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CONTENT

S. No.	TITLE	Page No.
DRDO News		1-9
DRDO Technology News		1-9
1.	Govt bans import of 101 defence equipment items	1
2.	Defence Ministry to impose import embargo on 101 items	3
3.	In push for self-reliance, defence ministry to put embargo on import of 101 items	4
4.	Bar on def imports: Unions see red, pvt cos ready with foreign tie-ups	5
5.	Defence stocks may gain after India's import embargo on 101 defence items	6
6.	From Tejas to Agni Missiles; these indigenous weapon systems prove Indian defence can be 'self-reliant'	7
7.	US tests high-energy laser weapons from Sea; Where does India stand in DEWs?	8
Defence News		10-31
Defence Strategic National/International		10-31
8.	From big guns to missiles, India bans import of 101 defence items to boost self reliance	10
9.	Army, IAF to maintain very high-level of alertness along LAC: Sources on border standoff with China	11
10.	LAC के नजदीक हरकतों से बाज नहीं आया China, भारत ने रात में DBO के ऊपर उड़ाए Chinook हेलीकॉप्टर	13
11.	Be prepared for any eventuality: Army Chief Gen Naravane cautions field commanders	14
12.	चीन से तनाव के बीच IAF के वाइस चीफ ने किया लद्दाख का दौरा, अलर्ट पर रहने को कहा	15
13.	IAF night flies Chinook over DBO as PLA ramps up troops in occupied Aksai Chin	16
14.	India asks China to pull back troops, cease further construction in Depsang sector in Ladakh at military talks	17
15.	India-China standoff: Employment of armour along the Line of Actual Control	18
16.	Amid LAC face-off, Army to study lasers, robotics & AI for warfare	20
17.	Amid tensions with China, armed forces push case for arming Israeli drone fleet with laser-guided bombs, missiles	21
18.	नौसेना ने हिंद महासागर में युद्धपोतों की तैनाती बढ़ाई, चीन की हर हरकत पर रखी जा रही नजर	22
19.	Indian Navy ramps up deployment of warships in Indian Ocean amid border tensions with China	23
20.	GSL to build damage control simulator for Navy	24
21.	As Indian Defence aims for self-reliance, private sector seeks level playing field	25
22.	Rafale acquisition gives much-needed boost to India's defence-industrial agenda	26
23.	India-Myanmar border on high alert after ambush by separatist rebels	28
24.	Indian Armed Forces contingent heads to Russia for war games next month	29
25.	China offers a new normal to end Ladakh border standoff. India shoots it down	30
Science & Technology News		32-44
26.	Materials science researchers develop first electrically injected laser	32
27.	Scientists develop principles for the creation of an 'acoustic diode'	33
28.	Programmable synthetic materials	34
29.	Measuring electron emission from irradiated biomolecules	35

COVID-19 Research News		36-44
30.	India weighs options in debate on who gets first shot of Covid-19 vaccine	36
31.	A titanate nanowire mask that can eliminate pathogens	38
32.	New process fast-tracks drug treatments for viral infections and cancer	39
33.	COVID-19 vaccine: Can't be pressured to launch coronavirus vaccine, says Bharat Biotech CMD	40
34.	People were immune to Covid-19 before it existed: Study	41
35.	Serum Institute to produce up to 100 million Covid-19 vaccine doses for India, other countries	42
36.	Common cold infections may train your body to identify COVID-19, finds research	43
37.	World's first Covid-19 vaccine to be registered next week by Russia: Report	44



Mon, 10 Aug 2020

Govt bans import of 101 defence equipment items

The Defence Ministry, Rajnath Singh said, is “ready for a big push to Atmanirbhar Bharat initiative”, and will “introduce import embargo on 101 items beyond the given timeline to boost indigenisation of defence production”.

By Krishn Kaushik

New Delhi: Pursuant to Finance Minister Nirmala Sitharaman’s announcement in May to boost the domestic defence sector, the government on Sunday announced a ban on import of 101 weapons, platforms, and equipment.

The negative import list will come into effect from December, and will be progressive, which means the import ban could be extended to more items.

The move is aimed at boosting the defence manufacturing sector in the country, which the government hopes can act as an engine to revive long-term economic growth. An estimated Rs 4 lakh crore worth of orders for the armed forces are likely to be placed with domestic manufacturers over the next seven years.

The government also wants to cut its large defence import bill. India has for years been among the world’s top three importers of defence equipment.

“The embargo on imports is planned to be progressively implemented between 2020 and 2024. Our aim is to apprise the Indian defence industry of the anticipated requirements of the armed forces so that they are better prepared to realise the goal of indigenisation,” Defence Minister Rajnath Singh said while announcing the policy.

The Defence Ministry, Singh said, is “ready for a big push to Atmanirbhar Bharat initiative”, and will “introduce import embargo on 101 items beyond the given timeline to boost indigenisation of defence production”.

“Taking cue” from Prime Minister Narendra Modi’s “clarion call for a self-reliant India”, the Defence Ministry has prepared a list of items to be embargoed from import over the next four years, Singh said. It is a “big step towards self-reliance in defence”, he said.

The “five pillars” of Modi’s self-reliant India are “economy, infrastructure, system, demography, and demand”, Singh said.

Sources in the Ministry said orders for items in the list, including those likely to be sought by the three services over the next 5-7 years will be given only to domestic players. In cases where some content is imported, Indian vendors will be encouraged to increase the indigenous content progressively, the sources said.

Singh said the decision had been taken after consulting all stakeholders. “The list was prepared by the MoD after several rounds of consultations with all stakeholders, including the armed forces, public and private industry to assess current and future capabilities of Indian industry for manufacturing various ammunition and equipment within India,” he said.

The stakeholders who were consulted before the list was drawn up include the Army, Air Force, Navy, Defence Research and Development Organisation (DRDO), Defence Public Sector Undertakings (DPSUs), Ordnance Factory Board (OFB) and private industry.

The list has been prepared by the Department of Military Affairs (DMA) headed by Chief of Defence Staff Gen Bipin Rawat. The negative imports list “offers a great opportunity to the Indian defence industry to rise to the occasion to manufacture the items in the negative list by using their own design and development capabilities or adopting the technologies designed and developed by DRDO to meet the requirements of the armed forces in the coming years”, the Defence Ministry said in a statement.

The DMA can add more items to the list over the coming years. “More such equipment for import embargo would be identified progressively by the DMA in consultation with all stakeholders”, Singh said, and a “due note of this will also be made in the DAP (Defence Acquisition Procedure) to ensure that no item in the negative list is processed for import in the future”.

The Minister said that “almost 260 schemes of such items were contracted by the tri-services at an approximate cost of Rs 3.5 lakh crore between April 2015 and August 2020”, and the government has estimated that “contracts worth almost Rs 4 lakh crore will be placed upon the domestic industry within the next six to seven years”.

Of these, “items worth almost Rs 1,30,000 crore each are anticipated for the Army and the Air Force while items worth almost Rs 1,40,000 crore are anticipated by the Navy over the same period”, he said.

The 101 items in the list released on Sunday “comprises not just simple parts but also some high technology weapon systems like artillery guns, assault rifles, corvettes, sonar systems, transport aircraft, light combat helicopters (LCHs), radars, and many other items to fulfill the needs of our defence services”, the government said. It includes “wheeled armoured fighting vehicles (AFVs) with indicative import embargo date of December 2021, of which the Army is expected to contract almost 200 at an approximate cost of over Rs 5,000 crore”.

For the Navy, the government is “likely to place demands for submarines with indicative import embargo date of December 2021, of which it expects to contract about six at an approximate cost of almost Rs 42,000 crore”.

For the Air Force, “it is decided to enlist the light combat aircraft MK1A with an indicative embargo date of December 2020, of which 123 are anticipated at an approximate cost of over Rs 85,000 crore”.

The government has bifurcated the Defence Ministry’s capital procurement budget for 2020-21 between domestic and foreign capital procurement – something that Finance Minister Sitharaman had mentioned in May.

“A separate budget head has been created with an outlay of nearly Rs 52,000 crore for domestic capital procurement in the current financial year,” the government said.

Former finance minister P Chidambaram said “the Defence Minister promised a ‘bang’ on a Sunday morning and ended with a ‘whimper’.”

“Import Embargo is high sounding jargon. What it means is we will try to make the same equipment (that we import today) in 2 to 4 years and stop imports thereafter!” Chidambaram posted on Twitter.

“The only importer of defence equipment is the Defence Ministry. Any import embargo is really an embargo on oneself. What the Defence Minister said in his historic Sunday announcement deserved only an Office Order from the Minister to his Secretaries!”

<https://indianexpress.com/article/india/govt-bans-import-of-101-defence-equipment-items-6548085/>

Defence Ministry to impose import embargo on 101 items

The Defence Minister said the decision would offer a great opportunity to the Indian industry to manufacture the items in the negative list

By Vijaita Singh

New Delhi: The Defence Ministry will “introduce import embargo on 101 items beyond given timeline to boost indigenisation of defence production”, Defence Minister Rajnath Singh announced through a series of tweets on Sunday.

Speaking at a function later in the day, Mr. Singh said the government intends to reach a turnover of \$25 billion through indigenously manufactured defence products and also expects to export products worth \$5 billion.

“Government has also decided that in any government contract over ₹200 crore, no foreign company can participate in the tendering process....we will help Indian defence manufacturers... This year ₹52,000 crore items to be bought only from Indian companies,” Mr. Singh said in an online interaction.

He added that the government will push the Swadeshi movement started by freedom fighters and Mahatma Gandhi during the Independence Movement.

“In his address to the nation on August 15, Prime Minister Narendra Modi will present the outline for a self-reliant India,” he added.

The policy change comes in the wake of Chinese transgressions and build-up along the Line of Actual Control (LAC) in Ladakh. China has refused to pull back forces from several areas. It amassed troops since May this year and has refused to vacate areas along the undefined border that were traditionally patrolled by the Indian army.

“The Ministry of Defence is now ready for a big push to #AtmanirbharBharat initiative.Taking cue from that evocation, the Ministry of Defence has prepared a list of 101 items for which there would be an embargo on the import beyond the timeline indicated against them. This is a big step towards self-reliance in defence. #AtmanirbharBharat,” Mr. Singh said in his Twitter series.

He said the decision will offer a great opportunity to the Indian defence industry to manufacture the items in the negative list by using their own design and development capabilities or adopting the technologies designed and developed by the Defence Research Development Organisation (DRDO) to meet the requirements of the Armed Forces.

“The list is prepared by MoD after several rounds of consultations with all stakeholders, including the Armed Forces, public & private industry to assess current and future capabilities of the Indian industry for manufacturing various ammunition & equipment within India,” Mr. Singh said.

He added that almost 260 schemes of such items were contracted by the Tri-Services at an approximate cost of ₹3.5 lakh crore between April 2015 and August 2020. It is estimated that contracts worth almost ₹4 lakh crore will be placed with the domestic industry within the next 6 to 7 years, he said.

“Of these, items worth almost ₹1,30,000 crore each are anticipated for the Army and the Air Force, while items worth almost ₹1,40,000 crore are anticipated by the Navy over the same period,” the Minister said.



Defence Minister Rajnath Singh said the decision would offer a great opportunity to the Indian defence industry to manufacture the items in the negative list. | Photo Credit: PTI

The list of 101 embargoed items comprises of not just simple parts but also some high technology weapon systems like artillery guns, assault rifles, corvettes, sonar systems, transport aircrafts, LCHs, radars and many other items to fulfil the needs of the defence Services, Mr. Singh said.

The list also includes wheeled Armoured Fighting Vehicles (AFVs) with indicative import embargo date of December 2021, of which the Army is expected to contract almost 200 at an approximate cost of over ₹5,000 crore.

“The embargo on imports is planned to be progressively implemented between 2020 to 2024. Our aim is to apprise the Indian defence industry about the anticipated requirements of the Armed Forces so that they are better prepared to realise the goal of indigenisation. MoD has also bifurcated the capital procurement budget for 2020-21 between domestic and foreign capital procurement routes. A separate budget head has been created with an outlay of nearly ₹52,000 crore for domestic capital procurement in the current financial year,” the tweet said.

<https://www.thehindu.com/news/national/self-reliance-in-defence-production-101-items-to-come-under-import-embargo-says-rajnath-singh/article32308342.ece>

hindustantimes

Mon, 10 Aug 2020

In push for self-reliance, defence ministry to put embargo on import of 101 items

Defence minister Rajnath Singh said that taking cue from PM Modi’s evocation, the defence ministry has prepared a list of 101 items for which there would be an embargo on the import beyond the timeline indicated against them

Edited By Amit Chaturvedi

New Delhi: Defence minister Rajnath Singh on Sunday said that India is now ready for the big push to the atma nirbhar or self-dependent initiative announced by Prime Minister Narendra Modi.

“The Ministry of Defence is now ready for a big push to #AtmanirbharBharat initiative. MoD will introduce import embargo on 101 items beyond given timeline to boost indigenisation of defence production,” Singh announced on Twitter.

“Prime Minister Shri @narendramodi has given a clarion call for a self-reliant India based on the five pillars, i.e., Economy, Infrastructure, System, Demography & Demand and announced a special economic package for Self-Reliant India named ‘Atamnirbhar Bharat’,” he further said in the series of tweets.

The defence minister said that taking cue from PM Modi’s evocation, the defence ministry has prepared a list of 101 items for which there would be an embargo on the import beyond the timeline indicated against them. “This is a big step towards self-reliance in defence,” he said on Twitter.

“This decision will offer a great opportunity to the Indian defence industry to manufacture the items in the negative list by using their own design and development capabilities or adopting the technologies designed & developed by DRDO to meet the requirements of the Armed Forces,” said Singh.

The defence minister said that the list of 101 items has been prepared by the defence minister after several rounds of consultations with all stakeholders, including the armed forces, public and private industry.

“Almost 260 schemes of such items were contracted by the Tri-Services at an approximate cost of Rs 3.5 lakh crore between April 2015 and August 2020. It is estimated that contracts worth almost Rs 4 lakh crore will be placed upon the domestic industry within the next 6 to 7 years,” Singh tweeted.

“The list of 101 embargoed items comprises of not just simple parts but also some high technology weapon systems like artillery guns, assault rifles, corvettes, sonar systems, transport aircrafts, LCHs, radars and many other items to fulfil the needs of our Defence Services,” his tweet further said.

Singh said that the embargo on imports is planned to be progressively implemented between 2020 to 2024. “Our aim is to apprise the Indian defence industry about the anticipated requirements of the Armed Forces so that they are better prepared to realise the goal of indigenisation.”

<https://www.hindustantimes.com/india-news/in-push-for-self-reliance-defence-ministry-to-put-embargo-on-import-of-101-items-to-boost-indigenisation-of-defence-production-rajnath-singh/story-K5nwhLqXREYfLGjyV8NxzM.html>

THE TIMES OF INDIA

Mon, 10 Aug 2020

Bar on def imports: Unions see red, pvt cos ready with foreign tie-ups

By Shishir Arya

Nagpur: The government’s move to impose an embargo on import of 101 defence items has evoked sharp criticism from a section of unions in the ordnance factories, which feel it may only end up helping the private sector. The unions have already served a strike notice over the government’s plan to corporatize the Ordnance Factory Board (OFB). The private sector, on the other hand, sees a major opportunity, as companies are ready with foreign collaborations to start production in India.

