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समाचार पत्रों से चयित अंश

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DEFENCE AVIATION POST
Your Connect To The World Of Defence And Aviation

Wed, 29 April 2020

DRDO adapts two more bio-warfare technologies to fight Covid-19

The by the Defence Research and Development Organisation (DRDO) has adapted two more technologies developed for bio-warfare applications for detection of COVID-19 in humans.

DRDO sources said two technologies based on immunological detection and gene amplification are being offered to the private industry for development and fast-tracking commercial production.

This is in addition to technology and specifications for a host of other items made available to the industry by DRDO to help in the fight against COVID-19.

According to a senior scientist, the immunological detection technology for COVID-19 is based on the detection of certain types of antibodies present in the human bodies by using antigens.

An antigen is a toxin or other foreign substance which induces an immune response in the body, especially the production of antibodies. The SARS-CoV-2 antibodies present in the human test sample binds to the antigens and the reaction is then analysed through scientific processes to determine the presence of the virus.

The other technology is the "reverse transcription loop mediated isothermal amplification," which scientists say, is a new generation innovative procedure that detects genomic viral RNA (Ribonucleic Acid) in human samples.

DRDO has listed over 43 items designed and developed by it that can be adapted or modified for use in the fight against COVID-19 and are open for manufacture by the private industry.

These include personal protection gear, virus detection and neutralisation items, shelters, sanitisers and safety gadgets and medical equipment.

https://www.defenceaviationpost.com/2020/04/drdo-adapts-two-more-bio-warfare-technologies-to-fight-covid-19/

THE HINDU

Wed, 29 April 2020

Manufacturing of PPE coveralls ramped up

Over 1 lakh units made per day

Coimbatore: The capacity to produce coveralls in the country has been ramped up to more than one lakh units a day, according to an official press release.

Bengaluru has emerged as the hub for manufacture of Personal Protective Equipment (PPE), accounting for nearly 50% of the production. Other places that have a large number of approved production units are Tiruppur, Chennai, Coimbatore, Ahmedabad, Vadodara, Ludhiana and Bhiwandi. Large-scale garment units in Bengaluru had taken to PPE coverall production in a big way. Some of these companies, that have scale of manufacturing, have invested in additional machinery as well.

A large number of non-woven textile manufacturers in Coimbatore-Erode belt in Tamil Nadu supply fabric to the coverall producers.

The release added that four laboratories in India have the synthetic blood penetration resistance test facilities and necessary approvals to conduct tests and certify body coveralls required for COVID-19.

These are, the South India Textile Research Association in Coimbatore, Defence Research and Development Establishment in Gwalior, and two laboratories under the Ordnance Factory Board — Heavy Vehicles Factory at Avadi and Small Arms Factory at Kanpur.

A unique certification code is generated for the prototype samples sent to these labs by the manufacturers of fabric and coveralls and the results are published on the websites of DRDO, OFB and SITRA. The laboratories now accept the sample of testing only on submission of an affidavit in the prescribed format by the organisation that wants to get the sample tested.

An official at SITRA said the association gets nearly 200 samples a day from different parts of the country.

https://www.thehindu.com/business/manufacturing-of-ppe-coveralls-ramped-up/article31457319.ece

Outlook
THE FULLY LOADED MAGAZINE

Wed, 29 April 2020

IIT students develop intubation boxes for Covid-19 patients with breathing problems

By Gunjan Sharma

New Delhi: Students at the Indian Institute of Technology (IIT) have developed low-cost intubation boxes for dealing with COVID-19 patients facing breathing issues and requiring assistance in the form of endotracheal intubation.

Intubation is the process of inserting a tube, called an endotracheal tube (ET), through the mouth and then into the airway. It is done so that a patient can be placed on a ventilator to assist with breathing during anaesthesia, sedation or severe illness.

The device developed by IIT Guwahati functions as an aerosol obstruction box which can be placed atop the patient"s bed on the head-side, limiting the flow of virus-laden droplets from the patient to the doctor, especially during the process of intubation.

According to the team, the primary prototype of the design has been completed at the Defence Research and Development Organisation (DRDO) and the box is currently being reviewed at major COVID-19 care centres including at the All India Institute of Medical Sciences (AIIMS). It will be available at much cheaper price than the ones available at present.

"Amid the dearth of PPE such as Powered Air-Purifying Respirators (PARPs) and well-sealed face masks, it becomes essential to complement the use of makeshift acrylic face shields, N95 masks and surgical respirators, with a proper obstruction for aerosol spewed via the mouth and nose of the patient. The intubation box allows having this protection in place by limiting the infection within the box"s volume around the patient," Umang Mathur, a B.Tech student at the Department of Bioscience, told PTI

"Unlike other PPE, this box works effectively for multiple doctors and nurses serving the patient. While the transparent material allows visual access to the head of the patient inside, the arm-holes on the box allow for the care-provider to perform any necessary tasks including intubation and extubation, which are both processes known to be cough inducing. Further, the boxes are reusable, as they may be cleaned thoroughly with 70 per cent alcohol or bleach, to allow use for the next patient," Umang added.

According to Sanchit Jhunjhunwala, a Mechanical Engineering student, based on the feedback received from AIIMS and other COVID-19 health centres, the design will be further optimised for improved efficacy, before the first batch is manufactured in Gurgaon (Haryana).

"We have started a crowd funding campaign in order to manufacture these boxes and provide them to government hospitals for free. The campaign raised a record INR 50,000 within six hours of launching," Sanchit said

"It is a low-cost alternative to intubation boxes and is easier to manufacture and deliver amid the lockdown. The projected cost per box is INR 2000, which is significantly lower than existing alternatives," he added.

The six-member team includes Prateek Manocha and Vrishank Bhardwaj, from department of electrical engineering; Shwetank Panwar from Department of Biosciences and Bioengineering and Vignesh Kumar from Department of Design.

The Government-run Industrial Training Institute (ITI) in Behrampur has also developed an aerosol box for intubation process.

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

https://www.outlookindia.com/newsscroll/iit-students-develop-intubation-boxes-for-covid19-patients-with-breathing-problems/1816994

the pioneer

Wed, 29 April 2020

Rajnath asks OFB, DPSUs to ramp up production

New Delhi: Defence Minister Rajnath Singh on Tuesday directed the defence public sector undertakings (DPSU) and Ordnance Factory Board (OFB) to be ready with contingency plans to ramp up production and contribute extensively to the economic recovery.

Taking stock of the overall preparedness of the PSUs to compensate for the lost working time due to lockdown, Singh referred to Prime Minister Narendra Modi's plans to revive the economy post-lockdown and said the defence production units along with private defence industry could play a major role in the economic revival. The minister conveyed this message during video-conference meeting with the PSUs and OFB.

"Several Units of OFB and DPSUs which are located in non-red zones have already started operations. Almost all DPSUs have made contingency plans to ramp up production after the lockdown is lifted by drawing up plans to work in three shifts and extending the work days from five to six days a week," defence ministry officials said after the meeting. They also said work will be carried out in the defence factories by observing social distancing and other relevant health guidelines.

During the conference, OFB conveyed that it has manufactured 12,800 overalls, developed specialised machines for testing Personal Protection Equipment (PPE), supplied 6.35 lakh masks to local authorities and 340 specialised tents to Arunachal Pradesh for COVID 19 patients. The OFB is more than 100 years old and has 41 factories across the country manufacturing missiles, tanks, guns, ammunition and other weapons for the armed forces.

The Bharat Electronics Ltd (BEL) has made arrangements to manufacture 12,000 ventilators in the month of May 2020 and another 18,000 in June 2020, the defence ministry statement said adding, around 3,000 engineers will also participate in training health professionals in operationalising these ventilators.

The Department of Defence Production (DDP), defence ministry, OFB and DPSUs made a contribution of ?77 crore to the PM CARES fund generated from Corporate Social Responsibility (CSR) funds and one day salary contribution, the statement said.

Separately, the Defence Research and Development Services (DRDS), the main cadre of Defence Research and Development Organisation (DRDO) to which about 7,000 scientists belong, made a contribution of ?10 lakh to PM CARES fund in addition to one day salary. The demand draft of ?10 lakhs was handed over to Minister of State for Defence Shripad Naik by All India DRDS Association (AIDA) last week.

During the conference, the OFB also reported that there was no COVID 19 positive case in any of its 41 manufacturing locations. Moreover, in its fight against the coronavirus pandemic, the OFB distributed one lakh litres of hand sanitizer and earmarked 280 isolation beds at its hospitals in 10 locations.

The aviation conglomerate Hindustan Aeronautics Limited (HAL) has also earmarked 93 isolation beds in Bengaluru for COVID-19 patients. The HAL has manufactured 300 aerosol cabinets and supplied them to various hospitals. It has also distributed 56,000 masks and extended support to migrant labour.

The Bharat Dynamics Ltd (BDL) is also working with eminent scientists for finalisation of design for ventilators and to make the prototype. The

Mazagon Dock Shipbuilders Limited (MDL) provided PPE and medicines worth Rs Five lakh to Naval Quarantine Centre, Mumbai and distributed 4,000 litres of sanitiser.

Secretary, (Department of Defence Production) Raj Kumar, senior officials of Department of Defence Production, senior officials of OFB, BEL, HAL, MDL, Bharat Earth Movers Ltd (BEML), Garden Reach Shipbuilders & Engineers Ltd (GRSE), BDL, Hindustan Shipyard Ltd. (HSL), Midhani Mishradhatu Nigam Ltd (MIDHANI) and Goa Shipyard Ltd participated in the video conference.

https://www.dailypioneer.com/2020/india/rajnath-asks-ofb--dpsus-to-ramp-up-production.html

DEFENCE AVIATION POST
Your Connect To The World Of Defence And Aviation

Wed, 29 April 2020

TEDBF v/s. N-AMCA: Future of Indian Navy

The Aeronautical Development Agency (ADA) controlled by the Defence Research & Development Organization (DRDO) will develop a Twin Engine Deck Based Fighter (TEDBF) for the Indian Navy (IN) instead of persisting with the development of a Mk2 variant of the LCA-Navy (NLCA) design.

The DRDO offered to develop a new twin-engine deck-based fighter aircraft for the Navy based on the experience of the Naval Light Combat Aircraft (LCA) and it should be ready by 2026, Navy Chief Admiral Karambir Singh said on 03 December 2019. He also noted that the Navy expected to have the first Indigenous Aircraft Carrier (IAC-1) Vikrant operational by 2022. "The Qualitative Requirements [QR] are being made.

They said they should be able to push it out by 2026. If it meets our time and QR requirements, we will definitely take it [fighter aircraft]," he said at the customary annual press conference ahead of the Navy Day.

The advantages of a twin-engine design are many, first, it will have increased speed and maneuverability, the jet will have enhanced range because it can carry more fuel and with refueling, it can be extended to well over 2000 km. It can carry larger combat loads. It is also less susceptible to mechanical failures or combat damage.

It can carry larger combat loads. At high altitudes, using two engines will have tremendous supplemental benefits, as losing a single engine jet over water or land is a much more life-threatening experience. System redundancy is a tertiary benefit of multi-engine aircraft, since losing engine results in only a 50% loss in total available thrust, plus redundant generators and hydraulic pumps will allow the aircraft to fly. In addition, having two engines will reduce training losses.

TEDBF/ORCA will borrow most of the cockpit technologies like Next Generation Wide Area Display (WAD) and side-stick controls from the MWF program and will also have the same high powered Digital flight control computer (DFCC) along with the same set of UTTAM AESA Fire Control Radar matted to bolt-on Infrared Search and Track (IRST) system for optically hunting down enemy aircraft, especially stealthy ones from the MWF program.

The new TEDBF fighter will be powered by two GE F-414 engines and the aircraft will have an all-up weight (AUW) of 24 tonnes. The aircraft will reportedly have a payload capacity of 9 tonnes and a maximum speed of approximately Mach 1.6. The aircraft would be comparable in size with the MiG-29K fighter jet currently operated by the Indian Navy from INS Vikramaditya.

Naval AMCA

LCA-Navy Mk1 seems to be a learning experience that both ADA and Navy relied on to avoid repeating the same mistakes. It is also recorded fact that airforce to navy conversion is much harder than the vice versa. Su-33 and Mig-29K which were developed from their Air force version still have a long list of issues that simply can't be fixed and even F-35C stealth fighter developed by the

united states for its Navy has many technical issues that limit its performance against F-35A which is its air force version.

Naval-AMCA will also need to make space for structural reinforcements and have the ability to carry additional fuel and not to forget reinforced landing gears, tail hooks, and larger wings to for increased low-speed control for carrier landings.

