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CONTENT

DRDO News

COVID-19: DRDO's Contribution

Medical Dialogues
.....Daily Dose of Health & Medical News

Wed, 01 July 2020

Delhi: 1,000-bed by DRDO with army doctors, paramedical staff to open soon

The operation of this centre, including availability of adequate medical personnel, has been entrusted to the central armed police forces, led by the Indo-Tibetan Border Police (ITBP)

New Delhi - A 1,000-bed hospital, built by the Defence Research and Development Organisation (DRDO) and manned by army doctors and paramedical staff, will start functioning here next week.

The hospital will be located near Dhaula Kuan, south-west part of the city, according to Union Ministry of Health and Family Welfare on Saturday.

The new field hospital would have a referral relationship with the All India Institute of Medical Sciences (AIIMS) and would be equipped with oxygen supplying machine, ventilators as well as an intensive care unit, it said.

To bolster the coronavirus containment measures, the Ministry said a 10,000-bed Sardar Patel Covid Care Centre was also being developed at Radha Soami Satsang Beas in Chhatarpur under the Centre"s supervision.

The operation of this centre, including availability of adequate medical personnel, has been entrusted to the central armed police forces, led by the Indo-Tibetan Border Police (ITBP).

Delhi has 34 dedicated Covid hospitals, four dedicated Covid health centres, 24 dedicated Covid centres to treat coronavirus cases according to their severity.

In Delhi, 62 facilities are engaged in treating Covid-19. The number of these facilities was being increased on a daily basis, the Ministry said.

https://medicaldialogues.in/state-news/delhi/delhi-1000-bed-by-drdo-with-army-doctors-paramedical-staff-to-open-soon-67170?infinitescroll=1

THE HINDU

Wed, 01 July 2020

'Rajnath Singh to lay foundation stone for DRDO project soon'

Machilipatnam: Machilipatnam Member of Parliament V. Balashourie has said that Defence Minister Rajnath Singh would lay the foundation stone for works of the proposed Missile Test Launch Facility proposed by the Defence Research and Development Organisation (DRDO) in Nagayalanka mandal in Krishna district soon after the spread of COVID-19 is controlled.

On Monday, Mr. Balashourie met Mr. Rajnath Singh in New Delhi, appealing to him to speed up the defence project. In an official release, Mr. Balashourie has said, "Mr. Rajnath Singh has assured to lay the foundation stone for the works of the defence project in Nagayalanka as soon as the normalcy prevails from the existing health alert."

"I was told by Mr. Rajnath Singh that infrastructure facilities such as roads would get a fillip in the Nagayalanka area the project would provide employment opportunities for the locals directly and indirectly," said Mr. Balashourie.

https://www.thehindu.com/news/national/andhra-pradesh/rajnath-singh-to-lay-foundation-stone-for-drdo-project-soon/article31951315.ece

Business Standard

Wed, 01 July 2020

Bharat Dynamics surges 16% as profit jumps 2-fold in Q4 to Rs 310 crore

The company's revenue from operations during the quarter under review rose 64 per cent to Rs 1,435 crore from Rs 877 crore in the corresponding quarter of the previous fiscal

Mumbai: Shares of Bharat Dynamics surged 16 per cent to Rs 349.70 in the early morning deals on the BSE on Tuesday after the company reported more-than-double net profit at Rs 309.72 crore in March quarter (Q4FY20) on the back of strong operational income. The state-owned defence company had logged profit of Rs 124.12 crore in the year-ago quarter.

In the past four trading days, the market price of Bharat Dynamics has appreciated by 34 per cent from level of Rs 261 on the BSE. At 09:36 am, the stock was trading 12.5 per cent higher at Rs 339 on the BSE, as compared to 0.65 per cent rise in the S&P BSE Sensex. It was trading close to its 52-week high level of Rs 365 touched on November 13, 2019.

The company's revenue from operations during the quarter under review rose 64 per cent to Rs 1,435 crore from Rs 877 crore in the corresponding quarter of the previous fiscal.

The company said it did not have any significant impact on the sales and operations of the company for the financial year 2019-20 on account of the Covid-19 pandemic.

Meanwhile, the board of directors of the Company recommended a final Dividend at Rs 2.55 per share (face value of Rs 10 each) for the year ended March 2020.