A source in Kalyani Group venture Bharat Forge said the company is planning to come up with a project to make small arms ammunition from 5.56mm calibre onwards. The company has worked out tie ups with Australian and Bulgarian manufacturers for the project and an announcement may be made soon. The group is already into making artillery guns. The 155mm howitzer made on the basis of DRDO design is due for trials, which have been held up because of the lockdown and other restrictions on account of Covid. The new policy can also bring opportunities for making naval guns and close in weapon system, said the official.



Wing Commander (retd) Rajesh Dhingra, CEO of Reliance Defence, which has a major set up in Nagpur, said, “The group already has its global tie ups, which can be taken up for production in India. Based on the technological platform available from abroad, products can be customized to Indian needs. The policy is expected to give a major fillip to the Indian industry, boosting domestic production.”

Satyanarayan Nuwal, chairman of Solar Industries, which has interests in ammunition manufacture, said the policy will create space for more private players in the segment. Solar Industries is already into making Pinaka rockets, and 30mm ammunition, which are in trial stage at present. Another project on hand grenades is also underway. The policy will give an opportunity for Indian businesses to develop their own technology too, he said.

“The ordnance factories have the capacity and technology to make a number of items in the list but there are not enough orders from the Master General Ordnance (MGO) of the Army. The move

to bar imports will lead to private sector companies that have got licences to make defence items moving in. With 74% FDI allowed in the sector, the companies can tie up with foreign entities and start assembling in India," said C Srikumar, general secretary of All India Defence Workers Federation (AIDEF).

The government had come up with a public procurement preference to make in India in June 2017. Under this, 127 items were notified and another 26 were added in May 2020. The local suppliers will have to be given preference for purchases of these items.

The government should also specifically include OFB in the preference list where we have the capacity to manufacture items, said Mukesh Singh, general secretary of Bhartiya Pratiraksha Mazdoor Sangh (BPMS), the RSS affiliated union. Singh said the BPMS welcomes the decision to bar imports as it will boost indigenization.

<https://timesofindia.indiatimes.com/city/nagpur/bar-on-def-imports-unions-see-red-pvt-cos-ready-with-foreign-tie-ups/articleshow/77452809.cms>

THE ECONOMIC TIMES

Mon, 10 Aug 2020

Defence stocks may gain after India's import embargo on 101 defence items

By Sanmam Mirchandani

Synopsis

The decision will offer an opportunity to the domestic defence industry to manufacture the items in the negative list by using their own design and development capabilities or adopting the technologies designed and developed by DRDO to meet the requirements of the Armed Forces.

Defence stocks may gain on Monday after the Ministry of Defence announced over the weekend that it has prepared a list of 101 items for which there would be an embargo on the import beyond the timeline indicated against them.

The decision will offer an opportunity to the domestic defence industry to manufacture the items in the negative list by using their own design and development capabilities or adopting the technologies designed and developed by DRDO to meet the requirements of the Armed Forces.

Experts said companies catering to the defence space may gain due to sentimental impact but the actual impact on financials will be known if this initiative translates into order flows.

"There will be a marginal impact sentimentally...but we will have to see whether it flows into orders and so on. It makes the Make in India theme stronger," said Sanjiv Bhasin, Director, IIFL Securities.

"The three most sought after stocks for defence are BEL, Bharat Forge NSE 1.00 % and L&T. All three have a pipeline and they are the most potential players who can benefit from that," said Bhasin.

<https://economictimes.indiatimes.com/markets/stocks/news/defence-stocks-may-gain-after-indias-import-embargo-on-101-defence-items/articleshow/77446935.cms>

From Tejas to Agni Missiles; these indigenous weapon systems prove Indian defence can be 'self-reliant'

Following weapons have been prepared indigenously and we can take a hint from them and make a sincere effort to achieve our goal to make India 'self-reliant' in the all crucial defence sector

New Delhi: In a bid to make the defence sector of India 'self-reliant', the Centre on Sunday announced that it has decided to put an import embargo on 101 defence items. The announcement was made by Defence Minister Rajnath Singh who called the move 'a big step towards self-reliance in defence', saying that the decision will offer a great opportunity to the Indian defence industry to manufacture the items in the negative list by using their design and development capabilities or adopting the technologies designed and developed by DRDO.

The Modi government's decision to import ban on 101 defence items is a much-needed step to ensure indigenisation of the defence sector. However, 'Make in India' is not seen as a great success in the defence sector as there have been several examples when 'make in India' products failed to achieve the requirements of the Indian Armed Forces which forces us to re-think our strategy.

So as the Modi government plans to make India 'self-reliant' in the defence sector, here are some types of equipment, weapons and missiles prepared indigenously in the country. Following weapons have been prepared indigenously and we can take a hint from them and make a sincere effort to achieve our goal to make India 'self-reliant' in the all crucial defence sector.

Dhanush Howitzers:

Dhanush Howitzers is a 155 mm light field gun that is used by the Indian Army and is developed by the Ordnance Factories Board (OFB). The gun was induced in 2018 and is based on Bofors guns. Equipped with thermal sightings, Dhanush Howitzers have a capability of firing three rounds in 15 seconds.

Akash Missile:

Developed by Defence Research and Development Organisation (DRDO), Akash is a medium-range mobile surface-to-air missile (SAM) which is used by the Indian Armed Forces. With an ability to hit targets up to 30 km away and at altitudes up to 18,000 metres, Akash missiles can fly at a speed of more than 2.5 mach and can track 64 targets in range.

Agni Missiles:

The Agni missiles have been jointly developed by Bharat Dynamics Limited and the DRDO and are intercontinental-range ballistic missiles. So far, India has developed six variants of Agni Missiles -- Agni-I (operational range: 700–1,200 km), Agni-II (operational range: 2,000–3,500 km), Agni-III (operational range: 3,000–5,000 km), Agni-IV (operational range: 3,500–4,000 km), Agni-V (operational range: 5,000–8,000 km) and Agni-VI (operational range: 11,000–12,000 km).

HAL Tejas:

A single-engine fourth-generation multi-role fighter aircraft, Tejas has been developed by Hindustan Aeronautics Limited (HAL), the DRDO and the



Aeronautical Development Agency (ADA). Though its trials began in the 1980s, the Tejas was finally inducted in the Indian Air Force on 2016 when its first unit, No. 45 Squadron IAF Flying Daggers was formed. Currently, the IAF has 33 Tejas fighter aircraft and it plans to induct 123 jets in its armoury.

NETRA:

Network Traffic Analysis (NETRA) is a software network developed by India's Centre for Artificial Intelligence and Robotics (CAIR) and the DRDO for Intelligence Bureau (IB) and Research and Analysis Wing (R&AW). NETRA can intercept messages with code words like “attack, bomb, blast and kill” and can analyse voice traffic passing through software such as Skype and Google Talk.

<https://english.jagran.com/india/from-tejas-to-agni-missiles-these-indigenous-weapon-systems-prove-indian-defence-can-be-selfreliant-10015063>



Mon, 10 Aug 2020

US tests high-energy laser weapons from Sea; Where does India stand in DEWs?

Laser-based or microwave-based high-power DEWs (Direct Energy Weapons) can easily incapacitate almost all ariel targets like drones, missiles and other targets without leaving any physical debris

India has already proven its vision for laser weapons as well as the scientific talent to absorb and build on the technology after its initial successes with a vehicle-mounted 1-kilowatt laser weapon system tested in July 2018.

Meanwhile, the US Navy has recently announced its successful attempt at a new high-energy laser weapon that can destroy aircraft mid-flight. The US Navy provided pictures and videos to show the amphibious transport dock ship USS Portland executing “the first system-level implementation of a high-energy class solid-state laser” to disable an aerial drone aircraft, the Navy had said in a statement.



India’s Defence Research and Development Organisation (DRDO) has two dedicated centres – Centre for High Energy Systems and Sciences (CHESS) and Laser Science & Technology Centre (LASTEC) have been working to develop laser weapons technology for the last few years.

In 2018, it successfully tested a laser system mounted on a truck in Chitradurga, Karnataka. “The laser beam hit a target located 250 metres away,” an official said. “It took 36 seconds for it to make a hole in the metal sheet.”

Sources familiar with the matter have said that DRDO now has plans to build a more powerful laser with a longer range. Kalyani Centre for Technology and Innovation, a privately held group, is also looking to develop or build Directed Energy Weapons (DEW) that is, weapons that produce a beam of concentrated electromagnetic energy.

The two types of DEWs include – high powered lasers and microwaves. DEWs are can cause intolerable burning of an area in the body and blindness and are thus anti-personnel. They are anti-material as well because it destroys missiles, ships, UAVs and fries circuitry of equipment deployed on a battlefield.

The US Navy has been developing DEWs since the 1960s. “By conducting advanced at sea tests against UAVs and small crafts, we will gain valuable information on the capabilities of the Solid State Laser Weapons System Demonstrator against potential threats,” Captain Karrey Sanders, commanding officer of Portland, said in the statement. “With this new advanced capability, we are redefining war at sea for the Navy.”

As per a report in *Breaking Defence*, the US defence forces may be only three years away from 300-kilowatt laser weapon, one powerful enough to shoot down cruise missiles. “We want to have a 300-kilowatt laser by 2022. We’d like to get up to 500 kilowatts by 2024,” he said, “and then, if we still haven’t hit the limit of anything, it’s on to the megawatt-class,” stated Thomas Karr, Assistant Director for directed energy under Pentagon R&D Chief.

While India has successfully tested only 1-kilowatt laser weapon in 2018, it severely lacks behind the US. According to experts, it is in the best interest for India to collaborate with the US or Israel, who are at an advanced stage of developing laser weaponry, besides China.

“It is also pertinent to keep in mind that China may not be too far behind in laser weapons technology as it has already let known its intent by targeting the US satellite. The laser-based aerospace defence assets, as and when they are deployed, could prove to be a potent deterrent,” wrote, Group Captain Atul Pant is a serving member of the Indian Air Force.

He also stated that for a country like India, with vast airspace across multiple frontiers to be protected, a laser-based weapons system could be the breakthrough needed to accommodate the escalating costs of air defence.

Due to increasing non-traditional threats, it would also provide a cost-efficient solution not only for wartime but also peacetime “The threat from drones, in particular, is going to be a big challenge in future, and a laser-based system could provide an effective solution for multiple scenarios. It could become a very cheap anti-satellite weapon too.”

<https://eurasianimes.com/us-tests-high-energy-laser-weapons-from-sea-where-does-india-stand-in-dews/>

hindustantimes

Mon, 10 Aug 2020

From big guns to missiles, India bans import of 101 defence items to boost self reliance

Defence minister Rajnath Singh said all necessary steps would be taken to ensure that the timelines for the production of the equipment on the negative import list are met

By Rahul Singh

New Delhi: Defence minister Rajnath Singh on Sunday said that the government has prepared a list of 101 items on which there would be an embargo on import to give a push to Prime Minister Narendra Modi's 'Atmanirbhar Bharat Abhiyan' (Self-Reliant India Movement).

Announcing the development on Twitter, Singh said it would be a big step towards self-reliance in defence.

The list includes artillery guns, missile destroyers, ship-borne cruise missiles, light combat aircraft, light transport aircraft, long-range land attack cruise missiles, communication satellites, basic trainer aircraft, multi-barrel rocket launchers, a variety of radars, assault rifles, sniper rifles, mini UAVs and different types of ammunition.

The list also spells out when the embargo kicks in for different items --- between 2020 and 2025.

All necessary steps would be taken to ensure that the timelines for the production of the equipment on the negative import list are met, Singh said.

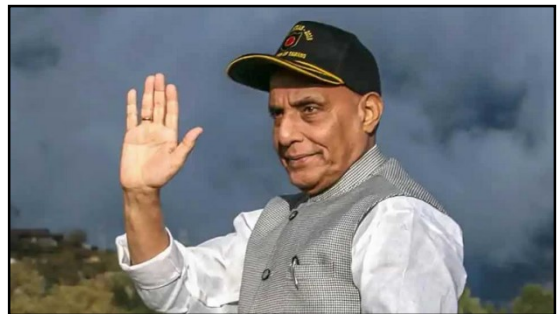
"The list also includes, wheeled Armoured Fighting Vehicles (AFVs) with indicative import embargo date of December 2021, of which the Army is expected to contract almost 200 at an approximate cost of over Rs 5,000 crore," the minister said.

He said the ministry has split the capital procurement budget for 2020-21 between domestic and foreign capital procurement routes. "A separate budget head has been created with an outlay of nearly Rs 52,000 crore for domestic capital procurement in the current financial year," he said.

From raising foreign direct investment (FDI) in defence manufacturing to creating a separate budget for buying locally-made military hardware and notifying a list of weapons/equipment that cannot be imported, the government had announced a raft of measures to boost self-reliance in the defence sector in May 2020.

Singh said the embargo on imports would be progressively implemented between 2020 and 2024. "Our aim is to apprise the Indian defence industry about the anticipated requirements of the armed forces so that they are better prepared to realise the goal of indigenization," he said.

The list of weapons banned for import will be reviewed every year and more items will be added to it after discussions with the department of military affairs (DMA). This implies India will have



Defence minister Rajnath Singh announced an embargo on import of 101 defence items on Sunday. (PTI File Photo)

to compulsorily develop technology for the defence systems and platforms figuring on the negative import list.

“More such equipment for import embargo would be identified progressively by the DMA in consultation with all stakeholders. A due note of this will also be made in the Defence Acquisition Procedure to ensure that no item in the negative list is processed for import in the future,” the minister said.

The list has been prepared by the ministry after several rounds of consultations with all stakeholders, including the military and the industry, and factoring in future capabilities of the defence sector to locally manufacture equipment and ammunition.

“Almost 260 schemes of such items were contracted by the Tri-Services at an approximate cost of Rs 3.5 lakh crore between April 2015 and August 2020. It is estimated that contracts worth almost Rs 4 lakh crore will be placed upon the domestic industry within the next 6 to 7 years,” Singh said.

One of the key responsibilities assigned by the government to the DMA, headed by chief of defence staff General Bipin Rawat, is to promote the use of indigenous military equipment in the armed forces.

Imports account for 60-65% of the country’s military requirements and it has signed contracts worth billions of dollars during the last decade for weapons and systems including fighter jets, air defence missile systems, submarine hunter planes, attack helicopters, heavy-lift choppers and lightweight howitzers.

India was the third-biggest military spender in the world last year after the United States and China, the Stockholm International Peace Research Institute (Sipri) said in a report released in April.

<https://www.hindustantimes.com/india-news/from-big-guns-to-missiles-india-bans-import-of-101-defence-items-to-boost-self-reliance/story-KN7V3wBHpKnGPZmCdxYWqJ.html>

THE TIMES OF INDIA

Sat, 08 Aug 2020

Army, IAF to maintain very high-level of alertness along LAC: Sources on border standoff with China

New Delhi: The Indian Army and the IAF will maintain a very high-level of operational readiness in all areas along the Line of Actual Control (LAC) in Ladakh, North Sikkim, Uttarakhand and Arunachal Pradesh till a "satisfactory" resolution to the border row with China is arrived at, people familiar with the developments said on Friday.

Chief of Army Staff Gen MM Naravane has already conveyed to all the senior commanders of the Army overseeing the operation of the frontline formations along the LAC to keep up a significantly high state of alertness and maintain the aggressive posturing to deal with any Chinese "misadventure", they said.

In the last three weeks, the Chief of Army Staff held long and elaborate discussions with all the senior commanders responsible for overseeing the Army's operational readiness and deployment along the nearly 3,500km-long LAC, the de-facto border between India and China.



The fresh directive to maintain a very high-level of alertness came in the wake of lack of forward movement in implementation of the disengagement process by China's People's Liberation

Army (PLA) at several friction points in eastern Ladakh including Pangong Tso, Depsang and Gogra.

