

2020

# समाचार पत्रों से चयित अंश Newspapers Clippings

A Daily service to keep DRDO Fraternity abreast with DRDO Technologies, Defence Technologies, Defence Policies, International Relations and Science & Technology

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## अमरउजाला

Fri, 17 April 2020

### कोरोना से जंग: डीआरडीओ ने पीपीई जांच केंद्र को ग्वालियर से दिल्ली किया स्थानांतरित

नई दिल्ली: देश की प्रमुख रक्षा उपक्रम, रक्षा अनुसंधान एवं विकास संगठन (डीआरडीओ) ने कोरोना महामारी के उपचार में जुटे डॉक्टरों तथा अन्य स्वास्थ्यकर्मियों के लिए जरूरी व्यक्तिगत सुरक्षा उपकरण(पीपीई) को समय पर और तेजी से उपलब्ध कराने के लिए अपने जांच केंद्र को ग्वालियर से दिल्ली स्थानांतरित कर दिया है।

डीआरडीओ ने आज कहा कि पीपीई किट की तेजी से उपलब्धता सुनिश्चित करने के लिए उसने ग्वालियर स्थित अपने जांच केंद्र (डीआरडीई) को दिल्ली स्थित इंस्टीट्यूट ऑफ न्यूक्लियर मेडिसिन एंड एलाइड साइंस (इनमास) में स्थानांतरित कर दिया है। इस केंद्र को पीपीई की जांच के लिए पूरी तरह तैयार कर दिया गया है और 10 बैच से भी अधिक वस्तुओं की इस प्रयोगशाला में जांच भी की जा चुकी है।



लैब(फाइल फोटो) - फोटो : ANI

इनमास बॉडी सूट और मास्क के परीक्षण और मूल्यांकन के लिए भी यह पूरी तरह उपयुक्त है। मंत्रालय के अनुसार इन वस्तुओं के 50 से अधिक बैचों को पहले ही इस प्रयोगशाला में परीक्षण किया जा चुका है।

बता दें कि डीआरडीई (ग्वालियर) जैविक और रासायनिक एजेंटों के खिलाफ पहचान और संरक्षण प्रौद्योगिकियों को विकसित करने में माहिर है। बयान में कहा गया है कि ग्वालियर प्रयोगशाला अब सिर्फ एचएलएल हेल्थकेयर लिमिटेड को विदेशों से प्राप्त मास्क का परीक्षण करेगी।

डीआरडीओ की परीक्षण प्रक्रियाओं से परिचित एक वरिष्ठ अधिकारी ने कहा कि पीपीई किट पर परीक्षण आयोजित करना एक चुनौती भरा काम है और इसमें त्रुटि के लिए कोई जगह नहीं हो सकती है क्योंकि यह स्वास्थ्यकर्मी की सुरक्षा के बारे में है।

<https://www.amarujala.com/india-news/drdo-moves-testing-center-of-ppe-from-gwalior-to-delhi>

## DRDO to test PPE at Delhi facility now

By Rahul Singh

New Delhi: The Defence Research and Development Organisation (DRDO) has shifted a key testing facility for carrying out quality checks on personal protective equipment (PPE) from Gwalior to New Delhi to cut down delays and ensure faster delivery of the safety gear to healthcare workers battling Covid-19, the defence ministry said in a statement on Thursday.

At a time when the country is facing a shortage of PPE kits, the testing facility has been shifted from Gwalior-based Defence Research Development Establishment (DRDE) to the Delhi-based Institute of Nuclear Medicine & Allied Sciences (INMAS).

“The facility at INMAS is fully operational for testing and evaluation of body suits and masks. More than 50 batches of these items have already been tested at the laboratory,” the ministry said.

The DRDE specialises in developing detection and protection technologies against biological and chemical agents. The statement said the Gwalior laboratory will now test only masks received by HLL Healthcare Limited from foreign countries before they are distributed to various agencies.



PPE kits are sent to DRDO for testing by HLL Lifecare, which is the government's nodal agency for medical procurement.(ANI file photo)

PPE kits are sent to DRDO for testing by HLL Lifecare, which is the government's nodal agency for medical procurement. The kits are distributed to various agencies only after they pass stringent quality tests. A PPE kit contains a full-body suit, masks, goggles, gloves, and shoe covers.

Conducting tests on PPE kits is a challenging task and there can be no room for error as it's about the safety of healthcare workers, said a senior official familiar with the DRDO's testing procedures.

“Our procedure is quite elaborate and includes synthetic blood penetration test and pressure testing at various levels to ensure that the suits can provide protection to the wearers. In testing, we look for the weakest link which is usually the seams. The safety of healthcare workers is crucial in the fight against coronavirus,” he said. Pressure testing of PPE suits is done at six different levels.

Another official said that the DRDO does not certify samples received from HLL Lifecare for testing as “passed” or “failed”. “We only list out the technical parameters of the PPE kits and send it back to HLL Lifecare Limited. After that, it is for them to decide,” he said.

The DRDO is among the several government agencies that have been at the forefront of the fight against the coronavirus disease. It has developed several products to combat the pandemic including ventilators, PPE kits, large area sanitization solutions and Covid-19 sample collection kiosks.

<https://www.hindustantimes.com/india-news/drdo-to-test-ppe-at-delhi-facility-now/story-dViPqLx4yNGgak8scyDBcK.html>



## Indian companies dazzle the world with anti-Covid products

By M Ramesh

Chennai: China gives virus, India gives the cure' goes a nationalistic riff doing the rounds on social media – a reference to demand for made-in-India hydrochloroquine (HCQ) from several countries, including the US and Pakistan.

Well, the wisecrack might just as well be spoken a bit louder, because the global demand is not only for HCQ but a bouquet of other counter-Covid-19 products as well.

**Soaring Demand:** From face shields to masks to PPE products to isolation chambers, the world is knocking at the doors of Indian companies for supplies. Oddly enough, the companies that are making these products have got into this business only weeks, if not days, ago.

For example, a Belgaum-based company called Vega Aviation has been in the business of making products such as packing cases, wastebins, mobile toilets, security cabins and home food delivery boxes with fibre-reinforced polymers and composites.

With technology from the Defence Research and Development Organisation (DRDO), the company has just begun manufacturing kiosks for sample collection from Covid-19 suspects. These kiosks are small chambers, like telephone booths, where the patient is inside but the doctor (or the clinician) is outside. The doctor collects blood samples by putting his hands in through fixed rubber gloves. One such kiosk costs about ₹1 lakh. Vega has the capacity to manufacture ten a day. Its Director Suhas Chandak says the idea is to ramp up production to at least 25 a day.

As soon as the market learned Vega was going to make these products, Chandak started getting calls from representatives of companies based in the US and West Asia, placing orders for the product. An overwhelmed Chandak told *BusinessLine* that Vega was thinking of increasing capacity to 60 a day. "But my priority is India," he said.

**Isolation Chambers:** Pune-based Raksha Polycoats also got into anti-Covid-19 business very recently. The company has been making various products for Defence and ISRO, but has just begun making isolation chambers for Covid-19 patients. Raksha Polycoats has capacity to make 500 shelters a month.

The company's Managing Director, Abhijit Sarkar, told *BusinessLine* that he had received several enquiries from abroad.

A Hyderabad-based company called iMake, which is into rapid prototyping and 3D printing, also said it was getting enquiries from US companies for 'full face shields'.

Mayank Dwivedi, Director, Directorate of Industry Interface and Technology Management, DRDO, told *BusinessLine* that these products would have a large and sustained demand from abroad even after the Covid-19 episode ends.

**Ventilators:** Asked if ventilators could be exported too, Dwivedi said DRDO, working with its industry partners, had developed various components for ventilators. For the immediate needs of the country, 30,000 units will be manufactured by Bharat Electronics Ltd.

Transfer of technology for other companies will happen later, because unlike for other products such as face shields, sanitizers and isolation chambers, ventilators is an extremely hi-tech item. Transfer of this technology is a longer process and it would be done in course of time. If there is overseas demand for ventilators, Indian industry will have a play.

<https://www.thehindubusinessline.com/news/indian-companies-dazzle-the-world-with-anti-covid-products/article31362385.ece#>

## Defence research body moves facility to Delhi for faster delivery of Covid kits

*Officials said the move has been made to overcome delays and ensure swift delivery of personal protective equipment and face masks*

New Delhi: The Defence Research and Development Organisation (DRDO) has shifted its testing facility from Gwalior to the national capital to ensure the swift delivery of personal protective equipment (PPE), officials said on Thursday.

The DRDO has shifted its testing facility from the Defence Research Development Establishment (DRDE) in Gwalior to the Institute of Nuclear Medicine & Allied Sciences (INMAS) in Delhi, they said.

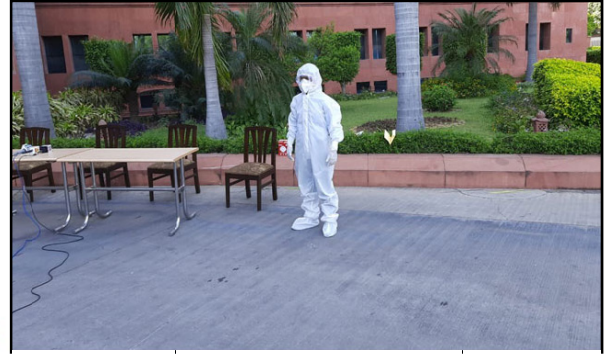
The INMAS is a premier life science laboratory of the DRDO.

"The facility at INMAS is fully operational for testing and evaluation of body suits and masks. More than 10 batches of these items have already been tested at the laboratory," the DRDO said in a statement.

Officials said the move has been made to overcome delays and ensure swift delivery of personal protective equipment and face masks.

The DRDE, Gwalior which has been at the forefront of India's fight against the highly contagious coronavirus, has now been tasked to confirm the label claims of masks and body suits received by the government-owned HLL Lifecare Limited from foreign countries, before they are distributed to various agencies, the statement said.

<https://www.ndtv.com/india-news/defence-research-and-development-organisation-moves-facility-to-delhi-for-faster-delivery-of-covid-k-2213163>



DRDO is testing protection kits sent by HLL Lifecare (File)

ज्ञान प्रसार एवम् विस्तार

**अमर उजाला** वर्ष

## कोरोना से जंग: डीआरडीओ ने पीपीई जांच केंद्र को ग्वालियर से दिल्ली किया स्थानांतरित

देश की प्रमुख रक्षा उपक्रम, रक्षा अनुसंधान एवं विकास संगठन (डीआरडीओ) ने कोरोना महामारी के उपचार में जुटे डॉक्टरों तथा अन्य स्वास्थ्यकर्मियों के लिए जरूरी व्यक्तिगत सुरक्षा उपकरण(पीपीई) को समय पर और तेजी से उपलब्ध कराने के लिए अपने जांच केंद्र को ग्वालियर से दिल्ली स्थानांतरित कर दिया है।

डीआरडीओ ने आज कहा कि पीपीई किट की तेजी से उपलब्धता सुनिश्चित करने के लिए उसने ग्वालियर स्थित अपने जांच केंद्र (डीआरडीई) को दिल्ली स्थित इंस्टीट्यूट ऑफ न्यूक्लियर मेडिसिन एंड एलाइड साइंस (इनमास) में स्थानांतरित कर दिया है। इस केंद्र को पीपीई की जांच के लिए पूरी तरह तैयार कर दिया गया है और 10 बैच से भी अधिक वस्तुओं की इस प्रयोगशाला में जांच भी की जा चुकी है।

इनमास बॉडी सूट और मास्क के परीक्षण और मूल्यांकन के लिए भी यह पूरी तरह उपयुक्त है। मंत्रालय के अनुसार इन वस्तुओं के 50 से अधिक बैचों को पहले ही इस प्रयोगशाला में परीक्षण किया जा चुका है।

बता दें कि डीआरडीई (ग्वालियर) जैविक और रासायनिक एजेंटों के खिलाफ पहचान और संरक्षण प्रौद्योगिकियों को विकसित करने में माहिर है। बयान में कहा गया है कि ग्वालियर प्रयोगशाला अब सिर्फ एचएलएल हेल्थकेयर लिमिटेड को विदेशों से प्राप्त मास्क का परीक्षण करेगी।

डीआरडीओ की परीक्षण प्रक्रियाओं से परिचित एक वरिष्ठ अधिकारी ने कहा कि पीपीई किट पर परीक्षण आयोजित करना एक चुनौती भरा काम है और इसमें त्रुटि के लिए कोई जगह नहीं हो सकती है क्योंकि यह स्वास्थ्यकर्मी की सुरक्षा के बारे में है।

<https://www.amarujala.com/india-news/drdo-moves-testing-center-of-ppe-from-gwalior-to-delhi>

## नवभारत टाइम्स

Fri, 17 April 2020

### कोरोना: चीनी पीपीई किट टेस्ट में फेल, DRDO ने दिया जवाब

कोरोना वायरस की जांच (Coronavirus Test) के लिए चीन से मंगवाई गई पीपीई किट के टेस्ट में फेल होने पर डीआरडीओ (DRDO) ने जवाब दिया है। बता दें कि 5 अप्रैल तक भारत में चीन से करीब 1.70 लाख PPE किट की सप्लाई आई थी, जिसमें से 50,000 किट क्वालिटी टेस्ट में खरे नहीं उतरे थे। जानिए डीआरडीओ ने क्या कहा..

