligible defence products in seven categories (civil infrastructure generally excluded)	0.5 for components of eligible product; 1.0 for eligible products; 1.5 if IOP is Micro Small and Medium Enterprise (MSME)
Investment for manufacture of eligible defence products*	Private sector / DPSUs / OFB	List of eligible defence products in seven categories (civil infrastructure generally excluded); No restriction on production, sale or export	2.0 if investment is in notified Defence Industrial corridors; 1.5 in other places
Transfer of technology for manufacture of eligible products	Private sector / DPSUs / OFB	List of eligible defence products in seven categories (civil infrastructure generally excluded).	2.0
Technology acquisition for government institutions*	DRDO / DPSUs / OFB, etc.	Identified list of technologies in 49 areas	3.0
Technology	DRDO	List of critical technologies in 32	4.0

acquisition*		areas	
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Note: *: Offset discharge is permitted by entities other than the main vendor and its Tier-I sub-vendor on a case to case basis.

Source: Adapted from Draft DPP-2020, *Ministry of Defence*, Government of India.

Acquisition Training

Recognising that defence acquisition is a specialised and complex task, the draft DPP-2020 has provided for institutionalised training of acquisition officials from the services, various MoD departments and defence finance. For the time being, the officials will be trained at training institutions in India and abroad. In future, the training will be formalised in the curriculum of the proposed Indian National Defence University (INDU).

Standard Contract Document

With the notable absence of the clause on limitation of liability, some new clauses have been included in the contract document relating to monitoring of projects, title and risk of loss, severability, and survival of certain clauses after cancellation or expiration of the contract. An important sub-clause included in the document seeks to ensure MoD's right to optimise life cycle support, costs and systems enhancement through indigenous eco-system, while at the same time, acknowledging the seller's intellectual property rights (IPRs) over the equipment being bought by the MoD.

Some other significant changes have also been made in the contract document. First, all taxes and duties shall now be excluded while determining L1. Second, delivery in all procurement cases will be on Delivery Duty Paid (DDP) terms or International Commercial Terms (Incoterm). This implies that the seller is deemed to have delivered the goods when these are placed at the disposal of the buyer at the named place of delivery, with the seller bearing all the costs and risks involved in bringing the goods to the place of delivery.

Third, the Bank Guarantees will be based on the total contract value less the taxes and duties. Fourth, the Performance-cum-Warranty Bank Guarantee will uniformly be five per cent of the contract value. And fifth, sellers will now be able to furnish multiple Bank Guarantees from all public and private sector banks authorised to undertake government transactions.

Part-II

Draft DPP-2020: Some Issues for Consideration by MoD

The draft DPP-2020 contains many features that would hasten the procurement process and provide a further fillip to the Make in India initiative in defence. Some issues which need consideration by the MoD before finalisation of the draft are discussed below:

Multiplicity of Procurement Categories

The changes envisaged in draft DPP-2020 will increase the number of procurement categories from just two in 2003 ('Buy' and 'Buy & Make') to eight (six prioritised categories plus the 'Leasing' and Strategic Partnership Model). In addition, there are 'Make' and 'Innovation' categories, with several sub-categories, which are meant for prototyping by using indigenous or imported technology with a high percentage of indigenous content. Post successful development of the prototype, procurement is undertaken through 'Buy (Indian-IDDM)' or 'Buy (Indian)' categories.

Proliferation of these categories could make the categorisation process confusing, cumbersome and time-consuming. For the sake of making the process simpler, there is a case for clubbing some of the categories. For example, 'Buy and Make (Indian)', 'Buy and Make' and SPM could be clubbed since quintessentially their defining attributes are the same. For the same reason, 'Buy (Indian-IDDM)' and 'Buy (Indian)' categories too could be clubbed. This restructuring will, of course, require fleshing out the attributes of the combined categories.

There seems to be no specific requirement for the 'Buy (Global Manufacture in India)' as its objectives can also be met through the 'Buy and Make' category. Be that as it may, the provision in draft DPP-2020 that 'Buy (Global – Manufacture in India)' contracts can be executed by foreign vendors through their subsidiaries in India needs to be harmonised with the foreign direct

investment (FDI) policy which stipulates mandatory government approval in cases where FDI exceeds 49 per cent and links such approval to the FDI proposal resulting in access to modern technology.

Capacity Building for Costing

Between 2001 and 2018, about 40 per cent of the total capital procurement of Rs. 7,45,000 crore was through Inter-Government Agreements (IGAs), including the Foreign Military Sales (FMS) programme of the United States (US) Government.⁸ Together with contracts signed on nomination basis with DPSUs and OFB, the share of single-source procurement is overwhelmingly high. Reasonability of cost assumes great significance in such single-source procurements.

While there is an internal cost assessment mechanism for products manufactured by DPSUs and OFB, this task is left to the Costing Committees, headed by Cost Advisors in the Capital Acquisition Wing. This may, however, not be adequate as cost assessment (including determination of a benchmark price before opening the commercial bids) requires extensive database, specialisation in defence-related costing techniques, etc. This inadequacy is evident from several instances of a wide difference between final contract price on the one hand and the AoN and benchmarking costs on the other, which is known to have slowed down the decision making.

Though draft DPP-2020 provides for institutionalised training of acquisition personnel, costing is an area which requires special focus. Several countries have created a vast costing set up with requisite knowledge base built over decades. There is not only a need to study the institutional mechanism of other countries, particularly the US, the United Kingdom (UK) and France, but also to lay down a detailed methodology for costing for the guidance of the Costing Committees and to ensure uniformity in costing.

Improving the process of costing would have little impact unless the process of determining the availability of funds is also streamlined. Persistent shortage of funds even to honour the committed liabilities indicates that no robust system is in place to ensure that new contractual liabilities are undertaken only if there is a reasonable certainty that funds will be available when required. This mechanism should ideally be a part of DPP.

Development of Military Materials and Aero-engines

The draft DPP-2020 seeks to promote use of artificial intelligence and indigenously developed software and military materials, ostensibly through incorporation of these requirements in the QRs. While this is a welcome directive, provisions made in the draft regarding development of military materials to meet the future needs and to treat the development of aero-engines and FAB as projects of national importance are sketchy and overlap with the mandate of DRDO. There are issues like economy of scales, funding cost of projects, assurance of post-development purchase order, etc., which will need to be resolved before any such projects are undertaken.

Applicability of Offsets to IGA and FMS Cases

There seems to be an anomaly between two provisions related to applicability of offsets. While para 12 of Chapter I in draft DPP-2020 stipulates that offsets are applicable to “all ‘Buy (Global)’ cases of more than Rs 2000 crores other than Single Vendor Cases (SVC) being progressed based on IGAs including FMS”, the Offset Guidelines at Appendix D to Chapter II do not support this. This requires to be clarified.

Case for Stipulating Different Quantum of Offsets in IGA/FMS/Single Vendor Contracts

There is a need to weigh the costs and benefits of having uniform offset quantum in all single-source procurement cases. Offsets come with a cost which gets minimised in competitive tendering. Since there is no competition in IGA/FMS contracts, the vendors and their governments possibly load all the offset-related costs on the main contract. This is the reason why some countries have different offset requirement in single-source procurement. South Korea, for instance, demands only 10 per cent offsets in FMS-type of contracts, whereas its offset requirement is 50 per cent in all competitive defence contracts. A similar approach could be considered by the MoD to prevent paying high cost of discharging the offset obligation in single-source procurement cases. Additionally, the possibility of creating a mechanism to ascertain how much cost the

vendors load on the main contract due to offset obligations in IGA/FMS contracts need to be explored.

Specific Offsets Through RFP

Transfer of technology has been added to the existing avenues for discharging the offset obligation. While this is a welcome step, it may be more effective if the MoD demands transfer of specific technologies for discharge of the offset obligation by specifying the requirement in RFP.

Contract Template

Apart from considering the inclusion of the clause on limitation of liability in the contract template, it would be desirable to consider the inclusion of an 'entire agreement clause' under which parties to the contract agree that the terms of the contract between them are contained within the text of the contract document and nowhere else. There is also a need to make it clear in the template whether or not liquidated damages (LD) are the final and only remedy for delay in meeting the delivery timelines, apart from termination of contract without invocation of the Bank Guarantees. In the interest of fair-play, it will be desirable to consider inclusion of a reverse LD clause in the contract for delayed payments to the sellers.

Code of Integrity for Public Procurement

The Pre-Contract Integrity Pact template of the DPP contains a provision that seeks to encourage the sellers to have an internal code of conduct, restraining employees from bribery and unethical behaviour and have a compliance programme for the implementation of the code. For the sake of reciprocity, a Code of Integrity for Public Procurement (CIPP) could be prescribed for the acquisition personnel who should also be required to sign a declaration on the lines of the relevant provisions in the Ministry of Finance's *Manual for Procurement of Goods 2017*.⁹

Policy on Suspension and Debarment of Companies

The draft DPP-2020 makes a number of references to the *Guidelines of the Ministry of Defence for Penalties in Business Dealings with Entities*¹⁰ to clarify its position about various penalties/punishment that could be invoked in case any company's conduct is found inconsistent with the highest standards of propriety during the entire phase of procurement. However, the said guidelines are unduly stringent and not in line with the best international practices. More significantly, its implementation is not necessarily in India's national security interests as suspension and banning of companies reduces whatever little competition is there among the vendors and seriously jeopardises the serviceability of the procured items.