India has already conveyed to China that there is no option but to restore status quo in all areas of eastern Ladakh to end the row, the people familiar with the developments said.

While Gen Naravane visited eastern Ladakh in mid-July with Defence Minister Rajnath Singh, on Thursday he held wide-ranging deliberations with senior commanders of the eastern command in Tezpur-based 4 Corps headquarters.

The Indian Air Force (IAF) is also preparing to maintain a relatively very high state of alertness in eastern Ladakh and other sensitive areas.

Vice Chief of IAF Air Marshal H S Arora visited a number of air bases in Ladakh on Friday to take stock of the operational preparedness of the force.

Following the Galwan Valley clashes, the IAF deployed almost all its frontline fighter jets like Sukhoi 30 MKI, Jaguar and Mirage 2000 aircraft in the key frontier air bases in eastern Ladakh and elsewhere along the LAC.

The IAF has been carrying out night time combat air patrols over the eastern Ladakh region in an apparent message to China that it was ready to deal with any eventualities in the mountainous region.

The IAF has also deployed Apache attack choppers as well as Chinook heavy-lift helicopters to transport troops to various forward locations in eastern Ladakh.

The Army has already made elaborate plans to maintain current strength of troops and weapons along the LAC during the harsh winter months in eastern Ladakh and all other sensitive areas along the LAC.

The temperature in some of the high-altitude areas along the LAC drops to minus 25 degree celsius in the winter months.

The Army is in the process of procuring a number of weapons, ammunition and winter gears for the frontline troops.

India and China have held several rounds of diplomatic and military talks aimed at disengagement of troops from friction points in eastern Ladakh.

On August 2, the two armies held the fifth round of Corps commander-level talks in an effort to expedite the disengagement process.

At the talks, the Indian side insisted on complete disengagement of Chinese troops at the earliest, and immediate restoration of status quo ante in all areas of eastern Ladakh prior to May 5 when the standoff began following a clash between the two armies in Pangong Tso.

The Chinese PLA has pulled back from Galwan Valley and certain other friction points but the withdrawal of troops has not moved forward from the Finger areas in Pangong Tso since mid-July, according to sources.

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.

The formal process of disengagement of troops began on July 6, a day after a nearly two-hour telephonic conversation between National Security Advisor Ajit Doval and Chinese Foreign Minister Wang Yi on ways to bring down tensions in the area.

In the first round of the Corp commander-level talks on June 6, 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 on June 15 in which 20 Indian Army personnel were killed. China has not released information on casualties on its side but according to an American intelligence report it was 35.

The second round of talks took place on June 22.

In the third round of military talks on June 30, both sides agreed on an "expeditious, phased and step wise" de-escalation as a "priority" to end the standoff.

After the Galwan Valley incident, the government has given the armed forces "full freedom" to give a "befitting" response to any Chinese misadventure along the LAC.

The Army has sent thousands of additional troops to forward locations along the border following the deadly clashes. The IAF has also moved air defence systems as well as a sizable number of its frontline combat jets and attack helicopters to several key air bases.

<https://timesofindia.indiatimes.com/india/army-iaf-to-maintain-very-high-level-of-alertness-along-lac-sources-on-border-standoff-with-china/articleshow/77419502.cms>



Mon, 10 Aug 2020

LAC के नजदीक हरकतों से बाज नहीं आया China, भारत ने रात में DBO के ऊपर उड़ाए Chinook हेलीकॉप्टर

चीन (China) ने पहले ही डीबीओ (DBO) में टैंक और बंदूकों की तैनाती पर आपत्ति जताई है, वहीं भारतीय सेना ने सीमापार के एरिया में चीनी सैनिकों की तैनाती और गतिविधि की ओर इशारा किया है।

चीन की पीपुल्स लिबरेशन आर्मी (PLA) की LAC के दूसरी तरफ सड़क निर्माण और सैनिक गतिविधि बढ़ने के बाद भारतीय वायुसेना (Indian Air Force) ने चिनूक हेलीकॉप्टर (Chinook Helicopter) की रैपिड तैनाती की गई है। इन्हें रात के वक्त DBO (Daulat Beg Oldi) के पास उड़ाया गया। ये भारतीय सीमा की आखिरी आउटपोस्ट है और काराकोरम पास (Karakoram Pass) के नजदीक मौजूद है।

हिंदुस्तान टाइम्स की खबर के मुताबिक आधिकारिक सूत्रों का कहना है कि अक्सई चिन के कब्जे वाले तिनवेइंडेन (TWD) में डिविजनल कमांडर लेवल (divisional commander level meeting) की बैठक में तनाव कम करने को लेकर बातचीत हुई थी। मीटिंग में भारत की तरफ से कहा गया था कि डेपसांग के मैदानी एरिया में गश्त की अनुमति दी जाए। डीबीओ को लेकर बातचीत, चुशुलु के मोल्दो में डिसएंगेजमेंट को लेकर कमांडर लेवल की चीन के साथ हो रही बातचीत से अलग है।

इसलिए उड़ाए गए चिनूक हेलीकॉप्टर

चिनूक हेलीकॉप्टर (Chinook Helicopter) को डीबीओ के ऊपर रात में उड़ाने का फैसला भारतीय सेना की क्षमता के परीक्षण के चलते किया गया था। एक वरिष्ठ कमांडर के मुताबिक अपाचे हेलीकॉप्टर्स (Apache Helicopters) चुशूल एरिया में पेट्रोलिंग कर रहे हैं, हालांकि अमेरिका द्वारा निर्मित चिनूक हेलीकॉप्टर को रात में लड़ाई की क्षमताओं के परीक्षण के लिए उड़ाया गया।

ग्राउंड फायर के लिए बेहतरीन हैं ये हेलीकॉप्टर्स

हमने पहले [T-90 टैंक और अर्टिलरी गन्स](#) क्षेत्र में तैनात कर रखी हैं। अमेरिका द्वारा बनाया गया चिनूक हेलीकॉप्टर अफगान माउन्टेन्स में रात में अपनी अटैकिंग पावर्स को सिद्ध कर चुका है। इसका इस्तेमाल विशेष परिस्थितियों में सैन्य जवाबी कार्रवाई में हवाई बलों के द्वारा किया जाता है। ट्विट रोटर प्लेटफॉर्म में दो कैलिबर मशीन गन्स होती हैं जिन्हें चॉपर के आगे और पीछे के हिस्से में लगाया जाता है। ये ग्राउंड फायर करने में बेहतर कारगर साबित होती हैं।

चीन टैंक तैनाती पर जता चुका है आपत्ति

चीन (China) ने डीबीओ में टैंक और बंदूकों की तैनाती पर आपत्ति जताई है, वहीं भारतीय सेना ने सीमापार के एरिया में चीनी सैनिकों की तैनाती और गतिविधि की ओर इशारा किया है। दोनों ही देश एक-दूसरे की सैन्य तैनाती का मिलान कर रहे हैं। वहीं चीन सीमापार एरिया में सैनिकों की तैनाती के लिए सड़क निर्माण में तेज़ी से लगा हुआ है। एलएसी के साथ-साथ अरुणाचल प्रदेश के अक्साई चिन से लेकर किबुथू तक सीमापार चीन की सैन्य गतिविधियों में कोई कमी नहीं आई है।

शनिवार को डिविजनल कमांडर लेवल की बैठक में भारत ने यह मुद्दा उठाया था कि दोनों तरफ से अपने-अपने क्षेत्रों में गश्त की अनुमति दी जानी चाहिए।

<https://www.tv9bharatvarsh.com/india/indian-air-force-flies-chinook-helicopter-in-night-over-dbo-after-pla-troops-movements-262648.html>



Sat, 08 Aug 2020

Be prepared for any eventuality: Army Chief Gen Naravane cautions field commanders

As Army chief Gen MM Naravane reviewed operational preparedness along India's borders with China in Arunachal Pradesh, Air Force vice chief HS Arora visited forward areas in Ladakh

By Manjeet Singh Negi

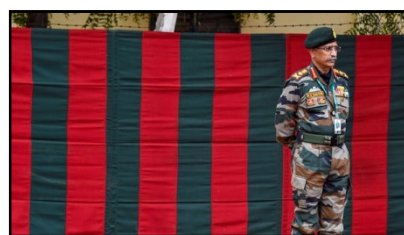
New Delhi: Amid heightened tensions with China, Army chief Gen Manoj Mukund Naravane has asked field commanders to be prepared for any eventuality and maintain operational preparedness at all times. Top sources in the Indian Army confirmed to India Today and Aaj Tak that Gen Naravane has asked the top brass to be vigilant in border areas.

The Army Chief conveyed his message to field commanders during a visit to Tezpur in Assam where he interacted with formations monitoring India's border with China in Arunachal Pradesh.

Gen MM Naravane also visited Lucknow-based Central Command and reviewed operational preparedness along the border in Uttarakhand where the Chinese have developed infrastructure in forward locations. China has transgressed into India at multiple locations and the situation is sensitive in those areas, an analysis by the Ministry of Defence had asserted.

News of the Army Chief's visits and reviews comes at a time when Indian armed forces are maintaining preparedness along the Line of Actual Control (LAC). The fact that the Indian Air Force vice chief was in forward locations in the Ladakh sector near the LAC to review operational preparedness at the same time Gen Naravane was visiting formations in the north-east is evidence of a strategy.

Vice chief of the Indian Air Force (IAF) Harjit Singh Arora made visits to key forward airbases such as Daulat Beg Oldie (DBO) in eastern Ladakh where Indian and Chinese troops are engaged in a military standoff. The IAF vice chief also took stock of assets such as the Chinook helicopters and the Apache attack helicopters deployed in the region to support the Indian Army. Vice chief HS Arora also flew the Chinook and Apache attack choppers to motivate the troops.



File photo of Army chief Gen MM Naravane (Photo Credits: PTI)

Air Force Chief Air Chief Marshal RKS Bhadauria had visited Ladakh right after the violent Galwan valley clash which resulted in 20 Indian soldiers being killed in the line of duty.

<https://www.indiatoday.in/india/story/be-prepared-for-any-eventuality-army-chief-gen-naravane-cautions-field-commanders-1708925-2020-08-07>



Sat, 08 Aug 2020

चीन से तनाव के बीच IAF के वाइस चीफ ने किया लद्दाख का दौरा, अलर्ट पर रहने को कहा

चीन (China) से तनाव के बीच शुक्रवार (7 अगस्त) को भारतीय वायुसेना (Indian Air Force) के वाइस चीफ हरजीत सिंह अरोड़ा (Harjeet Singh Arora) ने लद्दाख क्षेत्र में वेस्टर्न एयर कमांड के फॉरवर्ड बेस का दौरा किया।
राजीव रंजन

खास बातें

- भारत-चीन के बीच सीमा पर विवाद
- हरजीत सिंह अरोड़ा पहुंचे लद्दाख
- एयर वॉरियर्स से अलर्ट पर रहने को कहा

लद्दाख: चीन (China) से तनाव के बीच शुक्रवार (7 अगस्त) को भारतीय वायुसेना (Indian Air Force) के वाइस चीफ हरजीत सिंह अरोड़ा (Harjeet Singh Arora) ने लद्दाख क्षेत्र में वेस्टर्न एयर कमांड के फॉरवर्ड बेस का दौरा किया। वायुसेना के वाइस चीफ ने ऑपरेशनल तैयारियों का जायजा लिया। उन्हें वायुसेना की तैनाती का ब्योरा दिया गया। हरजीत सिंह अरोड़ा ने एयर वॉरियर्स से अलर्ट पर रहने के साथ हर समय कॉम्बैट ड्यूटी के लिए तैयार रहने को कहा।

बता दें कि भारतीय सेना और वायुसेना लद्दाख, उत्तरी सिक्किम, उत्तराखंड और अरुणाचल प्रदेश में वास्तविक नियंत्रण रेखा (LAC) के साथ सभी क्षेत्रों में बेहद उच्च स्तरीय परिचालन तत्परता बनाए रखेंगी। साथ ही जब तक चीन के साथ सीमा गतिरोध को लेकर संतोषजनक समाधान सामने नहीं आता, तब तक उच्च स्तरीय सतर्कता बरती जाएगी। सूत्रों ने यह बात कही है। उन्होंने बताया कि थलसेना प्रमुख जनरल एमएम नरवणे

(General MM Naravane) पहले ही LAC के साथ सीमावर्ती संरचनाओं के संचालन की निगरानी कर रहे सेना के सभी वरिष्ठ कमांडरों को निर्देश दे चुके हैं कि वे बेहद उच्च स्तर की सतर्कता बरतें और चीन के किसी भी दुस्साहस से निपटने के लिए आक्रामक रुख अपनाएं।

गतिरोध के मददेनजर पिछले तीन हफ्ते में आर्मी चीफ ने 3,500 किलोमीटर लंबी वास्तविक नियंत्रण रेखा की देखदेख करने वाले वरिष्ठ कमांडरों के साथ लंबी एवं विस्तृत चर्चाएं की हैं। चीन की पीपुल्स लिब्रेशन आर्मी (PLA) द्वारा पैंगोंस सो, देप्सांग और गोगरा समेत पूर्वी लद्दाख के कई गतिरोध वाले बिंदुओं से पूरी तरह अपने सैनिक हटाने में आनाकानी करने के मददेनजर उच्च सतर्कता बरतने के ताजा निर्देश दिए गए



हरजीत सिंह अरोड़ा ने वेस्टर्न एयर कमांड के फॉरवर्ड बेस का दौरा किया।

हैं। सूत्रों ने कहा कि भारत ने चीन को पहले ही सूचित किया है कि गतिरोध खत्म करने के लिए पूर्वी लद्दाख के सभी क्षेत्रों में यथास्थिति बहाल करने के अलावा कोई विकल्प नहीं है। (इनपुट भाषा से भी)

<https://khabar.ndtv.com/news/india/indian-air-force-vice-chief-harjeet-singh-arora-visit-ladakh-india-china-stand-off-2276152>

hindustantimes

Mon, 10 Aug 2020

IAF night flies Chinook over DBO as PLA ramps up troops in occupied Aksai Chin

The decision to fly Chinook over DBO advance landing ground during night time was taken to test the Indian Army's capability of rapid insertion of special forces and infantry combat vehicles in case the situation deteriorates

By Shishir Gupta

New Delhi: The Indian Air Force's rapid deployment Chinook helicopters have flown in the night over 16,000 feet Daulet Beg Oldi, Indian Army's last outpost near Karakoram Pass, after the deployment and road building activity of China's People's Liberation Army deployment increased in the area across the Line of Actual Control (LAC).

According to authoritative sources, the divisional commander level meeting at Teinweindien (TWD) post in occupied Aksai Chin was to lower the temperatures in the DBO sector with the Indian Army demanding that patrolling in Depsang Plains should be allowed unhindered. The DBO dialogue is separate from the military commanders on-going dialogue on Chushul-Moldo area with the specific task of disengagement and de-escalation of troops on the four friction points.

The decision to fly Chinook over DBO advance landing ground during night time was taken to test the Indian Army's capability of rapid insertion of special forces and infantry combat vehicles in case the situation deteriorates in the sub-sector north (SSN) area. "While Apache attack helicopters have been patrolling Chushul area, the US made Chinook flew over DBO to test its night fighting capabilities....we have already deployed T-90 tanks and artillery guns in the area," said a senior commander. The US built Chinook has a proven record of night flying in Afghan mountainous terrain and is used for rapid military retaliation by the special airborne forces. The twin rotor platform has two heavy calibre machine guns deployed at the front and back of the chopper to suppress ground fire.