प्रियेश मिश्रा

#### हाइलाइट्स

- क्वालिटी टेस्ट में खरे नहीं उतरे चीनी पीपीई किट, डीआरडीओ की जांच में हुए फेल
- 5 अप्रैल तक भारत में चीन से करीब 1.70 लाख PPE किट की सप्लाई आई थी
- डीआरडीओ ने कहा- हमारी लैब केवल निर्धारित मानकों के अनुसार टेस्ट करती है

कोरोना वायरस की जांच के लिए चीन से मंगवाई गई पीपीई (व्यक्तिगत सुरक्षा उपकरण) किट के टेस्ट में फेल होने पर डीआरडीओ (डिफेंस रिसर्च एंड डेवलपमेंट ऑर्गनाइजेशन) ने जवाब दिया है। डीआरडीओ के एक अधिकारी ने कहा कि हम हिंदुस्तान लेटेक्स लिमिटेड या किसी अन्य विक्रेता द्वारा टेस्ट के लिए प्रदान की गई किट को पास या फेल नहीं करते हैं। हमारी लैब केवल निर्धारित मानकों के अनुसार टेस्ट करती है और संबंधित एजेंसियों को उसका फीडबैक प्रदान करती है।

बता दें कि 5 अप्रैल तक भारत में चीन से करीब 1.70 लाख PPE किट की सप्लाई आई थी, जिसमें से 50,000 किट क्वालिटी टेस्ट में खरे नहीं उतरे थे। सूत्र ने बताया, '30,000 और 10,000 PPE किट के दो छोटे कंसाइनमेंट्स भी टेस्ट में पास नहीं हो पाए।' इन उपकरणों की जांच डिफेंस रिसर्च एंड डेवलपमेंट ऑर्गनाइजेशन (DRDO) की ग्वालियर स्थित लैबोरेटरी में हुई थी।

#### पूरी दुनिया में चीन ने भेजे हैं घटिया PPE किट

जिस चीन से कोरोना वायरस दुनियाभर में फैला, अब वही मेडिकल सप्लाई के नाम पर दुनिया के साथ मजाक कर रहा है। यूरोपीय देशों समेत कई जगहों पर चीन ने इतने घटिया पीपीई किट भेजे हैं, जिन्हें पहना ही नहीं जा सकता। सोशल मीडिया पर ऐसे तमाम वीडियो वायरल हो रहे हैं जिसमें चीन के भेजे पीपीई किट पहनते ही फट जा रहे हैं।

मास्क के नाम पर भी चीन ने शर्मनाक हरकतें की हैं। बीते दिनों उसने अपने 'सदाबहार दोस्त' पाकिस्तान तक को अंडरवेअर से बने मास्क भेजे थे। अब भारत के साथ भी उसने ऐसा ही भद्दा मजाक किया है। हालांकि, किरकिरी के बाद चीन ने अपने यहां क्वालिटी चेक बढ़ाया है।



## दक्षिण कोरिया सहित अन्य देशों से भी मंगाई जाएगी टेस्टिंग किट

चीन के टेस्टिंग किट में खामी मिलने के बाद भारत जल्द ही दक्षिण कोरिया से कोरोना टेस्टिंग किट खरीदेगा। इसके अलावा भारतीय मिशनो ने यूके, मलेशिया, फ्रांस, जर्मनी, जापान और अमेरिका के विक्रेताओं से टेस्टिंग किट के लिए कोटेशन भी लिए हैं। भारतीय मिशन पीपीई किट के लिए प्रमुख एजेंसियों के साथ कोऑर्डिनेट कर रहे हैं। संभावना है कि भारत को जल्द ही भारी मात्रा में पीपीई किट मिलेगी।

<https://navbharattimes.indiatimes.com/india/chinese-ppe-kits-fail-in-tests-drdo-labs-carry-out-tests-covid-19-in-india/articleshow/75181778.cms>

# hindustantimes

Fri, 17 April 2020

## Firms rush to meet new PPE norms

**Recently, thousands of PPE items among the 170,000 donated by China — world's main supplier — failed the safety tests at the government-approved laboratories, two high-ranking officials confirmed to the Hindustan Times.**

**By Anonna Dutt**

New Delhi: The Bureau of Indian Standards' newly-released list of national specifications for coveralls or body-suits worn by Covid-19 healthcare workers has left some government approved manufacturers scrambling for material that would pass the new tests, even as government-approved laboratories rejected thousands of personal protective equipment (PPE) kits that were donated by China.

Recently, thousands of PPE items among the 170,000 donated by China — world's main supplier — failed the safety tests at the government-approved laboratories, two high-ranking officials confirmed to the Hindustan Times.

“Yes, some of the samples of PPE kits from the imported lot did fail the safety tests,” an official from the Defence Research and Development Organisation (DRDO) in Gwalior said. The kits, which arrived in India on April 5, were sent there for stipulated quality check.

“About a week ago, China realized after complaints that some of their PPE kits were faulty. So they listed 4-5 firms that were making quality kits. We are now ordering only from them. The number of dodgy kits were not too significant,” an official of the empowered group on imports confirmed.

PPE kits include coveralls or full body suits, gloves, masks, head-cover respirators, goggles or face shields, and foot covers, among other elements. According to SITRA, India domestically produces 50,000 PPE kits (coveralls) daily, at present. However, till the beginning of this week, India faced a shortage of 15 million units, according to union textile ministry officials. It is unclear how the BIS guidelines will impact the shortage.

In an effort to standardise the quality of PPE kits, the BIS on April 14 released a specification document that said that the material used for coveralls must be fluid-resistant as well as virus-resistant. So far, the manufacturers have been making coveralls that are only fluid-resistant as per the guidelines laid down by the union health ministry in an 11-page document on March 24.



PPE kits include coveralls or full body suits, gloves, masks, head-cover respirators, goggles or face shields, and foot covers, among other elements.(Amal KS/HT PHOTO)



However, on Thursday, the list was taken down from the website of the BIS leading to speculation on whether the guidelines would undergo further revision.

“We were initially about to start our production with fluid-resistant materials, but we stopped even before we began because there were talks of viral-barrier suits. Now the challenge is availability of the raw material and the taping machines,” said Dr GSK Velu, chairman and managing director, Trivitron Group, one of the 81 manufacturers approved by SITRA.

“India does not have materials to make viral barrier suits. Instead, most companies are now laminating the coverall material and looking at sealing the seams to make the suits fluid and viral resistant. However, this is like wearing a raincoat in a non-AC ward, you can imagine the discomfort,” said Dr Ghanshyam Das Agarwal, chief managing director of G Surgiwear, a company that is looking to make products that are of certification level.

“The higher standard specifications released by the BIS are in a developing stage. Our feedback has already been sent through the official channels, so I cannot comment. But, it is likely that the specifications will be changed,” said Vijaya Shankara from Shree Hari Healthcare, an approved manufacturer.

According to Velu, while his company has been able to source material for viral-barrier body suits, and the manufacturing has begun, it will take at least a week for the kits to reach the market as the product will need to undergo certification.

Rajiv Nath, founder and forum coordinator of the Association of Indian Medical Device Industry (AiMeD) said that rather than import PPE kits, the government should import raw material, and other such critical material that’s missing in manufacturers’ supply chains.

“It is better to import critical missing raw material fabric for PPE that’s breathable and yet is fluid and viral resistant, rather than importing plane loads of PPE Kits,” Nath said.

“Breathability should be a bigger concern. Government should instead allow suits made of GSM 50 non-woven material, which will not pass the current test but are breathable and can provide 95 to 98% protection,” Agarwal added.

“It is good that there is a national standard now, we have been procuring the PPE kits locally and there are several that do not match the health ministry standards. If all the kits already come certified from the government then we will not have to worry about the quality,” a doctor treating Covid-19 patients in New Delhi’s Lok Nayak hospital, who did not wish to divulge his identity, said.

The issue of sub-standard PPE kits has been raised in multiple states. On Thursday, for instance, the director general of medical education (DGME) in Uttar Pradesh wrote a letter to medical colleges warning them against using substandard kits, after several complaints emerged from different Covid-19 hospitals. The kits were supplied by the Uttar Pradesh Medical Supply Corporation Limited.

“If you receive any sub-standard PPE kit or other medical items, do not use them. Return them straight away. Purchase good quality items from other sources and inform the DGME office about it,” Dr KK Gupta’s letter stated.

There are at least seven government designated private and public laboratories to check different items of PPE kits, including the DRDO and Coimbatore-based South India Textile Research Association (SITRA).

SITRA conducts checks for synthetic blood penetration (if blood will seep through the fabric), moisture vapour transmission (whether the fabric will allow moisture to pass between layers), weight test (grams per sq metre or GSM of the fabric), seam test and fabric strength.

A SITRA official told Hindustan Times that their laboratory also has the capacity to conduct dry and wet virus resistant tests on the fabric, but it was not carrying them out because there were no such directives from the government till now.

Other government approved testing laboratories include Trustin Analytical Solutions in Chennai that tests gloves, Chennai-based SGS India Private Limited that tests gloves, plastic-based

products, protective clothing and respirators, the Rubber Research Institute of India, which tests rubber-based materials, and the Heavy Vehicles factory, and the Small Arms factory.

(With inputs from Amrita Madhukalya and Gaurav Saigal)

<https://www.hindustantimes.com/india-news/firms-rush-to-meet-new-ppe-norms/story-reb7yr2XuepWeUXF4DJBNI.html>

*The Indian* **EXPRESS**

Fri, 17 April 2020

## Ahmedabad's textile firm helping DRDO make 5 lakh N99 masks

***ATIRA's nanotechnology department is developing and providing the filter cloth to DRDO in order to make masks that will be used by AIIMS, health ministry and defence organisations***

Ahmedabad: The Ahmedabad Textile Industry's Research Association (ATIRA) is helping the Defence Research and Development Organisation (DRDO) prepare around 5 lakh N99 masks approved by the World Health Organisation (WHO).

ATIRA's nanotechnology department is developing and providing the filter cloth to DRDO in order to make masks that will be used by AIIMS, health ministry and defence organisations. So far, cloth for 3,85,000 masks has been supplied by ATIRA to DRDO.

ATIRA Deputy Director Deepali Plawat said that being a research organisation, converting ATIRA into a production unit was a challenge, which was successfully undertaken by the technical team of 15 members, including scientific officer, researcher and production unit experts, from the nanotechnology department.