Defence industry worldwide, because of limited suppliers and its importance to national security, is considered as a national asset and is treated differently from its civilian counterparts. The normal practice is to give exemplary punishment to the guilty officials involved in corrupt practices and punish the concerned company through stringent financial penalties, as opposed to banning them from any business dealing, unless such action is on account of supply of sub-standard material.¹¹ The practice of imposing financial penalty is worth considering in the Indian context.

1. **"Draft DPP-2020"**, Ministry of Defence, Government of India, March 20, 2020.
2. For the Terms of Reference of the Review Committee, see **"Raksha Mantri Shri Rajnath Singh approves a Committee to review Defence Procurement Procedure to strengthen 'Make in India'"**, Press Information Bureau, Government of India, August 17, 2019.
3. While Chapter III of the draft DPP-2020 contains two parts, one each dealing with 'Make' and 'Innovation' category, Chapter I clubs them under the headline 'Design and Development/Innovation' category.
4. The Committee comprises members from User Directorate (Member Secretary), User Trial Agency, Quality Assurance Agency, Operations Branch, Procurement Directorate of the Service, Maintenance Agency, and other external subject matter expert as deemed necessary.
5. While the power to amend Operational Parameter of QRs is vested in the AoN according authority, in respect of other parameters it is with the Staff Equipment Policy Committee (SEPC)/Integrated Staff Equipment Policy Committee (ISEPC).
6. The SPB replaces the erstwhile Services Capital Acquisition Plan Categorisation Higher Committee (SCAPCHC)
7. Multiplier is a factor that increases the value of offset credit for a given transaction. For example, a multiplier of 2.0 for an offset transaction of say \$10 million will amount to credit value of \$20 million. Multiplier is often given to incentivise offset inflows into a particular area which is otherwise not preferred by the offset givers.

8. “Writ Petition [criminal] No.225 of 2018”, Judgement of the Supreme Court of India, December 14, 2018, pp. 14-15.
9. For the relevant provisions, see para 3.2 of “[Manual for Procurement of Goods 2017](#)”, Ministry of Finance, Government of India, April 05, 2017.
10. “[Guidelines of the Ministry of Defence for Penalties in Business Dealings with Entities](#)”, Ministry of Defence, Government of India, November 21, 2016.
11. There are instances of some big foreign companies being fined heavily on being found guilty of financial transgression. For instance, a major UK-based engine manufacture, which was found guilty of bribing government officials in a number of countries, including India, was made to pay nearly \$800 million in fine to settle investigations undertaken by the US, UK and the Brazilian authorities. See “[Rolls-Royce plc Agrees to Pay \\$170 Million Criminal Penalty to Resolve Foreign Corrupt Practices Act Case](#)”, US Department of Justice, January 17, 2017.
<https://idsa.in/policybrief/refining-draft-dpp-laxman-amit-vinay-080420>



Thu, 09 April 2020

Army study to examine career progression of women officers including permanent commission and command appointments

The study is aimed at giving a holistic view of their induction and later management as permanent commissioned officers. The study will look into their commissioning as officers, physical fitness, selection boards and duties, including the suitability of giving them command posts and other areas they can serve in

By Shaurya Karanbir Gurung

New Delhi: The Indian Army has started a study to examine the career progression of its women officers, including their promotions, courses they have to undergo, duties and command postings and recommend ways for tweaking and improving existing policies. The study is in light of February’s Supreme Court judgement of granting permanent commission to women officers irrespective of their years of service and suggesting command appointments for them.

The study is aimed at giving a holistic view of their induction and later management as permanent commissioned officers. The study will look into their commissioning as officers, physical fitness, selection boards and duties, including the suitability of giving them command posts and other areas they can serve in. The officials conducting the study are from different directorates, including those where women officers are inducted, and from the army commands. The study’s recommendations and findings will act as guidelines for the career management of women officers by the army.

The army has already begun tweaking its policies to allow its women officers, who are serving beyond the set years of service for being considered for permanent commission, to exercise this option. Permanent commission allows an officer to serve in the Army for 20 years, which is the minimum pensionable service, and beyond that. While women are only inducted as Short Service Commissioned (SSC) officers in the army, according to a policy letter of February last year they can be considered for permanent commission during the 10th year of service by a board of officers and if they make the grade, they are granted permanent commission. Women SSC officers can opt for it during the early years of their career. If they don’t give that option or are not selected, they can continue to serve upto 14 years, which is the maximum period of service of a SSC officer, or leave the army. About 600 women, who have completed 11 to 20 years of service, will be affected by the new move. This is because of the Supreme Court ruling that all women officers will be considered for permanent commission, irrespective of whether they have crossed 14 or 20 years of service.

The army is also ensuring that with permanent commission women undergo important courses such as junior command and complete two criterion appointments such as a company commander of a unit, to be able to be considered for promotion to the rank of Colonel in a command appointment. This is unprecedented because women in most of the 10 streams of the army they are inducted into don't move beyond the rank of Lieutenant Colonel (below Colonel) or get command appointments. This too follows after the apex court in its judgement stated that a clause in last year's letter-- on women officers be sent on staff appointments only after receiving permanent commission - will not be enforced.

Following the judgement, the army has sent letters to the 600 women officers, including the petitioners in the case, who have completed more than 10 years service to voluntarily opt for permanent commission. The army will examine them for permanent commission in three different categories. These will be those who have completed 11 to 14 years of service; those who have completed 14 to 20 years; and those who have completed 20 years and above. Experts clarified that these officers could be considered with their equivalent batches of male officers, who were granted permanent commission in their 10th year of service. Ideally, the performance of women officers should be compared with the marks of the last male officer of their equivalent batch who made it through the selection board, as this can act as a benchmark. If the women officers get equal or more marks than that of the last male officer to be approved, they too should be granted permanent commission. This will ensure that the calibre of all officers of equivalent short service batches is balanced.

The women officers in the first category who have less than 14 years of service and don't pass the selection board, can serve till 14 years and then leave the army. Those in the second category who have completed 14 years of service but still do not get approved for permanent commission can serve till 20 years, retire and receive pension.

Women getting permanent commission will be allowed to do certain courses and 'criterion appointments' to progress in the army. They will now be allowed to do courses such as junior command, meant for senior Captains and Majors to promote them to sub-unit commanders such as a company, one of the key elements of an army unit. Important career progression courses such as Staff College and MTech will now be open to them as well. They will also have to do two criterion appointments such as a company commander to be able to get to higher command appointments or be promoted to the rank of Colonel. The marks from criterion appointments is higher than those of non-criterion appointments and this helps an officer in being promoted to higher ranks. Earlier, very few women officers did the junior command course and held criterion appointments. This move will allow them to be on an equal footing with their male counterparts.

"The army is seeing what women officers can do as compared to their male counterparts for command appointments. We are creating a level playing field," an official said.

<https://economictimes.indiatimes.com/news/defence/army-study-to-examine-career-progression-of-women-officers-including-permanent-commission-and-command-appointments/articleshow/75041379.cms>

The Tribune

Thu, 09 April 2020

It's musical chairs for top army medical post

By Ajay Banerjee

New Delhi: In the past 34 months, the post of Director General Medical Services (Army) — the senior most doctor responsible for the health and well being of the 13 lakh Indian Army — has shifted between officers like a game of 'musical chairs'.

The other two services — the Indian Air Force and the Indian Navy — also have similar posts for their services. The three also have a boss, DG, Armed Forces Medical Service (DGAfms).

Since July 2017, there have been eight Lieutenant General rank doctors, who have been appointed at the post of DGMS Army. The latest one Lt Gen AK Hooda who took over on April 2, became the third incumbent in past 10 months, since June 1, 2019. His predecessor Lt Gen RS Grewal started his tenure on November 1, 2019 and handed over the charge five months later. Lt Gen A Banerji started his tenure on June 1, 2019 and got promoted as DGAFMS in October. During 2017-2018, for period of nine months the post even had an 'Officiating' DGMS Army.

Sources said a proposal to have fixed tenure for a minimum of one year as DG is awaiting clearance from the Principal Personnel Officers Committee (PPOC), a body of the three armed forces.

A senior functionary said the problem is due to a policy which says an officer can be in the rank of Lt General (or equivalent in the IAF and the Navy) for only two years of his career or till attaining the retirement age of 61.

A doctor in the rank of Lt General works on other posts before becoming the DG. By the time the turn comes, only for a few months of his two-year tenure remain. A way out of this situation is to retire doctors at 61 years of age instead of sending them home after being Lt Gen for two years.

Meanwhile, the Armed Forces Tribunal directed that the seniority principle be followed to appoint the DGMS. The concept of having a fixed tenure was not considered and the Army then got down to following the AFT directions while the policy-framing to amend the anomaly is pending with the PPOC.

<https://www.tribuneindia.com/news/nation/its-musical-chairs-for-top-army-medical-post-68564>

THE ECONOMIC TIMES
WWW.ECONOMICTIMES.COM

Thu, 09 April 2020

Indian Army postpones six-day conference of top commanders in view of coronavirus situation

The conference was to be held from April 13 to 18. In the conference, the Army commanders were set to carry out overall review of India's security challenges, particularly along the borders with Pakistan and China. The agenda of the conference also included a detailed discussion on ways to speed up long-pending reform in the 1.3 million-force

New Delhi: In The Indian Army has postponed a six-day conference of its top commanders next week in view of rising cases of coronavirus in the country, official sources said on Wednesday.

The conference was to be held from April 13 to 18. In the conference, the Army commanders were set to carry out overall review of India's security challenges, particularly along the borders with Pakistan and China.

The agenda of the conference also included a detailed discussion on ways to speed up long-pending reform in the 1.3 million-force.

Sources said the conference has been postponed due to the coronavirus pandemic. The Army has been extensively helping civil administrations across the country in dealing with the outbreak.