Naval-AMCA will also weigh more due to the strengthening of the air frame which might result in additional thrust requirements required by the Naval-AMCA to make carrier takeoffs with reasonable weapons load and fuel.

https://www.defenceaviationpost.com/2020/04/tedbf-v-s-n-amca-future-of-indian-navy/

COVID-19: Defence Forces Contribution

THE ECONOMIC TIMES
WWW.ECONOMICTIMES.COM

Wed, 29 April 2020

100 ft apart: Indian Army develops remote-controlled trolley to deliver essentials

Indian Army innovates

In the wake of the coronavirus pandemic, a number of entities, both private and public, are developing model solutions to combat the crisis. The Indian Army, too, has developed a remote-controlled trolley to deliver essential items.

Frontline duties

According to a TOI report, the Corps of Electronics and Mechanical Engineers (EME) of the Indian Army has created a remote-controlled vehicle to deliver essential items to frontline healthcare staff and others. In a Twitter post, the army showcased several images of this remote operated trolley.

The design

The trolley comes equipped with a wash basin and dustbin. It also has storage space which can be used in hospitals and isolation wards.

"Indian Army EME as part of anti-covid measures has innovated a remotely operated vehicle which can deliver essentials to personnel from 100 feet as part of social distancing," the army said in the Twitter post.

Minimising interaction

The trolley looks basic and is improvised with electrical fittings to serve the purpose. "This will decrease human contact and chances of infection from spreading. We will fight COVID together," it said in a tweet.

Other innovations

The army also recently developed low-cost innovations to help medical workers fight the coronavirus disease, including surgical masks, hand sanitiser, anti-aerosolization box, and a thermal scanner.

https://economictimes.indiatimes.com/news/defence/100-ft-apart-indian-army-develops-remote-controlled-trolley-to-deliver-essentials/indian-army-innovates/slideshow/75424400.cms

नवभारत टाइम्स

Wed, 29 April 2020

Covid-19: एयर इंडिया और नौसेना ने कसी कमर, स्वदेश लाए जाएंगे खाड़ी देशों में फंसे भारतीय

खाड़ी देशों में फंसे भारतीय नागरिकों को कवायद तेज हो गई है। इस मिशन पर एयर इंडिया और भारतीय नौसेना को संभवत: लगाया जा सकता है। इन दोनों को ही तैयार रहने के लिए कहा गया है। खाड़ी देशों में फंसे भारतीयों में अधिकांश मजदूर हैं। यह निर्धारित करने के लिए चर्चा चल रही है कि उनके निकासी का खर्च कौन वहन करेगा। ये खर्चा सरकार उठाएगी या फिर उन यात्रियों से वसूला जाएगा।

विनीत त्रिपाठी

हाइलाइट्स

- *खाड़ी देशों में फंसे भारतीय नागरिकों को वापस लाने की तैयारी*
- *इस मिशन पर एयर इंडिया और भारतीय नौसेना को लगाया जा सकता है*
- *खाड़ी देशों में अब भी फंसे हुए हैं हजारों भारतीय*
- *बार-बार दूतावास कर वापस अपने घर लौटने की गुहार लगा रहे हैं ये लोग*
- *भारतीय विदेश मंत्रालय ने सभी एजेंसियों को रिपोर्ट सौंपने के लिए कहा*

नई दिल्ली: कोरोना वायरस (Coronavirus) का कहर पूरी दुनिया में बरप रहा है। विश्व के तमाम देशों में फंसे भारतीय नागरिकों को विभिन्न विमानों से अपने देश लाया गया है लेकिन अभी भी खाड़ी देशों में कुछ लोग फंसे हुए हैं, इनको वापस लाने के लिए एयर इंडिया (Air India) और नेवी (Indian Navy) को तैयार किया गया है। हालांकि खाड़ी देशों (Gulf Countries) में कोरोना वायरस के खतरे को देकते हुए अभी इनको रोक दिया गया है। न्यूज एजेंसी एएनआई के मुताबिक सरकार के शीर्ष सूत्रों ने कहा, " हम लोग भारतीय नागरिकों को खाड़ी देशों से निकालने का प्लान बना रहे हैं। अभी हम हालात पर नजर बनाए हुए हैं और उसी के हिसाब से तैयारी कर रहे हैं। हमने एयर इंजिया और भारतीय नौ सेना को भी कहा है कि वो अपनी विस्तृत योजना बनाएं।

दुबई में भारतीय अधिकारी ने की पुष्टि

ऐसी रिपोर्ट आने के बाद दुबई में भारत के महावाणिज्य दूत विपुल ने स्थानीय अखबार खलीज टाइम्स से कहा, "हम अभी भी इस मामले पर दिल्ली से आधिकारिक पुष्टि की प्रतीक्षा कर रहे हैं। निकासी का तरीका भारत सरकार द्वारा तय किया जाएगा और मुझे यकीन है कि एयर इंडिया इस मिशन में शामिल होगा। भारतीयों को वापस ले जाने के लिए नौसेना की भूमिका होगी इसकी जानकारी मुझे नहीं है।" घर लौटने के इच्छुक भारतीयों से रजिस्ट्रेशन के विषय पर विपुल ने कहा, "इसकी आधिकारिक प्रक्रिया शुरू होना बाकी है। इस मिशन के लिए ऑनलाइन रजिस्ट्रेशन सुविधा दी जाएगी। हम इस मुद्दे पर दिल्ली से अंतिम फैसला आने का इंतजार कर रहे हैं।

खाड़ी देशों में कोरोना का कहर

खाड़ी के तमाम देशों में कोरोनो वायरस के बढ़ते प्रकोप के कारण वहां रहने वाले भारतीय नागरिक डरे हुए हैं। हजारों भारतीयों ने खाड़ी देशों से भारत वापस आने की इच्छा व्यक्त की है, लेकिन हवाई सेवा और यात्रा के अन्य साधनों के निलंबन के कारण वे वहां फंस गए हैं।

फंसे लोग लगा रहे हैं गुहार

सरकारी सूत्रों ने बताया है कि कई भारतीयों ने सोशल मीडिया और ई-मेल के माध्यम से दूतावासों से संपर्क किया है, जो अपने घरों में लौटने की इच्छा दिखा रहे हैं। सरकार हर संभव योजना बना रही है और उनको उनके मूल स्थानों तक

पहुंचाने की पूरी व्यवस्था कर रही है। सूत्रों ने कहा, "लगभग 10 मिलियन भारतीय खाड़ी देशों में हैं और उनमें से कई बंदरगाह शहरों में रह रहे हैं, और इसीलिए सरकार ने भारतीय नौसेना को समुद्री मार्गों के माध्यम से निकासी के लिए एक विस्तृत योजना देने के लिए कहा है।"

भारतीय नौसेना ने कहा हम सक्षम

भारतीय नौसेना ने, सरकार को सौंपी अपनी विस्तृत निकासी योजना में, उल्लेख किया है कि "भारतीय नौसेना नौसेना के तीन युद्धपोतों से खाड़ी देशों से 1,500 भारतीयों को निकाल सकती है।" विदेश मंत्रालय (एमईए) आवश्यक प्रक्रिया शुरू करने के लिए राज्यों और केंद्र शासित प्रदेशों के साथ परामर्श शुरू कर चुका है।

सभी एजेंसियां दें विस्तृत रिपोर्ट: विदेश मंत्रालय

विदेश मंत्रालय के सूत्रों के मुताबिक, "हमने आवश्यक व्यवस्थाओं के लिए राज्यों / केंद्रशासित प्रदेशों की सरकारों के साथ अपना परामर्श शुरू किया है। इसी तरह, सभी एजेंसियों को कहा गया है कि एक रिपोर्ट बनाकर सौंपे कि कैसे उनको भारत वापस लाया जाएगा। सूत्रों के अनुसार, नागरिक उड्डयन मंत्रालय के वरिष्ठ अधिकारियों ने एक लेटर में कहा था कि भारत के पास 500 से अधिक विमान हैं और भारतीय विमानन खाड़ी देशों से भारतीयों को निकालने में सक्षम हैं।" खाड़ी देशों में फंसे भारतीयों में अधिकांश मजदूर हैं। यह निर्धारित करने के लिए चर्चा चल रही है कि उनके निकासी का खर्च कौन वहन करेगा। ये खर्चा सरकार उठाएगी या फिर उन यात्रियों से वसूला जाएगा।

तैयार हैं भारतीय नौसेना के ये जांबाज युद्धपोत

गौरतलब है कि खाड़ी देशों में फंसे भारतीय नागरिकों को निकालने के लिए नौसेना ने अपनी तैयारी कर ली है। इसके लिए नौसेना ने अपने तीन सबसे बड़े युद्धपोतों को बचाव अभियान में लगाएगा। लोगों को बाहर निकालने में आईएनएस जलश्व दो अन्य युद्धपोतों के साथ तैयार है। सरकार ने इन युद्धपोतों को कुछ दिनों के भीतर चलने के लिए तैयार रहने को कहा है। चूंकि ये बड़े जहाज हैं, विशेष रूप से आईएनएस जलश्व इसलिए सरकार ने इन्हें भेजने का निर्णय लिया है। सरकार का मानना है कि इन जहाजों के जरिए बड़ी संख्या में लोगों को निकाला जा सकता है इसलिए एयर इंडिया के जंबो की बजाय जहाजों को भेजने का विकल्प चुना गया ।

गंभीरता से विचार कर रही है सरकार

जलश्व अपने चालक दल के अलावा, 1000 सैनिकों को ले जा सकता है और सोशल डिस्टेंसिंग के बाद, यह लगभग 850 लोगों का ले जा सकता है। दो एलएसटी इसकी तुलना में छोटे हैं (कुम्भिर श्रेणी के जहाज) और चालक दल के अलावा कई सौ लोगों को ले जा सकते हैं। यहां तक कि भारतीय नौसेना के पास विशाखापत्तनम, पोर्ट ब्लेयर और कोचीन में आठ एलएसटी हैं, लेकिन दो को बुलाया जा जा रहा है। यदि जहाजों का उपयोग किया जाता है, और यह एक ऐसा विकल्प है जिस पर सरकार गंभीरता से विचार कर रही है, तो खाड़ी देशों से चार से पांच दिन का समय लगेगा और यह इस बात पर निर्भर करेगा कि जहाज किस बंदरगाह से जा रहे हैं। अगर ये लोगों को 3-4 मई से लाना शुरू करते हैं तो उन्हें दो-तीन दिनों का समय लगेगा।

बड़ी संख्या में रहते हैं मजदूर

ईरान, इराक, कुवैत, सऊदी अरब, बहरीन, कतर, संयुक्त अरब अमीरात और ओमान समेत दक्षिणपश्चिम एशिया में फारस की खाड़ी के किनारे वाले देशों को गल्फ कंट्री यानी खाड़ी देश कहा जाता है। यहां पर बड़ी संख्या में भारतीय मजदूर काम करते हैं। यहां पर तेल की फैक्ट्रियों और कंस्ट्रक्शन का काम होता है जहां पर भारतीय मजदूर काम करते हैं। कुवैत, ओमान और बहरीन जैसे छोटे मुल्कों को भी नजरंदाज नहीं किया जा सकता। कुवैत में लगभग 10 लाख भारतीयों का घर है, जहां भारत ने कोरोना से लड़ने के लिए अपनी मेडिकल टीम भेजी थी। तीनों मुल्कों में 15 लाख भारतीय बतौर निवासी या कामगार रहते हैं। यहां तक कि इराक जैसे संघर्ष में उलझे मुल्क में भी तेल श्रमिक, ट्रक चालक आदि के रूप में 17,000 से अधिक भारतीय (पिछले साल का आंकड़ा) काम कर रहे हैं।

https://navbharattimes.indiatimes.com/india/coronavirus-in-india-air-india-and-navy-on-standby-to-evacuate-indians-from-gulf/articleshow/75428071.cms

THE HINDU

Wed, 29 April 2020

Coronavirus | Massive evacuation planned from Gulf

Naval ships and IAF, AI planes readied

By Dinakar Peri

New Delhi: The Union government is drawing up a major evacuation plan involving the Navy, the Indian Air Force (IAF) and Air India to bring back Indians stranded in West Asia following the nationwide lockdown and travel restrictions due to COVID-19, multiple defence sources said.

The IAF will deploy its fleet for evacuation.

"A major evacuation plan is under discussion with the Ministry of External Affairs being the lead ministry. When, where and how many and factors like who is to be evacuated and so on are under deliberation," a defence source told *The Hindu*. The tentative window for evacuation has not been decided yet but it is expected to be after the lockdown ends on May 3.