While the Chinese have raised objections to the deployment of tanks and guns at DBO, the Indian Army have pointed to recent accretion of PLA troops in the area along with air activity across the SSN. Both sides are matching each other's deployment in the area even as the PLA is indulging in fast paced construction of roads in the area for rapid deployment. The interesting part is that while China raises objections to India building border infrastructure, there is no slowing down of the same all along the LAC---from occupied Aksai Chin to Kibuthoo in Arunachal Pradesh.

At the divisional commander level meeting on Saturday, India has also raised the issue that both sides should be allowed to do unhindered patrolling of their respective claim lines in the area including the Depsang Bulge, south of DBO. This was a clear indication of the Indian intent that it is not going to back down from patrolling rights at the Bulge or at any other place on the LAC.

<https://www.hindustantimes.com/india-news/air-force-night-flies-chinook-over-dbo-as-pla-ramps-up-troops-in-occupied-aksai-chin/story-fxOObHJcV8Btt2qu8oOAtL.html>



The Chinook helicopters were flown after the deployment and road building activity of China's military increased across the LAC.

India asks China to pull back troops, cease further construction in Depsang sector in Ladakh at military talks

By Rajat Pandit

New Delhi: India asked China to pull back its troops and stop further construction activities in the strategically-located Depsang-Daulat Beg Oldie (DBO) sector of eastern Ladakh, where both have amassed thousands of soldiers as well as tanks and artillery guns, in another round of military talks on Saturday.

India stressed the “importance of reducing tensions to prevent any inadvertent escalation or clash” in the Depsang Plains, which has been a major flashpoint over the years because the rival “perceptions” of the line of actual control (LAC) vastly differ in the region, said sources.

In terms of strategic importance, Depsang Plains is more crucial than the Pangong Tso and Gogra areas, where the deadlock in troop disengagement has largely persisted despite five rounds of the highest military dialogue at the corps commander-level till now.

The “one-rung lower” talks on Saturday were held between 3 Infantry Division commander Major General Abhijit Bapat and his PLA counterpart on the Chinese side of the DBO-Tien Wien Dien (TWD) border personnel meeting point from 11 am to 7.30 pm.

“Below the corps commanders, who are focusing on the major face-off sites, talks are being regularly conducted at the level of colonels, brigadiers and major generals for discussing specific sectors,” said a source.

There was no official word on the Saturday meeting. But sources said Gen Bapat insisted that the PLA troops camping near the “Bottleneck” or “Y-junction” area in Depsang Plains since May should not continue to block Indian soldiers from going to their traditional Patrolling Points (PPs)-10, 11, 12 and 13.

The “Bottleneck” area is around 18-km inside what India perceives to be its territory, though the Chinese claim line lies another 5-km to the west of it. China, in fact, claims 972 square km of territory in the region.

The last major troop face-off in Depsang Plains, the table-top plateau located at an altitude of 16,000-feet and just about 35-km south of the critical Karakoram Pass, took place in April-May 2013. The PLA troops had then intruded 19-km across the LAC to camp at the Raki Nalla area, with the confrontation finally being resolved after 21 days of hectic diplomatic negotiations.

A large and permanent PLA presence in Depsang can conceivably threaten India’s two available access routes to the logistical hub and airstrip at DBO and the critical Karakoram Pass in the north.

“Depsang is an old problem due to the hugely overlapping claims. Rival soldiers from both sides used to go to their PPs in the past. But over the last two-three years, there has been some blocking of each other’s patrols. This has aggravated since May,” said the source.

The PLA has also deployed over 12,000 troops, with tanks and artillery guns, from its 4th Motorised Infantry Division and 6th Mechanised Infantry Division along the LAC across the Depsang-DBO sector. The Indian Army, too, has counter-deployed with a couple of infantry brigades and an armoured brigade in the region, as was reported by TOI earlier.

<https://timesofindia.indiatimes.com/india/india-asks-china-to-pull-back-troops-cessation-further-construction-in-depsang-sector-in-ladakh-at-military-talks/articleshow/77439330.cms>



India asks China to pull back troops, cease further construction in Depsang sector in Ladakh at military talks

India-China standoff: Employment of armour along the Line of Actual Control

Now that we have our focus back to our adversary in the North and his deployment of light tanks along the Line of Actual Control (LAC), the Military Operational Planners felt the need once again

By Lt Col Manoj Kumar Channan (Retd)

In the recent past as the Chinese “Transgressions” seems to fade away from the headlines; in its Operational Preparedness the need for light tanks is being felt. In the early 80’s when the tank PT 76 was in its last cycle of operational employment, the Indian Army had carried out user trials of Swedish IKV 91 and French AMX 10 tanks.

Now that we have our focus back to our adversary in the North and his deployment of light tanks along the Line of Actual Control (LAC), the Military Operational Planners felt the need once again. While it’s a “necessity”, yet at the same time let’s analyse what are the possible options that we have, under the circumstances.

The terrain is high altitude, with passes as high as 19,000 feet. The mountainous terrain has steep gradients and in the desert plains that exist the heights are in general region of 14,000 feet. There is a very fine dust that enters all the systems and needs a very high quality

of air purifiers. The temperatures vary from searing heat during the day which can cause sunburn and freezing temperatures at night resulting in chill blains. The terrain has fast-flowing rivers with freezing temperatures as they are at the very source of the glacial ice cap. There is no cover as the area is devoid of plantation. The roads and bridges in the area have classification restrictions for the moment and therefore needs to be kept in perspective with the existing inventory.

The Chinese pattern of operations and his likely aim is something the Military Planners would have assessed and in order to achieve these aims he has concentrated his forces along the line of control.

Quoting from an article by Mandeep Singh Bajwa, a Military Expert in the Indian Express dated 27th July 2020, “The Western Theatre Command (WTC) has benefited enormously from China’s military modernisation. Newly inducted weapon systems are reportedly deployed first in the Tibetan and Xinjiang MDs for testing and induction protocols. These include logically the third-generation Type-15 light tanks, specially designed for mountainous terrain, extreme conditions and harsh terrain. Also, the PCL-181 laser-guided vehicle-mounted howitzers, Z-20 medium utility rotary-wing aircraft and GJ-2 attack UAVs. KJ-500 Airborne Early Warning (AEW) aircraft are now deployed permanently in the Tibet MD. This could be a fallout of the 2017 Doklam stand-off. Though the PLAAF’s latest J-20 stealth aircraft has not been noticed in the skies above Tibet or Xinjiang, the latest J-10s, J-11s and J-16s (the last being an indigenous variant of the Russian Su-27) are now deployed in the theatre.” Unquote.

The Indian Army and Air Force too have carried out deployment to thwart any plans of the Chinese. Keeping this note to the employment of armour. To counter the Chinese armour there are adequate resources to support the infantry predominant operations. These are the Apache 64 E attack helicopters, Rudra indigenous Attack Helicopter, Light Attack Helicopter, the main battle tanks T 90 and T 72. The T 90 having the capability to fire an anti-tank missile from its main gun.



The Indian Army and Air Force too have carried out deployment to thwart any plans of the Chinese. (Photo source: ANI)

These are duly supported by the mechanised infantry with Infantry Combat Vehicle BMP II, which has its main armament Anti-Tank Guided Missiles as well as a 30 mm cannon for taking on Attack helicopters at standoff distances. The infantry battalions too have their complement of anti-tank missiles and handheld light anti-tank weapons.

Given the limitations of terrain and the likely enemy approaches/need for containment or restoration of an adverse situation at any particular point, for the ease of understanding for a non-military reader, we are well poised to evict and destroy the adversary.

If we were to look at an expeditionary force to be launched to secure areas across the LAC then we need to augment our military resources to be able to build combat superiority in the chosen area duly supported by logistics and adequate reserves to exploit fleeting moments of opportunities.

Tanks and Infantry Combat Vehicles are diesel guzzlers. In operational conditions, a tank easily consumes 12 litres of Diesel High-Pressure Point Alpha per Kilometre. In addition, it needs to replenish water of its cooling systems mixed with antifreeze additives to keep the systems running.

Logistics is a nightmare in mountainous terrain. The logistics are transported by the road along the Zoji La and Rohtang passes during the summer months. These are further supplied to the units by mule trains on beaten tracks on the mountains. In the winter months this becomes critical as the supply chain is now maintained by an aerobridge.

So what does this imply?

The area is starved for oxygen an important ingredient for internal combustion engines, road classification restrictions, it has steep gradients, the atmosphere has very fine dust, the area is interspersed with rivers and nullahs and the temperatures vary in extremities both by day and night.

The platform that would ideally suit such a deployment would, therefore, need to have the following:-

Should be capable of being air transported to the given area of operations by the existing inventory of heavy-lift transport aircraft.

A tank preferably in the 25-30 ton category to be able to move cross existing bridges and roads.

A superior and efficient multi-fuel engine to function at optimum levels given the terrain of operations. The air and oil filtration has to be extremely efficient to reduce corrosion of systems and engine seizure.

Should have a built-in secondary engine to keep the systems functioning as well as ensure fuel conservation.

Should have environment control in the fighting compartment.

Should have very high mobility cross country as in the given areas of operations should be able to “secure the passes in the minimal time frame”.

Should be able to do medium fording with minimal preparation.

The ground pressure has to be minimal for efficient movement.

The power to weight ratio of the tank should allow it to climb gradients of 45 degrees. The existing Main Battle Tanks can negotiate 30-degree gradients at sea level.

The main gun calibre could be a 105 mm gun to have a knock out capability of the enemy tanks and bunkers.

The radio communication should be encrypted and should be able to function in a highly electronic warfare environment.

The equipment and its sensors should be ruggedized and not prone to cyber-attacks.

NBC protection is a must.

The tank must have a built-in Armour Protection Suit against kinetic energy projectiles and missile attacks.

The modern-day sighting systems in the tank need to be ruggedized to withstand the environment.

Ammunition storage should be in blast-proof bins.

Taking into account that the fact that the Chinese have well-developed communication and infrastructure opposite us, across all sectors, he has the capability to build up his mechanised forces and employ them to his advantage for which we need to be able to match him with a suitable platform in all the sectors.

The procurement of the light tank should be on the fast track mode and the Indian Industry should step up to indigenise the components and support the manufacturing with quality control measures in place. Once again the spirit of “Atmanirbhar” needs to be awakened.

(The author is a former Armoured Corps officer. Views expressed are personal).

<https://www.financialexpress.com/defence/india-china-standoff-employment-of-armor-along-the-line-of-actual-control/2047882/>

THE TIMES OF INDIA

Sat, 08 Aug 2020

Amid LAC face-off, Army to study lasers, robotics & AI for warfare

By Rajat Pandit

New Delhi: The Army is undertaking a major study headed by a senior lieutenant general on advanced “niche and disruptive warfare technologies”, which range from drone swarms, robotics, lasers and loiter munitions to artificial intelligence, big data analysis and algorithmic warfare.

Sources on Friday said the aim of the “holistic study”, which comes amidst the ongoing military confrontation in eastern Ladakh with China, is to bolster the conventional war-fighting capabilities of the 13-lakh strong Army as well as prepare for “non-kinetic and non-combat” warfare in the years ahead.

China, of course, has been assiduously working to develop futuristic warfare technologies, like artificial intelligence (AI)-powered lethal autonomous weapon systems, towards its overall endeavor to usher in a major “revolution in military affairs (RMA) with Chinese characteristics”.

Indian Army’s new land warfare doctrine in 2018 had stressed the need to sharpen the entire war-fighting strategy, ranging from creation of agile integrated battle groups (IBGs) and expansive cyber-warfare capabilities to induction plans for launch-on-demand micro satellites, directed-energy weapons like lasers, AI, robotics and the like.

The new IBGs, after a similar study, have already started to take initial shape as self-contained fighting formations that can mobilize fast and hit hard. Each with around 5,000 soldiers and a varying mix of infantry, tanks, artillery, air defence, signals and engineers, the IBGs were war-gamed in exercises on both the western and eastern fronts last year, as was earlier reported by TOI.

“Technology will also be the key driver in future wars. The new study, which is headed by one of the seven Army commanders, will recommend the roadmap for inductions with timelines, along with an overall cost-benefit analysis being done for each disruptive technology,” said a source.

The study incorporates AI, remotely-piloted aerial systems, drone swarms, big data analysis, block-chain technology, algorithmic warfare, “Internet of Things”, virtual reality, augmented reality, hypersonic-enabled long range precision firing systems, additive manufacturing, biomaterial infused invisibility cloaks, exoskeleton systems, liquid armour, quantum computing, robotics, directed-energy weapons, loiter and smart munitions, among others.

“The Army’s existing equipment, ongoing procurements and long term perspective planning are based on concepts of warfighting which may transform due to induction of these niche technologies. They will accordingly be reviewed,” said another source.



The Army's future military planning will revolve around the effective integration of soldiers and such disruptive technologies into a cohesive war-fighting machinery. It will also focus on enhancing capabilities for 'Grey Zone' warfare, where operations may not necessarily cross the threshold of a full-fledged war, he added.

India, incidentally, has already done some groundwork on developing drone swarms or air-launched small aerial systems, which can overwhelm and destroy an enemy's air defence systems, in a joint project with the US.

It is one of the seven joint projects identified under the bilateral defence technology and trade initiative (DTTI) last October, with anti-drone technology called "counter-UAS rocket, artillery and mortar systems" being another one, as was reported by TOI.

<https://timesofindia.indiatimes.com/india/amid-lac-face-off-army-to-study-lasers-robotics-ai-for-warfare/articleshow/77425169.cms>

THE TIMES OF INDIA

Mon, 10 Aug 2020

Amid tensions with China, armed forces push case for arming Israeli drone fleet with laser-guided bombs, missiles

New Delhi: Amid border tensions with China, the armed forces are pushing a case for arming their Heron unmanned aerial vehicles (UAV) with laser-guided bombs, precision-guided munitions and anti-tank missiles for taking out enemy positions and armoured regiments.

The proposal, named 'Project Cheetah', has been revived by the armed forces after being pending for a long time and is expected to cost the government over Rs 3,500 crore.

"Under this project, around 90 Heron drones of the three services would be upgraded to be armed with laser-guided bombs, air to ground and air-launched anti-tank guided missiles," government sources told ANI.

The case is going to be considered by a high-level defence ministry body including defence secretary Ajay Kumar, who is now in charge of all capital procurements for the three services.

In the proposal, the armed forces have suggested that the drones should be equipped with stronger surveillance and reconnaissance payloads for keeping an eye on enemy locations and stations and take them out if required.

The Indian fleet of medium altitude long endurance drones, also known as UAVs, includes mainly Israeli equipment including the Herons.

They have been deployed by both the Army and Air Force in the forward locations of Ladakh sector along the China border. The drones also help in verifying the disengagement by Chinese as well as knowing their troop build up strength in depth areas.

The project to upgrade the drones for carrying out offensive operations against rivals would involve a number of Indian-developed solutions too.

The upgraded UAVs can be used against conventional military operations as well as in counterterrorism operations in future, if required, sources said.

With the upgrade in reconnaissance capabilities, the forces on the ground would also be able to get pin-point intelligence about hideouts in areas where men have to be involved in operations.



Amid tensions with China, armed forces push case for arming Israeli drone fleet with laser-guided bombs, missiles

The upgrades would also enable the ground station handlers of the armed forces to operate these aircraft from far-off distances and control them through the satellite communication system.