Bharat Dynamics is one of the leading defence PSUs in India engaged in the manufacturing of Surface to Air missiles (SAMs), Anti-Tank Guided Missiles (ATGMs), underwater weapons

launchers countermeasures, and test equipment. It is the sole manufacturer in India for SAMs torpedoes ATGMs. It is also the sole supplier of SAMs and ATGMs to the Indian armed forces.

Additionally, it is engaged in the business of refurbishment and life extension of missiles manufactured. It is also the co-development partner with the DRDO for the next generation of ATGMs and SAMs.

https://www.business-standard.com/article/markets/bharat-dynamics-surges-16-on-robust-q4-results-120063000376_1.html

Defence News

Defence Strategic: National/International

ORF OBSERVER RESEARCH FOUNDATION

Wed, 01 July 2020

National security, military modernisation and budgets

By B S Dhanoa

Unforeseen events have a tendency to upend all assumptions, and 2020, thus far, has turned out to be an "annus horribilis" in this regard for Indian defence planners. The global pandemic has squeezed economic activity, forcing a 20 percent reduction in defence spending for Q1, with the likelihood of it being extended for the entire FY. If this were not enough, China, in a rash of belligerence, has upped the ante since May 2020 on our Northern borders, especially the LAC in Eastern Ladakh. The Galwan Valley clash on 15/16 June has exposed our naiveté of believing for 45 years that "peace and tranquility" with China was a given. South Block has to dexterously deal with the dual challenges of a shrinking budget and a military threat in the North, while exchanges of fire on the LC and terror activity in J&K remain unabated. The question that the CDS and the Department of Military Affairs have to contend with is; in an era of limited budgets, how do you optimally modernize and restructure in the face of extant challenges to national security.

To military strategists, the approach to this challenge is relatively straight forward: (a) define your existing and future national security challenges, or threats (which is amongst the most difficult predictions to get even partly right); (b) frame your defence strategy/strategies; (c) finally, re-organise and develop existing and planned force structures as needed to execute these; for which a government ought to cater for in the long term defence perspective plan and yearly budget.

However, for the diplomat, the bureaucrat, and even the politician, the approach is rather more circuitous. They prefer to enunciate and strategise national interests through the prism of economic strength and foreign policy, reduce or mitigate external threats through deft diplomacy and alignments, and, with a reasonable appropriation of budgetary effort for defence, expect the military to be able to deal with dangers that other instruments of state policy are ineffective in tackling. From the distinct viewpoints both sides hold; reconciliation seems unlikely. However, in a rising economy like ours, and with the military under civilian control, even senior military leaders come around to accepting the view that national security will have to be circumscribed within budgetary allocations that a rising economy can afford. This is not entirely wrong.

But there are flaws in some of the assumptions that are put forth by glib policy wonks, first; that they have a fair handle on the challenges likely to be faced and thus the military brass need not worry whether enough tanks, planes or ships (to put it rather simplistically) are there in the kitty. Second; the tacit yet unspoken view, that we will see what is to be done when we come to that dangerous fork in the road.

But, threats, as China and the Corona virus have so emphatically shown, can come in forms and shapes that upset all existing frameworks. Therefore militaries like to be prepared for overkill (thus the demand for generous budgets) with a set of tools that are capable of multiple roles and tasks, as also have sufficient skilled manpower on hand to secure physical boundaries, wherever these may be. Adding intricacy to this, in our case, is a habit of throwing human resource at every job that needs doing (yes we are gradually leaning towards technology), which also reflects in the debatable distinction the Indian Military earned in April 2020 when it became the largest standing force in the world.

But, threats, as China and the Corona virus have so emphatically shown, can come in forms and shapes that upset all existing frameworks

So to reiterate, the leaders of India's armed forces, under their primary advisor to the Defence Minister, have to ideate anew, without preconceived notions or past baggage hindering this exercise, and frame a robust, resilient and futuristic force structure that takes into account the concerns of both sides of this debate. It requires a credible visualization of ongoing and future national security challenges, that the military has to deal with, cogently enunciated, and look to revamp the forces with better technology, reduced manpower and eventually a spread of the defence budget that corrects the revenue to capital expenditure ratio. For the Government, an assurance of availability of budget, which is not as miserly as the current allocation, is one promise they must hold good to while the military does its utmost to reduce revenue expenditure.

