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समाचार पत्रों से चयित अंश
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THE HINDU

Fri, 15 May 2020

Mysuru doubles its COVID-19 testing capacity

Lab at MMCRI, which is working in three shifts, sees surge in samples after the arrival of inter-State and international returnees

Mysuru: Mysuru's COVID-19 testing potential has been doubled and the laboratory carrying out coronavirus testing here is now equipped to handle more than 800 samples a day.

So far, the Viral Diagnostic and Research Laboratory (VRDL) at the Mysuru Medical College and Research Institute (MMCRI), the sole facility identified for the testing, had analysed more than 11,000 samples, including about 6,500 samples from Mysuru district alone. The lab was earlier carrying out testing on the samples sourced from neighbouring districts, including Mandya, Hassan, Kodagu and Chamarajnagar.

With the lockdown curbs eased for the return of stranded inter-State and international travellers, the testing is expected to see an increase since all the returnees, who are being quarantined in the government facility, were supposed to undergo testing irrespective of the symptoms.

Foreseeing a spurt in samples, the Mysuru lab has got bigger, thanks to the addition of the state-of-the-art mobile lab of the DRDO-Defence Food Research Laboratory (DFRL), Mysuru. This particular lab – Mobile Food Microbial Analysis Laboratory –- was being used by the DFRL for food analysis. The lab was handed over to the MMCRI recently for coronavirus testing since it is equipped with most advanced apparatus including PCR or thermal cycler machines.

After the tests using China-made rapid testing kits had been halted in the country, tests using PCR machines had been recommended. In addition to its own PCR machines, the VRDL got two more machines from the CSIR-Central Food Technological Research Institute (CFTRI) for stepping up testing.

Though the load on VRDL was reduced recently after the neighbouring districts got their own labs, the samples however rose with the arrival of inter-State and international returnees. "The VRDL, which was handling 250-300 samples a day in three shifts till recently, was today carrying out over 600 to 700 samples a day. It can stretch up to 800 samples a day, doubling its capacity," said MMCRI Dean and Director C.P. Nanjaraj.

Dr. Nanjaraj told *The Hindu* that the MMCRI had roped in the clinical staff from its research wing and also from the tuberculosis centre to support the VRDL staff in handling the rising number of samples. Importantly, the VRDL received a special bio-safety cabinet and deep freezers for boosting testing.

Another reason for the increase in testing was the referral of SARI cases. With the tests made compulsory for SARI and ILI cases, the private hospitals had been referring such cases directly to MMCRI's K.R. Hospital. The hospitals are reluctant to attend to such cases as they are worried that about their closure for containment reasons if the patients end up carrying the infection, sources told *The Hindu*.

Patients with respiratory problems are tested for COVID-19 and are sent back to private hospitals for treatment if they test negative. Positive patients are shifted to the COVID-19 hospital. Only two SARI cases had tested positive till date.

Out of 350 SARI cases witnessed so far, samples of 150 cases had tested negative. About 50 to 60 cases are being treated in the hospital and some cases had been discharged after treatment. "In the days ahead, testing will become regular, increasing the load on the lab," they add.

https://www.thehindu.com/news/national/karnataka/mysuru-doubles-its-covid-19-testing-capacity/article31583306.ece

THE TIMES OF INDIA

Fri, 15 May 2020

DFRL sets up mobile containment laboratory at KR hosptial

Mysuru: The Defence Food Research Laboratory (DFRL) and Defence Research & Development Organisation (DRDO), Mysuru, have jointly developed an innovative state-of-the-art mobile microbial containment (BSL-3) laboratory named 'Parakh.'. Any virus or bacteria can be tested in this mobile lab and every day 300 to 400 Covid-19 tests can also be conducted in the laboratory.

Now, with this facility, the Covid-19 testing capacity in Mysuru district has doubled. The mobile lab is stationed at KR Hospital where tests are already conducted.

Parakh is a fully autonomous containment laboratory built on ISO 20-feet container and mounted on a truck. It adheres to Class ISO 7 and operates with negative pressure to handle clinical, food and environmental samples during biological emergency without any risk to people and environment. It is equipped with dynamic pass box for transferring the samples directly to Class-III biosafety cabinet in a safe manner.

On Monday, Anil Dutt Semwal, director, DFRL handed over the mobile lab to Dr CP Nanjaraj, director and dean, Mysore Medical College and Research Institute (MMCRI).

"The health authorities had requested for this sort of facility. It is very safe. The person who conducts the tests and the environment remain safe. Any virus can be tested in this laboratory. The lab has been provided with PCR work station, real time PCR machine, incubator, deep freezer and refrigerator for testing samples and storing reagents with provision for treatment of liquid effluents, safe storage of solid bio-hazard wastes and decontamination by autoclaving. It also has provision for storing and donning PPE; storage of used aprons along with emergency body shower and eye wash. The mobile lab is equipped with captive and raw power supply. Parakh has air bellow suspension to reduce vibration during transport and air compressor for inflating tyres," said Semwal.

"With this mobile lab, the testing capacity has doubled in Mysuru. Earlier, we used to test 300 to 400 people per day. Now we can add another 300 to 400 tests per day, taking the overall testing capacity in the district to 600 to 700," said Dr Nanjaraj.

https://timesofindia.indiatimes.com/city/mysuru/dfrl-sets-up-mobile-containment-laboratory-at-kr-hosptial/articleshow/75716057.cms?utm_source=whatsapp&utm_medium=social&utm_campaign=TOIMobile

THE ECONOMIC TIMES
WWW.ECONOMICTIMES.COM

Fri, 15 May 2020

Gujrat co to provide DRDO unit shelters to house patients

Vadodara- based PPE manufacturer, Sure Safety, will soon be providing a Defence Research and Development Organisation (DRDO) facility with a 'rapidly deployable, negative pressure shelter' to treat patients

By Dia Rekhi

Vadodara-based PPE manufacturer, Sure Safety, will soon be providing a Defence Research and Development Organisation (DRDO) facility with a 'rapidly deployable, negative pressure shelter' to treat patients. These shelters are made of a special fabric that can withstand high wind velocities, making it ideal for deployment in open areas. It will help to treat patients where regular healthcare facilities are sparse.

"The shelter is not for the exclusive use of Covid-19 patients, but for several infective diseases including Covid-19," said Srikant Jainapur, director of Sure Safety. "Defense had plans to install Rapidly Deployable Shelters. However, the Covid-19 situation has probably hastened the process. They are easily deployable and transportable inflatable shelters that can help treat patients where regular medical infrastructure is not available," he said. He said one particular DRDO entity was taking the lead in getting these inflatable shelters ready and other DRDO units may follow suit. However, Jainapur said the number of shelters being provided and the project cost could not be revealed owing to the confidentiality clause with the defence agency.

"This shelter is fully inflatable and can be set up in a very short time and will stay standing without continuous inflation. With no mechanical framework, the shelters are lightweight to transport and compact to store. After the intended use, these shelters can be dismantled and transported for deployment in other areas. Hence, they can be reused multiple times," Jainapur said.

These 'Isolation Shelters' or 'Isolation Tents' can typically house about 10-12 patients in individual small chambers at a time and is made of a special polymerbased inflatable fabric and consists of a waterproof fabric sheet for the interiors and the canopy. There are different compartments within the shelter such as the air cleaning chamber, dressing room, isolation chamber, decontamination chamber and washrooms too.

The dressing room will have space for professionals to wear the PPE before entering the isolation chamber while the decontamination chamber includes a sealed space to sterilise or decontaminate the person going out of the isolation chamber, using chemical sprays. Sure Safety has also developed patient carrying positive pressure bags for defence which help in the quick evacuation of patients to other hospitals and prevent infection spread during evacuation.

https://economictimes.indiatimes.com/industry/healthcare/biotech/healthcare/gujarat-co-to-provide-drdo-unit-shelters-to-house-patients/articleshow/75731959.cms?from=mdr

Business Standard

Fri, 15 May 2020

Wipro unveils sanitisation walkways, robots to fight the coronavirus

Developed in four weeks, these walkways have already been installed at Wipro's campuses and factories. The walkway has been priced between Rs 1-1.3 lakh per unit

By Samreen Ahmad

Bengaluru: Wipro Infrastructure Engineering (WIN) on Thursday launched a 'sanitisation walkway', joining forces to fight with the Covid-19 pandemic while the Azim Premji-owned company also unveiled two other products, which are currently in the pipeline. These include an automated graded vehicle (AGV) capable of delivering food and medicines to a Covid-19 patient, and also an AGV which can sanitise a large area with UV rays.