Defence sources confirmed that Navy and IAF had been asked to work out the modalities from their end and accordingly preparations were on. "An exercise of aircraft availability was done to have a picture about capability, turn around time, sortie generation possibility and so on," a second source said, adding there was no tasking yet.

The IAF has a fleet of US origin C-130 Hercules medium transporters and C-17 Globemaster heavy transport aircraft, in addition to older Russian IL-76 aircraft, which have been playing a major role in recent Humanitarian and Disaster Relief (HADR) efforts.

Naval ships need enough time to sail from their home ports with requisite preparations to handle civilians. "The nation lockdown ends on May 3. So there is reaction time and there is also lot of administrative and logistical issues to be worked out," another defence source said on this.

As reported by *The Hindu* last week, with lockdown close to ending Cabinet Secretary Rajiv Gauba held a meeting of all nodal ministries, including Foreign Secretary Harsh Shringla and all chief secretaries of states and Union territories and took stock of preparations in various States, most notably Kerala, for the return of an estimated 2,00,000 expatriates and other travellers.

There are more than eight million Indians who live and work in the Gulf region and with plummeting oil prices there have been concerns of massive job losses.

It is not yet clear as to which mode of evacuation would be preferred which multiple sources said is yet to worked out.

https://www.thehindu.com/news/national/coronavirus-massive-evacuation-planned-from-gulf/article31457514.ece

DEFENCE AVIATION POST
Your Connect To The World Of Defence And Aviation

Wed, 29 April 2020

No haircuts for Indian Army as coronavirus cases cross 29,000 in India

Even as tens of thousands of uniformed defence personnel fan out to assist with India's response to the coronavirus pandemic, the virus has posed new risks to the Army's core mission, with training exercises, posting and courses canceled or delayed; a new problem has made its way into every soldier's life, which is they might not be able to get a haircut.

In order to keep the Army personnel safe from coronavirus infection, the forces have many restrictions and guidelines in place. Strict adherence to the lockdown is being followed in all cantonments with social distancing and maintaining hygiene being the key aspects. Another important instruction that the soldiers have been given and it has happened for the very first time is not to get haircuts.

Army personnel have to strictly follow the rule of keeping their hair short and getting a haircut each month. It is a part of their routine but with coronavirus scare lurking around, even soldiers can be seen with flicks and slightly longer mane than usual. They are not used to it but they say that it is the need of the hour.

Though every formation and unit in the Army has its own barber, they are still not allowed to get their haircut done. What now concerns them is that if the coronavirus is not contained, they might have to find some way to ensure a proper turnout.

Covid-19 panic grips India

It should be noted that recently panic had struck the Bargaon village in Madhya Pradesh's Khargone district after six villagers were tested positive for coronavirus after going to a hair-cutting salon for hair-cuts and shaving.

Swab samples of as many as 10-12 persons, who recently visited the salon, were sent for COVID-19 testing recently. Six men tested positive out of these.

https://www.defenceaviationpost.com/2020/04/no-haircuts-for-indian-army-as-coronavirus-cases-cross-29000-in-india/

Business Standard

Wed, 29 April 2020

Defence budget may be slashed by 40%, may save Centre Rs 80,000 crore

Addressing an audience of defence analysts in Delhi, the MoD official confirmed reports that the government had ordered the military to limit its first quarter

By Ajai Shukla

New Delhi: Military spending, minus the payroll, would probably be cut by at least 20 per cent from the allocations for the financial year 2020-21 and possibly by as much as 40 per cent, said a senior ministry of defence (MoD) official on Tuesday.

Cutting 20 per cent would save the exchequer about Rs 40,000 crore, while the deeper 40 per cent cut would save as much as Rs 80,000 crore.

Addressing an audience of defence analysts in Delhi, the MoD official confirmed reports that the government had ordered the military to limit its first quarter (April-June) spending to 15-20 per cent of the entire year's budget. She predicted the same cut would be extended to the next three quarters as well.

The official said the ministry of finance (MoF) sent a memorandum to other ministries and departments, ordering an expenditure ceiling of 20 per cent on the military and a spending limit of 15 per cent on civilian ministries.

The spending cap did not apply to defence salaries. In a later communication, the MoF also removed spending limits on defence pensions and the veterans' health scheme.

With this year's salary and pension bill of Rs 276,117 crore exempted from the 20 per cent spending limit, the ceiling is applicable only to the rest of the defence budget – or Rs 195,261 crore out of the overall Rs 471,378 crore. By the end of the fourth quarter, the 20 per cent cut would save Rs 39,052 crore.

The official said a contraction in the Gross Domestic Produce (GDP) could not be ruled out, in which case the spending limit for each quarter might be reduced further – from 20 per cent of the annual allocation to just 15 per cent. That would result in the military under-spending about Rs 80,000 crore over the financial year.

Making the three services' financial situation even tighter is what the official termed a "carry-forward Rs 40,000 crore liability in the revenue and capital budgets." That is from bills unpaid in previous years, which must be paid this year.

The official ascribed the major spending cuts to a "major rejig of the government's spending priorities" as a result of the Covid-19 pandemic. "The government has been allocating only 0.3 per cent of the GDP for expenditure on health. If more has to be spent on health, on agriculture and on reviving the economy, lower priority sectors like defence will have to take a hit," she said.

On a day when the authoritative Stockholm International Peace Research Institute (SIPRI) named India the world's third largest defence spender, the official stressed that overseas procurement of foreign weaponry would have to make way for indigenous equipment to boost the local defence industry.

"We need to defer weapons imports so that we push money into our own economy, not into other countries' economies. The import contracts we have already signed can be discharged, but new contracts must be with domestic producers," stated the MoD official.

The official also underlined the need to cut expenditure by prioritisation and by synergising between the three services – a job that must be done by the chief of defence staff (CDS).

"Each service has its own separate training institutions. Each unit has its own officers' mess. In the same station you will have twenty messes. We need to avoid duplication of resources and activities," she said.

Confirming what Business Standard reported on April 25 ("*Armed forces told to take optimisation measures amid Covid-19 crisis*"), the official revealed that the CDS has already made out and disseminated expenditure reduction proposals and asked the three service chiefs to revert to him with their own proposals.

https://www.business-standard.com/article/economy-policy/defence-budget-may-be-slashed-by-40-may-save-centre-rs-80-000-crore-120042900077_1.html

hindustantimes

Wed, 29 April 2020

India's defence spending is justified | HT Editorial

It is a time of economic stress. But New Delhi can't afford to lower its defences

India emerged as the world's third-largest defence spender last year. This is both good and bad news. The good part is that the country continues to invest in military preparedness in a difficult region. The bad part is that an expenditure of $ 71 billion a year, with a similar amount likely to be spent this fiscal year, will be a burden at a time of economic stress.

Any expectation the Covid-19 pandemic would inspire a more pacific sentiment in the region has been dissipated by the violence India is experiencing along the Line of Control. For Pakistan, it is business as usual as far as cross-border infiltration and shelling are concerned. The Sino-Indian border has been a quieter affair, but Beijing's economic and verbal aggression against other governments indicates the dragon has not been tamed by the virus. India cannot afford to lower its defences.

India's number three position is as much because of the decline of Russia and Saudi Arabia as it is about New Delhi spending more (Burhaan Kinu / Hindustan Times)

India's number three position is as much because of the decline of Russia and Saudi Arabia as it is about New Delhi spending more. With a defence budget that is about two per cent of GDP, India spends well below the global average and is light-years behind China's $261 billion. The past decade has seen New Delhi seek to squeeze waste and duplication out of the armed forces, a process that should continue. Getting more bang for the buck will be the path of every government in a time when bucks are far and few.

https://www.hindustantimes.com/editorials/india-s-defence-spending-is-justified-ht-editorial/story-npob082asfsX7bbZVrf6hM.html

BangaloreMirror

Wed, 29 April 2020

BEL, HAL, BEML get back to business, with reduced staff strength

By Hemanth CS

Bangalore: Defence production, which had come to a standstill for close to a month in the wake of the government enforcing a lockdown to combat the spread of the Covid-19, resumed on Tuesday.

Three Bengaluru-headquartered defence Public Sector Undertakings (PSU) -- Hindustan Aeronautics Limited (HAL), Bharat Electronics Limited and Bharat Earth Movers Limited (BEML) -- had ordered the closing down of their manufacturing units from March 24 onwards.

More than 36,000 employees work with the three PSUs.

"The Ministry of Home Affairs has clarified that since HAL is stated to be providing essential services to the Indian Air Force for maintaining operational preparedness, hence, HAL can be treated as on par with defence," an HAL order stated.

Divisions of the Bangalore Complex, Design Complex and Helicopter Complex will work in two shifts between 7 am to 3 pm and 4 pm to 12 midnight.

It further added that the divisions would obtain an undertaking from all the employees, tenure based personnel, casual and contract labourers who report to work from Tuesday onwards.

In the undertaking the employees will have to declare whether they were in the headquarters (Bengaluru) during the lockdown period and if they were not, they would have to indicate the reasons and the place they were in.

That apart there are strict standard operating procedures which the employees would have to adhere to during their work hours. Women employees would have to work only during one shift.

From March 24 to April 27, only those working in essential services were reporting for duty.

HAL is the only aircraft manufacturer in the country. It produces the LCA, Su-30 Mki, Hawk, Dornier aircraft, Chetak, Cheetah, ALH Dhruv helicopters besides producing engines, avionics, aerospace systems and materials.

Employees of BEL also reported to work from Tuesday onwards. A spokesperson said that about 30 per cent of employees would report to work. They were provided passes to ensure that they could commute to work in private vehicles. Due to the initial teething troubles, a few may be absent from work but would report in the coming days, he added.

BEL makes products in the areas of radars, missile systems, military communications, naval systems, electronic warfare and avionics, among others.

BEML, which is involved in the manufacturing of trucks used by the military and also integral rail coaches and metro cars, has about 7,000 employees all over India with about 2,000 working in Bengaluru alone. About 30 per cent of their staff too reported to work on Tuesday.

https://bangaloremirror.indiatimes.com/bangalore/others/bel-hal-beml-get-back-to-business-with-reduced-staff-strength/articleshow/75435335.cms

DefenceNews

Wed, 29 April 2020

Top 5 Indian Spies: Masterminds who changed enemy's battle algorithm

We have seen in movies like James Bond how interesting, adventurous and threatening the lives of spies are. Here we bring the list of such real life spies who are considered to be the masterminds in the history of India. The people, who made the nation proud with their daring missions and services. Take a look:

Ravindra Kaushik

Ravindra Kaushik, who was popularly known as 'The Black Tiger' as named by then Prime Minister Indira Gandhi, was one of the biggest mastermind of Intelligence unit in the Indian history.

Kaushik was fond of Art and Theatre in his early twenties. His performance in Uttar Pradesh's Lucknow drew attention of RAW, after which his was roped in as a part of Indian Research and Analysis Wing. Kaushik's all Indian documents were destroyed and he was sent to Pakistan when he was just 23 years old. He was well trained with Islamic verses and Quran and well versed in Urdu, to camouflage himself in the Pakistani culture. It was 1975, when Kaushik managed to infiltrate into the Pakistani territory and enroll himself in Karachi University as a law student, Nabi Ahmed Shakir.

It is said that 'Keep your friends close, but enemies closer'; The way Kaushik infiltrated so deep inside the Pakistani army, is indeed notable. This is the point that makes Kaushik the most powerful spy in the Indian history – Kaushik not only managed to get into a college but also entered the Pakistani army after completing his graduation. He began as a Commissioned officer but soon got promoted as a Major and kept on passing information to Indian Intelligence unit.

He passed on all sort of valuable information to India for four years from 1979 to 1984 before his cover was blown. In 1985, another spy who reached Pakistan when Kaushik's stint ended, exposed everything after being caught. Kaushik lost his life due to pulmonary tuberculosis after spending 16 years in Pakistani jail.

Mohanlal Bhaskar

Another mastermind who managed to get in Pakistan in guise of Mohammad Aslam was Mohanlal Bhaskar. Bhaskar was an under cover agent who provided his services in Indian Intelligence agency, Research and Analysis wing. Mohanlal Bhaskar started his stint at RAW in April, 1967. Reports say that he managed to sneak across Pakistani border more than 15 times within a span of one year. Bhaskar kept passing information to India from the other side of the border.

However, luck did not favor Bhaskar as he was betrayed by one of his fellow colleague who was also present in Pakistan on a similar mission. In 1968, along with several other Indians who were suspected to be spies by Pakistani authorities, Bhaskar was also put behind the bars after a counter-intelligence operation. It was later revealed that the person who helped Pakistani intel trace down Bhaskar was a double agent who worked for both – India and Pakistan. Later in 1971, Simla Accord that was signed between India and Pakistan came as a relief for Bhaskar. As a part of exchange of prisoners between the two nations, Bhaskar's name featured in the list of Indian prisoners who were supposed to return home.

