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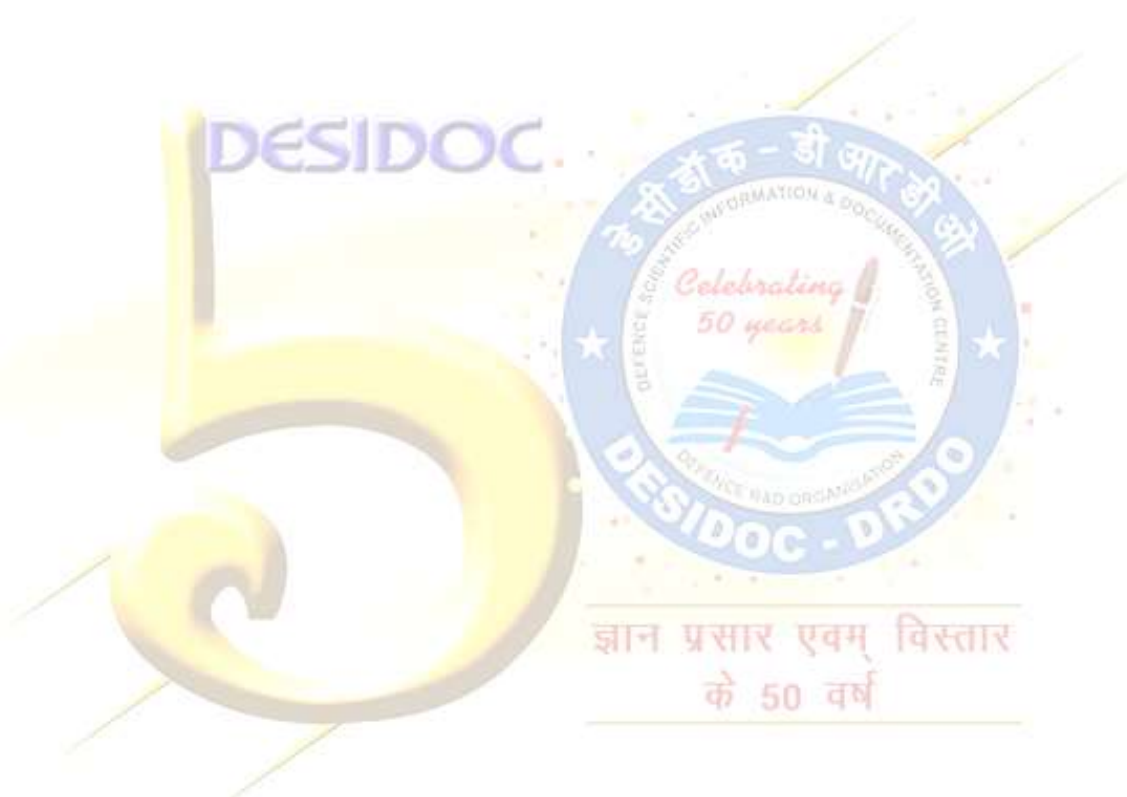
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COVID-19: DRDO's Contribution

Mon, 13 July 2020

2/3rds of Covid beds in Delhi hospitals vacant

New Delhi: The number of people in the city hospitalised with Covid-19 has been declining consistently over the past week, with the number of beds occupied dipping below the 5,000-mark on four consecutive days. This means over two-thirds of beds in Delhi designated for the treatment of Covid-19 patients remain vacant, as on Saturday. Currently, there are 15,244 Covid-19 beds across government and private hospitals, of which 4,502 were occupied as on Saturday evening. An additional 1,000 beds are available at the field hospital in Dhaula Kuan built by the Defence Research and Development Organisation (DRDO).

The last time the number of people in the hospitals was as low was on June 10, when Delhi had been recording between 1,000 and 1,500 new cases a day. The daily new case count shot up to 3,947 on June 23, but has significantly lowered, especially over the past week. The government, however, has no plans to de-escalate the preparations made for Covid-19 treatment. “We cannot start de-escalating preparations made for Covid-19 right now even though the number of hospitalisations has gone down. In many places across the world — even in Mumbai — the number of cases has gone up after showing a decline. We have to stay alert,” said a Delhi government spokesperson.



However, hospitals have put any further expansions on hold. “Only about a third of the beds in the AIIMS Trauma Centre and Jhajjar campus are currently occupied, and there is no need for more. The burns centre will not be converted to a Covid-19 hospital for the time being,” said Dr DK Sharma, medical superintendent of the All India Institute of Medical Sciences (AIIMS). The hospital has 1,250 beds in its cancer centre at Jhajjar and 260 beds in the trauma centre on ring road earmarked for Covid-19 patients. Currently, just over 400 patients are admitted to both, Dr Sharma said.

The number of admissions started going down at the hospital 10 days ago. The highest number of active cases that the hospital had was just over 600 mid-June. At the 2,000-bed Lok Nayak hospital, Delhi's biggest Covid-19 facility, the number of admissions have gone down from about a 100 a day 10 days ago to about 50 to 60 in the last 10 days. “The number of cases has certainly gone down, but the cases we are getting are more serious ones, where the patient is semi-conscious or is already on life-support. This means more and more people are staying in home isolation rather than coming to hospitals. However, whether or not to start other services is a decision that has to be taken by the government,” said Dr Suresh Kumar, medical director of Lok Nayak hospital.

Experts also agreed that it would be premature to scale down the number of Covid beds. “I visited two private hospitals in the city as a part of the committee observing Covid-19 patient care and found that 50% of the beds were empty. It is encouraging to see that the number of new cases

and hospitalisations are going down, but it is too early to shut down these facilities. The government should review the situation again in a few weeks to examine the trend,” said Dr Mahesh Verma, vice-chancellor of Guru Gobind Singh Indraprastha University. He chaired a committee set up by the Delhi government in June that estimated infrastructure needs to treat Covid patients.

The committee had said there would be 100,000 cases by June-end, which would consequently necessitate at least 15,000 beds. Another member of the committee Dr Arun Gupta, president of the Delhi Medical Council, said, “The number of people hospitalised in the city is consistently going down by 200 to 300 every day. This is very encouraging, but the government cannot lower their guard yet. In countries like China, Spain and US the number of cases has risen after a decline.” Assuming the initial trends of the sero-surveillance data to be true, he said, Delhi is a long way away from herd immunity.

“There were reports that there is a 15% prevalence of the antibodies against Covid-19 in Delhi. This is not enough for herd immunity, which can protect those who are uninfected. Besides, we don’t even know whether the antibodies are enough to prevent a second infection — studies have shown that antibody levels are lower in asymptomatic patients and those with mild symptoms. Plus, we also don’t know how long the antibodies last in a person. The infection is spreading in the other parts of the country and there is a possibility of resurgence in Delhi,” said Dr Gupta.

<https://www.nyoooz.com/news/delhi/1503227/23rds-of-covid-beds-in-delhi-hospitals-vacant/>



Sun, 12 July 2020

Rajasthan introduces DRDO-made special jackets for medical professionals

There are 5,002 active cases of coronavirus in Rajasthan with 17,070 cured/migrated/discharged and 491 deaths

Amid the COVID-19 outbreak, special jackets have been introduced by Jodhpur Health Dept for lab technicians.

"These jackets that are to be worn inside PPE kits have been designed by DRDO. The liquid in the jacket helps in keeping the body cool and cope up with heat," Dr Balwant Manda, CMO said.

According to latest data available on the Ministry of Health and Family Welfare, there are 5,002 active cases of coronavirus in Rajasthan with 17,070 cured/migrated/discharged and 491 deaths.

<https://www.livemint.com/news/india/rajasthan-introduces-drdo-made-special-jackets-for-medical-professionals-11594441289127.html>



The liquid in the jacket helps in keeping the body cool and cope up with heat,



Sun, 12 July 2020

Brahmos-Air launched cruise missile gets fleet release clearance

BrahMos, a joint venture between India's DRDO and Russian NPO Mashinostroyeniya reached another milestone when its Air Launched version was given 'Fleet Release Clearance (FRC)' by the Centre for Military Airworthiness & Certification (CEMILAC) on 10 June 2020 through video conferencing. The conference was attended by members from DRDO, BrahMos Aerospace, Aircraft and Systems Testing Establishment (ASTE), Software Development Institute (SDI), IAF HQ and CEMILAC. This also led to operationalization of the weapon on Su-30 MKI of Indian Air Force (IAF).

The fastest supersonic cruise missile created history on 22 November 2017 after it was tested for the first time from IAF's frontline aircraft Su-30 MKI against a seabased target. It was tested on 22 May 2019 in users' configuration with launch point, target point, way point, launch altitude and range decided by the IAF. The airborne BrahMos was again flight tested on 17 December 2019 against a sea-based target successfully hitting the target at bull's eye. The successful test firings have established BrahMos as the world's most powerful conventional airborne precision strike.



Weapon capable of annihilating high value land and sea-based enemy targets from longer ranges and safer distances. On 20 January 2020, Indian Air Force formally inducted Squadron of Su-30 MKI equipped with BrahMos Supersonic Cruise Missile. Designed as a modified variant of its original anti-ship configuration BrahMos Air Launched Combat Missile (ALCM)—featuring a lighter propulsion system, improved nose cone and enhanced aerodynamic structure—has become the heaviest and most powerful weapon onboard the frontline super-maneuvrable

Su-30 combat aircraft of the IAF. With a strike range of 290 km and a warhead of up to 300 kg, the 2.5 ton missile promises to deliver a deadly blow to strategic enemy positions across the land or sea. The air-launched BrahMos project was fraught with innumerable challenges as it involved the integration of a very powerful, high-speed, manoeuvrable missile on-board a heavy long-range air superiority fighter platform. The Russian-origin Su-30 combat aircraft underwent structural modifications to carry the BrahMos ALCM whose weight was reduced by 500 kg in order to fit it onto the heavy strike fighter.

The missile underwent design refinements for aerodynamic stability in the early stages of its flight from the supersonic air fighter platform. The highly intricate and challenging BrahMos-A programme became a marvellous engineering and technological feat for India wherein BrahMos Aerospace in close coordination with the IAF, HAL, DRDO, Russia's Sukhoi and all other major defence entities successfully modified, integrated and flight tested a weapon of such class and calibre from a fighter aircraft for the very first time in the world. "The Su-30 MKI armed with formidable BrahMos is going to be India's ultimate trump card against any kind of enemy aggression" said Dr Sudhir K Mishra, Director General BrahMos, DRDO. "BrahMos is a very

heavy missile and such a class of weapon has never been deployed by a powerful frontline air combat platform of any country in the world.

The missile has enormously widened our Air Force's stand-off air attack capability and has given it a distinct strategic edge over its adversaries" added BrahMos Chief. The incredible BrahMos Weapon System having excellent land attack and anti-ship capability has established its multi-platform, multi trajectory and multi-target features for platforms based on land, sea, sub-sea and air. BrahMos missile has emerged as a major 'Force Multiplier' in the modern day battlefield with impeccable capabilities furthering the confidence amongst all the three wings of the Armed Forces and has given them the much needed capability to undertake deep surgical strikes. In a rapidly evolving regional and global geostrategic order, a powerful weapon such as BrahMos has undoubtedly changed the security dynamics for India.

<https://idr.org/brahmos-air-launched-cruise-missile-gets-fleet-release-clearance/#more-230779>

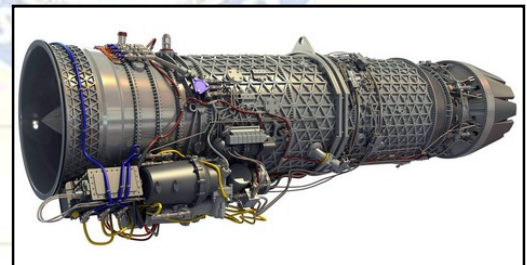


Mon, 13 July 2020

Detail report: DRDO-Rolls Royce JV for 110 kN Jet engine soon: Rolls Royce India

Louise Donaghey, Senior Vice President – India and South Asia for Rolls-Royce Defence has confirmed to India Global Week, that company is close to announcing a partnership to co-create a new engine with India. a tweet put out by India Global Week reads " We are planning to change the game, close to an agreement between two governments to co-create a new jet engine, India will get the IP. "The vision of Rolls Royce for India.": Louise Donaghey, Senior Vice President, India, and southeast Asia Rolls Royce.

In 2017, India and U.K. had agreed to cooperate on developing advanced defense products such as the gas turbine engine which was confirmed by the visiting U.K. Secretary of State for Defence Sir Michael Fallon. Kaveri project which was shelved due to lack of desired thrust levels achieved was to be revived with help of France and GTRE and Safran Group were working together till price steep developmental cost quoted lead to the fallout of talks.



India and the US also had formed joint working groups on jet engine technology and carrier technology under the Defence Technology and Trade Initiative (DTTI) but it was later dismantled after several rounds of talks failed to break the deadlock over Transfer of Technology (TOT) of the core section of the engine which India was demanding from the US.

GE developed the F414-EPE engine which generates 116 kN of Thrust class was supposed to used as a base to co-develop a new engine of 110 kN of Thrust class to power India's 5.5 Generation AMCA Mk2 fighter jets and later also in TEDBF and MWF-Mk2 aircraft. F414-INS6 single-engine variant developed for MWF-Mk2 aircraft will also be used in TEDBF and AMCA Mk1 variants.

Rolls Royce offered to use a new core design to co-develop a new engine that will use a new larger Fan with high distortion tolerance and surge margin designed by DRDO along with an Afterburner module designed jointly by GTRE and Rolls Royce. New Fan developed by DRDO also has stealth features and anti-icing systems which are much suited for modern 5th generation fighter jets. Sources have informed idrw.org that the new engine core will not be based on the

framed Eurojet EJ200 low bypass turbofan used as the powerplant of the Eurofighter Typhoon which was co-developed with Rolls Royce technology but due to multiple IP rights ownership in the EuroJet Turbo GmbH consortium which builds them, Core proposed will be designed from scratch with IP rights with India.

Rolls Royce claims that the new engine core will be more advanced than Eurojet EJ200 Core and will feature its new thermal signature management which with New DRDO Fan will be used to cool both the turbine as well as the exhausted air. The engine will feature a more effective Starter generator for effective use in the varying Indian climate conditions and the Dry weight of the engine will be less than 1 tonne with core and fan hardened to operate in the dusty conditions of India.

Gas Turbine Research Establishment (GTRE), Indian Rare Earth Limited (IREL), Mishra Dhatu Nigam Limited (MIDHANI), and Bharat Forge are some of the proposed public-private sector companies which will play a vital part in the development 110 kN Jet engine which will be headed by DRDO-Rolls Royce Jv.

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<https://idrw.org/detail-report-drdo-rolls-royce-jv-for-110-kn-jet-engine-soon-rolls-royce-india/#more-230812>

DESIDOC
THE HINDU

Mon, 13 July 2020

The Hindu Explains | How is India building up the squadron strength of its air force?

By Dinakar Peri

The story so far: On July 2, the Defence Acquisition Council (DAC) chaired by Defence Minister Rajnath Singh approved defence deals worth ₹38,900 crore which includes procurement of 21 MiG-29 fighter jets for the Indian Air Force (IAF) along with upgradation of 59 existing MiG-29 jets in the IAF inventory and procurement of 12 Su-30MKI aircraft from Russia.

What are the major deals approved?