India has recorded over 5,100 cases of coronavirus and 149 deaths due to the infection so far, according to Union Health Ministry.

<https://economictimes.indiatimes.com/news/defence/indian-army-postpones-six-day-conference-of-top-commanders-in-view-of-coronavirus-situation/articleshow/75046655.cms>



Thu, 09 April 2020

India's AK – Not Quite an AK-203

For years we at TFB have closely followed India's struggles to select a new service rifle to replace the 5.56x45mm INSAS which has gained a questionable reputation over the years. Numerous home-grown rifles such as the Indian Ordnance Factories Board-designed Excalibur and the Multi Calibre Individual Weapon System have both proven to be failures.

A glimmer of hope arrived when the Indian government made a concerted effort to procure new small arms launching a flurry of requests for information seeking a range of rifles in 7.62x39mm, 5.56x45mm and 7.62x51mm. At the same time, India have also procured .50 calibre anti-materiel rifles and .338 LM precision rifles in significant numbers.



It has since emerged that Russia's Kalashnikov Concern and the Indian government have been engaged in negotiations for licensed manufacture of a version of Kalashnikov's modernised AK-203 to be produced in Indian factories – as a part of the country's Made In India defence procurement initiative. With a potential order for 750,000 rifles, the scope of the contract is huge with a potential cost reported in 2018 of \$2.5 billion. While the Indian government appeared to announce the agreement 12 months ago we have been waiting patiently for further news on the signing of a contract for production of the new rifles.

INDIA'S AK-203

Despite uncertainty around when a contract might be finalised we now have our first look at what the Indian soldier might eventually be issued and it is not a stock AK-203 as has widely been assumed. In fact, the rifle has been adapted to Indian requests and has a number of significant and somewhat surprising differences. These photos were taken at the Indo-Russia Rifles booth at the recent DEFEXPO 2020 in Lucknow in Uttar Pradesh, India. Indo Rifles is a joint concern with 50-50 ownership split between India's state Ordnance Factory Board and Russia's Kalashnikov Concern/Rosoboronexport.

At a glance, you may not notice that the Indian AK-203 is a combination of features taken from the AK-203 and less refined and cheaper AK-103. Let's compare the three rifles and see which features the Indian AK-203 has combined.

Check out Kalashnikov Concern's video demonstrating their stock AK-203,

From the photos of the AK-103 and AK-203 above we can see that the Indian rifle has retained the 203's railed top cover, contoured ergonomic pistol grip and its muzzle device. However, it has not opted for the Russian 203's adjustable but stock, instead opting for the simpler AK-103 folding stock and handguard (with no top rail).

The primary, non-ergonomic, upgrades of Kalashnikov Concern's AK-203 include an improved barrel with tighter tolerances and a top cover which is held more firmly in place by a locking lever – allowing simpler and more stable optics mounting (without the need for a side mount). If we compare the three rifles again and look at their right sides we see that the Indian 203 has retained this system. The rifle's receiver also remains AK-203 marked.

Below we can see that the Indian rifle has opted to retain the railed top cover and locking lever system but has the AK-103's more traditional style of selector lever, which lacks the Russian 203's finger tab for easier manipulation without moving the right hand too far off the pistol grip.

The reasons for these design specification changes are unclear, perhaps for manufacturing simplicity, or cost saving or perhaps the changes are driven by doctrine or manual of arms driven choices. Regardless of the changes made to the rifle, the AK-203 represents a step up, from the current INSAS, which Indian soldiers will welcome enthusiastically. This incarnation of India's AK may not be the one which enters production, we will have to wait a little longer for confirmation of this spec and the contract for 750,000 rifles.

<https://idr.w.org/indias-ak-not-quite-an-ak-203/#more-224907>



Thu, 09 April 2020

Indian Navy partners with think3D to 3D print spare parts on demand for vessels

The Indian Navy has partnered with Indian 3D printing service bureau think3D to help produce spare parts on demand using additive manufacturing, for both on and off-shore scenarios.

The availability of spare parts has been a recurring problem for the Indian Navy due to the use of old, imported machinery. Collaborating with think3D, the Indian Navy has sought to solve this problem by instead 3D printing spare parts and replacing them on demand. think3D has supplied various 3D Printed spare parts to Indian Navy, all of which have been successfully tested and incorporated into its machinery. One particular case study that the company has shared revolves around the replacement of centrifugal pump impellers, key components for a ship's operation, using 3D printing.

The Difficulty of Sourcing Spare Parts for Old Machinery

A large proportion of the machines present on the Navy's ships are very old, and imported from other countries. As such, sourcing spare parts for these machines whenever a component gets damaged can be a long process, with significant delays before a part is received. This can prove costly for the Navy as it keeps its machines idle before the spare parts get replaced. One such example arrives in the Navy's long pending need for a quick replacement of centrifugal pump impellers onboard its ships.



The impeller is a rotating component of a centrifugal pump. It is responsible for transferring energy from the motor to the fluid being pumped by accelerating the fluid outwards from the center of rotation. On ships it is used to import seawater to sections of the ship for regular water needs. Impellers often come in different shapes and sizes according to the amount of liquid to be pumped. They are required to rotate at high speeds for long periods of time.

The breakdown of these impellers has caused major problems for the Indian Navy. These breakdowns are most often caused by the displacement of the eye of the impeller during rotation and by foreign particles in the sea hitting the impeller. As the impellers rotate at high speeds, the aforementioned problems are common occurrences. Replacement parts for these impellers involve a sand casting manufacturing process which often necessitates a 3 month turn-around time to produce a new impeller. Each ship has multiple such pumps and impellers and constant breakdowns have caused a major impediment to the Indian Navy in carrying out its regular tasks.

Seeking an alternative manufacturing process where these impellers can be produced quickly and at a lower cost of ownership, the Indian Navy identified 3D printing as a possible solution, and contacted think3D.

Reverse Engineering and 3D Printing the Impeller

Founded in 2014, think3D aims to increase the market awareness of 3D printing and its potential applications in India. The company offers services for 3D printing, design, scanning and batch production with other manufacturing processes as well. It also operates a \$6 million 3D printing facility for medical device manufacturing in the AP MedTech Zone, a manufacturing park for medical equipment in the Indian state of Andhra Pradesh.

After being contacted by the Indian Navy, the think3D team visited the ships to understand the problem in detail and to collect data on the impellers, including material properties required and boundary conditions. Its first step involved 3D scanning the impeller and reverse engineering its design. This was performed using an EinScan Pro+ 3D Scanner and CREO to create the CAD model based on the scanned data. Using ANSYS software, think3D then investigated which material and 3D printing process would benefit the application. Various materials like nylon composites, glass filled nylon, PA12, other regular plastics were tested for suitability.

An important requirement for the impeller material was its damping capabilities, which refers to its ability to convert vibrational energy into other forms of energy without the part breaking apart. Additionally, the part was required to have enough elasticity to withstand the vibrations as well. This ruled out various high strength materials as they were highly brittle, with think3D identifying a material with good damping property and elasticity for the final part. think3D has opted to keep the specific material used confidential.

Using Multi Jet Fusion technology from HP, think3D 3D printed the impeller with the desired mechanical properties. It was then CNC machined with metal bushings inserted to create an interface between metal rod and plastic component, required for rotating the impeller without the part breaking. After being tested aboard the ship, the impeller demonstrated an adequate performance for the desired number of hours. A part that would take 3 months to manufacture has instead taken 2 days to manufacture using 3D printing, while the cost of producing the component was 40 percent lower according to think3D. The 3D printed impeller was also lower in weight, coming in at 1kg compared to traditionally manufactured impellers which weigh between 8 kg and 9 kg.

With the successful completion of the 3D Printed impeller, think3D has now set its sights on building a digital repository of impellers for the Indian Navy. Once the repository is built, the company has committed to 3D printing the required impellers on demand to supply to the Navy.

Additionally, think3D has also detailed how it has collaborated with the Indian Navy to deliberate an approach for having a 3D printer mounted onboard a ship for when spare parts are needed on demand off-shore, with the CAD designs of the spare parts pre-loaded into the machine. In most cases, this would require the Indian Navy to air-lift parts to the ship or bring the ship back to shore for fitting the components, both of which come at significant cost. think3D is therefore building a customized 3D printer for the Indian Navy capable of additive manufacturing in off-shore conditions.

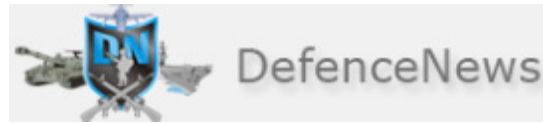
3D Printing in Maritime

Recently, the maritime industry has increased its adoption of 3D printing technology to combat similar issues experienced by the Indian Navy, mainly surrounding the supply of spare parts. For example, dry bulk shipping company Berge Bulk required a solution to produce spare scupper plugs at a faster and cheaper rate for its ships. Global maritime industry group Wilhelmsen, alongside additive manufacturing service bureau Ivaldi Group, 3D printed a set of scupper plugs for Berge Bulk that decreased the costs and time it takes to produce the scupper plugs via traditional processes.

The 3D printed scupper plugs were delivered as part of the Wilhelmsen and Ivaldi Group's Early Adopter Program (EAP), an initiative to supply 3D printed spare parts on-demand to ships and other vessels. This initiative, launched in Singapore, is also joined by the country's Joint Industry

Programme (JIP) to implement additive manufacturing in the marine industry. This JIP is organized by the Maritime and Port Authority of Singapore (MPA), Singapore's National Additive Manufacturing Innovation Cluster (NAMIC) and the Singapore Ship Association (SSA).