But it was not easy there. While India was looking for 'Sohanlal Bhaskar', Pakistan came up with a name fiasco and said they had captured 'Mohanlal Bhaskar'. Finally after reaching out to Swiss embassy, Bhaskar returned to his homeland after spending 14 years in jail in Pakistan in 1974. Bhaskar later retained the name 'Mohanlal' forever.

Kashmir Singh

Kashmir Singh is another pride in the Indian history. Singh started his career in Indian Army and served there for four years, before taking up spying as a part time job. As per his contract, Singh was paid Rs. 400 a month for his work. Singh entered Pakistan with the name of Mohammad Ibrahim and passed on crucial information including number of Pakistani army deployed at the Line of control or India-Pakistan border. Singh also passed on pictures of Pakistani army's strategic locations to India. He was arrested by Pakistani intelligence unit and jailed for 35 long years but never did he utter a word about his spying job there. Singh's cover was blown in a similar way like Ravindra Kaushik.

Another spy was sent by Indian Intelligence to Pakistan when Singh was about to return to his homeland. The spy was soon caught by Pakistani authorities – who managed to extract information about Kashmir Singh from him. This landed up Singh in jail in Pakistan for more than three decades, where he went through third-level torture. Singh never had a visitor or seen the light of the day for three decades during his time of imprisonment.

Finally in the year 2008, Pakistan's Federal Minister for Human Rights, Ansar Burney helped Singh release on humanitarian grounds. Singh, who was then 60-year-old, received a hero's welcome when he returned to India. A procession was organized with drums and foods alongside road when he returned back to his village.

Kashmir Singh finally admitted of spying after he stepped in the Indian soil. He further admitted that he passed on valuable information which helped in Indian defence too.

Saraswathi Rajamani

Saraswathi Rajamani played a huge role in India's freedom movement as well as in Indian Intelligence unit. Rajamani was highly influenced by Subhash Chandra Bose and joined Indian National Army or 'Azaad Hind Fauj' in 1942 when she was just 16. Impressed by her outstanding performance, she was hired in the Intelligence unit of India. She is also the first woman to be a part of such high level department in the country.

Along with other female colleagues, Rajamani went around dressing up as a boy to gather intelligence from top sources.

In the name of 'Mani', Rajamani would dress as a young boy to hide her identity. The most daring mission in Rajamani's life was rescuing her colleague who was captured by the Britishers. Dressed as a dancer, Rajamani managed to sneak into the place where her colleague was kept; she drugged the British officers and rescued her colleague. Rajamani was shot in leg while escaping, however, she managed to flee.

Rajamani suffered due to cardiac arrest and passed away in January 13, 2018.

Ajit Doval

He is the hero who is still providing his services for the nation. India's National Security Advisor Ajit Doval is someone who can send chills down the spines of enemies. Also known as 'Indian James Bond', Ajit Doval converted to Muslim and stayed in Pakistan for 7 years. Ajit Doval graduated from University of Agra in 1967 and took up IPS training a year later. After this, he led anti-terror operations in high tension areas like Punjab and Mizoram.

Doval's most daring mission was his stint as undercover agent in Pakistan. Doval, who lived as Pakistani Muslim in Lahore, monitored Pakistan Intelligence and ISI and passed on crucial information to India. Followed by this, Doval was later appointed Indian High Commissioner to Pakistan for 6 years after which he returned to India.

As Narendra Modi took over the throne of Prime Minister in 2014, he took no time to bring in Ajit Doval as country's National Security Advisor. Doval's high level skills and unmatched intelligence honored him with several awards including second highest peacetime gallantry award, Kirti Chakra.

https://www.defencenews.in/article/Top-5-Indian-Spies-Masterminds-Who-Changed-Enemy%e2%80%99s-Battle-Algorithm-830351

Wed, 29 April 2020

New Delhi is banking on nuclear, but will it succeed?

India's rise in the global nuclear order has been tumultuous in the past few decades. As a result of India's nuclear tests in the 1970s, the country was isolated from the international community for a significant time. The sense of isolationism prevailed through subsequent tests conducted by India (in 1998) and with the establishment of the Nuclear Suppliers Group (NSG), which was created as a direct response to India's 1974 nuclear test by nuclear supplier countries to prevent further nuclear proliferation.

A boost to India's status in the global nuclear dialogue came as a result of the strategic dialogue between India and the United States, and the fact that India presently has civil nuclear agreements with 14 countries, has been instrumental in India's rise. Even so, India continues to hold an interesting position in the global nuclear order as it is neither a signatory to the Non-Proliferation Treaty (NPT), nor is it a member of the NSG. This relative isolation is just one of a number of factors that pose barriers to India's rapid rise in the global nuclear order.

For New Delhi to truly establish its role in the sector, it is crucial to actively pursue civil nuclear engagement with new actors as well as to strengthen existing relationships. Deeper engagement with allies such as the US and France would help encourage more countries to enter in civil nuclear partnerships with India.

Climate and clean energy offer avenues for engagement

India's energy deficit and the success of the country's climate action policies are important factors to consider in the push for greater commitment to the nuclear energy sector and international alliance building. Given India's ever-growing energy demand, the pressure is on New Delhi to strike a balance between economic growth and adhering to the requirements of the Paris Agreement.

At present, India's primary energy source is coal, but the country's coal reserves are rapidly declining. These two factors make coal use unsustainable in the long run, necessitating a shift towards more reliable and long-term energy supplies. At the same time, nuclear energy contributes merely 2% to India's total energy requirements. As of March 2020, India has 22 operable reactors, with 7 more under construction.

The opportunities to expand this sector through international agreements are therefore abundant. Indeed, while NPPs require large investments in the set-up, the longer-term payoff is important to account for, especially when India's energy deficit and need to implement successful climate action policies are considered.

An uneven road to global acceptance

Reaching out, however, is not easy for India due to its complex position in the global nuclear order. Several barriers need to be overcome to do so successfully, both on the international and domestic level. Resulting from its relative isolation, Indian nuclear technology has been a result of

indigenous development and subsequent in-house improvement, but even so, nuclear sector growth has been traditionally stunted. However, the 2005 India-U.S. civil nuclear agreement and the 2008 NSG waiver have been instrumental in facilitating India's entry into the field as a potential stakeholder and key supplier.

A number of India's agreements – notably with the United States, Russia, France and Japan – include the exchange of expertise, technologies and personnel. Russia continues to be a key supplier of nuclear fuel to India, and helped construct more reactor units at the Kudankulam site. In 2019, the two countries also announced the intention to set up over 20 Russian-designed nuclear reactors in India over the next two decades. France and Japan also have been key in development of expertise and have boosted India's interaction with key global players.

Since India had to rely on indigenously developed technology, its nuclear technology base has been somewhat dated. A shortage of fuel for reactors to operate at optimal capacity slowed India's rise in the global nuclear order as well. Although cooperation with Russia, Japan and France has boosted civil nuclear abilities, it is important to expand India's cooperation in order to set up more technologically advanced foreign-built units and increase supply for fuel from key supplier countries.

Given the implications of this cooperation, it's a shame that Indian policymakers have been slacking in building ties with the international community. Although India has made immense strides in establishing itself as a responsible nuclear power through a self-moratorium and a distinct separation of its civil and military nuclear endeavours, it is important for policymakers to work towards overcoming concerns of key actors in its security practices. Accession to the IAEA safeguards agreement was a step in the right direction, but to stifle security concerns, much more proactive engagement with the global nuclear security culture is indispensable.

Lacklustre engagement: not just an international issue

A similar issue applies to the domestic level, where the nuclear energy sector is controlled by the state-owned Nuclear Power Corporation of India (NPCIL). Although the government allowed private enterprises to provide nuclear power, the engagement between NPCIL and the private sector has been scant.

It is of paramount importance that policymakers delve deeper into engagements with key stakeholders in the civil nuclear energy sector. A better relationship and deeper engagement between the public and the private sector in nuclear energy would substantially and expeditiously improve India's capacity to produce nuclear power, as well as develop and improve upon the country's indigenous personnel and expertise.

Clearly, this is a domestic policy debate with implications for international actors as well. Particularly nuclear liability has posed a direct challenge to India's engagement with the global nuclear order, because India's domestic laws put the responsibility of liability of the suppliers – international norms put the onus on operators. Although India has dealt with liability issues on a case-to-case basis, there is apprehension amongst interactional players to deepen cooperation as long as the international standard is not adopted.

Coming in from the cold

Although India's presence in the global nuclear order has been fairly small, its accomplishments in the face of the limiting factors mentioned above should be acknowledged. However, policymakers are nonetheless plagued with a number of issues in advancing India's position as a key and responsible actor – issues that need to be quickly overcome in the face of growing energy demand and pressing sustainability goals.

https://idrw.org/new-delhi-is-banking-on-nuclear-but-will-it-succeed/#more-226083

DEFENCE AVIATION POST
Your Connect To The World Of Defence And Aviation

Wed, 29 April 2020

Why AS565 Panther helicopter is a good option for the Indian Navy?

The Indian Ministry of Defense (MoD) has officially issued a Request for Information (RFI) for over 230 new helicopters for the Indian Navy this week. The new RFI constitutes one of the biggest global tenders issued for military helicopters recently.

In detail, the Indian Navy is interested in procuring 123 naval multi-role helicopters (NMRH) with anti-submarine warfare capabilities, and 111 armed light naval utility helicopters (NUH). The total value of the two contracts is estimated at over $10 billion.

Airbus has been proposing the Panther helicopter for the NUH programme. AS565 MBe, also known as the Panther, is the state-of-the-art multi-role helicopter that was designed for a multitude of naval and coast guard missions such as maritime surveillance, search and rescue, casualty evacuation, offshore patrolling and counter-terrorism.

The AS565 MBe is powered by two Safran Arriel 2N turboshaft engines for reliable performance in high and hot conditions. It features modern cockpit avionics that include an automatic flight control system (AFCS) and flight management system.

AS565 MBe is highly effective in anti-surface unit warfare missions (ASuW), including over-the-horizon targeting (OTHT) for ships with long-range anti-ship missiles. By acting as the ship's principal weapon system, it can search, classify, shadow and strike with precision well beyond the horizon. At Best Endurance Speed (VBE) the aircraft has a loiter time in excess of four hours.

The helicopter's use of a hydraulically-activated harpoon with deck-lock securing enables the AS565 MBe to land and take off from ship decks regardless of the wind direction and this makes the helicopter just the choice for India's needs keeping in mind the rough seas the Indian Navy has to operate in

AS565 MBe Panther will also be very easy to maintain as the modular mechanical assembly design, fiberglass Starflex rotor heads, composite tail rotor blades and airframe and 100-percent composite Fenestron contribute to significant reductions in maintenance time and costs, he added.

The helicopter performs a wide variety of roles. In its anti-surface unit warfare role, the AS565 MBe is highly effective in warfare missions, including over-the-horizon targeting for ships with long-range anti-ship missiles. By acting as the ship's principal weapon system it can search, classify, shadow and strike with precision with stable hovering capabilities. In its anti-submarine warfare avatar, with an endurance of four hours and its capability to carry up to two torpedoes / Depth Charges, the AS565 MBe significantly multiples a surface ship's ability to conduct Anti-Submarine Warfare (ASW) missions

The NMRH are being procured particularly to enhance the Navys anti-submarine and anti-surface warfare capabilities.The Navy has been pressing the government to procure new utility and multi-role helicopters to add teeth to its existing capability and replace its ageing fleet of choppers but the procurement process has seen years of delay.

Airbus has been proposing the Panther helicopter for the NUH programme. The parts for the Airbus Helicopter and Mahindra contract will be produced at the Mahindra facility in Bengaluru,

and shipped directly to the Airbus Helicopter production line in Marignane, France, where they would be integrated with the rest of the airframe assembly, forming a critical part of the Panthers sold worldwide.

The deal has ensured that Mahindra Aerostructures became the first Indian company to receive a direct manufacturing contract from Airbus Helicopters as a Tier-1 supplier. The Indian firm is expected to gradually emerge as the global single source supplier to Airbus Helicopters for these parts.

https://www.defenceaviationpost.com/2020/04/why-as565-panther-helicopter-is-a-good-option-for-the-indian-navy/

Wed, 29 April 2020

Bangalore torpedo continues to be used by engineer troops of US Army

A Bangalore torpedo is an explosive charge placed within one or several connected tubes. It is used by combat engineers to clear obstacles that would otherwise require them to approach directly, possibly under fire.