The Defence Ministry said the MiG-29 procurements and upgradation from Russia are estimated to cost ₹7,418 crore while the 12 Su-30 MKIs, which will be licence-produced by Hindustan Aeronautics Limited (HAL), are estimated to cost ₹10,730 crore. Other deals approved by the DAC include Pinaka rocket ammunition, long-range land attack missile system of over 1,000 km range and close to 250 Astra Beyond Visual Range (BVR) air-to-air missiles for the IAF. The Astra Mk-1 has been integrated on the Su-30MKI jets and is being inducted into the force. An ungraded variant, the Astra Mk-II is under development by the Defence Research and Development Organisation (DRDO).

What are the new fighter jets for?

The Defence Ministry said in a release after the DAC meeting that these decisions will address the long-felt need of the IAF to increase its fighter squadrons. The IAF currently has 30 fighter squadrons against a sanctioned strength of 42 squadrons and is set to phase out its MiG-21 fighters in the next few years further reducing the strength. As seen during the Balakot air strikes (Pakistan) in February 2019, air power will be key to swiftly respond to any short escalations and especially relevant amid the ongoing stand-off with China on the Line of Actual Control (LAC).



The 21 MiG-29s to be procured from Russia have already been manufactured for an unfulfilled order and will now be upgraded and delivered to India. These will add to the three MiG-29 squadrons in service with the IAF which are already undergoing an upgrade. The 12 Su-30 MKIs are meant to make up for the gaps in the Su-30MKI squadrons caused due to crashes over the years. India has contracted 272 Su-30 jets from Russia in different batches, a majority of which are being licence-manufactured by HAL.

What other steps is the Indian Air Force taking to address the shortage?

In July-end, the IAF will start adding the first batch of the 36 Rafale multi-role jets contracted from France. Another deal for 83 Light Combat Aircraft (LCA) Mk-1A estimated to cost ₹38,000 crore is expected to be signed in the next two months which the IAF Chief Air Chief, Marshal R.K.S. Bhadauria, termed as “top priority”. The deal has assumed even greater importance with the emphasis on indigenisation in defence advocated by the Finance Minister recently.

The IAF currently has one squadron of LCA in initial operational configuration (IOC) and in May, it constituted the second LCA squadron with one aircraft in the final operational clearance (FOC) configuration. It is scheduled to get 20 IOC aircraft and 20 FOC aircraft in all and will eventually operate 123 LCA including the 83 Mk-1A aircraft.

The more capable and larger LCA Mk-2 is under development which the IAF is keen to add in large numbers. An indigenous fifth generation advanced medium combat aircraft (AMCA) is also under development and is expected to make first flight by 2032. There is also a tender for 114 fighter jets that has been floated to global aircraft manufacturers to be manufactured in India under technology transfer.

The IAF is also upgrading all aircraft in its current inventory to make up for the shortfall. The Jaguar, Mirage-2000, MiG-29 fighters are all being upgraded and negotiations are on with Russia for a major upgrade of the Su-30MKI fleet.

What about budgetary allocations?

The defence budget has been going down as a percentage of the GDP, and the novel coronavirus pandemic has put further budgetary constraints on military modernisation. For instance, the defence allocation for 2020-21 is pegged at ₹3.37-lakh crore excluding defence pensions which accounts for 1.5% of the GDP. There is a steep rise in defence pensions, 13.5%, from ₹1.18-lakh crore in revised estimates of last year to ₹1.34-lakh crore this year. The ₹3.37-lakh crore allocated is 5.67% higher compared to the budget estimate of last year and just 1.8% higher compared to the revised estimates of 2019-20 which stood at ₹3.31 lakh crore.

Of the total capital allocation of ₹1.13-lakh crore, the IAF got 38% which comes to ₹43,281 crore, but in real terms the capital allocation for IAF has gone down from the revised estimates of 2019-20 which was ₹44,869 crore. In comparison, last year, the IAF had committed liabilities, payments for deals already signed for, of over ₹47,000 crore which was more than its entire capital allocation. The IAF has signed several major deals which include 36 Rafale jets from France, S-400 air defence systems from Russia, Apache attack helicopters and Chinook heavy lift helicopters from the U.S. among others.

<https://www.thehindu.com/news/national/the-hindu-explains-how-is-india-building-up-the-squadron-strength-of-its-air-force/article32053910.ece>

THE TIMES OF INDIA*Sun, 12 July 2020*

Chinese military further withdraws troops from Pangong Tso area: Sources

New Delhi: The Chinese military further thinned down its presence in the ridgeline of Finger Four and removed some boats from Pangong lake in eastern Ladakh ahead of another round of Lt General-level talks between India and China aimed at finalising modalities for complete disengagement along the Line of Actual Control (LAC), people familiar with the development said on Saturday.

The escalation in tension in eastern Ladakh was triggered by a violent clash between the two armies in Pangong Tso on May 5 in which a sizeable number of personnel from both sides were injured.

Following the incident, both sides were locked in an eyeball-to-eyeball confrontation in three other locations in the region.

At the military talks, the two sides are expected to specifically focus on completing withdrawal of troops from Pangong Tso and Depsang besides laying out a detailed roadmap for disengagement of large numbers of troops from the rear bases by the two sides in a time-bound manner. Both sides had significantly ramped up troops and weaponry including tanks and artillery guns in eastern Ladakh.

The formal process of disengagement of troops began on Monday morning after a nearly two-hour telephonic conversation between National Security Advisor Ajit Doval and Chinese foreign minister Wang Yi on Sunday.

The Chinese military has already completed moving back its troops from the face-off sites in Galwan Valley, Gogra and Hot Springs in line with the first phase of the disengagement process from the friction points on the LAC in eastern Ladakh, sources said.

The main focus now shifts to Pangong Tso. India has been insisting that China must withdraw its forces from areas between Finger Four and Eight. The mountain spurs in the area are referred to as Fingers.

There has been further withdrawal of Chinese troops in the ridgeline of Finger Four and they have removed some boats from Pangong lake, the sources said.

On Friday, India and China held another round of diplomatic talks during which both sides resolved to push ahead with "complete disengagement" of troops in eastern Ladakh in a timely manner for "full restoration" of peace and tranquility.

At the meeting, it was decided that senior commanders of the two armies will meet "soon" to discuss further steps to "ensure complete disengagement and de-escalation".

After the online diplomatic meeting under the framework of Working Mechanism for Consultation and Coordination (WMCC) on India-China Border Affairs, the Ministry of External



Affairs (MEA) said the two sides agreed that maintenance of "enduring peace" in the border areas was essential for overall development of bilateral ties.

The MEA said the two sides reaffirmed to ensure complete disengagement of the troops along the LAC for "full restoration" of peace and tranquility in the border areas in accordance with bilateral agreements and protocols.

Both sides have held several rounds of diplomatic and military talks in the last few weeks to ease tension in the region. However, there was no visible sign of any end to the standoff till Sunday evening.

On June 30, the Indian and Chinese armies held the third round of Lt General-level talks during which both sides agreed on an "expeditious, phased and step wise" de-escalation as a "priority" to end the standoff.

The first round of the Lt General talks was held on June 6 during which both sides finalised an agreement to disengage gradually from all the standoff points beginning with Galwan Valley.

However, the situation deteriorated following the Galwan Valley clashes as the two sides significantly bolstered their deployments in most areas along the LAC. Twenty Indian Army personnel were killed in the clashes on June 15.

The Chinese side also suffered casualties but it is yet to give out the details. According to an American intelligence report, the number of casualties on the Chinese side was 35.

Tensions had escalated in eastern Ladakh around two months back after around 250 Chinese and Indian soldiers were engaged in a violent face-off on May 5 and 6. The incident in Pangong Tso was followed by a similar incident in north Sikkim on May 9.

<https://timesofindia.indiatimes.com/india/chinese-military-further-withdraws-troops-from-pangong-tso-area-sources/articleshow/76912633.cms>

THE TIMES OF INDIA

Mon, 13 July 2020

India to push China for maps to clarify claim lines, actual control

By Indrani Bagchi

New Delhi: India plans to push the Chinese side for an exchange of maps in the western sector after the process of disengagement and de-escalation is complete and Indian troops go back to their old patrolling posts. Government officials said this would clarify each other's claim lines and actual control, which would make management and patrolling protocols easier.

China has so far refused to exchange maps in this sector. Even after 22 rounds of talks on the boundary question, it has shown no inclination to exchange maps or clarify the LAC, having exchanged maps for only the central sector. While a resolution of the boundary question is a distance away, the Galwan clashes, India hopes, is sufficient reason to clarify this sector. China's reluctance to exchange maps led to the suspicion that they want to keep it fluid to be able to change the situation on the ground.



High level government sources said the disengagement was currently underway to get both countries to move their troops back from the forward positions they had moved to in the past few months. This is being monitored closely, certainly by India. This is expected to be followed by a de-escalation by moving back troops and weapons from what is called 'depth areas'. "It's not as if we're conceding territory to them," an official involved in the negotiations said.

The process is expected to take a long time.

Meanwhile, the United States Agency for International Development (USAID) gave a grant of \$1 million to the Central Tibetan Administration (CTA) to “strengthen the financial and cultural resilience of the Tibetan people and contribute towards sustained resilience of the Tibetan people’s economic and cultural identity”. This is the first time the Tibetan government in exile has received direct funding from the US (with a nod from India) for development assistance.

The Sikyong (prime minister) of the CTA, Lobsang Sangay, was quoted as saying, “The awarding of direct funding to the CTA fulfils a long desired aspiration and represents the culmination of many years of effort since my first term.”

This is part of the new elements that have encroached on the India-China relationship. The events of the past couple of months, culminating in the bloody clashes in Galwan Valley, will mean that fresh boundary management rules will have to be worked out between the two sides. “Several decades of confidence building measures and protocols for boundary management, patrolling protocols etc have all been destroyed. We have to go back to the drawing board,” an official said. The degree of mistrust is the highest it has ever been between the two neighbours.

Military strategists and China observers said India should avoid the Doklam outcome, where the Chinese built up positions on their side after the disengagement at the face-off site. If this is repeated in Ladakh, it could have serious implications for both sides, but more so for India, which occupies much more hostile terrain than China.

<https://timesofindia.indiatimes.com/india/india-to-push-china-for-maps-to-clarify-claim-lines-actual-control/articleshow/76930654.cms>



Sun, 12 July 2020

लद्दाख में IAF का सबसे दमदार हेलीकॉप्टर रुद्र तैनात, चीन के Z-19 को मात देने में सक्षम

भारतीय वायुसेना ने अपने सबसे दमदार स्वदेशी लड़ाकू
हेलीकॉप्टर रुद्र को लद्दाख के मोर्चे पर तैनात किया है।
कृष्णमोहन मिश्रा के 50 वर्ष

नई दिल्ली: भारतीय वायुसेना ने अपने सबसे दमदार स्वदेशी लड़ाकू हेलीकॉप्टर रुद्र को लद्दाख के मोर्चे पर तैनात किया है। अपनी कई खूबियों की वजह से रुद्र अमेरिका से लाए अपाचे से भी बेहतर है। खासतौर पर हाई एल्टीट्यूड वारफेयर में रुद्र का पलड़ा अपाचे से भारी है और चीन की तरफ से तैनात जेड-19 लड़ाकू हेलीकॉप्टर कहीं ठहरता नहीं है।

लद्दाख के थोइस एयरबेस पर तैनात

रुद्र को वायुसेना ने लद्दाख के थोइस एयरबेस पर तैनात किया है। यहां से इस हेलीकॉप्टर के लिए एलएसी के उन सभी इलाकों तक जाना बहुत आसान है जहां चीन ने अपने टैंक, बख्तरबंद गाड़ियां और सैनिक ठिकाने बनाए हैं। रुद्र 250 किमी प्रति घंटे तक की रफ्तार से उड़ सकता है और बीस हजार फीट तक की ऊंचाई पर जा सकता है। लेकिन जो बात इसे हिमालय की ऊंचाई पर लड़ने में अपाचे से ज्यादा कारगर बनाती है वो है इसका वजन।

पायलट के हेलमेट से जुड़ी गन

रुद्र का वजन 518 टन जो अपाचे के 1014 टन के वजन का आधा है। लद्दाख की ऊंचाई में इतना कम वजन इसे ज्यादा फुर्ती से कार्रवाई करने में मदद करता है और छोटा आकार दुश्मन की पकड़ में काम आता है। रुद्र की मुख्य गन

20 मिमी की है जो पायलट के हेलमेट से जुड़ी होती है यानी पायलट जिधर देखेगा निशाना लगता जाएगा। इसके अलावा ये 48 रॉकेट या 4 एंटी टैंक मिसाइलें ले जा सकता है।

मिसाइल को पहले से भांपने का सटीक सिस्टम

इसके सेंसर्स बहुत कारगर हैं जिनसे दुश्मन के रडार का दूर से ही पता लग जाता है। इसमें हेलीकॉप्टर पर दागी गई मिसाइल को पहले से भांपने का सटीक सिस्टम लगा है जिससे पायलट को खुद पर दागी गई मिसाइल से बचने का पर्याप्त मौका मिलता है। रुद्र स्वदेशी एडवांस लाइट हेलीकॉप्टर ध्रुव का आर्म्ड संस्करण है और भारतीय पायलट लंबे अरसे से इस पर काम करने में महारत हासिल कर चुके हैं।

<https://zeenews.india.com/hindi/india/indian-air-force-helicopter-rudra-deployed-in-ladakh/709659>



Mon, 13 July 2020

All of India's land with our security forces, Say ITBP & BSF DG amid standoff with China

As Chinese and Indian troops move to disengage in eastern Ladakh after a tense standoff, the chief of ITBP and BSF on Sunday said all the country's land is under "full possession" of our security and defence forces. S S Deswal, Director General of the Indo-Tibetan Border Police (ITBP) and the Border Security Force (BSF), was speaking to reporters on the sidelines of a plantation drive held at a BSF camp in Bhondsi.

"All the country's land is with us. Our land is in full possession of our security forces," Deswal told reporters here. He made the remarks when asked to comment on the current military standoff along the Line of Actual Control (LAC) in eastern Ladakh. "All our borders are safe, be it the eastern, western or northern. The security forces of the country are very active, capable and dedicated.

"They are capable to protect the borders against any kind of enemy with all their might and efficiency," the 1984-batch Indian Police Service (IPS) officer said.

According to people familiar with the development, Chinese military has further thinned down its presence in the ridgeline of Finger Four and removed some boats from the Pangong Tso lake in eastern Ladakh ahead of another round of Lt General-level talks between India and China aimed at finalising modalities for complete disengagement along the LAC.

When asked if the ITBP had moved more troops to its posts along the LAC, Deswal said the forces are moved across the country as per requirement.

"The morale of the troops of the army and border guarding forces is very high. Since independence, the security forces have made numerous sacrifices to protect the country's borders and for security of the country whether is is external threat or internal security," he said.

"You can see our forces are quick and alert to ensure protection even at the cost of their lives," Deswal said.

All the security arrangements are in place at the borders and we can say that the country's security is ensured, he said.

Deswal is the head of the ITBP and has been holding an additional charge of the BSF for over four months now.



The about 90,000 personnel strong the ITBP is a mountain-warfare trained force tasked to guard the 3,488-km-long LAC with China.

It was raised in 1962 in the aftermath of the Chinese aggression and has decided to move at least 60 fresh companies to various locations along the LAC in the wake of the current situation in Ladakh.

An ITBP company has an operational strength of about 100 troops.

The BSF with about 2.5 lakh personnel is primarily tasked to guard Indian fronts with Pakistan and Bangladesh.