Threats and challenges that the Ministry of Defence is going to ask the armed forces to be prepared for in the coming decades seem well set at this point in time. But, it would be prudent to frame India's future security dimensions that her instruments of power would need to be cognizant of, in the form of a White Paper, or a National Security Strategy. It seems something of this nature is already in the works, or known to those who need to know.

Threats and challenges that the Ministry of Defence is going to ask the armed forces to be prepared for in the coming decades seem well set at this point in time. But, it would be prudent to frame India's future security dimensions that her instruments of power would need to be cognizant of, in the form of a White Paper, or a National Security Strategy

The next step our planners, ought to be working on is the shape, size, equipping and sustenance policy for the forces (joint and single service) that need to kept equipped, prepared and trained to meet expected threats that may materialise with or without warning. Finally, they need to see what current force structures should be kept, which ones reengineered and what new forces and organisations ought to be put in place to meet the multi domain (to borrow an American phrase) obligations of keeping a Nation's physical and virtual boundaries safe at all times.

Irrespective of the future contours of war, the need for traditional military strength is not going away anytime soon. This is the pragmatic view that Indian military leaders hold, even as they acknowledge the rise of newer forms of warfare and their purported effects on the future battlefield. In India's case we seem to be unable to break away from the glories of a centuries' old past while desirous of embracing a future that requires the shedding of past shibboleths. A genuine transformation and not superficial restructuring is what the future demands. Thus while jointness is the new mantra, with the CDS and a DMA at the apex to drive future joint force requirements, the unwieldy Indian Army remains disjointed as ever.

To quote just a few examples; the saga of a separate light and heavy infantry (traditional and mechanised infantry in our parlance) is a quixotic one. We remain the only army to so distinguish between troops that are going to perform similar (if not identical) tasks on the battlefield. They all need mobility, protection and firepower. This is a turf battle that should have finished in the last

century. Second; why do we not have an integrated logistics corps? Or; why is RPV capability under army aviation? These are bewildering questions to an outsider and yet the IA seems happy with such awkward structures and force development.

There is a need to seriously look at all existing organisations, from the tactical to the strategic, and develop a long-term modernisation plan, over a two decades horizon, which completely transforms what the military is in terms of doctrine, organisation, equipment, capabilities, size and budgets. Eventually our defence forces will have to reduce their dependence on manpower and rely on technology to do the jobs of border management, assured surveillance and routine information gathering. Technologies exist, or are in the pipeline, that can do these tasks with assurance.

In the long run we definitely need to reduce the size of the standing armed forces to manageable levels of well under a million strong (a definite figure is impossible to give). The requirements of managing large "unsettled" borders need to be addressed pragmatically through a mix of technology, infrastructure development and holding only key strategic locations, while maintaining a strong response as deterrence to any malicious designs of the adversary. The Indian Navy definitely needs that third aircraft carrier, along with expeditionary joint amphibious capability. The air force must look at platforms that are unmanned, stealthy and can carry precision loads. Manned-unmanned teaming is going to be the future, as is air defence against drones and their swarms. This is a conceptual thought process that needs further fleshing out.

As for the Indian Army, it needs to reduce its manpower across the board; from the size and number of infantry battalions, regiments of artillery and the mechanized forces, to an increase in aviation, electronic and cyber warfare units, as also missiles and long range precision strike munitions with all units that need them in their arsenal. A comprehensive and doable information and communications road map, under a joint agency is the need of the hour. Similarly, a defence logistics agency must be stood up forthwith, with national and tri-service logistics capabilities under the CDS. Finer details would have to be worked upon to fix all loopholes. Synergy between existing strategic and national logistics capabilities must be dovetailed into the needs of a military for both, border defence and expeditionary requirements.