<https://3dprintingindustry.com/news/indian-navy-parnters-with-think3d-to-3d-print-spare-parts-on-demand-for-vessels-170632/>



Thu, 09 April 2020

Air Force ready for any contingency within or outside country: AVM Surat Singh

Assistant Chief of Air Staff Operations (Space) Air Vice Marshal Surat Singh on Wednesday said that the Air Force is ready to tackle any contingency that may arise both within and outside the country amid the coronavirus lockdown. "We had sent our aircraft first to Wuhan and then Iran to bring back our people. Then to support the Maldives in terms of medical supplies, we had sent an aircraft there under Operation Sanjeevani. We have also supplied material to Nepal. We are ready to tackle any contingency both within and outside the country," Singh told ANI here.

He said that the Air Force is fully prepared and have all the resources in order to meet its critical capabilities and at the same time giving support to the nation in order to fight the coronavirus pandemic.

"We are in constant liaison with the Department of Defence and Department of Military Affairs at the Ministry of Defence. A critical management cell has been created, both at Air HQ and Command HQ, and there is a constant liaison with the Air Force and outside agencies," Singh said.

"We have also pre-positioned a large number of white-bodied aircraft and helicopters at various places across the country in order to ensure that we react very promptly to any situation that may arise, primarily at supporting government's efforts towards fighting coronavirus," he added.

Singh said that regular video conferencing are also being held to review the efforts. This comes as the country is under a 21-day lockdown to prevent the spread of coronavirus, which according to the Ministry of Health and Family Affairs has claimed the lives of 149 people and infected 5,194 people as on Wednesday.

<https://www.defencenews.in/article/Air-Force-ready-for-any-contingency-within-or-outside-country-AVM-Surat-Singh-830086>



Thu, 09 April 2020

Why India might fly French Dassault Rafales over Lockheed's 'Super F-16s' in the near future

An F-16V or F-21 is a radically different warplane compared to the F-16A that first flew in 1978. Lockheed Martin is developing a new variant of its iconic F-16 single-engine fighter in order to compete in India's 2019 tender for 110 new warplanes.

But don't count on the American firm's "F-21" to win the contract. According to journalist Angad Singh, the likely winner is French company Dassault's Rafale twin-engine fighter. Singh explains his rationale in the May 2019 issue of Combat Aircraft magazine. India previously

ordered 36 Rafales as part of an earlier fighter tender. “With 36 aircraft already on order and the infrastructure in place for an additional 36, a case could certainly be made that training, basing and sustainment costs for additional aircraft would not be an impossible burden.”

Other candidates for the Indian tender are the Saab Gripen from Sweden, the European Eurofighter Typhoon, the MiG-35 from Russia and the Boeing Super Hornet from the United States. Whichever fighter New Delhi selects, it needs the new jets now, according to Singh.

“The government-approved strength of the Indian Air Force, given the country’s well-publicized security scenario and the possibility of a ‘two-front’ threat of combined Pakistani and Chinese air action to the west and northeast, is 42 fighter squadrons,” Singh writes.

“There is little clarity on how this exact number was arrived at, but nonetheless, the IAF hasn’t come close to this strength for two decades, and has never approached anything near a force entirely equipped with modern aircraft.”

In 2019 the Indian air force maintains just 30 fighters squadrons. The units operate, among other plane types, 244 1960s-vintage MiG-21s and 84 MiG-27s that are only slightly younger. The MiG-21s, in particular, are accident-prone. Since the first of 874 MiG-21s entered Indian service in 1963, around 490 have crashed, killing around 200 pilots.

But the MiG-21s remain active. On Feb. 26, 2019 Indian planes crossed the line of control at India’s border with Pakistan and bombed what New Delhi described as a terrorist training camp near Balakot.

Several days of aerial fighting followed the bombing raid. On Feb. 27, 2019, Pakistani F-16s and other planes crossed the line of control to attack Indian forces, New Delhi claimed. Indian MiG-21s and other fighters intercepted the Pakistanis and shot down one plane, according to the Indian government.

The U.S. government reportedly counted Pakistan’s F-16s after the battle and concluded that none was missing, casting doubt on New Delhi’s claim.

Islamabad stated its forces shot down two Indian MiG-21s, but New Delhi copped to losing just one jet. Pakistani forces captured the MiG-21 pilot, Wing Commander Abhinandan Varthaman, and held him for two days before handing him over to Indian officials.

Now New Delhi wants to spend around \$18 billion acquiring 110 new fighters to replace the old MiGs. The new planes would fly alongside European-designed Jaguars, French Mirage 2000s and Rafales, Russian MiG-29s and Su-30s and India’s own indigenous Tejas fighter in what Lockheed described as “the world’s largest fighter aircraft ecosystem.”

For the purposes of Lockheed’s marketing campaign, the F-21 is a new fighter, although it shares many of its major features with the F-16V the company has sold to Bahrain, Greece, Slovakia, South Korea and Taiwan. Lockheed can build new F-16Vs or upgrade older F-16s to the V-standard.

Still, renaming the F-16V isn’t only semantic. An F-16V or F-21 is a radically different warplane compared to the F-16A that first flew in 1978. The F-16A is a nimble, eight-ton fighter with an unsophisticated radar and short-range weapons. The F-16V weighs 10 tons, boasts a cutting-edge radar and other sensors and carries a wide array of long-range weaponry, all at the cost of maneuverability.

Lockheed initially implied India could follow an acquisition of F-21s with a separate purchase of the company’s F-35 stealth fighters.

<https://www.defenceaviationpost.com/2020/04/why-india-might-fly-french-dassault-rafales-over-lockheeds-super-f-16s-in-the-near-future-2/>

US plans to ramp up defence architecture in Indo-Pacific despite battle on virus at home

The request by the US Indo-Pacific Command would last through the financial year 2026, it is understood. Under the proposal, some \$1.6 billion would be released for financial year 2021, with \$18.5 billion earmarked for 2022-26. The spending plan, titled "Regain the Advantage," calls for almost \$1.7 billion to fund an air missile defence system in the Indo-Pacific region

By Dipanjan Roy Chaudhury

New Delhi: The US military continues to pursue its China containment strategy and plans to strengthen its presence in the Indo-Pacific region, notwithstanding the battle against Covid-19 at home.

The US military requested an additional \$20 billion in funding from lawmakers last week to strengthen naval, airborne and ground-based operations in the Indo-Pacific region, ET has learnt.

The request by the US Indo-Pacific Command would last through the financial year 2026, it is understood. Under the proposal, some \$1.6 billion would be released for financial year 2021, with \$18.5 billion earmarked for 2022-26. The spending plan, titled "Regain the Advantage," calls for almost \$1.7 billion to fund an air missile defence system in the Indo-Pacific region.

In a recent report, the Hong Kong-based South China Morning Post remarked, "Dovetailing with the US administration's multi-agency effort to bolster US ties in the Indo-Pacific, the Pentagon in 2018 moved to designate the region its 'priority theatre,' with then-defence secretary James Mattis calling Beijing's fortification of reefs in the South China Sea acts of 'intimidation and coercion.'"

The US military's renewed focus on the region has heralded several new initiatives, including the upcoming deployment of army task forces focused on cyber-warfare and other non-conventional forms of conflict in the area, according to SCMP.

The US has accused China of using the pandemic to expand its "unlawful claims" in the South China Sea. State Department spokesman Morgan Ortagus said the US was "seriously concerned" by reports of a collision of a Chinese coast guard ship and a Vietnamese fishing vessel near the disputed Paracel Islands.

"This incident is the latest in a long string of PRC actions to assert unlawful maritime claims and disadvantage its Southeast Asian neighbours in the South China Sea," Ortagus said.

She advised Beijing to "remain focused on supporting international efforts to combat the global pandemic and to stop exploiting the distraction or vulnerability of other states to expand its unlawful claims in the South China Sea."

The US has alleged that since the coronavirus outbreak, Beijing had announced new research stations at its military bases on Fiery Cross Reef and Subi Reef and landed special military aircraft on Fiery Cross Reef, all in the South China Sea region.

Countering this, Chinese foreign ministry spokesman Zhao Lijian said on Tuesday that the US frequently sent fighter jets to the South China Sea to violate China's "maritime rights" and called on Washington not to link maritime disputes with the Covid-19 pandemic.

Meanwhile Vietnam has launched an official protest with China following the sinking of a Vietnamese fishing boat.

"The Chinese vessel committed an act that violated Vietnam's sovereignty over the Hoang Sa archipelago and threatened the lives and damaged the property and legitimate interests of Vietnamese fishermen," the foreign ministry said in its statement.

This is the second such incident in less than a year.

<https://economictimes.indiatimes.com/news/defence/us-plans-to-ramp-up-defence-architecture-in-indo-pacific-despite-battle-on-virus-at-home/articleshow/75042001.cms>

Thu, 09 April 2020

Australia's big stake in India's military reorganization

By David Brewster

COVID-19 will no doubt have many long-term consequences for the Indo-Pacific region that we can now only begin to imagine. One consequence that is easy to imagine in the face of a distracted and internally focused United States will be Australia's greater reliance on regional security partners, such as Japan and India. This includes an ever-greater stake in the effectiveness of the Indian military, and especially its navy.

India has just started to reorganize its outdated and highly inefficient structures. There have been positive developments, but a lot of problems ahead. Rhetoric aside, Australia will need a sober understanding of India's likely future abilities to act as a regional security provider across our shared oceanic space.