<https://idrw.org/all-of-indias-land-with-our-security-forces-say-itbp-bsf-dg-amid-standoff-with-china/#more-230818>

TSG SundayGuardianLive

Sun, 12 July 2020

Atmanirbhar weapons production plan put on anvil

PM Narendra Modi's 28 June Mann Ki Baat sets the tone for corporatisation of ordnance factories

By Shubhabrata Bhattacharya

New Delhi: A reform prerequisite for India to become “atmanirbhar” in the field of weapons production has been put on anvil within a week of Prime Minister Narendra Modi’s “Mann ki Baat” of 28 June. The government on 6 July sought bids for the selection of a consultancy service agency, which will assist the Department of Defence Production in the corporatisation of the Ordnance Factory Board (OFB). This was a major reform announced by Finance Minister Nirmala Sitharaman on the third day of her marathon five-day press interaction in mid-May. She had stated that OFB will be corporatized and envisaged that one or more entities, which will be PSUs listed on the stock exchanges, will be set up, which will be tasked with speeding up the “Make in India” process and be part of the Prime Minister’s “vocal about local” campaign.

In his 28 June broadcast, PM Modi said, “Friends, before Independence, in the realm of the defence sector, our country was ahead of many countries in the world. There used to be a multitude of ordnance factories. Many countries that lagged behind us then, are ahead of us now. After Independence, we should have made efforts in the defence sector, taking advantage of our prior experience...we did not. But today, in the fields of defence and technology, India is relentlessly endeavouring to advance on those fronts...India is taking strides towards self-reliance”.



India’s 18 ordnance factories provided sinews to the Allied endeavour in the Eastern Sector during the Second World War. Not only Indian soldiers but the effort of India’s defence workmen contributed significantly to the war effort. During partition, all 18 units remained in India. Post-Independence, Nehru’s pacifism was reflected in the decline of attention on munition production. In the years leading to the 1962 debacle the ordnance factories continued routine production of traditional arms and ammunition. Vehicle manufacturing was added to its kitty with tie-ups with Germany’s MAN and Japan’s Nissan—the Shaktiman trucks and versatile Janga jeeps emerged. Earthmoving equipment for the Dandakaranya project were made by OFs. India’s first air-conditioning equipment and high capacity pressure cookers (for troops) were also made.

The 1962 setback saw the setting up of Department of Defence Production—the then Director General of Ordnance Factories, Rear Admiral Daya Shankar, was promoted and appointed

Controller General of Defence Production—precursor to the present post of Secretary (Defence Production). Working in tandem with defence research laboratories and inhouse reverse engineering by OF technologists a semi-automatic rifle was developed at Ishapore and the Indian Field Gun and Mountain Gun emerged by the time India was engaged in its next war, in 1965, with Pakistan. In 1971, apart from Soviet supplies and surreptitious Israeli munitions, India's indigenous munitions were the mainstay of the armed forces. Post 1971 India exported munitions primarily as aid to the liberation struggles in Africa. Janes Defence Weekly listed Indian equipment as testimony to their efficacy. It is this glory, which evaporated after 1980s with dependence growing on imports and inability of OFs to live up to their past excellence, which perhaps prompted Modi to make a reference to ordnance factories in “Mann ki Baat” and set in motion the process of revival.

In April 1979, following recommendation of a committee headed by former Hindustan Lever Chairman, Vasant Rajyadhaksha, the Ordnance Factory Board was created—a semi-corporate entity, which continued as a wing of the Department of Defence Production. Prior to that, OF expenses were dovetailed to the Armed Forces budget. The financial autonomy delinking from forces' budget proved to be a nadir as OFB could not live up to competition in terms of pricing.

Also in 1979, a Field Gun Factory was set up in Kanpur to augment the capacity which existed in another factory in the same location. It was rated as the best engineering unit of its kind East of Suez—the Indian version of Bofors gun, “Dhanush”, which showed its prowess in Kargil, is made here. In 1980s, a tendency to import rather than produce at home became the paradigm of defence procurement. Scams like HDW submarine deal and Bofors ensued—bringing in their trail a paradigm change in India's political horizon itself. Three decades of political instability was perhaps reflected in decline of indigenous procurement and reliance on imported equipment. So much so that India, which has the third largest defence budget in the world, is dependent 60% on imports today. The advent of a new regime and emphasis on “Make in India” in 2014 should have seen increased reliance on home munitions, but it has taken six years for reform to impact this strategic sector.

The consultancy firm, once selected, will have a year's time to submit its report. One hopes the fate of this consultancy will not be similar to the ones of the Air India-Indian Airlines merger or that of the conversion of Telecom Department of P&T into BSNL and MTNL.

OFB can trace its history to the days of the East India Company—in 1775 a Board of Ordnance was set up in Fort William, Calcutta. In 1787, a gun powder factory was set up on the banks of Hooghly river in Ishapore, 25 miles north of Calcutta, adjacent to India's oldest cantonment, Barrackpore (where Mangal Pandey lit the flames of the 1857 uprising). In 1801, a gun manufacturing unit was set up at Cossipore, north Calcutta. In 1899, a Hague declaration had to be issued internationally banning the lethal Dumdum bullets which were made near Calcutta.

India's ordnance factories had an umbilical link with the British Royal Ordnance Factories (ROF), which were corporatized in 1985. Royal Ordnance plc, the listed company which ensued, was merged with British Aerospace in 1987 and BAe Systems, an integrated defence production giant emerged. OFB has 41 factories situated over 24 locations which have large land pool, industrial and residential and attendant medical facilities. In Britain, the First Division football team, Arsenal FC, is perhaps the most visible remnant of ROF (it was set up by munitions workers of Woolwich in 1883). The land estates of ROFs are redeveloped into better productive use, while factories are efficiently producing weapons and equipment under corporate ownership.

While reforming defence production the Modi regime may like to study the British model as well as take an omnibus view by looking at the United States' DARPA—Defence Advanced Research Project Agency—which is tasked with making pivotal investments in breakthrough technology for national security. DARPA was set up in 1958 by President Eisenhower after Soviet Union shot its Sputnik into space in 1957. Narendra Modi's 28 June “Mann ki Baat” can be India's Eisenhower moment if the mandate is extended beyond corporatisation of Ordnance Factory Board.

<https://www.sundayguardianlive.com/news/atmanirbhar-weapons-production-plan-put-anvil>

Indian Army to place order for 72,000 American assault rifles

Synopsis

The order for the second batch of the assault rifles would be coming after the first lot of 72,000 rifles, has already been delivered to the Army for use by troops in Northern Command and other operational areas.

New Delhi: Amid the ongoing dispute with China over boundary issue, the Indian Army is going to place another order of 72,000 Sig 716 assault rifles from the United States.

The order for the second batch of the assault rifles would be coming after the first lot of 72,000 rifles, has already been delivered to the Army for use by troops in Northern Command and other operational areas.

"We are going to place an order for 72,000 more of these rifles under the financial powers granted to the armed forces," Defence sources told ANI.

The Indian Army had received the first lot of Sig Sauer assault rifles to boost its counter-terrorism operations.

India had acquired the rifles under the fast-track procurement (FTP) programme.

The new rifles will replace the existing Indian Small Arms System (Insas) 5.56x45mm rifles used by the forces and manufactured locally by the Ordnance Factories Board.

As per the plan, around 1.5 lakh imported rifles were to be used by the troops in the counter-terrorism operations and frontline duties on the Line of Control (LoC), the remaining forces would be provided with the AK-203 rifles, which are to be produced jointly by India and Russia at Amethi ordnance factory.

The work on the project is yet to start due to several procedural issues faced by the two sides.

The Indian Army had been trying to replace their standard INSAS assault rifles for many years but the attempts failed due to one reason or the other.

Recently, the Defence Ministry placed an order of 16,000 light machine guns (LMGs) from Israel to do away with the shortage of these guns.

India and China are in a stand-off position in Eastern Ladakh as the Chinese Army has deployed more than 20,000 of its troops there without any provocation since May first week.

Though there has been disengagement on the front, the Chinese have still maintained heavy troops presence in the rear areas.

<https://economictimes.indiatimes.com/news/defence/indian-army-to-place-order-for-72000-american-assault-rifles/articleshow/76923664.cms>



A file image of the Sig Sauer arms company

Army looks to acquire US aerial vehicle to strengthen infantry

According to people in South Block aware of the development, the army is set to acquire 200 pieces of RQ-11 UAV, which can fly up to 10 kilometers at an altitude of 500 feet and speed up to 95 kilometre per hour

By Shishir Gupta

New Delhi: The Indian army has set its eyes on acquiring hand-launched, remotely controlled unmanned aerial vehicle Raven from US and state-of-the-art Israeli Spike Firefly “loitering” ammunition to add lethality to its ground infantry apart from long-range precision artillery shells with a range of over 40 kilometres.

While the army is sharpening the teeth of its infantry, the air force will get five Rafael multi-role fighter jets from Paris this month, with another four to be used for training in France.

The Indian navy is all set to commission its second ballistic missile-firing nuclear submarine, INS Arighat, later this year.

According to people in South Block aware of the development, the army is set to acquire 200 pieces of RQ-11 UAV, which can fly up to 10 kilometers at an altitude of 500 feet and speed up to 95 kilometre per hour, to help infantry troops conduct reconnaissance of the battle theatre ahead and placement of enemy troops.

After the Indian army brought Spike Mark III anti-tank guided missiles from Israel as part of emergency purchases due to the Ladakh standoff with China, it is now buying firefly ammunition that can deliver a precision strike on enemy troops hiding within a range of one km.

The latest Firefly ammunition not only has loitering capability to locate a target but also can be called back if the target has moved beyond range.

While the IAF and Indian Army have been at the forefront of the Indian posture in Ladakh, the Indian Navy has been on the front foot in the Indian Ocean against Chinese warships.

According to senior military officials, the Navy through its Fusion Centre at Gurugram, has kept a close watch on the Indian Ocean throughout the Ladakh crisis and has been able muscle out six Chinese warships from the Arabian Sea and Indian Ocean region.

“These ships were around Gwadar port in Balochistan. First three ships went back to China with Indian Navy closely watching them and then the remaining three also returned to their home country. Today, there is not a single Chinese warship in Indian Ocean,” said a senior military officer on condition of anonymity.

While the senior military commander talks on disengagement in Ladakh will take place this week, the troop withdrawal exercise from all the four stand-off points is currently on with verification on the ground.

While the Chinese People’s Liberation Army has tried to link the withdrawal with other conditions, Indian army commanders have made it clear that the disengagement is unconditional.

<https://www.hindustantimes.com/india-news/army-looks-to-acquire-us-aerial-vehicle-to-strengthen-infantry/story-vY4Cn0fZDAofvij2b0LvbN.html>



An Indian Air Force (IAF) MIG 29 releases bombs during an IAF exercise.(AP File Photo)

Two new Israeli assault rifles Arad and Carmel now set to be manufactured in India

The assault rifles will be manufactured under Make in India initiative in Madhya Pradesh by joint venture PLR Systems, which is already producing arms like Tavor

By Snehesh Alex Philip

New Delhi: In a boost to the fledgling domestic small arms industry, two latest Israeli assault rifles — the Arad and the Carmel — are set to be manufactured in India, ThePrint has learnt.

The assault weapons are to be produced under the 'Make in India' initiative in Madhya Pradesh, where a plant had been set up in 2017 by Israel Weapons System (IWI) in a joint venture called PLR Systems.

While Punj Llyod originally held 51 per cent shares in the joint venture, it was bought over by a company called Fouraces System India Private Limited with the Indian conglomerate facing debt issues.



An Arad rifle | www.iwi.net

The joint venture is aiming for contracts from the Special Forces of the Army, Navy and Air Force besides the central armed police forces and the state police, sources said.

Interestingly, PLR systems, now run by Col Ajay Soni, already manufactures number of small arms like the Tavor series, the mainstay of the special forces, in India along with others like the Galil sniper rifle, Uzi Pro submachine gun, Masada pistol and the Negev Light Machine Gun (LMG) with indigenous content ranging from 40-60 per cent.

Incidentally, the Army had last year contracted American Sig Sauer 7.62x51mm assault rifle, SIG 716, under a Fast Track Process (FTP) for 72,400 units after a long quest to change its INSAS rifles.

These rifles are to be used by the frontline troops while it has selected AK 203, a 7.62x39mm rifle, to be built in India under a joint venture between state-run OFB and Russian Kalashnikov Rifles, for the rest of the force.

“The plan is now to manufacture the Arad and Carmel, which are the latest offering from the IWI, in India through the joint venture,” a source in the know of the development said.

The sources said unlike in other cases where Make in India happens based on orders from the country, the PLR Systems are manufacturing the arms in India and then offering them for trials.

The company has already delivered various units to forces under the Home Ministry and the plan is now to offer Carmel and Arad.

Carmel and Arad

Carmel is a multi-purpose, modular, 5.56X45mm caliber assault rifle for modern warfare, which has been supplied to many customers around the world.

According to IWI, the rifle can be easily customised, depending on the operational needs, military or law enforcement tasks — vehicle patrol, CQB (close-quarters combat), undercover missions, short and medium combat engagement, diverse police operations, VIP protection, and more.

It is meant to be a fully ambidextrous platform, equipped with military standard 1913 Picatinny rails on all sides to allow compatibility with any available sights, devices or accessories.

Arad is an M4-type Assault Rifle, intended for all kinds of combat scenarios with its ability to change calibers. The rifle can be changed to shoot two different caliber bullets — 5.56 and 300 BLK.

The sources said the joint venture is also looking at export of the products it manufactures in India.

<https://theprint.in/defence/two-new-israeli-assault-rifles-arad-and-carmel-now-set-to-be-manufactured-in-india/459332/>



Sun, 12 July 2020

More than 60-70% of India armed forces equipped with Russian origin weapons: Indian envoy

The military technical cooperation between India and Russia is one of the most important pillars of the special and privileged strategic partnership between our two countries. Datla Bala Venkatesh Varma, Indian Ambassador to Russia, in an interview to “Krasnaya Zvezda” newspaper spoke about the state and perspectives of the military and military-technical cooperation between our countries.

“I would like to convey my congratulations to the Russian people, in particular, to the Veterans on the occasion of the 75th anniversary in the great patriotic war. This victory was possible due to the immense sacrifice of the Russian people as well as those from the former Soviet Republics. The defeat of Nazism was a historic turning point in world history. President Vladimir Putin’s Article on ‘The Real Lessons of the 75th Anniversary of World War II’ has many points of historic interest,” Varma noted.



Defence Minister Rajnath Singh represented India at the Victory Day Parade. “Our Prime Minister Narendra Modi was to attend the Parade on May 9th but due to the Covid Pandemic, this was not possible. Later the India’s Prime Minister conveyed his greetings to President Putin on telephone,” the envoy pointed out.

“The victory over Nazism was made possible in the second World War due to the combined efforts of a number of countries. Even though, India was not an independent country at that time, more than 2.3 million Indian soldiers were mobilized for the war. 14 million Indians were part of the war production effort. Indian soldiers fought bravely in North Africa and in South-East Asia. Most importantly, from Russia’s point of view, the Indian Army was involved in rendering supplies to the Soviet Union through Iran which, apart from the Murmansk route or the Far Eastern route, was of great significance to the Soviet War effort. Therefore, it is a matter of great honour that the memory of three Indian soldiers has been preserved in the new museum of the Patriot Park near Kalinka. These are Late Lieutenant (later Major General) Kalyan Singh, Subedar N.R. Nikkam, Havaldar Gajendra Singh,” the envoy recalled.

Varma stated that despite the restrictions of the COVID Pandemic, the Government took the decision to send the senior delegation, led by Defence Minister Rajnath Singh. This was the first visit of any official delegation outside India after the COVID Pandemic. This shows the special importance that Russia has in India’s foreign policy.