As for the Indian Army, it needs to reduce its manpower across the board; from the size and number of infantry battalions, regiments of artillery and the mechanized forces, to an increase in aviation, electronic and cyber warfare units, as also missiles and long range precision strike munitions with all units that need them in their arsenal

The list is endless. A visionary and focused hierarchy at the top can set the ball rolling. Once it gathers momentum in the right direction, only then can the armed forces be truly aligned with the security needs, and within the budgetary constraints India faces. An initial rise in defence expenditure for some of the steps listed above would, and should, be offset by the long term savings in manpower that would accrue, coupled with an integrated approach to maintaining and sustaining an eventual joint force.

(The views expressed above belong to the author(s).)

https://www.orfonline.org/expert-speak/national-security-military-modernisation-and-budgets-68775/

ZEENEWS

Wed, 01 July 2020

Defence Minister Rajnath Singh to hold talks with US counterpart Mark Esper over India-China face-off

Defence Minister Rajnath Singh will speak to his American counterpart Mark Esper over the telephone on Tuesday, during which the ongoing tensions at the Line of Actual Control (LAC) between India and China are expected to come up for discussion

Edited By Ritesh K Srivastava

New Delhi: Defence Minister Rajnath Singh will speak to his American counterpart Mark Esper over the telephone on Tuesday, during which the ongoing tensions at the Line of Actual Control (LAC) between India and China are expected to come up for discussion.

According to the Defence Ministry officials, "Defence Minister Rajnath Singh will talk to his American counterpart Mark Esper over the telephone. Ongoing tensions between India and China on the Line of Actual Control in Eastern Ladakh expected to come up for discussion in talks."

Meanwhile, the third round of Corps Commander-level talks between India and China to discuss and diffuse the tension over the ongoing dispute along the LAC in Eastern Ladakh is scheduled to be held at 10:30 am in Chushul, Leh today.

The first two rounds of talks had taken place in Moldo on the Chinese side of the LAC. In the second round of Corps Commander-level talks held on June 22, both sides reached a mutual consensus to disengage in the Eastern Ladakh sector, Army sources said.

The modalities for disengagement from all friction areas in Eastern Ladakh were discussed and these will be taken forward by both sides, the sources added.

India and China have been involved in talks to ease the ongoing border tensions since last month. Twenty Indian soldiers lost their lives in a violent face-off in the Galwan Valley on June 15-16 after an attempt by the Chinese troops to unilaterally change the status quo during the de-escalation.

Indian intercepts revealed that the Chinese side suffered 43 casualties including dead and seriously injured in the face-off.

In order to further tighten the noose around China, Prime Minister Narendra Modi-led NDA government at the Centre had on Monday (June 29) banned 59 Chinese mobile apps including TikTok, UC Browser and Cam Scanner among others.

A statement from the government said that the apps are 'engaged in activities which is prejudicial to sovereignty and integrity of India, defence of India, the security of the state and public order'.

India has been the biggest untapped market for some of China’s quirkiest social-media companies, which had been signing up hundreds of millions of consumers in the world’s second-most populous nation, looking to capture users who weren’t hooked on to US apps such as Facebook and Twitter.

A report from research firm Sensor Tower showed that the 59 banned apps have accumulated 4.9 billion (490 Crore) downloads from Apple Inc’s India App Store and Alphabet Inc’s Google Play since January 2014, including 750 million (75 Crore) so far this year.

Of the top 25 most downloaded apps on India's App Store and Google Play since April, eight were from the Chinese manufacturers.

https://zeenews.india.com/india/defence-minister-rajnath-singh-to-hold-talks-with-us-counterpart-mark-esper-over-india-china-face-off-2292710.html

DECCAN Chronicle

Wed, 01 July 2020

In marathon meeting, Indian Army tells China to take verifiable steps to de-escalate

The previous meeting between the two on June 22 had lasted for 11 hours, the second Corps commander-level meeting

By Pawan Bali

New Delhi: India and Chinese Corps Commanders on Tuesday held a marathon meeting that lasted over 12 hours at Chushul in Ladakh to work out the details to de-escalate tensions between the two countries.

The meeting between 14 Corps Commander Lt Gen Harinder Singh and South Xinjiang Military Region commander Maj Gen Liu Lin started around 11 am in Indian side of the line of actual control (LAC) and went on till late night.

The previous meeting between the two on June 22 had lasted for 11 hours. Tuesday's meeting was also the third meeting between the two army commanders this month.

