July
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समाचार पत्रों से चयित अंश
Newspapers Clippings

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CONTENT

DRDO News

COVID-19: DRDO's Contribution

THE TIMES OF INDIA

Mon, 27 July 2020

Drone deployed to sanitise Balasore town in Odisha

Balasore: In its bid to support the fight against Covid-19, the Integrated Test Range (ITR) -- a DRDO centre for performance evaluation of missiles - has deployed a sophisticated drone to spray sanitisers over Balasore town, where around 100 cases have been recorded.

The remote-controlled drone, equipped with a GPS system, is capable of spraying disinfectants from a height of 20 metres from the ground, a senior official said.

"We have deployed drones in order to sanitise different areas of Balasore town. We are trying to assist the district administration in its battle against the pandemic," ITR Director Dr Binay Kumar Das said.

On Sunday, the sanitisation drive was undertaken in three localities of the town, including areas around the police lines, he said.

The drone, developed jointly by Anna University and ITI Chennai, can store up to 20 litres of disinfectants, which is sprayed through its four nozzles, Das said.

"We plan to intensify the drive in Balasore town tomorrow. Sanitisation with the help of drones can be immensely helpful in inaccessible areas," the ITR director said.

https://timesofindia.indiatimes.com/city/bhubaneswar/drone-deployed-to-sanitise-balasore-town-in-odisha/articleshow/77181782.cms?utm_source=whatsapp&utm_medium=social&utm_campaign=TOIMobile

hindustantimes

Mon, 27 July 2020

DRDO team visits Bihar to select site for setting up Covid-19 hospital

The DRDO team, accompanied by district administration officials, explored four sites in Muzaffarpur on Saturday -- Chakkar Maidan, Muzaffarpur Institute of Technology (MIT), Patahi airport and CRPF camp at Jhapahan, District Magistrate Chandrashekhar Singh said

Muzaffarpur: A two-member team of the Defence Research and Development Organisation (DRDO) visited Bihar's Muzaffarpur district to find a suitable location for setting up a 500-bed temporary Covid-19 hospital, an official said on Sunday.

The hospital, to be built on the lines of another facility set up by the DRDO in Delhi, will cater to coronavirus patients in north Bihar, he said.

The DRDO team, accompanied by district administration officials, explored four sites in Muzaffarpur on Saturday -- Chakkar Maidan, Muzaffarpur Institute of Technology (MIT), Patahi airport and CRPF camp at Jhapahan, District Magistrate Chandrashekhar Singh said.

Once the site is chosen, work will begin immediately, and the facility is likely to get operational in a matter of 15 days, he said.

Of the 500 beds at the hospital, at least 150 will be equipped with ventilators, Singh added.

Bihar has recorded 36,314 cases so far. Over 230 have succumbed to the disease, while 24,520 people have recovered.

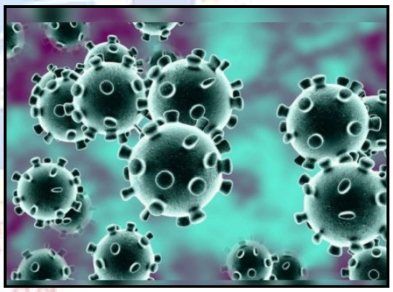
https://www.hindustantimes.com/patna/drdo-team-visits-bihar-to-select-site-for-setting-up-covid-19-hospital/story-f1WVawfl7uKMWMjp5Gcp7O.html

दैनिक भास्कर

Mon, 27 July 2020

कोरोना से जंग:पटना-मुजफ्फरपुर में 5-5 सौ बेड के कोरोना अस्पताल बनाएगी सेना, डीआरडीओ की टीम ने किया स्थलों का निरीक्षण

भारतीय सेना, बिहार के कोरोना मरीजों के इलाज के लिए अस्पताल बनाएगी। डिफेंस रिसर्च एंड डेवलपमेंट ऑर्गेनाइजेशन की टीम ने इसके वास्ते रविवार को पटना और मुजफ्फरपुर में जगह देखी। फौरी जरूरत के हिसाब से यही माना गया है कि ये अस्पताल कैम्प या मेकशिफ्ट अस्पताल होंगे, जिसमें इलाज की तमाम जरूरी सुविधाएं होंगी। सेना, आपात स्थिति में ऐसे अस्पताल तुरंत बना देती है। संभव है कि दोनों जगह बनने वाले ये अस्पताल 500-500 बेड के हों। पटना जिला प्रशासन ने डिफेंस रिसर्च एंड डेवलपमेंट ऑर्गेनाइजेशन की टीम को अस्पताल की जगह के रूप में वेटनरी ग्राउंड, ईएसआई (बिहटा) और आर्मी कैंटोनमेंट एरिया दिखाया। टीम ने मुजफ्फरपुर में चक्कर मैदान, एमआईटी परिसर, पताही एयरपोर्ट तथा झपहा के सीआरपीएफ कैंप का निरीक्षण किया। दोनों जिलों के वरीय अधिकारियों के अनुसार हमने उन्हें जगह दिखा दी है।



इसके तय होते ही अस्पताल के बनने की बात कही गई और यह भी यह अधिकतम 15 दिन में बन जाएगा। इसमें आधुनिक सुविधाएं होंगी। सूत्रों के मुताबिक 500 बेड के इस अस्पताल में 150 बेड वेंटिलेटर से युक्त होंगे। यह पूरी तरह कोरोना के लिए डेडिकेटेड अस्पताल होगा। आगे के दिनों में दूसरे जिलों में भी ऐसा हो सकता है।

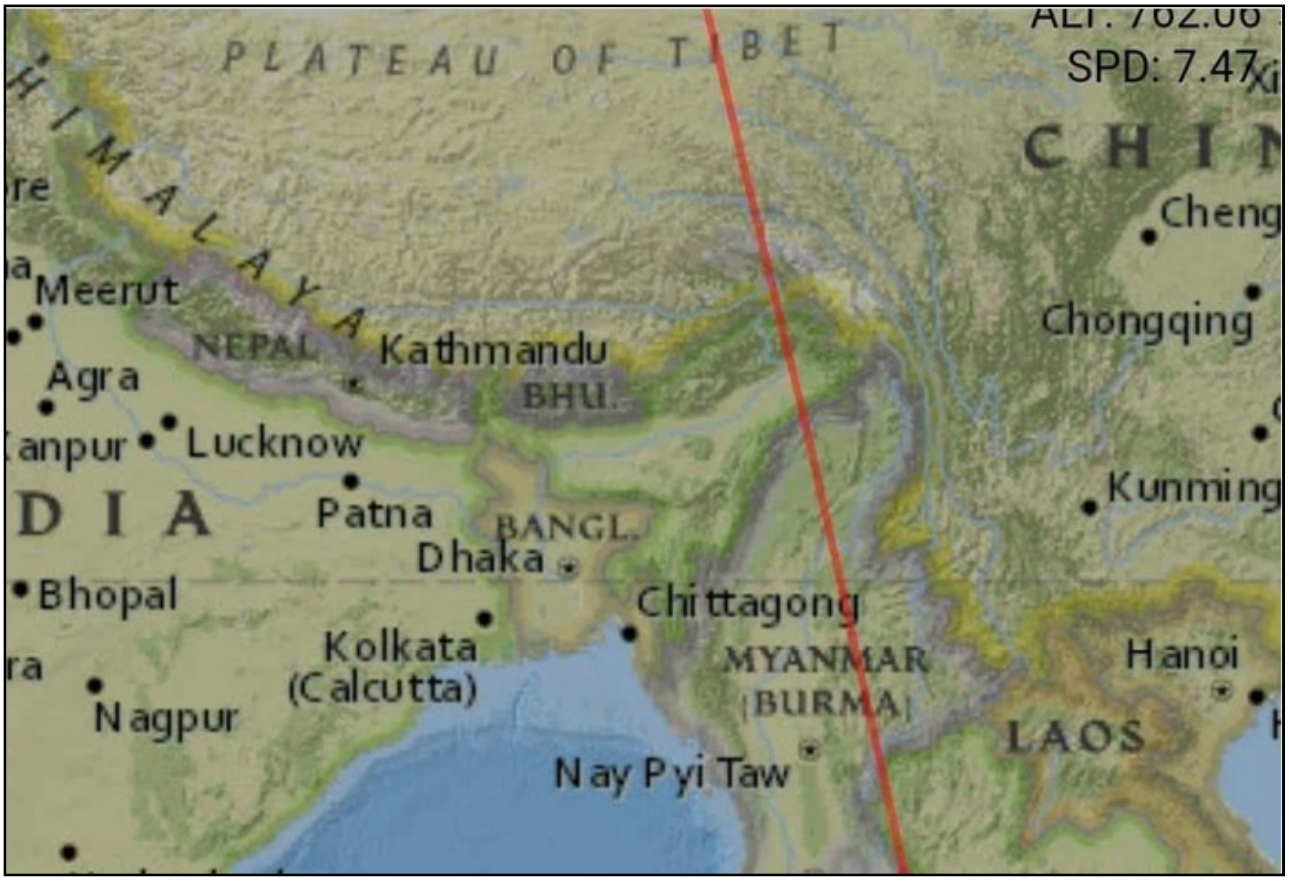
https://www.bhaskar.com/local/bihar/patna/news/army-drdo-team-inspects-sites-in-patna-muzaffarpur-corona-hospital-of-5-5-hundred-beds-127555976.html

india.com

Mon, 27 July 2020

India's spy satellite by ISRO studies China troops' position in Tibet

India's premier intelligence-gathering satellite EMISAT, operated by the Defence Research and Development Organisation (DRDO), has taken a good look at the positions of the Chinese People's Liberation Army (PLA) in occupied Tibet.



India's spy satellite passes over Chinese troops in Tibet (Photo Courtesy: IANS)

The satellite which carries Kautilya, an ELINT (electronic intelligence) package whose "capabilities are among the most highly-classified and closely-guarded aspects of operation for military purposes on Saturday carried out a pass over PLA positions in occupied Tibet near Arunachal Pradesh," an official source said.

Built by the Indian Space Research Organisation (ISRO), EMISAT's ELINT missions monitor radio signals which are used to determine the nature and location of all the sources of transmissions in an enemy area.

The satellite pass came a day after talks between India and China over the stand-off over Chinese structures on Finger 4 area along the Line of Actual Control (LAC) in Pangong Tso in Ladakh, made no headway, even as both sides have agreed to continue their meetings aimed at disengagement and de-escalation.

Sources said the Chinese troops have also been mobilised in Depsang sector, as soldiers could be spotted digging the area on their side of the LAC. The PLA had also intruded into Depsang in 2013.

On Friday, sources said, Indian radar reconnaissance satellite RISAT-2BR1 carried out a pass over Chinese People's Liberation Army Navy (PLAN) base in Djibouti in the Horn of Africa. The base is the PLAN's first overseas military base, built at a massive cost. Recently, there were reports that three Chinese warships are in the waters near the Djibouti coast.

On July 11, EMISAT's ELINT (Project Kautilya) carried out a pass near Pakistan Navy's Ormara base (Jinnah Naval Base). The base also has submarine berthing facilities and has reportedly hosted Chinese submarines in recent years.

Though India and China remain engaged in talks over the LAC standoff, there is speculation in Ladakh and Kashmir that Pakistan and China are preparing for a two-front war against India during the coming winter.

https://www.india.com/viral/indias-spy-satellite-by-isro-studies-china-troops-position-in-tibet-4094786/

THE HINDU

Mon, 27 July 2020

Lay more focus on research: DRDO Chief

Virtual lecture series inaugurated at VSU

Nellore: Defence Research and Development Organisation (DRDO) Chairman and Secretary of Department of Defence G. Sateesh Reddy has underscored the need for academic institutions pursuing basic research.

DRDO Chairman Dr G. Sateesh Reddy addressing a virtual webinar organised by VSU. | Photo Credit: byarrangement

Delivering the first of a series of Vikrama Simhapuri University (VSU)'s distinguished lectures through virtual mode on Saturday, he said academic institutions should encourage its students take up research which would later help in transforming the technology for application of basic programmes.

Espousing the idea of 'Aatmanirbhar Bharat' in aerospace and defence technologies, he said it was commendable that the country is sustaining on indigenous technology.

Recalling the success stories of Satellite Launch Vehicle (SLV), Mr. Sateesh Reddy said thirty five successful launches in the outer orbit has helped the country to make rapid strides in space programmes. There is also a sea of change in space technology in the last few decades, including designing and developing indigenous state of art technology to meet the defence requirements.

Inaugurating the virtual lecture series, State Education Minister A. Suresh emphasised the need to adopt appropriate technology to overcome problems in teaching and learning caused by the pandemic.