“Despite these difficulties with COVID Pandemic, our Defence Minister were accorded warm welcome and had an opportunity to meet Deputy Prime Minister Yuri Borisov. There was also a meeting of our delegation with Deputy Defence Minister Alexander Fomin. Our Defence Minister also interacted with the Tri-Service Indian Military contingent that marched in the Red Square. This included the Sikh Light Infantry whose bravery was recorded in many battles. Sikh Light Infantry has been established over 163 years ago. They have a very distinguished colourful uniform. The audience at the Red Square during the Victory Day Parade loudly applauded the Indian contingent.”

The military technical cooperation between India and Russia is one of the most important pillars of the special and privileged strategic partnership between our two countries. More than 60% to 70% of our armed forces in India are equipped with weapons of Russian origin, the envoy said, adding, Russia is also a very important partner for manufacture of defence items in India as part of Make in India programme.

“During the visit, our Defence Minister was assured that existing contracts would not only be implemented but they would be done so in shorter time. Our Defence Minister was fully satisfied with the assurances he received in Moscow. We see high potential from military technical cooperation. Defence Minister Shoigu has been invited to visit India towards the end of the year to participate in the next round of the Inter-governmental Commission on Military and Military Technical Cooperation.”

“International exercises are an important element of our military cooperation. However, due to the Covid Pandemic, some of these exercises has been postponed or adjusted to the new circumstances. In the next six months, we expect India to participate in the Kavkaz Exercises, including the annual Indra Exercises. However, in 2021, the normal routine of exercises will be restored.”

<https://idr.w.org/more-than-60-70-of-india-armed-forces-equipped-with-russian-origin-weapons-indian-envoy/#more-230777>

THE FINANCIAL EXPRESS

Mon, 13 July 2020

India to challenge China's foray in South America; To explore defence export opportunities

In a major policy shift, the government in its first term had notified a new strategy for export of defence products that not only encourages the sale of military equipment to foreign nations

By Huma Siddiqui

In a challenge to China's forays in South America, India is exploring the sale of various military platforms to the region. Diplomatic sources in the Indian missions in the region have confirmed to the Financial Express Online “Post COVID-19, there are opportunities to export defence equipment in the South American Region. Several private players and DPSUs are showing interest in the region.”

The region has been plagued by narco-terrorism. The drug cartels have been very active in the region right from Mexico down to Peru. And this fight against transnational organized crime and drug trafficking has increased the region's requirement for modern protection equipment for their security forces. “This makes it a potential market for military stores. Many of the countries and the police/ military forces of the region are engaged in the modernization of its forces which will give Indian companies the opportunity to exploit that market” explained a top diplomat.

On the list of systems that are likely to be exported include artillery systems, protected vehicles, electronic warfare, naval combat management system, military communications C4I solutions, small arms, night vision devices, and other related military equipment.

In a major policy shift, the government in its first term had notified a new strategy for export of defence products that not only encourages the sale of military equipment to foreign nations.

India-Chile Defence Cooperation

“Later this year an Indian Naval Delegation is expected to travel to Chile to attend the EXPONAVAL 2020 from December 1-4 at a naval base in that country. An invitation has been extended by the Commander of the Chilean Navy to Indian Navy Chief Admiral Karambir Singh and also for one of the Indian warships to attend an event at Valparaiso during their expo,” sources have confirmed to Financial Express Online. Also, an invitation has been extended to M/s BrahMos to participate in the event.

As per the laws for supply any industrial or defence equipment in Chile, companies all over the world are required to register themselves with the Chilean Armed Forces and the Joint Staff.

So far several Indian Companies with the help of the Indian Mission in Santiago have registered themselves with Chilean Armed Forces. Some Indian companies including M/s Brahmos; M/s Azista Industries; M/s Reliance Naval Engineering; M/s Goa Shipyard Ltd., are now registered. And registration of some companies including — New Space India Limited; Neo Power; Hindustan Aeronautics Limited; Ordnance Factory Board; and BEML is under process.

In March this year, the Chilean Navy has acquired an Anchor Handling Towing Supply and Standby Vessel (AHTSSV) ocean support vessel from Indian shipyard Larsen & Toubro Shipbuilding for a value of \$ 11.5 million. This unit was part of an order for four supply vessels (PSVs) and two vessels specializing in towing and handling and anchoring of offshore platforms (AHTSSV) made in 2013 by Halul Offshore Services Co. WLL (HOSC) from Qatar to L&T Shipbuilding. “The delivery of the AHTSSV, with around \$ 20 million each, was cancelled by HOSC in 2016 due to the fall in demand for services from the oil industry. The acquisition of the ship, which has been carried out through the Foreign Military Sales (FMS) modality of the United States Department of Defense, will be managed by the Naval Sea Systems Command (Navsea) and the pre-delivery work is scheduled to be completed in Chennai, soon,” an informed source told Financial Express Online.

The Chilean Navy is undergoing modernisation. And India could offer Indian shipyards and industry for major ‘Make in India’ initiatives. Also, there could be a possibility of co-operation in the field of ‘Scorpene’ Submarines. “The Chilean Navy has been operating this class of Submarine since 2005 and has developed considerable operational and maintenance expertise. And from India’s point of view, there could be cooperation in training, procedures, documentation, syllabi, maintenance and repair aspects including inventory management without the influence of the OEM,” explained a source.

What can India do in the region?

Delegations from the armed forces can visit these countries. And the Indian government can offer specialized training for officers in Basic and Advanced Mountain Warfare Courses. There could be cross deputation of instructors at respective training establishments. Cross deputation of instructors at respective training establishments; Cross deputation of observers during multinational exercises.

The focus markets will be Brazil, Argentina, Chile, Ecuador, Colombia, Bolivia, Mexico, El Salvador, Guatemala, Peru, Honduras and other countries in the region which are looking for body armour, plates, aircraft protection, naval protection, for homeland security—bulletproof jackets, helmets, night vision devices, general munitions etc.

MSME MKU Company based in the UP Defence Industrial Corridor has been perhaps the only one from India working in the region for a number of years now. And have been regularly supplying body armour for security forces of several of the Latin American countries.

Shipbuilding prospects with the South American Shipyards

Three nations in the region have three best shipyards that currently exist in the South American region: COTECMAR-Colombia; SIMA-Perú; and ASMAR-Chile. Though they already have full order books, Indian companies could look at joint ventures in shipbuilding.

The attraction for BrahMos Missiles

Besides Chile, countries like Brazil too had discussions with the BrahMos officials about the possibility of buying the missiles from India.

<https://www.financialexpress.com/defence/india-to-challenge-chinas-foray-in-south-america-to-explore-defence-export-opportunities/2021265/>

THE ECONOMIC TIMES

Mon, 13 July 2020

View: Quad is shaping up as the backbone of India's post-Covid foreign policy

By Indrani Bagchi

Synopsis

Our strategic reality warrants the militarisation of the Quad. India should shed its reticence

The opposition Congress party has come a long way from believing that India should use China's Belt and Road Initiative for its interests. Just this week, two senior Congress leaders — AM Singhvi and Deepender Hooda — advocated that India play a leading role in a more muscular Quad (a geopolitical grouping of US, India, Japan and Australia) to push back against an openly aggressive China, which tells its own story of a narrowing of political differences regarding China within India.

This week also saw the revival of the idea that Australia should join the annual Malabar naval exercises, which feature the navies of India, US and Japan. The only thing is, 2020 will have no Malabar exercise — Covid put paid to that. The earliest will be in 2021. So if India finally overcomes her hesitation, the first steps to militarise the Quad will take shape. The Quad 1.0 (2007) was almost stillborn.

But Quad 2.0 was almost a direct consequence of Doklam, even though the first statements on a “free and open Indo-Pacific” had been made by Shinzo Abe, Japanese PM. Post-Doklam, India agreed to tentative, “exploratory” meetings between senior officials of India, US, Japan and Australia, while Prime Minister Narendra Modi laid out the contours of India's own Indo-Pacific policy at the Shangri-La Dialogue in June 2018. For a long time, India was reluctant to conflate its Indo-Pacific policy with the Quad, maintaining that the former was “bigger” and more “inclusive” than the latter. Every meeting ended with all four countries issuing their own statements, according to their own priorities, a telling sign that they were still not on the same page — that balancing China was the glue that held them together.

Meanwhile, the US renamed its Pacific Command as the Indo-Pacific Command. India was still reluctant to include Australia into the Malabar exercise despite deepening its defence and security relationship with Canberra.

Two things started to tip the balance : the first meeting of foreign ministers of the Quad happened in September 2019. Second, India concluded logistics-sharing agreements with its Quad buddies (Australia predictably came through right at the end, in May 2020) as well as France,



The basic point should be that if India is challenged on the Himalayas by China, which will probably not end anytime soon, India has to take the battle to the oceans where it still enjoys a slight advantage.

which is India's Indo-Pacific insurance policy. Then Covid and China's creeping invasion in Ladakh happened. Covid not only showed that a virus originating in China could cripple the world, but that the world's dependence on China was also rather debilitating. China's invasion in Ladakh challenged India in ways it had not imagined earlier, leaving its relationship with China leaning on the reset button.

In the post-Covid world, the Quad will, if it hasn't already, become the most important grouping for India, both in terms of building alternative supply chains, collaborating on Covid treatments, vaccines, or even helping each other find their economic mojo again. It's in the area of defence and security that India will have to step off the fence and make some tough choices with regard to the Quad.

Military and defence strategists have already commented on the importance of building up Andaman & Nicobar Islands. So far, Japan is the only member of the Quad allowed in there. India might have to revisit this — if the US is developing Wake Island near Guam, there may be reciprocal options here in India. Especially if the Chinese are to be restricted in their access to Sittwe port in Myanmar and Chittagong in Bangladesh, and, on a larger scale, in the Indian Ocean.

India needs better defensive posts in the Horn of Africa (probably best not to add to the crowd in Djibouti) where it can challenge China more effectively. In the south-central Indian Ocean, the India-US and India-France relationships will stand us in good stead. Much greater investment is needed both in Sri Lanka and Maldives. A little display of tough love in Bangladesh would not be out of place either.

The basic point should be that if India is challenged on the Himalayas by China, which will probably not end anytime soon, India has to take the battle to the oceans where it still enjoys a slight advantage. For that, the Quad is invaluable.

Consider this: just in July, China conducted military exercises in the South China Sea near the Paracel Islands. They have been intimidating Vietnam off the Vanguard reef for weeks now. Chinese Coast Guard ships have been wandering in Japanese waters near the Senkaku Islands for a record 39 hours and 23 minutes at a stretch. Even the Philippines has protested against Chinese military drills in the South China Sea. "Should the exercises spill over to Philippine territory... it will be met with the severest response, diplomatic and whatever else is appropriate," said Teodoro Locsin Jr, foreign secretary of Philippines.

Instead of sitting at the Russia-India-China trilateral in the middle of a Chinese invasion in Ladakh, India should get more hard-headed in its approach to China. The Quad is not a panacea, but it's shaping up as the backbone of India's post-Covid foreign policy. The evolving geopolitical situation demands that the group displays military heft.

As Darshana Baruah, one of the foremost experts of India's Indo-Pacific strategy, observes in a recent paper for Carnegie Endowment for International Peace: "The rise of China across the Indian and Pacific Oceans challenges the security umbrella established at the end of Second World War and strengthened after the end of the Cold War. The emergence of the Indo-Pacific as a new geographic space — bringing together the Indian and the Pacific Oceans — represents the new strategic reality of the twenty-first century."

<https://economictimes.indiatimes.com/news/defence/view-quad-is-shaping-up-as-the-backbone-of-indias-post-covid-foreign-policy/articleshow/76914237.cms>

India isn't alone in dharmayuddha against Beijing

By Swapan Dasgupta

It is unlikely that anyone in the Indian government seriously considers the terms of the India-China military disengagement in the Ladakh sector of the Line of Actual Control to be anything but a temporary truce. While agreeing to halt its creeping aggression in the short run, China has also made it clear that it neither acknowledges the sanctity of the LAC nor is it willing to abandon its claims of sovereignty over Ladakh and Arunachal Pradesh — regions it claims as historically parts of Tibet and, by implication, China.

For the past two decades at least, there has been a debate in India over how to view China: as a competitor or an adversary. If nothing, the deaths of 20 Indian soldiers in the Galwan Valley, coming barely three years after the prolonged face-off in the India-Bhutan-China border at Doklam, has settled this question quite conclusively. The near-national consensus over its designs on the borders hasn't, however, extended to strategies to deal with the China threat to India's sovereignty and territorial integrity.

Predictably, the emergence of a national consensus has been marred by internal political calculations. It is not altogether curious that the most trenchant critics of Narendra Modi's handling of the border kerfuffle happen to be those who have consistently opposed him since 2014 or before. Some Opposition leaders have delighted in the fact that Prime Minister Narendra Modi's bid to strike a personal relationship with China's supreme leader Xi Jinping hasn't paid dividends. Others have taken perverse pleasure in arguing that China has set its sights on overtaking the United States as the number one global power and considers India to be at best an Asian irritant. The implication is that Modi's attacks on the culture of "expansionism" is tantamount to India punching above its weight.

The understanding of China's Middle Kingdom mentality may well be accurate but, unfortunately, the critics don't stop at stressing the daunting challenges before India. By celebrating China's spectacular rise from Deng Xiaoping to Xi Jinping, there is also the policy prescription that it is futile for India to resist the emergence of a unipolar Asia, and that it is best to negotiate the terms of honourable subordination with Beijing. Although this is never stated explicitly, this 'Vichy mentality' is discernible. It has been craftily masqueraded in the assertion that the Belt and Road doctrine is a meaningful alternative to West-dominated globalisation and promises a 'community of shared destiny'; that with a hostile Pakistan in the western border, India must avoid a second front at all costs; and that pan-Asian resurgence is a loftier goal than intransigence over fuzzy borders. From the Bandung Conference to the 1962 war, Jawaharlal Nehru's China policy was centred on a misplaced faith in pan-Asian solidarity. He was guilty of woolly naivete. Today's appeasers couch their indulgence of China in the logic of realpolitik and, in some cases, handsome business returns.

Without doubt, China has cultivated influential friends and they are by no means confined to those who still wave a red flag. The willingness to gloss over China's single-minded military and strategic expansion, the ruthlessness of its internal regime, its unethical commercial practices, including the brazen theft of technology, and its emulation of 19th-century European imperialism in parts of Asia and Africa is remarkable. It is a testimony to China's successful global soft power outreach that hegemonic designs have been cast in a benign garb. Those who dance to China's tune include capitalists preoccupied with global supply chains, decision-makers with an eye on kickbacks Chinese companies are only too willing to negotiate, the Taliban in Afghanistan that has been bankrolled in bad times, Third World oligarchs that appreciate China's disdain for human rights and sundry intellectuals who love a good junket. The China lobby is formidable and more varied than anything the Soviet Union was able to build during the Cold War.

It is prudent to acknowledge that a lone struggle by India against a rampaging China would have made limited headway. Fortunately, in the wake of Covid-19, there is greater global appreciation of the fact that China has gone too far. The West may be in decline and the centre of economic power may be shifting eastwards, but it is still resourceful enough to mount a fightback. India stuck its neck out by frontally opposing Belt and Road, thereby earning the intense displeasure of China. Now it must shape its diplomacy and economic outreach to align with all those who cherish prosperity with democracy and national independence. It is going to be in the frontline of an emerging dharmayuddha.