The Bangalore torpedo was first devised by Captain R. L. McClintock, of the Royal Engineers while attached to the Madras Sappers and Miners unit of the Indian Army at Bangalore, India, in 1912. He invented it as a means of blowing up booby traps and barricades left over from the Second Boer War and the Russo-Japanese War.

During the World War 1, the Bangalore torpedo was primarily used for clearing barbed wire before an attack. The Bangalore torpedo was later adopted by the U.S. Army during World War II, as the "M1A1 Bangalore torpedo". It was used by the U.S. Army, notably during the D-Day landings. The Bangalore torpedo was also used by US Army and Vietnamese army during the Vietnam war.

Bangalore torpedoes continue to be used today by U.S. Army under the designation of M1A2 and M1A3 versions and the modified Advanced Performance Bangalore Torpedo version (British Armed Forces and Australian Defence Force, under the L26A1 designation which is also used by Chemring), primarily to breach wire obstacles.

New Bangalore variants include the Alford Technologies Bangalore Blade and the Chemring Advanced Performance Bangalore Torpedo (APBT), with both of these having been developed in the United Kingdom. The Bangalore Blade is made from lightweight aluminum and is configured as a linear explosively formed projectile (EFP) array capable of cutting wire obstacles which earlier Bangalore variants were incapable of breaching effectively; the improvements introduced with the Bangalore Blade give the charge a cutting action as well as a blasting effect. In a test detonation conducted on the television show Future Weapons, the Bangalore Blade blasted a gap roughly five meters wide in concertina wire and created a trench deep enough to detonate most nearby anti-personnel mines.

The British Company Chemring Energetics has developed the Advanced Performance Bangalore Torpedo (AP Bangalore) for the British army. The traditional use for the 'Bangalore Torpedo' has been to defeat simple or complex entanglements made up of barbed or razor wire.

The AP Bangalore incorporates a unique and patented design feature that enhances its cutting capability against these traditional non-resilient and incoherent target arrays. This design feature has also demonstrated cutting performance against a 6mm steel target. AP Bangalore can be joined with up to seven additional Bangalore Torpedo tubes for tactical deployment to defeat large or extended obstacles up to 8 meters in length.

The Chemring Energetics Bangalore Torpedo Tube assembles to the Detonator Housing, Nose cone and up to seven other tubes via a quick turn thread. The design of the thread has been optimized to ensure ease of assembly under conditions where the thread is contaminated with sand, soil, or mud, whilst being strong enough to allow the tactical deployment of up to eight connected tubes (without decoupling).

The Chemring Energetics AP Bangalore is designed with a universal detonator gland which is compatible with standard UK service Electric and Nonelectric detonators, Mini-shock tube, Detonating Cord Boosters (DCB) and Integrated Firing Device (IFD). The design of the detonator gland and detonator housing accepts detonators up to 7.7mm in diameter. The DPX10 fill of the detonator housing permits the use of a pilot hole to accommodate a wide range of detonator lengths.

https://idrw.org/bangalore-torpedo-continues-to-be-used-by-engineer-troops-of-us-army/#more-226039

DEFENCE AVIATION POST
Your Connect To The World Of Defence And Aviation

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Australia informs India about cancellation of premier multilateral air combat training exercise Pitch Black 2020

Australia has informed India that their premier multilateral air combat training exercise Pitch Black 2020 scheduled from July 27 to August 14 has been cancelled due to the COVID-19 situation, defence sources said.

This was conveyed by Air Marshal Meg Hupfeld, Chief of the Royal Australian Air Force (RAAF), in a letter to Air Chief Marshal RKS Bhadauria, in mid-April.

"The RAAF Chief informed of his decision to cancel the exercise this year due to the current and anticipated impacts of the worldwide pandemic of COVID-19," a defence source told The Hindu. He also noted that while the IAF was not participating with aircraft, Ex Pitch Black 2020 would have provided an opportunity for engagement between our personnel, the source said.

Indian Air Force SU-30 Flanker aircraft conduct air to air refuelling from a Royal Australian Air Force No. 33 Squadron KC-30A Multi Role Tanker Transport during Exercise Pitch Black 2018.

The exercise is also an opportunity to interact with forces from across the globe, a second defence source said. The next edition of Pitch Black is scheduled in 2022.

In the last edition of Pitch Black in 2018, the IAF for the first time deployed fighter aircraft which it had said would "provide a unique opportunity for exchange of knowledge and experience with these nations in a dynamic warfare environment". The contingent consisted of 145 personnel, four Su-30MKI fighters, one C-130 and one C-17 transport aircraft which went to Australia via

Indonesia and during the transit had constructive engagements with Indonesian and Malaysian Air Forces as well.

The defence and strategic engagement with Australia has steadily gone up in recent years especially on the bilateral front with naval cooperation at the forefront. The bilateral naval exercise AUSINDEX early last year saw participation of the largest Australian contingent ever to India with over 1,000 personnel.

The Mutual Logistics Support Agreement (MLSA) has been long pending and is expected to be concluded soon as well as a broader maritime cooperation agreement including the Maritime Domain Awareness (MDA) to elevate the existing strategic partnership.

Last week, Australian High Commissioner-designate Barry O'Farrell made a pitch for trilateral cooperation among India, Australia and Indonesia to "identify new ways that our three countries can collaborate to be the best possible custodians of the Indian Ocean".

https://www.defenceaviationpost.com/2020/04/australia-informs-india-about-cancellation-of-premier-multilateral-air-combat-training-exercise-pitch-black-2020/

the pioneer

Wed, 29 April 2020

Points to ponder

Is the Coronavirus paving the way for China to 'peacefully' acquire and procure strategic world assets without a fight?

By Abhijit Bhattacharyya

Of all the nations in the world, only 164 countries have a navy and just 18 of them manufacture warships (above 3,000 deadweight tonnage) for their own use or export. While the sea has historically played an important role in a country's trade, industry, technology, economics, diplomacy, expansion and colonisation, it was World War-I which signalled a paradigm shift pertaining to its enhanced role in the definition of a superpower. The 20th century war enlarged the scenario with enhanced combat capability of the vessels and versatile use thereof, by belligerents. It took a five-year World War to transform and tilt a land power into an actual, visible, ship-operating sea State. Sea replaced land. And that happened in the Pacific Ocean as the traditional naval balance shifted from the West (Atlantic Ocean) to the Far East, spanning from the US to Japan and to the Chinese coastline. In real terms, for the first time on the naval canvas, two powerful navies emerged in the Pacific Ocean: From the mighty US and the tiny Japan.

Since the war left Japan the dominant power in the Pacific, especially owing to the eclipse of the Russian army and simultaneous destruction of Berlin and Moscow navies, the traditional naval powers of the West could not take kindly to the rise of (Asia's) Nippon navy. This resulted in the Washington Conference of 1921-1922 which concluded three treaties — the Four-Power Pacific Treaty; the Naval Treaty; the Nine-Power Treaty on China — essentially all regarding the Pacific. As a result Japan was checkmated and its navy drastically cut its size and strength.

Interestingly, a big country like China was never a naval power or maritime nation during its 4,000 year history. Its so-called Silk Route essentially ran through the great Euro-Asian landmass, for trade, terror, tourism. Thus China saw with awe the unprecedented December 1941 blow inflicted by the Japanese aircraft carrier force on the US naval base Pearl Harbour. The budding leaders of the Communist Party of China, who took control of the State in 1949, after a prolonged civil war deep inside their own land, saw it all in the post-Second World War era. The importance of sea power of the State was not lost on them.

Thus, after a slow and somewhat lethargic start, the Chinese went full steam from the 1990s when they established themselves as credible trade partners of dual use, high quality military technology. With an ability to access technology, through fair or foul means, and reverse

engineering, Beijing gradually built a navy to compete with and challenge, the US in the sea, hitherto the sole supreme operator across the vast Pacific since the end of the World War-II. As China always looked at its bitter and traditional foe Japan's military with a tinge of envy and admiration, Beijing emulated Tokyo. Its navy, aka the PLA Navy, today is constantly challenging the smaller neighbours and harassing the US in the western fringe of the Pacific Ocean.

It is claiming areas of several seas as if it's something like Alsace, Lorraine; Eupen, Malmedy, Bohemia, Moravia, Slovakia; Schleswig-Holstein and Silesia, all of which were causes for major wars in Europe in the 19th and 20th centuries. But, the gravest of threats posed by China to her maritime neighbours today can be found in its ceaseless attempts to forcibly acquire numerous islands spread across the South China Sea, East China and the Sea of Japan. China threatens kinetic action against smaller neighbours from Manila to Cambodia, Tokyo to Thailand and Laos to Vietnam.

Beijing very well understands the quality and numerical superiority of the US Navy and the contemporary Chinese focus is on an indigenous carrier fleet and intimidation, leading to area-denial to the US carrier battle group in the Pacific Ocean. Little wonder, no sooner did the US-China trade spat begin in June 2018, there took place in December 2018 the Military Industry List Summit, where Chinese Rear Admiral Lou Yuan, deputy head of Chinese Academy of Military Sciences, thundered: "What the US fears the most is taking casualties....sinking one aircraft carrier could kill 5,000 US service members." Then, one fine morning comes the news that one of the mammoth 75,160 tonne US Navy carriers, Theodore Roosevelt, with 5,750 sailors aboard, has been hit by the Coronavirus; thereby aborting its mission for an indefinite period and putting almost 1,000 sailors in quarantine. The fight for the Pacific is over in one stroke. China trumps the mighty US without a single shot. Soon, comes, another shocker. More than 1,000 of the 1,862 sailors of the French Navy's sole 43,182 tonne aircraft carrier Charles De Gaulle, too, hospitalised owing to COVID-19. The best possible news for China, however, comes from India. At least 25 Indian Navy men from the Mumbai-based shore establishment Angre are afflicted by the virus, sending the Western Naval Command into a tizzy.

Is the writing on the wall visible? Is the COVID-19 paving the way for China to "peacefully" acquire and procure strategic world assets without a fight? Making the enemy surrender before and not after a fight. War in accordance with the art of war of Sun Tzu, Mao Zedong and now Xi? It is time to ponder.

Are we so dependent and helpless that we cannot look after national interests except through dubious foreign investment, unaccounted money and poorly-finished, cheap Chinese goods? Are we, thereby, torpedoing our sovereignty, territorial integrity and freedom for globalisation, liberalisation and privatisation? Are we heading towards imminent financial disaster? It is time for some deep introspection.

(The writer is the author of 'China in India')

https://www.dailypioneer.com/2020/columnists/points-to--ponder.html

THE DIPLOMAT
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Wed, 29 April 2020

Pakistan's new midget submarine: Emerging challenge to India in the Arabian Sea

What will Pakistan's new indigenous midget submarine bring to its naval capabilities?

By Prakash Panneerselvam

Pakistan's submarine force is undergoing major modernization. In the last five years, Pakistan has inked two major submarine deals with China and Turkey to upgrade its submarine force.

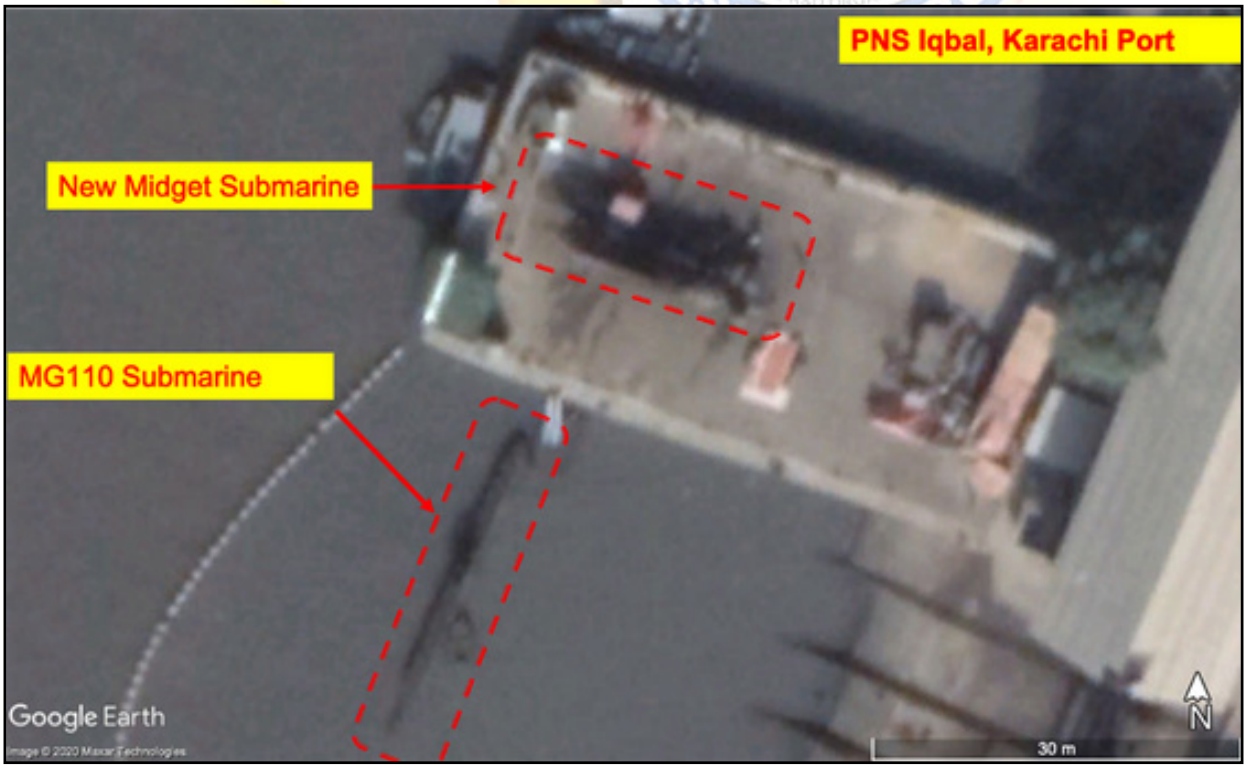
In 2015, Pakistan approved the purchase of eight *Hangor* (Type 042 *Yuan*-class) submarines with a provision to construct four at Karachi Shipyard with a possible Transfer of Technology (ToT) from China.