He said the State government had put a lot of efforts to bring forth quality, equity, administrative efficiency and governance in the education system. He also stressed the need for skill-based education to increase employability of youth.

https://www.thehindu.com/news/national/andhra-pradesh/lay-more-research-on-research-drdo-chief/article32194976.ece

The Tribune

Mon, 27 July 2020

Army officers have higher stress but lower quality of life than other ranks: DRDO study

The respondents for the study were 150 male personnel aged between 25 to 45 years

By Vijay Mohan

Chandigarh: While the Indian Army personnel have moderate levels of occupational stress, the levels of psychological well-being and quality of life amongst the rank and file is good, a new study undertaken by the Defence Research and Development Organisation (DRDO) has revealed.

In the occupational hierarchy, officers were found to have highest stress levels but lowest levels of psychological well-being and quality of life, whereas junior commissioned officers (JCOs) reported the highest level of psychological well-being and quality of life followed by other non-commissioned personnel.

Photo for representation

Moderate stress levels can be due to the strenuous nature of work, role ambiguity, frequent postings, separation from families and danger/threat amongst various other reasons. The usual demands of multiple deployments exposing the personnel to regular stressful conditions have shown enormous deterioration in psychological and physical health conditions including, lower morale, more mental health problems, and more stress-related work problems, according to the researchers.

"The Indian Army's role is to protect the whole nation and not an individual or a group, by ensuring national security and national unity, by defending the nation from external aggression and internal threats, and maintaining peace and security within its borders. The great importance of this duty puts tremendous stress on army personnel. Recent media reports indicate over four times more soldiers die battling stress rather than fighting militants in North-East or Kashmir," the study says.

Undertaken by four scientists at the DRDO's Defence Institute of Psychological Research (DIPR), New Delhi, the study was published on July 22. DIPR's core work area is personnel selection research, organisational behaviour, stress and combat stress management, soft-skill development and the human factor in man-machine interface.

The respondents for the study were 150 male personnel aged between 25 to 45 years who were posted in one of the largest training centres of the Army and have had experiences in field and counter-insurgency areas. These included 50 officers, 50 junior commissioned officers (JCO) and 50 non-commissioned ranks.

Researchers found occupational stress to be negatively correlated with psychological well-being as well as with the quality of life, whereas psychological well-being and quality of life were found to be positively correlated.

Analysis of descriptive statistics by researchers has shown that, in the Occupational Stress Index, the total mean is high on all three occupations (hierarchical) levels. Among all three levels, officers have reported the highest level of occupational stress, followed by JCOs. Non-commissioned personnel reported a slightly lower level of occupational stress than JCOs.

"One of the reasons of the above findings might be an officer holds a position of authority and therefore has more work responsibility and management responsibility as compared to JCOs and non-commissioned personnel, leading to higher levels of stress," the study states. "Moreover, officers are responsible for decision making, planning, and execution of various activities. In the Indian Army, JCOs have longer years of service than officers, due to which officers accord JCO's

great respect and have a great amount of influence in their welfare and morale. Hence JCO's have lower occupational stress level than officers," the study adds.

https://www.tribuneindia.com/news/nation/army-officers-have-higher-stress-but-lower-quality-of-life-than-other-ranks-drdo-study-118184

The EurAsian Times

Sun, 26 July 2020

India's 5th generation fighter jet 'AMCA' under speedy development – Reports

Prior to AMCA, India had decided to work with Russia on joint development of a Fifth Generation Fighter Aircraft (FGFA). However, this plan was abandoned in 2017 to promote indigenization and reduce dependence on foreign technology

India is aggressively working on developing its 5th generation advanced multirole combat aircraft (AMCA). The primary aim is to develop the AMCA indigenously, reduce dependency on foreign players like Russia and France and at the same time support the 'Aatmanirbhar Bharat' mission.

The Indian Air Force (IAF) is reportedly working aggressively in collaboration with Hindustan Aeronautics Limited (HAL) and the Aeronautical Development Agency to develop the indigenous AMCA.

Earlier, India had decided to work with Russia on joint development of a Fifth Generation Fighter Aircraft (FGFA). However, this plan was abandoned in 2017 to promote indigenization and reduce dependence on foreign technology. India was also not happy with the progress of FGFA.

The modular design of the fifth-generation, twin-engine single-seat aircraft is said to be finalised. 'That is what we are putting our energies into,' Air Chief Marshal Rakesh Kumar Singh Bhadauria said recently. More than most of his predecessors, Bhadauria has supported the need to focus on indigenous design and manufacturing.

Six squadrons of AMCAs are planned initially. The first flight is expected in 2024-25, followed by trials and tests. It will be in full production by 2029.

Advanced Multirole Combat Aircraft (AMCA)

AMCA will be a single-seat, twin-engine, stealth all-weather multirole fighter aircraft with an indigenous AESA radar. In 2018, $60 million was allotted for prototype design and R&D.

The project will face similar technology and knowledge transfer challenges as FGFA, because 'no nation is willing to share its stealth technology' with India, a senior Indian official admitted.

The Aeronautical Development Agency (ADA) of the Defence Research and Development Organisation (DRDO) and the Indian Air Force (IAF) are meanwhile moving swiftly on the development of the advanced medium combat aircraft (AMCA).

The 25-ton jet will have all munitions in its belly and will be propelled by two engines capable of super-cruise speeds. AMCA will have complex S-shaped serpentine intakes. These hide the spinning turbine blades in the engine and are a key stealth feature.

The supercruise feature enables the AMCA to accelerate without the use of afterburners. Both features guarantee minimum radar signatures and thus making it stealthy. Designed as a fifth-generation stealth fighter using composite material, the AMCA will be unveiled by ADA in 2024.

https://eurasiantimes.com/india-speeds-up-development-of-indigenous-5th-generation-amca-super-jet/

FINANCE REWIND

Sun, 26 July 2020

DRDO has provided its indigenously developed drone – BHARAT

Jyotika Kumari

The Defence Research and Development Organisation (DRDO) has successfully provided its first-ever indigenously-developed drone – BHARAT to the Indian Army. Bharat is an unmanned aerial vehicle means it does not need any staff or crew for operation. It aims to help the Indian army with exact surveillance in the higher altitude areas and mountainous regions along the Line of Actual Control (LAC) in Eastern Ladakh.

Accurate surveillance along the Line of Actual Control (LAC) was the demand of the situation due to the ongoing tensions between India and China in Eastern Ladakh. China's stubborn behavior and reluctance to disengagement in eastern Ladakh criticized by many countries across the globe such as the United States, Britain, and Japan, and the development of the drone amid such a situation will build some sort of pressure on China.

DRDO stated – "This small yet powerful drone works autonomously at any location with great accuracy. The unibody biomimetic design with advance release technology is a lethal combination for surveillance missions."

About BHARAT

All these Bharat series of drones are developed in a Chandigarh based laboratory of the DRDO. As per the experts, Bharat drones stand to be the "world's most agile and lightest surveillance systems." They are capable of surviving in extremely cold conditions like that of the Himalayan region. These drones can also help the army by providing real-time video transmission during an important mission.

Bharat Drones are also equipped with Night vision and Artificial intelligence. AI will help in the detection of humans hiding deep inside the forest and in differentiation between friends and foes. While Night vision mode will help in the detection of enemies round the clock.

The drone has an inbuilt design which makes it almost impossible to get detected by any radar.

About DRDO

The Defence Research and Development Organisation mainly fulfills the requirements of the Indian armed forces by developing and manufacturing defense technologies, systems, and products. Currently, it is being chaired by Dr. G. Satheesh Reddy.

https://financerewind.com/top-global-news/drdo-has-provided-its-indigenously-developed-drone-bharat/

The Telegraph online

Mon, 27 July 2020

LAC: Indian Army commander issues statement for first time on restoring of status quo

Restore? But PM said no one there

By Imran Ahmed Siddiqui

New Delhi: The Northern Army Commander, Lt Gen. Y.K. Joshi, on Saturday said the army would "continue all efforts to restore status quo ante along the LAC", the statement assuming significance against the backdrop of the no-intrusion claim by Prime Minister Narendra Modi.

This is the first time an army commander has officially spoken about "restoring status quo ante" along the Line of Actual Control, which entails that the Chinese have occupied Indian territory.

The northern army commander, Lt Gen. Y.K. Joshi

Modi had on June 19 said: "Neither has anyone intruded into our frontier there, nor is any intruder there, nor is any of our posts occupied by someone else."

The Prime Minister never retracted the statement, apart from his office issuing a clarification that he was talking about the post-June 15 position. Since then, government statements on the subject have been riddled with implied contradictions.

Defence minister Rajnath Singh on July 17 said "no power... can touch even an inch of India's land", while adding that the progress of the talks suggested "the situation should be resolved" but he could give no "guarantee".

After the fourth round of military talks on July 15, statements issued by the army and the foreign ministry had avoided explicitly mentioning an Indian demand for restoration of the status quo.

However, the statements had described the disengagement process as "intricate" and "complex", appearing to imply that India had made such a demand and that China was resisting it.

Joshi's comment on status quo came in an interview to CNN News 18, where he was asked how long the standoff was likely to continue.

"We shall continue all efforts to restore status quo ante along the LAC. I believe that negotiations and (the) process of disengagement and the commitment of both sides to adhere to the laid-down methodology would dictate the timeline of the standoff," he was quoted as saying.

Joshi added that "certain commitments" from both sides were necessary for the disengagement process to move ahead.

"There are certain commitments required from the two sides which are essential for the process to move ahead positively. There are certain factors, though, such as territorial integrity of the country, which are not negotiable," he said. "While we are investing sincerely in this ongoing endeavour to bring about peace along the border, we also remain prepared at all times for any eventuality."

The 11-week-old standoff has seen four rounds of military-level talks, three meetings of the Working Mechanism for Consultation and Coordination on India-China Border Affairs, and one meeting between the special representatives of India and China.

The third Working Mechanism meeting, on Friday, decided on a fifth meeting of senior military commanders, indicating the process was not progressing according to script.

"I believe the disengagement process cannot be left entirely to the military commanders. It should have been preceded by political intervention at the highest level. The political leadership needs to take control and call for restoration of the status quo," an army veteran said.

Sources had said the disengagement process seemed to have hit a dead end, with the Chinese reluctant to retreat from their positions at the Pangong Lake, Patrolling Point 17 Gogra and the Depsang Plains as agreed.

A limited pushback has happened at Patrolling Point 14 — site of the June 15 clash in the Galwan Valley that killed 20 Indian soldiers — and Hot Springs, with each side moving back 1.5km to create buffer zones within India-claimed lines.

Security officials and military veterans have expressed concern that a Chinese failure to pull back from friction points could alter the status quo if the standoff dragged on.

"The Chinese have a clear design to alter the status quo at the points where they have dug in since May. The problem has been compounded by their refusal to let our soldiers patrol these India-claimed territories," a security official attached to the Intelligence Bureau said.

The creation of buffer zones, he said, had thrown up tactical problems as these areas had become out of bounds for Indian soldiers too.

"Although the government said the buffer zones are a temporary measure to avoid immediate friction, the status quo could change if the stalemate continues for a long time, and this is exactly what the Chinese want," he said.

A ground assessment suggests the Chinese have been controlling the heights near the Pangong Lake, where they have built several structures including a small hospital between Finger 8 and Finger 4.

India claims territory till Finger 8 but the Chinese have advanced 8km up to Finger 4 from their erstwhile position at Finger 8.

"Even at PP14, the Chinese are still camping inside India-claimed lines," an army veteran said.

https://www.telegraphindia.com/india/india-china-clash-indian-army-commander-issues-statement-for-first-time/cid/1787341

hindustantimes

Mon, 27 July 2020

India moves squadron of missile-firing T-90 tanks to last outpost near Karakoram Pass

India's last outpost at Daulet Beg Oldi DBO lies at a height of 16,000 feet just south of Karakoram pass and on banks of Chip-Chap river, north of the Galwan-Shyok confluence

By Shishir Gupta

New Delhi: With the Chinese People's Liberation Army (PLA) deploying close to 50,000 troops in Aksai Chin, the Indian Army for the first time has deployed a squadron (12) T-90 missile firing tanks, armoured personnel carriers (APCs) and a full troop brigade (4,000 men) at Daulat Beg Oldi (DBO) to prevent any Chinese aggression from the Shaksgam-Karakoram pass axis, according to top military commanders familiar with the matter.

India has moved 12 T-90 tanks, armoured personnel carriers and 4,000 soldiers to Daulat Beg Oldi to prevent any Chinese aggression

India's last outpost at Daulet Beg Oldi DBO lies at a height of 16,000 feet just south of Karakoram pass and on banks of Chip-Chap river, north of the Galwan-Shyok confluence.

