

2020

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Tue, 14 April 2020

DRDO at the forefront of fighting Covid-19

In a bid to fight against the deadly coronavirus pandemic, the DRDO (Defence Research and Development Organisation), using its scientific endeavour, has developed a host of protective equipment, ventilators and sanitisation equipment for helping the frontline workers.

The DRDO has developed 11 such products to combat the coronavirus. These products include visor-based full-face shield, isolation shelter, mobile area sanitisation system, advanced N99 masks, personal sanitisation equipment, portable backpack area sanitisation equipment, advanced PPEs (Personal Protection Equipment) for doctors and frontline health workers, ventilators and sanitisers.

With an anticipation of a growing need for ventilators in the coming days for patients fighting the coronavirus, the DRDO's Defence Bioengineering and Electromedical Laboratory in Bangalore, in partnership with Bharat Electronics Limited (BEL) and Scanray Pvt Ltd in Mysuru, will develop modern and portable ventilators at the earliest.

And, according to sources in the DRDO, works on the development of such ventilators are progressing and each scientist and technician is working to come up with the best and most advanced form of ventilator. Apart from this, a personal sanitisation equipment which is a full body disinfection chamber has been developed by the DRDO's Vehicle Research and Development Establishment laboratory in Ahmednagar. This personal sanitisation equipment, which is currently being used at the entrance of many markets across the country, is a walk-through full body disinfection chamber. It is a portable system equipped with sanitiser and soap dispenser.

The decontamination is started using a foot pedal at the entry. On entering the chamber, an electrically operated pump creates a disinfectant mist of hypo sodium chloride for disinfecting. The mist spray is calibrated for an operation of 25 seconds and stops automatically, indicating completion of operation.

<https://www.defenceaviationpost.com/2020/04/drdo-at-the-forefront-of-fighting-covid-19/>



Tue, 14 April 2020

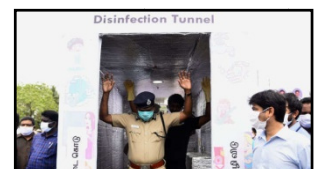
Coronavirus pandemic: Creative innovations in India to fight Covid-19

Disinfection Chamber

In an attempt to boost the fight against coronavirus, DRDO designed a full-body disinfection chamber they are calling the personnel sanitization enclosure. Reportedly, a walkthrough enclosure is capable of disinfecting 650 persons until the next refill.

Robots on the Job

As health workers, researchers and governments struggle to contain the spread of the pandemic, robots are being deployed to administer treatment and provide support to quarantined patients.



A Bodysuit to Safeguard Frontline Warriors

The bodysuit is a critical requirement for doctors, medical staff, sanitation workers so that they do not contract the virus during their work; DRDO has designed a full bodysuit to stop contamination through coronavirus.

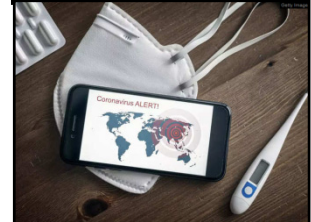
A Mobile App to Locate Virus Suspects

IIT Roorkee has developed a mobile tracking application with state-of-the-art features to boost government efforts for the surveillance of coronavirus suspects. The application can track COVID-19 suspects who have been quarantined, using geofencing technology, which marks a virtual geographic area and triggers a response if an individual exits or enters the boundary.

Low Cost Ventilators

IIT Roorkee has also developed a low-cost portable ventilator that can be useful for COVID-19 patients. Named 'Prana-Vayu,' the closed-loop ventilator is equipped with state-of-the-art features.

<https://economictimes.indiatimes.com/news/politics-and-nation/coronavirus-pandemic-creative-innovations-in-india-to-fight-covid-19/disinfection-chamber/slideshow/75116886.cms>



live**mint**

Tue, 14 April 2020

ITI surges on plan to make portable ventilators

By Ashwin Ramarathinam

- *ITI is poised to fast-track production and plans to undertake manufacturing at its Bengaluru facility*
- *It will be able to produce portable ventilators within the next 30 to 60 days,*

Mumbai: ITI Ltd's shares on Monday hit the upper circuit of 20% at ₹ 87.35 as the company is likely to ink a deal with the Defence Research and Development Organisation (DRDO) soon to produce portable ventilators, a first of its kind in India.

"DRDO wants ITI to manufacture portable ventilators and is transferring technology to us. Once we come up with a final product and after due test procedures, we'll be able to produce such ventilators," ITI chairman Rakesh Mohan Agarwal said in an exchange filing on Thursday.

In the wake of the covid-19 pandemic, medical experts say India would require several thousand ventilators and their absence may impair the ability of the country's healthcare system to respond to rising epidemic cases. With a population of 1.33 billion, India has nearly 50,000 ventilators.



Agarwal said ITI is poised to fast-track production and plans to undertake manufacturing at its Bengaluru facility.

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

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

The state-controlled telecom technology company is set to sign a memorandum of understanding (MoU) with DRDO this week.

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

Agarwal said portable ventilators could be used during the current crisis and also in the future by the army and paramilitary forces and defence hospitals.

With a strong order book worth about ₹ 20,000 crore, the state-owned ITI is expecting to continue with a growth momentum of nearly 35%. In October-December 2019, the public sector firm posted a turnover of ₹ 979 crore, up 53% over the same quarter last year.

ITI's consolidated net profit surged 1,139% to ₹ 168.25 crore on a 47% jump in net sales to ₹ 827.95 crore in October-December 2019 over the same quarter a year ago.

<https://www.livemint.com/market/stock-market-news/iti-surges-on-plan-to-make-portable-ventilators-11586769549666.html>



DEFENCE AVIATION POST

Your Connect To The World Of Defence And Aviation

Tue, 14 April 2020

Artificial Intelligence in the fight against Covid-19

There is a race against time around the globe to manufacture ventilators in large quantities so as to face the onslaught of COVID-19 infection, with India being no exception in this effort. Defence PSUs, Ordnance Factory Board (OFB) and Defence Research and Development Organisation (DRDO) and academia have joined hands with the private sector to ensure that the ventilators are available and are in working conditions in the hospitals across the country.

What are Ventilators?

Ventilators helps a patient in getting more oxygen into their lungs and take the carbon dioxide out. The demand for more ventilators in today's COVID-19 pandemic is high not because they are a cure but to assist lung function while the patient is critically infected and recovering.

What are WHO Specifications?

There should be a flexible breathing circuit, a control system, monitors, and alarms. There should be specialized breathing circuits, oxygen accumulators.

Should have humidifiers or heat and moisture exchangers (HMEs).

The devices use positive pressure to deliver gas to the lungs at normal breathing rates.

There is also an endotracheal tube, a tracheostomy cannula, or a mask.

Power supply is through a line from an internal or external battery.

Predictive Artificial Intelligence Model

In the midst of the global pandemic University of Copenhagen have innovatively used Artificial Intelligence (AI) technique to create models to calculate and forecast the requirement of intensive care and ventilator support for patients in early stages of COVID-19 infection. The effort at Copenhagen is to predict cases requiring ventilator within a week etc. This makes it feasible to



optimise the use of ventilators, especially when their availability is limited and with more patients to be tended to.

Milind Kulshreshtha, C4I expert says, “Various efforts to optimise the ventilator machines are being explored including trials of mechanical distributors to link up more ventilators to a source etc.”

<https://www.defenceaviationpost.com/2020/04/artificial-intelligence-in-the-fight-against-covid-19/>

hindustantimes

Tue, 14 April 2020

AIIMS shuts sanitisation unit after complaints of skin irritation

By Anonna Dutt and Rhythma Kaul

New Delhi: A sanitisation unit at the emergency department of the All India Institute of Medical Sciences (AIIMS) in Delhi was shut four days after it was installed, due to reports of skin irritation. The unit was installed, on a trial basis, to disinfect staff dealing with coronavirus disease (Covid-19).

“The unit is still very much here. But its use has been stopped, for the time being, keeping in mind the scientific evidence. A study of the literature shows that the sodium hypochlorite solution used in the sprays is not very effective for disinfection of personnel and can, sometimes, cause dermatitis (itching), if open skin is exposed,” said Dr DK Sharma, medical superintendent of the hospital.

What is effective, he says, is following hand and cough hygiene while taking care of general patients and using personal protective gear properly while screening or taking care of Covid-19 patients.

The disinfection chamber was developed by the Defence Research and Development Organisation (DRDO) and was being “evaluated for utility” at the hospital.

Each unit is in the form of a small chamber that can be used for disinfection of personnel at the areas of controlled entry and exit in hospitals, malls, office buildings and other critical installations.

The decontamination is started by using a foot pedal at the entry. On entering the chamber, an electrically operated pump creates a disinfectant mist of hypo sodium chloride for disinfecting through a set of at least 20 nozzles. The mist spray is calibrated to operate for 25 seconds and stops automatically, indicating completion of the process. People undergoing disinfection need to keep their eyes shut inside the chamber.