Credit: Pakistan Navy Official Website (via Wikimedia Commons)

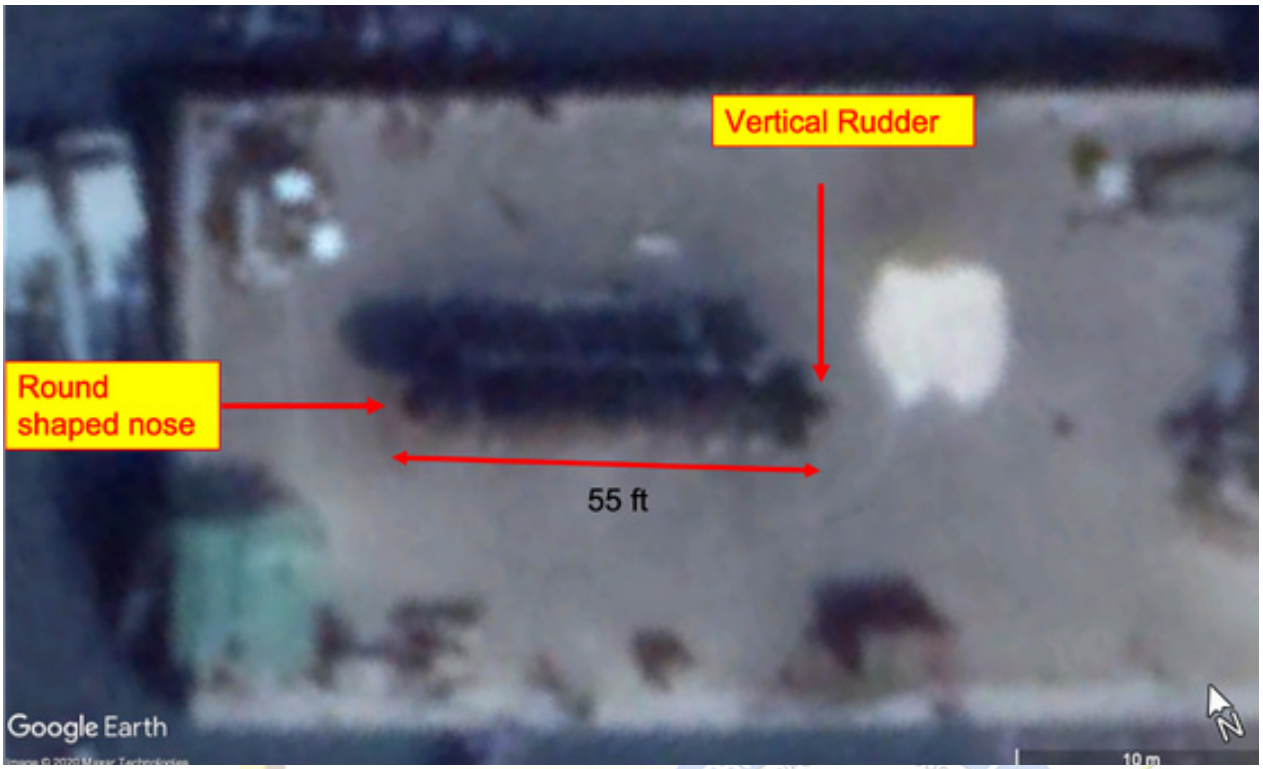
Subsequently, in 2016, Pakistan awarded the *Agosta 90B* Submarine Modernization Project worth $350 million to Turkey-based weapon manufacturer STM. Interestingly, this was the first time Pakistan has selected a Turkish company as the prime contractor for a submarine project. Under this project, STM will be exporting design and engineering services to the Pakistan Navy.

The submarine deals with China and Turkey are expected to be a major game changer for the Pakistan Navy. Along with that, Pakistan is now focusing on building new midget submarines for its Navy.

Pakistan's Special Service Group (Navy) has been using the *Cosmos* MG110 midget for overt and covert operations. These submarines have been in service from the early 1990s and are nearing the end of their service lives.



Satellite imagery shows an MG 110 Submarine docked in Karachi Port along with a domestically built new midget submarine. Source: Google Earth, DOI: 18/12/2019 (24°50'3.74"N, 66°58'14.23"E)



The image shows the fully constructed hull of a new midget submarine at Karachi Port Source: Google Earth, DOI: 2/11/2018 (24°50'3.74"N, 66°58'14.23"E)

In order to replace these aging submarines, Pakistan has proposed to build a new midget submarine. In the Ministry of Defense Production (MoDP) Year Book 2015–2016, Pakistan listed the development and construction of a midget submarine as a target for 2017–2018. The MoDP documents have also mentioned that midget submarine project will be based on indigenous design and production.

Notably, a recent satellite image (Figure 1) confirms that Pakistan might have indigenously developed a new midget submarine as it proposed in the MoDP 2015–2016.

From 2016 on, one can see the submarine partially covered in a tent in. Since 2019, the submarine can be seen in open view, suggesting that the construction is near completion and that sea trials may have commenced.

The new midget submarine, which is compact in size, is leading to speculation regarding its possible role in the Arabian Sea and in combat.

The midget submarine as seen from the satellite images has a length of around 55 feet (16.7 m) and a beam measurement of around 8 feet (2.43 m). The vessel's displacement is currently unknown.

The prominent vertical rudder, propeller, and the round-shaped nose are visible from the shadow of the midget submarine. The snorkel is not visible in the image. But it is clear from the image that the submarine appears to be larger than the Swimmer Delivery Vehicle (SDV) and slightly smaller than the MG110 midget submarines.

The compact size of the submarine with simple hull constructions suggests that it is easy to operate and maintain. The vessel can likely be transported over land due to its size. The defense expert H. I. Sutton writes in *Forbes* that the submarine design is new and doesn't appear to be an imported one.

Given the present level of cooperation between Pakistan and Turkey, one cannot rule out the possibility of a Turkish firm's involvement in the development of new midget submarines. In an interview in 2019, Murat İkinci, the general manager of STM, confirmed that the "Pakistan Navy and STM are currently discussing new projects, including serious and dedicated works for midget

submarines." However, there are no official sources to confirm that the new midget submarine has been codeveloped with Turkey.

A Role for the Midget Submarine

The Pakistan has been using new midget submarines for many years now. The development of a new midget submarine not only showcases its indigenous capability, but also shows that Pakistan is prepping its underwater warfare capability.

As Pakistan continues to lay emphasis on a sea denial strategy there is a possibility that it may use the midget submarine in an offensive role during any conflict with India in the coming months and years.

The seaward defense of Karachi has been one of the major challenges for the Pakistan Navy since the 1971 war with India. The midget submarine would fill a gap in protecting Karachi Port from sea-based attack. Most importantly, it would replace the current MG110s in service with the SSG (Navy) for operations such as frogmen operations, laying mines, and so on.

Also, with the *Agosta 90B* submarines undergoing midlife upgrades and modernization, scheduled to join the Pakistan Navy in 2020, and first four *Hangor* submarines stated to be delivered in 2023, the Pakistan Navy would find a significant increase in its ability to execute an anti-access and area-denial (A2/AD) posture in the Indian Ocean. Along with that, the new midget submarine would upgrade Pakistan's underwater warfare capabilities in a significant way.

In short, the changeover in the Pakistan submarine force could pose a real security threat to India in the Arabian Sea. Given India's preparedness to develop a credible anti-submarine warfare (ASW) capability, Pakistan's new midget submarine can challenge India's maritime operations in the Arabian Sea.

Besides, Pakistan might use the new midget submarine to expand its clandestine operations off the western Coast of India, particularly around Gujarat's Sir Creek area and Mumbai.

Hence, it's essential that India strengthen its subsurface detection and track capability to thwart any Pakistan anti-access capability in the Arabian Sea and to protect India's maritime security interests in the region.

(Prakash Panneerselvam, Ph.D, is an Assistant Professor at the National Institute of Advanced Studies (NIAS) in Benagluru, India.)

https://thediplomat.com/2020/04/pakistans-new-midget-submarine-emerging-challenge-to-india-in-the-arabian-sea/

Science & Technology

EurekAlert!

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HKUST researchers unlock genomic secrets of scaly-foot snail

Laying foundation for potential solutions provided by deep-sea creatures

Despite an extreme environment characterized by high pressure, high temperature, strong acidity and low oxygen level which resembles living condition in pre-historic time, hydrothermal vents harbor a diverse amount of creatures - most of which have huge potential for biomedical and other applications. Among other inhabitants of such difficult environment, Scaly-foot Snail, also known as "Sea Pangolin", is of particular interest to marine scientists.

Scaly-foot Snail is the only extant gastropod (a major invertebrate animal, commonly known as snails and slugs,) alive that possesses armor-like scales - an otherwise very common feature for gastropod during the Cambrian time over 540 million years ago. This snail is also the only organism in the world known to incorporate iron into its exoskeleton, and is also one of the top ten astounding marine species of the decade (2007-2017). Little is known, however, about its genome and unusual morphology, as the creature is extremely difficult to locate and collect.

Now, a research team led by Prof. QIAN Peiyuan, Chair Professor of HKUST's Department of Ocean Science and Division of Life Science, managed to collect 20 scaly-foot snails at around 2,900 meters below sea level from the Indian Ocean in collaboration with researchers from the Japan Agency for Marine-Earth Science and Technology (JAMSTEC), and analyze the snail's genome sequence.

Contrary to many scientists' expectation that the creature contains some new special genes that give rise to its bizarre morphology, the team actually discovered that all of the snail's genes already existed in other mollusks such as squid and pearl oyster, and the snail's gene sequence has remained almost unchanged throughout its evolution. The 25 transcription factors (a key protein that regulates many downstream gene expression levels) which contribute to the snail's scale and shell formation, as the team identified, have also contributed to the formation of many other unique hard-parts in Mollusca - such as operculum in gastropods, beak in squid, spicule in chiton, or chaetae in polychaetes.

"Although no new gene was identified, our research offers valuable insight to the biomineralization - a process where the clustering, positioning and on and off switching of a combination of genes defines the morphology of a species," Prof. Qian said. "Uncovering Scaly-foot Snail's genome advances our knowledge in the genetic mechanism of mollusks, laying the genetic groundwork which paves the way for application. One possible direction is how their iron-coated shells withstand heavy blows, which can provide us insights on ways to make a more protective armor."

The findings were recently published in the scientific journal *Nature Communications*.

The study of genome sequencing of organisms often brings breakthrough to biomedical and other sectors. An enzyme of a microbe that lives in such vents - for example, was recently used for the detection of COVID-19 as well as other viruses such as AIDS and SARS.

https://www.eurekalert.org/pub_releases/2020-04/hkuo-hru042820.php

Wed, 29 April 2020

4-billion-year-old nitrogen-containing organic molecules discovered in Martian meteorites

Using advanced techniques, scientists have detected organic compounds containing nitrogen in Martian meteorites which were ejected from Mars' surface ~ 15 million years ago, proving that evidence for early life can be preserved and detected today

A research team including research scientist Atsuko Kobayashi from the Earth-Life Science Institute (ELSI) at Tokyo Institute of Technology, Japan and research scientist Mizuho Koike from the Institute of Space and Astronautical Science at Japan Aerospace Exploration Agency, have found nitrogen-bearing organic material in carbonate minerals in a Martian meteorite. This organic material has most likely been preserved for 4 billion years since Mars' Noachian age. Because

carbonate minerals typically precipitate from the groundwater, this finding suggests a wet and organic-rich early Mars, which could have been habitable and favourable for life to start.