As some bridges on the Darbuk-Shyok-DBO road cannot handle the weight of a 46 ton T-90 tank, the Indian Army commanders sent the T-90 tanks after the June 15 Galwan flare-up by fording the rivers and rivulets using specialized equipment. The armoured personnel carriers (APCs) or infantry combat vehicles , M 777 155mm howitzers, and 130 mm guns had already been sent to DBO after Chinese aggression at patrolling points 14, 15, 16 , 17 and the Pangong Tso finger features.

While India and China have decided to first totally disengage and then de-escalate from the area, the Indian Army is not only matching troop strength but also keenly watching the PLA deployment of tanks, air defence radars and surface to air missiles in Aksai Chin.

The disengagement is work-in-progress with each side verifying the movements of the other, the commanders, who asked not to be identified said.

While the Indian military has also decided to black-top the advance landing ground at DBO, the main reason for deploying tanks in the area is to prevent any sudden Chinese move from the north, they added.

Already China has built some 36 kilometres of road in the Shaksgam Valley (5163 square kilometres were illegally ceded by Pakistan to China in 1963), and Indian military planners fear that PLA will link the G-219 (Lhasa-Kashgar) highway to Karakoram pass through the Shaksgam pass.

Even though this will require tunnelling under the permafrost of Shaksgam glacier, the Chinese have the technical ability to complete the job.

The fear is that once the link is completed, the PLA will put pressure on DBO from the north as it needs a buffer to prevent the Indian Army from targeting the road.

According to the military commanders, the main purpose of PLA aggression this summer was to clear all the friction points with the Indian Army along the 1147 km long line of actual control (LAC) in East Ladakh and impose the 1960 map claim. However, this attempt was forcefully repelled by the men of 16 Bihar who took on the 3 Mechanized Infantry of Xinjiang Military district on June 15 at Galwan.

This plan dovetailed into a larger plan of linking the G219 highway to G314 (Kashgar-Islamabad Karakoram highway) via Karakoram-Shaksgam pass axis in order to save not only time but distance.

A fruition of this plan would have made Indian army positions untenable not only at DBO but also at Siachen as the outpost is linked to Sansoma (crucial base on Nubra river before Siachen) via Saser la-Murgo axis.

In many ways, Pervez Musharraf's plan to interdict Srinagar-Kargil highway and starve Indian positions at Siachen during the 1999 Kargil war between India and Pakistan has a parallel in China's Xi Jinping's attempt to interdict the DSDBO road to cut off DBO 21 years later.

https://www.hindustantimes.com/india-news/india-moves-squadron-of-missile-firing-t-90-tanks-to-last-post-near-karakoram-pass/story-h4LtB6PZXtiYpMadupySlK.html

ThePrint

Mon, 27 July 2020

Rafale fighters to take off from France tomorrow, can be operational within a week

While operational deployment usually takes six months, due to these 'extraordinary circumstances' the fighters will be ready to be deployed within a week

By Snehesh Alex Philip

New Delhi: At least five Rafale fighter aircraft will take off from Merignac in France Monday to arrive in India Wednesday and, if required, these aircraft can also be operationally deployed within a week amid the India-China standoff in Ladakh, ThePrint has learnt.

According to sources in the defence and security establishment, a total of 12 Indian Air Force (IAF) pilots have been fully trained on the fighter aircraft, which is considered a game-changer in the region with its unmatched fire power.

A Rafale fighter aircraft | Credits: www.dassault-aviation.com

Several other pilots are completing their training in France — the contract stipulates that a total of 36 pilots will be trained by French authorities, including those who will undergo training in India.

While, in an official statement, the IAF had said that five aircraft will land Wednesday, as reported by ThePrint on 29 June, the figure could be six.

"The exact number of aircraft that will take off will be known only on Monday. The IAF has said that five would land on July 29 in India but this number could even be six," a source said.

According to the contract signed in September 2016, 12 aircraft are supposed to be delivered every year.

French defence major Dassault Aviation, which is manufacturing the Rafale jets, had since October last year handed over a total of nine aircraft to the IAF. The 10th is undergoing acceptance trials by IAF pilots in France.

The source also added that the aircraft can be operationally deployed, if needed, "within a week".

Under normal circumstances, it takes at least six months for full operational deployment.

However, according to a source, these are "extraordinary times".

"The pilots have been on training mode till now. They now need to be in combat mode which takes time because they have to get used to the aircraft with multiple combat training flying.

However, extraordinary times require extraordinary measures. If need be, the aircraft can be operationally deployed within a week of arriving or actually the same day itself. But that is if need be," he said.

The flying plan: From France to India

According to the plan, the Rafale fighters will take off from Merignac, where the production facility of Dassault Aviation is located.

They will fly straight to the French airbase in Al Dhafra near Abu Dhabi in the UAE for a night halt.

This would be a 10-hour-long journey and these fighters would be accompanied by two mid-air refuelers of the French Air Force.

Sources noted that there would be two rounds of refueling mid-air, to complete the journey.

They added that the pilots have undergone specialised training for mid-air refueling through the Airbus 330 Multi-Role Tanker Transport (MRTT) aircraft that the French use.

This was not originally part of the training module since the IAF uses the Russian aircraft IL-78 for mid-air refueling.

While the distance to the UAE can be covered by the Rafale in much shorter time, they will have to keep pace with the tankers.

After the night halt, the jets will take off for Ambala in Haryana, where the IAF's 17 Squadron 'Golden Arrows' — home of the first Squadron of Rafale fighters — is based.

Initially, the aircraft were scheduled to arrive after layovers in multiple countries. However, in light of the Covid-19 pandemic, this meant that the pilots would have to be quarantined at every base.

Furthermore, the increasing border tensions with China meant that the IAF could not wait for the fighters to be delayed.

Missiles aboard Rafale aircraft

India had approached France to expedite the delivery of the Rafale fighters, in light of the border tensions. The weapon system was initially scheduled to arrive only in October this year.

The French government then diverted an initial lot of cutting edge missiles meant for its own air force to India.

The missiles, which have already arrived at the Ambala base, include the Meteor air to air missile, manufactured by European firm MBDA.

The Meteor costs about Rs 20 crore each, and is a very long-range rocket and ram-jet powered air-to-air missile. With a range of about 150 km, the missile can attack an enemy aircraft without even crossing the Indian air space.

Neither China nor Pakistan has a missile to counter this capability of the IAF.

Another key missile on board is the 1,300 kg and the 5.1 metre-long Scalp, which can be carried in either one missile or two missiles configuration on the Rafale.

The air-to-ground missile costs about Rs 40 crore each and is also manufactured by the MBDA. It has a 600-km range and is known for its precision.

The Rafale will not have to cross the Indian airspace to hit a target that is about 600 km in enemy territory and can be used in penetration, impact or airburst modes.

It is meant to strike deep even in areas with limited access and in an area denial scenario — which is meant to prevent the adversary from entering one's territory.

Considering the situation in Ladakh with China, the IAF has also directed emergency procurement of the HAMMER air-to-ground missile with a range of about 60 Kms.

The original plan was to integrate the Israeli Spice 2000 with the Rafale aircraft but with the focus on early operational deployment of Rafale in mind, a decision was taken to buy the HAMMER, which the Rafale is already configured to fire.

The other missile that the Rafale would be carrying is the air-to-air MICA that have also been deployed on the Mirage 2000.

https://theprint.in/defence/rafale-fighters-to-take-off-from-france-tomorrow-can-be-operational-within-a-week/468511/

hindustantimes

Mon, 27 July 2020

Kargil Vijay Diwas: Defence minister Rajnath Singh, home minister Amit Shah pay tributes to brave soldiers

Indian armed forces had defeated Pakistan on July 26, 1999, and the day is marked as Kargil Vijay Diwas to rekindle the pride and valour of the soldiers who took part in Operation Vijay

New Delhi: In the occupational hierarchy, officers were found to have highest stress levels but lowest levels of psychological well-being and quality of life, whereas junior commissioned officers (JCOs) reported the highest level of psychological well-being and quality of life followed by other non-commissioned personnel.

Union minister Rajnath Singh and Amit Shah on Sunday saluted the unwavering courage, patriotism and valour of Indian soldiers on the 21st anniversary of Kargil Vijay Diwas, observed every year to mark India's triumph over Pakistan in 1999.

Students of Allahabad Central University make a sand sculpture to pay homage to the martyrs of Kargil war on the eve of Kargil Vijay Diwas, at Sangam in Prayagraj on Saturday. (PTI Photo)

Defence minister Rajnath Singh and home minister Amit Shah took to Twitter to pay their tributes to the brave soldiers of the Indian armed forces.

"Kargil Vijay Diwas is a symbol of India's self-respect, valour and steadfast leadership. I bow to the soldiers who with their indomitable courage drove the enemy from the inaccessible hills of Kargil and waved the tricolour there again. The country is proud of the heroes of India, who are dedicated to protecting the motherland," Shah tweeted in Hindi.

Singh tweeted that Kargil Vijay Diwas is "indeed the celebration of India's proud tradition of outstanding Military service, exemplary valour and sacrifice."

"The unwavering courage and patriotism of our Armed Forces have ensured that India is safe and secure," the defence minister posted.

"I am also grateful to those who despite becoming disabled in battle, continue to serve the country in their own ways and have set examples worthy of emulation by the Nation," he said.

"On the 21st anniversary of Kargil Vijay, I would like to salute the brave soldiers of the Indian Armed Forces who fought the enemy under the most challenging conditions that the world had witnessed in the recent history," he said.

Indian armed forces had defeated Pakistan on July 26, 1999, and the day is marked as Kargil Vijay Diwas to rekindle the pride and valour of the soldiers who took part in Operation Vijay.

India launched Operation Vijay to clear the posts in the high-altitude Kargil sector, which was occupied by the Pakistani soldiers and infiltrators on the Indian side of the Line of Control.

The armies of the nuclear-armed nations fought the war between May and July in Kargil district of Jammu and Kashmir and elsewhere along the LoC. It took about three months for the Indian forces to recapture the posts.

India lost 527 soldiers in the short but sharp conflict.

https://www.hindustantimes.com/india-news/kargil-vijay-diwas-defence-minister-rajnath-singh-home-minister-amit-shah-pay-tributes-to-brave-soldiers/story-HxPPvUEBwIMHPBj01icavM.html

hindustantimes

Mon, 27 July 2020

Kargil Vijay Diwas: Day to mark India's victory in 1999 conflict against Pakistan

India launched Operation Vijay to clear the posts in the Kargil sector, which was occupied by the Pakistani soldiers and infiltrators on the Indian side of the LoC

Edited By Meenakshi Ray

New Delhi: India is observing Kargil Vijay Diwas on Sunday to commemorate its victory over Pakistan in the high-altitude conflict in Jammu and Kashmir's Kargil district and along the Line of Control (LoC) and pay tributes to soldiers who lost their lives more than two decades ago.

India launched Operation Vijay to clear the posts in the Kargil sector, which was occupied by the Pakistani soldiers and infiltrators on the Indian side of the LoC.

The armies of the nuclear-armed nations fought the war between May and July in 1999.

The Indian Army, with the help of the Indian Air Force (IAF), wrested back the glaciated heights of Kargil, in the Ladakh sector, from the Pakistan army.

The Kargil War, which lasted a little over two months and ended on July 26, 1999, led to 527 deaths on India's side.

Here are some facts about the Kargil War:

- India and Pakistan fought the Kargil War between May and July of 1999 in Kargil district under the temperature of minus 10 degree Celsius.
- The conflict began after Indian forces detected infiltrations by Pakistani troops and terrorists into Indian territory. The Pakistani side had a strategic advantage during the start of the conflict as they positioned themselves in key locations and could fire at advancing Indian troops.
- The Indian Army was able to ascertain the points of incursion based on information from local shepherds and launched Operation Vijay.
- IAF's launched its air operations under Operation Safed Sagar in support of the army on May 26. Indian MiG-21, MiG-27 and Mirage-2000 fighters fired rockets and missiles throughout the Kargil War at the "fortified enemy positions" from their side of LoC.
- IAF had planned to bomb targets in Pakistan during the Kargil War. But the then National Democratic Alliance or NDA government led by Atal Bihari Vajpayee instructed the then IAF chief air chief marshal AY Tipnis that his fighter jets must not cross LoC under any circumstances.
- IAF also wanted to cross the LoC slightly during the Kargil War but this request was also rejected by the government.
- Pakistan shot down two Indian fighter jets while another crashed during the operation.
- The Indian Navy also launched Operation Talwar to blockade Pakistani ports, especially the one in Karachi, during the Kargil War to stop the supply of oil and fuel.
- The Indian Navy's western and eastern fleets patrolled the Arabian Sea and threatened to cut Pakistan's trade routes.
- Pakistan asked the US to intervene but then American president Bill Clinton declined its request, saying Islamabad must withdraw its troops from LoC.