The dimensions of the enclosure are approximately 8 feet (length) x 4 feet (width) x 8 feet (height), with a drainage mechanism, a mounted roof and tanks, with a total capacity of 700 litres, at the bottom.

Approximately 650 persons can pass through the chamber for disinfection until a refill is required, and about 80-100 persons can undergo the process every hour. The price of a unit is about ₹ 1.48 lakh.

“A single unit that has been given to us by DRDO was installed at AIIMS, for the time being, to see whether it works well. It is meant for all hospital staff members who are dealing with Covid-19 management. It is a part of the hospital’s infection control practice that the staff will be disinfected before entering and exiting the hospital premises,” said Dr Sharma.

If the trials proved successful, the institute had also proposed to install such units in other areas of the hospital, especially the trauma centre, which has been turned into a dedicated ward to treat Covid-19 cases.

<https://www.hindustantimes.com/delhi-news/aiims-shuts-sanitisation-unit-after-complaints-of-skin-irritation/story-V37uk5ryvjuKaluvswDCZI.html>

पूर्व मध्य रेल ने सैंपल पीपीई किट मंजूरी के लिए डीआरडीओ को भेजा

पूर्व मध्य रेल ने प्राप्त की महत्वपूर्ण उपलब्धि

पीडीडीयू नगर (चंदौली): पूर्व मध्य रेल के दानापुर मंडल में जगाधारी कारखाने से प्राप्त पीपीई सामग्री से अब तक दो पीपीई किट तैयार किया गया है। शीघ्र ही इस सैंपल को कार्य के लिए अधिकृत संस्था डीआरडीओ के पास इंस्पेक्शन, टेस्टिंग, सर्टिफिकेशन और मंजूरी के लिए भेजा जाएगा।

डीआरडीओ द्वारा सैंपल की मंजूरी के पश्चात उत्तर रेलवे से प्राप्त दस हजार किलो पीपीई निर्माण सामग्री से रेलवे चिकित्सालय के चिकित्सक, नर्स एवं अन्य पैरामेडिकल स्टाफ के प्रयोग के लिए पीपीई का निर्माण पूर्व मध्य रेल के पांचों मंडलों में किया जाएगा। कोविड-19 महामारी से लड़ने के लिए चिकित्सक, नर्स, पैरामेडिकल स्टाफ के स्वास्थ्य सुरक्षा के लिए पीपीई का होना नितांत आवश्यक है। इतने कम समय में पीपीई का निर्माण करना पूर्व मध्य रेल के लिए एक महत्वपूर्ण उपलब्धि है। बाजार में अनुपलब्धता को देखते हुए रेलवे का यह प्रयास है कि पीपीई ड्रेस का उत्पादन स्वयं किया जाए। जगाधरी में प्रथम बार पीपीई तैयार किया गया था जिसे डीआरडीओ ने भी अपनी स्वीकृति प्रदान कर दी है। इसी के मद्देनजर भारतीय रेल के अन्य कारखानों को भी इसके निर्माण की जिम्मेवारी दी गई है। पूर्व मध्य रेल की यह उपलब्धि कोविड-19 के मरीजों के इलाज के दृष्टिकोण से मील का पत्थर साबित होगा।

<https://www.jagran.com/uttar-pradesh/chandauli-east-central-rail-sent-sample-ppe-kit-to-drdo-for-approval-20187558.html>

DRDO Technology



Tue, 14 April 2020

DRDO seizes mislabeled autoclave from a Chinese ship: A nuclear opportunity for India

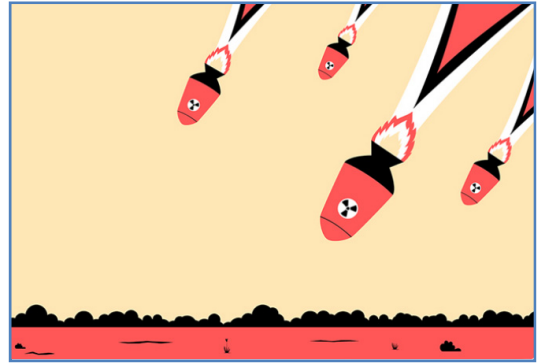
*The relationship between China and Pakistan has been a major
hurdle in India's membership to the Nuclear Suppliers Group*

By Pulkit Mohan

On 3 February, an Indian customs team at India's Kandla Port detained a Chinese ship *Dai Cai Yun* en-route to Karachi, Pakistan. The team operated on the basis of an intelligence tip-off. The ship was allowed on 20 February, to proceed to the aforementioned destination once dual-use (civilian and military) equipment mislabeled as an industrial autoclave was seized. Technical experts from the Defence Research and Development Organisation (DRDO) confirmed that the seized autoclave was a "dual use industrial autoclave, which was misdeclared as an industrial dyer." Beijing denied that the material seized is "neither military supplies nor dual use items under non-proliferation and export control." Given the DRDO's confirmation and further analysis, it is

important for New Delhi to raise serious concerns about the incident at a bilateral level as well as in the international context to expose China on its dubious activities.

This incident once again highlights the continuing and strong nexus between China and Pakistan in the area of weapons of mass destruction (WMD). It is well-known that Pakistan's nuclear programme is not indigenous and that China has had a critical role in the development and sustenance of the Pakistani nuclear weapons programme. China has grown as Pakistan's all-weather ally and provided significant support in terms of expertise and material in the last several decades. New Delhi has been apprehensive about this



alliance between Beijing and Islamabad, specifically in the nuclear and military domain. These uncertainties are not unfounded as is displayed by the autoclave incident. New Delhi should acknowledge the opportunity this incident brings in addressing this matter at an international platform for its benefit as well as in strengthening the non-proliferation mechanism.

It is well-known that Pakistan's nuclear programme is not indigenous and that China has had a critical role in the development and sustenance of the Pakistani nuclear weapons programme.

The seizure demands an appropriate response from India's national security planners due to the clear violation of international frameworks. Given the rarity of such incidents being intercepted by Indian authorities, it is important that India looks into possible responses through multiple channels. The falsification of information provided by China and Pakistan presents New Delhi with a couple of avenues to pursue this in the international context. In this situation, India can invoke the Weapons of Mass Destruction and Their Delivery Systems (Prohibition of Unlawful Activities) Act 2005. The Act provides legislation on unlawful activities in relation to WMDs. In this specific context, the Act may be invoked on the grounds of unlawful "transportation of a nuclear explosive device or a nuclear weapon and their means of delivery." However, the more pertinent instrument available to the Indian government is the United Nations Security Council (UNSC) Resolution 1540 (2004). This UNSC resolution reiterates the concern of "the threat of illicit trafficking in nuclear, chemical, or biological weapons and their means of delivery, and related materials, which adds a new dimension to the issue of proliferation of such weapons and also poses a threat to international peace and security."

The relationship between China and Pakistan has also been a major hurdle in India's membership to the Nuclear Suppliers Group (NSG). China has repeatedly blocked India's entry on the grounds that only signatories to the Non-Proliferation Treaty (NPT) can be a member of the NSG. China has reiterated that it is not singling India out specifically and it is purely adhering to the rules and regulations of the NSG. Indian experts on the matter have observed that it is likely that China has blocked India's entry into the NSG, in a show of solidarity with its ally, Pakistan. With the seizure of the autoclave, India can raise the issue at international platforms to hold China and Pakistan and put them on the defensive. India must call upon its friends and partners such as the United States and France to pursue this case.

The seizure of the autoclave has reaffirmed New Delhi's stance that Pakistan's nuclear programme is further strengthened by China. India, therefore, also needs to be mindful of the increasingly deepening alliance and take into account the two-front threat the country faces in New Delhi's security calculations. Given the rare occasion where India has substantial evidence to hold Beijing accountable, it is important that India uses this opportunity to bring international attention to the matter. New Delhi is confronted with an opportunity to justify national security interests at a domestic and international context and must do so in order to further its position in the nuclear world order.

<https://www.orfonline.org/expert-speak/drdo-seizes-mislabeled-autoclave-from-chinese-ship-nuclear-opportunity-india-64523/>

Hundreds of sorties, 336 tonnes of supplies, IAF is now govt's transport service in lockdown

The IAF has carried out nearly 70 sorties for 300 tonnes of essential supplies just in the northern sector — covering Leh, Ladakh and Srinagar — since 25 March

By Amrita Nayak Dutta

New Delhi: As the country grapples with the coronavirus pandemic, the Indian Air Force (IAF) has deployed its transport fleet to aid the efforts, emerging as the essential transport service for the government.

Sources in the IAF told ThePrint that the force's transport aircraft have in the last month flown over hundreds of sorties ferrying over 336 tonnes of medicine, ration and other essential supplies to various parts of the country.

The work is being carried out through transport aircraft such as the C-17, C 130, AN 32 and the Dornier. The IAF's primary transport chopper, the MI-17 V5s, have also been put into action and have been transporting swab samples for testing.