For decades, scientists have tried to understand whether there are organic compounds on Mars and if so, what their source is. Although recent studies from rover-based Mars exploration have detected strong evidence for Martian organics, little is known about where they came from, how old they are, how widely distributed and preserved they may be, or what their possible relationship with biochemical activity could be.

Martian meteorites are pieces of Mars' surface that were themselves blasted into space by meteor impacts, and which ultimately landed on Earth. They provide important insights into Martian history. One meteorite in particular, named Allan Hills (ALH) 84001, named for the region in Antarctica it was found in 1984, is especially important. It contains orange-coloured carbonate minerals, which precipitated from salty liquid water on Mars' near-surface 4 billion years ago. As these minerals record Mars' early aqueous environment, many studies have tried to understand their unique chemistry and whether they might provide evidence for ancient life on Mars. However, previous analyses suffered from contamination with terrestrial material from Antarctic snow and ice, making it difficult to say how much of the organic material in the meteorite were truly Martian. In addition to carbon, nitrogen (N) is an essential element for terrestrial life and a useful tracer for planetary system evolution. However, due to previous technical limitations, nitrogen had not yet been measured in ALH84001.

This new research conducted by the joint ELSI-JAXA team used state-of-the-art analytical techniques to study the nitrogen content of the ALH84001 carbonates, and the team is now confident they have found the first solid evidence for 4-billion-year-old Martian organics containing nitrogen.

Terrestrial contamination is a serious problem for studies of extraterrestrial materials. To avoid such contamination, the team developed new techniques to prepare the samples with. For example, they used silver tape in an ELSI clean lab to pluck off the tiny carbonate grains, which are about the width of a human hair, from the host meteorite. The team then prepared these grains further to remove possible surface contaminants with a scanning electron microscope-focused ion beam instrument at JAXA. They also used a technique called Nitrogen K-edge micro X-ray Absorption Near Edge Structure (μ-XANES) spectroscopy, which allowed them to detect nitrogen present in very small amounts and to determine what chemical form that nitrogen was in. Control samples from nearby igneous minerals gave no detectable nitrogen, showing the organic molecules were only in the carbonate.

After the careful contamination checks, the team determined the detected organics were most likely truly Martian. They also determined the contribution of nitrogen in the form of nitrate, one of the strong oxidants on current Mars, was insignificant, suggesting the early Mars probably did not contain strong oxidants, and as scientists have suspected, it was less-oxidizing than it is today.

Mars' present surface is too harsh for most organics to survive. However, scientists predict that organic compounds could be preserved in near-surface settings for billions of years. This seems to be the case for the nitrogen-bearing organic compounds the team found in the ALH84001 carbonates, which appear to have been trapped in the minerals 4 billion years ago and preserved for long periods before finally being delivered to Earth.

The team agrees that there are many important open questions, such as where did these nitrogen-containing organics come from? Kobayashi explains, 'There are two main possibilities: either they came from outside Mars, or they formed on Mars. Early in the Solar System's history, Mars was likely showered with significant amounts of organic matter, for example from carbon-rich meteorites, comets and dust particles. Some of them may have dissolved in the brine and been trapped inside the carbonates.' The research team lead, Koike adds that alternatively, chemical reactions on early Mars may have produced the N-bearing organics on-site. Either way, they say, these findings show there was organic nitrogen on Mars before it became the red planet we know today; early Mars may have been more 'Earth-like', less oxidising, wetter, and organic-rich. Perhaps it was 'blue.'

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More information

Tokyo Institute of Technology (Tokyo Tech) stands at the forefront of research and higher education as the leading university for science and technology in Japan. Tokyo Tech researchers excel in fields ranging from materials science to biology, computer science, and physics. Founded in 1881, Tokyo Tech hosts over 10,000 undergraduate and graduate students per year, who develop into scientific leaders and some of the most sought-after engineers in industry. Embodying the Japanese philosophy of "monotsukuri," meaning "technical ingenuity and innovation," the Tokyo Tech community strives to contribute to society through high-impact research.

The Earth-Life Science Institute (ELSI) is one of Japan's ambitious World Premiere International research centers, whose aim is to achieve progress in broadly inter-disciplinary scientific areas by inspiring the world's greatest minds to come to Japan and collaborate on the most challenging scientific problems. ELSI's primary aim is to address the origin and co-evolution of the Earth and life.

The World Premier International Research Center Initiative (WPI) was launched in 2007 by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) to help build globally visible research centers in Japan. These institutes promote high research standards and outstanding research environments that attract frontline researchers from around the world. These centers are highly autonomous, allowing them to revolutionize conventional modes of research operation and administration in Japan.

https://www.eurekalert.org/pub_releases/2020-04/tiot-4no042720.php

ScienceDaily

Wed, 29 April 2020

Smart contact lenses that diagnose and treat diabetes

Diabetes is called an incurable disease because once it develops, it does not disappear regardless of treatment in modern medicine. Having diabetes means a life-long obligation of insulin shots and monitoring of blood glucose levels. But what if you could control the secretion of insulin just by wearing contact lenses?

Recently, a research team at POSTECH developed wirelessly driven 'smart contact lens' technology that can detect diabetes and further treat diabetic retinopathy just by wearing them.

Professor Sei Kwang Hahn and graduate students Do Hee Keum and Su-Kyoung Kim of POSTECH's Department of Materials Science and Engineering, and Professor Jae-Yoon Sim and graduate student Jahyun Koo of Department of Electronics and Electrical Engineering have developed a wireless powered smart contact lens that can diagnose and treat diabetes by controlling drug delivery with electrical signals. The findings were recently published in *Science Advances*. The smart contact lenses developed by the research team are made of biocompatible polymers and integrate biosensors and drug delivery and data communication systems.

The research team verified that the glucose level in tears of diabetic rabbits analyzed by smart contact lenses matched their blood glucose level using a conventional glucose sensor that utilize drawn blood. The team additionally confirmed that the drugs encased in smart contact lenses could treat diabetic retinopathy.

Recently, by applying the platform technology of these smart contact lenses, a research has been conducted to expand the scope of electroceuticals that use electrical stimulations to treat brain disorders such as Alzheimer's and Parkinson's diseases, and mental illnesses including depression.

The research team expects this development of self-controlled therapeutic smart contact lenses with real-time biometric analysis to be quickly applied to wearable healthcare industries.

Professor Sei Kwang Han who led the research stated, "Despite the full-fledged research and development of wearable devices from global companies, the commercialization of wireless-powered medical devices for diagnosis and treatment of diabetes and retinopathy is insufficient." He added, "We expect that this research will greatly contribute to the advancement of related industries by being the first in developing wireless-powered smart contact lenses equipped with drug delivery system for diagnosis and treatment of diabetes, and treatment of retinopathy."

This research was financially supported by Samsung Science and Technology Foundation, the Global Frontier Project (Director: Professor Kilwon Cho), the Mid-career Researcher Program from the National Research Foundation of Korea, and World Class 300 Project of the Ministry of SMEs and Startups. The research findings on smart contact lens-based technologies were introduced in the January issue of Nature Reviews Materials, which drew attention from the academic circles. The research team is preparing to carry out clinical trials for the safety and validity assessment for commercialization of smart contact lenses in collaboration with Interojo Inc.

Story Source:

Materials provided by Pohang University of Science & Technology (POSTECH). *Note: Content may be edited for style and length.*

Journal Reference:

1. Geon-Hui Lee, Hanul Moon, Hyemin Kim, Gae Hwang Lee, Woosung Kwon, Seunghyup Yoo, David Myung, Seok Hyun Yun, Zhenan Bao, Sei Kwang Hahn. **Multifunctional materials for implantable and wearable photonic healthcare devices**. *Nature Reviews Materials*, 2020; 5 (2): 149 DOI: 10.1038/s41578-019-0167-3

https://www.sciencedaily.com/releases/2020/04/200428091502.htm

DECCAN HERALD

Wed, 29 April 2020

India in talks with China, Russia, other BRICS nations to set up vaccine research centre

As the COVID-19 crisis underscores international healthcare cooperation, the five BRICS nations will discuss possibility of holding drills in responding to epidemics

By Anirban Bhaumik

India is discussing with China, Russia, Brazil and South Africa, to set up a BRICS Vaccine Research and Development Centre, as the COVID-19 pandemic has apparently brought cooperation in the healthcare sector to the top of the agenda of the five-nation bloc.

Representational Image-- India, others in BRICS to set up R&D centre on vaccines (Picture credit: Pixabay)

The process to set up the BRICS Vaccine Research and Development Centre is likely to gain momentum on Tuesday, when External Affairs Minister S Jaishankar will hold a video-conference with his Russian, Chinese, Brazilian and South African counterparts. They will also discuss another proposal to hold drills, not among the armed forces of the five nations, but among the respective national agencies responsible for responding to the epidemics.

Jaishankar and the Foreign Ministers of the four other nations will also work out a BRICS strategy to respond to the huge social and economic impact of the travel and transport restrictions as well as the lockdowns imposed in most of the nations around the world to contain the COVID-19 pandemic.

It was during the BRICS summit hosted by Prime Minister Narendra Modi in Goa in October 2016 that the leaders of the five nations stressed on "cooperation in promoting research and development of medicines and diagnostic tools to end epidemics and to facilitate access to safe, effective, quality and affordable essential medicines".

The BRICS summit at Xiamen in September 2017 saw Modi and the leaders of the four other nations agreeing that the bloc would step up its role in global health governance, especially in the context of the World Health Organization and United Nations agencies. They also agreed to ensure "availability of innovative medical products through the promotion of research and development and access to affordable, quality, effective and safe drugs, vaccines, diagnostics and other medical products and technologies as well as to medical services through enhanced health systems and health financing."

The proposal of setting up a BRICS Vaccine Research and Development Centre was mooted and endorsed in the bloc's 10th summit in Johannesburg in South Africa in July 2018.

It, however, did not see much progress on the ground over the past couple of years.

As the COVID-19 pandemic underscored the need for stepping up international cooperation in the healthcare sector, the process of setting up the BRICS Vaccine Research and Development

Centre is expected to gain momentum in the coming months, a source in New Delhi told the DH on Monday.

The BRICS Foreign Ministers are also likely to discuss during the video-conference on Tuesday preparations for the forthcoming summit, which is scheduled to be held at Saint Petersburg in Russia from July 21 to 23, but has now come under a shadow of uncertainty due to the COVID-19 crisis.

The diplomats of the five nations are also discussing the possibility of holding the summit through video-conference if the crisis continues beyond June.

https://www.deccanherald.com/national/india-in-talks-with-china-russia-other-brics-nations-to-set-up-vaccine-research-centre-830618.html

नवभारत टाइम्स

Wed, 29 April 2020

भारत में कोरोना: शोध में दावा, रूप बदलकर ज्यादा खतरनाक बन रहा है कोविड-19 वायरस

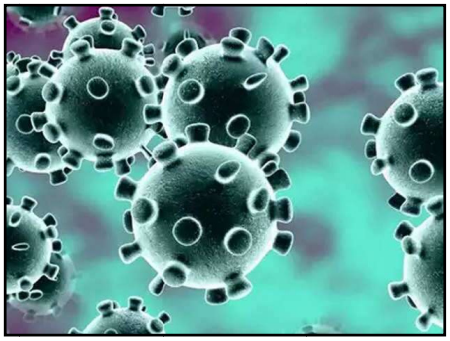
Coronavirus India Update: भारत में कहर बरपा रहे कोरोना वायरस (corona in india) अब तरह-तरह के रूप बदलकर दुनिया में फैल गया है। यह जानलेवा वायरस अब तक दुनिया में 2 लाख से ज्यादा लोगों की जान ले चुका है। एक नए रिसर्च में पता चला है कि अभी दुनिया के ज्यादातर मुल्कों में अब A2a वायरस कोहराम मचा रहा है।

योगिता राव, सत्यकाम अभीषेक (एडिटर)

हाइलाइट्स

- कोरोना वायरस ने पूरी दुनिया में कोहराम मचा रखा है
- इस जनालेवा वायरस के कारण दुनियाभर में 2 लाख से ज्यादा मौतें हुई हैं
- एक नए शोध में पता चला है कि यह वायरस तरह-तरह का रूप बदल रहा है
- शोध के अनुसार, A2a वायरस सबसे ज्यादा संक्रमण फैला रहा है