- Indian armed forces attacked the rest of the outposts as Pakistani troops withdrew and captured the last of them by July 26.
- The official death toll on the Indian side was 527 and that on the Pakistani side was between 357 and 453.
- Pakistan had initially denied it had any role in the conflict and said that India was facing off with "Kashmiri freedom fighters." It, however, awarded its soldiers medals for the conflict later.
- After the Kargil War, India increased its defence spending in the budget.
- The complete overhaul of India's intelligence set-up and the creation of a younger and fitter army are among the most significant changes made by the government on the basis of recommendations of the Kargil Review Committee (KRC).
- The creation of the post of a Chief of Defence Staff (CDS) was also among them. General Bipin Rawat took over as the first CDS on January 1 this year and will serve a full three-year term till December 2022.
- The creation of the Defence Intelligence Agency in 2002 and the technical intelligence gathering agency, National Technical Research Organisation (NTRO) in 2004, were some of the report's key outcomes.
- The timespan for promotions was slashed up to the rank of commanding officers (COs) or colonels and their equivalent in the air force and navy.

https://www.hindustantimes.com/india-news/kargil-vijay-diwas-day-to-mark-india-s-victory-in-1999-conflict-against-pakistan/story-x2cUNDgKxoQPxrzKEmoK4J.html

THE TIMES OF INDIA

Mon, 27 July 2020

Amid LAC face-off, Army opens Siachen to civilians

By Sanjay Dutta

New Delhi: Missing your fix of adrenaline since the lockdown and yearning to get high on adventure? The Indian Army has the perfect cure for your symptoms and is willing to "liberally" issue permits for civilian expeditions to the Siachen Base Camp and Kumar Post in Ladakh.

The decision to open up the world's largest non-polar glacier and the highest battlefield was taken in October last year, when winter was already knocking on Ladakh's doors and tourist season was nearly over. Carrying through that decision amid the border standoff with China indicates government's assertiveness and a possible rethink on keeping forward villages off limits for civilians in future.

Siachen lies just west to the Galwan valley, which is in the eye of the current storm. It overlooks the tri-junction of Pakistan, India and Sakshgam, the area ceded by Pakistan to China in Aksai Chin that India claims as its own.

Lack of opportunities have led to thinning of population in forward areas, which has left them vulnerable. In contrast, tourism boom has brought visible economic prosperity in Leh and Nubra in the north and Man-Merak areas along the Pangong-Tso.

The district administration has been pushing for opening up more areas, reflecting the demand from locals who want to reap the benefit of tourism. In December 2018, five new routes were opened up through the border areas. Most of these either run along or lead to the LAC. But still large parts, such as Koyul on the Indus and Demchok remain out of bounds for civilians.

The Siachen Base Camp is roughly 225 Kms north of Leh. It is connected with a black-top road across the 18,360-ft-high Khardung-La (pass in Ladakhi) and along the Nubra river. The base camp is at an altitude of 11,000 ft and Kumar Post at 15,000 ft.

The Army Adventure Cell will vet prospective visitors to the Siachen area and issue permits. But all visitors will have to follow protocols and quarantine requirements put in place by the Leh district administration. Currently movement of non-locals is restricted within a 40-km radius of Leh.

Army sources said the popular tourist trail on the Shyok-Chushul 'axis' along the Pangong Tso (lake in Ladakhi)-Chushul is likely to remain out of bounds for tourists – at least for the time being – in view of the heavy military deployment and the border situation.

The five new routes opened up in 2018 were the Merak-Loma Bend axis, Chushul-Kartsangla-Mahe, Durbuk-Shachukul-Tharuk-Sato Kargyam-Parma-Erath-Chushul and Loma-Hanley, Korzok-Nurbo-Sumdo-Parangla-Kazaand, and Agham-Shayok-Durbuk links. All these are currently out of bounds for civilians.

https://timesofindia.indiatimes.com/india/indias-tourism-offensive-in-ladakh-amid-china-border-row/articleshow/77186885.cms

THE FINANCIAL EXPRESS

Sun, 26 July 2020

Indian Navy's green efforts: Reducing carbon footprint, solar power plants inaugurated in three commands

Earlier this month, a 3 MW Solar Power Plant project executed by Kerala State Electronics Development Corporation Ltd (KELTRON), was inaugurated at Indian Naval Academy (INA), Ezhimala, Kerala

By Huma Siddiqui

In line with the government's initiative of 'National Solar Mission' to achieve 100GW of solar power by 2022, the Indian Navy has so far between May-July installed large Solar Power Plants in three Commands. Earlier this month, a 3 MW Solar Power Plant project executed by Kerala State Electronics Development Corporation Ltd (KELTRON), was inaugurated at Indian Naval Academy (INA), Ezhimala, Kerala. It is one of the many initiatives taken by INA towards green environment and reducing the carbon footprint. Vice Admiral Anil Kumar Chawla, Flag Officer Commanding-in-Chief, Southern Naval Command (SNC) commissioned the plant.

According to the Indian Navy, the surplus power generated at the largest Solar Plant has an estimated life span of 25 years and will also feed the Kerala State Electricity Board (KSEB) grid. It has all the components which have been indigenously sourced, and this includes 9180 highly efficient monocrystalline solar panels which use the latest technology.

Adhering to all the protocols and guidelines against COVID-19, the project has been executed in a time-bound manner in which all the concerned agencies have played a significant role.

Another 2 MegaWatt Solar Power Plant has been inaugurated at Naval Station Karanja, Uran.

E-inaugurated by Vice Admiral Ajit Kumar, Flag Officer Commanding-in-Chief, Western Naval Command, the first 2 Mega Watt Capacity Solar Power Plant has been installed at Naval Station Karanja. One of the largest solar plants in the region has 100 per cent indigenously developed solar panels, tracking tables and inverters.

"This plant is grid interconnected by using the state of art single-axis sun tracking technology which has computerised monitoring & control" said the Indian Navy.

Adding, “It is one of the most significant steps which have been taken by the Indian Navy in an effort to harness solar energy and for meeting the power supply of the Naval station to use a renewable source of energy.”

Another 2 MW Solar Photovoltaic Plant has been commissioned at INS Kalinga, Visakhapatnam by Vice Adm Atul Kumar Jain, Commanding-in-Chief, Eastern Naval Command (ENC) in May.

Currently being headed by Cmde Rajesh Debnath, INS Kalinga has taken significant strides in green initiatives, since it has been set up in the 1980s, and this includes numerous plantation drives, coastal cleanup drives, afforestation, and protection of the Geo-Heritage site “Erra Matti Dibbalu”.

The plant, which is the largest in the ENC and has an estimated life of 25 years. To complete the project despite the countrywide lockdown due to the global pandemic, all stakeholders including APEPDCL had worked out a contingency plan which was based on the protocols laid down.

https://www.financialexpress.com/defence/indian-navys-green-efforts-reducing-carbon-footprint-solar-power-plants-inaugurated-in-three-commands/2034820/

DefenceNews

Sun, 26 July 2020

Should IAF invest $15 bn in buying the F/A-18 Super Hornet?

From Top Gun fans to IAF enthusiasts, everyone’s talking about the F/A-18 Super Hornet this week. We take a closer look.

Since the trailer for Top Gun: Maverick dropped last week, aviation enthusiasts have been buzzing about the multi-role fighter that the Indian Air Force (IAF) and Indian Navy could soon fly, courtesy of Boeing and two Indian companies.

In April 2018, Boeing announced a partnership with PSU Hindustan Aeronautics Limited (HAL) and Mahindra Defence Systems (MDS) to manufacture the F/A-18 Super Hornet in India under the ‘Make in India’ programme. Last month, HAL delivered its 150 th gun bay door for the F/A-18 Super Hornet.

A few interesting facts about the fighter aircraft that’s got everyone talking:

1. The F/A-18 Super Hornet is a twin-engine multirole combat jet based on the McDonnell Douglas F/A-18 Hornet. It was designed primarily for use on aircraft carriers of the US Navy after the US government decided to stop purchases of the F-14 Tomcat in 1991 (the fighter jet featured in the original Top Gun movie).
2. Today, the latest evolution of the F/A-18 – the Block III – is able to perform a variety of tactical missions such as air superiority, day/night strike with precision guided weapons, fighter escort, close air support, suppression of enemy air defence, maritime strike, reconnaissance, forward air control and buddy refuelling.
3. According to the Boeing website, the F/A-18 Super Hornet will deliver on India’s need for a carrier and land-based multi-role fighter being the least expensive aircraft per flight hour of its kind with advanced survivability and continuous evolution.
4. This assessment is based on extensive testing that Boeing has done to test the Super Hornet’s compatibility with Indian carriers. Results show that the Super Hornet is capable of launching off a ski-jump carrier and could be operated from Indian carriers with a meaningful fuel and weapons load, as found on the company’s website.

5. Should the IAF and the Indian Navy decide to purchase the Super Hornets, the value of the IAF contract alone is estimated to be $15 billion.
6. Depending on the number of machines ordered by both the Navy and the IAF, Boeing will set up a completely new production facility in India for the production of its F/A-18 Super Hornets with the aim that the new facility can be used for other programs like India's Advanced Medium Combat Aircraft (AMCA) program.
7. The Royal Australian Air Force currently operates 24 Super Hornets, while Kuwait has ordered 28 of the jets. The Super Hornet was also proposed for the Indian Air Force's now-aborted deal to purchase 126 fighter aircrafts.

https://www.defencenews.in/article/Should-IAF-invest-$15-bn-in-buying-the-F/A-18-Super-Hornet-891834

THE TIMES OF INDIA

Mon, 27 July 2020

Sound doctrine must for strong Army

By Lt Gen DS Hooda

As India celebrates the 21st Kargil Vijay Diwas in Western Ladakh today, the Army's eyes will be focused on the confrontation in Eastern Ladakh. Questions, similar to those raised during the Kargil War, are being heard on our intelligence capability, foreign policy choices, and military preparedness. At present, these issues could be kept aside, and space given to the government and the Army to handle the ongoing stand-off, but a subsequent postmortem is also necessary. This future review should be a holistic assessment of the complete national security architecture, including our military capability.

We tend to equate military capability with pure numbers of men and equipment, and each decision by the Ministry of Defence to procure some piece of military hardware is hailed as a gamechanger. Equipment is essential, but the military capability is much more than adding guns, ships, and aircraft. A RAND Corporation report title 'Measuring Military Capability' states, "A country may provide its military with generous budgets and large cadres of manpower, but if the military's doctrine is misguided, the training ineffective, the leadership unschooled, or the organization inappropriate, military capability will suffer."

It is now accepted that given the state of the Indian economy, the defence budget will not see any massive infusion of funds. This comes at a time when our borders are extremely volatile and unlikely to see an improvement soon. The situation dictates that we take a hard look at how we can bring in operational efficiencies by changes in our doctrine and organisational structures, and by a realistic assessment of the capabilities required to fight our wars.

There is an urgent need for a joint warfighting doctrine that synergises the capabilities of the three services. There is a lot of discussions these days about how the Indian Navy could be utilised to put pressure on China in the Indian Ocean as a counter to what is happening in Ladakh. Former Navy Chief, Admiral Arun Prakash, has correctly called this a "viable strategy", but to be completely effective, it has to have the weight of serious tri-service discussions behind it.

The joint doctrine must also cover a whole range of conflict scenarios. Our focus is currently on all out wars, as witnessed by the Army's "cold start doctrine". This envisages rapid and massive offensives into Pakistan to achieve victory in a short, swift war. Similarly, a fullscale mobilisation of the Indian Army precedes any conflict on our northern borders. This is an all-or-nothing approach to military operations. In fact, a major war between the nuclear-armed countries in South Asia is the least likely possibility. The military must be prepared for various scenarios — selective cross-border strikes, limited conflict, and military coercion. Apart from well thought out battle

plans to deal with all contingencies, this preparation will also trigger an intellectual discussion on crucial issues like escalation control as well as escalation dominance.

It is also vital that the political leadership show greater involvement in the preparation of the military doctrine. Ultimately, the application of military power is for the achievement of a political objective. Giving a free hand to the military is fine at the tactical level, but the overall strategy must have the stamp of the country's leader.

The need for joint warfighting organisational structures is an escapable requirement but stands mired in inter-service differences. These differences should be narrowed. The establishment of 'Theatre Commands' must be done on priority and as part of a comprehensive plan backed by all three services. The tendency to announce proposals in the media, before they have even been debated within the service headquarters, will only harden positions and make restructuring difficult.

We could also consider integrating the Eastern Naval Command and the Andaman and Nicobar Command into one command. The current arrangement of the Eastern Naval Command under the Navy Chief and the Andaman and Nicobar Command administered by the Chief of Defence Staff will adversely impact integrated naval operations in the South-East Indian Ocean.