Initially, cloth for 10,000 N99 masks was developed daily, which has now been increased to 15,000. Plawat added that due to lockdown there was difficulty in procuring the raw material but with the help of state government, GNFC and GSFC, the raw material was procured from within the state.

"Polyamide 6, a type of nylon is used in making the filter. For this, granules were required to be procured from Germany. With the help of the ministry of civil aviation and foreign ministry, 4 tonnes of granules were flown in by a passenger plane from a private firm in Germany that provided the granules free of cost," she said.

With a filtration capacity of 99.99% the N99 mask is prepared using coated fibre. It has total five layers where between three normal layers lies the filtered layers.

<https://indianexpress.com/article/coronavirus/ahmedabad-textile-company-drdo-n99-masks-coronavirus-covid-19-6365944/>



Initially, cloth for 10,000 N99 masks was developed daily, which has now been increased to 15,000. (File Photo)

## ATIRA making medium for N99 masks

Ahmedabad: Ahmedabad Textile Industry's Research Association (ATIRA) has developed a special nano-coated medium that helps filter out any known virus prevalent in the world and can be used in making N-99 masks. While the novel coronavirus is of the size of 5 microns, the nano-coated medium can help filter particulate matter of up to 0.2 microns, according to ATIRA scientists. At present, the filtration medium is supplied to at least four manufacturers of masks and personal protective gear in Ahmedabad.

“Amid the lockdown, ATIRA is operating the machines in two shifts to produce the nano-coated medium, which is a material that can filter particles of up to 0.2 microns and therefore, it will be useful for frontline workers and other citizens, amid the ongoing fight against the Covid-19 pandemic. The machine has a capacity of producing some 400 metre of the material over an 8-hour shift on the nano-electro spinning machine,” said R M Sankar, assistant director, ATIRA.



“This material is being supplied to manufacturers of PPE and masks. Basically, the nano-coated medium is supposed to be kept between two layers of the mask and it will give adequate protection those who wear it,” he explained further.

In the past, masks made using similar medium has been supplied by ATIRA to Ahmedabad city police and to the Ahmedabad Municipal Corporation for traffic police as well as sanitation workers. This was primarily done to protect them from air pollution, particularly, PM2.5 particles.

The filtration medium has been tested at the Centre of Excellence of Medical Textiles at South India Textile Research Association (SITRA) in Coimbatore and also at Nelson Laboratory, USA.

The medium has been developed jointly by ATIRA and DRDO. ATIRA has so far provided material enough to produce 3.85 lakh N99 masks to the DRDO so far.

The production capacity has now been increased from material for 10,000 masks to 15,000 masks on a daily basis, at ATIRA.

<https://timesofindia.indiatimes.com/city/ahmedabad/atira-making-medium-for-n99-masks/articleshow/75190415.cms>

THE FINANCIAL EXPRESS

## Indian Railways steps Covid-19 fight with 30,000 coveralls for health workers in April; 1 lakh in May

*According to the Railway Ministry, the national transporter will manufacture over 30,000 such coveralls in April 2020*

*By Devanjana Nag*

Indian Railways units make coveralls to fight Coronavirus! The production units, workshops and field units of Indian Railways have started producing Personal Protective Equipment (PPE) coveralls to fight against COVID-19 pandemic. These coveralls will be used for medical and health-care personnel who get directly exposed to the novel Coronavirus infection when working amongst infected patients. According to the Railway Ministry, the national transporter will



manufacture over 30,000 such coveralls in April 2020. Besides, Indian Railways plans to produce as many as 1,00,000 coveralls in May 2020 in a mission mode. The ministry also informed that the prescribed tests have already been cleared by the prototype coveralls with the highest grades at the authorized DRDO laboratory at Gwalior.

As the medical staff of Indian Railways, as well as other health workers and care-givers, are working tirelessly fighting the novel Coronavirus, they are directly exposed to the COVID-19 infection when working amongst



infected patients. Therefore, they need to be provided with a special type of impervious coverall that can guard against the virus and other disease-carrying fluids. Since such coveralls can be used only once they are needed in large numbers.

Indian Railways plans to produce as many as 1,00,000 coveralls in May 2020 in a mission mode.

To fulfill the requirement of PPEs, the Northern Railways' Jagadhari Workshop had taken the initiative to design as well as produce a prototype PPE coverall. In the current month of April 2020, the national transporter has been able to procure as well as distribute sufficient raw material to its workshops and other units for producing over 30,000 PPE coveralls.

According to the ministry, the production of coveralls has been started and for another 1,00,000 coveralls in the month of May 2020, sourcing of appropriate raw material has been started as well. The Railway Ministry further claimed that all this has been done by the Production Units and Workshops of Indian Railways despite there being a shortage of raw materials and machinery for producing PPE coveralls.

<https://www.financialexpress.com/infrastructure/railways/indian-railways-steps-covid-19-fight-with-30000-coveralls-for-health-workers-in-april-1-lakh-in-may/1930169/>

**Outlook**  
THE FULLY LOADED MAGAZINE

ज्ञान प्रसार एवम् विस्तार  
Fri, 17 April 2020

## Covid-19: NFR plans to produce 2,000 PPEs in April

Guwahati: The Northeast Frontier Railway (NFR) has planned to make 2,000 sets of personal protective equipment this month to meet the growing demand for such coveralls for healthcare personnel who get directly exposed to the COVID-19 disease when working amongst infected patients, an official said on Thursday.

The NFR has already made about 150 sets of PPEs in its workshops as per the specification provided, he said.

Prototypes of PPEs have been made at the New Bongaigaon and Dibrugarh workshops of the NFR with the help of presently available infrastructure, CPRO Subhanan Chanda said.

These prototypes have been tested by medical professionals of the railway, he said.

"Nearly 150 sets of PPEs have already been made in the last 2-3 days, and NFR plans to make 2,000 such sets, out of 30,000 targeted by Indian Railways," the CPRO said.

The prototype coveralls have been approved with the highest grade at the authorised DRDO laboratory at Gwalior, he added.

The Railways' production facilities, workshops and field units across the country have also begun manufacturing of the PPEs to meet the target of 30,000 such coveralls in April, and it plans to make 1 lakh more in May.

Chanda said the Railways' doctors, nurses and health workers are working amongst infected patients and they are vulnerable to the infection.

He said they need to be provided with a special kind of impervious coveralls and these are required in very large numbers as each can be used only once, he said.

Meanwhile, Indian Railways has converted more than 5,000 of its passenger coaches into quarantine and isolation facilities within a very short period, he added.

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

<https://www.outlookindia.com/newscroll/covid19-nfr-plans-to-produce-2000-ppes-in-april/1804437>

## THE TIMES OF INDIA

Fri, 17 April 2020

### Northeast Frontier Railway plans to make 2,000 PPE sets in April

By Prabin Kalita

Guwahati: The Northeast Frontier Railway (NFR) has started making Personal Protective Equipment (PPE) for use by doctors and nurses attending to Covid-19 patients.

NF Railway chief PRO Subhanan Chanda said the NFR plans to make 2,000 sets of personal protective equipment this month.

"The NFR has made nearly 150 sets of PPEs in the last two to three days and we plan to make 2,000 such sets out of 30,000 targeted by the Indian Railways to meet the growing demand for such coveralls for healthcare personnel who get directly exposed to the Covid-19 when working amongst infected patients," he said.

"The prototypes of PPEs have been made at the New Bongaigaon and Dibrugarh workshops of the NFR with the help of presently available infrastructure and these prototypes have been tested by medical professionals of the railways. The prototype coveralls have been approved with the highest grade at the authorised DRDO laboratory at Gwalior," he added.

The Indian Railways' production facilities, workshops and field units across the country have also begun manufacturing PPEs to meet the target of 30,000 such coveralls in April. It plans to make 1 lakh more in May.

Chanda said doctors, nurses and health workers of the Railways are working among infected patients and they are vulnerable to the infection.

<https://timesofindia.indiatimes.com/city/guwahati/northeast-frontier-railway-plans-to-make-2000-ppe-sets-in-april/articleshow/75191220.cms>



Figure 1 As coronavirus spreads across India, its time to mask up and stay safe (Image courtesy: maskindia.com)

## Start-up set for mass production of N95 masks

*Product clears all mandatory tests*

*By M.P. Praveen*

A Kochi-based company, working with the Kerala Startup Mission (KSUM) and Maker Village, is determined to turn the shortage of N95 masks, the most common particulate-filtering facepiece respirator across the world, felt during the fight against COVID-19 being the last such episode.

“The product has cleared all eight tests, including those prescribed by the National Institute for Occupational Safety and Health (NIOSH). Of them, five were conducted at the South India Textile Research Association and three at a major mask manufacturing company. The approval of the Union government alone is pending for which the product has been sent to the DRDO lab at Gwalior for clearance from the Indian Council of Medical Research,” said Saji Gopinath, Chief Executive Officer, KSUM. In fact, production can be started once government approval is obtained in which case it will be the third such company in the country to produce N95 masks. The startup has the capacity to churn out 5,000 to 10,000 masks a day and has already stockpiled raw materials for manufacturing over 2 lakh masks, Mr. Gopinath added.

### Quality Parameters

In all the eight tests, the product exceeded the quality parameters of N95 and nearly matched the standards of N99 masks.

According to N95 specifications, bacterial filtration needs to be at least 95%, whereas it was 99.70% for the product. Particulate matter filtrate was 99.91% as against the standard of 95%.

<https://www.thehindu.com/news/cities/Kochi/start-up-set-for-mass-production-of-n95-masks/article31360656.ece>

**DRDO Technology**



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Fri, 17 April 2020

## HAL AMCA: Is India now able to develop it's fifth generation fighter jet?

India, a country who recently developed its own first indigenous fighter (LCA TEJAS) which is single engine, single seat and multi role fighter jet. But till India is not able to build its own engine which is the main power house for any Fighter jet but India is developing it at a very fast rate.

Does it sound realistic that a country who made it's first jet recently after a long struggle, now he is thinking that he can make a fifth generation fighter which is capable to cope with fighter jets of countries like USA (only country who have its own fifth generation fighter jet in operational state).

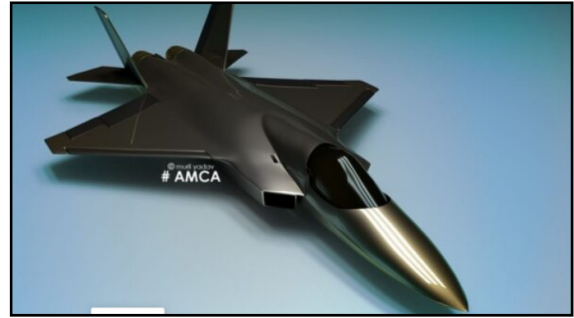
Yes, India has many plans to do for its military from its plan one is to develop a fifth generation fighter jet for its Air-force. Govt. Promoting Indian defense player to come up and make good quality products so that countries need for defense would be fulfilled at domestic level as well as



govt. Aims to become a export player in defense manufacturing that's they backing defense manufacturer in India.

### **Lets come to point on Hal AMCA**

In 2008, IAF asked ADA to prepare a detailed report on fighter which is of 20 ton and have some stealth feature. Air-force chief asked this because of India's Air-force fleet aging and to remain and balance the power in the region India need a strong Air-force.



But in 2010 requirements were changed by Air-force now they want 25 ton stealth fighter jet and they also asked ADA is AMCA's first prototype flight can take off by 2025?

After the completion of study ADA found that they need at-least 9000 crore for this project in which different technologies are developed and at-least seven prototype be prepared, they submitted this to Govt.

In 2012 final design is approved by Air-force, after that HAL and ADA are working on this project with their full speed. ADA said that they will make first prototype by 2022, hope this statement by ADA will become true.