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

<https://timesofindia.indiatimes.com/blogs/right-and-wrong/india-isnt-alone-in-dharmayuddha-against-beijing/>

hindustantimes

Sun, 12 July 2020

How PM Modi called China's bluff in Ladakh

Xi Jinping is on an expansionist spree. But India has set the momentum for resistance. Others are joining in

By Shishir Gupta

After the successful outcome of the July 6 meeting between National Security Adviser and Special Representative for boundary talks, Ajit Doval, and his counterpart and Chinese foreign minister, Wang Yi, there has been a palpable lowering of tensions between the Indian and Chinese armies along the 3,488 km Line of Actual Control (LAC). The aggressive Chinese People's Liberation Army (PLA) has thinned its presence at Finger Four in Pangong Tso, has withdrawn from forward positions to base camps in the Galwan sector, and is on the way back to its April positions in the Gogra and Hot Springs area. Disengagement has begun with de-escalation to follow in next three weeks — three divisions (30,000 troops) each of the Indian and Chinese armies are still facing each other from Ladakh to Arunachal Pradesh.

There is a certain amount of satisfaction among national security planners that the Indian military stood up to PLA, but the massive bilateral erosion of trust after the June 15 flare-up has convinced the Narendra Modi government that Beijing will be back on LAC, perhaps at Depsang Plains in Ladakh, next summer. For a country which believes that it is a global superpower, 2017 Doklam and 2020 Galwan are mere tactical mistakes in power projection and ambition.

That Prime Minister (PM) Modi will think a hundred times before he does a Wuhan or Chennai connect again with paramount leader Xi Jinping is akin to a traffic ticket for the Middle Kingdom. For a rampaging China, it is only the big picture that matters.

The Chinese expansionist posture in Ladakh is intertwined with the country's plans in the South China Sea — something that is evident by looking at the world map. Beijing wants the Shyok river alignment to be the border with India in Ladakh so that the multi-billion dollar China-Pakistan Economic Corridor is further away from the Indian military positions, and also to ensure it gets a better all-weather route linking the Tibet Highway in Aksai Chin to the Karakoram highway south of the Khunjerab pass.

With Pakistan now reduced to a client State of China, it is through the port of Balochistan that the PLA Navy will dominate the oil trade in the Persian Gulf and the Arabian Sea. The Chinese base in Djibouti and Beijing's huge influence on Africa's eastern seaboard will allow it to



Prime Minister Narendra Modi interacts with the Indian troops during his visit to the forward post at Nimu in Ladakh(PTI)

dominate the sea route from Suez Canal. The strategic location of both the Gwadar and Djibouti bases makes this amply evident to any military planner.

The Chinese military's ambition in the South China Sea is not only limited to dominating more than half of world trade passing through the Malacca, Lombard and Sunda Straits, but to also capture Taiwan as part of One China Policy to, then, break out from its backyard and contest the dominance of the Pacific Ocean with the United States (US) Japan and Australia. The military key to this posture is the presence of ballistic missile firing Chinese nuclear submarines at Yulin Naval Base at Hainan Islands, just north of Vietnam.

As a military plan, all this looked good and achievable, till such time India, under PM Modi, called the Ladakh bluff and the mighty US Navy simultaneously pincer Beijing by challenging the PLA Navy in the South China Sea. Currently, supercarriers USS Ronald Reagan and USS Nimitz are not only orchestrating a full spectrum war game in the South China Sea but also daring Beijing's mouthpieces who threaten to use DF-21 D and DF-26 "ship killer" nuclear missiles on carriers. The US task forces now dominate all the exit routes from the East and South China sea in Miyako, Bashi Channel and Luzon Strait through which the global internet cables pass undersea.

Asean countries are also unhappy with China, and Japan is finally standing up to Beijing in the Senkaku Island dispute. Australia and Canada have called out China, and Europe has finally woken up to the reality of a Communist State. If one were to look at the big picture, then the global pushback against China was inspired by the Galwan fightback and followed by US President Donald Trump translating America's often stated but never implemented Asian Pivot objectives on the sea. The plight of the Buddhist people of Tibet and Muslim Uighurs in Xinjiang under the traditionally xenophobic Han Chinese is back on the global agenda, and suddenly things don't look so good for the general secretary of the Chinese Communist Party.

Rather than distracting countries from the global fight against the marauding coronavirus, which originated from Wuhan, by indulging in a war dance in Ladakh and the South China Sea, China should be at the forefront of the battle against the pandemic. It needs to de-escalate from both the areas and not wait for another opportunistic strike when the world is focused on US Presidential elections in November 2020 as it did against India in 1962 taking advantage of Cuban Missile Crisis.

Taking a leaf out of past paramount rulers, China needs to settle the borders on basis of the 2005 agreement on the Political Parameters and Guiding Principles of the India-China Boundary Question. President Xi surely understands the popularity of Modi, whom much of India followed faithfully through the painful demonetisation and total lockdown. But the global bully that China has become, it understands only the language of power, and the economic, military might and technological superiority of the US. Had the India-US nuclear deal been nixed by opponents in India, the 2005 border agreement would have never come through. Beijing will not forget 2020, the year of the metal rat in the Chinese calendar, in a hurry. The world, particularly India and the happy tiny kingdom of Bhutan, will hear the echoes of this in the future.

<https://www.hindustantimes.com/analysis/how-pm-modi-called-china-s-bluff-in-ladakh/story-AKpv1q56OsH87tVp6ssBnL.html>



Mon, 13 July 2020

Chinese order of battle in Aksai Chin: What are we up against?

The Chinese have been quick to reinforce their troops in Aksai Chin facing India's XIV Corps. Some of these additional forces had come in earlier as part of the pre-planned push to secure Indian territory. Reserves have been inducted to counter Indian deployment aimed at undertaking offensive operations. What did the Chinese have in the area for border management before launching Operation Land-Grab and what have they added? According to the International Institute for Strategic Studies, London, before the start of the confrontation, the People's Liberation Army (PLA) had three border-defence companies based close to the areas in question in Aksai Chin.

Two were drawn from the 362nd Border Defence Regiment one being located at the 19th century Khurnak Fort on the north bank of the Pangong Tso and the other at the Spanggur Tso to the south. The third is located at the Kongka La Pass near the Indian post at Gogra/Hot Springs, and belongs to the 363rd Border Defence Regiment. All these sub-units patrolled the LAC running into Indian patrols and were used to make the initial intrusions.



Border Defence Regiments are on a par with regular troops in equipment, (except in armoured fighting vehicles) communications and leadership. Their counterpart is the Indo-Tibetan Border Police which hold posts along the LAC and are backed up by infantry battalions of the Army patrolling the boundary in rotation from nearby camps.

There is also a Chinese patrol boat squadron on Pangong Lake itself. All these sub-units taken together would amount to around 500–600 personnel. Reacting to the changed situation, it is likely that additional troops drawn from one or both of their parent Border Defence Regiments' operational reserves have also been deployed to the area, raising the total PLA border forces in the area to 1,000–1,500 personnel.

The border troops have been reinforced by mobilising more combat forces, most likely from the 6th Mechanised Infantry Division, a northern or high-altitude manoeuvre formation. This formation is normally based at a distance from the Aksai Chin on the southern boundary of the Taklamakan Desert. It constitutes the Southern Xinjiang Military District's primary operational reserve and is earmarked to be first responders to any operational crisis in the region. This deployment replicates that of the 2017 Doklam crisis where border management troops manned the frontline with manoeuvre regiments from regular formation held further back as a striking reserve.

By May-end, units of main battle tanks and batteries of towed artillery had been deployed at existing Chinese positions north and east of Gogra. This combination of heavy armour and towed artillery is now quite rare in the PLA following the latest military reforms. Normally armoured fighting vehicles would be supported by self-propelled artillery. What is known about the 6th Mechanised Infantry Division is that it has still to receive self-propelled artillery. This is also true of the three other mechanised divisions in the Xinjiang Military District.

In the Pangong Tso and the Fingers Area, the Chinese have now stationed themselves in a strong way in Finger 8. On May 18 and 19, the PLA had brought in around 2,500 troops to the sub-sector. These were regular rather than Border Defence Regiment personnel. This was done very visibly the obvious intention being to overawe the relatively smaller Indian contingent facing them on the lake's bank. They have established a logistics hub along with deployment of armoured

fighting vehicles. Bigger boats for dominating the water bodies and transporting assault troops across them have been brought in. The road built by the Chinese from Finger 8 to Finger 5 alongside the lake also helps them in the quick transfer of troops from there to the Finger 4 base. There is considerable Chinese build-up. This has resulted in shorter reaction time and time taken for movement of troops.

In the Galwan River valley, a Chinese infantry platoon deployed at Patrolling Point 14 (PP14) had been withdrawn by the fourth week of May. The main PLA camp was then established three kilometres further back in territory already occupied by them. We do not know at the moment whether this unit is supported by armour or artillery. Such manoeuvre or fire support seems unlikely in the absence of viable road communications. This has been planned for some time but remains unfinished. A further reinforcement of the sector seems unfeasible at the moment.

What is known is that China now has built up force levels along the LAC to include another mechanised infantry division trained and equipped for high-altitude warfare. Which one could this be? My view is that either 8th or 11th Motorised Infantry Divisions, part of the Xinjiang Military District's three mechanised formations held in reserve some distance from the Aksai Chin have been deployed.

Indian Humint, Comint and Techint are closely watching the activities, readiness status and operational preparations of another 10,000-12,000 Chinese troops deployed in Xinjiang with high mobility vehicles (Chinese copies of Humvees) and weaponry in the rear positions with the capability to reach the LAC or depth positions ready to launch offensives or in a counter-penetration role within a period of two days. This could be 4th Motorised Infantry Division stationed at Aksu. Its induction into the theatre could tilt the scales in favour of the PLA.

The Chinese normally have two divisions trained and equipped for mountain warfare deployed in the Tibet region. Generally reliable sources claim that reacting to the current crisis and Indian build-up they have brought in close to two extra divisions from locations as far as 2,000 kilometres from mainland China as a counter-measure. This is outside the Aksai Chin region.

The Chinese have a formidable number of troops in Aksai Chin with armour artillery, air defence, drones, helicopters, air support and mechanised infantry. The regional command of the Western Theatre which commands all troops posed against and oversees operations against India has a number of reserves awaiting deployment.

Deploying Air Power against the Chinese

A number of mistakes were made in the conduct of the 1962 war. By far the biggest one was not using our medium-sized but formidable air force for offensive air operations. Our Canberras, Hunters, Mysteres, Gnats, Ouragans (Toofanis) and Vampires flown by well trained and motivated pilots would have interdicted Chinese lines of communication, strafed, bombed and rocketed their artillery batteries, troop concentrations, headquarters, supply columns and even forward elements. Though combat air patrols and reconnaissance flights were flown by the IAF they were forbidden from firing even a single round. Air Marshal MM Singh, then a Squadron Leader commanding 24 Squadron (Hawks) saw a strong enemy column moving towards one of our forward defended localities in the Walong sector while flying a recce mission in his Vampire fighter. He dived down and had the satisfaction of seeing them scatter in panic even though he wasn't able to fire even a single shot. It was galling for a professional fighter pilot to be thus hamstrung while troops on the ground were fighting for their lives.

IAF helicopters played a major role in reconnaissance, casualty evacuation, supply of otherwise cut-off posts and communications. Squadron Leader Vinod Sehgal volunteered to fly in his Bell helicopter to the Namka Chu and find out what was the ground situation after communications with the formation under attack there were lost by the divisional headquarters on the first day of the war. Unaware that the Chinese were already targeting the helipad, he tried to land and was shot down, and killed while exiting the machine and making for cover. Here a couple of helicopters fitted with machine-guns and lobbing bombs on advancing enemy troops would've caused attrition and boosted the morale of the stricken Indian defenders. But the aggressive spirit so essential for such

improvisations was sadly missing. The government irrationally worried over Chinese retaliation against civilian targets had curbed the fighting spirit of the IAF.

Transport aircraft played a major role in 1962. From moving troops to far-flung destinations to supplying posts dependent solely on air-drops to strategic airlift the IAF was everywhere. AN-12s operating from Chandigarh transported AMX-13 tanks to Chushul making a significant impact on the operations in and around the airbase. It was a masterly exercise in improvisation and airmanship. A salute to the transport fleet!

While no air intrusions have been reported by the PLAAF (the Chinese Air Force) the IAF is on full alert. Combat air patrols are in full swing including night sorties. Frontline air-superiority fighters like the Su-30 MKIs, Mig-29s, Mirage 2000s and Jaguars have been moved to operational bases in Jammu and Kashmir, Punjab and Haryana. Bases at Avantipura, Pathankot, Adampur, Chandigarh, Halwara, Ambala etc are on high alert.

Apache helicopters armed with Hellfire missiles are ready to take on Chinese armour and mechanised infantry. Not for nothing is the aircraft known as a super tank-killer. Chinook heavy-lift helicopters have been deployed for tactical troop movements, casevac and supply functions. Significantly, the Chinook can carry the M-777 ultralightweight 155mm medium howitzer unslung. This will add greatly to the punch and mobility of strike formations.

Strategic airlift is the IAF's forte. Using C-17 Globemasters and C-130J Super Hercules transport planes tens of thousands of battle-ready troops have been flown into Ladakh along with the weapons and equipment. Shorter flights with lesser loads have been undertaken by Ilyushin IL-76s. A large share of the burden of logistically maintaining the additional troops inducted into the theatre with food, ammunition, medicines, tentage, housing and other supplies through the winter will fall on the transport squadrons.

Quick-reaction surface to air missiles (SAMs) fielded by both the IAF and the Army have been positioned at strategic spots to undertake the air defence of installations, supply and ammunition dumps, command and control centres and troop and armour concentrations. Defend Indian air space in short. Medium-range, mobile Akash missiles are included in these. These have been modified for deployment and use in high-altitudes.

Eastern Ladakh Sitrep: 9th July 2020

The Prime Minister's visit raised the morale of the armed forces and the citizens of Ladakh. The visit and the public posturing therein indicated the temporary failure of the military-level talks aimed at de-escalation and disengagement of forces. The rhetoric and the hard intentions displayed had their effect. The Special Representative-level talks seem to have resolved matters to some extent. There are reports albeit carefully worded and guarded in nature of Chinese troop withdrawals and corresponding Indian disengagements.

All for the good. Things could be improving. What do we have to look out for in the future? We could be showing undue urgency for de-escalation. The Chinese have laid claim to the entire Galwan Valley and dominating heights. Their behaviour and moves even after a rearward move would have to be very carefully watched. Very definite and accurate reconnaissance and surveillance systems have to be put into place besides the use of human resources. Eyeballs Mark I in an Indian skull alone will not suffice! Anything out of the ordinary will be suspect. In this sector the Chinese have access to only a dirt track to move troops, vehicles and supplies. Macadamising i.e. black-topping of this road will indicate without a doubt that the Chinese are repudiating any agreements made with us. This is the reality of today.

The People's Republic of China as a matter of national policy uses force and negotiation at the same time. We must be prepared to not just play the same game with them but beat them at it. A new professionalism, a new ruthlessness must take root. Wishing to forever occupy the moral high ground is passé. We must learn the right lessons and modify our strategic imperatives. While the Chinese give preference to the big picture our thinking is the exact opposite – tactical in nature.

Lastly, the reserve formations moved to Eastern Ladakh will in the main have to be kept there in the interim at least through the winter. Such is the fickle nature of agreements with the Chinese!

This will add immensely to our logistics load and administrative burden. We must be prepared for that. It has to be remembered that in foreign policy as in war there are no prizes for runners-up.