The sources told ThePrint that nearly 70 sorties have been flown to carry 300 tonnes of essential supplies just in the northern sector — covering Leh, Ladakh and Srinagar — since 25 March.

The sorties in the northern sector also include routine air maintenance missions.

“All other non essential movements have been stopped for now,” a senior IAF officer told ThePrint, referring to the regular movement of men and material carried out by the transport fleet on a daily basis.

Carrying Material across the Length and Breadth of the Country

The IAF had earlier said that it has earmarked aircraft at nodal points to airlift medical supplies and equipment at short notice to proactively support operations against Covid-19.

According to the IAF, its transport aircraft have airlifted essential medical supplies and commodities from nodal points to various states such as Maharashtra, Kerala, Telangana, Nagaland and the Union Territories of J&K and Ladakh.

The service had deployed aircraft to fly in medical supplies and doctors to Leh and fly out blood samples for Covid-19 testing to Chandigarh and Delhi.

By 1 April, the IAF had airlifted nearly 25 tonnes of essential medical supplies from Delhi, Surat and Chandigarh to Manipur, Nagaland and the Union Territories of J&K and Ladakh.

The medical supplies included personal protective equipment (PPE), hand sanitisers, surgical gloves, thermal scanners apart from medical personnel.

Earlier this month, the IAF had airlifted essential medical supplies and commodities from nodal points to Manipur, Nagaland and Gangtok in the North Eastern region.

On 6 April, an AN-32 aircraft airlifted personnel and 3.5 tonnes of ICMR medical equipment from Chennai to Bhubaneswar for setting up testing labs and facilities in Odisha.

The IAF had also airlifted essential medical supplies and commodities from nodal points to Guwahati, Dibrugarh and Mohanbari in the North Eastern region; Prayagraj, Gorakhpur, Bareilly and Agra in the Central region.

The force recently flew dedicated sorties for the Defence Research Development Organisation (DRDO) and airlifted around nine tonnes of raw material from various nodal points for producing personal protective equipment at DRDO production facilities.

“It also airlifted N95/99 Masks manufactured by DRDO. IAF is ensuring that all necessary precautions as specified by the Govt of India to prevent the spread of the contagion, are put in place while undertaking these tasks,” an IAF statement had mentioned.

Essentials to other Countries

The IAF has also helped New Delhi send essential supplies to foreign countries and has flown back Indians stuck in other nations.

The IAF had airlifted critical medical supplies to Male, Maldives, as ‘Operation Sanjeevani’ on 2 April after the island nation faced shortage of essential medical supplies.

On 26 February, the force flew medical supplies to China and evacuated 112 passengers from Hubei province in China. Among these, 76 were Indian citizens.

Last month, an IAF C-17 Globemaster aircraft evacuated 58 Indians from Iran and also carried 529 samples for investigation.

According to an IAF statement, the service is providing medical care to Indian citizens evacuated from Iran and Malaysia at air bases at Hindon and Tambaram respectively.

The service has set up nine quarantine facilities of 200-300 personnel capacity each, at nodal IAF bases across the country. COVID-19 testing laboratory at Command Hospital Air Force, Bengaluru is operational for testing.

The service has also started a 24×7 crisis management cell at Air Headquarters and various Command Headquarters.

<https://theprint.in/defence/hundreds-of-sorties-336-tonnes-of-supplies-iaf-is-now-govts-transport-service-in-lockdown/400805/>



Tue, 14 April 2020

Indian Navy to treat COVID-19 cases on warships as emergency, evacuate patients rightaway

Given the restricted space and high number of personnel on warships and in submarines, physical distancing is a challenge

By Mayank Singh

New Delhi: Coronavirus cases on board Indian Navy ships and submarines on missions will be treated as an emergency and patients will be evacuated immediately, while in extreme cases the mission can be aborted for the safety of the personnel.

“Instructions have been given to all ships and submarines that a case of coronavirus on board be treated as an emergency,” said a Navy officer who did not wish to be named. The first response will be to evacuate the person by a helicopter. If that is not possible, then personnel would disembark on the first available opportunity or if required divert the ship to return to the closest base, he added. The decision has been taken for the safety of the personnel.



Given the restricted space and high number of personnel on warships and in submarines, physical distancing is a challenge. Navy Chief Admiral Karambir Singh on Friday said, “We have to make sure that our operational assets, especially ships and submarines, remain free from the virus. Physical distancing remains a challenge for any warship or submarine. This requires us to apply ourselves, to make sure that our personnel and our readiness is not compromised.”

Due to operational requirements, ships are continuing with Mission Based Deployments, Offshore Security & Coastal Security Patrols which includes the Operation Sankalp, anti-piracy deployments, Indian Ocean Region and Bay of Bengal deployments. “There are between 10 to 15 warships on sail at present with around 3500 men onboard and this is in addition to the coastal surveillance deployments on the east and west coasts,” said the officer.

Six additional warships with their personnel are loaded with HADR bricks and kept on standby for assistance at Vishakhapatam, Kochi and Mumbai to respond to any requests from littoral neighbouring countries like Maldives, Sri Lanka and Bangladesh.

As a precaution, while the number of ships sailing has come down, the number of air sorties for surveillance have been increased to reduce exposure. Also, for harbour requirements to keep machinery/equipment in running condition, minimum strength is maintained with one set of crew manning at one time and not being allowed to mix with the other set.

The Indian Navy is mandated to not only secure the country’s 7516 km length of coastline but also an Exclusive Economic Zone (EEZ) of about 2.37 million km².

The Navies of the United States and France have been dealing with coronavirus outbreaks on board. In the case of the US aircraft carrier USS Theodore Roosevelt, the number of coronavirus cases has reached 550. Its commanding officer Capt. Brett Crozier was removed from command as the letter which he wrote for evacuation of the carrier’s crew was leaked. Three more US carriers and French aircraft carrier Charles de Gaulle have also reported coronavirus cases.

<https://www.newindianexpress.com/nation/2020/apr/13/indian-navy-to-treat-covid-19-cases-on-warships-as-emergency-evacuate-patients-rightaway-2129632.html>

THEWEEK

Tue, 14 April 2020

Southern Naval Command designs air evacuation pod for COVID-19 emergencies

The indigenously-designed pod costs one per cent the price of an imported equivalent

An air evacuation pod (AEP) was indigenously designed by Naval Aircraft Yard, Kochi, under the Southern Naval Command (SNC). The AEP will be used for safe air evacuation of COVID-19 patients from remote areas like islands, and ships in a fully sealed transfer capsule, eliminating the risk of infection for pilots and evacuation teams.

This will also do away with the need to sanitise an aircraft post-evacuation.

The evacuation pod, which was designed under the guidance of principal medical officer of the Naval air station in Kochi, INS Garuda, in consultation with specialists from the Naval hospital INHS Sanjivani and HQSNC, is made of aluminium, nitrile rubber and perspex.



The highlight of the pod is that it weighs just 32 kg, and has a manufacturing cost of Rs 50,000—about one per cent of the price of an imported equivalent item (Rs 59 lakhs), according to a press release.

Trials of patients inside AEP were undertaken on board the Advanced Light Helicopter (ALH) and Dornier aircraft of Indian Navy at SNC and were successfully completed on April 8. AEPs are planned for distribution across southern, western, eastern and Andaman and Nicobar Naval commands.

The successful induction of the AEP will increase the Indian Navy's abilities to fight to contain the pandemic, stated the press release.

<https://www.theweek.in/news/india/2020/04/13/southern-naval-command-designs-air-evacuation-pod-for-covid-19-emergencies.html>

Defence Strategic: National/International



Mon, 13 April 2020

Big Reveal: Why Python-5 was never fired from LCA-Tejas

Israeli developed Python-5 Withing visual range (WVR) air to air missile was denied clearance to be fired from LCA-Tejas even after successful integration since it failed to clear captive flight vibration stress trials and still now waits pending firing trials. Python-5 WVR was supposed to compliment with the Derby BVR missile to engage and destroy a wide spectrum of threats such as attack aircraft, bombers, cruise missiles UAVs and UCAVs and standoff weapons.

Rafael Advanced Defense Systems officials down in India were informed about the decision to keep the firing trials pending and were also given measurement data of the captive flight vibration stress trials for rectification.

idrw.org was informed of the rationale behind the holding of the firing trials of the missile. people familiar with the program have informed that the captive flight vibration stress trials are an important factor that is done to study the effects of the air to air missile reliability and the vibration which derives from the disturbed airflow field around the missile.

In captive flight tests, Python-5 was put through a variety of maneuvers through the flight regime of the aircraft and it was subjected to all possible worst ride and worst possible environment. Rafael Advanced Defense Systems officials had told that they will be conducting laboratory tests which are close to captive flight test so that they can determine ways to fix for the issues but have not been able to come back with the solution but it is expected that the Python-5 is still in the race to be equipped on the Tejas Mk1 and Mk1A when it is ready.