AMCA is designed by ADA and manufactured by HAL. AMCA will be a single seat, Twin engine, stealth multi-role fighter jet. First stage of AMCA is done and stage two works is started. It's first flight is scheduled in 2025. Not only Air-force but Navy also interested in this project, because navy also want a Naval version of this Fighter. Navy also invested in this project.

It is supposed that it will consist of all modern weapons and modern avionics, some of them are under development and remaining taken from tejas, Rafale, Su-30mki and other modern fighter jets. Speed of AMCA will be 2,655 km/h and this fighter jet will be powered by Kaveri engine which is under development stage. AMCA also consists of modern sensors, Radars, Missiles which will be a mix of Israel, India, Russia, France and some other technologies from India's friendly countries too.

The broad requirements outlined for the AMCA are to incorporate a high degree of stealth, a high internal and external weapons payload, high internal fuel capacity, and the ability to swing from an air-to-air role to air-to-ground. It is also expected to have the ability to super cruise. This allows the aircraft to travel at supersonic speeds with greater endurance as the afterburners do not have to be used with the additional fuel usage.

Even though future air combat has been envisaged as being beyond visual range excluding the likelihood of aerial dogfights as before, the AMCA is expected to sport a thrust vectoring engine. The ADA is designed the AMCA as a platform with high survivability, to meet the challenges of future air defense environments through a combination of moderate stealth, electronic warfare capability, sensors and kinetic performance. The design philosophy seeks to balance aerodynamics and stealth capabilities.

The aircraft will have a weight of 16-18 tons. 16-18 tons with 2-tons of internal weapons and 4-tons of internal fuel. Combat ceiling will be 15-km, max speed of 1.8-Mach at 11-km. The AMCA will be powered by 2 x 90KN engines with vectored nozzles.

AMCA also comes with self protection jammer system to jam enemy radar guided missiles from both air and ground. Electronic counter measure systems to confuse the infrared guided missiles and a radar warning receiver too added to detect enemy radar frequency's.

<https://www.defenceaviationpost.com/2020/04/hal-amca-is-india-now-able-to-develop-its-fifth-generation-fighter-jet/>



*Fri, 17 April 2020*

## **MWF Tejas: Why Tejas Mk2 (MWF) will be important**

With the Indian Air Force's (IAF's) MMRCA program getting serially delayed and recast more than once, there was a feeling in various quarters that the Tejas Mk2 design should perhaps evolve further than what was initially envisaged to provide an indigenous option for the IAF's requirements. Thus, the IAF and the Aeronautical Development Agency (ADA) sat down to redefine the Tejas Mk2 with more elaborate modifications such that it could function as a medium weight fighter for ground attack roles while continuing to be nimble in the air to air (A2A) role. In fact, the version of the Tejas Mk2 currently envisaged has been rebadged as the Medium Weight Fighter or (MWF) and is being designed as a replacement for the Mirage 2000 with a view to surpassing its capabilities in almost every respect

Tejas Mk2 also known as Medium Weight Fighter (MWF) looks very much similar to Tejas Mk1. However the main differences are prolonged fuselage. The overall length of Tejas Mk2 is 14.7 meter from increased from 13.2 meter in Tejas Mk1. While studying the aerodynamics and its constrains in Tejas Mk1, it was observed that it was unable to comply to Area ruling because of short length. So it was decided to take care of this concern of Tejas Mk1 by increasing



the length. Other aerodynamic issues such as elevating canopy, redesigning pylon, putting short range missile on wing tip etc is freezed in Mk2 design. All this will reduce aerodynamic drag and will improve transonic acceleration by a very good margin.

Mark-2 MWF will continue to have the legacy LCA-Tejas Mk1 and Mk1A design elements which will be powered by single F414-GE-INS6 engine supplied by General Electric which has already started to arrive in India from 2017 on wards. MWF will exceed the performance of Upgraded Mirage-2000 when Inducted into air force but actually will replace Mig-29 first. MWF will also be replacing Jaguar fighter-Bomber which are due to be retired from service from 2034 on wards

Development of MWF was convinced only in 2014-15 period and the whole platform was redesigned and the previous Mk-2 design concept which was just Mk1 air frame with 0.5m fuselage plug has been discarded to allow the platform to be classified as a Medium class aircraft. Since the 5th generation AMCA program was unofficially commissioned way before MWF was conceived, designers were able to feature in a lot of Radar cross-section (RCS) reduction measures in the air frame design to reduce electromagnetic and infrared signatures of the aircraft with use of carbon composite and thermoplastic composites at the frontal section of the aircraft to achieve better RCS reduction.

Another big issue which is addressed is increasing fuel capacity from 2.5 tons to 3.3 ton which will give it a big boost in ferry range and combat radios. Supersonic fuel tanks are also developed. It offers a big fuel capacity with minimum addition of drag. This will further add to range and mission capability to carry out operation in large geographical area.

### **Canard**

It is not only a betterment but was necessary. In fact, ADA had considered canard in LCA Tejas as one the short-selected design concepts in the 1980s. Later the idea was dropped because that was the first time India was developing a Flight Control System (FCS)- that too for a highly unstable

aircraft like Tejas; so adding canard i.e. an extra control surface would have increased the complexities and risk with no significant aerodynamic advantage relative to the complexity. Now that a robust FCS has been developed, adding canard is an incremental development challenge that ADA can handle.

The canard is 'close-coupled' (meaning it is located just above and forward of the wing)

A close-coupled has many positive aerodynamic effects like:

- i) It increases wing lift. For Delta wing design aircraft (like Tejas), close-coupled canard benefits even more- increases lift both in low speed flight and high (transonic) speed flight.
- ii) It creates better aerodynamic stability of wing vortices
- iii) It reduces wing-loading
- iv) It gives an extra control surfaces for pitch and roll control, and on the ground, as air-brakes.
- v) It reduces take-off distance.
- vi) A good area ruling that includes the canard helps to reduce various aerodynamic drag (wave drag, trim drag etc.) hence enhancing its performance.
- vii) Compensation for shift of CG with respect to CL (as said in 1st point)

### **Shealth**

At least Four RCS reduction measures will be incorporated in the air frame design so that " Semi Stealth " can be achieved with help from the use of fully internal electronic warfare system to defuse radar frequency (RF) and infrared (IR) threats while on the mission.

MWF will also get a stealth coating paint which has been developed specifically for the AMCA program but only at certain sections to manage absorption of all radar frequencies. Critical RCS reduction measures in the air frame will be

- 1) Wing and Canard edge alignment to reduce drag and also reduce friction heat and improve RF deflection,
- 2) Air intakes ducts will have twisted design so that engine blades can be carefully hidden inside the intake duct.
- 3) Radar-absorbent materials on the critical sections of the fuselage will be used 4) Sharp edges at front fuselage will also help reduce radar cross-section.

MWF fighter jet program will be replacing entire Mirage 2000, MiG-29 and Jaguar fighter fleet from Indian air force inventory of nearly 200 jets and since it will need to be operated in contested environments where stealth features will come in handy to improve the survivability of the platform and the pilot. MWF cannot be classified as a stealth aircraft but measures to reduce its RCS will ensure its survivability.

MWF will be getting new AESA Radar, on-board oxygen-generating system, Internal advanced electronic warfare (EW) suite, larger Multi-functional displays, the upgraded digital flight control computer (DFCC), Infra-Red Search and Track (IRST). Missile Approach warning system (MAWS) and Higher thrust engines which makes it distinctively class apart from the baseline LCA-Tejas fighter jets.

After building huge inventory of heavy category fighter like SU 30 MKI and developing light weight Tejas MK1, Entire focus of India is now centered on acquiring medium weight fighter like Rafale or other MMRCA. Tejas Mk2 is a surprising sweet option which has emerged for Indian air force.

<https://www.defenceaviationpost.com/2020/04/mwf-tejas-why-tejas-mk2-mwf-will-be-important/>



## Ordnance Factory Board's Tamil Nadu unit secures approval for manufacturing medical protection coveralls

Chennai (ANI): The Ordnance Factory Board's Tamil Nadu unit has secured approval for manufacturing Personal Protective Equipment (PPE required by the health professionals for protection from COVID-19.

The Small Heavy Vehicle Factory (HVF), Avadi, in Tamil Nadu was granted accreditation by the National Accreditation Board for Testing and Calibration (NABL) for manufacturing coveralls.

"We have succeeded in producing coveralls. We are basically meant to produce the garments for the armed forces but with the COVID-19 challenge that the country is facing, we have taken up this challenge under the guidance of Ordnance Factory Board," said Surjit Das, the General Manager of - Ordnance Clothing Factory of Avadi.

He also elaborated on how the employees at the factory have been working tirelessly to ensure that the country does not face a shortage of PPE.

"We have succeeded in manufacturing the first batch. All our employees who are staying in different parts of Chennai, all of them have come to the factory despite the absence of public transport," he said.

"The coveralls require a specialised way of stitching and sealing to ensure that the user doesn't get infected. And they have given their best to learn to stitch a new garment and adopt it in minimum time," Das further added.

The Avadi unit of OFB is manufacturing coveralls that include masks and glove and the products have been passed by the South India Textile Research Association (SITRA).

SITRA conducts tests and issues certificates for Personal Protective Equipment (PPE body coveralls. (ANI)

<https://www.aninews.in/news/national/general-news/ordnance-factory-boards-tamil-nadu-unit-secures-approval-for-manufacturing-medical-protection-coveralls20200416104453>



Fri, 17 April 2020

## Indian Army Chief General MM Naravane reinforces need to be prepared for meeting security challenges

*The Chief of Army Staff (COAS) accompanied by the Northern Army Commander Lt Gen YK Joshi and Chinar Corps Commander Lt Gen BS Raju visited the formations and units in the hinterland*  
*By Syed Khalid Hussain; Edited By Ananya Das*

Srinagar: Indian Army Chief General MM Naravane on Thursday, while interacting with jawans in Jammu and Kashmir, reinforced the need to be prepared to meet emerging security challenges effectively at all times. The Army Chief is on a two-day visit to Jammu and Kashmir to review the prevailing security situation.

The Chief of Army Staff (COAS) accompanied by the Northern Army Commander Lt Gen YK Joshi and Chinar Corps Commander Lt Gen BS Raju visited the formations and units in the hinterland.

During the interaction, the COAS highlighted that it was the dawn of a new era of development, peace and prosperity in Kashmir and applauded them for their high level of morale and motivation.



General Naravane extolled the close coordination among all government agencies towards maintaining vigil and peace in the valley and reaching out to the people wholeheartedly to combat the spread of the coronavirus COVID-19 pandemic together.

Later in the day, the COAS visited 92 Base Hospital, where he appreciated the excellent work and vital critical care being provided by the doctors and support staff of 92 Base Hospital. He commended them for being the lifeline of the Valley.

The Army chief was then briefed by the Chinar Corps Commander at Badami Bagh Cantonment on the overall situation pertaining to the Line of Control (LoC) and the hinterland. He also met members of the civil society later in the evening.

<https://zeenews.india.com/india/indian-army-chief-general-mm-naravane-reinforces-need-to-be-prepared-for-meeting-security-challenges-2276934.html>

## Special trains to move Army troops to sensitive northern, eastern command in lockdown

*The Army is also considering moving key appointments back to sensitive locations, with special permission to move by either road or special aircraft*

*By Amrita Nayak Dutta*

New Delhi: Two special military trains will run this week to meet Army's operational requirements at the northern and the eastern command amid the lockdown.

Sources told ThePrint that five trains had initially been requested to facilitate troop movement. They added that pan-India routes were being worked out based on the number of troops travelling from various locations.

Of the two trains sanctioned, one will begin operations from Friday and head to Jammu from Bengaluru. The train will run through Belgaum, Secunderabad and Ambala.



Contingent of the Indian Army showcase their skills on Army Day, in Delhi | Suraj Singh Bisht | ThePrint File Photo

The second train leaves Saturday from Bengaluru and will head to Guwahati through Belgaum, Secunderabad, Gopalpur, and Howrah and New Jalpaiguri Station in West Bengal.