<https://idrw.org/chinese-order-of-battle-in-aksai-chin-what-are-we-up-against/#more-230787>



Mon, 13 July 2020

AGM-158C LRASM: Indian P-8 fleet soon will have far deadlier missile than BrahMos

In 2020, the U.S. Navy began the process of integrating the AGM-158C LRASM onto the P-8 Poseidon maritime patrol aircraft, Trials of which they plan to be completed by 2026 and missiles system made available for entire P-8 Operator including Indian Navy which is currently the second-biggest operator of the type after USN.

AGM-158C LRASM will supersede AGM-84D Block 1C Harpoon anti-ship missiles which are currently deployed by all P-8 Operators including India and is designed to meet the needs to fight in contested environments. According to US media reports, India and Australia have been selected as the first few countries that will get LRASM to strengthen their firepower in an increasingly contested Indo-Pacific region.



AGM-158C Long Range Anti-Ship Missile is a stealthy anti-ship cruise missile developed for the United States Air Force and the United States Navy. LRASM has a range of 450 km to 1000 km depending on the warhead used which is 450kgs for 450 km range if reduced it improves upon its range, which means each P-8 aircraft can carry two different LRSAM with two different warheads with two different range.

LRASM is a subsonic and Stealthy cruise missile that is equipped with sophisticated autonomous targeting capabilities, mid-course guidance, low-altitude profile, and obstacle-avoidance algorithms which even with subsonic speeds makes it far deadlier than current contemporary missiles. LRASM is designed to detect and destroy specific targets within groups of ships by employing advanced technologies that reduce dependence on intelligence, surveillance and reconnaissance platforms, network links, and GPS navigation in electronic warfare environments.

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<https://idrw.org/agm-158c-lrasm-indian-p-8-fleet-soon-will-have-far-deadlier-missile-then-brahmos/#more-230755>

Russia offers to organise RIC defence ministers' meet

Russia has emerged a key political actor in China-India ties and was involved in quiet diplomacy to salvage RIC Foreign Ministers meet last month after PLA killed 20 Indian Army personnel in the Galwan Valley

By Dipanjan Roy Chaudhury

New Delhi: Russia has proposed to organise a Russia-India-China (RIC) defence ministers' meet this year, said people aware of the matter--a move that can act as a confidence building measure between New Delhi and Beijing amid their nearly two-month-long border standoff.

The proposal has been put forward by Russia as it holds the current presidency of RIC. The meet is still being planned and no date has been firmed up yet, the persons cited earlier said.

On Thursday, Russian envoy to India Nikolay Kudashev told a select audience that "the Russian presidency in BRICS and SCO in 2020 had to adjust formats of the events, shifting focus on video conferences. Just recently, we had conducted successful BRICS and SCO (Shanghai Cooperation Organisation) virtual ministerial meetings. Also, on June 23, we had a very constructive RIC Foreign Ministers' virtual conference, which demonstrated our common desire to further expand the trilateral agenda, including by involving defence ministries' dialogue".



Russian officials ET spoke with said this CBM would contribute to greater stability in Eurasia. Russia has emerged a key political actor in China-India ties and was involved in quiet diplomacy to salvage RIC Foreign Ministers meet last month after PLA killed 20 Indian Army personnel in the Galwan Valley.

At the June 23 RIC meet, Indian foreign minister S Jaishankar had a subtle but important message for his Chinese counterpart Wang Yi. "The challenge today is not just one of concepts and norms, but equally of their practice. The leading voices of the world must be exemplars in every way. Respecting international law, recognising the legitimate interests of partners, supporting multilateralism and promoting common good are the only ways of building a durable world order."

ET has learnt that India favours supporting Russia on the greater Eurasian stability while it seeks Moscow's support for its inclusive Indo-Pacific vision.

India is in talks to conclude a free trade agreement (FTA) with Russian-led Eurasian Economic Union that would open a huge market for India. Earlier, Russia had played a key role in India's entry into the SCO as a member amid China's dilly-dallying.

Earlier, the Russian government had quietly turned down China's reservation against arms supplies to India as defence minister Rajnath Singh visited Moscow to expedite supplies of key defence platforms, ET has learnt. Moscow, notwithstanding its ties with Beijing, made it clear that it cannot be dictated and it is Russia's sovereign decision to supply arms to its partners.

Prime Minister Narendra Modi's recent phone call to the Russian president reaffirmed defence partnership, including early supplies of key defence platforms to India. Modi was the first world leader to telephone Putin following the constitutional referendum.

<https://economictimes.indiatimes.com/news/defence/russia-offers-to-organise-ric-def-ministers-meet/articleshow/76900346.cms>

Australia may soon join India, US, Japan for mega Navy Drill in Indo-Pacific: Report

If India decides to include Australia in the exercise, then it will comprise all members of the "Quad" or quadrilateral coalition which was set up with an aim to ensure peace and stability in the Indo-Pacific and check China's increasing efforts to expand military influence in the region

New Delhi: India is favourably considering Australia's keen interest to be part of the next edition of the Malabar naval exercise which is scheduled to be held later this year, people familiar with the development have said.

If India decides to include Australia in the exercise, then it will comprise all members of the "Quad" or quadrilateral coalition which was set up with an aim to ensure peace and stability in the Indo-Pacific and check China's increasing efforts to expand military influence in the region.

In November 2017, India, US, Japan and Australia gave shape to the long-pending "Quad" coalition to develop a new strategy to keep the critical sea routes in the Indo-Pacific free of any influence.

India is favourably considering Australia's interest to be part of the Malabar exercise, sources told news agency Press Trust of India, adding that a formal decision is likely to be taken in the next couple of weeks.

The indication of India's willingness to include Australia in the Malabar exercise comes in the midst of a bitter border row between Indian and Chinese troops in eastern Ladakh.

The Malabar exercise started in 1992 as a bilateral drill between the Indian Navy and the US Navy in the Indian Ocean. Japan became a permanent member of the exercise in 2015.

For the last few years, Australia has been showing keen interest in participating in the exercise.

Defence and security ties between India and Australia have been on an upswing in the last few years.

Last month, India and Australia elevated their ties to a comprehensive strategic partnership and signed a landmark deal for reciprocal access to military bases for logistics support during an online summit between Prime Minister Narendra Modi and his Australian counterpart Scott Morrison.

The Mutual Logistics Support Agreement (MLSA) allows militaries of the two countries to use each other's bases for repair and replenishment of supplies besides facilitating scaling up of overall defence cooperation.

(Except for the headline, this story has not been edited by NDTV staff and is published from a syndicated feed.)

<https://www.ndtv.com/india-news/malabar-exercise-australia-may-soon-join-india-us-japan-for-mega-navy-drill-in-indo-pacific-2260875>



Sun, 12 July 2020

South Korea urges India to conclude the deal for K-30 Biho anti-aircraft system

Union Defence Minister Rajnath Singh recently spoke to Jeong Kyeong-Doo, Minister of National Defence, Republic of Korea, over phone yesterday. During the conversation, the ministers reviewed the progress on various bilateral defence cooperation initiatives and expressed commitment to further promote defence cooperation engagements between the two armed forces. Doo urged Singh to conclude the deal for the South Korean made K-30 Biho anti-aircraft system which Indian Army had selected in 2018.

The contract has been stuck after Russia filed objections and claimed the Indian Army did not properly test its weapon system and showed favoritism towards the South Korean anti-aircraft system, Hence requested to re-start the bidding process. According to media reports, two separate systems offered by Russia included upgraded Tunguska M1 and Pantsir missile systems which both failed tests, with the most critical being mobility trials where they could not perform as per the requirements.



Under self-propelled air defence gun missile system (SPAD-GMS) tender, Army wanted to procure 104 K-30 Biho systems, 97 ammunition carriers, 39 command vehicles, 4,928 missiles and 172,260 rounds of ammunition, bringing the contract's total value to \$2.5 billion but due to several objections and complaints by the Russian side, India is yet to move towards the stage of price negotiations since ministry's internal monitoring committee is yet to file its finding report. Russia is seeking another chance for field trials to prove its systems meet all technical requirements.

The selection of K-30 Biho was the second major win for a South Korea in India, after the procurement of the K-9 'Vajra' self-propelled artillery systems.

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<https://idrw.org/south-korea-urges-india-to-conclude-the-deal-for-k-30-biho-anti-aircraft-system/#more-230775>

Sun, 12 July 2020

'Young will do the job': ISRO Chief K Sivan confident of India beating China in space tech

ISRO Chief K Sivan expressed confidence that young Indian scientists can develop technologies that can beat China in the space race and be a tech powerhouse

By Shubhayan Bhattacharya

Indian Space Research Organisation (ISRO) chairman Kailasavadivoo Sivan expressed confidence that young Indian scientists can develop technologies that can beat China in the space race and maintained that India has shown, it is second to none.

Speaking to Republic TV's editor-in-chief Arnab Goswami on his show - Nation Wants to Know, the acclaimed scientist said, "I'm sure that may be in the future, in some technologies, we will be able to beat China. Our youngsters are definitely capable of developing such technology. We always show that we are second to none. We can always make our India, technologically more powerful and I'm sure our youngsters will do the job."



Space is vast, so are opportunities: K Sivan

Maintaining that the lucrative space sector has a lot of opportunities for new-age entrepreneurs to exploit, K Sivan held that India's young will work hard to make the country a tech powerhouse in the world.

"Space is a vast area. There is a lot of opportunities for new entrepreneurs to develop new technology. I am sure that Indian brains are not less than anyone else in the world. I dream one day, India will be the number one technology powerhouse globally. I want youngsters to work for that and achieve that," the ISRO Chief said.

ISRO Chief's dream project

When asked about his dream project, K Sivan stated that it is his vision to send a man in the orbit and bring him back safely. He said, "I would like to say that my dream is to put a man in the orbit and bring him back safely. This is one vision that I have. When we talked about Aditya L1, it is similar to any other mission, only thing is the payloads are different. and when you talk about the venus mission, it is similar to what we have achieved with the Mangalyaan mission. Whereas the Ganganyaan mission, which is 100% totally indigenous, and it needs a lot of new technology that needs to be developed."

<https://www.republicworld.com/technology-news/science/isro-chief-k-sivan-confident-of-india-beating-china-in-space-tech.html>

'India will get many Elon Musks': ISRO Chief opens up on privatisation of space sector

ISRO Chief K Sivan, talking to Republic Media Network's Editor-in-Chief Arnab Goswami expressed what he expects from India opening its space to private sector

By Bhakti Hargunani

Talking to Republic Media Network's Editor-in-Chief Arnab Goswami on his show - *Nation Wants To Know*, Indian Space Research Organisation Chief Dr K Sivan expressed what he expects from India opening its space to the private sector. When asked about whether the Chief sees India creating its own Elon Musks and Crew Dragon-like astronaut missions after SpaceX's (a private company) historic launch of NASA astronauts in May, Sivan said that India will definitely get many Elon Musks in the future.

'There will be Elon Musks from India'

"What I am saying is, if not immediately, in future, I am sure we (India) will get many Elon Musks. It is the kind of enthusiasm that our startup companies are providing for technology development. At the same time, big industries are also showing interest over getting into our space venture. I am sure that in future, there will be Elon Musks from India," said Dr K Sivan.

Dr K Sivan also talked about the kind of system that exists in ISRO that helps him reduce the stress while handling such a big responsibility. Calling the system 'beautiful', Sivan said that everybody shares the load. While the launch vehicle team handles the launch vehicle thing, the crew module is similarly handled by the satellite team. Dr Sivan added that the Chairman's job is to put the teams together and make sure they work in an even direction. Praising ISRO, the Chief said that the load is distributed and 'cultured' at the organisation.

Private sector participation in space activities

Earlier, on Jun 24, aiming to boost private sector participation in the entire range of space activities, the Union Cabinet approved reforms in the space sector. Taking the decision in line with Atmanirbhar Bharat, Union Minister of State for Atomic Energy and Space, Jitendra Singh, also announced the formation of a new institution - Indian National Space, Promotion, and Authorisation Centre or IN-SPACE. The body's role was extended into ISRO.

ISRO Chief Dr K Sivan praised the Centre's move, terming it as 'transit into a new Space era'. "Far-reaching reforms will put India in a league of few countries with efficient promotional and authorisation mechanism for private-sector space activities", he said.

Crew Dragon's historic launch to the ISS

Making history, The NASA-SpaceX Crew Dragon capsule was launched from the Kennedy Space Centre's launch pad Pad 39A on May 30 at 3:22pm EDT to the International Space Station. The launch was a first-of-its-kind from the American turf.

Elon Musk, the CEO of SpaceX is the first private space company to have launched a rocket with NASA. With India opening up private sector participation in space activities, questions regarding India's own SpaceX and Elon Musks are often talked about.

<https://www.republicworld.com/technology-news/science/isro-chief-talks-about-india-getting-many-elon-musks-in-future.html>

Scientists from NUST MISIS create the stealth technology that can make antennas and airport towers “invisible”

By Lyudmila Dozhdikova

Physicists from NUST MISIS together with their colleagues from the Polytechnic University of Turin (Italy) and the Scientific and Technological Center of Unique Instrumentation of the Russian Academy of Sciences (STC UI RAS) have developed a technology that makes various elongated objects, such as antennas and various sensors, aircraft landing gears, ship masts and airport towers “invisible”. This means that the technology will allow objects to pass radar signals through, without “giving out” the location.

The invention is based on an innovative metamaterial that eliminates an object’s electric type scattering. The result has been published in the Scientific Report international scientific journal.

Any elongated metal object, for example, antennas or cell towers, including the 5G ones, has an electric response – a signal that appears in response to an impact. To hide such an object from radars, the object must begin to scatter light, like an object with a *magnetic response*, which is very weak. This was accomplished by scientists from the Russian-Italian scientific collaboration, in the framework of the “ANASTASIA” project (Advanced Non-radiating Architectures Scattering Tenuously And Sustaining Invisible Anapoles), named after the Grand Duchess of the Russian Empire Anastasia Romanova.

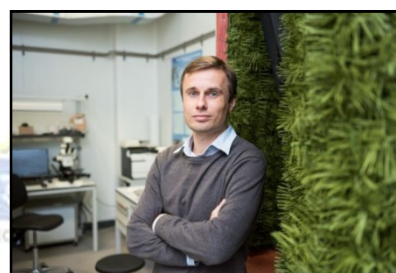
“We came up with a special coating based on an ideal magnetic dipole scatterer that turns an elongated metal object with an electric response into an object with a magnetic response,” said one of the researchers, associate professor at the NUST MISIS Superconducting Metamaterials Laboratory, Alexey Basharin.

“This has become possible due to the anapole state of the coating material, which lowers the electric type scattering to the level of the magnetic one and even lower. As a result, the object becomes invisible.”

The first of the possible applications of the new coating will be STEALTH technology for military and civilian purposes – to hide various elongated objects, such as aircraft landing gear, antennas and various sensors, ship masts and airport towers. The developers emphasize, that if the task of hiding these objects from enemy radars is trivial, the task of electromagnetic compatibility of antennas on satellites is vital: antennas must not affect each other. And this will be possible only if they are invisible.

The method will help hide the structures of airports, operator towers so that they do not interfere with radar and communications with pilots. Besides, the development will find application in the so-called “Magnetic light” tasks, where it is necessary to enhance various magnetic phenomena: in nano-antennas, nano-lasers, etc.