First, the good news. Last December, after decades of inaction, the government appointed General Bipin Rawat as India's first chief of defense staff, theoretically bringing India's three armed services under unified command for the first time. The chief of defense staff supposedly provides a single point of advisor to the government on military affairs. But Rawat will still only be regarded as the "first among equals" with the other service chiefs, and the extent of his powers is not yet clear.

The chief of defense staff replaces an organizational model for India's armed forces that was put in place as a temporary measure by the British in 1947. Importantly, this appointment is just the first step in what may become the most significant military reorganization ever undertaken by India.

From independence, Nehru and the Congress Party kept the military divided, siloed, and deeply subordinated to the civilian bureaucrats of the Ministry of Defense. As a result, the military has often been only at the periphery of governmental decision-making about defense issues.



Tight civilian control of India's military ensured that it stayed well clear of politics. Unlike many post-colonial states, India has not suffered from coups or the hijacking of resources or foreign policy by the military. Even today, the idea of a single chief of armed forces remains somewhat controversial. Fears of militarism and military coups likely still exist within the opposition Congress Party.

But the system also comes with significant costs to military effectiveness. Indian armed forces are highly disjointed with each of the services doing its own strategy, war planning and capability planning. The army would, for example, have little if any input into the navy's strategy or doctrine and vice versa.

Operational command was also separated. The army and air force each maintain their own western, central, and eastern commands, but they are all located in different places, making joint operations difficult.

One of Rawat's first acts upon his appointment as chief of defense staff was to propose the reorganization of the Indian armed forces into unified theater commands, in addition to tri-service

commands for cyber, space, and special forces. This has the long-term potential to transform India's armed forces into a modern joint military and considerably enhance its effectiveness.

Indeed, the navy, the only service with a strong power projection mentality, has been among the strongest supporters of joint commands. The navy currently runs India's only theater command in the Andaman and Nicobar Islands, seen by some as important to India's ability to project power into the Pacific. The Indian Navy, which inherited the British Royal Navy's global perspectives, sees its role as protecting India's interests wherever they may be, primarily between Hormuz and Singapore, but also potentially much further afield.

But the navy might find that the proposed reorganization will actually be restrictive. Rawat has also proposed merging the navy's eastern and western commands, headquartered on India's east and west coasts, into a single new "Peninsular Command." This smacks of continentalist thinking, positioning the navy as principally a coastal defense force whose main job is to defend India's maritime borders.

There are also real concerns about India's defense (and, particularly, naval) spending. Growth in spending has largely stalled in the face of a weak economy, and we should assume that there will likely be major cuts in defense spending in the wake of the COVID-19 crisis.

That could hit India's military modernization plans hard. Its bloated ground force of 1.2 million regular troops and 960,000 reserves means that the army swallows up most of the defense budget. There may be little left to spend on modernization.

The Indian Navy has long been the "Cinderella Service" with the smallest budget. In recent years, its share of the defense budget has fallen further, from 18 percent in 2012–13 to 13 percent in 2019–20. To put this in context, Australia probably spends considerably more overall than India on maritime security (although Australia's maritime spending is split between the navy and air force).

Budget cuts have already hit the Indian Navy's plans. Its total planned ships by 2027 have now been reduced from 200 to 175. Future acquisitions of P-8I maritime surveillance aircraft may be reduced. As foreshadowed by this author in 2018, Gen. Rawat is also questioning whether the navy should go ahead with its planned third aircraft carrier, suggesting instead that it make greater use of airfields on India's island territories. The navy argues that this would not be an acceptable substitute.

These developments contrast with China's military modernization program. This included the establishment of five fully integrated theater commands in 2016, bringing together the army, air force, navy, and rocket forces. The People's Liberation Army's troop numbers are also steadily being reduced, freeing up money for modernization and naval spending.

Australia has a big stake in the ability of the Indian military, and particularly its navy, to deliver effective outcomes right across our shared maritime domain. We need to ask some hard questions about India's capabilities as a regional security provider in the Indian Ocean in coming decades.

(Dr. David Brewster is with the National Security College at the Australian National University, where he specializes in South Asian and Indian Ocean strategic affairs. He is also a Distinguished Research Fellow with the Australia India Institute.)

(This piece was produced as part of a two-year project being undertaken by the National Security College on the Indian Ocean, with the support of the Australian Department of Defense.)

<https://warontherocks.com/2020/04/australias-big-stake-in-indias-military-reorganization/>

Budget problems are killing Russia's Su-57 stealth fighter dreams

Moscow is buying fewer planes than it previously planned

By David Axe

Key point: The Su-57 is an immature design whose production line is small and inefficient. That won't quickly or cheaply change

Russian president Vladimir Putin made a big show on May 14, 2019 of visiting the 929th Chkalov State Flight-Test Center in Russia's Astrakhan region.

Six Sukhoi Su-57 stealth fighters -- fully half of the Su-57s that Sukhoi has built since the type first flew in 2010 -- escorted Putin's Il-96 VIP plane on the trip from Moscow to Astrakhan.

Speaking on May 15, 2019, Putin said the Kremlin would buy scores of Su-57s over the next eight years. If Putin is serious and the Russian defense ministry follows through on the pledge, Russia soon could possess a meaningful number of stealth fighters.

But there are good reasons to be skeptical. The Su-57 still isn't a mature design. It lacks key combat systems. Sukhoi hasn't set up a big, efficient production line for the type. And Moscow almost certainly doesn't have the money to buy a large number of stealth fighters.

After years of slow development, one engine fire and a theatrical "deployment" of apparently non-combat-capable jets to Syria, in 2018 the Kremlin announced it would all but suspend production of the Su-57 in favor of upgraded versions of the venerable, non-stealthy Su-27. Moscow would buy just 16 new Su-57s through 2027, resulting in an overall force of no more than 28 stealth fighters.

Economics surely motivated the change in plans. Russia in 2016 spent \$70 billion on its armed forces. But an economic downturn that shaved nearly four percent off of GDP in 2015 forced Moscow to reconsider its spending priorities. "In preparing the 2016 budget, there was clearly awareness that this level of spending could not be sustained," the International Institute for Strategic Studies explained.

The government tried to spin the decision to curtail Su-57 production. "You know that today the Su-57 is considered to be one of the best aircraft produced in the world," Yuri Borisov, Russia's deputy defense minister, told a television audience. "Consequently, it does not make sense to speed up work on mass-producing the fifth-generation aircraft."

The 2018 decision meant the Russian air force for the foreseeable future would not operate meaningful numbers of stealth fighters. The United States and China, meanwhile, both are mass-producing stealth fighters and developing new stealth bombers.

Putin in May 2019 promised to address the imbalance. Claiming that Sukhoi had driven down the cost of an Su-57 by 20 percent, Putin announced the Kremlin by 2027 would buy 76 Su-57s instead of just 16. "I hope that the adjusted plans will be executed," Putin said.

Sukhoi has not said how much an Su-57 costs, but it's worth noting that Lockheed Martin's F-35 stealth fighter costs around \$100 million per copy on a mature, fully modern assembly line that annually produces dozens of planes.

The U.S. military in recent years has bought between 60 and 70 F-35s a year as part of an overall \$700-billion annual defense budget. The F-35 accounts for one percent of U.S. military spending. If Moscow spends one percent of its own military budget on Su-57s, it might be able annually to afford six of the planes for a total of 54 new stealth fighters by 2027.

But that's an optimistic assessment. Before it can mass-produce Su-57s that the Russian air force actually can use in combat, Sukhoi must complete development of the type's combat

systems, integrate weapons on the planes, expand the assembly line that builds the stealth fighters and train workers actually to make them.

All of these things are easier said than done. And simply throwing money at them won't necessarily work. The F-35 program has experienced no shortage of technical, industrial and logistical setbacks while also enjoying nearly 20 years of sustained funding.

Of course, it's possible that Putin's six-plane Su-57 escort and subsequent announcement of a possible big new order for the type both weren't really related to any serious effort to equip the Russian air force. It's possible they're part of a marketing campaign for prospective international buyers.

It's no coincidence that Russia's initial plan to acquire Su-57s for its own use coincided with India's decision to quit co-development and co-financing of a variant of the Russian stealth fighter for the Indian air force.

Russia might be hoping to entice Turkey into joining the Su-57 program and taking over India's role as a major financier. The Turkish air force has ordered F-35s, but the U.S. government has threatened to block the order owing to Ankara's decision also to buy Russian-made air-defense systems whose sensors could gather sensitive data on the F-35's stealth profile.

A big display of Putin's supposed confidence in the Su-57 could be just the thing to convince Turkish officials to gamble on the Russian stealth fighter.

But buying into the Su-57 program won't magically solve the program's problems. The Su-57 is an immature design whose production line is small and inefficient. That won't quickly or cheaply change.

<https://nationalinterest.org/blog/buzz/budget-problems-are-killing-russias-su-57-stealth-fighter-dreams-142177>

TIMESNOWNEWS.COM

Thu, 09 April 2020

ISRO further delays launch of GISAT-1 satellite due to COVID-19 lockdown

The launch of GISAT-1 satellite has been pushed further due to lockdown imposed to prevent the spread of coronavirus, sources said on Tuesday

New Delhi: The launch of GISAT-1 satellite has been pushed further due to lockdown imposed to prevent the spread of coronavirus, sources said on Tuesday. The launch of GISAT-1 onboard GSLV-F10 was planned for March 5, but it was postponed due to technical reasons. In a statement, the Indian Research Revised launch date will be informed in due course.

Sources, however, added that the next launch was scheduled to be held in April.

"But now we cannot launch GISAT-1 due to lockdown. An exercise like launching a satellite requires nearly 1,000 people to do deal with its various aspects," a source said.