According to the Bengaluru-headquartered company, ClearWalk, the sanitisation walkway is basically an enclosure which has been fitted with specially designed spray nozzles creating fine water particles sized between 50 to 100 microns to give maximum coverage to the person walking through. Developed in collaboration with DRDO, these modular setups can be installed within 6-8 hours.

“In crowded areas, mass sanitisation techniques such as ClearWalk are an additional measure to minimise infection. It is ideal to be placed at the entry and exit of offices, factories, hospitals, hotels, educational institutions and malls,” said Pratik Kumar, CEO of Wipro Infrastructure Engineering.

Developed in four weeks, these walkways have already been installed at Wipro’s campuses and factories. The walkway has been priced between Rs 1-1.3 lakh per unit and will be available commercially in 3-4 weeks, the company said.

A team of DRDO engineers helped in optimising the walkway in terms of spray efficiency and nozzle position, said G Sundararaman, senior vice president & head, WIN Automation. The product will be manufactured at Wipro’s manufacturing facility in Bengaluru and the capacity is scalable depending on the market demand, said the company.

WIN’s second Covid-19-specific project called MediKart is a robot equipped with a monitor, which can carry medicines and other necessities to patients so that exposure of the virus to health workers is minimised. It is also fitted with a camera which allows the health practitioner to observe the patient remotely. The robot is currently under testing in a Bengaluru hospital.

Another project, the Wipro Infrastructure Engineering team is working on, is also a robot or an AGV that is capable of sanitizing areas inside a complex. The robot, which will have a UV sanitisation arm mounted onto it, is expected to be launched in a month, the company said.

https://www.business-standard.com/article/companies/wipro-unveils-sanitation-walkways-robots-to-fight-the-coronavirus-120051401364_1.html

THE ECONOMIC TIMES
WWW.ECONOMICTIMES.COM

Fri, 15 May 2020

Wipro Infrastructure Engineering develops sanitizing walkway

Developed by WIN Automation, a part of Wipro Infrastructure Engineering, ClearWalk is a two metre-long enclosure fitted walkway. ClearWalk is fitted with spray nozzles that create fine water particles (between 50 and 100 microns) in a turbulence to give maximum coverage to the person walking through, said the company

Bengaluru: Wipro Infrastructure Engineering has developed a sanitizing walkway with the support of Defence Research & Development Organisation (DRDO) called ClearWalk in a bid to help in fighting Covid-19.

Developed by WIN Automation, a part of Wipro Infrastructure Engineering, ClearWalk is a two metre-long enclosure fitted walkway.

ClearWalk is fitted with spray nozzles that create fine water particles (between 50 and 100 microns) in a turbulence to give maximum coverage to the person walking through, said the company.

An individual takes two to three seconds to walk through two metre on a wet surface. To ensure effective exposure, an individual needs to halt at the one-metre mark (mid-way) and rotate 360 degrees and continue walking. The total time spent by an individual inside the Walkway will be about five to six seconds. The size of disinfectant generated cannot be directly inhaled, as it will be in the form of fine water droplets, said the company.

A team of specialists from DRDO were involved in guiding WIN Automation team.

"In crowded areas mass sanitization techniques such as ClearWalk is an additional measure to minimise infection. It is ideal to be placed at the entry and exit of offices, factories, hospitals, hotels, educational institutions and malls. It is a unique opportunity to partner with DRDO to accelerate the development of ClearWalk," Pratik Kumar, chief executive officer, was quoted saying.

https://economictimes.indiatimes.com/industry/indl-goods/svs/engineering/wipro-infrastructure-engineering-develops-sanitizing-walkway/articleshow/75741975.cms?from=mdr

SmartInvestor.in

Fri, 15 May 2020

Wipro unveils sanitisation walkways, robots to fight the coronavirus

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https://smartinvestor.business-standard.com/market/Marketnews-639664-storydet-Wipro_unveils_sanitation_walkways_robots_to_fight_the_coronavirus.htm#.Xr4P2R9czcc

Fri, 15 May 2020

India Positive: DRDO develops contactless sanitisation cabinet to disinfect gadgets

The RCI, a premier laboratory of DRDO based at Hyderabad, has developed an automated contactless UVC sanitising cabinet to sanitise mobile phones, iPads, laptops, currency notes, cheque leafs, challans, passbooks, and paper. Research Centre Imarat (RCI), a part of the Defence Research Development Organisation (DRDO), developed the Defence Research Ultraviolet Sanitiser (DRUVS).

DRDO said on Sunday that DRUVS Cabinet has a contactless operation which is very important to contain the spread of the virus. The proximity sensor switches clubbed with a drawer opening and closing mechanism makes its operation automatic and contactless. The DRUVS provides 360-degree exposure of UVC to the objects placed inside the cabinet. Once the sanitisation is done, the system goes in sleep mode, hence the operator need not wait or stand near the device, said a statement.

https://www.news18.com/videos/india/india-positive-drdo-develops-contactless-sanitisation-cabinet-to-disinfect-gadgets-2619489.html

वैश्विक अर्थव्यवस्था ही नहीं विज्ञान भी हतप्रभ: डॉ एके सिंह

डीआरडीओ के महानिदेशक बोले : कोवीड-19 के निदान में जुटा संस्थान

Thu, 14 May 2020

माई सिटी रिपोर्टर

नोएडा। रक्षा अनुसंधान और विकास संगठन (डीआरडीओ) के महानिदेशक (जैव विज्ञान) डॉ. अजय कुमार सिंह का कहना है कि कोरोना से बचने के लिए सामाजिक दूरी बनाकर रखना जरूरी है। डीआरडीओ ने समय रहते सैनिटाइजर, पीपीई, वेंटिलेटर आदि जरूरी उपकरण उपलब्ध कराकर कोरोना को रोकने का प्रयास किया है।

अमर उजाला से बातचीत में उन्होंने कहा कि कोरोना एक तरह से प्रलय का रूप है। इसका प्रभाव वैश्विक अर्थव्यवस्था पर ही नहीं पड़ा, बल्कि विज्ञान भी हतप्रभ है। अभी तक पूरी दुनिया के वैज्ञानिक इसका टीका या दवा नहीं बना सके हैं। भारत समेत पूरी दुनिया प्रयास में जुटी हुई है।

संचारी रोग कोरोना एक दूसरे से स्थानांतरित होने वाला वायरस है। संपूर्ण मानवता आज संकट में है। इस वायरस में स्वयं के अस्तित्व और संख्या बढ़ाने के लिए आवश्यक सभी घटक मौजूद हैं। वायरस का स्रोत चमगादड़ माने जाते हैं। छींकने, खांसने व एक दूसरे से बातचीत के दौरान सांस में गए छोटे कणों से यह फैलता है। हालांकि, अधिकांश लोगों के लिए यह बीमारी मामूली है। यह गले, श्वसन मार्ग, फेफड़ों के स्तर की कोशिकाओं को संक्रमित करता है।

डीआरडीओ ने उठाए कदम

उन्होंने बताया कि समय रहते महत्वपूर्ण चिकित्सा आवश्यकताओं पर काम शुरू कर दिया था। हाथ और सतह सैनिटाइजर, व्यक्तिगत सुरक्षा उपकरण, कृत्रिम श्वास मशीन, कोविड नमूना संग्रह कियोस्क, यूवी सैनिटाइजेशन बॉक्स, हैंड हेल्ड यूवी डिवाइस, पर्सनल सैनिटाइजेशन एनक्लोजर, मैट्रिक्स, मोबाइल बीएसएल-3 वीआरडीएल लैब आदि विकसित किए हैं। मूलरूप से ग्राम धोरऊ चांदपुर, थाना चंडौस, गभाना अलीगढ़ निवासी डॉ. एके सिंह ने लोगों से अपील की है कि जब तक दवा न बन जाए, कोरोना से बचने के लिए भारत सरकार के जारी निर्देशों का पालन करें।

डॉ. अजय कुमार सिंह, महानिदेशक, डीआरडीओ

NDTV

Fri, 15 May 2020

As PM Modi pushes "Vocal for Local", How India is changing fighter jet plans

The country's air force is finalizing plans to induct indigenously made Light Combat Aircraft, Tejas to boost the capability of its aging combat aircraft fleet, Chief of Defence Staff Bipin Rawat said

By Sudhi Ranjan Sen

India plans to switch to locally-made fighter jets, two years after asking global companies to submit proposals to supply 114 combat aircraft in the world's biggest warplane contract.