“Another idea discussed in this work is that we were able to develop a coating that makes the impedance of the cylinder equal to the impedance of the surrounding space due to the special form of the sinusoidal metamaterial. It gives the following effect: the incident electromagnetic wave completely does not notice the cylinder object and passes through it without hindrance. Important progress of our work is that we have applied a flat coating, and not bulk heavy structures,” added Alexey Basharin.



The research of the team is a theoretical work and demonstrates new methods and open effects. The next stage of the project and the immediate goal, according to the researchers, is to learn how to reduce the magnetic response of elongated metal structures.

“We have already deduced the theory for super-toroidal configurations earlier. Now we want to show it experimentally. Thus, we will come closer to solving the problem of complete invisibility. Although according to the optical theorem, it is impossible to create perfect invisibility, we can take a big step towards this,” concluded Basharin.

<https://qswownews.com/scientists-from-nust-misis-create-the-stealth-technology-that-can-make-antennas-and-airport-towers-invisible/>

InsideHook

Sun, 12 July 2020

Research scientists develop groundbreaking artificial cartilage

The new material is strong enough to work in knees

By Tobias Carroll

Knee surgery is a frequently-performed procedure across the country. Why? Well, the knees are at work for most of your waking hours, and the same activity that keeps you physically fit can also lead to wear and tear on them. If you've ever needed to have work done on the joint itself, you may be aware of the difficulties of coming up with a lasting replacement: until recently, there wasn't a replacement durable enough for the cartilage in a human knee.

That might no longer be the case, however. At Science Alert, David Nield has the news that a group of researchers, some affiliated with Duke University, have made a breakthrough in replacing cartilage. They've come up with a hydrogel that compares favorably to the material currently used for knee replacement surgery:

The hydrogel passed with top marks in both these crucial categories – stretching and squishing – and showed better performance than other existing hydrogels. In one test of 100,000 repeated pulls, the artificial cartilage held up as well as the porous titanium material used in bone implants.



Need some cartilage? There's a technology for that.

This is still a few years from being widely available, however. A few years of testing will be required to make sure that the new hydrogel is safe for patients. Early tests will focus on its potential toxicity within the human body.

If the tests are successful, it could mean a less invasive surgical procedure and a shorter recovery time. All told, that's a win for both patients and for the technology behind the process.

https://www.insidehook.com/daily_brief/science/research-scientists-develop-groundbreaking-artificial-cartilage

Institute of Nano Science & Technology scientists formulate nanoparticle to reduce severity of rheumatoid arthritis

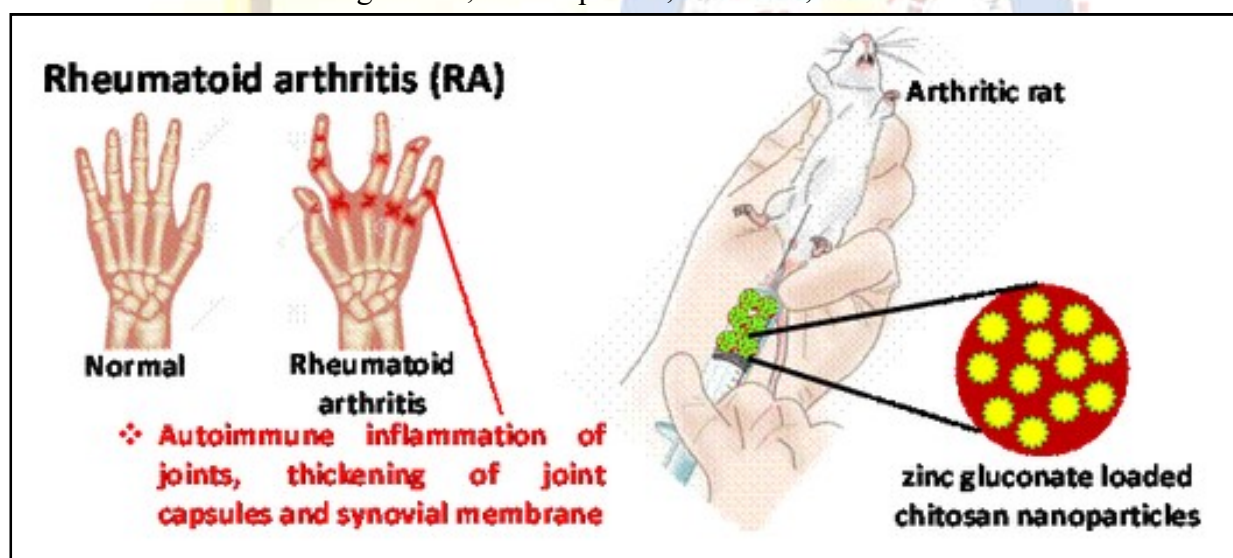
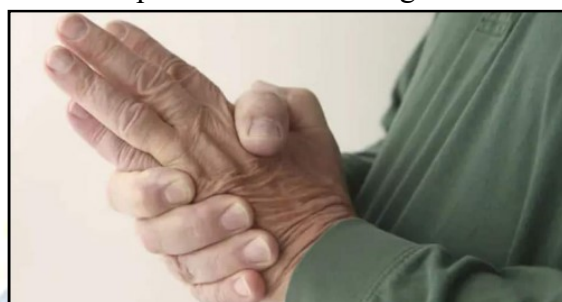
The ionic gelation method has been widely employed for formulating chitosan nanoparticles

Edited By Pushkar Tiwari

Mohali: The scientists from the Institute of Nano Science & Technology (INST) in Mohali have formulated nanoparticles with chitosan and loaded these nanoparticles with zinc gluconate for reducing the severity of rheumatoid arthritis.

Element Zinc is vital for maintaining normal bone homeostasis, and its levels are reported to get reduced in rheumatoid arthritis patients and arthritis-induced animals. It is also known that oral supplementation of zinc in the form of zinc gluconate have very low bioavailability in humans.

Chitosan, the biocompatible, biodegradable natural polysaccharide that is one of the most abundant biopolymers obtained from the exoskeleton of crustaceans have shown absorption promoting characteristics. The INST team have particularly chosen chitosan as it is biodegradable, biocompatible, non-toxic, and mucoadhesive in nature.



A previously published report in the journal 'Magnesium Research' exhibited that after intraperitoneal administration in rats, zinc oxide in standard form resulted in a slight increase in serum zinc level, whereas that in nano form resulted in significantly high serum zinc levels thus increasing the zinc bioavailability. This motivated the INST team to develop the nanoformulation of zinc gluconate.

In the recent past, the ionic gelation method has been widely employed for formulating chitosan nanoparticles, which may contain various medicinally active pharmacological agents. The DST-Science and Engineering Research Board (SERB) and DST-Nanomission supported study led by Dr Rehan Khan, published in ACS Biomaterials Science and Engineering journal has analyzed the superior efficacy of zinc gluconate-loaded chitosan nanoparticles over the free form of zinc gluconate.

The team prepared Zinc gluconate loaded chitosan nanoparticles using chitosan and sodium tripolyphosphate in double-distilled water, and zinc gluconate was simultaneously added along with the synthesis of chitosan nanoparticles.

Nanoparticles were characterized for various physicochemical properties, and then anti-arthritis potential was investigated against collagen-induced arthritis in Wistar rats. They observed that the treatment of rats with both zinc gluconate and zinc gluconate loaded chitosan nanoparticles reduced the severity of arthritis by reducing joint swelling, erythema, and edema but zinc gluconate loaded nanoparticles exhibited superior efficacy.

The team assessed various parameters like biochemical analysis, histological observations, and immunohistochemical expression of inflammatory markers and suggested that zinc gluconate-loaded chitosan nanoparticles exerted superior therapeutic effects compared to the free form of zinc gluconate. This they attributed due to the inflammatory potential of zinc gluconate-loaded chitosan nanoparticles.

“Nanobiotechnology provides several effective solutions for the problems that traditional pharmaceutical formulations are often not able to address as effectively, such as the sustained and targeted release of drugs, bioavailability, and efficacy of drugs and nutraceuticals, etc. The nanoformulation of zinc gluconate-loaded chitosan nanoparticles developed at INST Mohali is a creative example of a superior therapeutics for rheumatoid arthritis,” said Prof Ashutosh Sharma, Secretary, DST.

<https://zeenews.india.com/india/institute-of-nano-science-technology-scientists-formulate-nanoparticle-to-reduce-severity-of-rheumatoid-arthritis-2295262.html>

COSMOS

Mon, 13 July 2020

Using wood to purify water

Chinese team takes steam generation up a notch

Chinese scientists have developed a wood-based steam generator which, with the help of bacterial-produced nanomaterials, harnesses solar energy to purify water.

The steam generation bit isn't new. Numerous devices have been designed to use solar energy to separate pure water from its contaminants by evaporation.

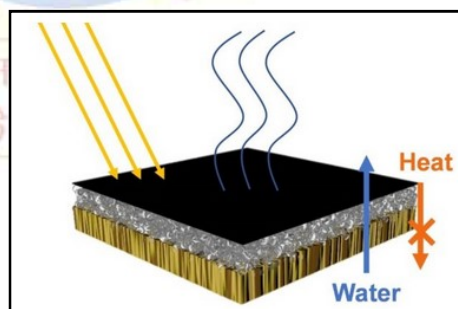
Their efficiency and effectiveness vary greatly, however, and researchers are always seeking improvements in all four of the key components: light absorption, heat management, water transport and evaporation.

Shu-Hong Yu and colleagues at the University of Science and Technology of China believe they tick all four boxes with a device that makes the most of wood's sustainability and porous structure – though there is a lot more to it than just wood.

The researchers made their device with the help of bacteria that produced long cellulose nanofibres, which bound the layers of the device together. They added bacteria to the surface of a block of wood, allowed them to ferment, then sprayed an aerosol of glass bubbles onto the surface.

The bubbles, which provide excellent thermal insulation, became embedded in the nanofibres, forming a hydrogel. To this was added carbon nanotubes, which tangled with the nanofibres to form a light-absorbing, water-evaporating top layer.

The device works, Yu and colleagues say, by transporting water upward through the wood to the light-absorbing layer, which is heated by the sun. The water evaporates, and the steam is collected and condensed to produce pure water.



Credit: Adapted from Nano Letters 2020

The insulating layer of glass bubbles keeps heat from being transferred downward through the device and lost, and the nanoscale structures lower the energy required for water vaporization.

The research is described in a [paper](#) in the journal *Nano Letters*.

<https://cosmosmagazine.com/technology/materials/using-wood-to-purify-water/>



Mon, 13 July 2020

Study focuses on the way brain regions function independently, collectively

In breakthrough research, neuroscientists examined the way brain regions function independently and collectively. The research could help in a better understanding of parts of the brain that are used to process sensory information and remember different skills

Boston: In breakthrough research, neuroscientists examined the way brain regions function independently and collectively. The research could help in a better understanding of parts of the brain that are used to process sensory information and remember different skills. "From a biomedical standpoint, the question is whether certain parts of the brain are [solely responsible for] certain types of function," says Jerry Chen, a College of Arts and Sciences assistant professor of biology and faculty member of Boston University's Center for Systems Neuroscience. The latest research from his lab, published in *Neuron*, could eventually help us determine which abilities are particularly difficult to recover after a traumatic brain injury -- likely because these skills are represented in only one area of the brain -- and which are more resilient.



Representative image. Image Credit: ANI

Chen's team created a memory game for mice in order to examine the function of two brain areas that process information about the sensation of touch and the memory of previous events--areas of the brain they called S1 and S2. Chen wanted to see whether S1 and S2 both processed the same information (distributed processing), or if the areas each had specialized, independent roles (localised processing). Mice were presented with a memory game that gently stimulated their whiskers with a moving device. For the mice, the goal of the game was to recognize whisker movement patterns to receive a reward. First, each mouse felt the device move its whiskers either forward or backwards. Then, after a two-second pause, the device moved their whiskers again. If their whiskers were moved in opposite directions during both rounds--for example, if the device moved the whiskers forward first, paused, and then moved the whiskers backwards--the mice learned they could lick a straw to receive a thirst-quenching drink. On the other hand, if the device moved their whiskers in the same direction during both rounds, the mice were supposed to refrain from licking. If the mice got it wrong, they instead received a small puff of air and a timeout before they could resume the game.

Meanwhile, the researchers were observing the mice's brain activity throughout the game and seeing how the S1 and S2 areas impacted the mice's skills. They used a technique called optogenetics, a genetic engineering method that allowed them to selectively activate groups of brain cells in the S1 or S2 areas of the mice's brains using light. The researchers found that the S1 and S2 areas of the mice's brains do a lot of the same processing, frequently sending information back and forth to each other. But they also observed that the two brain areas carried out some specialized roles while the mice played the memory game. S1 seems to be more involved in processing immediate sensory information, making sense of how the mice's whiskers move in real-

time. In contrast, S2 seems to be particularly involved in helping the mice recall past events, with the mice relying on this brain area to remember what happened in the first round of the game. Chen says the findings suggest that S1 and S2 are wired differently, as the brain cells in S2 are more strongly connected with each other than the brain cells inside S1. Chen speculates that these stronger connections relate to S2's role in recalling the past. When brain cells are more connected, it may be easier for a cue to set off a chain of cells and trigger a memory--a "domino effect" of neural activity. Together, the localized and distributed processing roles of S1 and S2 both contributed to the mice being able to correctly play the game and earn a sugary snack.

Although humans don't have whiskers, the team's experimental observations could represent the same kind of sensory information processed by human hands. "We have just as much sensitivity and dexterity to process tactile information with our fingers as a mouse has with its whiskers," Chen says. "So, if we were to study how we process tactile information in our hand and fingers, we might expect to see just as much distributed power as we would [in a mouse] because that's what we've evolved to use as one of our main senses."

Before these findings can help humans suffering from the long-lasting loss of motor skills or other abilities after traumatic brain injury, Chen says there's still a lot of research to be done. "One factor to keep in mind is that a mouse has a smaller brain [than a human], and some of these areas are much more intermingled, so the processing in a mouse brain might be more distributed," he says. The volume of a human brain is so much greater than that of a mouse, Chen says, humans might have more regions that carry out localized processing. Or, the opposite could also be true, he says: "Because [we have] a larger brain, there are a lot more connections, so we might have just as much distributed power as a mouse -- or more." (ANI)

<https://www.devdiscourse.com/article/science-environment/1126848-study-focuses-on-the-way-brain-regions-function-independently-collectively>



Mon, 13 July 2020

JNCASR spinoff launched molecular probes used in COVID-19 test kits

New Delhi: VNIR Biotechnologies Private Limited, a spinoff by Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR) an autonomous institute of the Department of Science & Technology, Government of India launched indigenous fluorescence probes and Polymerase chain reaction (PCR) mix for Reverse transcription polymerase chain reaction (RT-PCR) detection which are molecular probes used in COVID-19 test kits. VNIR Biotechnologies Private Limited is incubated at Bangalore Bio-innovation Centre (BBC) of Government of Karnataka.

Prof. T. Govindaraju and Dr. Meher Prakash co-founders of VNIR have developed the Florescence probes and PCR mix for RTPCR detection. These molecular probes are used in COVID-19 test kits. A typical, PCR based test kit has three critical components (oligos, enzymes, molecular probes). The first two are partly available in India and partly imported while molecular probes used in COVID 19 tests, however are only imported. The molecular probes are used to track the amplification in PCR. Their immediate application is for COVID-19 testing, but they are general-purpose molecular tools for molecular diagnostic tests of several diseases.

VNIR has innovated synthesis protocols for a suite of molecular probes, which will be useful for PCR based COVID-19 testing. VNIR will be filing for the protection of its process innovation.