IAF has decided to wait till Python-5 is ready or MBBA's ASRAAM which already has been integrated with Israeli ELA-2052 AESA Radar for the Jaguar Darin-III program and since same AESA Radar will be used on the Tejas M1A ,ASRAAM can be used as standard WVRAAM for the Tejas fleet even though Russian R-73 WVR has been integrated already it will not be the main WVRAAM for the Tejas fleet in the future.

idrw.org has been informed that excess vibration levels in certain frequencies could be harmful to the missile's electronics and it is the responsibility of the contractor for designing and making changes to the missile system.

(Note : Article cannot be reproduced without written permission of idrw.org in any form even for YouTube Videos to avoid Copy right strikes)

<https://idrw.org/big-reveal-why-python-5-was-never-fired-from-lca-tejas/#more-225184> .

THE ECONOMIC TIMES

Tue, 14 April 2020

Training hit at defence institutes, passing out and new inductions likely to be delayed

Due to the lockdown that has prevented the entry of some trainers at the institutes and the restrictions that are likely to remain even after it is lifted, coupled with the final phases of the training that are still left to be completed, the passing out parade of the current batch of students could get delayed.

By Shaurya Karanbir Gurung

New Delhi: The graduation of the current batch of students and the induction of new trainees at the defence forces' training institutes is likely to be delayed due to the coronavirus outbreak and the nationwide lockdown due to it. Training at these institutes has also been severely affected due to the pandemic.

Due to the lockdown that has prevented the entry of some trainers at the institutes and the restrictions that are likely to remain even after it is lifted, coupled with the final phases of the training that are still left to be completed, the passing out parade of the current batch of students could get delayed. The travel restrictions due to the lockdown has also prevented fresh trainees from reaching their institutes. For example, the new batch of trainees at the army's Officers Training Academy (OTA) Chennai and OTA Gaya for shortservice commissioned officers and those coming through the "technical entry" as engineers was to report on March 30, but could not due to the lockdown. There is likely to be deliberations on whether these institutes should have a compressed training schedule for the new batch or continue for the scheduled full duration. Officials, on the condition of anonymity, also said that selection boards of potential candidates for most institutes such as the army's Indian Military Academy (IMA) and the tri-services National Defence Academy (NDA) are not taking place currently. This means that new batches of trainees to these institutes, who are to join in July, could be delayed.

The Delhi-based Naval Headquarters is deliberating on working out fresh schedules for selections of officers and sailors. Some fresh trainees, who could not join the navy for their initial training, would be joining the next batch when travel restrictions are lifted.

Training institutes are hopeful that they can catch up with the lost training schedule, because the passing out parade or graduation of most of them is next month. However, with indications of the Centre likely to extend the lockdown and the rising number of COVID-19 cases, it remains to be seen if the institutes are able to do this on time.

Some of the affected training institutes are the tri-services National Defence Academy (NDA), the army's Indian Military Academy (IMA), OTA Chennai and OTA Gaya, and the navy's Indian Naval Academy (INA) for officers and INS Chilka for sailors. All recruitment rallies for army jawans have also been delayed. This recruitment is done to make up for the numbers who are retiring. But, as recruitment has been delayed, this could lead to a deficiency in strength for some time.

Outdoor activities, including mass physical training, exercises and mandatory specialised camps, have been stopped at these institutes. However, physical training is being conducted in some institutes in small batches, while maintaining social distancing norms. For example, at the

naval institutes certain physical activities for officers, sailors and special forces and diving personnel are happening. Theoretical classes with several students are largely not being conducted for a fear of preventing a contagion. The trainees are being made to do self-study in their rooms with tests and quizzes being given to them, while only non-confidential research material is being given to them on their tablets and computers.

At the NDA, officials said that the training is being done in “bits and pieces”. Every squadron of cadets has been broken up to maintain social distancing. There is no intermingling between squadrons and there are different timings for their activities. For example, if a squadron is headed for breakfast, another one is doing physical exercises in small groups. Every cadet is using a computer to study in his room and attending classes via videoconference. The academy is also working on a skeleton staff. “Although the PoP (passing out parade) is in May, it could get affected. The effect on it and the next batches will have to be seen,” an official said.

Officials said that due to the coronavirus outbreak, the annual training programme at the INA has been “severely affected”. “As COVID precautions involve physical distancing and avoid mass gathering, this has led to stopping and curtailing many activities like classroom instructions, equipment training, PT, drill and swimming. So in all training has been seriously affected. We are therefore assessing on a weekly basis the impact keeping all concerned informed and working out simultaneously the corrective actions and solutions that can be implemented to make up for the lost time,” an official said.

Here too, self study is being carried out by cadets. Online studies involving research and dissertations are happening. Classes have been divided into small batches with different trainers, who also live in the same campus. “The passing out of courses from INA and Chilka is likely to be affected. The lockdown has adversely affected the training schedule as some instructors are living off the base. Mass PT, swimming and drill practice has stopped. Hence, we have to catch on lost training time. Moreover, there are bound to be travel restrictions even as lockdown is lifted. Hence, passing out schedules and reporting of the next batch is going to get affected,” an official said.

The official said that there is scope for catching up. “In case the situation stabilises, then we would be able to recover quickly as the POP at INA is at the end of May and POP at Chilka is in early July,” he said.

Even IMA training is suffering with important activities like jungle and mountain warfare and “Camp Chindit”-- the culmination of all training before commissioning-- could also be affected. This is likely to delay the passing out parade of the cadets in June, officials said.

<https://economictimes.indiatimes.com/news/defence/training-hit-at-defence-institutes-passing-out-and-new-inductions-likely-to-be-delayed/articleshow/75116495.cms>



Tue, 14 April 2020

36 years of Operation Meghdoot, Indian Army says 'doing difficult is routine here'

It was on April 13 in 1984 when the Indian Army along with the Indian Air Force and paramilitary forces launched the 'Operation Meghdoot' to secure the control of the heights predominating the Siachin glacier

By Pushkar Tiwari

New Delhi: It was on April 13 in 1984 when the Indian Army along with the Indian Air Force and paramilitary forces launched the 'Operation Meghdoot' to secure the control of the heights predominating the Siachin glacier.

The military action that resulted in Indian troops gaining control of the entire Siachen Glacier was the first assault launched in the highest battlefield in the world.

The Indian Army took to its official social media accounts and wrote, "This day, that year, Indian Army secured strategically important Siachen Glacier and guards these icy heights of our motherland."

They added, "Doing difficult is routine here, impossible may take a little longer."

Operation Meghdoot was led by Lieutenant General Prem Nath Hoon who recently died in January, 2020.

The Siachen Glacier is located in the Eastern Karakoram range in the Himalayas, just northeast of Point NJ9842 where the Line of Control



between India and Pakistan end and is the second longest glacier in the World's Non-Polar areas.

The Indian Army Troops have been deployed on the world's highest and coldest battlefield from the last 36 years now where they safeguard the nation's frontiers in temperatures between -40 to -50 degrees Celsius.

<https://zeenews.india.com/india/36-years-of-operation-meghdoot-indian-army-says-doing-difficult-is-routine-here-2276144.html>



Tue, 14 April 2020

US approves sale of missile, torpedoes worth USD155 million to India

According to the Pentagon, the Harpoon missile system will be integrated into the P-8I aircraft to conduct anti-surface warfare missions in defense of critical sea lanes while enhancing interoperability with the United States and other allied forces

New Delhi: The Trump Administration on Monday notified the Congress of its determination to sell Harpoon Block II air-launched missiles and lightweight torpedoes worth USD155 million to India. The sale of 10 AGM-84L Harpoon Block II air-launched missiles is estimated to cost USD92 million, while 16 MK 54 All Up Round Lightweight Torpedoes and three MK 54 Exercise Torpedoes are estimated to cost USD63 million, the Defense Security Cooperation Agency said in two separate notifications to the Congress.

A determination in this regard was recently made by the US State Department following a request for this two military hardware made by the Indian Government, the Pentagon said.

According to the Pentagon, the Harpoon missile system will be integrated into the P-8I aircraft to conduct anti-surface warfare missions in defense



of critical sea lanes while enhancing interoperability with the United States and other allied forces.

"India will use the enhanced capability as a deterrent to regional threats and to strengthen its homeland defence. India will have no difficulty absorbing this equipment into its armed forces," the Pentagon said.

While the Harpoon missiles will be manufactured by Boeing, the torpedoes would be supplied by Raytheon, the notification said.

The proposed sale, it said, will improve India's capability to meet current and future threats from enemy weapon systems. The MK 54 Lightweight Torpedo will provide the capability to conduct anti-submarine warfare missions.

“India will use the enhanced capability as a deterrent to regional threats and to strengthen its homeland defense. India intends to utilize MK 54 Lightweight Torpedoes on its P-8I aircraft. India will have no difficulty absorbing these systems into its armed forces,” it said.

In both the notifications, the Pentagon said that the proposed sale of these equipment and support will not alter the basic military balance in the region.