The country's air force is finalizing plans to induct indigenously made Light Combat Aircraft, Tejas to boost the capability of its aging combat aircraft fleet, Chief of Defence Staff Bipin Rawat said in an interview in New Delhi. It will buy an additional 83 jets, apart from an earlier deal for 40 aircraft, for $6 billion, he said.

"The Indian Air Force is switching that to the LCA," Chief of Defence Staff Rawat said, when asked about the global tender for jets. "The IAF is saying, I would rather take the indigenous fighter, it is good."

The decision is a set back for the likes of Boeing Co., Lockheed Martin Corp. and Saab AB who were in the race for the $15 billion order and another sign that India is abandoning costly foreign defense purchases which have been plagued by bureaucratic delays and a funding crunch. Prime Minister Narendra Modi this week stressed the need to buy locally made products to boost an economy battered by the Covid-19 outbreak.

The induction of jets will help India emerge as a key defense exporter due to its "relatively low price," General Rawat said in his office in New Delhi. Several countries may be interested in purchasing the aircraft once they see them in operation with the airforce.

The process to buy fighter jets started more than a decade ago. India scrapped a long-awaited order with Dassault Aviation for 126 Rafales worth $11 billion in 2015, but has since bought 36 of the planes to speed replacement of older aircraft.

In April 2018, India floated a global tender seeking responses from global manufacturers to purchase 114 jets. The deal attracted initial offers from global giants like Boeing, Lockheed Martin and Sweden's Saab AB and the Russian-made Sukhoi Su-30Mki and Su-35. At least 85% of production was to be in India, according to the initial document.

While New Delhi is the world's third-biggest military spender, its air force, navy and the army are still equipped with weapons that are largely obsolete.

Local Production

The move to indigenous fighters marks a shift to start using locally made weaponry, General Rawat said. The defense forces will be using a lot more domestically produced goods, and there is an understanding there may be some quality issues in the beginning, but these will be improved, he said.

"The artillery guns, air defense systems and radars will all be indigenous systems as well. We are doing well with artillery guns and in air defense systems," he added. "We are also looking at ammunition manufacturing in our country in a very big way."

Modi had made clear his intention of reducing India's dependence on foreign made weapons platforms soon after taking over as leader in 2014 but the progress hasn't been remarkable.

India desperately needs new aircraft to replace ageing Soviet-era jets. It needs about 42 squadrons of fighters to defend its western and northern borders simultaneously but is making do with about 31 squadrons only. By 2022, it is likely to add on two more squadrons of the Rafale fighter.

While the IAF is backing the indigenous fighter program, there are several glitches, including faster delivery schedules and quality issues that still need to be ironed out. As per plans, the 123 Tejas fighters are to be followed by the Mark-II variant which are medium weight fighters. The test flight for the next generation Tejas aircraft is likely in 2022.

U.S., China and India were the world's three biggest military spenders in 2019, followed by Russia and Saudi Arabia. The two Asian countries made it to the top three for the first time according to a recent report of the Stockholm International Peace Research Institute. For the fiscal 2020-21 India has earmarked $ 66.9 billion for defense but budget cuts are imminent because of CoVID-19 pandemic.

https://www.ndtv.com/india-news/as-pm-narendra-modi-pushes-vocal-for-local-how-india-is-changing-fighter-jet-plans-2228905

NEWS18

Fri, 15 May 2020

Indian Air Force set to purchase 83 more Tejas jets locally as plan of a global deal halts

The purchase, in addition to an earlier deal to buy 40 of the aircraft, will cost $6 billion, CDS Bipin Rawat said

The Indian Air Force plans to switch to the locally-manufactured Light Combat Aircraft, Tejas, two years after it floated a tender from international producers for 114 aircraft.

Bloomberg quoted Chief of Defence Staff Bipin Rawat as saying that in order to replace the ageing fleet of the Indian Air Force (IAF), 83 more jets will be bought from Hindustan Aeronautics Limited (HAL).

The purchase, in addition to an earlier deal to buy 40 of the aircraft, will cost $6 billion, he said. Rawat maintained that the induction of the LCA into the IAF will help establish India as an important defense exporter due to the relatively low prices.

The move will be a milestone in India's bid to start using locally-made weapons, even though there will be some quality issues in the beginning, the CDS was quoted as saying.

In addition to the jets, artillery guns, air defence systems and radars will be indigenously produced as well, he said. “We are also looking at ammunition manufacturing in our country in a very big way," he added.

India had invited bids for the purchase of the 114 jets in 2018, which attracted offers from Boeing, Lockheed Martin and Saab AB of Sweden worth $15 billion. This comes as a sign that the country seeks to abandon expensive defence purchases from abroad.

In 2015, the long-awaited order worth $11 billion for 126 Rafale jets from the French Dassault Aviation was scrapped. The IAF has supported the program to induct indigenous fighter jets, but the process is riddled with glitches like faster delivery schedules and quality issues.

The 123 Tejas fighters are to be followed by the Mark-II variant which are medium weight fighters. Prime Minister Narendra Modi has made it clear that India will reduce its dependence on weapons made abroad. Earlier this week, he stressed on the need to buy local in order to give a push to an economy hard-struck by the Covid-19 pandemic.

https://www.news18.com/news/india/indian-air-force-set-to-purchase-83-more-tejas-jets-locally-as-plan-of-a-global-deal-halts-2620489.html

Fri, 15 May 2020

Rawat’s statement on LCA over foreign fighter creates confusion

By Raunak Kunde

Chief of Defence Staff Bipin Rawat said in an interview in New Delhi. that IAF will buy additional 83 jets, apart from an earlier deal for 40 aircraft, for $6 billion and also said that “The IAF is saying, I would rather take the indigenous fighter, it is good.” when asked about the global tender for jets under which IAF had plans to buy 114 jets from Global vendors like Boeing Co., Lockheed Martin Corp, JSC Rosoboronexport , Dassault, Eurofighter Consortium and Saab AB who have send their proposals for their fighter jets.

Procurement of 114 jets from a foreign vendor was over 83 LCA-Tejas Mk1A jets which IAF had finalized with state-owned HAL and was due to be inked by now but was delayed due to CoVID-19 situation in the country. Amid recent calls by Prime Minister Narendra Modi who stressed the need to buy locally made products to boost an economy battered by the Covid-19 outbreak,it was expected that IAF might drop plans to buy from a foreign vendor.

Defense Analysts have been urging IAF and MOD to cancel procurement of 114 jets under possible contract for $15 billion and instead focus on the construction of Tejas Mk1A and Tejas Mk2 which is under development. India presently has three active fighter jet programs Tejas Mk1A, Tejas Mk2, and AMCA, and state-owned ADA recently also proposed Twin-Engined ORCA fighter jet concept which is air force derivative of the TEDBF planned for the Indian Navy for Carrier-based Jet requirements. *(Note: Article cannot be reproduced without written permission of idrw.org in any form even for YouTube Videos to avoid Copy right strikes)*

https://idrw.org/rawats-statement-on-lca-over-foreign-fighter-creates-confusion/#more-227438

Defence News

COVID-19: Defence Forces Contribution

THE NEW INDIAN EXPRESS

Fri, 15 May 2020

Defence Ministry patents low-cost PPE developed by Navy to move towards its mass production

On Wednesday, around 100 doctors and paramedic staff of the SVP hospital in Ahmedabad went on a flash strike on the issue of lack of the PPE

New Delhi: The Indian Navy said on Thursday a low cost personal protective equipment (PPE) developed by it has been successfully patented by the Defence Ministry in a step towards its rapid mass production amid the coronavirus pandemic.

Doctors sit outside a hospital in Bengaluru to screen patients. (Photo | Meghana Sastry, EPS)

"The low-cost PPE has been developed by a doctor of Indian Navy, posted at the recently created Innovation Cell at Institute of Naval Medicine (INM), Mumbai. A pilot batch of PPEs has already been produced at Naval Dockyard in Mumbai," a statement issued by the Navy said.