Our excessive focus on the number of Army divisions, fighter squadrons, and navy ships will need to be replaced by capabilities that maximise our geographical advantage and neutralise China's superiority in specific areas. The Navy needs to enhance its maritime domain awareness in the Indian Ocean, coupled with long range precision strike capability by air and naval assets. The Air Force should acquire systems for stand-off attacks against strategic targets in Tibet through manned and unmanned aerial systems and enhance its ground air defence to protect strategic assets from ballistic and cruise missile attacks.

The Army must transform into a leaner and more agile force capable of rapid application in the mountains along our Northern borders. Additional tactical helicopter lift will enable the swift relocation of troops and obviate the need to have large standing forces all along the border. The weaknesses in our intelligence and surveillance along the border with China have been exposed and should be urgently addressed.

Finally, significant capability has to be built up in electronic warfare, cyber, and space, where the Chinese have an overwhelming advantage. These are areas that transcend single-service responsibility and have escaped our attention but will be battle winning factors in future wars. The suggested improvements in capability are by no means a comprehensive list, which could be drawn up after a more detailed assessment.

Winston Churchill famously said, "Never let a good crisis go to waste." Facing both financial stress and an assertive China, military leadership must swiftly move to undertake wide rangin

(Disclaimer: Views expressed above are the author's own.)

https://timesofindia.indiatimes.com/blogs/generals-jottings/sound-doctrine-must-for-strong-army/

TSG SundayGuardianLive

Sun, 26 July 2020

‘India’s nuclear capabilities on way to bring all of China within reach’

Hans M. Kristensen, top nuclear scientist, speaks at length on ‘India’s Nuclear Forces 2020 and ahead’

By Maneesh Pandeya

New Delhi: India’s nuclear doctrine and its strategic force posture have been evolving with a rapidly changing threat environment as perceived by New Delhi. Questions of targeting and no-first-use policy are now being discussed more critically with rising belligerence from China. While Indian nuclear posture has traditionally been geared towards handling Pakistan, according to a new research, there are indications that India is now focusing more on managing threats from China and as such, strengthening its ability to bring entire Chinese territory within its nuclear strike range. Inducting deep strike capable fighters, longer-range ballistic missiles and sea-based ballistic missiles (SSBNs) are indicative of this trend. Such increased delivery capability, incidentally, also has implications for India’s nuclear dynamics with Pakistan, by widening the nuclear power gap between New Delhi and Islamabad. Agni V missiles and Rafale jets will be game changer for India’s new defence strength, hints a latest report authored by Hans M. Kristensen, Director of the Nuclear Information Project in the Federation of American Scientists. In an exclusive interview with The Sunday Guardian, the top nuclear scientist spoke at length on “India’s Nuclear Forces 2020 and ahead”. Excerpts:

Q: Your research paper, “India’s Nuclear Forces 2020”, conveys strongly the point that India is out to re-strategise its nuclear arsenal and thrust. What are the compelling needs and what has India done to realise the new nuclear capacity it wants to build on?

A: The point we’re making in the paper is not that there is a major shift in India’s nuclear strategy, but that its capabilities are evolving to bring all of China within reach for the first time. We’re not assessing what India should or should not do but simply describing its nuclear posture to the extent we can. The reality is that the focus of India’s current missile development is range—to have enough range to hold targets at risk throughout China. Agni III has this capability if launched from the very north-eastern part of India. Agni IV will give more flexibility, but not until Agni V becomes operational and deployed will India be able to overcome the geographical constraints and allow it to base its missile force further back from the Chinese border.

Q: Will Agni missile mission be the game-changer for India in countering China?

A: India can already hold many Chinese cities and military bases at risk with its nuclear forces, so to that extent I don’t think Agni V will necessarily be a “game changer”. That said, Agni V will enable India to hold targets at risk throughout China—not least the leadership in Beijing—and allow Indian planners to base the missiles further back from the Chinese border. How that will affect Chinese thinking and planning is difficult to predict not least because China already has the capability to target facilities throughout India.

Q: The emerging geo-political dynamics wants India to be a major player in the new defence and security churning, the epicentre of which is the Indo-Pacific region. As a nuclear and security expert, how do you see this panning out for India?

A: For the foreseeable future, India’s strategic (I’m not a general military expert so I’ll focus this answer on the nuclear issue) influence will almost entirely be Pakistan and China. But longer-range capabilities such as the Agni V will also bring other nuclear-armed states within reach: Russia, Israel, part of NATO. Although there’s no indication that India would include those areas in its nuclear strategy, it can potentially influence how those countries view security issues involving India. It can also influence how those countries describe the outlook their nuclear planning has to take into account.

Q: Your research paper specifically mentions India's steady change in its nuclear thrust towards China and not Pakistan anymore. Is this strategic shift since Doklam or further triggered by the recent LAC (border) standoff with Beijing?

A: The evolution of India's current and foreseeable arsenal we're describing is neither recent nor in response to Doklam, but has much deeper roots and is part of a general strategic modernisation to build a Triad that can cover both Pakistan and China. The nuclear strategy and capabilities can certainly be influenced by such border disputes, not least if India concludes that such incidents mean its potential nuclear adversaries are going to be more aggressive or provocative in the future. In the short term, however, I suspect the border disputes will more directly influence India's conventional military planning.

Q: The recent LAC clash with Chinese forces proved one point that India is no more the country of 1962. How do western experts see India's tough resolve?

A: My impression is that Western defence experts saw both China and India playing tough and that this will influence how the two countries behave from now on and how they plan their military posturing along the border. While each side saw itself as standing up to the other, the bigger picture is that both sides have ramped up activities and that this will affect the future security situation along the border.

Q: How far the comprehensive security and defence partnership, including in maritime security, between the US and India will be a factor in boosting India's new nuclear armoury?

A: The US security assistance is focused on non-nuclear issues. The United States is not interested in supporting a further nuclear build-up of countries in the region. The US sees India as a growing nuclear power in the region that can influence the US nuclear relationship with China, which is currently a major and increasing factor in US military and nuclear planning. The US is concerned about the Chinese military modernisation and it is concerned that an increasing Chinese-India military competition will result in additional increases in both countries' nuclear arsenals, which could further destabilise the region.

Q: You have listed in detail about India's nuclear forces in operation and some in the production stage. To reach the level India is aspiring, how much more is required from New Delhi? What could be the critical forces to give India an edge in ensuring security and countering threat from China?

A: The Indian government hasn't described how much is enough. For national security, nuclear capabilities are probably more important than numbers. The main driver of India's nuclear modernisation is to ensure it has a force that is capable of responding to a nuclear attack and cannot be decapitated in a surprise first strike. That is the only role that nuclear weapons can realistically serve. Short of that strategic objective, it becomes an endless game of justifying more and better capabilities for limited scenarios and war-fighting that can actually undermine national security. This was one of the important lessons of the Cold War between the United States and the Soviet Union.

Q: Will the Rafale jets be a factor to boost India's defence status and its strength in Asia, including against China?

A: Yes. The Rafale is a very capable aircraft. If India equips it to carry nuclear bombs, it will represent an increased strike capability in the air-leg of the nuclear Triad.

Q: India has managed well so far between the US and Russia when it comes to defence buying. How do you see this going out for India? Do you see India's reliance on Russia as a strategic tactic to keep Kremlin neutral against China?

A: India has always based its defence acquisition on a number of countries: Britain, Russia, France, US. It will probably continue to do so. I do not see Indian reliance on Russian equipment as an effort to keep Russia "neutral against China". Russia has its own historical reasons for the relationship it has with China, and these days those factors are more dominated by an interest in teaming up with Beijing against Washington.

Q: India's sea strength, both in missiles and ammunition, need a stronger push and capacity building, particularly if India is focusing on China. Your comments?

A: India has long been the most powerful local military in the Indian Ocean. After the Soviet Union disintegrated, the Russian presence disappeared and the US (and to a smaller extent Britain and France) was the major foreign power. With its growing general military capabilities and increasing foreign affairs activities in the Middle East and Africa, China's presence in the India Ocean is increasing and will likely increase further. As such, we're seeing efforts to strengthen India's presence in the area and beef up its military capabilities. It remains to be seen, however, whether—or to what extent—New Delhi has the appetite or capacity to significantly increase its military presence in the Indian Ocean. As such, it may end up relying more on partnering with the United States.

https://www.sundayguardianlive.com/news/indias-nuclear-capabilities-way-bring-china-within-reach

Business Standard

Sun, 26 July 2020

China's weapon supply to Myanmar terrorists re-ignites NE insurgency fears

India's Ambassador to Thailand, Suchitra Durai, held a meeting with Unsit Sampuntharat, Governor of Tak province of Thailand in which Mae Sot is located

The recent seizure of a large quantity of illegal Chinese weapons in Mae Tao region, which is on the Thai side of the Myanmar-Thailand border, has given rise to India's fear of "another attempt to reignite insurgency in its Northeast region", a Europe-based think-tank said.

Citing a June 23 report published in *The Irrawaddy*, the European Foundation for South Asian Studies (EFSAS) said, "While preliminary investigations have suggested that the weapons may have been destined for insurgent groups in Myanmar, the development has nonetheless raised antennae within security circles in New Delhi. It has also reignited the serious questions that had existed for long about the scope and depth of China's support to terrorist groups in the region in pursuit of its policy of what a Thailand-based organisation termed 'diplo-terrorism'."

File photo of Chinese President Xi Jinping (right) with PM Narendra Modi during the Mamallapuram Informal summit

While confirming the report that the weapons seized from the Myanmar-Thailand border belonged to China, *The Irrawaddy* quoted a source from an ethnic armed organisation based on the border as saying, "They are not the weapons currently used by the AA (Arakan Army). The weapons manufactured by the Wa (United Wa State Army) and the KIA (Kachin Independence Army) are not up to much. They cannot fire on automatic. The seized weapons are original and Chinese-made."

"Indian insurgents from the country's Northeastern states who have been sheltering for years in Myanmar, as well as the AA that has its roots in the Rakhine state of Myanmar, both present security challenges for India. In addition to being threats to national security, they are also irritants that impact India's Act East Policy. The Indian suspicion, not without basis, is that impeding the progress of India's Act East projects has assumed weight in China's strategic thinking. The influx of Chinese weapons is, accordingly, in tune with such thinking," the EFSAS said.

With regard to this matter, on July 20, India's Ambassador to Thailand, Suchitra Durai, held a meeting with Unsit Sampuntharat, Governor of Tak province of Thailand in which Mae Sot is located. Meanwhile, the Indian security agencies have also been in touch with their counterparts in Myanmar and Thailand to get further details about the seized consignment.

Citing a study titled 'China's diplo-terrorism in Myanmar' by Anders Corr, a former civilian worker for the United States' military intelligence, that appeared in the Bangkok-based LiCAS.news, EFSAS said, "China was supplying funds and sophisticated weaponry to the AA, a terrorist organisation, in a bid to expand its diplomatic influence in Myanmar."

"An object lesson in diplo-terrorism is the leverage over Myanmar and India that China gained by arming the Arakan Army, operating in the corridor from North-East India over Myanmar's Chin and Rakhine states to the Indian Ocean. The evidence of China using violence by ethnic militias in Myanmar against its competitors demonstrates the violent side of its Belt and Road development project, which not only ensnares recipients in debt traps, but seeks to bar competitors through violent means deployed by criminal sub-state actors..., Corr was quoted as saying.

"Sadly, China's conception of its role in the world seems to be guided by exactly the zero-sum conflict over territory and influence that it accuses others of fomenting. It does not limit itself to soft power. Rather, Beijing associates with the lowest-level forms of terrorist and gangland violence in order to attain its diplomatic objectives," Corr said.

The Amsterdam-based think tank recalled US Senator Larry Pressler as saying, during his visit to Kolkata in 2002, that China was the world's major source of small arms proliferation that was "fuelling conflicts from Morocco to Malaysia".

Similarly in 2015, strategic analyst Wasbir Hussain said, "China, in fact, holds the key to the availability of weapons and ammunition among the terror groups in North-East India that is actually keeping insurgency alive in this far-eastern frontier."

The EFSAS opined that while China's acts of violation of the international order are increasing since the outbreak of COVID-19 pandemic, "it is high time that state sponsorship of terrorism by China is acknowledged, exposed and accorded the serious corrective attention that it eminently deserves.

https://www.business-standard.com/article/current-affairs/china-s-weapon-supply-to-myanmar-terrorists-re-ignites-insurgency-fears-120072500118_1.html

hindustantimes

Sun, 26 July 2020

US eases export restrictions on unmanned drones, New Delhi to benefit

President Trump's tweaking of the MTCR law pertaining to drones will pave the way for India to acquire Predator B armed drones

By Shishir Gupta

New Delhi: President Donald Trump's order on updated export restrictions on unmanned aerial vehicles (UAV), with the new speed limit of 800 kmph, will not only help its allies in the Middle-East facing the brunt of Chinese armed drones in Libyan theatre but will also help India acquire proven Predator-B armed and Global Hawk surveillance drones from the US. Both the top of line drones have speeds less than 800 kmph.