According to sources, India asked China to take steps to restore the trust factor in the dialogue after the Galwan clash. The two armies also discussed the process of mutual disengagement along each stand-off point along the LAC.

India is believed to have told the Chinese army to take verifiable steps to de-escalate the situation and disengage its soldiers from the LAC. As a way forward, India, sources said, urged Chinese troops to withdraw at least 2-3 kilometers from the LAC.

India and China are involved in a bitter stand-off at Pangong Tso, Galwan Valley, Hot Springs-Gogra Post, Depsang and Daulat Beg Oldie sector.

According to sources, India on Tuesday reiterated its demand that the Chinese restore status quo at the LAC prior to April 2020.

India has objected to China's attempt to try to change the LAC at Pangong Tso and Galwan Valley by bringing in more troops, heavy weapons and constructing fortifications.

However, sources said that dis-engagement, whenever it will start, would be a long process which can take months.

Even though in the last Corps Commander meeting on June 22, both sides had reached a "consensus to disengage" from "all friction areas" in Ladakh, there has been no improvement on the ground.

Infact, ground reports suggest that there has been further mobilisation of troops by both armies at the LAC in last few days. India has also deployed tanks, heavy artillery and air defence system in the Ladakh sector to counter Chinese deployment in the Ladakh sector.

Both armies are in an eyeball-to-eyeball position in many areas in the Ladakh and Chinese army is trying to open new fronts.

While India is expecting the arrival of Rafale fighter aircraft by July end, it is also ordering many other weapons and ammunition on an emergency basis. Indian Air Force is reported planning to buy advance version of the precision Spice-2000 bombs, which were used last year during the

air strike on Balakot. The Indian Army is also looking to buy specialised waterproof clothing for its soldiers deployed at Galwan Valley.

https://www.deccanchronicle.com/nation/current-affairs/010720/in-marathon-meeting-indian-army-tells-china-to-take-verifiable-steps.html

THE ECONOMIC TIMES
WWW.ECONOMICTIMES.COM

Wed, 01 July 2020

China's untenable demand to resolve Pangong standoff

China, sources said, is making unacceptable demands while the Indian position has been consistent that status quo ante has to be restored as the PLA has been the aggressor by moving its troops forward and setting up infrastructure across the Line of Actual Control (LAC)

By Manu Pubby

New Delhi: In a seemingly untenable demand to de-escalate matters in the Finger areas of Pangong Tso, China is believed to have proposed that Indian forces move back to Finger 2 as a pre-condition to Chinese troops withdrawing to Finger 6. At present, both sides are in a standoff at Finger 4.

China, sources said, is making unacceptable demands while the Indian position has been consistent that status quo ante has to be restored as the PLA has been the aggressor by moving its troops forward and setting up infrastructure across the Line of Actual Control (LAC).

A third round of Corps Commander-level talks is planned for Tuesday between 14 Corps Commander Lt Gen Harinder Singh and his Chinese counterpart Maj Gen Liu Lin. These talks will take place at an Indian meeting point in Chushul.

The ground situation in Eastern Ladakh has remained unchanged for several weeks now with thousands of troops locked in a standoff and talks yielding little results.

Sources said there has been no reduction of troops at friction points along the LAC and disengagement will be a prolonged process.

No Change in Troop Buildup

The standoff could stretch on through the winter but talks would continue, they said.

The Finger area is a series of spurs that rise along the bank of the Pangong lake, with the Indian perception of the LAC lying at Finger 8. The disputed area between Finger 4 and 8 — over 50 sq km — used to be patrolled by both sides.

However, in an aggressive move, China moved in soldiers and equipment to Finger 4 since late April, cutting off Indian access and unilaterally changing the ground situation. Over the past month, it has built several dozen defences and hundreds of structures between Finger 4 and 8, in gross violation of all border protocols and agreements.

Sources said that Chinese demands are untenable as the change in status quo was carried out by the PLA and Indian troops did not try to alter ground positions. In addition, moving back to Finger 2 would involve dismantling of two Indian military camps on the banks of the lake. Moreover, the Indian claim is till Finger 8, and anything short of restoring that would not be acceptable.