India has been reeling with the PPE shortage since the beginning of the pandemic.

On Wednesday, around 100 doctors and paramedic staff of the SVP hospital in Ahmedabad went on a flash strike on the issue of lack of the PPE.

The patent was filed by the Defence Ministry in association with the National Research Development Corporation (NRDC), an enterprise under the Ministry of Science and Technology, the Navy said.

"In a major step towards rapid mass production of the medical PPE developed by the Indian Navy, a patent has been successfully filed by the Intellectual Property Facilitation Cell (IPFC) of Min of Defence, in association with National Research Development Corporation," it said.

The PPE developed by the Navy is made of a special fabric which affords a high level of protection along with "high breathability" as against other PPEs available in the market and is, therefore, more suitable for use in hot and humid weather conditions as prevalent in India, the Navy said.

It said the technology has also been tested and validated by a testing lab approved by the Indian Council of Medical Research (ICMR).

Eligible firms, the Navy said, are being identified by the NRDC for taking up licensed production of the PPEs on a fast track.

India has been under lockdown since March 25 to curb the spread of the novel coronavirus, which has infected more than 78,000 persons and killed over 2,500 in the country till now.

https://www.newindianexpress.com/nation/2020/may/14/defence-ministry-patents-low-cost-ppe-developed-by-navy-to-move-towards-its-mass-production-2143411.html

THE NEW INDIAN EXPRESS

Fri, 15 May 2020

Military working to make Short Service Commission more attractive: CDS Bipin Rawat

Short Service Commission scheme is meant for eligible men and women to serve as officers for minimum of 10 years

By Mayank Singh

New Delhi: Indian Army is actively working to bridge the shortage both at officer and Personnel Below Officers Rank (PBOR) level and also to decrease the Revenue expenditure from the defence budget.

Chief of Defence Staff General Bipin Rawat (File Photo | PTI)

While a new idea 'Tour of Duty' is ready to be implemented as the pilot project, the older Short Service Commission (SSC) scheme will be made more attractive.

Chief of Defence Staff General Bipin Rawat on Thursday said, "We are working on ideas to make Short Service Commission more attractive."

In the coming time, the SSC might have added financial benefits along with avenues to make the officers leaving the forces professionally armed for civil jobs, added General Rawat.

On the idea of Tour of Duty, the CDS said it is at the nascent stage and is to be tested in future on the factors of cost in training and equipping.

Tour of Duty is at present limited to Army and has been given a go ahead aiming to attract the fit young boys and girl volunteers of the country with a chance to serve the Indian army, including its prestigious combat arms for three years both as an officer and as jawan.

Under the idea, the selected candidates will be put through one year training before inducting them into three year Army service.

The army feels that the performance demonstrated by the Officers and Jawans with three years or lesser service in the recent conflicts including that in Kargil leaves no window of doubt on their commitment, dedication and performance.

New approaches to both SSC and ToD are aimed to serve the twin purposes of increasing savings with a reduction in pay and gratuity payouts where the saved money could be utilised for the much needed modernisation and to fill the shortage of manpower.

Short Service Commission scheme is meant for eligible men and women to serve as officers for minimum of 10 years with options to either leave or opt for Permanent Commission or to opt for an extension of four more years of service. The SSC officers neither pension nor the medical support under the ex-servicemen Contributory Health Scheme.

Talking on the number of SSC officers getting Permanent Commission (PC) an officer said, "Most of those who volunteer are granted PC."

While speaking to a select group of journalists on the SSC scheme CDS said, "The officers might be given medical facility post retirement along with an attractive severance package and

more importantly they may get to do a professional course in Management and Technology from prestigious institutions."

The shortage is persisting both at the officer level and also at the PBOR level. The authorised strength of officers is 50,312 whereas the current strength is 42913 leaving a shortage of 7399 officers till the beginning of 2019 as per the parliament records.

At the PBOR level, this shortage is of almost 27,000 soldiers. In January 2019, the authorised strength of PBORs was 12,23,381 whereas the actual holding numbers were 11,95,632. It is a shortage of 27,749.

Talking about the necessity of making SSC attractive General Rawat said, "A boy or a girl joins at the average age of 21-22 years and once he or she leaves in the age bracket of around 35-36 year and have the responsibility of family and child."

"Among those joining through SSC we will allow between 25 to 30 percent getting Permanent Commission and the rest will not lose with severance financial package and the professional degree will make them eligible for a decent job." told General Bipin Rawat.

https://www.newindianexpress.com/nation/2020/may/15/military-working-to-make-short-service-commission-more-attractive-cds-bipin-rawat-2143447.html

hindustantimes

Fri, 15 May 2020

Army's only cavalry unit to replace horses with tanks

The Indian Army's only mounted cavalry regiment is set to say goodbye to its horses, with the government approving a proposal to equip the 61st Cavalry with tanks, two senior officers said on condition of anonymity

By Rahul Singh

New Delhi: One of the world's last remaining horse-mounted cavalry regiment may be riding into the sunset.

The Jaipur-based 61st Cavalry is likely to be equipped with T-72 tanks. (HT Archive/For Representational Purposes)

The Indian Army's only mounted cavalry regiment is set to say goodbye to its horses, with the government approving a proposal to equip the 61st Cavalry with tanks, two senior officers said on condition of anonymity.

The famous 61st Cavalry is being converted into a regular armoured regiment on the basis of a recommendation made by the Lieutenant General DB Shekatkar (retd) committee in a report on sharpening the army's combat edge and trimming its revenue expenditure, said one of the officers cited above.

The Jaipur-based 61st Cavalry is likely to be equipped with T-72 tanks, said the second officer cited above. "Three independent squadrons of other regiments are being amalgamated under the headquarters of the 61st Cavalry to form the new tank unit," the officer added.

The regiment's 300-odd horses (200 in Jaipur and around 100 with a squadron of 61st Cavalry in Delhi) will become part of a new equestrian node, he said.

Lieutenant General Shekatkar, who headed the 11-member expert committee named after him, said the recommendation to mechanise the 61st Cavalry was taken after scrutinising the track record of the unit.

"It has not taken part in any operation during the last 25 years. Nowhere in the world is playing polo or taking part in equestrian sports the main occupation of any army unit. It's in the army's

best interests that it (the unit) operates tanks instead of horses," Shekatkar said. He said the President's Bodyguard, also a mounted unit, has the well-defined role of performing ceremonial duties for the country's President. The decision to mechanise the mounted regiment, steeped in tradition and sporting history, has evoked mixed reactions. While some in the army argue that the regiment's military heritage should have been preserved, others counter that it makes more sense to assign the 61st Cavalry an operational role rather than limiting it to ceremonial functions and sporting events.

"The 61st Cavalry has a rich and storied history that should have been preserved. There can be no 61st Cavalry without horses. It's heartbreaking to see the unit being disbanded," said an armoured corps officer who asked not to be named. Another officer, however, said mechanisation of the regiment was the way forward and mounted units were a thing of the past.

The 61st Cavalry was raised in Jaipur in October 1953 by putting together mounted elements of cavalry regiments of the erstwhile princely states of India.

Rich in sporting history, the regiment accounts for one Padma Shri, 10 Arjuna Awards, 11 Asian Games medals and a raft of representations at the Polo World Cup and international equestrian competitions. It has been a part of the annual Republic Day parade for several decades.

https://www.hindustantimes.com/india-news/army-s-only-cavalry-unit-to-replace-horses-with-tanks/story-ruLeP4r4t3zBLnXFFxLhPP.html

THE FINANCIAL EXPRESS

Fri, 15 May 2020

Civilians in the military and the need for deeper study

The selection procedure for the officers is more stringent in terms of a written test and psychological evaluation at the Services Selection Board (SSB)

By Lt. Col Manoj K Channan (retd)

The recent announcement by the Government of India to induct civilians into the Indian Army for three-year tenure is probably to fill in the deficiencies at all ranks. While it may augment the depleted manpower, there are questions that need to be answered. The Indian Army has time tested procedures for recruitment of Other Ranks, in certain cases Junior Commissioned Officers as Religious Teachers and the Army Education Corps and Officers through NDA, IMA and OTA. The training period varies from forty-four weeks for men to four years for an officer passing out from IMA through NDA.