Army sources said these two trains will enable decongestion of the Category A and B training establishments at Bengaluru, Belgaum, Secunderabad and Gopalpur as well as assist in operational preparedness of active formations deployed at the northern and eastern borders.

The defence service typically sees a constant movement of lakhs of troops across the country who are returning from or going on training or leave. The Army usually requests for military special trains when units move from one location to the other, either on deployment or training.

The Army is also considering moving key appointments back to sensitive locations, who would be given special permissions to travel either by road or special aircraft. Sources said the Army is also looking into charter flight options to move troops from Delhi and Chandigarh.

### When Lockdown Ends

At any given time, about 25 per cent of the 13 lakh-strong Indian Army is on staggered leave and thousands are on training, explained a senior Army officer. To manage the load on the transport infrastructure, reporting days vary, the officer added.

However, when the lockdown was announced on 24 March, all troop movement was suspended in view of the quickly spreading disease. When the lockdown is lifted, there will be a rush of troops reporting back to their bases.

“As the lockdown would be phased out, about two to two-and-a-half lakh troops on leave would be coming back to join their bases around the same time from across the country,” the senior officer said.

He said ensuring special trains for the troops will make sure other trains do not get overcrowded while also cutting down on the troops mingling with the crowd, and thus preventing any possible transmission, the officer added.

An earlier Army advisory stated that troops will report to their nearest military station in case transport is not available. The Army is now contemplating having troops screened and accordingly



quarantined before being deployed to their respective units to ensure the disease doesn't spread, said a second Army officer.

Only personnel due to rejoin units deployed in northern and eastern borders who have undergone mandatory quarantine period and are found medically fit will be accommodated on the special trains, sources said.

<https://theprint.in/defence/army-to-run-special-trains-to-move-troops-to-sensitive-northern-eastern-command-in-lockdown/402931/>

**INDIA  
TODAY**

*Fri, 17 April 2020*

## **Army releases guidelines for soldiers handling bodies of terrorists to avoid Covid-19 infection**

*The fresh guidelines released by the Army say that any personnel involved in handling corpses of infiltrators should wear proper protective gear and not come in contact with the bodies*

*By Abhishek Bhalla*

The Indian Army has ordered all personnel posted in forward areas to follow a specific standard operating procedure (SOP) while disposing of bodies of terrorists killed in encounters as they could be infected with Covid-19.

The step comes amid a flurry of intelligence inputs about people infected with Covid-19 entering India as infiltrators along with terrorists to spread the infection among the Indian Army soldiers.

The fresh guidelines released by the Army say that any personnel involved in handling corpses of infiltrators should wear proper protective gear and not come in contact with the bodies.

"The contact must be minimum while burying the bodies. Instructions have been passed on to all field locations in forward areas to take necessary precautions and wear protective gear while handling bodies," said an Army official.

Sources said that terror launchpads across the Line of Control are heavily packed and it is possible that those attempting infiltration may also carry the infection.

The move to put in place this SOP comes amid increased ceasefire violations and infiltration attempts along the LoC.

There has been a spike in the ceasefire violations and hostilities at the Line of Control despite the coronavirus scare. The number has already gone past 1,200 this year with the frequency picking up recently.

In January, there were 367 ceasefire violations, while in February the number was at 366. And as the pandemic hit India and Pakistan in March, the numbers swelled up to 411. This month, the tally has already crossed 60.

Last year, in April, the number of ceasefire violations was 919, and in 2018, it was 802. Also, in March 2019, the number was 267 and in 2018 for the same period, it was 201.



The move to put in place this SOP comes amid increased ceasefire violations and infiltration attempts along the LoC. (Representative photo: Reuters)

The number of ceasefire violations by Pakistan this year is much more than during the corresponding periods of 2019 and 2018.

Officials said that the increased ceasefire violations and infiltration attempts could also be a ploy to divert the attention of the Indian Army that is currently involved in relief measures during the pandemic.

Last week, the civilian population in Kupwara was targeted as Pakistan indulged in heavy.

<https://www.indiatoday.in/india/story/army-releases-guidelines-soldiers-handling-bodies-terrorists-avoid-covid-19-infection-1667560-2020-04-16>

# ThePrint

Fri, 17 April 2020

## Army of 50,000 ‘NCC corona warriors’ ready, being deployed across India

*NCC Director General, Lt Gen Rajeev Chopra, tells ThePrint that in the last 15 days, nearly 3,700 cadets have been deployed countrywide in 14 states*

*By Snehesh Alex Philip*

New Delhi: The National Cadet Corps (NCC) has created an army of 50,000 volunteers, who are being deployed across the country on the basis of requests from state governments to help in the fight against the coronavirus epidemic.

“The number of NCC corona warriors volunteers has reached 50,000 and more are joining in,” the Director General of the NCC, Lt Gen Rajeev Chopra, told ThePrint.

He said states such as Tamil Nadu, Gujarat, Maharashtra and Bihar had already deployed the NCC volunteers.

“We have got requests from Kerala and Odisha also now,” he said. “The states are seeing the advantage of employing the NCC cadets as it frees up their own staff for more work and hence the demand is increasing.”



The NCC cadets at a data control centre | Photo: NCC

ThePrint had reported on 2 April that the Narendra Modi government has decided to rope in NCC volunteers aged 18 or above, to help the Indian civil infrastructure.

The NCC, which operates under the Ministry of Defence, is the largest uniformed youth organisation in the country with an approximate strength of 14 lakhs.

But only senior division volunteer cadets above 18 years of age — boys and girls — are being used to help the civil administration.

Lt Gen Chopra said that within 15 days, 3,700 cadets have been deployed countrywide in 14 states, with the maximum in Gujarat where over 1,100 cadets are deployed for various duties.

### ‘Not being deployed for law and order’

The NCC chief said every step has been taken to ensure that the cadets are not exposed to the coronavirus and are not deployed for law and order duties.

“Safety of my cadets is of utmost importance. They are not being employed in areas that have been sealed or earmarked as hotspots by the state governments,” he said. “They are also not being employed for law and order duties.”

The officer added that the cadets are being deployed as a homogeneous group of at least eight and are accompanied by an NCC officer or instructor who can ensure that they are safe and deployed for the right work.

“The cadets have been employed by the administration for a host of duties including help in traffic management, queue management outside ATMs, banks,” he said.

Additionally, they are also being deployed for distribution of ration and cooked food.

“Basically we have identified that the cadets can be used in logistics and supply chain, manning of helplines and as data managers,” Lt Gen Chopra said.

He added the administration has realised that the deployment of NCC cadres helps them free up their own staff for more work in other fields.

#### **‘People react better to NCC cadets’**

Lt Gen Chopra said that authorities have discovered that people listen better and obey NCC cadets.

“At the end of the day, people connect with the NCC cadets because they see them as a reflection of their own children. The cadets are well mannered and speak well,” he said. “People realise that the cadets are volunteers and are not doing it because it is part of their job.”

The NCC chief said that more cadets are signing up to be corona warriors.

“Since education institutions have been shut, many students have gone back to their homes and away from the NCC Directorate they come under. And hence we have told them that they can volunteer at places they are in currently,” he said.

The NCC network is spread throughout the country, as its 17 directorates cover all the 28 states and eight union territories. These directorates are further divided into 96 groups and 825 units, thus ensuring availability of cadets to the district administration in all the states.

<https://theprint.in/india/army-of-50000-ncc-corona-warriors-ready-being-deployed-across-india/402781/>

THE ECONOMIC TIMES

Fri, 17 April 2020

## **Indian Army to strictly observe 'no movement' till April 19 due to coronavirus pandemic**

*In the Army headquarters, the wings handling military operations, military intelligence, operational logistics and strategic movement will carry out their functions with bare minimum staff strength till April 19, according to the order*

New Delhi: The Indian Army on Thursday issued a directive to all its military establishments, cantonments, formation headquarters and units, asking them to strictly ensure no movement of forces till April 19 in view of the extended lockdown to fight the coronavirus pandemic. India went under a total shutdown of 21 days from March 25 to April 14 to fight the coronavirus pandemic. On Tuesday, Prime Minister Narendra Modi announced extending the lockdown till May 3 but added that certain restrictions could be lifted from April 20.

In the Army headquarters, the wings handling military operations, military intelligence, operational logistics and strategic movement will carry out their functions with bare minimum staff strength till April 19, according to the order.

Within the command headquarters, wings handling manpower, logistics and operations will only function with skeletal staff. In Northern and Eastern commands, the intelligence branch will also function as usual.

"In view of the extension of lockdown, all military establishments, cantonments, formation headquarters and units will observe strict 'No Movement' till April 19," the order said.



It also mentioned that offices in Army headquarters, command headquarters and formation headquarters would start functioning with 50 per cent manpower from April 19 to May 3.

It said all training activities and temporary duties will remain suspended till May 3, adding directions on actions to be taken post the lockdown period will be issued on receipt of fresh orders from the government.

In its directive, the Army said personnel connected with providing essential services will be allowed to move and that the restrictions will not hinder any operational tasks of any formation or units.

All social, sports, entertainment, academic, cultural and religious gatherings as well as religious congregations and regimental events will have to be suspended till May 3, according to the order.

"Offices falling in 'hotspots or containment zones' will observe strict 'no movement' till they are denotified. Exceptions to be given will depend on the local military authority," the order said.

It said Directorate General Medical Services (Army) will continue functioning at full strength to provide a robust response to COVID-19.

All medical establishments and hospitals will continue functioning at full strength.

Last month, Army Chief Gen Manoj Mukund Naravane issued instructions to insulate the 13 lakh strong Army from the coronavirus pandemic.

Gen Naravane also conveyed to the families of the soldiers guarding India's borders with Pakistan and China that the Army is taking care of its personnel serving the country in this difficult time.

<https://economictimes.indiatimes.com/news/defence/indian-army-to-strictly-observe-no-movement-till-april-19-due-to-coronavirus-pandemic/articleshow/75181214.cms>

## Defence Strategic: National/International

THE  
NATIONAL  
INTEREST

ज्ञान प्रसार एवम् विस्तारम् *Fri, 17 April 2020*

# This war guaranteed that India would dominate South Asia

*And Pakistan has never been the same*

*By Michael Peck*

Here's what you need to Remember: Pakistan's humiliation in 1971 spurred it into developing an atomic bomb. With India also armed with atomic weapons, South Asia now lives under the shadow of nuclear war.

This is what happens when you chop a nation in half.

Before December 3, 1971, Pakistan was a country suffering from a split personality disorder. When British India became independent in 1947, the country was divided into Hindu India and Muslim Pakistan. The problem was that East Pakistan and West Pakistan were almost a thousand miles apart, and wedged in between them was archenemy India. Imagine if the United States only consisted of the East Coast and West Coast, and Russia controlled all of North America in between.

Thirteen days later, Pakistan had been amputated. Indian troops had conquered East Pakistan, which became the new nation of Bangladesh. More than ninety thousand Pakistani soldiers were

taken prisoner, half the Pakistani Navy had been sunk and the Indian Air Force came out on top. It was total humiliation, and not just for Pakistan. The United States and Britain sent aircraft carriers in a futile attempt to intimidate India, and ended up facing off against Soviet warships. Pakistan's defeat also spurred its rulers to begin the development of nuclear weapons.

The 1971 India-Pakistan War, the third major conflict between the two nations in twenty-five years, was sparked by unrest in East Pakistan. The Bengalis of East Pakistan, who constituted 54 percent of Pakistan's population at the time, chafed under the rule of West Pakistan. The two Pakistans belonged to different ethnic groups and spoke different languages.



Bengali demands for autonomy were rebuffed. By mid-1971, an East Pakistan guerrilla movement had emerged, supported by India. Pakistan's military-controlled government cracked down hard, killing up to three million Bengalis in what has been described as a genocide. By November, both India and Pakistan were preparing for war.