Also, the ground position of PLA troops does not match what was agreed to during the last two rounds of talks. In Galwan, Chinese troops remain dug in and the troop buildup in the rear has not been dismantled.

At Finger area too, there have not been signs that the Chinese troops are pulling back – satellite images show defensive structures both along the banks of the lake and at the ridgelines. The first attempt to de-escalate at Galwan, which was agreed to at a Corps Commander-level meeting on June 6, ended in disaster when a skirmish took place on June 15 in which 20 Indian soldiers were killed along with an undeclared number of PLA troops, including the Commanding Officer.

India is approaching all promises of disengagement by the Chinese side with extreme caution after the skirmish.

(This story has not been edited by economictimes.com and is auto–generated from a syndicated feed we subscribe to.)

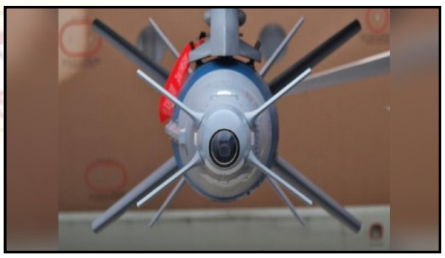
https://economictimes.indiatimes.com/news/defence/chinas-untenable-demand-to-resolve-pangong-standoff/articleshow/76700359.cms

Wed, 01 July 2020

बॉर्डर पर चीन से तनाव के बीच बालाकोट में तबाही मचाने वाले बम खरीदने की तैयारी में भारत

जो बम भारत (India) खरीदने की तैयारी कर रहा है वह स्पाइस-2000 (SPICE-2000 Bombs) का एडवांस वर्जन होगा, जो कि पल भर में दुश्मनों की इमारतों और बंकरों को धूल मिला देगा।

जमीनी टारगेट्स पर अपनी मारक क्षमता मजबूत बनाने के लिए भारत (India) और ज्यादा संख्या में स्पाइस-2000 बम (SPICE-2000 Bombs) खरीदने की योजना बना रहा है। स्पाइस-2000 बम 70 किलोमीटर दूर तक लक्ष्य को तबाह कर सकता है। इसका नया वर्जन बैंकर्स और बेहद मजबूत शेल्टर्स की भी धज्जियां उड़ा सकता है।



पिछले साल बालकोट एयर स्ट्राइक (Balakot air strikes) के दौरान पाकिस्तान में आतंकवादी कैंप को तबाह करने के लिए भारतीय वायुसेना (Indian Air Force) ने इन्ही बमों का इस्तेमाल किया था। माना जा रहा है की चीन (China) के साथ बढ़ते सीमा विवाद के बीच भारत जमीनी टारगेट्स को निशाना बनाने की अपनी शक्ति और मजबूत करना चाहता है।

सरकारी सूत्रों ने न्यूज एजेंसी एएनआई को बताया कि भारतीय वायु सेना के पास पहले से ही स्पाइस-2000 बम हैं। अब यह स्पाइस-2000 बमों जैसे आपातकालीन खरीद शक्तियों के तहत अधिक स्टैंड-ऑफ हथियार हासिल करने की योजना है।

जो बम भारत खरीदने की तैयारी कर रहा है वह स्पाइस-2000का एडवांस वर्जन होगा, जो कि पल भर में दुश्मनों की इमारतों और बंकरों को धूल मिला देगा।

बता दें कि इमर्जेंसी पावर के तहत केंद्र सरकार ने सेनाओं को 500 करोड़ रुपए तक का कोई भी हथियार खरीदने की छूट दी है। तीनों सेनाओं के वाइस चीफ को आवश्यक हथियारों की फास्ट ट्रैक प्रोसिजर के तहत हथियार उपकरण खरीद के लिए 500 करोड़ रुपये दिए गए हैं।

https://www.tv9bharatvarsh.com/india/india-planning-to-buy-more-spice-2000-bombs-240669.html

Wed, 01 July 2020

10 IAF Pilots fully trained to fly Combat ready Rafale coming next month

The Indian Air Force (IAF) is to get its first state-of-the-art Rafale fighter aircraft on July 27. That is when the first four—perhaps six—fighter jets will touch down at IAF Ambala. The fully armed jets are being delivered at a time of rising tensions between India and China in eastern Ladakh, during the largest military stand-off between the two countries since the 1962 border war.