The front line units of the Indian Army are cohesive, honed fighting machines with years of camaraderie built over the years from the training academies to the present day. (Representational image: AP photo)

The selection procedure for the officers is more stringent in terms of a written test and psychological evaluation at the Services Selection Board (SSB). Many critics have commented on the procedures of the SSB as archaic and not conforming to the best Human Resources practices being followed by Multi-National Companies. The proof of the pudding lies in its eating. Over the years and even this day the selection procedure has stood the test of time in many operations that the Army has been involved in whether conventional operations, counter-insurgency/counter-terror operations or humanitarian aid to civil authorities or representing the country at International Sports events, the Indian Army has done it with élan and has always made the Nation proud. To add on here the Special Action Group (SAG) of the National Security Guard (NSG) and

the Assam Rifles (AR) is led by the officers of the Indian Army, which is a force under the Ministry of Home Affairs. It needs to be amplified that the DG NSG is normally an IPS and other groups within the NSG has volunteers from the Central Armed Police Forces (CAPF).

The front line units of the Indian Army are cohesive, honed fighting machines with years of camaraderie built over the years from the training academies to the present day. The training philosophy is "The more you sweat in peace, less you bleed in War". The characteristics of each man and of the officer is known and the commanding officers know; the weakest link in the chain if any.

Para dropping of a select few in the ranks of the army is a step to the dilution of a strong cohesive combat force. A new inductee may be professionally very strong, but he/she must be able to pull his weight in a given situation.

Some of the Western Army's follow this short term induction, but their performance vis-à-vis ours is miles apart. The youth may think its "fun and games" the lure of the Services Life seems a very green pasture but then it's nurtured with a lot of sweat and blood. An internal survey from the units of the Indian Army needs to be done before this policy is implemented.

The route of the Territorial Army is an option for this recruitment, which is a support to the combat units in guarding of vulnerable areas/points thus releasing troops for their primary tasks.

To sum up, a young officer/soldier inducted in a unit is put through professional training in particular to the arms/service before he/she is qualified to lead the best troops of the world in combat or any other exigencies of service. It's "Fauj not Mauj" the mandarins of South Block need to think through this one.

(The author is Indian Army Veteran. Views expressed are personal.)

https://www.financialexpress.com/defence/civilians-in-the-military-and-the-need-for-deeper-study/1958671/

Live हिन्दुस्तान.com

Fri, 15 May 2020

इंडियन आर्मी में 3 साल के लिए आम लोगों की भर्ती, जानें क्या है भारतीय सेना का टूर ऑफ ड्यूटी प्लान

नई दिल्ली: अगर आपमें इंडियन आर्मी में जाकर देश की सेवा करने का जज्बा है तो यकीन मानिए आपके मन की मुराद पूरी होने वाली है। आर्मी ने आम लोगों को ट्रेनिंग देने का प्लान तैयार किया है। भारतीय सेना एक ऐसे प्रपोजल पर काम कर रही है जिसके मुताबिक आम युवा लोग तीन साल के लिए आर्मी में शामिल हो सकते हैं। इस योजना को टूर ऑफ ड्यूटी (Tour of Duty - ToD) का नाम दिया गया है। ToD मॉडल पहले से चले आ रहे शॉर्ट सर्विस कमिशन जैसा होगा जिसके तहत वह युवाओं को 10 से 14 साल के आरंभिक कार्यकाल के लिए भर्ती करती है। अगर इस प्रपोजल को मंजूरी मिलती है तो सेना इसे लागू कर सकती है।

सेना के एक प्रवक्ता ने कहा, सेना आम नागरिकों को तीन साल की अवधि के लिए बल में शामिल करने के 'टूर ऑफ ड्यूटी' के प्रस्ताव पर विचार कर रही है। सेना प्रतिभाशाली युवाओं को आकर्षित करने के लिए अनेक प्रयास करती रहती है। योजना के जरिए वे युवा भी सेना में शामिल हो सकेंगे।

सेलेक्शन का तरीका अभी जैसा रहेगा

हालांकि टीओडी मॉडल में अनिवार्य सैनिक सेवा जैसा नियम नहीं होगा। भारतीय सेना प्रवक्ता अमन आनंद ने कहा अगर प्रस्ताव को मंजूरी मिलती है तो यह सिस्टम पूरी तरह स्वैच्छिक होगा। इसमें सेलेक्शन प्रक्रिया के नियमों

को कम नहीं किया जाएगा। आर्मी क्वॉलिटी से कोई समझौता नहीं करेगी। यानी शॉर्ट सर्विस कमिशन के लिए जिस तरह से लिखित परीक्षा व इंटरव्यू लिए जाते हैं, इसके लिए भी इसी तरह की भर्ती प्रक्रिया होगी।

एक अधिकारी ने बताया कि सेना शुरुआत में ट्रायल बेसिस पर अफसर और अन्य रैंक के अधिकारियों व जवानों की सीमित वैकेंसी निकाल सकती है। इसमें मिलिट्री ट्रेनिंग के बाद एक इंटर्नशिप अनिवार्य होगी।

एक अन्य अधिकारी ने कहा, 'यह प्रस्ताव सशस्त्र बलों में परमानेंट कमिशन के कॉन्सेप्ट से अलग तीन वर्षों के लिए 'इंटर्नशिप' की अवधारणा है। इसके जरिए आम युवाओं को मिलिट्री लाइफ का अस्थायी अनुभव दिया जाएगा।"

सेना को फायदा

बताया जा रहा है कि इस टूर ऑफ ड्यूटी मॉडल (टीओडी) से न सिर्फ सेना में युवाओं की संख्या बढ़ेगी बल्कि सेना को पैसों की बचत होगी। उसे ग्रेज्युटी व पेंशन नहीं देनी पड़ेगी।

शॉर्ट सर्विस कमिशन के जरिए सेना में भर्ती हुए अफसरों को रिलीज करने तक प्री-कमीशन ट्रेनिंग, वेतन व अन्य खर्च के तौर पर 10 साल में 5.12 करोड़ व 14 वर्ष के लिए 6.83 करोड़ खर्च करने पड़ते हैं। जबकि तीन साल के लिए शामिल हुए लोगों पर सिर्फ 80 से 85 लाख का खर्च आएगा।

कॉरपोरेट जगत में मौके

इसके अलावा टीओडी चुनकर तीन साल सेना में सेवाएं देने के बाद लोगों के लिए कॉर्पोरेट वर्ल्ड में भी नए अवसर खुलेंगे। प्राइवेट कंपनियां सिक्योरिटी सर्विसेज में सामान्य ग्रेजुएट्स की बजाय उन लोगों को अच्छी सैलरी वाली नौकरियां देती हैं जो आर्मी से ट्रेंड होते हैं।

प्रस्ताव में कहा गया है- 'यह ऐसे लोगों के लिए शानदार अवसर है जो पूरी जिंदगी के लिए सैन्य सेवाओं में नहीं जाना चाहते थे, लेकिन आर्मी लाइफ का अनुभव लेना उनका सपना होता है।'

https://www.livehindustan.com/career/story-indian-army-tour-of-duty-3-year-voluntary-service-know-all-about-indian-army-proposal-3214464.html

FlightGlobal

Fri, 15 May 2020

Sikorsky signs $905 million deal for 24 MH-60R anti-submarine helicopters for Indian Navy

By Garrett Reim

sSikorsky officially signed a contract with the US Navy to provide 24 examples of the MH-60R helicopter to the Indian navy for anti-submarine warfare.

MH-60R Seahawk flying ahead of guided-missile cruiser USS San Jacinto in 2014

The $905 million deal with New Delhi was anticipated, as it was reportedly cleared by the Indian Ministry of Defence in February. The sale will be handled by the USN via the Foreign Military Sale process. The first helicopter delivery to the Indian Navy is anticipated in spring 2021.

In the official US government contract notice, the USN is ordering three MH-60Rs, while India is ordering 21 examples.

"The US Navy has allowed us to leverage three aircraft from their inventory of brand new aircraft that have never been introduced into the fleet — in order to provide them to the Indian Navy so they can begin training on a more accelerated basis than might normally be possible," says Tom Kane, director of Sikorsky naval helicopter programmes.

Sikorsky declines to say what weapons and subsystems the Indian navy's MH-60Rs would have. However, the manufacturer says the equipment would enable anti-submarine and anti-ship warfare, as well as special operations, search and rescue, utility, vertical replenishment, and command and control missions.