On December 3, Pakistan launched a preemptive air strike against Indian airfields, ironically trying to emulate how the Israeli Air Force had destroyed Egyptian airpower in 1967. The difference was that the Israelis committed two hundred aircraft and wiped out nearly five hundred Egyptian aircraft in a few hours; Pakistan committed fifty aircraft and inflicted little damage. The air war featured the full panoply of Cold War jets, pitting Pakistani F-104 Starfighters, F-86 Sabres, MiG-19s and B-57 Canberras against Indian MiG-21s, Sukhoi-7s, Hawker Hunters and Folland Gnats, as well as Hawker Sea Hawks flying from the Indian carrier *Vikrant*.

Both sides claimed victory in the air war. Chuck Yeager, who was in Pakistan advising their air force, claimed the Pakistanis “whipped their asses.” The Indians claim Yeager was crazy. However, it does appear that India had the upper hand in the air, controlling the skies over East Pakistan and losing about forty-five aircraft to Pakistan's seventy-five. The maneuverable little Indian Gnat, a British-made lightweight fighter (its predecessor was called the Midge), proved so successful against Pakistani F-86s that the Indians dubbed it the “Sabre Slayer.”

At sea, there is no question that India won. The Indian Navy dispatched missile boats, armed with Soviet-made Styx missiles, to strike the western port of Karachi, sinking or badly damaging two Pakistani destroyers and three merchant ships, as well as fuel tanks. Indian ships blockaded East Pakistan from reinforcements and supplies. Notable was India's use of the carrier *Vikrant* to conduct air strikes on coastal targets, as well as conducting an amphibious landing on Pakistani territory.

Pakistan retaliated by dispatching the submarine *Ghazi* to mine Indian ports. While stalked by an Indian destroyer, the *Ghazi* mysteriously blew up. However, the submarine *Hangor* did sink the Indian frigate *Khukri*.

As for the ground war, the best that can be said is that if Napoleon himself had faced Pakistan's strategic dilemma, he would have sulked off to St. Helena. Isolated by land and blockaded by sea, no army could have defended East Pakistan against even a moderately competent foe, let alone the nine Indian divisions that quickly captured the East Pakistan capital of Dhaka. East Pakistani forces surrendered on December 16.

To add insult to the defeat of Pakistan and its proudly Muslim rulers, the Indian campaign was planned by Maj. Gen. J. F. R. Jacob—an Indian Jew descended from a family that fled Baghdad in the eighteenth century.

One issue that hampered Pakistan's war effort would soon become familiar in Iraq, Syria, Afghanistan and other ethnically divided nations. In 1971, Bengalis comprised a significant part of the Pakistani military, especially in technical jobs.

Meanwhile, the superpowers were flexing their muscles. Despite its cruelty toward the Bengalis, and the opposition of U.S. diplomats, President Richard Nixon and National Security Adviser Henry Kissinger backed Pakistan against pro-Soviet India (see the Nixon-Kissinger transcripts here). Task Force 74, centered on the aircraft carrier *Enterprise*, steamed into the Bay of Bengal, as did the British carrier *Eagle*. Why India would have been intimidated into a cease-fire, even as its tanks were rolling into Dhaka, is a mystery. America's attempt to deter India from defeating Pakistan became a case study of the limitations of relying on the threat of force to compel other nations to change their behavior.

In fact, what the U.S. Navy accomplished was to chill U.S.-Indian relations for years. Even more disturbing were the Soviet cruisers, destroyers and submarines shadowing Task Force 74. A war between two Southwest Asian nations could have triggered a superpower showdown at sea, and perhaps World War III.

In the end, India had demonstrated its military superiority. Pakistan lost half its territory and population. Perhaps more important, Pakistani illusions that an Islamic army could rout the "weak" Hindus had been disproved. Following the 1947 and 1965 wars, the 1971 war was the third major conflict between India and Pakistan. It was also the last. Despite some hostilities in Kargil and other spots on the border, India and Pakistan have not fought a major war in forty-five years.

Unfortunately, Pakistan's humiliation in 1971 spurred it into developing an atomic bomb. With India also armed with atomic weapons, South Asia now lives under the shadow of nuclear war. The next major India-Pakistan clash could be the last.

<https://nationalinterest.org/blog/buzz/war-guaranteed-india-would-dominate-south-asia-145092>

## The Tribune

*Fri, 17 April 2020*

### **Four Boeing P8I surveillance aircraft are on schedule from July**

New Delhi: The lot of four Boeing P8I maritime surveillance aircraft that will further widen the arc of Indian Navy operations, are expected to start arriving in phases as per contractual schedule commencing in July.

In the US the Defence manufacturing industry is part of the 'essential works' and work, so far, is on as per schedule, the Ministry of Defence has been informed. The Boeing is a US company.

"The contract stipulated supplies to commence from July 2020," sources said adding, that so far everything is on schedule. Once the lockdown ends in India, matters will be known better. From April 20 onwards the forces will be start working with 50 per cent staff and then onwards the procurements cells will start functioning.

Indian Navy has been using the Boeing P8I planes since 2013 and now has fleet of eight, the four more are to be added over the next 18 months or so. The P8I is a long range maritime reconnaissance (LRMR) but carries Anti-Submarine Warfare (ASW) and anti-ship strike abilities. The planes are used for patrolling the Sea Lanes of Communication (SLOC's) extending east and west of peninsular India.

Two days ago, the US notified the possible sale of 10 Harpoon missiles and also 16 MK 54 Torpedoes to be fitted onto the P8I. The AGM-84L Harpoon Block air launched anti-ship missile would cost \$92 million while the MK 54 anti-submarine torpedoes would cost \$ 63 million—collectively Rs 1,160 crore.



Already in November last year, the Defence Acquisition Council (DAC), the apex decision making body of the Ministry of Defence approved procurement of six more such planes, once all are in New Delhi will have fleet of 18. The Boeing P-8I is a derivative of the P-8A used by the United States Navy.

<https://www.tribuneindia.com/news/nation/four-boeing-p8i-surveillance-aircraft-are-on-schedule-from-july-72040>



*Fri, 17 April 2020*

## **Russia reiterates offer of joint FGFA program as an alternative to ‘off the shelf’ Su-57 fighter purchases for India**

As India continues to consider options for the acquisition of a next generation fighter jet from Russia – seeking to provide its Air Force with a new heavyweight high performance combat jet to counter the fast growing capabilities of its neighbours – Russian Trade and Industry Minister Denis Manturov has reiterated that a contract for joint manufacture of such an aircraft incorporating Indian defence technologies remains possible.

Russia is marketing a number of high end combat jets to India, and alongside continued sales of MiG-29 and Su-30MKI fighters the country is also expected to purchase the Yak-130 fighter-trainer and the MiG-35 next generation medium fighter in the near future.

An offer to upgrade Indian Su-30 fighters to a ‘4++ generation’ standard is also under consideration – under which the jets would integrate new AL-41 thrust vectoring engines, Irbis-E radars and possibly R-37M hypersonic long range air to air missiles.

India has shown a strong interest in Russia’s Su-57 next generation heavyweight fighter, although with the aircraft having yet to enter service in the Russian Air Force itself Delhi is likely waiting to assess its performance before committing to a purchase. The possibly remains that India will purchase an initial batch of ‘off the shelf’ Su-57 jets from Russia to evaluate their capabilities – before entering into a contract for joint production.

This would be consistent with its acquisition strategy for the Su-30 – as before joint manufacturing of the Su-30MKI India purchased and evaluated the Su-30K from Russia. The capabilities of the jointly manufactured Su-30MKI variant were far superior to the Su-30K, but operating the jet familiarised the Indian Air Force with the airframe and its performance limitations – much as a Su-57 could do to precede a joint next generation program.

It is also possible that India intends to purchase more sophisticated future variants of the Su-57, likely to be dubbed ‘Su-60’ or something similar, once these become available – and possibly in a twin seat configuration which its Air Force has long favoured.

With next generation technologies from Saturn 30 engines to new hypersonic missiles and artificial intelligence systems being developed near continuously for the Su-57 program, such high end derivatives are likely to begin to emerge around the mid 2020s.

<https://www.defenceaviationpost.com/2020/04/russia-reiterates-offer-of-joint-fgfa-program-as-an-alternative-to-off-the-shelf-su-57-fighter-purchases-for-india/>

Fri, 17 April 2020

## The U.S. Air Force has a spy ship in the persian gulf

*The U.S. Air Force quietly keeps a small, inconspicuous spy ship in the Persian Gulf, presumably in order to keep an eye on Iran's missile launches*

By David Axe

The U.S. Air Force quietly keeps a small, inconspicuous spy ship in the Persian Gulf, presumably in order to keep an eye on Iran's missile launches.

Technically speaking, USNS *Invincible*—a 224-foot vessel displacing a mere 2,800 tons—belongs to Military Sealift Command, the quasi-civilian branch of the Navy that operates America's military logistics ship and other specialist vessels.



But *Invincible* is just a hull—unremarkable, painted white and maintained by 18 civilian contractors. It's what's *inside* and *atop* the hull that really matters. A sophisticated, dual X- and S-band radar called Gray Star that belongs to the Air Force.

No one says much about *Invincible* or Gray Star. Military Sealift Command refers to the vessel as a “missile range instrumentation ship” whose job it is to “monitor missile launches and collect data.”

The Air Force's Intelligence, Surveillance and Reconnaissance Agency, in its official history for 2012, lumped Gray Star in with its sea-based systems that collect “scientific and technical data of foreign military capabilities and systems.”

It's apparent from the ship's deployments that she spends most of her time keeping tabs on the regime in Tehran—specifically, Iran's expanding arsenal of medium-range ballistic missiles.

The Air Force ISR Agency admitted that *Invincible* “typically” deploys to Central Command's area, which includes the Persian Gulf and Indian Ocean. But there's not a lot of actual evidence of the ship's presence overseas. The military seems keen to downplay *Invincible*'s activities.

In May 2012, *Invincible*—which has no official homeport in the U.S.—passed through the Strait of Hormuz into the Persian Gulf in a convoy of U.S. Navy and British vessels. An official photo depicted the transit.

Another official photo from November 2012 showed sailors from the destroyer USS *Jason Dunham* riding in a small boat to visit *Invincible* somewhere in the Persian Gulf.

Military Sealift Command revealed in its official history for 2013 that *Invincible* sailed to the Mediterranean in May of that year.

But an online ship-tracking service showed that on July 27, 2013, *Invincible* was back in the Gulf, sailing 50 miles or so northeast of Bahrain, where the U.S. Fifth Fleet maintains its headquarters. After that date, the spy ship temporarily disappeared from online location databases.

Tehran is 650 miles from Bahrain's capital Manama.

We can reasonably assert that *Invincible* remained in the Persian Gulf even after she dropped off the ship-tracking sites. One user of the LinkedIn social media website claimed he was part of *Invincible*'s crew as recently as December 2013. He listed his location at that time as Bahrain.

And in the fall of 2014, *Invincible*'s crew shipped a one-ton package back to the U.S. via a commercial freighter. The crew gave its home address as Manama. The package arrived back in America in October that year.

Which was a strong indicator that the Air Force's spy ship with her high-tech Gray Star radar was still on duty near Iran, apparently still watching for Tehran's missile tests.

*Invincible*'s presence in the Persian Gulf became impossible to deny when, three years later, fast-attack boats belonging to the Iranian Revolutionary Guard Corps swarmed the spy ship as she was transiting the Strait of Hormuz.

The Iranian boat crews behaved in an "unsafe and unprofessional" way, a U.S. official stated. *Invincible*'s own crew had no choice but to change course in order to avoid a collision.

In November 2018, the Fifth Fleet tweeted a photo of *Invincible* in the fleet's area of operations.

Two years later, *Invincible* was still in the Middle East. Ship-tracking websites as recently as March 2020 registered the spy vessel's transponder at a port in Oman.