No fresh date has been fixed for the launch of GISAT-1, the sources said.

In India, satellite launches take place from the Satish Dhawan Space Centre in Sriharikota.

GISAT-1, the earth observing satellite roughly weighs around 2,275 kg and has a lifespan of seven years.



The satellite will also have multi and hyperspectral imagery along with the 700 mm Ritchey-Chretien telescope for earth observation and data collection, plus a high-resolution camera.

It will help in near real-time observation of the Indian subcontinent under the cloud-free condition at frequent intervals. It will also help in quick monitoring of natural disasters and keep a constant watch on borders.

The satellite has been designed to obtain spectral signatures of agriculture, forestry, mineralogy, disaster warning, cloud properties, snow, glaciers and oceanography.

<https://www.timesnownews.com/technology-science/article/isro-further-delays-launch-of-gisat-1-satellite-due-to-covid-19-lockdown/575514>



Thu, 09 April 2020

ISRO said to postpone launch of GISAT-1 imaging satellite further

No fresh date has been fixed for the launch of GISAT-1, the sources said

Highlights

- ***GISAT-1 satellite launch has been pushed further due to lockdown***
- ***The launch of GISAT-1 onboard GSLV-F10 was planned for March 5***
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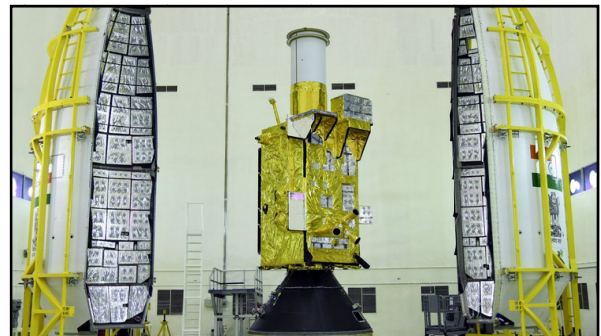
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<https://gadgets.ndtv.com/science/news/isro-said-to-postpones-launch-of-gisat-1-imaging-satellite-further-2208309>



4 Indian pilots training in Russia for Gaganyaan mission in self-isolation as a precautionary measure

There was no official word from the Indian side on the development

By Rezaul H Laskar

New Delhi: Four Indian pilots currently being trained in Russia for the Gaganyaan manned space mission have gone into self-isolation purely as a precautionary measure following the detection of nine Covid-19 cases in the Russian space agency, people familiar with developments said on Wednesday.

The pilots from the Indian Air Force, being trained at the Yuri Gagarin Research and Test Cosmonaut Training Center at Star City near Moscow, are all in good health and the self-isolation was part of the standard procedures for dealing with the situation, said people who spoke on condition of anonymity.

“They have not been infected,” said one of the people cited above.



There was no official word from the Indian side on the development.

Dmitry Rogozin, director-general of Roscosmos, Russia’s space agency, told the media on Monday that nine employees of the corporation had been infected by the coronavirus. He said all the infected employees were receiving treatment.

Till last week, the number of infected Roscosmos employees at different locations of the corporation was four.

The pilots began their training in Russia in February. However, routine activities at the Russian facility, such as the training programme, have been temporarily suspended by the Covid-19 pandemic. The Indians had made good progress in the training so far and cleared some tests, the people said.

Russia, which has recorded more than 8,600 infections and 63 deaths, is currently under lockdown till April 30. The lockdown also applies to the cosmonaut training centre and medical teams are regularly screening and monitoring all personnel at the facility.

The training programme for the Indian pilots, who were chosen from among hundreds of applicants, will last a year and focus on both basic astronaut training and issues specific to the Gaganyaan mission planned for 2022.

The Human Space Flight Centre of the Indian Space Research Organisation (ISRO) and Russia’s state-run Glavkosmos signed a contract for the training programme in 2019.

<https://www.hindustantimes.com/india-news/4-indian-pilots-training-in-russia-for-gaganyaan-mission-in-self-isolation-as-a-precautionary-measure/story-ccL7WeZAU21PZ6ZhudfIRL.html>

For survivors of severe COVID-19, beating the virus is just the beginning

*Survivors of COVID-19 who spent time on a ventilator
may be at risk of long-term disability and illness*

By Kelly Servick

The next few months will be full of grim updates about the spread of the new coronavirus, but they will also be full of homecomings. Patients hospitalized with severe COVID-19, some having spent weeks breathing with the help of a mechanical ventilator, will set about resuming their lives. Many will likely deal with lingering effects of the virus—and of the emergency treatments that allowed them to survive it.

“The issue we’re all going to be faced with the most in the coming months is how we’re going to help these people recover,” says Lauren Ferrante, a pulmonary and critical care physician at the Yale School of Medicine. Hospital practices that keep patients as lucid and mobile as possible, even in the throes of their illness, could improve their long-term odds. But many intensive care unit doctors say the pandemic’s strain on hospitals and the infectious nature of the virus are making it hard to stick to some of those practices.



While COVID-19 is sending even young, previously healthy people to the intensive care unit (ICU), older adults are at greatest risk of both severe disease and long-term impairment, says Sharon Inouye, a geriatrician at Harvard Medical School’s Hebrew SeniorLife health care system. “It’s taken us a long, long time to [develop] some best practices for geriatric care in the hospital and ICU, and I just see all of that being eroded during this crisis.”

COVID-19’s immediate assault on the body is extensive. It targets the lungs, but a lack of oxygen and widespread inflammation can also damage the kidneys, liver, heart, brain, and other organs. Although it’s too early to say what lasting disabilities COVID-19 survivors will face, clues come from studies of severe pneumonia—an infection that inflames the air sacs in the lungs, as COVID-19 does. Some of these infections progress to acute respiratory distress syndrome (ARDS), in which those sacs fill with fluid. That condition sometimes leads to scarring that can cause long-term breathing problems, Ferrante says, but studies show that most ARDS patients eventually recover their lung function.

After any severe case of pneumonia, a combination of underlying chronic diseases and prolonged inflammation seems to increase the risk of future illnesses, including heart attack, stroke, and kidney disease, says Sachin Yende, an epidemiologist and critical care physician at the University of Pittsburgh Medical Center. His team reported in 2015, for example, that people hospitalized for pneumonia have a risk of heart disease about four times as high as that of age-matched controls in the year after their release, and about 1.5 times as high in each of the next 9 years. COVID-19 might prompt “a big increase in these sorts of events,” he says.

Patients who spend time in an ICU, regardless of the illness that put them there, are also prone to a set of physical, cognitive, and mental health problems after leaving known as post-intensive care syndrome. The new coronavirus might put ICU survivors at particular risk for some of these problems, says Dale Needham, a critical care physician at Johns Hopkins University’s School of Medicine. One reason is the exceptionally severe lung injury it can cause, which leads many patients to spend prolonged periods on a ventilator under deep sedation. A patient with ARDS caused by other illnesses might rely on this life support for 7 to 10 days, Needham estimates, but some coronavirus patients require more than 2 weeks.

Many COVID-19 patients who need a ventilator never recover. Although survival rates vary across studies and countries, a report from London's Intensive Care National Audit & Research Centre found that 67% of reported COVID-19 patients from England, Wales, and Northern Ireland receiving "advanced respiratory support" died. A study in a smaller patient group in China found that only 14% survived after going on a ventilator.

Those who survive a long period on a ventilator are prone to muscle atrophy and weakness. Keeping a critically ill patient moving—raising their arms and legs, and eventually helping them sit up, stand, and walk—can reduce that weakness and get them off the ventilator faster. But because SARS-CoV-2 is so infectious, bringing rehab specialists into patients' rooms can be a challenge, Needham says.

In Needham's ICU at Johns Hopkins, these specialists are donning protective gear to help people on ventilators stay moving. But Ferrante says that at many major hospitals, including hers, a shortage of such equipment has kept physical therapists away from COVID-19 patients. And even when people are well enough to leave the ICU or the hospital, many still have the virus, she says, and may have to wait until they're not contagious to get inhome care or visit a rehab facility.

Another risk for hospitalized patients is delirium—a state of confused thinking that can lead to long-term cognitive impairments such as memory deficits. "What we're finding in COVID is that there's a ton of delirium," says E. Wesley Ely, a pulmonologist and critical care physician at Vanderbilt University whose team is preparing to publish those findings. The virus itself is partly to blame, Ely says. He suspects this coronavirus, like the ones that cause severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome, can directly infiltrate and damage the brain. And bodywide inflammation caused by the virus can also limit blood flow to the brain and kill brain cells.

Making matters worse, doctors commonly prescribe sedative drugs to suppress violent coughing and help patients tolerate the distress and discomfort of a breathing tube. But these drugs can increase the risk of delirium, Ely says. And as hospitals run short of the most commonly used sedatives, they're turning to benzodiazepines, a class of drugs that can cause "intense and prolonged delirium," he says.

Over the past 20 years, Ely and colleagues have developed a checklist, now adopted by many ICUs, to improve patient care and outcomes. Among its priorities: a daily interruption of narcotics and sedatives plus a decrease of ventilator pressure to test whether patients can wake up, breathe, and tolerate the ventilator without drugs. (If they can't, doctors are urged to restart these drugs at a lower dose.) But the practice requires close monitoring, and in ICUs overstretched by COVID-19, "I think that's getting skipped," Ely says. "Everybody out there is trying to do their best," he notes. "But let's not throw out all the things we've learned in the last 20 years."