<https://timesofindia.indiatimes.com/india/amid-tensions-with-china-armed-forces-push-case-for-arming-israeli-drone-fleet-with-laser-guided-bombs-missiles/articleshow/77444897.cms>



Sat, 08 Aug 2020

नौसेना ने हिंद महासागर में युद्धपोतों की तैनाती बढ़ाई, चीन की हर हरकत पर रखी जा रही नजर

चीन के साथ कई महीनों से चल रही तनातनी के मद्देनजर भारतीय नौसेना ने हिंद महासागर क्षेत्र (आइओआर) में अपने युद्धपोतों की संख्या बढ़ा दी है।

नई दिल्ली: चीन के साथ कई महीनों से चल रही तनातनी के मद्देनजर भारतीय नौसेना ने हिंद महासागर क्षेत्र (आइओआर) में अपने युद्धपोतों की संख्या बढ़ा दी है। सरकारी सूत्रों के मुताबिक, नौसेना ने इस क्षेत्र में सामान्य तौर पर तैनात रहने वाले युद्धपोतों से करीब 25 फीसद अतिरिक्त युद्धपोत बढ़ाए हैं। अधिकारियों ने बताया कि पिछले सौ दिनों से भारतीय नौसेना उत्तर में लद्दाख से लेकर दक्षिण में मॉरीशस तक करीब 7,000 किलोमीटर और पश्चिम में लाल सागर से पूर्व में मलक्का जलडमरूमध्य तक करीब 8,000 किलोमीटर की दूरी तक निगरानी रख रही है।

दुश्मन को जवाब देने के लिए तत्पर

भारतीय नौसेना आइओआर में महत्वपूर्ण स्थानों पर अपने युद्धपोत तैनात रखती है। यह किसी भी स्थिति में दुश्मन को जवाब देने के लिए तत्पर रहते हैं। ये युद्धपोत बंगाल की खाड़ी, मलक्का जलडमरूमध्य, अंडमान सागर, दक्षिण और मध्य हिंद महासागर क्षेत्र, अदन की खाड़ी और फारस की खाड़ी में गश्त करते नजर आ सकते हैं।

सतर्कता से निगरानी

भारतीय नौसेना का एक युद्धपोत 2019 में आपरेशन संकल्प के दौरान से अब तक फारस की खाड़ी से गुजरने वाले मालवाहक जहाजों को सुरक्षा प्रदान करता है। भारतीय नौसेना का इस क्षेत्र में जबर्दस्त नेटवर्क है। इसके अलावा उसके विमान इस क्षेत्र में सतर्क निगरानी करते हैं।

...ताकि ना हो मुंबई हमले जैसी घटना

एक शीर्ष सरकारी अधिकारी ने बताया कि नौसेना तटवर्ती इलाकों की भी बहुत सतर्कता से निगरानी करती है। 26/11 के बाद इस काम में नौसेना 20 सरकारी एजेंसियों से सामंजस्य रखती है। इस निगरानी का मकसद मुंबई हमले जैसी किसी घटना की पुनरावृत्ति रोकना है।

आस्ट्रेलिया के सहयोग से सहूलियत

पूर्वी लद्दाख में चीनी सेना की गतिविधियां बढ़ने और 15 जून को गलवन में खूनी झड़प जिसमें 20 भारतीय सैनिक बलिदान हुए थे। इसके बाद भारतीय सेना, नौसेना और वायु सेना के प्रमुख प्रतिदिन बैठक कर संयुक्त प्रतिक्रिया पर विचार विमर्श करते हैं। चीन की घुसपैठ के बाद से नौसेना लगातार निगरानी कर रही है। आस्ट्रेलिया से जून में हुए पारस्परिक सहयोग समझौते के बाद से भारतीय नौसेना को कोकोस और कीलिंग आइलैंड तक जाने की छूट मिल गई है। इस छूट से नौसेना को हिंद महासागर क्षेत्र में प्रवेश करने वाले चीन के युद्धपोतों, पनडुब्बियों और विमानों की निगरानी करने में सहूलियत हो गई है।

<https://www.jagran.com/news/national-deployment-of-indian-navy-warships-increased-across-the-indian-ocean-region-20603716.html>

Indian Navy ramps up deployment of warships in Indian Ocean amid border tensions with China

The Indian Navy is said to have increased deployment of warships in the IOR since the border tensions with China began, government officials said

New Delhi: With a considerable increase in the deployment of its warships in the Indian Ocean Region (IOR), the Indian Navy is providing strategic support to its fellow services in the ongoing activities related to the border tensions with China.

The Indian Navy is said to have increased deployment of warships in the IOR since the border tensions with China began, government officials said. Some estimates indicate that the increase is almost 25 per cent.

The officials said that past 100 days have seen the Indian Navy operating from the Ladakh (with its P-8I surveillance aircraft) in the north to Mauritius, 7,000 km to the south, and from the Red Sea in the west to the Malacca Strait in the east, a distance of nearly 8,000 km.

Indian Navy deploys ships on Mission Based Deployments at key locations in the IOR so as to build a comprehensive maritime picture and respond to developing situations.

At any time, there are warships patrolling the Bay of Bengal, the Malacca Straits, the Andaman Sea, the southern and the central Indian Ocean Region, the Gulf of Aden and the Persian Gulf.

Additionally, following maritime security incidents, a combat-ready warship has also been deployed on Operation Sankalp since June 2019 for protection of Indian merchant vessels passing through the Persian Gulf.

"Being a network-enabled force, the Navy maintains total awareness of the IOR by using the IFC-IOR (Information Fusion Centre-Indian Ocean Region), ships on Mission Based Deployments, P-8I and Dornier surveillance aircraft and other high-end surveillance tools," a senior government official said.

Near-coast surveillance is also coordinated by the Indian Navy by coordinating the resources of nearly 20 government agencies to draw an electronic fence over our coastline, to deter any 26/11-type incident.

After Chinese People Liberation Army's activities in eastern Ladakh increased in the months of May and June, culminating in June 15 clashes in which 20 Indian soldiers were killed, the chiefs of the Indian Army, Navy and Air Force are meeting on a daily basis to coordinate the joint response.

Since then, the Indian Navy has been at the forefront of strategic signalling to the Chinese forces.

Signing of the Mutual Logistics Support Agreement in June with Australia gave the Indian Navy access to the strategically located Cocos and Keeling Islands in the southern Indian Ocean, which will enable ships and aircraft to keep watch on Chinese Navy ships and submarines entering the Indian Ocean Region.

Similarly, the agreement provides Australian ships and aircraft access to the Andaman and Nicobar Islands, to extend their reach into the South China Sea.

The Indian Navy conducted four joint exercises with foreign navies during the Galwan crisis to signal intent to the Chinese Communist Party Navy.

The India-Indonesia coordinated patrol was conducted along the maritime boundary line on June 15 by ships and aircraft of both nations, while Japanese and Indian Navy ships also jointly exercised in the Indian Ocean Region on June 27.



Indian naval warships patrolling the high seas.
| Photo Credit: PTI

Passage exercises were also conducted with French Navy in June and between the Indian Navy's Eastern Fleet and US Navy's Nimitz Carrier Strike Group in July.

These joint exercises were an affirmation of the resolve of the global comity against China's recent aggressions. The combination of joint resolve on the Line of Actual Control coupled with strategic signalling at sea seems to have had the desired effect, for now.

With the disengagement at Ladakh slowing down, the Indian armed forces are aware that this could be long drawn-out affair.

"Adequate operational tempo tempered with maintenance of readiness of men and materiel is the order of the day," the official said.

While the Indian Army mobilised on a war-footing in Ladakh and other areas along the LAC, the Air Force has forward deployed its top-of-the-line aircraft.

Indian Navy deployed the P8I Poseidon aircraft to Ladakh to provide valuable intelligence on PLA's mobilisation on the LAC.

"Aptly named after the Greek god of the sea, the P-8I is an all-weather aircraft with latest sensors and weapons, and is a maritime domination platform," said a senior government official.

The cutting-edge performance of the aircraft has now prompted the Indian Navy to place orders for another 10 of these aircraft, which will soon increase its inventory to 18.

The Indian Navy is now set to induct the carrier-borne strike aircraft Mig-29K to fly combat air patrols along with Indian Air Force jets in Ladakh - a credit to the joint pilot training programme of the Indian armed forces.

<https://www.timesnownews.com/india/article/indian-navy-ramps-up-deployment-of-warships-in-indian-ocean-amid-border-tensions-with-china/633669>

THE TIMES OF INDIA

Sat, 08 Aug 2020

GSL to build damage control simulator for Navy

Panaji: The Indian Navy has tasked Goa Shipyard Limited (GSL) to build a damage control simulator which will be based at Port Blair, Andaman and Nicobar Islands. The Navy and GSL formally signed the contract for the simulator on Friday, this being the seventh simulator that GSL will build for the armed forces.

The simulators will help train naval personnel to deal with various types of vessel damage, ranging from fires to water ingress. The simulator has 19 compartments and can simulate five different damage control exercises.

As many as 24 naval personnel can be trained at a time in the simulator, GSL said.

A damage control simulator is essentially a training system that simulates a realistic and stressful but controlled environment for crew training in ship damage control and repair. The probability of damage to a warship during war and routine sorties is likely and the navy trains its personnel to contain the damage and save the vessel. "The crew needs to be able to respond to the threat with efficiency, expertise and confidence gained from training in similar situations," said a naval officer.

Till date, GSL has built six simulators and has even exported a damage control simulator to a neighbouring country.

"With the signing of this contract, GSL has consolidated its position in supply of ship simulators for damage control. All these GSL built simulators are in active service and are assisting the users in providing realistic simulation of possible naval scenarios at training establishments," said GSL chairman and managing director B B Nagpal.

The three deck structure can simulate ship movements, compartment flooding, failure of electrical power and machinery.

GSL has completed refit of 17 vessels in the last 18 months and is also working on warships for the navy and the Coast Guard.

<https://timesofindia.indiatimes.com/city/goa/gsl-to-build-damage-control-simulator-for-navy/articleshow/77423313.cms>

THE HINDU BusinessLine

Sat, 08 Aug 2020

As Indian Defence aims for self-reliance, private sector seeks level playing field

By G Balachandar

Chennai: DPEPP 2020 suggests a more bottom-up framework to empower defence PSUs achieve greater scale by expanding the role of the private sector

As the Indian government has come out with a blueprint for self-reliance in Defence procurement, Indian private sector is seeking a level playing field with some actionable measures for its active participation in fulfilling the twin objectives of self-reliance and exports.

Private sector players have lauded the government's draft Defence Production and

Export Promotion Policy (DPEPP) 2020 as a well-structured apex level policy document which is in-line with the 'Atmanirbhar Bharat' goal. The draft document has clearly-defined goals and high-level strategies for indigenous R&D, production and exports in the Defence sector.

The DPEPP 2020 suggests a more bottom-up framework to empower system integrators (defence PSUs) achieve greater scale by expanding the role of the private sector.

The share of the private sector has been steadily increasing with participation of more players and it accounts for little over a fifth (₹17,000 crore) of the Defence industry (₹80,000 crore).

"It was the industry's demand that the Ministry of Defence implement and operationalise the draft Defence Production policy 2018 with some of the goals. The draft DPEPP now combines the Defence Production Policy 2018 as well as the Export Guidelines in the form of a single policy document. This will focus on Defence production for India as well as for export markets," said Jayant D Patil, Whole-Time Director & Senior Executive Vice President (Defence & Smart Technologies), Larsen & Toubro Ltd, which has been in the Defence business for more than three decades and has established significant indigenous capabilities.

To enhance the role of private sector in the domestic defence supply chain, several initiatives have been proposed. The policy has tried to address two major concerns – import of major weapons and procurement visibility.

However, Patil pointed out that without a level playing field in letter and spirit, the private sector cannot truly contribute towards achieving the goals of DPEPP.

"We would have liked to see a policy document like this to mention that private sector players will have level playing field on par with the government-owned defence PSUs and demonstrate the same through measurable actions.

"Need for such an inclusion in the DPEPP is highlighted by the fact that officials have preferred to direct friendly country requests for imports from India to Defence PSUs even when track record existed with the private sector and where the private sector had previously exported the goods to another country," he added.



Ashok Leyland, one of the largest mobility suppliers to the Indian Defence sector for over five decades, stated that DPEPP 2020 policy is in the right direction.

“We see the DPEPP 2020 as an opportunity for us, as we can be part of any wheeled mobility solutions which can be delivered with high standards to any of the equipment or tactical vehicles. Recently, AL has ventured into tactical/armoured vehicle solutions and developed bullet-proof vehicles. We are expanding in these areas and will stand to benefit from DPEPP 2020,” said Vipin Sondhi, Managing Director & CEO, Ashok Leyland.

However, he felt that implementation of the new policy would be vital in realising the objectives.

“To indigenise, we need to have one nodal agency for approvals and the process should be time-bound. Trials to procurement are a long lead process and that should be reduced to help implement and promote Make in India. Also, the private industry spends a lot on R&D and trials, but only one OE gets listed as L1. If this issue can be addressed, it would be helpful,” said Sondhi.

Several private sector players like Bharat Forge and Sundram Fasteners are keen on tapping the emerging opportunities in Defence. Sundram Fasteners has set up a subsidiary to focus on the aerospace and Defence segments. It has orders for forged, cast and machined parts for all-terrain and land systems vehicles for Defence.

In the aerospace segment, Chennai-headquartered MRF has emerged as a key player in the supply of tyres to Indian Air Force. It has started supply of tyres to advanced fighter jets like Sukhoi as part of an indigenisation programme.

<https://www.thehindubusinessline.com/companies/as-indian-defence-aims-for-self-reliance-private-sector-seeks-level-playing-field/article32291369.ece#>



Sat, 08 Aug 2020

Rafale acquisition gives much-needed boost to India's defence-industrial agenda

Since 2014, the country also started a massive programme to build domestic defence-industrial capabilities which have yielded slow but steady results

By Sameer Patil

Nearly two decades after Sukhoi aircraft were imported, India received a fleet of five French-manufactured Rafale multi-role combat jets last week. The acquisition of the Rafale fighter jets is a much-needed capacity booster for the Indian Air Force (IAF), given the aircraft's proven combat capabilities in air defence, electronic warfare and ground support. Their induction into the IAF will also support India's management of the ongoing border stand-off with China's People's Liberation Army (PLA) in eastern Ladakh where India has already deployed multiple weapons platforms hardware including Sukhoi-30 and Mirage fighter jets.

India has got defence upgrade over the last 15 years mostly through imports. Since 2014, the country also started a massive programme to build domestic defence-industrial capabilities which have yielded slow but steady results. Defence-industrialisation is critical for India as it is linked to national security and the country's profile in the Indo-Pacific region. The significance of building such capabilities is evident from the Chinese example. Till two decades ago, China was one of the largest arms importers. Now it is the world's fifth-largest arms exporter, according to the



Rafale multi-role combat jets

Stockholm International Peace Research

Institute's Trends in International Arms Transfers, 2019. This has implications for India as Beijing has assiduously exploited its role as a defence supplier to entrench itself in India's neighbourhood.

India is now trying to catch up. Since 2014, under the 'Make in India' initiative, the government has been promoting the private sector and start-ups in defence manufacturing. The aim is not just building the manufacturing capacity but also achieving technological competency. The two most important mechanisms to achieve these are the Strategic Partnership (SP) model and the Innovations for Defence Excellence (iDEX) programme.

The SP model was launched in 2017 and seeks to establish partnerships between Indian and foreign defence companies for manufacturing the equipment of fighter aircraft, submarines and helicopters. India needs the technical expertise that foreign defence companies bring with them. This January, the first domestic SP contract was activated when the defence ministry shortlisted the defence public sector unit (DPSU) Mazagon Dock and private shipbuilder L&T as Indian strategic partners for the Rs 45,000-crore contract to build the P75I diesel-electric submarines for the Indian Navy.