<https://nationalinterest.org/blog/buzz/us-air-force-has-spy-ship-persian-gulf-144792>

## Science & Technology

theinterpreter

Fri, 17 April 2020

### Aryabhata: Remembering India's first satellite

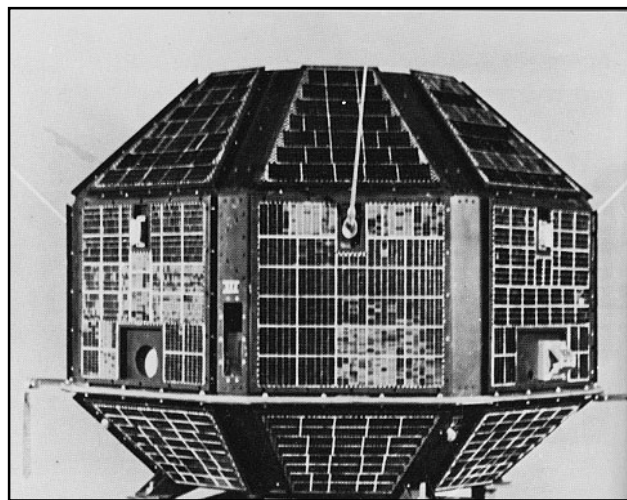
*History has shown time and again that success is built on persistence and a willingness to risk failure*

*The story of Aryabhata should continue to inspire awe, and the belief that scientists and engineers can overcome setbacks.*

*By Martand Jha*

It remains one of the proudest moments, not only for India's space program, but as a landmark in the history of the country. Forty-five years ago, on 19 April 1975, the rocket thrusters fired to launch India's first indigenous satellite. It was named Aryabhata, yet like many initial forays beyond the Earth's atmosphere, the project stumbled and ran afoul of roadblocks, a reminder that is still relevant today about the precariousness of ambition.

The Indian satellite program began to take shape in the early 1970s, although local scientists had long dreamed of an indigenous Indian program since the time of Sputnik. After the eventual success of the Indian built Rohini rocket program in the 1960s, the Indian Space Research Organisation shifted focus to building indigenous satellites. Vikram Sarabhai, the ISRO founder and a renowned physicist who also had a role in the development of India's nuclear industry, appointed a team of 25 engineers and researchers at Physical Research Laboratory



Aryabhata, India's first satellite (Wikimedia Commons)

in Ahmedabad. Under the direction of space



scientist Dr. U R Rao, a 100-kilogram satellite was designed, intended to be launched by the United States using the Scout launch vehicle – a multistage rocket seen as reliable and affordable for India.

Yet Cold War rivalries would intrude. In 1971, India's then Prime Minister Indira Gandhi received a message from the country's ambassador in Moscow, saying that the Soviet Academy of Sciences was ready to assist India in launching its first satellite. Negotiations followed in New Delhi and Moscow between Indian diplomats and scientists with Soviet counterparts. Just as a deal was about to be finalised, tragedy struck.

Vikram Sarabhai died in December 1971, aged 52. His death brought the Indian space program to a standstill. Sarabhai had worked with India's first prime minister Jawaharlal Nehru and another leading scientist of the time Homi Bhabha as the driving force behind the country's space program. Sarabhai had a meticulous approach, overseeing each and every aspect of the research personally. His sudden death came as a national shock.

This led to a substantial delay in finalising the details for the launch of the satellite. The interim ISRO chair M.G.K Menon ultimately made an agreement with the Soviets at Trivandrum in February 1972. Indira Gandhi wanted to know the cost – to which Rao, the scientist in charge of satellite design, estimated to be roughly US\$3.9 million, plus another \$1.3 million at least in foreign exchange to cover the launch. This was on top of equipment needed to build the satellite, totalling to an enormous expense for the time.

There was a way to ensure the Prime Minister's backing. Until that point, the satellite had not been named. Three were proposed. First was Aryabhata (after the great Indian 5th century CE mathematician and astronomer), the second was Mitra (signifying friendly relations between India and USSR) and third was Jawahar (to invoke the spirit of Independence). Indira Gandhi was offered the choice, and Aryabhata it was.

Aryabhata was the first unmanned Earth satellite built by India, assembled at Peenya, near Bangalore, but launched from the Soviet Union by a Russian-made rocket in 1975. Aryabhata weighed 360 kilograms, with instruments to explore conditions in Earth's ionosphere, measure neutrons and gamma rays from the Sun, and perform investigations in X-ray astronomy. The scientific instruments had to be switched off during the fifth day in orbit because of a failure in the satellite's electrical power system. Useful information, nevertheless, was collected during the five days of operation.

A roaring success, perhaps not. But even this somewhat chequered episode is important to recall in the context of the most recent setbacks to the Indian Space Program. An attempt last year to land the Chandrayaan 2 probe on the Moon failed, leading to great national disappointment.

Yet the story of Aryabhata should continue to inspire awe, and the belief that scientists and engineers can overcome setbacks. The Aryabhata's launch was successful at a time when leading space powers had little faith in India's chances to produce an indigenous satellite. It is a reminder of the distance the Indian Space Program has travelled in the last 45 years.

<https://www.lowyinstitute.org/the-interpreter/aryabhata-remembering-india-s-first-satellite>

# ISRO was flooded with requests from Indians wanting to become astronauts

BY Anantha Krishnan M



The Human Space Flight Centre (HSFC) of ISRO inside the Antariksh Bhavan, situated in Bengaluru. Photo.

Bengaluru: The Indian Space Research Organisation (ISRO) was in 'deep trouble' till recently. ISRO insiders confirm they were so 'helpless' and at one point even a bit 'clueless' to arrest the situation.

Insiders at ISRO felt making critical systems that can reach Moon, Mars and beyond was a manageable task. But, to encounter a 'communication tornado' that hit them out of the blue was indeed difficult.

So, what was the problem that unmuzzed India's top space brains? And, how did ISRO chairman Kailasavadivoo Sivan and team manage it?

Ever since Prime Minister Narendra Modi announced the ambitious, big ticket Indian Human Spaceflight Programme (HSP) – Gaganyaan – from the ramparts of Red Fort on August 15, 2018, the 'virtual trouble' began at Antariksh Bhavan, the ISRO headquarters in Bengaluru.



ISRO stalwarts, past and present, in front of the model of the crew module at HSFC. Photo: ISRO.

Indians across the globe were soon locked on to ISRO and somehow wanted to be part of the mission.



## Sivan and Team

The flurry of requests and suggestions came in many forms. While majority bombarded all public email IDs with their queries, the postal department too had a tough time in delivering letters from anxious, wannabe astronauts.

From emails to letters to phone calls, the ISRO HQ received non-stop queries from Indians who were keen to join the Gaganyaan mission.

While some were keen to become astronauts or Ganganauts, there were many others who wanted to contribute to this mission.

From graduates to PhD-holders, all were keen to get onboard the Gaganyaan mission.

### Passionate letters, emails

The many letters that reached ISRO officials told of the aspirants' passion and urgency.

"I am from Jind in Haryana, 22 years old and want to be part of the crew to be selected for Gaganyaan programme.

Please provide me information on the selection process," reads an email that also gives her complete address and other details.

Another email from a computer science engineering graduate gives a bit of history into her love for space and aeronautics.

"I have always been attracted to anything related to space, be it space walk or other scientific, physical experiments, including ying aircraft. As I know that a team of 3-4 would be heading into space, it would be of great help if you could give me details of becoming part of it," says an email.

"I am very much interested to become part of this project. I am not a technically-qualified person. But I am very much condent to attend this project. If there's any possibility, kindly accept my application," reads a communication.

Interestingly, a 19-year-old student doing his undergraduate course in political science from Delhi University thought the rst manned space mission of India was aimed to go to the Moon.

"I am sure this is a mission sending humans to the Moon. Sir, I want to go to the Moon. Please help me or suggest me how can I go?" he pleads.

Queries kept pouring in from Indians working and studying across the globe.

"I am happy to share that I have interned with ISRO earlier before moving to UK. I wish to be an astronaut and will be learning more about the same during my course here. I wish to contribute back to my country. Hope I am given an opportunity be part of Gaganyaan mission," says another mail.

A passionate letter from a girl from Kerala also sought all details of astronaut selection process for Gaganyaan.

"Now, I am 16 years old (Class IX) and strongly believe that I have a lot of perseverance for the mission's success. I am popular in my school for sports, public speaking and studies and I am the school leader as well. Please don't avoid me and please remember to send me the selection details," reads the email.

Interestingly, ISRO sources say that Dr Sivan had directed all officials to respond to as many emails/letters as possible, especially from few officials were tasked with replying to all the emails that came towards the end of 2017, 2018 and 2019.

The fact remains that there seems to be no end to ISRO's 'worries' even after the Indian Air Force (IAF) shortlisted four Test Pilots for the mission.



The crew module that was used for the pad abort test (PAT) as part of the Gaganyaan pre-mission trials. Photo. Onmanorma



One of the four pilots, now undergoing training at the Gagarin Cosmonaut Training Center (GCTC) in Russia, is likely to be picked up for the maiden mission.

"The queries still keep coming now, but the flow has reduced. The news of selection process is known to many. We don't disappoint anyone and try and reply to all emails that has proper credentials," says an official.

### **Many wanted to fly**

ISRO Chairman Dr K Sivan told Onmanorama that the Gaganyaan mission got both national and global attention after PM's announcement.

He said the people in India, the Indian diaspora at large as well and other space faring agencies are following Gaganyaan programme with great interest.

"Lot of young people wanted to contribute in Gaganyaan programme. Some of them wanted to be the first to fly in the crew module. ISRO has a well established mechanism of handling public response and the same is being done for Gaganyaan programme also," Dr Sivan.

According to him, the one message ISRO wanted to convey to the young people is that working in the field of research and development is all about hard work and passion.

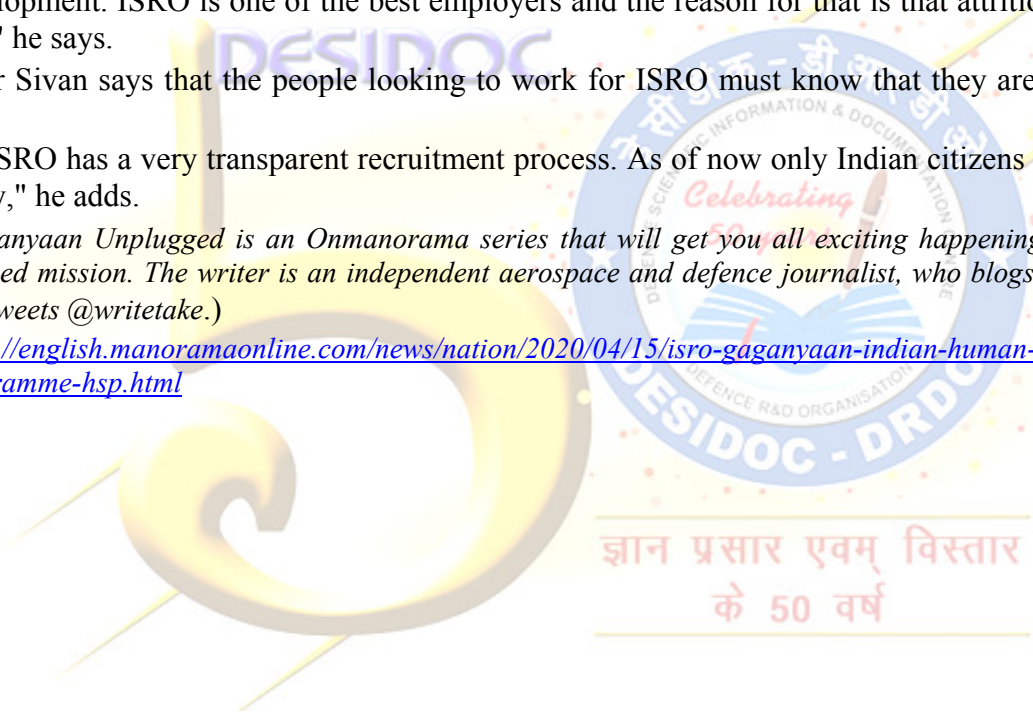
It is not a very high paying job or glamorous job. The salary is one of the best for a fresher. More than salary, it is the job satisfaction and the knowledge of contributing for national development. ISRO is one of the best employers and the reason for that is that attrition rate is very low," he says.