Previously, the helicopters were to include weapons such as AGM-114 Hellfire missiles, Advanced Precision Kill Weapons System rockets and Mk54 torpedoes and crew served guns, according to a Foreign Military Sales approval notice sent to the US Congress in 2019. The package was also to include multi-mode radars, sonobuoys and multi-spectral targeting systems.

However, that former notice valued the possible deal at $2.6 billion, much higher than the package announced today, so it is not clear what weapons and related equipment would be included in the final sale.

"The initial value of $905 million as announced by the US Navy today is for production of these aircraft. Additional follow-on work is required for unique modifications and systems, which is currently going through the bid and proposal process," says Kane, noting Sikorsky is still negotiating with the US government. "Prices can vary depending on specific requirements, unique equipment, length and scale of support, training and logistics packages."

The main operator of the MH-60R helicopter is the USN, which has 289 examples in its fleet. It plans to fly the aircraft through 2040. The Royal Danish Navy, Royal Australian Navy and Royal Saudi Naval Forces fly the aircraft as well.

The Indian navy is also searching for 111 Naval Utility Helicopters to replace its aging fleet of Hindustan Aeronautics Chetak helicopters. Those new helicopters are intended for search and rescue, casualty evacuation, passenger and cargo transportation and torpedo drop roles.

India wants 95 helicopters out of the 111 Naval Utility Helicopters to be manufactured in country. The local offset would help replace production for the Chetak, a version of the Airbus Alouette III built in India under license.

https://www.flightglobal.com/helicopters/sikorsky-signs-905-million-deal-for-24-mh-60r-anti-submarine-helicopters-for-indian-navy/138387.article

THE DIPLOMAT
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Fri, 15 May 2020

India's Defense Chief opposes aircraft carrier plans

CDS General Bipin Rawat reiterated doubts about acquiring a third carrier in a recent interview

By Rajeswari Pillai Rajagopalan

Last week, India's Chief of Defense Staff General Bipin Rawat said in an interview to an Indian newspaper that the Indian military is not an expeditionary force and should not be deploying forces around the globe. He said that Indian forces have "to guard and fight only along our borders, and, of course, dominate the Indian Ocean Region." He went on to add that the military services should not seek large imports "by misrepresenting our operational requirements." He targeted the Indian Navy's carrier plans, saying that because carriers, as surface vessels, can be "knocked off by missiles," the Navy should invest more in submarines.

Credit: Indian Navy

Rawat's statements have several implications. Most importantly, it calls into question the Indian Navy's and the Air Force's acquisition plans. These are particularly important at a time when China has been

both putting pressure on the Sino-Indian border and venturing into the Indian Ocean Region. Rawat's comments could also bring back concern within the Navy and the Air Force about the Army's dominance within the Indian military and potentially lead to intensified interservice rivalry among the three services. The creation of the chief of defense staff (CDS) post was meant at least partly to create greater synergy among the services and greater jointness, but that could be at risk if the two smaller services feel the CDS is being partial to the Army.

Clearly, the economic impact and the financial implications of the COVID-19 pandemic is going to be significant. The Indian defense budget allocation over the last two years has been the lowest since the early 1960s, but the COVID-19 impact is likely to lead to further slashing the defense budget. This in turn will affect major defense procurements, particularly for the Navy and Air Force. Both are services that require capital-intensive investment in acquisitions that take longer term planning and a lot of lead time. They are not going to be happy about the CDS's comments.

This issue has clearly been on Rawat's mind for some time, and possibly has been under debate within the government too; the CDS was repeating earlier comments. In February this year, Rawat said that the Indian Navy's request for a third aircraft carrier may not be approved any time soon because the priority is to strengthen the submarine fleet. The CDS cited cost as the major factor for this pushback. Rawat of course has to prioritize the military's acquisition, depending on the available funds, but cutting down on aircraft carriers is likely not going to be easy. The Indian Navy is already pushing back.

Sources in the Indian Navy are reported to have said that the service is certain about its plans for a third aircraft carrier. They added that "the third aircraft carrier is an operational necessity. It is not that an aircraft carrier can be bought off the shelf. Even if all permissions are given today, it will take 15 years for the carrier to be inducted." Admiral Karambir Singh, chief of the Indian Navy, previously stated that he was convinced that "the country needs three aircraft carriers, so that two are operational at all times. And it should be 65,000 tonnes with electromagnetic propulsion," probably a misquoted reference to the Electromagnetic Aircraft Launch System (EMALS) with which the Navy plans to equip future aircraft carriers. Navy sources have also argued that shore-based aircraft operations, as indicated by the CDS, will be limited in terms of range.

India currently has one operational aircraft carrier, the INS *Vikramaditya*, which can host around 30 aircraft. The second, INS *Vikrant*, is still being built at the Cochin shipyard in south India, and is expected to be operational only by 2022, though even that is likely an optimistic timeline.

But Rawat's emphasis on dominance in the Indian Ocean Region also cannot be addressed adequately if he plans to shrink the naval budget. Both Prime Minister Narendra Modi and External Affairs Minister S. Jaishankar have emphasized an ambitious agenda for the Indian Ocean Region. To play an effective role in this vast maritime space, India would need a much higher number of ships. A falling naval budget would not permit this. India's declining submarine fleet has been an additional matter of concern. With only 13 operational submarines, many of which are old, India cannot match the more capable navies in the Indo-Pacific, such as those of China and Japan. Unless India adds to its submarine fleet quickly, it may move down to the level of Pakistan, which has just eight operational submarines.

But the budget woes are unlikely to ease. The CDS and the Army leadership are also likely come under pressure to seriously think about downsizing the Army. With a strength of around 1.4 million personnel, the Indian Army is the world's largest land force, followed by North Korea and China. China, in its attempt at modernizing its military, reduced the size of its Army by half and is now increasing its emphasis on the People's Liberation Army Navy and Air Force. Pensions and salaries are becoming the biggest burden on the military budget and crowding out capital investments and much of this is the result of India's massive army. The CDS is right in arguing for budget prioritization, but this might lead to calls for pruning the Army.

https://thediplomat.com/2020/05/indias-defense-chief-opposes-aircraft-carrier-plans/

Devdiscourse
Discourse on Development

Fri, 15 May 2020

ARI Pune develops novel process for synthesis of Quantum Dots used in photographing cellular organelles

Researchers at the Agharkar Research Institute (ARI), Pune, an autonomous institute under the Department of Science and Technology, have developed a new process for the synthesis of quantum efficient and biocompatible quantum dots (QDs) used in capturing images of cellular organelles and processes within the visible wavelength ranges across the electromagnetic spectrum

Researchers at the Agharkar Research Institute (ARI), Pune, an autonomous institute under the Department of Science and Technology, have developed a new process for the synthesis of quantum efficient and biocompatible quantum dots (QDs) used in capturing images of cellular organelles and processes within the visible wavelength ranges across the electromagnetic spectrum. The process which involves continuous flow and is active microreactor assisted has been published in the journal Advances in Colloid and Interface Science recently.

Currently, bioimaging applications such as visualisation of cellular organelles, tracking cellular processes, etc. are reliant on traditional fluorophores which are fluorescent chemical compounds that can re-emit light upon excitation. "These fluorophores are vulnerable to photobleaching, have low signal intensity, and overlapping spectra which restrict their use, particularly in multispectral bioimaging. Quantum Dots have advantages over traditional fluorophores in terms of quantum efficiency, photo- and chemical-stability and their toxicity can be tackled by a surface coating which also expands the possibility of the conjugation of various biomarkers while targeting different organelles during multispectral bioimaging. However, it is challenging to reproducibly obtain the essential properties during synthesis. Thus, QDs are still not favoured commercially over traditional fluorophores," the Department of Science and Technology said in a release.

To overcome this challenge Dr Dhananjay Bodas, Scientist, Nanobioscience Group at ARI developed the continuous flow active microreactor based synthesis in conjunction with mathematically predicted process parameters and employed it to obtain narrow size-tunable monodispersed QDs with a high degree of reproducibility. Further, the synthesized QDs were rendered biocompatible by coating with silicone. The coating not only provided biocompatibility but also enhanced quantum efficiency and photostability. These polymer-coated quantum efficient fluorescent nanocrystals were successfully applied in multispectral bioimaging -- multiple emission at the single excitation wavelength, of organelles of cells and zebrafish tissue.