A statement issued by White House said, "The President has decided to invoke our national discretion to treat a carefully selected subset of missile technology control regime category I unmanned aerial systems (UAS), which cannot travel faster than 800 kmph as category II… This will increase our national security by improving the capabilities of our partners and increase our economic security by opening the expanding UAV market." This policy change means that the UAVs under 800 kmph will no

In this image, a fully armed unmanned aerial vehicle (UAV) Predator B is seen in mountains.

longer be subjected to the "strong presumption of denial" of the MTCR".

While the US defence contractors were restricted by the Missile Technology Control Regime (MTCR) UAS clause, the Chinese have been supplying Wing Loong armed drones to Pakistan and for use in the Yemen and Libyan civil war. According to intelligence reports, China has already supplied four Wing Loong armed drones to Pakistan for protection of the CPEC and Gwadar port. The drone, which has a limited track record, carries more than 1,000 kilograms of bombs or air-to-surface missiles. Neither China nor Pakistan are members of the MTCR, hence there is no restriction on Beijing to export these systems to Islamabad.

It is the introduction of Wing Loong into the Indian sub-continent which has prompted India to relook the acquisition of Predator-B drone, proven in Afghan and Iraq theatre, for the Indian military. The Predator-B is the armed version of Guardian drone, twenty-two of which have been approved for sale to India by the Trump administration. Predator B can carry four Hell-fire missiles and two 500-pound laser-guided bombs.

By tweaking the MTCR rules for UAS, President Trump has opened doors for India to acquire the armed drones as well as systems to counter them. The armed drones will also be available to US allies like Saudi Arabia, UAE and Egypt who have acquired the Chinese armed drones.

As the cost of a Predator-B drone is no less than a fighter aircraft, the Indian Air Force may have to reduce its limit of manned fighters to create squadrons of armed drones within the present Cabinet sanction of 42 squadrons.

https://www.hindustantimes.com/world-news/us-eases-export-restrictions-on-unmanned-drones-new-delhi-to-benefit/story-f1GfxnB4e7vKLDvOTRBKwN.html

Science & Technology News

Mon, 27 July 2020

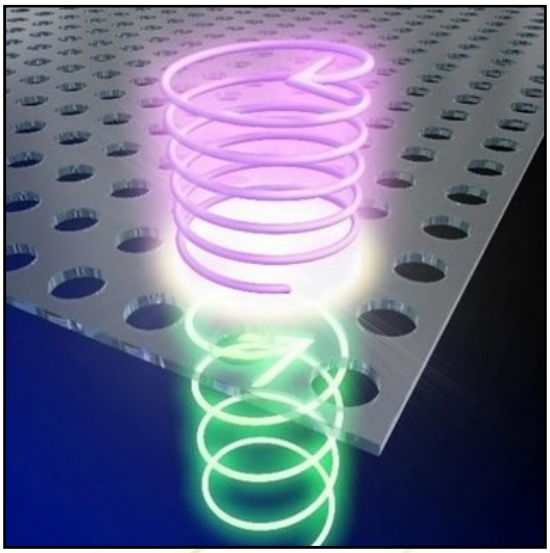
New photonic crystal light converter: Powerful tool for observation in physics and life sciences

Spectroscopy is the use of light to analyze physical objects and biological samples. Different kinds of light can provide different kinds of information. Vacuum ultraviolet light is useful as it can aid people in a broad range of research fields, but generation of that light has been difficult and expensive. Researchers created a new device to efficiently generate this special kind of light using an ultrathin film with nanoscale perforations.

The wavelengths of light you see with your eyes constitute a mere fraction of the possible wavelengths of light that exist. There's infrared light which you can feel in the form of heat, or see if you happen to be a snake, that has a longer wavelength than visible light. At the opposite end is ultraviolet (UV) light which you can use to produce vitamin D in your skin, or see if you happen to be a bee. These and other forms of light have many uses in science.

Within the UV range is a subset of wavelengths known as vacuum ultraviolet light (VUV), so called because they are easily absorbed by air but can pass through a vacuum. Some VUV wavelengths in the region of around 120-200 nanometers (nm) are of particular use to scientists and medical researchers as they can be used for chemical and physical analyses of different materials and even biological samples.

However, there is more to light than a wavelength. For VUV to be truly useful, it also needs to be twisted or polarized in a manner called circular polarization. Existing methods to produce VUV, such as using particle accelerators or laser-driven plasmas, have many drawbacks, including cost, scale and complexity. But also, these can only produce untwisted linear polarized VUV. If there was a simple way to make circular polarized VUV, it would be extremely beneficial. Assistant Professor Kuniaki Konishi from the Institute for Photon Science and Technology at the University of Tokyo and his team may just have the answer.



Circularly polarized laser light goes through the PCN device and comes out the other side as VUV polarized in the opposite direction. Credit: © 2020 Konishi et al.

"We have created a simple device to convert circularly polarized visible laser light into circularly polarized VUV, twisted in the opposite direction," said Konishi. "Our photonic crystal dielectric nanomembrane (PCN) consists of a sheet made from an aluminum oxide-based crystal (γ-Al_2O_3) only 48 nm thick. It sits atop a 525 micrometer-thick sheet of silicon which has 190 nm-wide holes cut into it 600 nm apart."

To our eyes the PCN membrane just looks like a flat featureless surface, but under a powerful microscope the pattern of perforations can be seen. It looks a little like the holes in a showerhead which increase the water pressure to make jets.

"When pulses of circularly polarized blue laser light with a wavelength of 470 nm shine down these channels in the silicon, the PCN acts on these pulses and twists them in the opposing direction," said Konishi. "It also shrinks their wavelengths to 157 nm which is well within the range of VUV that is so useful in spectroscopy."

With short pulses of circularly polarized VUV, researchers can observe fast or short-lived physical phenomena at the submicrometer scale that are otherwise impossible to see. Such phenomena include the behaviors of electrons or biomolecules. So this new method to generate VUV can be useful to researchers in medicine, life sciences, molecular chemistry and solid state physics. Although a similar method has been demonstrated before, it produced less useful longer wavelengths, and did so using a metal-based film which is subject to rapid degradation in the presence of laser light. PCN is far more robust to this.

"I am pleased that through our study of PCN, we found a new and useful application for circularly polarized light conversion, generating VUV with the intensity required to make it ideal for spectroscopy," said Konishi. "And it was surprising that the PCN membrane could survive the repeated bombardment of laser light, unlike previous metal-based devices. This makes it suitable for lab use where it may be used extensively over long periods. We did this for basic science and I hope to see many kinds of researchers make good use of our work."

Reference:

"Circularly polarized vacuum ultraviolet coherent light generation using a square lattice photonic crystal nanomembrane" by Kuniaki Konishi, Daisuke Akai, Yoshio Mita, Makoto Ishida, Junji Yumoto, and Makoto Kuwata-Gonokami, 21 July 2020, *Optica*. DOI: 10.1364/OPTICA.393816

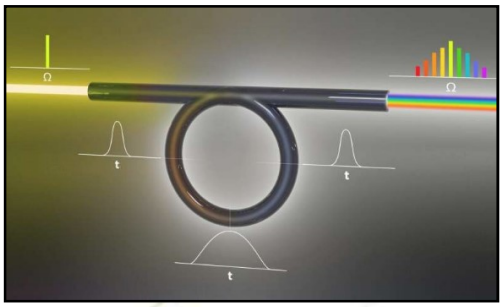
https://scitechdaily.com/new-photonic-crystal-light-converter-powerful-tool-for-observation-in-physics-and-life-sciences/

PHYS.ORG

Sat, 25 July 2020

Project creates more powerful, versatile ultrafast laser pulse

University of Rochester researchers are setting a new standard when it comes to producing ultrafast laser pulses over a broader range of wavelengths than traditional laser sources.



In work published in *Physical Review Letters*, William Renninger, an assistant professor of optics, along with members of his lab, describe a new device, called the "stretched-pulse soliton Kerr resonator," that enhances the performance of ultrafast laser pulses. The work has important implications for a range of engineering and biomedical applications, including spectroscopy, frequency synthesis, distance ranging, pulse generation, and others.

The device creates an ultrafast laser pulse—on the order of femtoseconds, or one quadrillionth of a second—that's freed from the physical limits endemic to sources of laser light—what laser scientists call laser gain—and the limits of the sources' wavelengths.

"Simply put, this is the shortest pulse ever from a gain-free fiber source," Renninger says.

Renninger and his team of graduate research and postdoctoral associates improved upon Kerr resonators, an exciting new alternative for generating femtosecond laser pulses that have been the subject of considerable research.

The lab overcame a challenge to pulse duration in other versions of Kerr resonators by discovering a new soliton—a short burst or localized envelope of a wave—that maintains its shape while propagating at a constant velocity. The solitons generated in Renninger's device differ from the solitons in other Kerr resonators, specifically in the shape and behavior of the stretching pulses they create.

"It is stable in the sense it keeps repeating the same thing over and over, getting longer, then shorter, longer then shorter," Renninger says.

The pulses "feature a broad spectral bandwidth and a compressed pulse duration of 210 femtoseconds, which is the shortest pulse duration observed to date from fiber Kerr resonators," the researchers state in the paper.

Lead author Xue Dong is a graduate research associate in the Renninger lab. In addition to Renninger, other coauthors are Qian Yang and Christopher Spiess, also graduate research associates in the lab, and Victor Bucklew, a former postdoctoral associate in the lab.

The study was funded by in part by the University's Technology Development Fund, a University Research Award, and by the National Institutes of Health. A patent is pending. Interested parties can contact Curtis Broadbent, licensing manager at URVentures, about licensing the technology.

Making ultrafast lasers more accessible

Renninger, an expert in creating sources for femtosecond lasers, received his BS and Ph.D. degrees in applied physics from Cornell University. Before joining the Institute of Optics, he was a postdoctoral associate and an associate research scientist in the Department of Applied Physics at Yale University.

He recently received a National Science Foundation CAREER award, which includes funding to create open source access to information for designing and creating advanced lasers sources generating femtosecond pulses.

"There are now commercial products, but they're very expensive. They are prohibitive for many research groups with limited budgets for equipment," Renninger says.

Much of the cost is for expertise, not components, so his group will use part of the CAREER funding to provide consulting for research groups at smaller universities in how to design and build femtosecond lasers for basic research.

"The ultimate goal is to have a design guide published on our website for everybody," Renninger says.

More information: Xue Dong et al, Stretched-Pulse Soliton Kerr Resonators, *Physical Review Letters* (2020). DOI: 10.1103/PhysRevLett.125.033902

Journal information: *Physical Review Letters*

https://phys.org/news/2020-07-powerful-versatile-ultrafast-laser-pulse.html

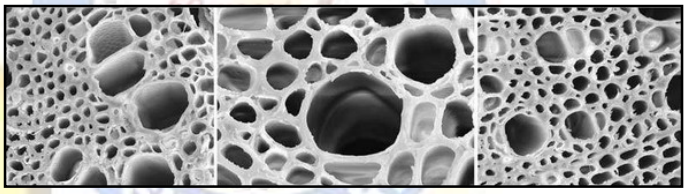
PHYS.ORG

Sat, 25 July 2020

Engineering study examines sunflower stem growth

Examining the structure of a sunflower stem as it matures can help both the plant scientist and biomaterials engineer. That's the premise that Anamika Prasad, an assistant professor in South Dakota State University's Department of Mechanical Engineering, is putting into practice.

"This is the first study to quantify structural and compositional changes in the sunflower stem at multiple stages of crop development," said Prasad, noting most of the literature from the engineering side on plants is on wood. Results will be published in the August 2020 issue of *Materialia*.



These microscope images show the cylindrical vascular tissue in a sunflower stem at six weeks, from left, eight weeks and 10 weeks of growth. With growth, the cross-section of vascular tissue becomes a more uniform circle, with an increase in cell diameter and cell wall thickness. Credit: South Dakota State University

Prasad, whose expertise is in materials science and biomechanics, has done research on the structure and mechanics of bone and cardiovascular tissue in collaboration with medical doctors for more than 10 years.

Doctors use CT scans of healthy and diseased human tissues "to identify what is going wrong," she explained. "These techniques have been studied to diagnose plant diseases, but they are not commonly used." Prasad hopes to work with plant scientists to bring an engineering perspective to crop production issues including plant diseases.

That goal led her to collaborate with field crops pathologist Febina Mathew, an associate professor of agronomy, horticulture and plant science. Mathew's research at SDSU focuses on diseases of soybean, corn, sunflower and other broadleaf crops.