Last week, India's defence ministry reached out to the DGA (Direction Générale de l'Armement)—the French government body that buys and sell military equipment for the French armed forces—to increase the number of aircraft in the first batch of deliveries from four to six. India had signed up to buy 36 multirole Rafale jets from France in a deal worth 7.8 billion (Rs 58,891 crore) in September 2016. The first jets were to have been delivered by May this year, but were delayed by the pandemic. All 36 aircraft will be delivered by 2022 in batches of four, and in two-month intervals.

The aircraft are equipped with two standoff weapons the IAF has never possessed—Meteor air-to-air missiles, with a range of over 100 km, and Scalp air-to-ground missiles, with a range of 500 km. The 10-ton Rafale can carry also a 14-ton payload of fuel and weapons—more than the weight of two MiG-21 fighter jets. "The Rafale numbers might seem small for now, but their presence is itself a deterrent," says Air Marshal Nirdosh Tyagi, former Deputy Chief of Air Staff. "These are special mission aircraft—they are not the type that will be used for close air support or point defence."

The standoff has seen increased air activity by both India and China. India has deployed Mirage 2000s and Su-30MKIs very near the theatre and activated all 11 airbases facing China. The PLAAF (People's Liberation Army Air Force) has activated multiple airbases on the Tibetan plateau from where it operates J-8 and J-11 fighter aircraft.

Experts say Chinese fighter jets will find their performance degraded by the altitude and rarefied air of the Tibetan plateau—they can take off with only half their designed payload and fuel and will be substantially underpowered. IAF aircraft will be able to take off from multiple airbases on the plains with full weapon loads and fuel, unaffected by geographical constraints. That is where the Rafale fits in, as a potent fighter aircraft that could surpass any platform in the PAF (Pakistan Air Force) and the PLAAF.

"This is the induction of an aircraft with near fifth generation performance and marks a paradigm shift in the combat potential of the IAF," says Air Marshal P.S. Ahluwalia, former C-in-C Western Air Command. "It is important that the pilots and technicians absorb the technology and more importantly, apply it."

Sources say that increasing the number of jets being delivered next month to six would impact the training of IAF pilots back in Bordeaux. Ten pilots have been trained to fly the jets, with 12 more yet to be trained. The pilots are part of a team of over 100 IAF personnel based in France since March 2019 for training on various aspects of the jet, including flying and ground handling.

Defence Minister Rajnath Singh received the first batch of Rafales on behalf of the IAF on October 8 in Merignac, France. The IAF has been recently challenged by a dwindling fighter fleet—it last acquired a sophisticated fighter, the Su-30MKI, just about two decades ago, in 2001.

https://idrw.org/10-iaf-pilots-fully-trained-to-fly-combat-ready-rafale-coming-next-month/

ThePrint

Wed, 01 July 2020

China 'deploys' S-400s, IAF has war gamed the scenario multiple times for air ops

India has also pushed in more air defence and radar systems in Ladakh since 20 May giving India a full view of the deployment and activities across LAC

By Snehesh Alex Philip

New Delhi: The Indian Air Force (IAF) has war gamed how it can successfully launch air operations in case China deployed its S-300 and S-400 air defence systems, as it has reportedly done in the Tibet region adjoining Ladakh amid the current stand-off.

India has pushed in more air defence and radar systems in Ladakh since 20 May, giving it a full view of the deployment and activities across the Line of Actual Control (LAC).

Representational image | Indian air force pilots walk away from their IL-76 medium cargo jet after landing | Commons

"The IAF has war gamed the scenario of operating amid Chinese air defence systems which includes the S 400, S 300, LY 80 and others. All I can say is that the high altitude and the mountains work to our advantage," a source told ThePrint.

Sources in the defence and security establishment say that from a pure air-to-air combat, the Indians have an edge over China in the high altitude Ladakh sector. However, what China has an edge over with India is its air defence systems.

Sources underlined that the air power comes into play only when there is a war, and engagement of any aircraft flying in Indian territory by China would be an act of war.

India's tactical advantages

One of the biggest handicaps for China's People's Liberation Army Air Force (PLAAF) is that all their bases in Ladakh are far away from the LAC and are at high altitudes.