The threat of infection has limited the bedside interactions that can help patients stay calm and reduce the need for delirium-inducing drugs. "If you could design a system to be bad for how you care for older adults, you would make it such that no one could go in the room, and the family would not be allowed to visit, and ... everyone has to go in with face masks and all gowned up, so they're completely frightening," Inouye says. Doctors do need to sedate and restrain agitated patients to keep them from pulling out their IV or breathing tubes, she says. "And yet I'm wondering, could we possibly take 2 minutes to try to calm them, to have someone there who's gloved and masked, to hold their hand and stroke their arm?"

Early reports from ICUs battling COVID-19 suggested patients should be put on ventilators early in the course of the disease, says C. Terri Hough, a pulmonary critical care physician at the University of Washington, Seattle. "That was our approach here for our first handful of patients." Part of the logic was that a less invasive alternative—delivering a high flow of oxygen into the nose—might send the patient's viral particles into the surrounding air, increasing the risk of infecting others. And if a patient declined quickly, doctors would be forced to do a riskier emergency intubation. But Hough's team "quickly got worried about all the downsides of early ventilation," she says. She and her colleagues are now trying to tease apart subtypes of respiratory failure in coronavirus patients to help them decide which patients need ventilators and when. "As

we learn the faces of the disease, we're seeing our practices shift," she says. "If we're putting more people on ventilators than maybe we need to, that certainly is going to affect the population health after recovery."

Poor survival odds and the potential for long-term complications force difficult conversations for older patients, families, and clinicians. "I was initially really upset when I was hearing about the rationing of ventilators from older adults," Inouye says. But when COVID-19 broke out at her 91-year-old mother's assisted living facility, she and her sister made plans to tell hospital staff that if their mother got sick, she did not want to be kept on a ventilator when the hope of recovery was slight. (The facility has now passed 14 days without a new coronavirus case.)

"Because of the decision-making about my mom's case, and because of realizing how scarce the ventilators are, I do think we have to take it one-on-one—we have to go by what that person's wishes are and what their family's wishes are," she says.

As hospitals struggle through the current surge of cases, researchers are also trying to look ahead. Ely's team is testing a tablet-based rehabilitation program for people who have cognitive impairment after being hospitalized for a critical illness, which he describes as "Sudoku and Scrabble on steroids." Yende's team is piloting a care approach for discharged pneumonia and sepsis patients that includes monitoring them using computers and smartphones and visiting them at home or treating them remotely in hopes of preventing readmission to the hospital.

Others are preparing for a surge in mental health problems, among them anxiety, depression, and post-traumatic stress disorder following the psychological stress of severe disease. A study of people hospitalized for SARS found that more than one-third had moderate to severe symptoms of depression and anxiety 1 year later. Hough and her collaborators are testing a mobile app that promotes mindfulness and coping skills in people leaving the hospital.

The global emergency could lead to a stronger support system for survivors of any critical illness, Hough says. "This we're-all-in-this-together attitude around coronavirus may actually provide hope that wasn't there before."

(Kelly is a staff writer at *Science*)

<https://www.sciencemag.org/news/2020/04/survivors-severe-covid-19-beating-virus-just-beginning>

The Atlantic

Wed, 08 April 2020

The best hopes for a Coronavirus drug

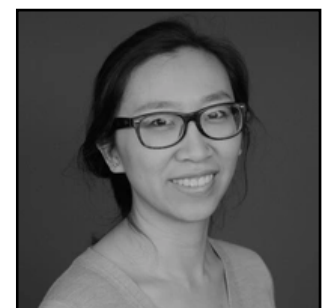
If there is a way to stop COVID-19, it will be by blocking its proteins from hijacking, suppressing, and evading humans' cellular machinery.

By Sarah Zhang

Twenty-nine. That's the number of proteins the new coronavirus has, at most, in its arsenal to attack human cells. That's [29 proteins](#) to go up against upwards of tens of thousands of proteins comprising the vastly more complex and sophisticated human body. Twenty-nine proteins that have taken over enough cells in enough bodies to kill more than 80,000 people and grind the world to a halt.

If there is a way—a vaccine, therapy, or drug—to stop the coronavirus, it will be by blocking these proteins from hijacking, suppressing, and evading humans' cellular machinery. The coronavirus may sound small and simple with its mere 29 proteins, but that is also what makes it hard to fight. It has so few weak spots to exploit. Bacteria, in comparison, might have hundreds of their own proteins.

Scientists have been furiously looking for a weakness in SARS-CoV-2, as the coronavirus that causes COVID-19 is formally known, ever since it was identified as the culprit behind mysterious



pneumonia cases in Wuhan, China, in January. In just three months, labs around the globe have homed in on individual proteins, mapping some of their structures atom by atom at a record pace. Others are screening molecular libraries and the blood of COVID-19 survivors for compounds that can tightly bind and inhibit these viral proteins. More than 100 existing and experimental drugs are being tested against COVID-19. A vaccine candidate from Moderna was first injected into the arm of the first volunteer in mid-March.

Yet other researchers are focusing on how these 29 proteins interact with parts of the human cell—with the goal of finding drugs that target the host instead of the virus. While this seems indirect, it follows with the replication cycle of viruses. Unlike bacteria, viruses cannot copy themselves. “Viruses use the machinery of the host,” says Adolfo García-Sastre, a microbiologist at the Icahn School of Medicine at Mount Sinai. They trick host cells into copying their viral genomes and making their viral proteins.

One idea is to stop these virus-ordered functions without interfering with a cell’s normal functions. Here, the best analogy for a potential SARS-CoV-2 drug may not be an antibiotic, which kills foreign bacterial cells rather indiscriminately. “I think it’s much more like a cancer therapy,” [Kevan Shokat](#), a pharmacologist at UC San Francisco, told me. In other words, it may be about selectively killing the human cells that have gone haywire. This opens up the possibility of many more drug targets in the host, but it also adds a challenge: It is much easier for a drug to distinguish between human and bacteria than between human and virus-hijacked human.

Antivirals are thus rarely “miracle cures” the way antibiotics can be against bacteria. Tamiflu, for instance, can shorten the duration of the flu by a day or two, but does not outright cure it. Antivirals for HIV and hepatitis C have to be taken in cocktails of two or three drugs at a time because the viruses can quickly mutate to become resistant. The good news about SARS-CoV-2, at least, is that it does not seem to mutate especially quickly for a virus. A number of different steps in the disease cycle could be lasting targets for a treatment.

Stop the Virus from Getting into a Cell

Let’s begin where the virus starts, which is by tricking its way into a host. SARS-CoV-2 is covered in lollipop-shaped “spike” proteins, whose tips can bind to a receptor found in some human cells called ACE2. These spikes are what give coronaviruses—the group of related viruses that includes SARS-CoV-2 as well MERS and SARS—their name, because they create a crown- or corona-like appearance. The three coronaviruses are similar enough in their spike proteins that scientists are repurposing strategies from SARS and MERS to fight SARS-CoV-2. The vaccine from Moderna, for example, was able to start clinical trials so quickly in March because it is based on previous research into MERS’s spike protein.

The spike protein is also the focus of antibody therapy, which is likely faster to create than a new pill because it harnesses the power of the human immune system. The immune system makes proteins called antibodies to neutralize foreign proteins, such as those from a virus. Several hospitals around the country are trying to infuse antibody-rich plasma from COVID-19 survivors into patients. Currently, research groups as well as biotech companies are also screening the survivor plasma to identify antibodies that can be manufactured en masse in a factory. Spike proteins are a logical target for antibodies because the proteins are so plentiful on the outside of the virus. And again, the similarities between SARS-CoV-2 and SARS helps. “It looked enough like SARS that we had a bit of a head start,” says Amy Jenkins, a program manager at the Defense Advanced Research Projects Agency, the Pentagon’s blue-sky research arm, which is funding four different groups working on antibody therapy against the new virus.

But simply attaching its spike protein to a receptor is not enough for SARS-CoV-2 to gain entry into a cell. In fact, the spike protein is not active until it is cut in two. The virus takes advantage of another human enzyme—such as furin or the inelegantly named TMPRSS2—which can



unwittingly come along and activate the spike protein. Several candidate drugs are meant to prevent these enzymes from unknowingly doing the virus's work. One possible mechanism for the much-hyped hydroxychloroquine, the malaria drug Trump is fixated on, may be inhibiting this spike-activation process.

Once the spike protein is activated, SARS-CoV-2 fuses itself with the membrane of the host cell. It injects its genome, and it's in.

Stop the Virus from Replicating

To a human cell, a naked SARS-CoV-2 genome looks like a specific type of RNA, a molecule that normally functions as instructions for making new proteins. So like a soldier who has gotten new orders, the human cell dutifully begins churning out viral proteins to make more viruses.

Replication is a relatively complicated step, which makes it a ripe target for antivirals. "There's many, many proteins involved ... there's many potential targets," says Melanie Ott, a virologist at the Gladstone Institutes and UCSF. For example, remdesivir, an experimental antiviral that is in clinical trials for COVID-19, targets the viral protein that copies the RNA, so the genome-copying step goes awry. Other viral proteins called proteases are necessary to free individual viral proteins that are linked together in one long strand, so they can go off and help the virus replicate as well. And still other proteins might help remodel the internal membranes of the human cell, creating bubbles of membrane that get turned into little virus factories. "The replication machinery sits on these membranes, and then it just starts making tons of viral RNA over and over and over again," Matthew Frieman, a virologist at the University of Maryland School of Medicine, told me.