Besides the SP model for producing equipment for the Indian military, Indian companies have forged partnerships with foreign firms for exporting aerospace related sub-systems and components, unlocking new business opportunities. Full-fledged joint ventures of European and American companies like Airbus, Boeing and Lockheed Martin with Indian companies like Tata Advanced Systems, Bharat Forge, and Mahindra Aerostructures to manufacture and export sub-systems are activating and becoming part of the global supply chain.

The government is also promoting the involvement of start-ups and individual innovators through the iDEX programme. It seeks solutions for augmenting the Indian military's operational and combat capabilities, and has identified technologies like soldier protection systems, secure hardware encryption devices, GPS anti-jam devices, unmanned surface and underwater vehicles, and 4G/LTE tactical local area network, among others.

While these measures are a good start, they need to be well-developed to be utilised to the full. For example, the DPSUs fear losing their monopoly in defence manufacturing and being shown up for their weaknesses in performance. To leverage DPSU's experience and infrastructure and the private sector's management and financial expertise, the SP model should be extended to form partnerships between the DPSUs and the private sector.

On the technology front, the government can initiate flagship defence technology development programmes catering to future defence acquisitions. Ideally, these should be based on India's existing competencies, such as information and digital technology, to integrate the commercial and manufacturing dimensions with research and development efforts and expedite their commercialisation, like in the United States. This will help in identifying critical technologies, especially those that may be denied to India as part of the global export control regimes such as Australia Group and Wassenaar Arrangement. Though India has become a member of these regimes, efforts to deny technologies to developing countries have continued.

India already has like-minded diplomatic partners on its side—the US, Japan, and Israel, with each of whom India has multiple projects to co-develop and co-produce defence technologies. India should expand its partnerships geographically to include partners like Australia and technologically to include new innovations like additive manufacturing which is now being used in the production of civil and military aerospace and naval systems components.

The political will to reduce import dependence by creating a domestic defence industrial base is evident. By bringing certainty to the defence procurement process, monitoring emerging technologies and joining hands with like-minded countries, this political will can become a vibrant and profitable defence-industrial reality.

(The author is Fellow, International Security Studies Programme, Gateway House. Views expressed are personal.)

<https://www.outlookindia.com/website/story/opinion-rafale-acquisition-gives-much-needed-boost-to-indias-defence-industrial-agenda/358191>

India-Myanmar border on high alert after ambush by separatist rebels

The ambush came amid a reshuffling of the Naga separatist movement in Myanmar

By Rajeev Bhattacharya

Indian security forces have been put on high alert along the country's border with Myanmar following another ambush by separatist rebels that killed three personnel of a paramilitary outfit.

An official said that "vulnerable spots" along the border in India's Northeast have been identified and "area domination exercises" launched to prevent further attacks by the rebel groups.

In Nagaland's Mon and Tuensang, which had been a hotbed of militancy for the past several decades, additional deployment of troops have been observed by residents in the district headquarters.

On July 29, a joint squad of three Myanmar-based separatist groups from India's Northeast ambushed a patrolling party of Assam Rifles on the border at Sajik Tampak in Manipur's Chandel district. A press release issued by these outfits claimed that four personnel were killed in the attack as part of the campaign against India's "colonization" of western Southeast Asia.

Chandel has been one of the most vulnerable zones along the 1,643 kilometer long India-Myanmar border. In 2015, as many as 18 soldiers of the Indian army were killed in an ambush carried out jointly by the separatist outfits.

Across Chandel in Myanmar are at least two big camps belonging to the People's Liberation Army (Manipur) and United National Liberation Front, which serve as a launching pad for the attacks against the Indian security forces. Both the outfits hail from Manipur's Imphal Valley and have close ties with other separatist groups in the region.

The release mentions the involvement of a new outfit, the Manipur Naga People's Front (MPNF), in the recent attack, fueling speculation among the Indian security agencies about new linkages that might have emerged among the groups and whether it was linked to the division in the Naga separatist movement in Myanmar.

The ambush on July 29 was preceded by two developments in Myanmar's Naga inhabited region which is contiguous to India's Northeast. The Khaplang faction of the National Socialist Council of Nagaland (NSCN-K) suffered its second split in less than two years when a faction led by Niki Sumi expelled chairman Yung Aung.

A release cited Aung's decision to change the official seal and his attempts to "clandestinely" establish ties with the Isak-Muivah faction of NSCN (NSCN-IM), which operates out of India's Northeast, as the reasons for his expulsion from the outfit.

Predictably, Aung reacted by expelling Sumi and two senior functionaries from the organization on charges of convening "illegal meetings," misappropriation of funds, encouraging "divisive policies," and failing to report in the council headquarters after being summoned.

The entire outcome of these developments may be too early to gauge but the split will certainly weaken the separatist movement in Myanmar's Naga inhabited zone. The unity that former chairman S. S. Khaplang had assiduously maintained could be difficult to sustain given the myriad tribes in the region. While Aung is a Pangmi Naga, Niki Sumi hails from the Sumi tribe in Nagaland and he has the support of some senior leaders from the Konyak Naga region in Myanmar.



Credit: Photo by special arrangement

Adding to the complexities were reports last month that the Tatmadaw, Myanmar's military, has deployed additional columns of the army in the remote hilly regions of Sagaing Division along the border with India. There was speculation that another offensive would be launched against the NSCN(K)'s stronghold to flush out rebels belonging to United Liberation Front of Asom (Independent) from Assam in northeast India.

All the camps of the separatist outfits from India's Northeast were dismantled in a raid last year at Taga. Several functionaries from many groups were jailed and later handed over to India. However, no operations were launched this time around and the army reportedly returned to its barracks after a couple of weeks.

An Indian government official explained that the additional deployment was triggered following Tatmadaw's receipt of reports that a large group of the NSCN(IM) would shift base to certain locations in Myanmar's Sagaing Division. Earlier, there had been a spate of reports in the media claiming that the NSCN(IM) had already transferred a large chunk of its weapons and cadres to camps in Myanmar from its camps in India's Northeast.

NSCN (IM) has been engaged in a peace process with the Indian government since 1997 with the objective to reach a negotiated settlement. A "Framework Agreement" clinched in 2015 between the two sides raised the hope of an agreement, but the process has been stuck over the demands of a separate flag and constitution by the Naga group, which is unacceptable to the government.

In the last couple of months, government troops have also launched a crackdown against the outfit resulting in some encounters as well. The NSCN (IM) has accused the government of putting the peace process in "cold storage" and it has blamed the interlocutor and Nagaland governor R. N. Ravi for the delay.

(Rajeev Bhattacharyya is a senior journalist in Assam, India.)

<https://thediplomat.com/2020/08/india-myanmar-border-on-high-alert-after-ambush-by-separatist-rebels/>



DEFENCE AVIATION POST

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Sat, 08 Aug 2020

Indian Armed Forces contingent heads to Russia for war games next month

Post COVID-19, India gets ready to participate in the Russian Kavkaz 2020 strategic command-post exercise. All the bilateral and multilateral military exercises had been put on hold due to the global pandemic of COVID-19 and now their resumption is starting gradually.

The exercise comes at a time when the tensions between India and China are growing along the Line of Actual Control in Eastern Ladakh. China and Pakistan are also invited to participate in KavKaz 2020 as both countries are members of the Shanghai Cooperation Organisation (SCO).

Who will participate from India?

According to sources, "a tri-service contingent with 150 Army personnel and from Air Force and Navy will be heading to Astrakhan in Southern Russia for the exercise."



The exercise is scheduled for September 15-26 and there will be participation from at least 18 countries in KavKaz 2020 including countries from Central Asian Republics who are part of SCO as well as China, Iran, Pakistan and Turkey.

While the countries which have been invited are yet to confirm their participation, according to a top diplomat, Pakistan is likely to participate.

Due to global lockdown, all the three services had put on hold all their internal drills as well as globally.

Earlier this summer, at the Victory Day Parade, Indian and Chinese military contingents marched at Red Square in Moscow. This event was to mark the 75th anniversary of World War II, and defence minister Rajnath Singh was there to represent India at the parade.

More about SCO and India's participation in these drills

The grouping is a eight-member economic and security bloc and India and Pakistan were admitted as full members back in 2017.

<https://www.defenceaviationpost.com/2020/08/indian-armed-forces-contingent-heads-to-russia-for-war-games-next-month/>

hindustantimes

Sat, 08 Aug 2020

China offers a new normal to end Ladakh border standoff. India shoots it down

India has told China that restoration of the pre-April 20 position at the friction points in East Ladakh is a prerequisite for normalisation of bilateral ties

By Shishir Gupta

New Delhi: The Indian Army will continue to sit it out along the 1,597 km Line of Actual Control in East Ladakh till China restores status quo ante, people familiar with the development told Hindustan Times after China's People's Liberation Army made an unsuccessful attempt to negotiate a new normal at the border.

India has told China on more than one occasion that restoration of the pre-April 20 position at the friction points in east Ladakh is a prerequisite for normalisation of bilateral ties. But China hasn't given up.

"The PLA has made it out to be a staring match and wants India to blink. We are also prepared to wait it out and take other steps to make Beijing realise the adverse impact the boundary dispute has on the bilateral relationship," a top government official familiar with discussions within the government on the standoff said.

India has already banned over 100 Chinese mobile applications and its clones, changed the rules to bar Chinese firms from getting government contracts and is next taking a hard look at tie-ups with Chinese universities to ascertain if they comply with existing norms.

The message, even if not explicitly spelt out, has been that the longer the PLA led by commander-in-chief Xi Jinping takes to disengage at the border and restore status quo, the more damage it will cause to the India-China relations.

China, however, hasn't given up and appears to have rested its hopes on the Indian government coming under pressure from its domestic constituents to end the standoff.

Like the political row that erupted on Thursday after a defence ministry note that spelt out India's position on the continuing standoff made its way to the government website. It transpires that an official, tasked to compile the ministry's activities to be placed on the website, adopted a



The PLA, a senior army officer said, wants India to move back from its traditional points where it has had an advantage before it vacates locations where it had moved in April-May. (HT Photo)

shortcut and put out the Defence Secretary's monthly report to the Cabinet Secretary without removing operational details of the standoff.

China has been betting on India taking the easier way out, even putting out statements that told the world that the standoff was over and the disengagement completed at Ladakh. The Indian government didn't take the bait, prompting Beijing to shift its stand and speak about the positive progress being made.

On the ground, the Indian army has told the government, China's PLA is dragging its feet both at patrolling point 17 and 17A (General Area Gogra) and on the finger features on the banks of the Pangong Tso.

At the meeting of the military commanders from the two sides, the PLA has been attempting to persuade the Indian Army to yield to a new normal. "The PLA wants a military reward from the Indian army despite being the aggressor that triggered the border tension and plunged ties between the two countries to their lowest point in decades," an army commander said.

The PLA, the senior army officer said, wants India to move back from its traditional points where it has had an advantage before it vacates locations where it had moved in April-May.

For instance, the PLA wants to hold its new positions on the first ridge-line next to the Kugrang River near Gogra so that the Indian domination on the ridgeline gets reduced comparatively.

At Pangong Tso, the PLA is still sitting on the upper heights of finger 4 relief in lesser numbers and wants Indian troops to withdraw behind its established old base at Dhan Singh Thapa post around Finger 3. The PLA also wants Indian Army to yield to new normal on general area Gogra and has linked its withdrawal from finger feature 4 to 8 in depth at the Pangong Tso.

The Chinese proposal, the army officer said, reflected that it had not been able to accurately assess New Delhi's determination not to cede ground. Militarily, China's effort is clearly an attempt to position the PLA on dominating heights to add more depth to their bases in the Aksai Chin area.

<https://www.hindustantimes.com/india-news/india-lobb-ball-in-china-s-court-rejects-attempt-to-set-a-new-normal-at-ladakh-border/story-Xbn3br6jL3D6xjlupFdwzO.html>

Materials science researchers develop first electrically injected laser

Materials science researchers, led by electrical engineering professor Shui-Qing "Fisher" Yu, have demonstrated the first electrically injected laser made with germanium tin.

Used as a semiconducting material for circuits on electronic devices, the diode laser could improve micro-processing speed and efficiency at much lower costs.

In tests, the laser operated in pulsed conditions up to 100 kelvins, or 279 degrees below zero Fahrenheit.

"Our results are a major advance for group-IV-based lasers," Yu said. "They could serve as the promising route for laser integration on silicon and a major step toward significantly improving circuits for electronics devices."

The research is sponsored by the Air Force Office of Scientific Research, and the findings have been published in *Optica*, the journal of The Optical Society. Yiyin Zhou, a U of A doctoral student in the microelectronics-photonics program authored the article. Zhou and Yu worked with colleagues at several institutions, including Arizona State University, the University of Massachusetts Boston, Dartmouth College in New Hampshire and Wilkes University in Pennsylvania. The researchers also collaborated with Arktonics, an Arkansas semiconductor equipment manufacturer.

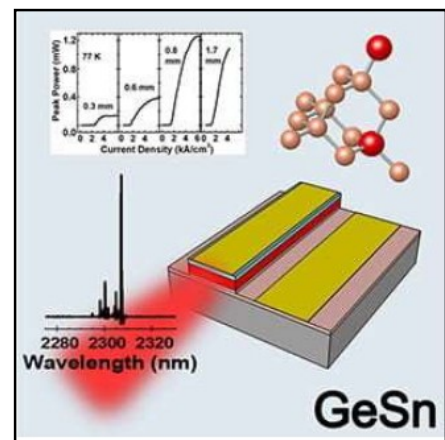
The alloy germanium tin is a promising semiconducting material that can be easily integrated into electronic circuits, such as those found in computer chips and sensors. The material could lead to the development of low-cost, lightweight, compact and low power-consuming electronic components that use light for information transmission and sensing.

Yu has worked with germanium tin for many years. Researchers in his laboratory have demonstrated the material's efficacy as a powerful semiconducting alloy. After reporting the fabrication of a first-generation, "optically pumped" laser, meaning the material was injected with light, Yu and researchers in his laboratory continue to refine the material.

More information: Yiyin Zhou et al. Electrically injected GeSn lasers on Si operating up to 100 K, *Optica* (2020). DOI: [10.1364/OPTICA.395687](https://doi.org/10.1364/OPTICA.395687)

Journal information: *Optica*

<https://phys.org/news/2020-08-materials-science-electrically-laser.html>



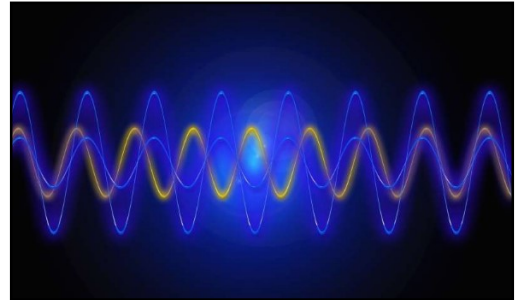
Schematic illustration of electrically injected germanium-tin laser and its power output versus current and spectrum characteristics. Credit: University of Arkansas

Scientists develop principles for the creation of an 'acoustic diode'

In research published in *Science Advances*, a group led by scientists from the RIKEN Center for Emergent Matter Science (CEMS) have used the principle of magneto-rotation coupling to suppress the transmission of sound waves on the surface of a film in one direction while allowing them to travel in the other. This could lead to the development of acoustic rectifiers—devices that allow waves to propagate preferentially in one direction, with potential applications in communications technology.

Devices known as rectifiers are extremely important in technology development. The best known are electronic diodes, which are used to convert AC into DC electricity, essentially making electrification possible.