According to the Pentagon, this proposed sale will support the foreign policy and national security of the United States by helping to strengthen the US-Indian strategic relationship and to improve the security of a major defensive partner, which continues to be an important force for political stability, peace, and economic progress in the Indo-Pacific and South Asia region.

<https://www.indiatvnews.com/business/news-us-approves-sale-of-missile-torpedoes-worth-usd155-million-to-india-607440>



Tue, 14 April 2020

Why China underestimates India's growing Navy

Accidents happen at sea

By Michael Peck

Here's What You Need To Remember: It's not as if America and Russia haven't had plenty of naval disasters (the *USS Fitzgerald* and the submarine *Kursk*, anyone?), or spent billions on failed weapons. Accidents happen when warships go to sea. Sometimes for the dumbest of reasons, but they happen.

India's only aircraft carrier suffered a fire that left one sailor dead.

And China, which is India's rival, says this is because Indians aren't competent enough to operate advanced military equipment.

The fire broke out in the engine room of the carrier *Vikramaditya* as it entered the Indian naval base at Karwar on April 26.

The blaze was extinguished, but not before an Indian Navy lieutenant commander, who led the firefighting effort, was overcome by fumes and later died in hospital, according to Indian media. He had gotten married just a month earlier.

The Indian Navy reported that the fire had not seriously damaged the combat capabilities of the vessel, which is India's only operational carrier. The 45,000-ton *Vikramaditya* – the ex-Soviet carrier *Admiral Gorshkov* -- had just completed a deployment in the Arabian Sea, and was preparing to begin joint exercises with the French Navy's only aircraft carrier, the *Charles de Gaulle*, off the Indian coast.

The cause of the fire has not yet been disclosed. But Chinese media quickly ran a story that suggested the fire was the result of Indian incompetence. Li Jie, a Chinese naval expert, told the state-owned *Global Times* newspaper “that the fire was more likely to be out of human error rather than mechanical problems. The fire and the extinguishing process suggested that they are unprofessional and unprepared to address such an emergency, he said.”



“India has been actively developing its military in recent years, but ‘its military culture is lax and it has loose regulations,’ which cannot effectively train soldiers to operate advanced military equipment, Li said.”

That criticism comes despite that fact that India has far more experience than China in operating aircraft carriers. India’s first carrier, the *Vikrant*, a former World War II British carrier, was commissioned in 1961. It performed combat duty in the 1971 India-Pakistan War. China’s first carrier, the *Liaoning* – the ex-Soviet carrier *Varyag* – wasn’t commissioned until 2012. It has yet to see action.

Ironically, both India and China are in the midst of ramping up their carrier fleets. India is completing a new *Vikrant*, which will be the nation’s first domestically-produced carrier. It has also announced plans to build a 65,000-ton carrier, which might even be based on the Royal Navy’s Queen Elizabeth-class vessels.

China’s first indigenous-produced carrier, a Type 001A vessel, is scheduled to be launched in late 2019. Beijing appears to have far grander ambitions than India, with reports indicating that the People’s Liberation Army Navy may get as many as six new carriers by 2035.

China’s contempt for Indian technical competence also seems misplaced. In 2003, all 70 sailors aboard the Chinese diesel submarine *361* died, probably because an engine malfunction suffocated them. China’s first nuclear-powered missile submarine was so bad that it only sailed once.

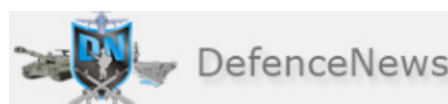
In fact, during the Cold War, it was China that relied on huge armies of infantry armed with old Soviet-designed weapons. India was able to use mechanized forces to win wars against Pakistan in 1965 and 1971. Shocked by the lethality of American smart weapons during the 1991 Persian Gulf War, China has since embraced high-tech warfare, from stealth fighters to hypersonic missiles, with all the zeal of a convert.

The Indian military certainly deserves its share of criticism. It has suffered numerous accidents over the past decade, including a corvette that sank after a collision with a merchant vessel in 2006. Development of new weapons, such as the Arjun tank and the Tejas fighter, has become notorious for delays, cost overruns and technical problems.

But it’s not as if America and Russia haven’t had plenty of naval disasters (the *USS Fitzgerald* and the submarine *Kursk*, anyone?), or spent billions on failed weapons. Accidents happen when warships go to sea. Sometimes for the dumbest of reasons, but they happen.

China and India are rivals. And underestimating your enemy is always a mistake.

<https://nationalinterest.org/blog/buzz/why-china-underestimates-indias-growing-navy-143887>



Tue, 14 April 2020

Russian Defense Ministry working on new generation of g-force pilot protection gear

The Russian Defense Ministry’s Research and Testing Center of Aviation and Space Medicine and Military Ergonomics is working on new protective equipment for pilots, using modern materials and technologies, says Igor Zhdanko, Doctor of Medical Science and senior researcher of the medical service, who heads the facility.

The Center is celebrating its 85th anniversary this year. Its specialists have contributed to the renowned space flight of the dog Laika - the first living creature to ever be sent into space. In addition, it participated in Yuri Gagarin’s historic flight.

"Today, our Center is working on new pilot protective gear, which will involve modern materials and technologies," Zhdanko told the *Krasnaya Zvezda* newspaper. "This will be a new generation of ventilated equipment."

He did not provide any further details on the new development.

According to the Center's director, its personnel is now focused on solving the key issues on protecting and preserving a pilot's combat capability in the upgraded and upcoming military planes.

"[These issues include] the justification of methods and the development of requirements for the gear that protects the pilot from dynamic multidirectional g-forces during combat maneuvering. These forces pose danger of loss of consciousness, spine injury, increased crash risk and decreased combat effectiveness," the senior researcher said.

He disclosed that this research is being conducted at the Center's own laboratory bench facility, which possesses unique models of planes and helicopters and research benches that simulate various flight factors, including a centrifuge, a hyperbaric chamber and sound-proof isolation chambers (surdochambers).

He added that a large portion of the research is being conducted during real flights on planes and helicopters, equipped with specialized sensors.

Psycho-physiological Research

Zhdanko also disclosed that the Center's specialists have developed and are ready to implement methods of psycho-physiological training of pilots, intended to boost their resistance to such flight factors as high and prolonged excessive g-forces.

Besides, the Center has innovated four generations of ejection seats that are considered the best in the world. It has also come up with an impact protection for helicopters.

"We have developed unique landing safety systems for armored vehicles that descend with the crew onboard," Zhdanko stated, adding that these systems have already been put into service.

Another issue the Center is working on is improving medical control over the health of pilots, and physiological and psycho-physiological reserves during the training.

Zhdanko underscored that the human factor is one of the most difficult problems for military specialists in military aviation.

"Technical capabilities of planes will keep expanding, while human psycho-physiological capabilities will remain at effectively the same level. The Center's work in the upcoming years will focus on solving these important [...] issues," he added.

<https://www.defencenews.in/article/Russian-Defense-Ministry-working-on-new-generation-of-g-force-pilot-protection-gear-830156>

THE ASIAN AGE

Tue, 14 April 2020

The world must sue China

The pandemic will hopefully encourage nations to look at reform of the UN system and act against China's irresponsible behavior

By Jagannath Panda

Pragmatism and politics have long prevailed over any pretence of reform in the discourse on permanent membership of the United Nations Security Council (UNSC). A set of legal barriers along with the political influence of the permanent members (P-5), particularly China, have obstructed the UNSC reform process. And the obvious victims of this have been the Group of Four (G-4) countries – India, Japan, Brazil and Germany – who are considered the natural frontrunners for permanent berths in the UNSC. Nonetheless, with the coronavirus pandemic questioning the relevance of the global governance regime itself, is it not appropriate to review the relevance of the current decision-making process in the UN and its affiliated bodies?

On March 31, 2020, addressing the socioeconomic impacts of COVID-19, UN secretary-general Antonio Guterres stated that, "Everything we do during and after this crisis must be with a strong focus on building more equal, inclusive and sustainable economies and societies that are more resilient in the face of pandemics, climate change, and the many other global challenges we face."



Beijin's Arrogance

His words assume great significance given the cavalier and authoritarian Chinese approach within both the UNSC and the World Health Organization (WHO). The same arrogance was on display in the early days of the outbreak, when the Chinese authorities tried to cover it up and punished whistle-blowers, allowing the virus to spread around the globe.

In view of the UN secretary-general's comment, the UNSC has largely remained silent on the pandemic. An important reason for this was that for the month of March 2020, the UNSC was under the presidency of China. (It passed to the Dominican Republic in April.) The WHO declared the outbreak as a pandemic on March 11, while the UNSC has still not scheduled a meeting to discuss the rapidly spreading disease. Further, on March 26, China's ambassador to the UN, Zhang Jun, chaired UNSC's first-ever video conference which adopted four new resolutions, none of which, however, pertained to the coronavirus. Further, the Estonian government has blamed China for vetoing its proposal with the help of Russia and South Africa to discuss the COVID-19 situation with transparency.