Dr Sivan says that the people looking to work for ISRO must know that they are in for a long haul.

"ISRO has a very transparent recruitment process. As of now only Indian citizens are eligible to apply," he adds.

*(Gaganyaan Unplugged is an Onmanorama series that will get you all exciting happenings from India's manned mission. The writer is an independent aerospace and defence journalist, who blogs at Tarmak007 and tweets @writetake.)*

<https://english.manoramaonline.com/news/nation/2020/04/15/isro-gaganyaan-indian-human-spaceflight-programme-hsp.html>



# दैनिक जागरण

Fri, 17 April 2020

## Fight Against COVID19: कोरोना वायरस टेस्टिंग के लिए पंजाब यूनिवर्सिटी को मिली अनुमति

वैभव शर्मा

चंडीगढ़: कोरोना वायरस की टेस्टिंग के लिए केंद्र सरकार ने पंजाब यूनिवर्सिटी को अनुमति दे दी है। इस फैसले के साथ ही पंजाब यूनिवर्सिटी के रिसर्च स्कॉलर्स भी कोरोना वायरस की टेस्टिंग करेंगे। पीयू के माइक्रोबायोलॉजी विभाग के रिसर्च स्कॉलर नीरज पंत ने इस पर खुशी जाहिर की है। उन्होंने कहा कि कोरोना वायरस की टेस्टिंग के लिए उन्होंने लंबी लड़ाई लड़ी थी। देश में कोरोना वायरस की टेस्टिंग अब बड़े पैमाने पर शुरू होने वाली है। ऐसे में पीयू को टेस्टिंग की अनुमति मिलना पंजाब और आसपास के राज्यों के लिए लाभदायक साबित होगी।

### पीयू में है नॉर्थ रीजन की सबसे बड़ी लैब

पीयू में सैफ लैब के रूप में नॉर्थ रीजन की सबसे अत्याधुनिक लैब है। सैफ लैब में टेस्टिंग के लिए नए और बेहतरीन उपकरण मौजूद हैं। सैफ लैब के अलावा पीयू में एक और लैब है जहां कोरोना वायरस की टेस्टिंग आसानी से हो सकती है। आसपास के राज्यों में भी बढ़ेगी कोरोना की टेस्टिंग पीयू को कोरोना वायरस की टेस्टिंग की अनुमति मिलना दूसरे राज्यों के लिए भी खुशखबरी है। पीयू के रिसर्च स्कॉलर चंडीगढ़ के अलावा इसके आसपास के राज्यों में भी कोरोना वायरस की टेस्टिंग करेंगे।

### पंजाब और हरियाणा सरकार से किया जाएगा संपर्क

कोरोना वायरस की टेस्टिंग के लिए जल्द ही पंजाब और हरियाणा सरकार से संपर्क किया जाएगा। इन दोनों राज्यों में कोरोना से संक्रमित मरीजों की संख्या दिन-प्रतिदिन बढ़ रही है। नीरज ने बताया कि हरियाणा और पंजाब के कई रिसर्च स्कॉलर, जूनियर रिसर्च फेलो, सीनियर रिसर्च फेलो के अलावा साइंटिस्ट भी उनके संपर्क में हैं।

### आइआइएसईआर और आइएमटेक भी करेगा पीयू साथ काम

पीयू को अनुमति मिलने के बाद मोहाली स्थित इंडियन इंस्टीट्यूट ऑफ साइंस एजुकेशन एंड रिसर्च (आइआइएसईआर) और इंस्टीट्यूट ऑफ माइक्रोबियल टेक्नोलॉजी (आइएमटेक) भी कोरोना वायरस टेस्टिंग में पीयू की मदद करेगा। एक-दो दिन में इसको लेकर पीयू प्रशासन की बैठक का आयोजन होगा जिसमें इस कार्य को लेकर रणनीति बनाई जाएगी।

<https://www.jagran.com/punjab/chandigarh-pu-gets-permission-for-corona-virus-testing-20197466.html>

## **Gujarat: Scientists at GBRC govt lab decode coronavirus COVID-19 whole genome sequence for the first time**

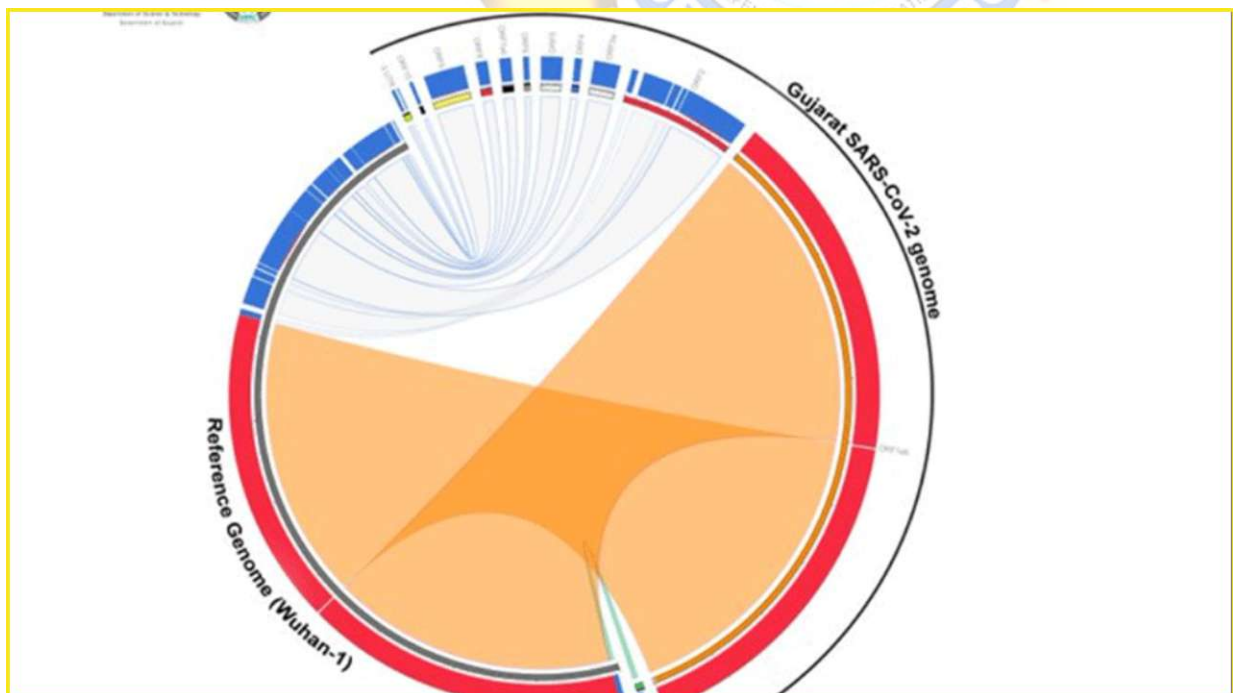
*Gujarat's Chief Minister Office (CMO) praised the scientists at GBRC for becoming the first state government laboratory in the country to achieve this feat. The whole-genome sequence will play an important role in tracking the origin, drug targets, vaccine and association with virulence.*

In a major scientific breakthrough, researchers at the Gujarat Biotechnology Research Centre (GBRC) have succeeded in sequencing the whole genome of the coronavirus that has caused the COVID-19 pandemic outbreak throughout the globe.

Gujarat's Chief Minister Office (CMO) praised the scientists at GBRC for becoming the first state government laboratory in the country to achieve this feat. The whole-genome sequence will play an important role in tracking the origin, drug targets, vaccine and association with virulence.

"Gujarat is proud of scientists at Gujarat Biotechnology Research Centre (GBRC), the only State Govt laboratory in India that has reported COVID19 whole-genome sequence which will be helpful in tracking origin, drug targets, vaccine & association with virulence," tweeted CMO Gujarat.

Whole-genome sequencing is used to determine the complete DNA sequence of the genome of a particular organism. The approach for sequencing the coronavirus genome involves obtaining samples from patients that have tested positive for the deadly virus and sending these samples to a sequencing center.



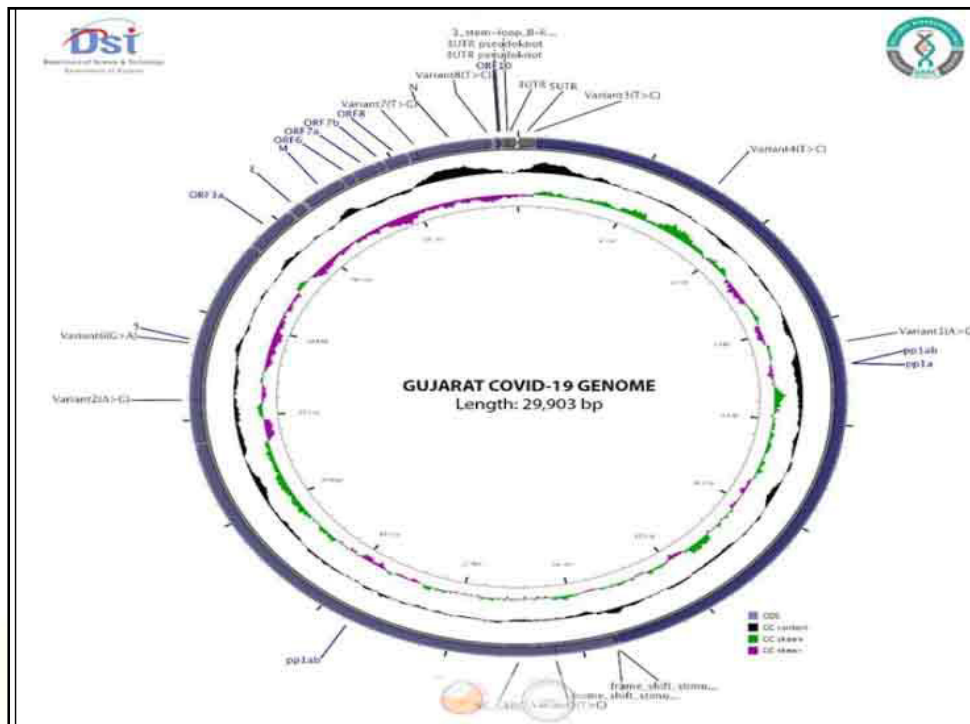
Whole-genome sequencing is used to determine the complete DNA sequence of the genome of a particular organism

It is to be noted that the Indian Council of Medical Research (ICMR) researchers have succeeded in detecting coronaviruses among two species of bats in India, sending a message that



active surveillance of bats is required to identify the emerging strains of the viruses that can cause an epidemic in future.

As the coronavirus disease (COVID-19) crisis exacerbates in India, the central government on Wednesday earmarked 170 districts as hotspots in the 'Red Zone' with the aim to adopt stricter lockdown measures in these regions for checking the pandemic outbreak in its tracks. The Red Zone hotspots are essentially the regions that have reported a significant number of positive cases, contributing more than 80% of cases in India with a doubling rate of less than four days.



Meanwhile, 207 non-hotspot districts with clusters and non-infected districts have also been classified as 'Green Zone'.

The Ministry of Health and Family Welfare has also stated that there is no community transmission of India so far, adding that the chain of transmission of coronavirus can be broken successfully if no case is reported for 28 days from a particular area.

Prime Minister Narendra Modi had on Tuesday morning announced the extension of the countrywide lockdown till May 3.

<https://www.dnaindia.com/india/report-gujarat-scientists-at-gbrc-govt-lab-decode-coronavirus-covid-19-whole-genome-sequence-for-the-first-time-2821226>