Molecular diagnostic tests used to be limited to research laboratories or for limited applications. COVID-19 has presented a unique problem that the finest level of molecular diagnostic test has to be performed almost at a complete population level if needed. Given the scale of tests required for COVID-19, it is very important to become self-reliant with the critical test kit components. Enzyme and oligo needs are partly met from Indian manufacturers, and VNIR envisions to address the third critical component, which is the molecular probes.

“The probes for RT-PCR based COVID–19 tests is an excellent example of leveraging our basic science knowledge for development of critical new products that are until now being imported. Nor is this knowledge limited to one particular virus, but would help us rapidly develop molecular diagnosis in the future for other viruses as well,” said Prof Ashutosh Sharma, Secretary, DST.

Molecular probe development is a consequence of synthetic organic chemistry, by understanding several aspects of it – the molecule, its target, the availability of chemicals, and optimizing the yields at each step of the synthesis by a judicious choice of protocols. VNIR used its core strengths in molecular probe development to develop the molecular probes using novel synthetic routes.

In March 2020, with the rest of the world, VNIR also came to a halt briefly. VNIR team used the opportunity of staying at home to contribute to address the problem of COVID-19.

“Investing on newer R&D, in addition to those ongoing, was overwhelming for us as a startup. However, we took up the risk and the challenge. Our team went back to the drawing board and planned the synthesis of these much-required probes for the COVID-19 tests. VNIR’s R&D effort in line with the Make-In-India and Aatmanirbhar Bharat missions of the Government of India are meant to contribute to self-reliance in COVID-19 testing. To the best of our knowledge, there is no Indian company making these molecular probes.” said Prof. T. Govindaraju.

<https://indiaeducationdiary.in/jncasr-spinoff-launched-molecular-probes-used-in-covid-19-test-kits/>

Russia's Sechenov University says it has completed clinical trials of world's first COVID-19 vaccine

Vadim Tarasov, the director of the Institute for Translational Medicine and Biotechnology said that the first group of volunteers who participated in the study will be discharged on Wednesday

Moscow: As the world races towards finding an effective and safe vaccine against the novel coronavirus, the clinical trials of the world's first COVID-19 vaccine on volunteers at Sechenov First Moscow State Medical University has been completed, said Vadim Tarasov, the director of the Institute for Translational Medicine and Biotechnology, reported news agency ANI. He also said that the first group of volunteers who participated in the study will be discharged on Wednesday, and the second on July 20th.

The university was conducting trials on the vaccine candidate produced by Gamalei Institute of Epidemiology and Microbiology, Russia. They began trials on June 18.

"Sechenov University has successfully completed tests on volunteers of the world's first vaccine against coronavirus," Tarasov said.

The objective of this stage of the trials was to test the vaccine's safety for human health, which was successfully done, said Alexander Lukashev, the director of the Institute of Medical Parasitology, Tropical and Vector-Borne Diseases at Sechenov University.

"The safety of the vaccine is confirmed. It corresponds to the safety of those vaccines that are currently on the market," Lukashev told Sputnik, reported ANI.

Further plans on vaccine development are being determined by the developers, including the complexity of the epidemiological situation with the virus and the possibility of scaling up production.

"Sechenov University in a pandemic situation acted not only as an educational institution but also as a scientific and technological research centre that is able to participate in the creation of such important and complex products as drugs ... We worked with this vaccine, starting with preclinical studies and protocol development, and clinical trials are currently underway," Tarasov added.

More than a hundred vaccines against the novel coronavirus are currently under development or trials, globally. The coronavirus has infected more than 12 million people around the world, till now.

<https://www.timesnownews.com/health/article/covid-19-vaccine-trials-first-vaccine-trial-successfully-completed-at-russias-sechenov-university/620331>



Russia's Sechenov University says it has completed clinical trials of world's first COVID-19 vaccine | Photo Credit: iStock Images

China's CanSino in talks for Covid-19 vaccine Phase III trial overseas

Zeng Guang, former chief epidemiologist at the Chinese Center for Disease Control and Prevention, told the conference that Chinese construction groups overseas in particular are keen to take experimental vaccines

China's success in driving down COVID-19 infections has made it harder to conduct large-scale vaccine trials, and so far only a few countries have agreed to work with it.

"We are contacting Russia, Brazil, Chile and Saudi Arabia (for the Phase III trial), and it's still in discussion," Qiu Dongxu, executive director and co-founder of CanSino, told an anti-viral drug development conference in Suzhou, in eastern China.

He said its Phase III trial was likely to start "pretty soon," and the company plans to recruit 40,000 participants for the test.

Its COVID-19 candidate, Ad5-nCov, became the first in China to move into human testing in March but is running behind other potential vaccines in terms of trial progress. Two experimental vaccines developed by Sinovac Biotech and a unit of China National Pharmaceutical Group (Sinopharm) are already approved for Phase III trials.

Qiu said its Phase II trial involving 508 people has yielded "much better" results than the Phase I about the safety and ability to trigger immune response. He did not disclose specific evidence.

He said its new factory under construction in China will allow it to produce 100-200 million doses of coronavirus vaccines per year by early 2021.

China's military, whose research unit is co-developing the vaccine candidate, approved its military use last month, while Sinopharm's two experimental shots are offered to employees at state-owned firms travelling overseas.

Zeng Guang, former chief epidemiologist at the Chinese Center for Disease Control and Prevention, told the conference that Chinese construction groups overseas in particular are keen to take experimental vaccines.

He also said discussion should start whether to launch emergency inoculation of experimental vaccines "right now."

There are no approved vaccines yet for COVID-19, a respiratory disease caused by the new coronavirus, which has killed more than half a million people globally.

<https://indianexpress.com/article/coronavirus/china-cansino-in-talks-for-covid-19-vaccine-phase-iii-trial-overseas-6501626/>

Thailand set to start human trials for its Covid-19 vaccine in September

Globally, 160 vaccines are being studied for Covid-19, of which 21 are at the clinical evaluation stage, according to the World Health Organization

By Siraphob Thanthong-Knight

Bangkok: Thailand is starting the clinical stage for its own Covid-19 vaccine after both monkeys and mice generated satisfactory antibodies against the virus following injections, according to scientists in the study.

“We hope that the vaccine could generate neutralizing antibodies in humans seen in monkeys and mice,” Kiat Ruxrungtham, head researcher at Chulalongkorn University’s Center of Excellence in Vaccine Research and Development, said at a briefing on Sunday in Bangkok. If the trials are successful, Thailand could have its vaccine by the second half of 2021, he said.

The Thai study will begin its human trials as early as September and will be among the first done outside high-income countries. Globally, 160 vaccines are being studied for Covid-19, of which 21 are at the clinical evaluation stage, according to the World Health Organization.

Access to life-saving vaccines is a perennial issue in poorer countries. The economic turmoil of the pandemic has raised the stakes, and the worry is that countries will compete for scarce supplies, seeking to protect their own populations. The Oslo-based Coalition for Epidemic Preparedness Innovations, WHO and the non-profit vaccine alliance Gavi are among those seeking equitable distribution.

The first stage of Thai clinical trials will enroll about 100 volunteers separated in two groups, one for people aged 18 to 60 and the other for 60- to 80-year-olds, Kiat said. The focus of the first stage, which will take about two months, is on determining the safety and appropriate dosage for human use. The recruitment for volunteers is expected to start in September.

The second stage, likely to begin in December, will involve 500 to 1,000 people. The vaccine may get emergency-use authorization from the Food and Drug Administration and skip the third and final stage, which would use more than 10,000 volunteers in countries with an ongoing outbreak, according to Kiat.

The Chulalongkorn University vaccine employs new mRNA technology that’s similar to that of a project led by Cambridge, Massachusetts-based Moderna Inc. The technique is cost-effective and ideal for large-scale production. Thailand also has several other Covid-19 vaccine studies underway using a variety of methods.

The production of 10,000 doses for the vaccine trials will start next week. Once the trials have completed all stages, Thailand will start output, with the potential to boost supplies for distribution to neighboring nations and other low- or middle-income economies.

<https://theprint.in/health/thailand-set-to-start-human-trials-for-its-covid-19-vaccine-in-september/459322/>

Does UV light kill the new coronavirus?

By Donavyn Coffey

Ultraviolet light has been used to stop pathogens in their tracks for decades. But does it work against SARS-CoV-2, the virus behind the pandemic?

The short answer is yes. But it takes the right kind of UV in the right dosage, a complex operation that is best administered by trained professionals. In other words, many at-home UV-light devices claiming to kill SARS-CoV-2 likely aren't a safe bet.

UV radiation can be classified into three types based on wavelength: UVA, UVB and UVC. Nearly all the UV radiation that reaches Earth is UVA, because most of UVB and all of UVC light is absorbed by the ozone layer, according to the Centers for Disease Control and Prevention. And it's UVC, which has the shortest wavelength and the highest energy, that can act as a disinfectant.

"UVC has been used for years, it's not new," Indermeet Kohli, a physicist who studies photomedicine in dermatology at Henry Ford Hospital in Detroit, told Live Science. UVC at a specific wavelength, 254 nanometers, has been successfully used to inactivate H1N1 influenza and other coronaviruses, such as severe acute respiratory virus (SARS-CoV) and Middle Eastern Respiratory Syndrome (MERS-CoV), she said. A study published June 26 to the preprint database medRxiv from Kohli's colleagues awaiting peer review now confirms that UVC also eliminates SARS-CoV-2.

UVC-254 works because this wavelength causes lesions in DNA and RNA. Enough exposure to UVC-254 damages the DNA and RNA so that they can't replicate, effectively killing or inactivating a microorganism or virus.

"The data that backs up this technology, the ease of use, and the non-contact nature" of UVC make it a valuable tool amid the pandemic, Kohli said. But responsible, accurate use is critical. UVC's DNA-damaging capabilities make it extremely dangerous to human skin and eyes, Kohli said. She cautioned that UVC disinfection technologies should primarily be left to medical facilities and evaluated for safety and efficacy by teams with expertise in photomedicine and photobiology.

When it comes to at-home UVC lamps, their ability to damage skin and eyes isn't the only danger, Dr. Jacob Scott, a research physician in the Department of Translational Hematology and Oncology Research at Cleveland Clinic, said. These devices also have low quality control, which means there's no guarantee that you're actually eliminating the pathogen, he said.

"UVC does kill the virus, period, but the issue is you have to get enough dose," Scott told Live Science. "Particularly, for N95 masks, which are porous, it takes a pretty big dose" of UVC-254 nm to eliminate SARS-CoV-2. This kind of accuracy isn't possible with at-home devices.

In hospitals, the geometry of the room, shadowing, timing and the type of material or object being disinfected are all accounted for when experts determine the right dosage of UVC needed to kill pathogens. But that kind of "quality assurance is really hard out in the world, out in the wild," Scott said. At-home devices don't offer that kind of precision, so using them could offer a false assurance that SARS-CoV-2 has been eliminated when it hasn't, he noted. "Having something you think is clean, but it's not, is worse than something that you know is dirty" because it affects your behavior toward that object, he said.



A handful of N95 respirators get zapped with UV radiation.

Both Kohli and Scott and their teams are working to make UVC disinfection of personal protective equipment (PPE), such as face masks and N95 respirators, more efficient. Kohli's group advises hospitals and vendors repurposing existing UVC equipment for N95 respirator decontamination. Scott's group developed a machine that can be used by smaller medical facilities and a software program that helps users factor in the geometry of the disinfection room so that staff can deliver the most effective dose of UVC.

There are ongoing conversations in the field about installing UVC units in ceilings to decontaminate circulating air, Kohli said. And others are researching another wavelength of UVC called UVC-222 or Far-UVC, which may not damage human cells, she added. But that will require more research, Kohli said. Still, it's clear that "used accurately and responsibly, UVC has enormous potential." *Originally published on Live Science.*

<https://www.livescience.com/uv-light-kill-coronavirus.html>

MEDICAL NEWS TODAY

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COVID-19 could directly affect the heart

By Eleanor Bird

A recent stem cell study has shown that SARS-CoV-2, the novel coronavirus, can infect heart cells via the same receptor present in the lungs. This may be responsible for the cardiac complications associated with COVID-19.

Experts initially thought that COVID-19 was a respiratory disease, with symptoms including cough, shortness of breath, and pneumonia. However, more recent evidence into COVID-19 shows that the disease can also cause neurological and cardiac symptoms.

Physicians have reported changes to the circulatory system in people with COVID-19, sometimes leading to blood clots, as well as cardiac complications, such as changes to the heart rhythm, damage to heart tissue, and heart attacks.

Although there is widespread agreement that COVID-19 is a risk to the heart, whether these symptoms are due to the virus directly or a consequence of other disease processes, such as inflammation, has been unclear.

In a new study appearing in the journal *Cell Reports Medicine*, scientists have helped resolve this mystery by showing that SARS-CoV-2 can infect heart cells and change their function.

Their findings, from experiments in human stem cells, suggest that the cardiac symptoms of COVID-19 may be the direct result of the infection of heart tissue.

SARS-CoV-2 behavior in heart cells

The scientists used a type of stem cell called induced pluripotent stem cells (iPSCs) to generate heart cells.

Scientists can create iPSCs from a person's skin cells and then reprogram them to become any cell type in the body. They provide a useful tool for research into human disease and a way to test new treatments.

In this study, the team programmed the iPSCs to become heart cells and later incubated them with SARS-CoV-2. Using microscopes and genetic sequencing techniques, the researchers found that SARS-CoV-2 could directly infect the heart cells.



New evidence shows how SARS-CoV-2 may affect the heart.

They also showed that the virus can rapidly divide inside heart cells, which caused changes to the heart's ability to beat after a period of under 3 days.

“We not only uncovered that these stem cell-derived heart cells are susceptible to infection by [the] novel coronavirus, but that the virus can also quickly divide within the heart muscle cells,” explains first study author Dr. Arun Sharma, a research fellow at the Regenerative Medicine Institute of Cedars-Sinai Medical Center in Los Angeles, CA.

The role of the ACE2 receptor

Additional experiments focused on the different genes expressed by heart cells before and after the virus infected them. These studies showed activation of the innate immune response and antiviral clearance pathways to help fight the virus.

However, how does the virus get into the heart in the first place? The researchers suggest that one way in which it gains access may be by using angiotensin-converting enzyme 2 (ACE2). This is the same receptor the virus uses to infect cells in the lungs.

Importantly, studies have shown that treatment with an ACE2 antibody can help stop SARS-CoV-2 from replicating and save cells in the heart.

“By blocking the ACE2 protein with an antibody, the virus is not as easily able to bind to the ACE2 protein, and thus cannot easily enter the cell. This not only helps us understand the mechanisms of how this virus functions, but also suggests therapeutic approaches that could be used as a potential treatment for SARS-CoV-2 infection.” – Dr. Arun Sharma

The importance of these findings

The researchers suggest that scientists could use stem cell-derived heart cells to screen new drugs and find compounds able to stop the infection of heart cells.

“This key experimental system could be useful to understand the differences in disease processes of related coronaviral pathogens SARS and MERS,” adds study author Dr. Vaithilingaraja Arumugaswami, an associate professor at the University of California, Los Angeles.

There are some limitations to this approach, however. These include the fact that stem cell-derived heart cells are not exactly the same as the real thing.

The researchers also studied the cells in a dish, an isolated system lacking the immune interactions that would occur in the human body.

Nevertheless, the experiments clearly showed that the cells became infected with SARS-CoV-2, which is in line with some clinical data showing the virus in the hearts of people who died from COVID-19.

<https://www.medicalnewstoday.com/articles/covid-19-could-directly-affect-the-heart>