According to Dr Bodas, reproducibility can be achieved by stringent control on the synthesis process. Micro reaction technology offers not only this alternative but advantages such as faster reaction rates, less concentration/ thermal gradients, less consumption of reagents and so on. The method could be made industry viable by automation and could be scaled-up in the future, which could pave the way for cost-efficient production of monodispersed, quantum efficient, photostable and biocompatible quantum dots, that might serve as an excellent alternative to traditional fluorophores, said Dr Bodas. (ANI)

https://www.devdiscourse.com/article/science-environment/1051378-astronomers-using-subaru-telescope-determine-that-trappist-1-planetary-orbits-are-not-misaligned

Fri, 15 May 2020

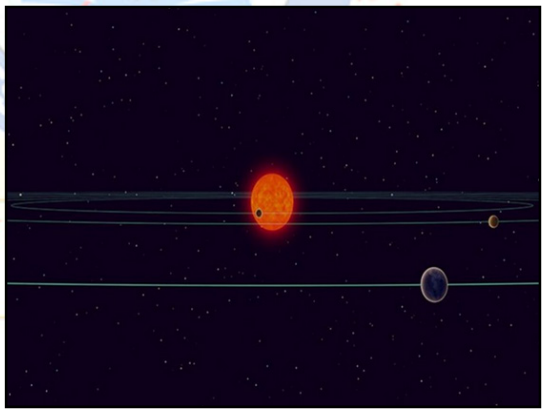
Astronomers using Subaru Telescope determine that TRAPPIST-1 planetary orbits are not misaligned

Astronomers using the Subaru Telescope have determined that the Earth-like planets of the TRAPPIST-1 system are not significantly misaligned with the rotation of the star

Washington: Astronomers using the Subaru Telescope have determined that the Earth-like planets of the TRAPPIST-1 system are not significantly misaligned with the rotation of the star. This is an important result for understanding the evolution of planetary systems around very low-mass stars in general and in particular the history of the TRAPPIST-1 planets including the ones near the habitable zone.

Stars like the Sun are not static but rotate about an axis. This rotation is most noticeable when there are features like sunspots on the surface of the star. In the solar system, the orbits of all of the planets are aligned to within 6 degrees with the Sun's rotation. In the past, it was assumed that planetary orbits would be aligned with the rotation of the star, but there are now many known examples of exoplanet systems where the planetary orbits are strongly misaligned with the central star's rotation.

This raises the question: can planetary systems form out of alignment, or did the observed misaligned systems start out aligned and were later thrown out of alignment by some perturbation? The TRAPPIST-1 system has attracted attention because it has three small rocky planets located in or near the habitable zone where liquid water can exist. The central star is a very low-mass and cool star, called an M dwarf, and those planets are situated very close to the central star. Therefore, this planetary system is very different from our solar system.



Determining the history of this system is important because it could help determine if any of the potentially habitable planets are actually inhabitable. But it is also an interesting system because it lacks any nearby objects which could have perturbed the orbits of the planets, meaning that the orbits should still be located close to where the planets first formed. This gives astronomers a chance to investigate the primordial conditions of the system. Because stars rotate, the side rotating into view has a relative velocity towards the viewer, while the side rotating out of view has a relative velocity away from the viewer.

If a planet transits, passes between the star and the Earth, and blocks a small portion of the light from the star, it is possible to tell which edge of the star the planet blocks first. This phenomenon is called the Rossiter-McLaughlin effect. Using this method, it is possible to measure the misalignment between the planetary orbit and the star's rotation. However, until now those observations have been limited to large planets such as Jupiter-like or Neptune-like ones.

A team of researchers, including members from the Tokyo Institute of Technology and the Astrobiology Center in Japan, observed TRAPPIST-1 with the Subaru Telescope to look for misalignment between the planetary orbits and the star. The team took advantage of a chance on August 31, 2018, when three of the exoplanets orbiting TRAPPIST-1 transited in front of the star in a single night. Two of the three were rocky planets near the habitable zone. Since low-mass stars

are generally faint, it had been impossible to probe the stellar obliquity (spin-orbit angle) for TRAPPIST-1.

But thanks to the light-gathering power of the Subaru Telescope and high spectral resolution of the new infrared spectrograph IRD, the team was able to measure the obliquity. They found that the obliquity was low, close to zero. This is the first measurement of the stellar obliquity for a very low-mass star like TRAPPIST-1 and also the first Rossiter-McLaughlin measurement for planets in the habitable zone.

However, the leader of the team, Teruyuki Hirano at the Tokyo Institute of Technology, cautions, "The data suggest an alignment of the stellar spin with the planetary orbital axes, but the precision of the measurements was not good enough to completely rule out a small spin-orbit misalignment." "Nonetheless, this is the first detection of the effect with Earth-like planets, and more work will better characterize this remarkable exoplanet system," Hirano added. (ANI)

https://www.devdiscourse.com/article/science-environment/1051378-astronomers-using-subaru-telescope-determine-that-trappist-1-planetary-orbits-are-not-misaligned

COVID-19 Research

EurekAlert!

Fri, 15 May 2020

Compact electronic nose to identify human lung diseases

sResearchers from Russia and Italy have proposed a compact sensor system that can implement the functionality of the electronic nose and developed a reproducible technology for its manufacture. This device is designed as flexible electronics that can analyze exhaled air, as well as identify pathologies of the respiratory tract and organs.

During the experiments, the device demonstrated high accuracy in determining patients with chronic obstructive pulmonary disease (COPD), an inflammatory disease of the respiratory tract, which increases the risk of complications when infected with COVID-19.

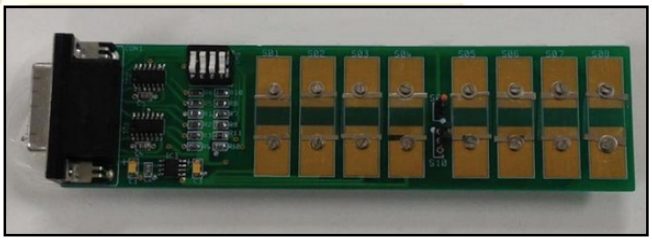


IMAGE: The electronic nose matrix board with eight sensor

Chronic obstructive pulmonary disease (COPD) develops in the bronchial mucosa in response to pathogenic external factors and leads to a negative change in the functions of the respiratory tract. A person with COPD cannot receive the necessary oxygen, because the inhaled air flow is limited. COPD is commonly caused by gases and volatile particles, such as dust, tobacco, cadmium and silicon particles, and others. The methods for detecting this disease are complex and time consuming, which is inextricably linked to a threat to the patient's health. Conventional methods for breath analysis, such as gas chromatography and mass spectroscopy, are expensive and time-consuming, so new approaches are required that are notable for their low cost and speed of testing. COPD is an urgent problem, as the disease may lead to the limitation of physical performance and disability of patients. It is important to note that people with COPD are most at risk for complications if they become infected with COVID-19.

"Malfunctioning of human organs causes a change in a number of processes in the metabolism, which affects the composition of exhaled air. Its analysis can be used to identify diseases of the

respiratory system as well as other internal organs, such as the stomach," explains Ivan Bobrinetskiy, Doctor of Science, project manager for the Russian Science Foundation grant, leading research associate of the National Research University of Electronic Technology. "The proposed concept of the electronic nose allows for operational monitoring and preliminary detection of diseases in just a few minutes. At the same time, the sensors are reusable, and the basic data and the identification of possible pathologies of organs are transferred from the device to digital mode using methods of statistical data analysis, including the capabilities of artificial intelligence. "

The system is based on modified carbon nanotubes (CNTs), which allows the electronic nose to combine various desired properties. For example, flexible conductive films can be made from carbon nanotubes. Such films are needed in order to provide the system with a layer with a given electronic structure, which will be responsible for the operation of the device. "CNTs were synthesized by aerosol chemical vapor deposition and deposited in the form of thin transparent and conductive films. This technology is highly reproducible, easily scalable and allows applying films of nanotubes to any surface," said Albert Nasibulin, professor at the Skolkovo Institute of Science and Technology, professor of the Russian Academy of Sciences. The development of the CNT manufacturing technology for the sensor system is also supported by a grant from the Russian Science Foundation.