"This study gives us a different perspective on what is happening within a healthy plant and can be applied to study diseased plants," Mathew said. Plant diseases are usually diagnosed using laboratory tests, such as DNA/RNA-based identification methods. Spectroscopy-based techniques can complement these identification methods to confirm diagnosis of plant diseases and, possibly, asymptomatic infections of the crops.

The sunflower plants Prasad studied were cultivated under Mathew's supervision in the greenhouse to protect them from biotic stressors, such as diseases, weeds and insects.

Prasad's work was supported by the SDSU Research and Scholarship Fund. Doctoral student Mukesh Roy worked on the project through funding from the Department of Mechanical Engineering.

Examining stem structure

"Annual plants are a good template to design flexible polymer composites," Prasad said. Though trees grow radially outward once matured, annual plants, such as sunflowers, grow longitudinally during their short life cycle. To see how the vascular tissues within the plant stem change as they grow, the researchers examined a non-oilseed sunflower variety, collecting samples at four, six, eight and 10 weeks, which is when the plant begins flowering.

"At week four, we could only measure the girth because the stem was too soft for sectioning," Prasad said, noting that she and Roy also had to figure out how to analyze the tissues.

Surprisingly, the number of vascular tissue cells do not increase, but the shape and thickness of the cell walls change considerably to accommodate mechanical and biological demands, Prasad explained. At first, the cells are non-uniform cylinders, but as the plant grows, they take on a uniform circular cross-section, with their diameter and wall thickness also increasing. Correspondingly, the internal soft food storage cells in the stem pith decrease and the vascular tissues widen to accommodate the flow of water and nutrients.

"All of these internal modifications influence the load-carrying capacity and flow conduction properties," Prasad said.

Inspiring composite material design

"We are looking at the plant cell wall as inspiration for composite design and the cellulose within as biomaterial for manufacturing," said Prasad, whose research group is developing the infrastructure to incorporate cellulose nanofibers into structural engineering materials and biomaterials for medical applications.

This summer, Prasad is using her research on plant structure as a basis for designing composite materials for aerospace and defense applications through a U.S. Air Force Research Laboratory Summer Faculty Fellowship.

"The stem is a fiber-reinforced structure and cellulose is the building block of that fiber," she noted. Determining how the cell's structure handles strain may help engineers use those mechanics to design flexible composites.

Furthermore, different layers within the cell wall grow in unison, touching one another without breaking apart, Prasad pointed out. Understanding the underlying structural basis of this adhesive contact can provide inspiration for the design of composite materials.

Next, she is examining structural changes in soybeans based on the amount of water and nutrients they receive. To do this, Prasad is working with SDSU associate professor Sen Subramanian, whose expertise is in plant genetics and molecular biology.

More information: Mukesh Roy et al. Biomechanics of vascular plant as template for engineering design, *Materialia* (2020). DOI: 10.1016/j.mtla.2020.100747

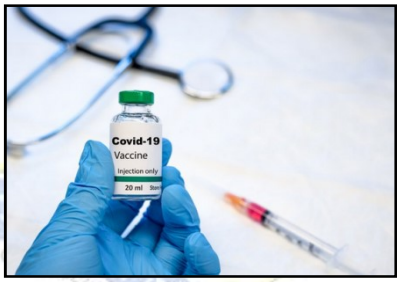
https://phys.org/news/2020-07-sunflower-stem-growth.html

DH DECCAN HERALD

Mon, 27 July 2020

Indigenous Covid-19 vaccine Covaxin shows 'encouraging' results in trials

The phase-I human clinical trial of India's first indigenously-developed Covid-19 vaccine candidate, Covaxin, has shown "encouraging" results, according to the principal investigator of the vaccine trial team.



Representative Image. Credit: iStock Photo

"First part of phase-1 of vaccine trial (Covaxin) has been completed. 50 people across India were administered the vaccine and the results were encouraging. Six people were administered vaccine on Saturday under the second part of phase-1," Dr Savita Verma, principal investigator of the vaccine trial team, told news agency ANI.

Telangana-based Bharat Biotech's Covaxin, along with ZyCoV-D, are the only two vaccine candidates to have got a nod from the Drugs Controller General of India (DCGI) to conduct human trials. They have been developed by Hyderabad-based Bharat Biotech in collaboration with Indian Council of Medical Research and the National Institute of Virology.

On July 17, Haryana Health Minister Anil Vij had announced that the human trial of Covaxin began at Rohtak's Post-Graduate Institute of Medical Sciences.

Later, the phase-I trial began at the AIIMS on July 24, with the first dose of the injection given to a man, who is in his 30s. Over 3,500 volunteers have already registered themselves for the trial at AIIMS, of whom the screening of at least 22 people is underway, informed AIIMS professor Dr Sanjay Rai.

AIIMS-Delhi is among the 12 sites selected by the Indian Council for Medical Research (ICMR) for conducting phase I and II randomised, double-blind, placebo-controlled clinical trials of Covaxin. The phase-I human trials have so far begun in AIIMS Patna and few other sites too.

In phase I, the vaccine would be tested on healthy 375 volunteers with no co-morbid conditions aged between 18-55 years and a maximum of 100 of them would be from AIIMS. The second phase would include around 750 volunteers from all 12 sites together and about 750 people between the age group 12-65 years will be selected.

"In the first phase, we see the safety of the vaccine which is of primary importance and the dose range is also calculated," AIIMS Director and leading pulmonologist, Randeep Guleria had said.

(With agency inputs)

https://www.deccanherald.com/science-and-environment/indigenous-covid-19-vaccine-covaxin-shows-encouraging-results-in-trials-865847.html

hindustantimes

Sun, 26 July 2020

COVAX Facility aims to deliver 2 bn doses by end of 2021: Dr Poonam K Singh

Dr Poonam Khetrapal Singh, WHO Regional Director for South-East Asia, says it is important the potential vaccines meet the recommended mandatory standards of efficacy and safety before they are used for mass vaccination

New Delhi: Several experimental vaccines for Covid-19 are in final-stage clinical trials and early results from two of them have established safety levels and immune response. With vaccines expected to be ready by early 2021, the World Health Organization (WHO) recently launched the COVAX Facility as a mechanism to guarantee rapid, fair, and equitable access to countries to a broad portfolio of vaccines and manufacturers to a demand-secure market. Dr Poonam Khetrapal Singh, WHO Regional Director for South-East Asia, spoke to Sanchita Sharma about the facility and how it aims to deliver two billion doses by 2021-end to prioritised population groups. Edited excerpts:

When is the earliest the world can expect a Covid-19 vaccine to be ready?

There are promising results from the clinical trials for some vaccine candidates, which is very encouraging. However, we need to wait for the completion of the trials and their outcomes to be in a better position to understand by when the vaccines will be ready. It is important the potential vaccines meet the recommended mandatory standards of efficacy and safety before they are used for mass vaccination.

Dr Poonam Khetrapal Singh, elected SEARO Regional Director at the WHO Executive Board meeting, Geneva(WHO / Violaine Martin)

WHO is working globally with partners to accelerate research and development of a safe and effective vaccine and ensure equitable access for the billions of people who will need it. But even with an accelerated process, the development and production of a vaccine will take time. We must continue to accelerate vaccine research while doing more with the tools we have.

How will WHO ensure equitable access to vaccines, especially in low- and middle-income countries?

WHO is committed to and will continue to advocate countries to ensure that as medicines and vaccines are developed, they are shared equitably with all countries and people. In April 2020, a global collaboration of governments, global health organisations, civil society groups, businesses, and philanthropies came together to form the Access to Covid-19 Tools Accelerator, or the ACT-Accelerator. The idea is to form a plan for an equitable response to the Covid-19 pandemic. There are four pillars under the ACT-Accelerator, of which vaccines are one.

COVAX Facility has been established recently under the vaccine pillar of the ACT-Accelerator to manage the large, diverse portfolio of Covid-19 vaccines that are under development to ensure a global sharing of risks, associated with the development of Covid-19 vaccines and equitable access based on a fair allocation of the available vaccines. The facility is a mechanism designed to guarantee rapid, fair, and equitable access to Covid-19 vaccines worldwide. By connecting a pool of demand to a pool of supply, it will allow countries access to a broad portfolio of Covid-19 vaccines and provide manufacturers access to a demand-secure market.

All countries have been invited to participate, and those that will are expected to receive access to vaccines procured by the facility at the negotiated price. The facility aims to deliver two billion doses by the end of 2021 to prioritised population groups in all participating countries.

What will be India's role in vaccine development?

India is among the largest vaccine manufacturers and is rightly called the world's pharmacy. It is also home to many research institutes and experts. Undoubtedly, they would play an important role in making the Covid-19 vaccines available globally.

WHO convened a meeting of vaccine manufacturers from South-East Asia Region on April 29 to get a landscape of the development and manufacture of potential Covid-19 vaccines. Twelve vaccine manufacturers from India, Indonesia, and Thailand participated in the meeting and shared their collaborations with vaccine developers, platforms likely to be used by them to develop the vaccines, potential timelines, and capacities for vaccine production.

Once available, how should vaccines be deployed?

WHO is working with member states, partners, and stakeholders to develop an allocation framework, which is expected to help countries prioritise populations at risk so that the available vaccines are provided to these priority populations first and then expanded to other populations in all countries.

The aim is to ensure an equitable and fair allocation of the available vaccines across all countries. This addresses the issue of who would have priority in accessing the vaccine first, such as health care workers, essential workers, and other vulnerable populations, and how groups could be progressively prioritised as more doses become available.

What does early data show on the quality of protection? Are people likely to need a booster dose?

There are 23 vaccines in clinical trials. We expect more to follow as there are at least 160 candidate vaccines. We are engaging with vaccine developers and others to ensure that we have standard endpoints and data collection mechanisms to regularly monitor both the efficacy and safety of the candidates. These trials, once completed, will help to understand better the extent and duration of protection.

Different vaccines are being developed using different technologies and platforms and are likely to have different efficacies, product profiles, and characteristics. This robust vaccine pipeline gives us hope, even if there many unpredictable factors that will determine their success.

Should everyone be vaccinated, including children?

Equitable distribution of a safe and efficacious vaccine is one of WHO's priorities. We will continue to advocate with member countries and work with them, providing guidelines and updated information on the population at risk and those who should be vaccinated on a priority.

https://www.hindustantimes.com/india-news/covax-facility-aims-to-deliver-two-billion-doses-by-the-end-of-2021-dr-poonam-khetrapal-singh/story-92YrG5wkUx1T9dZeJAYuZN.html

ScienceDaily

Sat, 25 July 2020

How COVID-19 causes smell loss

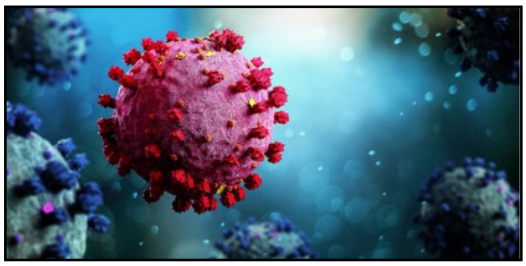
Olfactory support cells, not neurons, are vulnerable to novel coronavirus infection

Summary:

Loss of smell, or anosmia, is one of the earliest and most commonly reported symptoms of COVID-19. A new study identifies the olfactory cell types most vulnerable to infection by the novel coronavirus. Surprisingly, sensory neurons involved in smell are not among the vulnerable cell types.

Temporary loss of smell, or anosmia, is the main neurological symptom and one of the earliest and most commonly reported indicators of COVID-19. Studies suggest it better predicts the disease than other well-known symptoms such as fever and cough, but the underlying mechanisms for loss of smell in patients with COVID-19 have been unclear.

Now, an international team of researchers led by neuroscientists at Harvard Medical School has identified the olfactory cell types most vulnerable to infection by SARS-CoV-2, the virus that causes COVID-19.



Coronavirus illustration (stock image).

Surprisingly, sensory neurons that detect and transmit the sense of smell to the brain are not among the vulnerable cell types.

Reporting in *Science Advances* on July 24, the research team found that olfactory sensory neurons do not express the gene that encodes the ACE2 receptor protein, which SARS-CoV-2 uses to enter human cells. Instead, ACE2 is expressed in cells that provide metabolic and structural support to olfactory sensory neurons, as well as certain populations of stem cells and blood vessel cells.

The findings suggest that infection of nonneuronal cell types may be responsible for anosmia in COVID-19 patients and help inform efforts to better understand the progression of the disease.

"Our findings indicate that the novel coronavirus changes the sense of smell in patients not by directly infecting neurons but by affecting the function of supporting cells," said senior study author Sandeep Robert Datta, associate professor of neurobiology in the Blavatnik Institute at HMS.

This implies that in most cases, SARS-CoV-2 infection is unlikely to permanently damage olfactory neural circuits and lead to persistent anosmia, Datta added, a condition that is associated with a variety of mental and social health issues, particularly depression and anxiety.