In addition to proteins that help it replicate and the spike proteins that make up a portion of the virus's outer capsule, SARS-CoV-2 has a set of relatively mysterious "accessory proteins" that are unique to this virus. Figuring out what these accessory proteins are doing, Frieman said, could help scientists figure out other ways SARS-CoV-2 interacts with the human cell. These accessory proteins might allow the virus to evade the human cell's natural antiviral defense in some way—another potential target for a drug. "If you can target that process," Frieman said, "you can help the cell inhibit the virus."

Stop the Immune System from Going Haywire

Antivirals are likely to work best early in an infection, when the virus has not infected many cells nor made too many copies of itself yet. "When you give antivirals too late, the risk is the immune component has already taken over," Ott says. In COVID-19 specifically, patients who become critically and fatally ill seem to experience what's known as a cytokine storm, in which the disease sets off an indiscriminate and runaway immune response. Perversely, cytokine storms can also further damage the lungs, sometimes permanently, by allowing fluid to build up in the tissue, says [Stephen Gottschalk](#), an immunologist at St. Jude Children's Research Hospital. Another way to treat COVID-19, then, is by treating the immune response, rather than the virus itself.

Cytokine storms are not unique to SARS-CoV-2 or even infectious diseases. They can happen in patients with a genetic disorder, an autoimmune disease, or a bone marrow transplant. Drugs for quelling the immune system in these patients are now being repurposed in clinical trials for COVID-19. Randy Cron, a rheumatologist at the University of Alabama, is planning a small trial for Anakinra, an immunosuppressant currently approved to treat rheumatoid arthritis. Other trials are repurposing yet other drugs on the market, such as tocilizumab and ruxolitinib, which were originally developed for arthritis and diseases of the bone marrow, respectively. Treating a viral infection by tamping down the immune system is especially tricky to balance, because the patient still needs to clear the virus.

Moreover, Cron says, the reports of COVID-19 patients suggest that the cytokine storm within this disease is unique, even compared to another respiratory disease like influenza. "This one really starts fast in the lungs," Cron says, but with less damage to other organs. Biomarkers of cytokine storms aren't as "screaming" high as they usually are, he adds, despite the high level of lung damage. COVID-19 and the virus that causes it are, after all, still incredibly new to science.

Much of the early research into drugs against COVID-19 has focused on repurposing existing drugs because they are the fastest way to get something to a patient in a hospital bed. Doctors

already know their side effects, and companies already know how to manufacture them. Unless researchers get very lucky, though, these repurposed drugs are unlikely to be a cure-all for COVID-19. Still, they might just work well enough to keep a mildly ill person from becoming severely ill, which is enough to free up a ventilator. “We can do better probably as time goes by,” says García-Sastre, “but right now we need something to start.”

(Sarah Zhang is a staff writer at The Atlantic)

<https://www.theatlantic.com/science/archive/2020/04/what-coronavirus-drug-will-look-like/609661/>

दैनिक जागरण

Thu, 09 April 2020

रूस में 29 जून से इंसानों पर होगा कोरोना वायरस के टीके का परीक्षण, जानें रिसर्च की रिपोर्ट

नई दिल्ली, लाइफस्टाइल डेस्क: कोरोना वायरस से अब तक 83 हजार से अधिक लोगों की मौत हो चुकी है। वहीं, 14 लाख से अधिक लोग संक्रमित हो चुके हैं। भारत में भी इस वायरस से 52 सौ लोग संक्रमित हो चुके हैं। इस बीच रूस से कोरोना वायरस के वैक्सीन को लेकर अच्छी खबर आ रही है। रूस के एक अनुसंधान केंद्र के प्रमुख ने मंगलवार को एक वीडियो लिंक के जरिए राष्ट्रपति व्लादिमीर पुतिन को बताया कि उनकी प्रयोगशाला जून में मानव पर कोरोना वायरस वैक्सीन का परीक्षण के लिए तैयार है।

स्टेट रिसर्च सेंटर ऑफ वायरोलॉजी एंड बायोटेक्नोलॉजी वेक्टर के प्रमुख रिनत मक्स्यूतोव ने कहा कि 29 जून को प्रयोगशाला में 180 वालंटियरों को तीन चरणों में वैक्सीन दिया जाएगा। इसके लिए 180 वालंटियरों को पहले से तैयार कर लिया गया है। इसके आगे मक्स्यूतोव ने पुतिन को कहा कि हमारे पास अब तक 300 से अधिक आवेदन आ चुके हैं। हमारे वैज्ञानिकों ने साइबेरियाई शहर नोवोसिबिर्स्क के कोल्टसोवो में स्थित शीर्ष-गुप्त प्रयोगशाला परिसर में कई प्रोटोटाइप वैक्सीन विकसित की है।

मक्स्यूतोव ने आगे जोड़ते हुए कहा कि फिलहाल प्रोटोटाइप वैक्सीन का परीक्षण चूहों, खरगोश और अन्य जीव जंतुओं पर किया जा रहा है और 30 अप्रैल तक आशाजनक परिणाम मिलने की पूरी संभावना है। वेक्टर केंद्र ने प्रोटोटाइप वैक्सीन का मानव पर परीक्षण करने से पहले प्री-क्लीनिकल रिसर्च की योजना बनाई है। इसके बाद ही इसका मानवों पर परीक्षण किया जाएगा। हालांकि, अगर स्वास्थ्य मंत्रालय से अनुमति मिल जाए तो मानवों पर प्रोटोटाइप वैक्सीन का परीक्षण मई में ही शुरू हो सकता है।

आपको बता दें कि वेक्टर वैक्सीन प्लेटफॉर्म तकनीकें हैं जो पहले ही मानव पर अन्य वैक्सीन की परीक्षण कर चुकी है और कोरोना वायरस के लिए भी इसका इस्तेमाल किया जा सकता है। वेक्टर प्रयोगशाला ने सोवियत काल में गुप्त जैविक हथियार अनुसंधान के साथ साथ इबोला और चेचक वायरस के वैक्सीन का भी भंडारण किया था।

<https://www.jagran.com/lifestyle/health-russia-will-do-first-coronavirus-vaccine-test-on-human-in-june-20175272.html>

जल्द ही आ सकता है कोरोना वायरस का टीका,

इस यूनिवर्सिटी के साथ शुरू हुआ रिसर्च

हैदराबाद, हेल्थ डेस्क: वैक्सीन बनाने वाली कंपनी इंडियन इम्यूनोलॉजिकल लिमिटेड (IIL) ने घोषणा की है कि वह COVID-19 महामारी पर काबू पाने के लिए एक वैक्सीन विकसित करने जा रही है। इसके लिए कंपनी ऑस्ट्रेलिया की ग्रिफिथ यूनिवर्सिटी के साथ मिल कर रिसर्च करेगी। इससे यह उम्मीद जगी है कि कोरोना वायरस का टीका जल्दी सामने आ सकता है। कोरोना वायरस से दुनिया के ज्यादातर देश तबाह हैं। भारत में इससे अभी तक 4798 लोग संक्रमित हो चुके हैं और मरने वालों की संख्या 124 हो गई है।

रिसर्च के लिए किया समझौता

कंपनी ने एक बयान जारी कर कहा है कि ऑस्ट्रेलिया की ग्रिफिथ यूनिवर्सिटी से कोरोना वायरस का वैक्सीन विकसित करने के लिए समझौता किया गया है। यूनिवर्सिटी के साइंटिस्ट्स के साथ मिल कर कोरोना का वैक्सीन बनाने के लिए रिसर्च जाएगा। आईआईएल के एमडी डॉ. के.के. आनंद कुमार ने कहा कि कंपनी इस रिसर्च में शामिल होकर सार्वजनिक स्वास्थ्य संबंधी जरूरतों को पूरा करने के लिए प्रतिबद्ध है। उन्होंने कहा कि आईआईएल का मकसद वैक्सीन को विकसित करने के साथ उसकी सप्लाय भी करना है।

नई तकनीक का होगा इस्तेमाल

कंपनी ने कहा है कि कोरोना वायरस का टीका विकसित करने के लिए आईआईएल और ग्रिफिथ यूनिवर्सिटी के वैज्ञानिक नई तकनीक का इस्तेमाल करेंगे। वे कोडन डे-ऑप्टिमाइजेशन तकनीक का इस्तेमाल करके एक लाइव अटैच्ड 'सार्स-सीओवी-2 वैक्सीन' या सीओवीआईडी-19 वैक्सीन विकसित करेंगे।

कैसा होगा ये वैक्सीन

मेन्जिज हेल्थ इंस्टीट्यूट, क्लीन्सलैंड में प्रोफेसर सुरेश महालिंगम ने कहा कि ग्रिफिथ यूनिवर्सिटी के सहयोग से विकसित किया जाने वाला यह वैक्सीन लंबे समय तक असरदार साबित होगा। यह सिंगल डोज वाला वैक्सीन होगा जो कोरोना वायरस से सेल्युलर और एंटीबॉडी इम्युनिटी को विकसित करने में सक्षम साबित हो सकेगा।

वेरो सेल प्लेटफॉर्म तकनीक से बनेगा टीका

कंपनी ने बयान में कहा है कि जल्दी ही इस वैक्सीन के सामने आने की उम्मीद है। इसके लिए लाइसेंस हासिल कर प्रशासन के सहयोग से सिंगल डोज वैक्सीनेशन का अभियान चलाना होगा। कंपनी के एमडी डॉ. के.के. आनंद कुमार ने कहा कि बड़े पैमाने पर इसके उत्पादन के लिए कंपनी वेरो सेल प्लेटफॉर्म तकनीक का इस्तेमाल करेगी।

<https://hindi.asianetnews.com/health-capsule/corona-virus-vaccine-may-come-soon-research-started-with-this-university-mja-q8gjpjv>