The study of the effectiveness of the new system involved 12 patients with COPD and 9 healthy individuals in accordance with the rules of clinical trials. Breath sampling was carried out in disposable polytetrafluoroethylene (PTFE) plastic bags - made of a very inert material - containing a sensor matrix. The subjects inhaled and inflated the bag as much as possible through a plastic straw. When the straw was removed, the packages were sealed. The sensor matrix inside the bag was in contact with exhaled air for about three minutes, so that all sensors could fully work and interact with the gas molecules that characterize the pathology. Then the system was cleaned with dry air for the next study. Samples were collected from each participant with an interval of one hour.

Since the system detected all people with COPD, it can be argued that the device is effective. In the exhaled air, an increased concentration of nitrogen dioxide was detected. It should be noted that the gas content is less than one molecule per million molecules of the exhaled air, which indicates high sensitivity of the developed sensors.

Researchers have also successfully tested their system on gases that can characterize other diseases. The volatiles selected for this study (ammonia, nitrogen dioxide, sodium hypochlorite, water, benzene, hydrogen sulfide, acetone, ethanol and 2-propanol) are associated with specific diseases and can potentially be considered as their biomarkers. Thus, the content of 2-propanol, benzene, ethanol and acetone in exhaled air is increased in people with lung cancer, while acetone is found in patients with diabetes. A high concentration of ammonia in human breath is associated with liver or kidney diseases, and hydrogen sulfide has been proposed as a biomarker of asthma. It is shown that the concentration of sodium hypochlorite is an increased content in exhaled air in children with bronchial asthma and cystic fibrosis.

The studies were carried out together with colleagues from the Catholic University of the Sacred Heart (Italy), Aalto University (Finland), Biosense Institute in University of Novi Sad (Serbia).

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https://www.eurekalert.org/pub_releases/2020-05/sios-cen051420.php

The Indian EXPRESS

Fri, 15 May 2020

Covid-19 vaccine: The search for a Coronavirus cure

Coronavirus (Covid-19) Vaccine: At the earliest, we are 12-18 months away from developing a vaccine for the coronavirus, but global efforts raise hope that we could emerge on the other side of the pandemic.

By Leela Murali

New Delhi: In the Covid-19 story, there are three possibilities that lie ahead: One, communities develop immunity against the disease, two, a drug is invented to contain the disease, and three, a vaccine is made available. At the earliest, we are 12-18 months away from developing a vaccine for the coronavirus, but global efforts raise hope that we could emerge on the other side of the pandemic.

There are some 100 research groups across the world racing to develop a vaccine. These projects are in various stages of development, from research to clinical trials.

So, first, what is a vaccine?

Vaccines are biological products that are introduced in the body to act against toxins released by a pathogen. It teaches the immune system to identify a disease-causing pathogen and store in memory which fightback options are the most effective. Some vaccines are live pathogens; they don't cause any harm, but the body can recognise it and act.

For example, the yellow fever vaccine is a live, weakened yellow fever virus; the BCG vaccine too is a live attenuated strain derived from an isolate of Mycobacterium bovis used widely as a vaccine for tuberculosis. The polio vaccine has the killed virus.

Why is vaccination important?

Vaccines allow vulnerable people to obtain immunity from a disease without getting sick. When vaccines are administered, there is no longer a need to put in resources to prevent the disease. It also releases pressure on the healthcare system to treat patients who are ill.

How are vaccines developed?

Vaccines usually take years to develop. After research, it is tested on animals and then undergoes human trials — a controversial method of intentionally injecting the virus into people.

Each vaccine has to be tested for safety and efficacy in three phases — in **phase one**, small groups of people receive the trial vaccine; in **phase two**, it is administered to those who have characteristics similar to whom the new vaccine is intended; and in **phase three**, it is injected into several thousand people. Finally, researchers also analyse post-marketing data.

We must not forget that there is also a business side to vaccines. The SARS and Zika epidemics ended before vaccine could be developed, leaving manufacturers at a financial loss as funding agencies pulled out of the projects. This also derailed other vaccine-development programmes.

Which countries are developing coronavirus vaccines?

The United States, China, Germany, the United Kingdom and even India are in the process of developing vaccines.

The University of Oxford is researching whether a vaccine that was originally developed for MERS, another coronavirus, could be administered during this pandemic. Called ChAdOx1 nCoV-19, this vaccine would help the body recognise the "spikes" of the virus which are made of protein. As it was already being developing for MERS, it passed the initial stages and is now in the clinical trial phase.

In Germany, a vaccine named BNT162 is in the clinical trial stage. It is being developed by US-based Pfizer and the German company BioNtech.

In the US, a vaccine, mRNA-1273, is being developed by the National Institute of Allergy and Infectious Diseases (NIAID), in collaboration with biotech company Moderna.

Meanwhile, US agency Biomedical Advanced Research and Development Authority is funding French pharmaceutical group Sanofi to use its existing technology to create a vaccine for the coronavirus. The technology was originally designed for influenza.

Another vaccine is being developed by Novavax, the NVX-COV2373 vaccine. It is ready to start human tests after finding promising results from its animal trials. At least 130 Australians have reportedly volunteered to test the vaccine.

China is working on a way to introduce the coronavirus into the body, without its potent elements, to help generate a natural immune response against an actual infection. Researchers at the Academy of Military Medical Sciences, affiliated to China's People's Liberation Army, are working with Hong Kong-listed firm CanSino Biologics on the project.

There are also studies underway to see whether the Bacillus Calmette-Guérin (BCG) vaccine, which has been used for tuberculosis, protects against the coronavirus.

Israel-based Tel Aviv University has entered into a partnership with Swiss-based bio pharmaceutical company Neovii to develop a vaccine against the coronavirus.

Coronavirus Vaccine, Covid-19 Vaccine in India

The Indian Council of Medical Research (ICMR) on Sunday, May 9, 2020 said it had partnered with Bharat Biotech International Limited (MMIL) to develop an indigenous Covid-19 vaccine using the virus strain isolated at the National Institute of Virology (NIV), in Pune.

"Work on vaccine development has been initiated. ICMR and BBIL will seek fast-track approvals to expedite vaccine development, subsequent animal studies and clinical evaluation of the candidate vaccine," ICMR stated in a press release.

https://indianexpress.com/article/explained/coronavirus-covid-19-vaccine-6402085/

The Dispatch

Fri, 15 May 2020

Soon, private hospitals can purchase PPE kits from government-approved manufacturers

The Union Ministry of Health and Family Welfare is mulling to allow private hospitals to purchase personal protective equipment (PPE) kits from government registered PPE kits manufacturers. As of now, the government registered PPE kits manufacturers do not have permission to supply coveralls to a private hospital.

"We have anticipated the requirement of private hospitals for PPE kits. Hence, we are planning to allow private hospitals to get the coveralls from the government-approved companies.

"So far, we have over 100 in-house manufacturers, developing PPE kits for us, which costs around Rs 650 each. It was strictly advised to them that they have to supply PPE kits only to the government, and not to anybody else," he said.

"We are preparing a list of government-approved PPE kits manufactures, who can provide coveralls to private hospitals at a reasonable price," added the official, saying that domestic production of PPE kits is above two lakh per day.

A PPE kit consists of a mask, eye shield, shoe cover, gown and gloves, which doctors and healthcare workers wear during the treatment of COVID-19 patients.

When contacted, Dr DS Rana, Chairman, Board of Management at Sir Ganga Ram Hospital, said: "For us, the quality of PPE kit is a major concern. There have been cases of poor quality PPE kits with over-pricing. It is a welcome move by the government where private hospitals will be allowed to purchase coveralls from the government-approved manufactures."

The Central government's PPE kits are procured by the HLL on behalf of the Union Health and Family Welfare Ministry, and Ministry of Textiles.

Companies like Alok Industries, JCT Phagwara, Gokaldas Exports, and Aditya Birla are some of domestic PPE kits manufactures.

Orders to the tune of 2.22 crore PPE kits have already been placed, of which orders to the tune of 1.42 crore have been placed with domestic manufacturers and 80 lakh PPE kits are being imported.

The government institutes like South India Textile Research Association (SITRA), Defence Research & Development Organisation (DRDO) and Ordnance Factory Board are at the forefront of developing new technologies, materials and testing facilities. DRDO has also developed new PU coated nylon/polyester for supply to domestic manufacturers.

https://www.thedispatch.in/soon-private-hospitals-can-purchase-ppe-kits-from-government-approved-manufacturers/