As a P-5 country, China has time and again influenced the decision-making process in the UNSC on many pressing matters, especially regarding its own national or foreign policy interests. However, it has often fallen short of genuinely supporting global issues in times of need, especially amidst the Covid-19 pandemic. In other words, Beijing has overlooked the principles of a rules-based order that the UN or the UNSC as its highest decision-making body should ideally implement.

And yet, the WHO, a specialised agency of the UN, has been helping China expand its clout as a public health superpower. However, amid the coronavirus crisis, the agency's support of China is drawing questions about the relationship between the two sides. The WHO, which is heavily dependent on Chinese funding, has consistently been lauding Chinese 'transparency' and 'effective management' of the ongoing crisis, news of which in fact was not shared with the organisation until mid-January.

Failure of UN System

The UN system, including the WHO, has not only failed to anticipate the global spread of the virus but is also currently struggling to control the pandemic through a credible medical response system. Apart from the damage COVID-19 has inflicted on the global economy and its supply-chain networks, it has importantly exposed the systemic flaws in the current global governance architecture to address universal health problems across continents. While drugs and vaccines for tackling COVID-19 are still being developed or tested, the wide spreading pandemic is prompting many questions such as: Is it not time for an overhaul of the UN governance systems? Isn't the world deserving of a better world health system and an effective UNSC?

The world needs values and ethical practices, as also leaders with vision who are transparent and trustworthy. The COVID-19 scenario shows that China does not have the required leadership skills that the world currently needs. Its non-transparent governance system, which heavily draws from its opaque authoritarian political system under the Communist Party of China, is certainly a major

obstruction. Even in a health crisis such as this, Beijing has been occupied more with building its own global influence, by supplying masks and medical equipment to cover up its damage. However, the pandemic needs a value-based health care approach that is qualitative in nature, and what countries such as Japan and India could possibly bring to the table, rather than China.

Certainly, the G-4 countries, particularly, Japan and India, offer such an alternative leadership, which has not been as yet explored. The comity of nations, surprisingly, has not realised the importance of such a grouping and its constituent members. For example, Beijing has officially objected to the G-4's bid for permanent membership in the UNSC. The lack of serious support from the United States has only helped sustain Chinese supremacy in the global governance architecture. Despite India's and Japan's international efforts to defend a rules-based order, their bids for permanent membership have effectively been clogged with relative ease by China.

Beijing has rejected Japan's strong candidacy – one of the largest financial contributors to the UN – because it feels that global responsibility should not be judged through financial criteria. In fact, China has time and again revived the issue of Japan's war crimes to prevent this debate from going forward. Likewise, China has never valued India's historical support to China's membership in the UNSC and increasingly views India as pro United States, opposing any prospective entry of India into the organization. Besides, China wants to sustain the global credibility that comes with being the only Asian power with a veto and permanent seat in the UNSC. China has had political differences with Brazil and Germany, too, which have only grown over the years. Brazil's education minister Abraham Weintraub recently drew the wrath of China after he tweeted that coronavirus is part of Beijing's geopolitical 'plan for world domination'. Further, German presence in the P-5 is not something China is ready for, as it would tip the votes in a pro-European Union lobby within the UNSC, even post Brexit.

The current pandemic will hopefully encourage nations to believe in the values of fellowship, harmony and universal well-being to not just pursue UNSC reform or revisit the scope and mandate of international agencies such as the WHO, which have begun to look partisan with greater zeal, but also take actions against China's irresponsible behaviour. Thus, in the post-COVID-19 period, the global community must hold China accountable through treaties, covenants and charters; especially in view of similar health negligence by China during the SARS epidemic in 2002-2003.

Legal options should be explored against China at the WHO for breaching the International Health Regulations, and legal proceedings in the International Court of Justice and the Permanent Court of Arbitration could be initiated too. Such legal actions should not only be explored at the UN-affiliated institutions, but also in other international forums too. For instance, actions could be taken against China under the World Trade Organization rules; claims could be brought before the Hong Kong courts as the actions of state bodies breached the rights under the International Covenant on Economic, Social and Cultural Rights; claims could be brought in the US Federal Courts against the Chinese state as an exemption within the Foreign Sovereign Immunities Act; and options could also be explored in the courts in the United Kingdom against the commercial entities linked to the Chinese state or the Communist Party of China. Time has come to tax and reprimand China for its authoritarian and non-responsible role in the global governance regimes.

<http://www.asianage.com/opinion/oped/130420/the-world-must-sue-china.html>

Tue, 14 April 2020

The role of global cooperation in space after covid-19

By Ajey Lele

The coronavirus pandemic has resulted in the deaths of tens of thousands of people across the globe. It is also causing huge damage to the global economy. According to the predictions of the International Monetary Fund (IMF), 2020 could be the worst year since the Great Depression in the 1930s, with more than 170 countries likely to experience negative per capita income growth due to the pandemic. Countries are taking different measures to mitigate that economic impact, depending on the situations in their countries. However, the process of overcoming economic crisis is going to be extremely difficult. Few businesses would find it hard even to sustain and there is going to be a significant upsurge in unemployment rates.

“Because of the COVID-19 crisis, the Indian government expected to try to reduce the budget allocations made just in February. Science and technology could thus be one sector vulnerable to budget cuts, particularly for new projects.”

Like much of the rest of the world, India is under lockdown. It is bit premature to predict the exact impact of coronavirus crisis on the Indian economy since the situation is still evolving. However, it is clear at this stage that the country will be facing major economic downturn and levels of unemployment will steeply rise. The government has already offered an economic package of 1.7 trillion rupees (\$22.3 billion) in the last month for providing food security and money to the poor. It is expected that the government would shortly announce the next economic stimulus package.

All this would require the government of India to undertake a ruthless review of existing patterns of expenditure. The government budgeting caters to the requirements of various segments of the society, including agriculture, health, education, and railways. The budget has two other important areas of attention: defense and science & technology.

Because of the COVID-19 crisis, the Indian government expected to try to reduce the budget allocations made just in February. However, it could be difficult to make major cuts in the agricultural, social services, and defense sectors. Science and technology could thus be one sector vulnerable to budget cuts, particularly for new projects. It is fully understood that science and technology is one area that always needs a budget boost to ensure progress of research and development and innovation continues unhindered. However, these are difficult times and there would be requirements to make some immediate compromises.

There is a need for the Indian government to prioritize certain projects. For example, the government announced in its 2020 budget a National Mission on Quantum Technologies & Applications (NM-QTA) with a total budget outlay of 80 billion rupees (\$1 billion) over five years. It is a much-required investment because quantum computing, quantum cryptography, and quantum communication would allow India to leapfrog its technology development. However, this project is vulnerable to potential reprioritization by government agencies.



Another major project on the anvil is the Indian Space Research Organisation's (ISRO) Gaganyaan project. This is India's ambitious program for a human mission to low Earth orbit with an estimated cost of 100 billion rupees (\$1.3 billion). Jairam Ramesh, a member of parliament who is also the Chairman of the Parliamentary Standing Committee on Science & Technology, Environment, Forests, and Climate Change, has recently suggested in an interview with Pallava Bagla that under these tight fiscal circumstances India could think of delaying this mission by three to four years.

Today, when the virus is taking so many lives, it would be immoral to even offer a counterargument to opinions like, "Why spend money for going to Moon and Mars when our healthcare sector is suffering?"

Gaganyaan is a spacecraft for carrying an Indian astronaut to space. Four Indian Air Force test pilots are undergoing astronaut training in Russia. It is proposed to fly its first mission by late 2021 or early 2022, lasting for approximately seven days. So far only three countries in the world have demonstrated such capability, namely the US, Russia, and China. There is an opinion in India that, since they are almost two years away from a flight, it could be better to freeze this mission for a few years and allow finances to be diverted to address the COVID-19 crisis.

India is not the only major space power facing major financial challenges owing to the coronavirus pandemic. Thus, while the issue of Gaganyaan is India specific, it still should not be viewed in isolation. In many other nations, major space projects demanding significant financial commitments could be put on the backburner in near future. Various investments in space will under major scrutiny because of this crisis. Today, when the virus is taking so many lives, it would be immoral to even offer a counterargument to opinions like, "Why spend money for going to Moon and Mars when our healthcare sector is suffering?"

At the moment, it is premature to predict what the world will be like after, perhaps, six months. It is not the purpose of this essay to debate about the possibility of a "new world order" in post-coronavirus era. However, in all likelihood, world powers will realize the need for greater cooperation among nations versus any aggressive competition. At the same time, it would be naive to think that power politics would wither away so easily.

But, perhaps, space could offer an excellent opportunity to demonstrate a way forward. It is a reality that many major space missions are money-guzzlers. However, altogether stopping investments in major space projects could work against the long-term interests of humanity. Various space projects among nations are at different levels of maturity. All these projects have relevance, and it could be unwise to terminate these projects. Hence, bilateral and multilateral collaboration could emerge as better options for the future. All this would require various states to alter their mindsets.