मुंबई : चीन से पूरी दुनिया में फैले नोवल कोरोना वायरस (covid-19 in india) ने कोहराम मचा रखा है। दिसंबर 2019 में चीन के हुबेई प्रांत के वुहान में इसका पहला मामला आया था तब से लेकर अभी तक इस वायरस ने पूरी दुनिया को अपनी चपेट में ले लिया है। यही नहीं, यह जानलेवा वायरस खुद में लगातार बदलाव कर 10 अलग-अलग टाइप में बदल चुका है। इसी में इसका एक रूप है A2a। अभी इस वायरस के 11 प्रकार हैं। शोध से पता चला है कि A2a टाइप वायरस ज्यादा खतरनाक है और अब यह पूरी दुनिया में सबसे ज्यादा संक्रमण फैला रहा है।



NIBG ने किया है शोध

नैशनल इंस्टीट्यूट ऑफ बायोमेडिकल जिनोमिक्स, कल्याणी बंगाल (NIBG) के एक शोध में पता चला है कि A2a वायरस बाकी अन्य टाइप के वायरस की जगह पूरे दुनिया में फैल गया है। निधान विस्वास और प्रथा मजूमदार की यह रिसर्च इंडिनय जर्नल ऑफ मेडिकल रिसर्च में जल्द ही प्रकाशित होने वाली है।

शोध में दावा, नया वायरस फेफड़ों को पहुंचाता है नुकसान

शोध में पता चला है कि A2a वायरस काफी खतरनाक है और यह मनुष्यों के फेफड़े में बड़े पैमाने पर घुसपैठ की क्षमता रखते हैं। पिछला SARSCoV वायरस, जिसने दस साल पहले 800 लोगों की जान ली थी और 8 हजार से ज्यादा लोगों को संक्रमित किया था, उसने भी मनुष्यों के फेफड़े में घुसने की क्षमता विकसित कर ली थी। हालांकि उसकी यह क्षमता A2a वायरस जितना नहीं थी। शोध के अनुसार, A2a वायरस का तेजी से ट्रांसमिशन होता है और कोविड-19 का यह टाइप पूरी दुनिया में फैल रहा है।

रिसर्च से वैक्सीन बनाने में मिलेगी मदद

विस्वास और मजूमदार के रिसर्च से माना जा रहा है कि कोरोना के लिए वैक्सीन बनाने वाले वैज्ञानिकों को अहम मदद मिलेगी। शोध के अनुसार, पिछले 4 महीने में कोविड-19 वायरस के 10 प्रकार अपने पुराने 'O' टाइप के थे। मार्च के आखिरी सप्ताह से A2a ने पुराने वायरस की जगह लेनी शुरू की और पूरी दुनिया में यह फैला चुका है। मजूमदार ने कहा, 'यह दूसरे प्रकार के वायरस को रिप्लेस कर चुका है और SARSCoV2 का ताकतवर प्रकार बन चुका है।'

शोध में RNA सीक्वेंस डेटा का इस्तेमाल

NIBG के शोधकर्ताओं ने RNA सीक्वेंस डेटा का उपयोग किया। इस डेटा को कोविड-19 पर शोध कर रहे पूरी दुनिया के रिसर्चरों ने जारी किया था। भारतीय शोधकर्ताओं ने RNA सीक्वेंस डेटा का इस्तेमाल किया। 55 देशों से दिसंबर 2019 से 6 अप्रैल तक संकलित 3,600 कोरोना वायरस पर RNA सीक्वेंस का प्रयोग किया गया था। NIBG के फाउंडिंग डायरेक्ट और प्रोफेसर मजूमदार ने कहा, 'कोरोना वायरस को कई प्रकार में बांटा जा सकता है। यह O, A2, A2a, A3, B, B1 और अन्य टाइप में बांटा जा सकता है। अभी इस वायरस के 11 टाइप हैं। इसी में O टाइप भी है जो इसका पुराना प्रकार है और यह वुहान में पैदा हुआ था।' उन्होंने कहा कि इस प्रकार से रूप बदलने वाला वायरस ट्रांसमिशन के के खतरे को बढ़ाता है।

https://navbharattimes.indiatimes.com/metro/mumbai/other-news/coronavirus-has-mutated-into-10-types-1-dominant-across-regions-study/articleshow/75421576.cms

जागरण

Wed, 29 April 2020

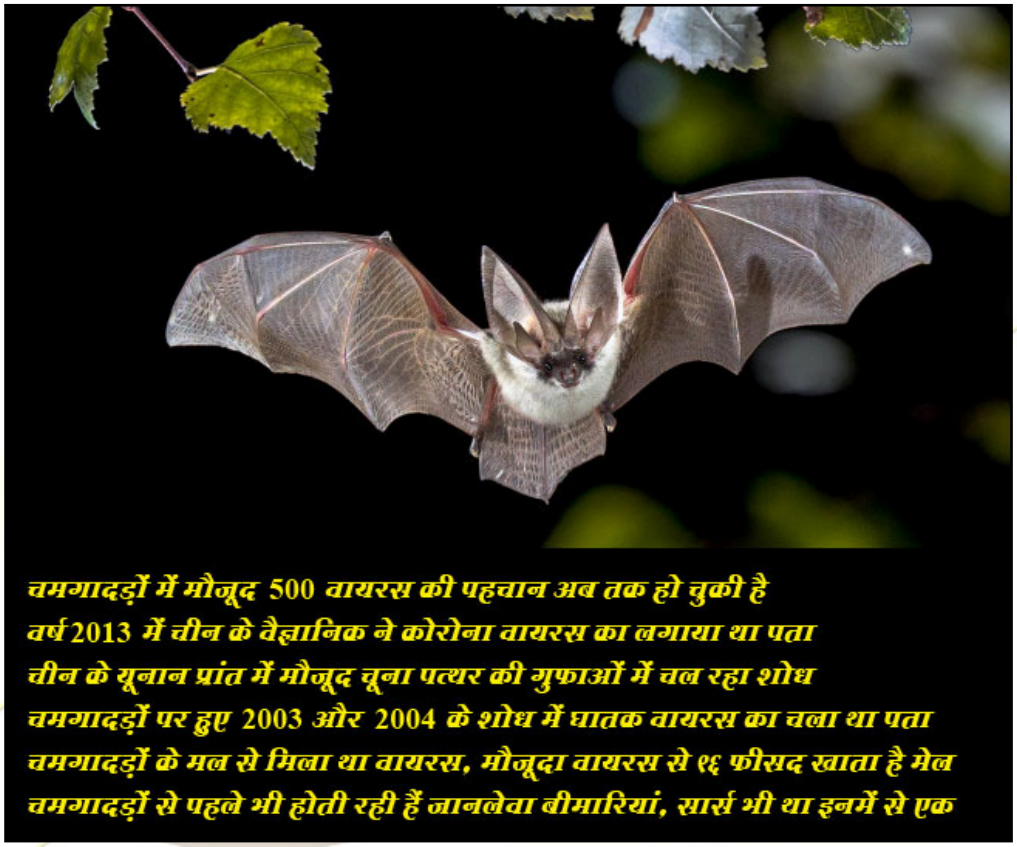
वर्षों से चल रही है चमगादड़ों पर रिसर्च, 2013 में सामने आई थी कोरोना वायरस की थ्योरी

नई दिल्ली (जेएनएन): कोरोना वायरस की उत्पत्ति और सवालों के बीच इसके वाहक बने चमगादड़ों पर कई देशों में रिसर्च चल रही है। चीन में ऐसी ही रिसर्च जनवरी में उस वक्त की गई थी जब वुहान समेत पूरे देश में कोरोना वायरस के मामले हजारों में पहुंच चुके थे। ये खोज यूनान प्रांत में मौजूद चूना पत्थर की गुफाओं में की गई थी। इस खोज को अमेरिका की गैर लाभकारी संस्था इको-हेल्थ एलाइंस ने अंजाम दिया था। इस रिसर्च के दौरान वैज्ञानिक यहां से चमगादड़ों के जालों, थूक और खून समेत कई तरह के नमूने एकत्रित किए। इस दौरान वैज्ञानिकों का दल विशेष सुरक्षा सूट पहने हुए था। आपको बता दें कि इको-हेल्थ एलाइंस नए घातक वायरसों की पहचान करने और बचाव करने में मदद करता है।

इको-हेल्थ एलांइस के अध्यक्ष और वैज्ञानिक पीटर दासजाक इससे पहले भी इस तरह की खोज कर चुके हैं। आपको बता दें कि पूरी दुनिया में चमगादड़ों से सृजित करीब 500 घातक वायरस खोजे जा चुके हैं। वर्ष 2003 और वर्ष 2004 में भी इस तरह के घातक वायरस की खोज की गई थी। वैज्ञानिकों का कहना है कि

अब तक खोजे गए घातक वायरस और दुनिया के लिए समस्या बना नोवेल कोरोना वायरस इनसे करीब 96 फीसद तक मेल खाता है। खुद पीटर ही बीते 10 वर्षों में 20 से ज्यादा देशों में खतरनाक वायरस की खोज कर चुके हैं।

इन वैज्ञानिकों के लिए खोज का माध्यम केवल चमगादड़ ही नहीं बनते हैं बल्कि दूसरे जानवर भी होते हैं। जहां तक चमगादड़ों की बात है तो आपको यहां पर ये भी बता देते हैं कि अब तक हुई रिसर्च में ये बात काफी दमदार तरीके से सामने आई है कि चमगादड़ों के जरिए ही ये वायरस पहले चीन में और फिर पूरी दुनिया में फैला है। आपको बता दें कि आस्ट्रेलिया में चमगादड़ों की सबसे बड़ी गुफा है जहां पर लाखों की तादाद में चमगादड़ पाए जाते हैं। इन पर शोध करने वालों के लिए आस्ट्रेलिया की ये गुफा काफी बड़ी सुविधा भी है।



गौरतलब है कि चीन के वैज्ञानिक और वुहान इंस्टीट्यूट ऑफ विरोलॉजी के प्रमुख वैज्ञानिक शी जेंगली ने चमगादड़ों से मिलने वाले वायरस पर काफी समय तक शोध किया है। लांसेट जर्नल में छपे रिसर्च पेपर में उन्होंने लिखा था कि अपने शोध के लिए उन्होंने चमगादड़ों का जो मल एकत्रित किया था उसमें नोवेल कोरोना वायरस के मिलने की पुष्टि हुई थी। उन्होंने ये खोज वर्ष 2013 में की थी। नवंबर-दिसंबर के दौरान जब ये बीमारी चीन में फैल रही थी तब इस वायरस का पहले से मौजूद वायरस से मिलान किया गया था। उस वक्त इन दोनों में 96 फीसद मेल सामने आया था।

वैज्ञानिक मानते हैं कि कोरोना वायरस का केवल चमगादड़ ही संवाहक नहीं रहा होगा। जो भी जानवर इनके संपर्क में आया होगा वही इसका वाहक भी बन गया होगा। इनमें बिल्ली, ऊंट, पैंगोलिन और दूसरे स्तनपायी जानवार भी हो सकते हैं। ये जानवर इंसानों के आसपास ही होते हैं। इस वजह से ये वायरस इंसानों के संपर्क में आया होगा और फिर एक के बाद एक इस संक्रमण से प्रभावित होते गए होंगे। नेचर मैगजीन में कहा गया है कि चमगादड़ों में बड़ी संख्या में घातक वायरस होते हैं जो इबोला, सार्स और कोविड-19 जैसी महामारियों का कारण बनते हैं।

आपको बता दें कि 2003 में सार्स महामारी से पहले कोरोना वायरस के बारे में ज्यादा अध्ययन नहीं किया गया था। उस समय तक सिर्फ दो ही प्रकार के वायरस के बारे में पता था जिसे 1960 में खोजा गया था। 2009 में यूएस एड द्वारा वित्तपोषित प्रेडिक्ट की स्थापना की गई। इस संस्थान ने इकोहेल्थ एलाइंस, द स्मिथसोनियन इंस्टीट्यूशन, द वाइल्ड लाइफ कॉन्जर्वेशन सोसाइटी और कैलिफोर्निया की कंपनी के साथ एक महामारी ट्रैकर बनाया। इसका उद्देश्य नए बीमारियों की पहचान करना था। दासजाक ने कहा, हमने सार्स की उत्पत्ति के बारे में जानने के लिए खोज शुरू की। लेकिन, बाद में हमें पता चला कि हजारों प्रकार के कोरोना वायरस हैं, इसलिए हमने अपना ध्यान उन्हें खोजने में केंद्रित किया।

https://www.jagran.com/news/national-scientist-found-500-virus-from-bat-cave-in-yunnan-province-jagran-special-20227952.html