In the current study, the group examined the movement of acoustic surface waves—movements of sound like the propagation of earthquakes over the surface of the Earth—in a magnetic film. There is interplay between the surface acoustic waves and spin waves, disturbances in magnetic fields within the material that can move through the material.



Credit: CC0 Public Domain

Acoustic surface waves can excite spin waves in two ways. One, magneto-elastic coupling, is very well documented. However, a second, magneto-rotation coupling, was proposed more than 40 years ago by Sadamichi Maekawa, one of the authors of the current study, but was not experimentally verified until now.

In the current study, the authors found that the two mechanisms occur at the same time, but under different intensities. They found that when the magnetization of the magnetic specimen is rotating in the same direction of the surface acoustic waves, the energy of the acoustic surface waves is more efficiently transferred to the spin waves, increasing the rotation of the magnetization. In fact, the researchers were able to identify a configuration of unidirectional coupling where only the energy of surface acoustic waves in one direction could be transferred to the rotation of the magnetization. They also noticed that this rectification effect was more pronounced when the magnetic material exhibited magnetic anisotropy, meaning there was a preferred direction of internal magnetization even before the application of an external magnetic field.

Mingran Xu of RIKEN CEMS, the first author of the paper, says: "It was very exciting to show that the phenomenon of magneto-rotation coupling actually takes place, and that it can be used to completely suppress the movement of acoustic energy in one direction."

Jorge Puebla, also of RIKEN CEMS, says: "We hope that we can use this work to create an 'acoustic diode' equivalent to the electronic diodes that are so important. We could relatively easily make a device where the acoustic energy is efficiently transferred in one direction but blocked in the other. This is happening at microwave frequencies, which is the range of interest for 5G communication technology, so surface acoustic waves may be an interesting candidate for this technology."

More information: "Nonreciprocal surface acoustic wave propagation via magnetorotation coupling" *Science Advances* (2020). DOI: [10.1126/sciadv.abb1724](https://doi.org/10.1126/sciadv.abb1724)

Journal information: [Science Advances](https://phys.org/news/2020-08-scientists-principles-creation-acoustic-diode.html)
<https://phys.org/news/2020-08-scientists-principles-creation-acoustic-diode.html>

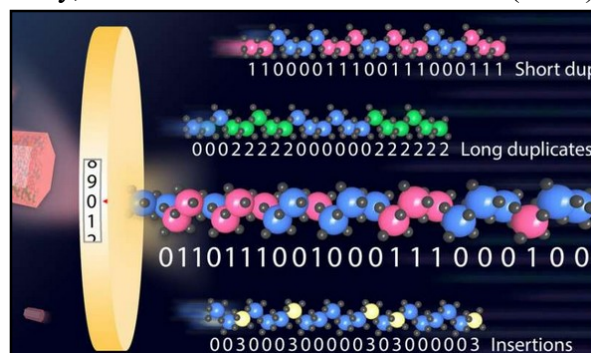
Programmable synthetic materials

By Robert Sandlers

Artificial molecules could one day form the information unit of a new type of computer or be the basis for programmable substances. The information would be encoded in the spatial arrangement of the individual atoms—similar to how the sequence of base pairs determines the information content of DNA, or sequences of zeros and ones form the memory of computers.

Researchers at the University of California, Berkeley, and Ruhr-Universität Bochum (RUB) have taken a step towards this vision. They showed that atom probe tomography can be used to read a complex spatial arrangement of metal ions in multivariate metal-organic frameworks.

Metal-organic frameworks (MOFs) are crystalline porous networks of multi-metal nodes linked together by organic units to form a well-defined structure. To encode information using a sequence of metals, it is essential to be first able to read the metal arrangement. However, reading the arrangement was extremely challenging. Recently, the interest in characterizing metal sequences is growing because of the extensive information such multivariate structures would be able to offer.



Rods of multivariate MOFs (left) can be programmed with different metal atoms (colored balls) to do a series of chemical tasks, such as controlled drug release, or to encode information like the ones and zeros in a digital computer. Credit: UC Berkeley image by Omar Yaghi and Zhe Ji

Fundamentally, there was no method to read the metal sequence in MOFs. In the current study, the research team has successfully done so by using atom probe tomography (APT), in which the Bochum-based materials scientist Tong Li is an expert. The researchers chose MOF-74, made by the Yaghi group in 2005, as an object of interest. They designed the MOFs with mixed combinations of cobalt, cadmium, lead, and manganese, and then decrypted their spatial structure using APT.

Li, professor and head of the Atomic-Scale Characterisation research group at the Institute for Materials at RUB, describes the method together with Dr. Zhe Ji and Professor Omar Yaghi from UC Berkeley in the journal *Science*, published online on August 7, 2020.

Just as sophisticated as biology

In the future, MOFs could form the basis of programmable chemical molecules: for instance, an MOF could be programmed to introduce an active pharmaceutical ingredient into the body to target infected cells and then break down the active ingredient into harmless substances once it is no longer needed. Or MOFs could be programmed to release different drugs at different times.

"This is very powerful, because you are basically coding the behavior of molecules leaving the pores," Yaghi said.

They could also be used to capture CO₂ and, at the same time, convert the CO₂ into a useful raw material for the chemical industry.

"In the long term, such structures with programmed atomic sequences can completely change our way of thinking about material synthesis," write the authors. "The synthetic world could reach a whole new level of precision and sophistication that has previously been reserved for biology."

More information: Sequencing of metals in multivariate metal-organic frameworks, *Science* (2020). DOI: [10.1126/science.aaz4304](https://doi.org/10.1126/science.aaz4304), science.sciencemag.org/content/369/6504/674

Journal information: *Science*

<https://phys.org/news/2020-08-programmable-synthetic-materials.html>

Measuring electron emission from irradiated biomolecules

When fast-moving ions cross paths with large biomolecules, the resulting collisions produce many low-energy electrons which can go on to ionize the molecules even further. To fully understand how biological structures are affected by this radiation, it is important for physicists to measure how electrons are scattered during collisions. So far, however, researchers' understanding of the process has remained limited. In new research published in *EPJ D*, researchers in India and Argentina, led by Lokesh Tribedi at the Tata Institute of Fundamental Research, have successfully determined the characteristics of electron emission when high-velocity ions collide with adenine—one of the four key nucleobases of DNA.

Since high-energy ions can break strands of DNA as they collide with them, the team's findings could improve our understanding of how radiation damage increases the risk of cancer developing within cells. In their experiment, they considered the 'double differential cross section' (DDCS) of adenine ionization. This value defines the probability that electrons with specific energies and scattering angles will be produced when ions and molecules collide head-on, and is critical for understanding the extent to which biomolecules will be ionized by the electrons they emit.



To measure the value, Tribedi and colleagues carefully prepared a jet of adenine molecule vapor, which they crossed with a beam of high-energy carbon ions. They then measured the resulting ionization through the technique of electron spectroscopy, which allowed them to determine the adenine's electron emissions over a wide range of energies and scattering angles. Subsequently, the team could characterize the DDCS of adenine-ion collision; producing a result which largely agreed with predictions made by computer models based on previous theories. Their findings could now lead to important advances in our knowledge of how biomolecules are affected by high-velocity ion radiation; potentially leading to a better understanding of how cancer in cells can arise following radiation damage.

More information: Shamik Bhattacharjee et al, Electron emission in ionization of adenine molecule induced by 5 MeV/u bare C ions, *The European Physical Journal D* (2020). DOI: [10.1140/epjd/e2020-10151-3](https://doi.org/10.1140/epjd/e2020-10151-3)

Journal information: [European Physical Journal](https://phys.org/news/2020-08-electron-emission-irradiated-biomolecules.html)
<https://phys.org/news/2020-08-electron-emission-irradiated-biomolecules.html>

Business Standard

Sun, 09 Aug 2020

India weighs options in debate on who gets first shot of Covid-19 vaccine

Companies wait for government orders as top medical research group says health workers must get first inoculation

By Ruchika Chitravanshi & Sohini Das

New Delhi/Mumbai: As the world races towards the coronavirus vaccine, the larger debate on who gets it first, how and for what price has also gathered pace, especially in the backdrop that unlike many rich countries that have invested and made advance payments for vaccine procurement and its development, no such move has yet been made by the Indian government.

The Indian Council of Medical Research has said that the vaccine should be made available to the health workers first. Health secretary Rajesh Bhushan also said recently that there was already a growing consensus that the frontline health workers have the best claim to the vaccine. "This would also avoid shortage of healthcare professionals."

The statement however, has been seen by experts more as a suggestion or a wish not backed by any action. Whether the government will provide the vaccine to health workers for free or whether any of its arm procure coronavirus vaccine for the country is also not clear.

The ICMR in response to some of these queries said it did not wish to respond. Government sources indicated that the ICMR and the health ministry are still deliberating on these issues. "There is not much clarity on which candidate may emerge successful, and therefore, the government has not made any funding commitments to any local player to pick up its vaccines. However, some grants have been made available from the department of Biotechnology," said a senior official.

Indian companies have joined Covax - Covid-19 Vaccine Global Access, and have partnered with the Bill and Melinda Gates Foundation and Gavi to supply vaccines to low and medium income countries. Many rich countries such as the US, Japan, UK among others have already paid drug companies upfront to secure billions of doses of vaccines.

"Countries can do bilateral deals and can also be part of the Covax facility...The bilateral deals run the risk that some companies may not end up with a successful vaccine whereas in Covax you are pooling that risk by investing a large number of candidates," said Soumya Swaminathan, chief scientist, World Health Organisation.

The availability of vaccines through Covax will depend upon the funds available with the initiative to purchase the vaccines. Gavi has estimated \$2 billion as the minimum requirement for initial supplies and it has so far raised \$600 million. India, since it is not counted among the high and upper middle income countries, does not need to make any advance payment to Gavi as one of its eligible members.

"Model that we want to promote is that whatever is available, share it equitably," Swaminathan said.



India is banking heavily on its vaccine manufacturing capabilities - among the highest in the world to give it a good bargaining position in accessing the vaccine.

WHO is also expecting countries who have placed bulk orders to share any excess supply they might have with other countries.

Indian vaccine makers are keenly waiting for the government to give some sign for procurement of vaccines. “We understand that the initial batches of the vaccine produced would be procured by the government for equitable distribution. However, the government has not yet shared the risk of development, or invested in the project thereby committing to procure vaccines,” a leading vaccine manufacturer said.

Panacea Biotec and Hyderabad based company Indian Immunologicals have also said that there has been no discussion on procurement of vaccines with the government till now. “The government is perhaps waiting for more clarity on which candidate can emerge successful, and then take a call on investments or procurement,” said Rajesh Jain, managing director, Panacea Biotec.

Another vaccine manufacturer indicated that the government has assured help in scaling up manufacturing if a vaccine is proven successful in phase 3 trials.

The department of pharmaceutical too had recently held a review meeting with glass vial makers on production capacity and did a stock-taking of preparedness.

Serum Institute of India has partnered with Gavi and Gates Foundation to supply 100 mn doses of Covid19 vaccines - AstraZeneca-Oxford candidate and Novavax candidate, at a price cap of \$3 or Rs 250 per dose. For this, the Bill & Melinda Gates Foundation, via its Strategic Investment Fund, will provide at-risk funding of \$150 million to Gavi for supporting SII in the manufacture.

Beyond the 100 mn doses commitment to Gavi, SII will be free to price the vaccines in the Indian market. Adar Poonawalla, CEO of SII has, however, indicated earlier that the price of the vaccine would be less than Rs 1000 per dose.

Vaccines that were made available for free in India include polio, diphtheria, tetanus, BCG, according to experts. For various other diseases, such as hepatitis, chicken pox people had to buy the vaccine on their own, experts said.

“Government will say we have made the vaccine available in the country: Go buy it. That is what has happened with the influenza vaccine. If they were serious in terms of wanting to use a vaccine, they would definitely have spent some money on it,” said Jacob John, senior virologist.

Funding aside, vaccine makers are also highlighting issues such as faster permissions and easier clearance by the government. Towards this end, Krishna Ella, managing director, Bharat Biotech said at a recent event, “It was important for the government to decentralise the clearance process for vaccine development as well as set up regional offices of regulatory bodies.”

India is banking heavily on its vaccine manufacturing capabilities - among the highest in the world to give it a good bargaining position in accessing the vaccine.

Speaking at the ICMR seminar on vaccines, Dr Anthony Fauci, director of the National Institute of Allergy and Infectious Diseases (NIAID), and a leading infectious disease expert had said that India's private sector will have a 'very important role' to play in the global battle against Covid19.

“Moving forward, we and other (US National Institutes of Health) institutes will continue to work with Indian counterparts and colleagues to assure Indian scientists and Indian impressive research and development capacity are integrated in the global efforts to address the Covid-19 vaccine," he had said.

However, experts say that if the handling of pandemic is anything to go by then the decision to buy vaccines may also be left to state governments as they deem fit.

https://www.business-standard.com/article/companies/india-weighs-options-in-debate-on-who-gets-first-shot-of-covid-19-vaccine-120080900146_1.html

A titanate nanowire mask that can eliminate pathogens

Filter 'paper' made from titanium oxide nanowires is capable of trapping pathogens and destroying them with light. This discovery by an EPFL laboratory could be put to use in personal protective equipment, as well as in ventilation and air conditioning systems.

As part of attempts to curtail the COVID-19 pandemic, paper masks are increasingly being made mandatory. Their relative effectiveness is no longer in question, but their widespread use has a number of drawbacks. These include the environmental impact of disposable masks made from layers of non-woven polypropylene plastic microfibres. Moreover, they merely trap pathogens instead of destroying them. "In a hospital setting, these masks are placed in special bins and handled appropriately," says László Forró, head of EPFL's Laboratory of Physics of Complex Matter. "However, their use in the wider world—where they are tossed into open waste bins and even left on the street—can turn them into new sources of contamination."



Credit: Swoxid SA

Researchers in Forró's lab are working on a promising solution to this problem: a membrane made of titanium oxide nanowires, similar in appearance to filter paper but with antibacterial and antiviral properties.

Their material works by using the photocatalytic properties of titanium dioxide. When exposed to ultraviolet radiation, the fibers convert resident moisture into oxidizing agents such as hydrogen peroxide, which have the ability to destroy pathogens. "Since our filter is exceptionally good at absorbing moisture, it can trap droplets that carry viruses and bacteria," says Forró. "This creates a favorable environment for the oxidation process, which is triggered by light."

The researchers' work appears today in *Advanced Functional Materials*, and includes experiments that demonstrate the membrane's ability to destroy *E. coli*, the reference bacterium in biomedical research, and DNA strands in a matter of seconds. Based on these results, the researchers assert—although this remains to be demonstrated experimentally—that the process would be equally successful on a wide range of viruses, including SARS-CoV-2.

Their article also states that manufacturing such membranes would be feasible on a large scale: the laboratory's equipment alone is capable of producing up to 200 m² of filter paper per week, or enough for up to 80,000 masks per month. Moreover, the masks could be sterilized and reused up a thousand times. This would alleviate shortages and substantially reduce the amount of waste created by disposable surgical masks. Finally, the manufacturing process, which involves calcining the titanate nanowires, makes them stable and prevents the risk of nanoparticles being inhaled by the user.

A start-up named Swoxid is already preparing to move the technology out of the lab. "The membranes could also be used in air treatment applications such as ventilation and air conditioning systems as well as in personal protective equipment," says Endre Horváth, the article's lead author and co-founder of Swoxid.