Some people have been arguing in favor of global cooperation as a better option, particularly in case of human missions to the Moon and Mars. Now, the time has come for the world to look at the importance and urgency in regard to various proposals in development and on the drawing board. Countries should stop the unnecessary activity of trying to reinvent the wheel in every respect of space experimentation.

In case of India's Gaganyaan mission, a couple of years back some people argued that India should avoid going solo for human spaceflight. In one conference in Goa in 2018, scientist V Siddhartha had suggested that India should actively advance the idea that human space flight programs of all spacefaring nations become an international collaborative program among those national space agencies. Even today, India could lobby to become a part of ISS. This also could allow India to send their astronauts after their successful completion of training to ISS.

It could be a positive development for the global community if nations decide to shift their futuristic ambitious programs from the local to the global level.

Gaganyaan has yet to reach the midpoint of its development. The two uncrewed test flights of this program had been scheduled for December 2020 and July 2021. Two Indian Data Relay Satellite Systems (IDRSS) communications satellites meant for this mission are also under

development. This suggests significant savings for the government if this project is put on hold for some time.

Today, the world is enduring a major crisis that demands drastic measures. After the situation gets stabilized to some degree, the space community can take a measured view about their various ongoing projects and decide on priorities. However, it could be a positive development for the global community if nations decide to shift their futuristic ambitious programs from the local to the global level. It was always known that science would go faster if important countries join hands together to further their space agendas. Now the time has come to bring it in practice.

(Ajey Lele is a Senior Fellow at MP-IDSA, New Delhi. The views are personal.)

<https://www.thespacereview.com/article/3919/1>



Tue, 14 April 2020

India to boost drug ingredient output to pare China reliance

India plans to ramp up production of pharmaceutical ingredients to become an alternative supplier to China.

By Shruti Srivastava

India plans to ramp up production of pharmaceutical ingredients and become an alternative supplier for global drugmakers hit by factory shutdowns in China due to the coronavirus outbreak.

The Indian government has aggressively begun implementing a policy to ramp up local output and emerge as an alternate to China, according to people familiar with the plan who asked not to be identified as discussions are not public yet. The so-called “China-plus one” strategy involves identifying essential drug ingredients, providing incentives to domestic manufacturers and reviving ailing state-run drugmakers, they said.

The deadly coronavirus, which shut down vast swathes of the Chinese economy before becoming a pandemic, snapped global supply chains as factories in Asia’s largest economy fell silent. For India -- world’s single-largest exporter of generic drugs -- this triggered raw material shortages and exposed its dependence on Chinese imports. The south Asian nation relies on bulk ingredients from China to manufacture a fifth of the global supplies of drugs that are off patents.

Highly Dependent

Bulk Drug	% imported from China
Paracetamol	100
Metformin	100
Amoxicillin	90-95
Ampicillin	100
Ibuprofen	85-95
Ciprofloxacin	100

* Source: Pharmexcil, 2018 data

India imports almost 70% of its bulk drugs and intermediates - the chemicals that make a finished drug work -- from China. A number of these are sourced from Hubei province, where the pathogen first emerged in late-December. Of the total \$3.56 billion imports of such products in

2018-19, China's share was \$2.4 billion, according to information presented in the Indian parliament.

The current crisis also gives an opportunity to India to challenge China's stronghold on supplying basic drug ingredients.

Coronavirus Outbreak Exposes Faults in Antibiotics Pipeline

After announcing a 140-billion-rupee (\$1.8 billion) fund last month for setting up three drug manufacturing hubs, the government has identified 53 key starting materials and active pharmaceutical ingredients (APIs) whose output will be boosted on priority, the people said. These include fever-medicine paracetamol and antibiotics such as penicillin and ciprofloxacin.

Discussions are also underway on the viability of reviving on loss-making state-owned drugmakers Hindustan Antibiotics Ltd. and Indian Drugs and Pharmaceuticals Ltd. to speed up this process and ensure affordable medicines, the people familiar said.

"Indian bulk drug manufacturers could grow income by \$3.3 billion if they expand capacity and global supply as the virus outbreak disrupts China's pharma sector," Mia He and Jamie Maarten, analysts with Bloomberg Intelligence wrote in a March 16 note.

Essential Medicines

Of the 373 drugs listed under India's national essential medicines list, some 200 are imported as APIs, mostly from China, Dinesh Dua, chairman of Pharmexcil, an export promotion council under the trade ministry, said Blomberg.

Sudhir Vaid, chairman and managing director, Concord Biotech Ltd, said the government should support local companies by giving low cost power, subsidies and faster approvals. It takes as long as three years to get approvals, Vaid said.

"If the government goes full throttle with the monetary help in one cluster, it can become a success in two years," Pharmexcil's Dua said. "In five years, we can replicate that model throughout the country."

<https://economictimes.indiatimes.com/industry/healthcare/biotech/pharmaceuticals/india-to-boost-drug-ingredient-output-to-pare-china-reliance/articleshow/75128876.cms>

COVID-19 Research

नवभारत टाइम्स

Tue, 14 April 2020

दुनिया में कैसे आया किलर कोरोना वायरस, जानें क्यों रिसर्च पेपर छिपा रहा चीन?

चीन ने कोरोना वायरस (Coronavirus) के ऑरिजिन (Coronavirus Origin) को लेकर अकैडमिक शोधों के प्रकाशन पर प्रतिबंध लगा दिया है। इससे चीन की मंशा पर दुनियाभर में सवाल उठाए जा रहे हैं। चीन (China) ने कहा है कि वायरस के ऑरिजिन को लेकर अतिरिक्त जांच की जरूरत है।

शैलेश शुक्ला

हाइलाइट्स

- कोरोना के कहर से दुनिया बेहाल है और अब तक करीब एक लाख 20 हजार लोग मारे गए
- महासंकट के बीच कोरोना का ऑरिजिन कहां है, इसको लेकर अमेरिका और चीन में जुबानी जंग

- विवादों में आए चीन ने कोरोना के ऑरिजिन से जुड़े अकैडमिक शोधों के प्रकाशन पर प्रतिबंध लगाया।

बीजिंग: [कोरोना वायरस](#) के कहर से पूरी दुनिया बेहाल है और अब तक करीब एक लाख 20 हजार लोग इस महामारी से मारे गए हैं। इस महासंकट के बीच कोरोना वायरस का ऑरिजिन कहां है, इसको लेकर अमेरिका और चीन में जुबानी जंग छिड़ी हुई है। विवादों में आए चीन ने अब नोवेल कोरोना वायरस के ऑरिजिन से जुड़े अकैडमिक शोधों के प्रकाशन पर प्रतिबंध लगा दिया है।

यहां तक कि दो यूनिवर्सिटी ने भी पहले यह शोध प्रकाशित किया और फिर उसे ऑनलाइन डिलीट भी कर दिया। चीन ने कहा है कि वायरस के ऑरिजिन को लेकर अतिरिक्त जांच की जरूरत है। शोध को प्रकाशन से पहले केंद्रीय अधिकारियों से स्वीकृत कराना होगा। इसी वजह से यूनिवर्सिटी की वेबसाइट से शोध को डिलीट किया गया है।

शोधकर्ताओं का मानना है कि चीन के इस कदम के पीछे बड़ी साजिश छिपी हुई है। दरअसल, बीजिंग का प्रयास है कि वह इस धारणा को नियंत्रित करे कि कोरोना वायरस वुहान से फैला था और दुनिया को बताए कि कोरोना वायरस का ऑरिजिन चीन नहीं है। यहां तक कि कुछ चीनी अधिकारियों ने यहां तक कह दिया कि यह वायरस अमेरिकी सेना का काम है। चीन के इस दावे के बाद अमेरिकी राष्ट्रपति डोनाल्ड ट्रंप भड़क गए थे।

कोरोना पर क्या छुपा रहा है चीन?