"I think it's good news, because once the infection clears, olfactory neurons don't appear to need to be replaced or rebuilt from scratch," he said. "But we need more data and a better understanding of the underlying mechanisms to confirm this conclusion."

A majority of COVID-19 patients experience some level of anosmia, most often temporary, according to emerging data. Analyses of electronic health records indicate that COVID-19 patients are 27 times more likely to have smell loss but are only around 2.2 to 2.6 times more likely to have fever, cough or respiratory difficulty, compared to patients without COVID-19.

Some studies have hinted that anosmia in COVID-19 differs from anosmia caused by other viral infections, including by other coronaviruses.

For example, COVID-19 patients typically recover their sense of smell over the course of weeks -- much faster than the months it can take to recover from anosmia caused by a subset of viral infections known to directly damage olfactory sensory neurons. In addition, many viruses cause temporary loss of smell by triggering upper respiratory issues such as stuffy nose. Some COVID-19 patients, however, experience anosmia without any nasal obstruction.

Pinpointing vulnerability

In the current study, Datta and colleagues set out to better understand how sense of smell is altered in COVID-19 patients by pinpointing cell types most vulnerable to SARS-CoV-2 infection.

They began by analyzing existing single-cell sequencing datasets that in total catalogued the genes expressed by hundreds of thousands of individual cells in the upper nasal cavities of humans, mice and nonhuman primates.

The team focused on the gene ACE2, widely found in cells of the human respiratory tract, which encodes the main receptor protein that SARS-CoV-2 targets to gain entry into human cells. They also looked at another gene, TMPRSS2, which encodes an enzyme thought to be important for SARS-CoV-2 entry into the cell.

The analyses revealed that both ACE2 and TMPRSS2 are expressed by cells in the olfactory epithelium -- a specialized tissue in the roof of the nasal cavity responsible for odor detection that houses olfactory sensory neurons and a variety of supporting cells.

Neither gene, however, was expressed by olfactory sensory neurons. By contrast, these neurons did express genes associated with the ability of other coronaviruses to enter cells.

The researchers found that two specific cell types in the olfactory epithelium expressed ACE2 at similar levels to what has been observed in cells of the lower respiratory tract, the most common targets of SARS-CoV-2, suggesting a vulnerability to infection.

These included sustentacular cells, which wrap around sensory neurons and are thought to provide structural and metabolic support, and basal cells, which act as stem cells that regenerate the olfactory epithelium after damage. The presence of proteins encoded by both genes in these cells was confirmed by immunostaining.

In additional experiments, the researchers found that olfactory epithelium stem cells expressed ACE2 protein at higher levels after artificially induced damage, compared with resting stem cells. This may suggest additional SARS-CoV-2 vulnerability, but it remains unclear whether or how this is important to the clinical course of anosmia in patients with COVID-19, the authors said.

Datta and colleagues also analyzed gene expression in nearly 50,000 individual cells in the mouse olfactory bulb, the structure in the forebrain that receives signals from olfactory sensory neurons and is responsible for initial odor processing.

Neurons in the olfactory bulb did not express ACE2. The gene and associated protein were present only in blood vessel cells, particularly pericytes, which are involved in blood pressure regulation, blood-brain barrier maintenance and inflammatory responses. No cell types in the olfactory bulb expressed the TMPRSS2 gene.

Smell loss clue

Together, these data suggest that COVID-19-related anosmia may arise from a temporary loss of function of supporting cells in the olfactory epithelium, which indirectly causes changes to olfactory sensory neurons, the authors said.

"We don't fully understand what those changes are yet, however," Datta said. "Sustentacular cells have largely been ignored, and it looks like we need to pay attention to them, similar to how we have a growing appreciation of the critical role that glial cells play in the brain."

The findings also offer intriguing clues into COVID-19-associated neurological issues. The observations are consistent with hypotheses that SARS-CoV-2 does not directly infect neurons but may instead interfere with brain function by affecting vascular cells in the nervous system, the authors said. This requires further investigation to verify, they added.

The study results now help accelerate efforts to better understand smell loss in patients with COVID-19, which could in turn lead to treatments for anosmia and the development of improved smell-based diagnostics for the disease.

"Anosmia seems like a curious phenomenon, but it can be devastating for the small fraction of people in whom it's persistent," Datta said. "It can have serious psychological consequences and could be a major public health problem if we have a growing population with permanent loss of smell."

The team also hope the data can help pave inroads for questions on disease progression such as whether the nose acts as a reservoir for SARS-CoV-2. Such efforts will require studies in facilities that allow experiments with live coronavirus and analyses of human autopsy data, the authors said, which are still difficult to come by. However, the collaborative spirit of pandemic-era scientific research calls for optimism.

"We initiated this work because my lab had a couple of datasets ready to analyze when the pandemic hit, and we published an initial preprint," Datta said. "What happened after that was amazing, researchers across the globe offered to share and merge their data with us in a kind of impromptu global consortium. This was a real collaborative achievement."

Co-first authors on the study are David Brann, Tatsuya Tsukahara and Caleb Weinreb. Additional authors include Marcela Lipovsek, Koen Van den Berge, Boying Gong, Rebecca Chance, Iain Macaulay, Hsin-jung Chou, Russell Fletcher, Diya Das, Kelly Street, Hector Roux de

Bezieux, Yoon-Gi Choi, Davide Risso, Sandrine Dudoit, Elizabeth Purdom, Jonathan Mill, Ralph Abi Hachem, Hiroaki Matsunami, Darren Logan, Bradley Goldstein, Matthew Grubb and John Ngai.

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Journal Reference:

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Increased risks for COVID-19 patients who smoke, vape: Study

Researchers reviewed the role of smoking and vaping that may play in the cerebrovascular and neurological dysfunction of those who contract the COVID-19 virus

Researchers reviewed the role of smoking and vaping that may play in the cerebrovascular and neurological dysfunction of those who contract the COVID-19 virus. The study led by Cucullo and TTUHSC graduate research assistant Sabrina Rahman Archie, "Cerebrovascular and Neurological Dysfunction under the Threat of COVID-19: Is There a Comorbid Role for Smoking and Vaping?" was published in the International Journal of Molecular Sciences. It was based on the findings of recent case studies of COVID-19 patients

As the SARS-CoV-2 virus or COVID-19 has unfurled its tentacles across the globe, the severe respiratory and pulmonary disorders associated with the infection have become well known. However, recent case studies also have strongly suggested the presence of cerebrovascular-neurological dysfunction in COVID-19 patients, including large artery ischemic strokes that originate in one of the brain's larger blood-supplying arteries such as the carotid. Luca Cucullo, Ph.D., and other researchers from the Texas Tech University Health Sciences Center (TTUHSC) have for years studied the effects smoking and vaping have on the cerebrovascular and neurological systems. Their research, and that of others, has shown smokers of tobacco and vaping products are more vulnerable to viral and bacterial infection than are non-smokers.

In his previous research, Cucullo demonstrated how tobacco smoke can impair a person's respiratory function. From there, it can affect the vascular system and eventually the brain. Because COVID-19 also attacks the respiratory and vascular systems, he and Archie wanted to see if there were any reported cases indicating the virus may also affect the brain and lead to the onset of long-term neurological disorders like ischemic strokes. They also looked for evidence showing smoking and vaping can otherwise worsen the outcomes for COVID-19 patients, which Cucullo said seems

to be the case. Archie said some case studies demonstrate there are indeed stroke occurrences in COVID-19 patients and the rates appear to be increasing every day. In fact, one study comprised of 214 patients found that 36.45% of COVID patients had neurological symptoms, further indicating the virus is able to affect the cerebral vascular system. But how does this happen?

There are within the human body approximately 13 blood coagulation factors that can be increased due to hypoxia, a condition that occurs when the body is deprived of sufficient amounts of oxygen at the tissue level, as occurs with smoking. Archie said COVID-19 appears to also raise some blood procoagulant, especially the von Willebrand Factor, a blood-clotting protein that primarily binds carries coagulation factor VIII and promotes platelet adhesion at the site of wounds. "When the coagulant factor will be increased in our body, there will be a higher chance of clot formation," Archie explained. "Ultimately, it will be responsible for several vascular dysfunctions, for example, hemorrhagic or ischemic stroke."

Because COVID-19 and smoking or vaping each increases blood coagulation factors that may eventually affect the cerebral vascular system, Cucullo believes the stroke risk may be higher still for COVID-19 patients who smoke."COVID-19 seems to have this ability to increase the risk for blood coagulation, as does smoke," Cucullo added. "This may ultimately translate in higher risk for stroke." Recent clinical study data also shows some of the damage caused by COVID-19, especially to the respiratory system, is permanent. Cucullo said the same data indicates that patients who recover from COVID-19 still have an elevated risk for stroke and that age and physical activity don't seem to be factors. Some of those with the highest risk factors for long-term problems related to COVID-19 are young adults in their 20s and 30s who were active and considered to be in their physical prime.

"After COVID-19, some of those can barely take few steps without having breathing issues, so the recovery, it's kind of formal recovering, but some of these long-term effects remain," he added. In addition to impairing the immune and vascular systems, and triggering cerebrovascular and neurological dysfunction, smoking and vaping often worsen the outcomes for patients who contract influenza or other respiratory or pulmonary diseases. Because COVID-19 appears to affect many of the same systems within the body, Cucullo said it would seem logical to think the health risks are increased for COVID-19 patients who smoke, but the virus is too new to know for certain.

"We don't even know whether COVID-19 can get into the brain because nobody has actually checked for it yet," Cucullo said. "I think it's very early for this kind of study; the prime clinical concern is either a vaccine or trying to alleviate the symptoms, in particular the respiratory symptoms, so they didn't even get that far. We are planning to do something from that point of view; this is something we will definitely research." (ANI)

https://www.devdiscourse.com/article/technology/1144171-increased-risks-for-covid-19-patients-who-smoke-vape-study

livemint

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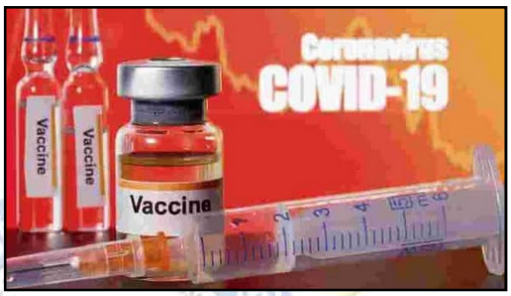
Russia set to start human trials for second Covid-19 vaccine from tomorrow: Report

- ***Another Russian research institute said it has received permission to conduct clinical trials of Covid-19 vaccine***
- ***Russia, which has the fourth-most coronavirus cases in the world, has accelerated the testing process of its vaccines***

After reports of wrapping up clinical trials of Russia's first Covid-19 vaccine with the researchers saying that all volunteers who underwent the process have gained coronavirus immunity after using the vaccine, a new report now says the country's second such vaccine is also ready for human trials starting from Monday, 27 July.

Russian State Research Center of Virology and Biotechnology Vector said it has received permission to conduct clinical trials of vaccine against coronavirus, the first volunteers will receive it tomorrow, Russian healthcare watchdog Rospotrebnadzor said, according to Sputnik News.



Producing vaccines and deploying them to the world's population in the midst of a pandemic would be a massive challenge. (Reuters)

"Rospotrebnadzor's Vector Center received permission on July 24 to conduct clinical trials of the vaccine, the first volunteers will be vaccinated on July 27 as part of the clinical trial protocol," the statement read, as per the report.

Earlier, Russia's Sechenov University announced that it had successfully completed clinical trials of a coronavirus vaccine, developed by Russia's Defense Ministry's Gamalei Institute of Epidemiology and Microbiology. Alexander Lukashev, the director of Sechenov's Institute of Medical Parasitology, Tropical and Vector-Borne Diseases, told Sputnik that the trials had established the vaccine's safety on human health. It has recently cleared the first stage of trials in a small group of volunteers. Murashko described the outcome as "positive."

Russia could make 30 million doses domestically in 2020 for its first Covid-19 vaccine, and 170 million abroad, with five countries expressing interest in producing the vaccine and others willing to produce it, according to a Bloomberg report quoting Russian Direct Investment Fund's head Kirill Dmitriev.

Russia, which has the fourth-most coronavirus cases in the world, has accelerated the testing process of its vaccines, amid a global race to find defenses against the deadly pandemic that has wreaked economic havoc.

Currently, after registering 5,871 new COVID-19 cases in the past 24 hours, the total number of coronavirus cases rose to 806,720, the country's coronavirus response center said on Thursday.

As many as 146 COVID-19 patients died in Russia over the past 24 hours, which brings the death toll to 13,192. *With inputs from agencies*

https://www.livemint.com/news/world/russia-set-to-start-human-trials-for-second-covid-19-vaccine-from-tomorrow-report-11595764070311.html