More information: Endre Horváth et al. Photocatalytic Nanowires-Based Air Filter: Towards Reusable Protective Masks, *Advanced Functional Materials* (2020). DOI: [10.1002/adfm.202004615](https://doi.org/10.1002/adfm.202004615)

Journal information: [Advanced Functional Materials](https://phys.org/news/2020-08-titanate-nanowire-mask-pathogens.html)
<https://phys.org/news/2020-08-titanate-nanowire-mask-pathogens.html>

New process fast-tracks drug treatments for viral infections and cancer

Discovering antiviral and anticancer drugs will soon be faster and cheaper thanks to new research from Simon Fraser University chemist Robert Britton and his international team.

For the past 50 years, scientists have used manmade, synthetic and nucleoside analogues to create drug therapies for diseases that involve the cellular division and/or the viral reproduction of infected cells. These diseases include hepatitis, herpes simplex, HIV and cancer.

But, says Britton, "That process has been intensive and challenging, limiting and preventing the discovery of new drug therapies."

Now, using the new process, scientists can create new nucleoside analogues months earlier than with the previous method, paving the way for quicker drug discoveries. A paper on this research was published today in the journal *Science*.

"The reduction in time and cost of synthesis will vary, depending on the individual nucleoside analogue, but we have examples where we cut a 20-plus step synthesis, which takes several months to complete at the very least, down to three or four steps, which would only take a week or so," says Britton.

"This is clearly a critical factor when it comes to treating newly evolved viruses like SARS-CoV-2 (COVID-19)."

The team shortened the process by replacing naturally occurring carbohydrates typically used for synthesising these types of drugs.

"This entirely new approach builds in opportunities to diversify these drug scaffolds and should inspire new and unusual nucleoside analogue drug discoveries," says Britton.

The team also replaced naturally derived chiral materials with achiral materials since they are generally cheaper and more versatile.

L.-C. Campeau, Merck's head of process chemistry and discovery process chemistry says, "One of our priorities is identifying problems limiting the speed of drug discovery and development, especially regarding synthesizing custom nucleoside analogues. We are very excited to collaborate with Professor Britton in establishing new methods to access this therapeutically important class of molecules."

More information: A short de novo synthesis of nucleoside analogs, *Science* 07 Aug 2020: Vol. 369, Issue 6504, pp. 725-730, [DOI: 10.1126/science.abb3231](https://doi.org/10.1126/science.abb3231) , [science.sciencemag.org/content/369/6504/725](https://www.sciencemag.org/content/369/6504/725)

Journal information: [Science](https://www.sciencemag.org)

<https://phys.org/news/2020-08-fast-tracks-drug-treatments-viral-infections.html>



Credit: Simon Fraser University

COVID-19 vaccine: Can't be pressured to launch coronavirus vaccine, says Bharat Biotech CMD

Coronavirus vaccine update: The pandemic is putting pressure on the company to come out with a vaccine quickly, but we cannot rush as safety and quality are paramount, says Krishna M Ella

By Chitranjan Kumar

As the world rushes to develop coronavirus vaccines, Krishna M. Ella, Chairman and Managing Director, Bharat Biotech International, has said that testing the COVID-19 vaccine for safety and quality is of paramount importance. During an interaction with members of the Chennai International Centre on 'COVID-19 Endgame Scenarios', Ella said there is pressure on the company to come out with a vaccine quickly in the midst of the pandemic but can't rush into it.

"The current pandemic is putting pressure on the company to come out with a vaccine quickly, but we cannot rush as safety and quality are paramount," Business Standard quoted Ella as saying.

Last month, Bharat Biotech started phase-1 clinical trials for "India's first Indigenous COVID-19 vaccine, Covaxin". The vaccine is being developed in collaboration with the Indian Council of Medical Research (ICMR) - National Institute of Virology (NIV), Pune.

On the target date for the launch of Covaxin, Ella said, "We want to do clinical research of the highest standards. We have been monitored by international agencies and communities. It's a matter of prestige for the country and for us. We won't be shortsighted on research and will produce the best quality vaccine."

As per the latest update on Covaxin, the human clinical trial of indigenously developed vaccine has started at hospitals selected by the ICMR. The vaccine development has so far moved at a good pace.

Covaxin will be tested on over 1,100 people in two phases. For the first phase of clinical trials, the company plans to enroll 375 participants to test COVID-19 vaccine candidate. Based on the first trial's results, it has a plan to enroll 750 people in the second phase of trial.

Phase-1 trial is for safety studies and phase-2 is for dosage and phase-3 is for vaccine efficacy in mass trials for different genetic types. What happens at this stage is crucial and will be closely watched.

There are over 200 COVID-19 vaccines in development, with more than two dozen have reached human trials. Russia is set to register world's first coronavirus vaccine on August 12, which has been developed jointly by the Gamaleya Research Institute and the Russian Defence Ministry.

<https://www.businesstoday.in/current/corporate/coronavirus-vaccine-safety-paramount-says-bharat-biotech-cmd-on-development-of-covaxin/story/412462.html>



Last month, Bharat Biotech started phase-1 clinical trials for India's first Indigenous COVID-19 vaccine

People were immune to Covid-19 before it existed: Study

Some degree of immune reactivity against SARS-CoV-2 already pre-existed in the general population, according to a paper published in Nature Reviews Immunology.

Earlier in May, another study by researchers Alba Grifoni and others, also detected reactivity in 50 percent of donor blood samples obtained in the United States between 2015 and 2018.

These studies, therefore, suggest that even before coronavirus-causing SARS-CoV-2 appeared in the human population, some people had grown immune to it.

Although the recent paper by German researchers Alessandro Sette and Shane Crotty, titled, “Pre-existing immunity to SARS-CoV-2: The knowns and unknowns”, does not conclude the reason for the immunity, it suggests that it might be due to immunity to other coronaviruses in the past.

The researchers note that the detection of the immunity prevalence has implications for Covid-19 disease severity, herd immunity and vaccine development, which still wait to be addressed with actual data.

Founding director of Yale University's Yale-Griffin Prevention Research Center, Dr David L Katz, told CNN in an interview that it is excellent news at the population level.

“We have had indications for this from a long time that many people may not be prone to get this particular virus at all because they have partial native resistance likely due to prior coronavirus exposures,” he said.

Stressing that both the US research paper issued under Cell journal as well as the German research paper, published under the Immunology section of ‘prestigious’ journal Nature, have reached the same conclusion, Katz told the publication that although the ‘percentage side’ is a bit unclear, both the papers point to ‘big numbers’.

Referring to the papers, he added, “It said the same thing — 40 to 60 percent people without exposure to this particular virus had essentially developed an immune system defence force that was predisposed to react to this virus as if it had seen it before.

Answering if he thinks a significant amount of population is partly resistant to Covid-19, the preventive medicine specialist said, “My impression is that there has long been evidence that that’s true.”

Citing the example of the Diamond Princess ship which saw a major Covid-19 outbreak, he suggested the presence of “pre-existing immunity” as only a small percentage of the passengers got infected.

Reviewing the findings of the research papers and its impact on the Covid-19 vaccination efforts, Katz pointed that the studies reveal various aspects of the SARS-CoV-2 our immune system can react to which can be used to trigger a reaction using proteins from different coronaviruses.

“The more ways you have of triggering an immune response that’s protective against a particular threat, the more opportunity you have to create an effective vaccine. So, even if this isn’t directly related to vaccine development efforts that are ongoing now but I think it’s good news on the vaccine front too,” he said in the interview.

<https://www.deccanherald.com/science-and-environment/people-were-immune-to-covid-19-before-it-existed-study-871274.html>

Serum Institute to produce up to 100 million Covid-19 vaccine doses for India, other countries

New Delhi: Serum Institute of India (SII) on Friday said it has entered into a new partnership with international vaccine alliance Gavi and Bill & Melinda Gates Foundation to accelerate manufacturing and delivery of up to 100 million doses of Covid-19 vaccines for India as well as other low and middle-income countries (LMICs).

"The collaboration will provide upfront capital to SII to help them increase manufacturing capacity now so that, once a vaccine, or vaccines, gains regulatory approval and WHO pre-qualification, doses can be produced at scale for distribution to India and LMICs as part of the Gavi COVAX AMC mechanism as early as the first half of 2021," SII said in a statement.

The company has set an affordable ceiling price of \$3 (around Rs 225) per dose, it added.

The funding will support at-risk manufacturing by SII for candidate vaccines from AstraZeneca and Novavax, which will be available for procurement if they are successful in attaining full licensure and WHO pre-qualification, the statement said.

The Bill & Melinda Gates Foundation, via its Strategic Investment Fund, will provide at-risk funding of \$150 million to Gavi, which will be used to support the SII to manufacture the potential vaccine candidates and for future procurement of vaccines for low- and middle-income countries via Gavi's COVAX Advance Market Commitment (AMC), the statement said.

"In an attempt to make our fight against Covid-19 stronger and all-embracing; SII has partnered with Gavi and the Bill & Melinda Gates Foundation to advance the manufacturing and delivery of up to 100 million doses of future Covid vaccines for India and low- and middle-income countries in 2021," Serum Institute of India CEO Adar Poonawalla said.

Through this association, SII seeks to ramp up constant efforts to save the lives of millions of people from this dreadful disease, he added.

Serum Institute has a long history of partnerships with Gavi and pharmaceutical companies to manufacture vaccines that protect against meningitis, severe diarrhoea, pneumonia and measles, the statement said.

"We are very happy to see SII enter this global partnership to respond to the global health crisis posed by Covid-19," Renu Swarup, secretary in the department of biotechnology, government of India, said.

India has a proven track record of manufacturing safe and cost-effective vaccines not only for India, but for the world, she added.

In a similar vein, Indian Council of Medical Research Director General Balram Bhargava said: "ICMR is deeply supportive of our cutting edge vaccine research and manufacturing prowess, of which SII is one prominent example. This partnership signifies yet another step in India's efforts to bolster the fight against this global pandemic."

Vaccines will be priced at maximum \$3 per dose and made available to the 92 countries included in Gavi's COVAX AMC, it added.

<https://timesofindia.indiatimes.com/business/india-business/serum-institute-to-produce-up-to-100-million-covid-19-vaccine-doses-for-india-other-countries/articleshow/77413870.cms>



Serum Institute to produce up to 100 million Covid-19 vaccine doses for India, other countries

Common cold infections may train your body to identify COVID-19, finds research

Scientists, however, have warned that it may be too soon to say if such existing memory affects how the novel coronavirus affects the body

By Anushree Gupta

New Delhi: When the coronavirus outbreak initially began, one of the most common questions and concerns medical professionals had were that there was so little known about the virus. As we gained more information about the virus, it has come in handy in the production and development of vaccine candidates, and treatments for severe and mild COVID-19. However, it seems that our bodies are smarter, and have already learnt to recognise the COVID-19 infection.

The immune system's memory helper, known as T cells, which recognise the common cold virus and help the body to fight it, can also identify some part of the novel coronavirus, a study has found. These findings may also explain why some people have milder COVID-19 infection than others.

The research was published in the journal Science. The researchers found that the T cells keep track of the viruses they have encountered before, which helps the immune system in recognising and fighting pathogens.

Researchers defined the exact parts of the virus that are responsible for the cross-reactive T cell response. On analysing, they found that individuals who have never been exposed to SARS-CoV-2 can produce a range of memory T cells that are equally reactive against novel coronavirus and four types of common cold coronaviruses.

Based on these findings, the scientists concluded that fighting off a common cold coronavirus could teach the T cells to recognise some parts of SARS-CoV-2. They believe that this process provides evidence for the hypothesis that common cold viruses can, in fact, induce cross-reactive T cell memory against SARS-CoV-2.

Scientists, however, have warned that it may be too soon to say if such existing memory affects how the novel coronavirus affects the body.

“We have now proven that, in some people, pre-existing T cell memory against common cold coronaviruses can cross-recognise SARS-CoV-2, down to the exact molecular structures,” said Daniela Weiskopf, a co-author of the study from LJI. “This could help explain why some people show milder symptoms of the disease while others get severely sick,” Weiskopf said, news agency PTI reported.

Alessandro Sette, another co-author of the study also said that the reactivity of the immune system may lead to different degrees of protection from the virus.

“Having a strong T cell response, or a better T cell response may give you the opportunity to mount a much quicker and stronger response,” Sette said.

Another study by Sette and his team had shown that about 40 to 60 per cent people who were never exposed to the novel coronavirus had T cells that reacted to the virus. The study said that the immune systems of these people recognised bits of the coronavirus, that it had never encountered before. Similar findings were also reported from the Netherlands, Germany, Singapore, and the UK.

These findings can enhance the potential to take advantage of this cross-reactivity, and could further enhance vaccine potency.

<https://www.timesnownews.com/health/article/common-cold-infections-may-train-your-body-to-identify-covid-19-finds-research/633494>

World's first Covid-19 vaccine to be registered next week by Russia: Report

- *The vaccine has been developed jointly by the Gamaleya Research Institute and the Russian Defence Ministry*
- *In an earlier report, the final check-up of volunteers testing the coronavirus vaccine showed immunity in all participants, the ministry said*

Amid the rising novel coronavirus cases and deaths across the world, Russia has been pushing extensively for a Covid-19 vaccine for quite some time now.

Following that, the country will register its first vaccine against the coronavirus on 12 August, Deputy Health Minister Oleg Gridnev said on Friday, according to a report.

The vaccine has been developed jointly by the Gamaleya Research Institute and the Russian Defence Ministry.

"At the moment, the last, third, stage is underway. The trials are extremely important. We have to understand that the vaccine must be safe. Medical professionals and senior citizens will be the first to get vaccinated," Gridnev told reporters at the opening of a cancer centre building in the city of Ufa, according to Sputnik News.

According to the minister, the effectiveness of the vaccine will be judged when the population immunity has formed.

In an earlier report, the final check-up of volunteers testing the coronavirus vaccine, which is developed by Gamaleya National Research Center of Epidemiology and Microbiology, showed immunity in all participants, the Russian Defence Ministry said.

Clinical trials of the vaccine began on June 18 and included 38 volunteers. All of the participants developed immunity. The first group was discharged on July 15 and the second group on July 20.

Apart from this, volunteers who participated in a the second Covid-19 vaccine trial developed by Vektor State Research Center of Virology and Biotechnology are in good health and no side effects of the vaccination are observed, the press service of the Federal Service for Surveillance on Consumer Rights Protection and Human Wellbeing told TASS, a Russian news agency.

"All vaccinated volunteers are in good health. No complications after the inoculation with the EpiVacCorona vaccine against the coronavirus have been recorded," the statement said.

Meanwhile, the World Health Organization on Tuesday urged Russia to follow the established guidelines for producing safe and effective vaccines after Moscow announced plans to start swiftly producing COVID-19 vaccines.

WHO stressed that all vaccine candidates should go through the full stages of testing before being rolled out. "There are established practices and there are guidelines out," WHO spokesman Christian Lindmeier told reporters at the United Nations in Geneva.

"Any vaccine...(or medicine) for this purpose should be, of course, going through all the various trials and tests before being licenced for roll-out," he said.

However, Russia has not yet published any scientific data from its first clinical trials. The WHO's list of vaccine candidates in human testing still lists the Gamaleya product as in Phase 1 trials, reported Associated Press. Russia has registered 5,241 COVID-19 cases in the past 24 hours, bringing the cumulative total to 877,135, the country's coronavirus response centre said on Friday.

This brings the total case count to 877,135, with daily increase standing at 0.6 per cent.

<https://www.livemint.com/news/world/world-s-first-covid-19-vaccine-to-be-registered-next-week-by-russia-report-11596802242325.html>