क्या चीन सरकार कोरोना वायरस पर सच्चाई छुपाना चाहती है। रिसर्च पेपर के प्रकाशन को लेकर जिस तरह के नए और कड़े नियम लगाए गए हैं उससे तो यही जाहिर होता है। यह कोरोना वायरस महामारी के ऑरिजिन को लेकर बनी राय पर नियंत्रण करने की सरकार की एक कोशिश लगती है। सीएनएन की रिपोर्ट के मुताबिक, जनवरी के अंत से ही चीनी शोधार्थी अंतरराष्ट्रीय मेडिकल जर्नल्स में कोविड19 पर अपने अध्ययन प्रकाशित कर रहे हैं।

कोरोना वायरस से जुड़े शोध पर चीन के वैज्ञानिकों के साथ काम कर रहे हॉन्कॉन्ग के एक मेडिकल एक्सपर्ट ने बताया कि उनकी क्लीनिकल एनालिसिस के प्रकाशन में फरवरी तक ऐसा कोई अंकुश नहीं लगाया गया था। नाम न प्रकाशित करने की शर्त पर चीनी शोधार्थियों ने कहा कि इस कदम से देश में महत्वपूर्ण वैज्ञानिक शोध प्रभावित होंगे। उन्होंने कहा, 'यह वायरस को लेकर राय को नियंत्रित करने की सरकार का प्रयास है और वह यह दिखाना चाहती है कि वायरस का जन्म चीन में नहीं हुआ।'

रिसर्च पेपर की कई स्तर जांच, शोध को होगा नुकसान

शिक्षा मंत्रालय ने निर्देश जारी कर रहा है वायरस के ऑरिजिन का पता लगाने संबंधी अकैडमिक पेपर की कड़ाई से जांच की जाएगी। इसे पब्लिश करने के लिए कई स्तर की मंजूरी की जरूरत होगी। सबसे पहले यूनिवर्सिटी की अकैडमिक कमिटी जांच करेगी। इसके बाद उन्हें शिक्षा मंत्रालय के साइंस ऐंड टेक्नॉलजी विभाग को भेजना होगा। वह इस पेपर को स्टेट काउंसिल इसका निरीक्षण करेगा। इसके बाद ही टास्क फोर्स की मंजूरी के बाद ही यूनिवर्सिटी इसे जर्नल में पब्लिश करने को भेजा सकती है। इतनी लंबी चौड़ी प्रक्रिया के बाद शायद ही किसी शोधार्थी में अध्ययन का उत्साह बचा रह जाएगा।

<https://navbharattimes.indiatimes.com/world/asian-countries/how-novel-coronavirus-came-into-the-world-know-why-china-is-hiding-research-paper/articleshow/75132857.cms>

New drug promises to change Covid-19 response, gets nod for human trials

Scientists are hopeful that a new drug — called EIDD-2801, could change the way doctors treat Covid-19. The antiviral shows promise in reducing lung damage, has finished testing in mice and will soon move to human clinical trials.

By Ankit Kumar

The regulatory body for drugs in the United States, the Food and Drugs Administration (FDA) has given a go-ahead for the human clinical testing of a new drug being developed by researchers of Emory University.

Named EIDD-2801, the drug is being touted as a 'relief drug' for Covid-19. The results of the anti-viral drug being developed by researchers at UNC-Chapel Hill Gillings School of Global Public Health was recently published, which showed that it could “prevent severe lung injury in mice infected with the associated virus SARS-CoV”. Similar results were visible with cultured human lung cells infected with SARS-CoV-2 as well.

What’s the big deal about EIDD-2801?

The new drug is claimed to be a dedicated anti-coronavirus drug which promises to be effective against the entire virus family known as coronavirus. Other interventions against the novel coronavirus under development include the development of vaccines, reuse of old drugs such as hydroxychloroquine (HCQ) and Avigan and convalescent plasma therapy.

While a vaccine may take 12-18 months to come to life with a significant risk of unknown long-term side-effects and issues of overall effectiveness, anti-viral drugs such as HCQ and Avigan have not been able to win the decisive vote of medical experts due to various reasons including the side-effects. The convalescent plasma therapy is a complicated therapy which requires advanced hospital infrastructure.

The EIDD-2801, on the other hand, is a simple new anti-viral drug which has shown effective results against Covid-19 and can be taken as a pill. “This new drug not only has a high potential for treating Covid-19 patients but also appears effective for the treatment of other serious coronavirus infections,” said Ralph Baric, Professor at Department of Microbiology and Immunology in a statement.

“When given as a treatment 12 or 24 hours after the infection has begun, EIDD-2801 can reduce the degree of lung damage and weight loss in mice, which is expected to be longer in humans,” the researchers said.

Clinical studies of the drug in humans are expected to begin in a few weeks time. If successful, the researchers hope this drug to be the first line of defence against the coronavirus, preventing future outbreaks.

Unlike most other potential Covid-19 treatments which require to be administered intravenously, this drug can be delivered orally as a pill “which offers a potential advantage for treating less ill patients where many people have been exposed but not sick yet,” a statement from Emory University said.

The research team has entered into an agreement with pharma company Ridgeback Biotherapeutics for trial and development of the drug.

<https://www.indiatoday.in/science/story/new-drug-promises-to-change-covid-19-response-gets-nod-for-human-trials-1666240-2020-04-12>

Stop, fight, kill: Karnataka opens multiple fronts in corona

By Chethan Kumar

Bengaluru: From startups to hospitals and scientific institutions, Karnataka -- dubbed India's science capital -- has responded overwhelmingly with technological innovations and proposals to help the country battle Covid-19.

Many institutions, startups, defence laboratories, PSUs and independent innovators have technologies that hold potential.

WIELD THE SHIELD, CANON & COPTER SPRAY

SCALENE HYPERCHARGE CORONA CANON (SHYCOCAN)

- Developed by Bengaluru-based Rajah Vijay Kumar
- In SARS-CoV-2, initial attachment of the virion to the host cell is initiated by interactions between S-protein and its receptor. The guiding mechanism is negative transmembrane potential of the host cells



SHYCOCAN is intended to disable S-protein in the virus by neutralising it with negatively charged electrons. The device, which can produce 10 to 100 trillion ions per second, is able to provide an electron density of a minimum 6 trillion per cubic centimetre at a distance of at least 12 centimetres from the canon

AEROSOL SHIELD

- Developed by IISc team led by Manish Arora
- Meant to protect doctors and medical personnel treating critical Covid-19 patients
- While placing a patient on a ventilator or for anaesthesia, a tube is inserted into the patient's airway through his/her mouth. This exposes the medical team to air exhaled by the patient, which might carry aerosolized infectious virus. This shield is meant to protect them



HEXACOPTER

- Developed by General Aeronautics, a startup at IISc
- Was first used by BBMP to spray disinfectants
- Now, city police are trying surveillance & audio messaging to enforce lockdown



TIMES VIEW

Popular American children's television host Fred Rogers once said that in times of trouble, one should take heart from the helpers. Those who put in time, money and effort into finding solutions to help people deal with the Covid-19 pandemic, are the helpers, the heroes. The fact that IISc is so deeply involved in this is heartening. It is now up to the state to make sure that valid solutions and tools developed by scientific institutions, NGOs and others, after appropriate testing, are deployed effectively in the battle for the nation's health.

OXYGEN CONCENTRATORS

- Being developed by IISc team led by Praveen C Ramamurthy
- To help make oxygen supplies available at remote places and meet overwhelming demand from hospitals
- These concentrators could be coupled with ventilators. Mechanism being created to control flow and direction for optimum oxygen generation. Concentrated oxygen can be directly used with ventilators



SPECIAL COATING TO CONTAIN VIRUS

- Developed by Jayanta Haldar and team at JNCASR
- One-step curable anti-microbial coating which when sprayed on surfaces such as cotton, polyurethane, polystyrene, polyvinyl chloride, has the potential to contain infectivity of SARS-CoV-2, which causes Covid-19
- It has already worked on influenza virus with 100% disabement



MOBILE DIAGNOSTIC TESTING LAB

- Being developed by IISc team led by Sai Siva Gorthi
- Goal is to scale up diagnostic testing capabilities and cut down turnaround times from sample collection to test results from 3 days to 1 day



The Indian Institute of Science (IISc) is leading with at least 12 technologies that could aid efforts in tackling the pandemic. Its latest invention is an aerosol shield to protect medical personnel treating critical Covid-19 patients, developed at the request of doctors at Nimhans.

A team from IISc's Centre for Product Design and Manufacturing has built four such shields in 48 hours.

Drones that can be used for disinfection, contact tracing app, network analytics, ventilator projects and a mobile diagnostic testing lab are among IISc's other 11 projects.

At Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), scientists have developed a one-step curable (able to dry) anti-microbial coating which when sprayed on surfaces has the potential to contain the infectivity of SARS-CoV-2, which causes Covid-19. The project was approved for funding by the department of science and technology, after TOI reported about it.

Another researcher at the institute, Santosh Ansumali, along with IISc's Alope Kumar, was among the first to create a statewise Covid-19 projection model in India.

The Defence Research and Development Organisation (DRDO), which developed a critical-care ventilator, has transferred the technology to nine companies. Presently, innovation is on to create a 'multi-patient ventilator'.

Defence PSU BEL has stepped in to manufacture and supply 30,000 ventilators for ICUs within the next two months. It has tied up with Skanray, a Mysurubased company.

Further, over 750 proposals relating to technological innovations have reached a special Covid-19-focused accelerator launched by Centre for Cellular and Molecular Platforms, United Nations Health Innovation Exchange and Social Alpha.

Bangalore Life Science Cluster (BLiSC) is also actively participating in the national efforts to track, study and counter the pandemic.

<https://timesofindia.indiatimes.com/city/bengaluru/stop-fight-kill-karnataka-opens-multiple-fronts-in-corona-battle/articleshow/75117915.cms>