"Because of high altitudes, the fighters cannot take off with full fuel or weapons packages. High altitude means that it effectively saps the energy of the fighters," another source explained.

India on the other hand has a number of bases close to Ladakh and it has activated all the bases in Punjab, Haryana, Kashmir, Leh and rest.

Other elements that work in India's favour are the long range stand-off weapons with extreme precision, such as the Indo-Russian joint venture missile BrahMos, European manufacturer MBDA's Scalp and even the Israeli Spice 2000 among others.

The Scalp is the latest addition to India's inventory and has already arrived ahead of the Rafale fighter aircraft.

These missiles were originally meant for the French Air Force but have been diverted to meet India's immediate requirement, as reported by ThePrint Monday.

"All these have an over 300 km range, except Spice, and some even more with high precision," another source said.

The sources said there are other missiles and resources available with India to take on any kind of defensive or offensive systems of enemy besides pounding their positions.

https://theprint.in/defence/china-deploys-s-400s-iaf-has-war-gamed-the-scenario-multiple-times-for-air-ops/451417/

ThePrint

Wed, 01 July 2020

Indian army demands waterproof clothing as water flow increases in Galwan river

The Indian side is preparing itself for the possible long term deployment in the Galwan valley and other areas where the Chinese have deployed heavily along the LAC

New Delhi: As the water-flow has increased in the Galwan river, the Indian Security forces are now feeling the need for specialised waterproof clothing for the troops deployed there in a standoff position with China.

The Chinese side seems to have come prepared for the deployment as their troops deployed in the Galwan river valley bed are wearing water-proof clothes which allows them to step in the icy water there. "There is a need felt for specialised clothing for deployment alongside the river with ice-cold water as the water flow has increased in the river with the rise in temperature," sources told ANI.

A road bridge built by India between Durbuk and Daulat Beg Oldi in eastern Ladakh | Representational Image | ANI

The Chinese side which has made camps all along the Galwan river valley up to near the Indian Patrolling Point 14 has come with specialised clothing where the lower portion of the combat dress is made up of waterproof material which allows them to step into the water, the sources said.

The Galwan River after originating from Aksai Chin passes through the Line of Actual Control (LAC) and merged with the Shyok River near Indian PP-14.

Earlier also while patrolling the area from KM-120 post to the PP-14, Indian security men had to step inside the river water which would wet their shoes, they said.

Sources said the special clothing with Chinese could have helped them in avoiding a higher number of hypothermia casualties during the Galwan valley clash on June 15 with Indian soldiers.

The Indian side is also preparing itself for the possible long term deployment in the Galwan valley and other areas where the Chinese have deployed heavily along the LAC.

All along the LAC from the Ladakh sector to Arunachal Pradesh, the Chinese Army has done heavy deployments and not showing any signs of thinning down despite holding talks at multiple levels with the Indian agencies.

The Chinese buildup had started around May 4 almost two months ago when they marched along the LAC to multiple points including the Finger area, Galwan valley, DBO sector, PP-15, Hot Springs and Ghoghra.

The Chinese have also been fortifying their positions and troops' strength in areas where they have come and it is being perceived that they are using the time in talks for building up further.

https://theprint.in/defence/indian-army-demands-waterproof-clothing-as-water-flow-increases-in-galwan-river/451606/

TIMESNOWNEWS.COM

Wed, 01 July 2020

IAF develops locust control system for Mi-17 choppers

"The Chandigarh Base Repair Depot indigenously designed and developed the ALCS for Mi-17 helicopters," said a top Air Force officer

New Delhi: The Indian Air Force has indigenously designed and developed a pesticide spraying tool for Mi-17 choppers -- the Airborne Locust Control System (ALCS) -- to save the country from locust attacks.

"The Chandigarh Base Repair Depot indigenously designed and developed the ALCS for Mi-17 helicopters," said a top Air Force officer.

Anticipating repeated locust attacks in various states across the country, the Indian Agricultural Ministry had signed a contract with a UK based company in May 2000 to modify two Indian Air Force Mi-17 choppers for spraying atomised pesticide to arrest locust breeding.

Due to the Covid-19 pandemic, the UK based firm was unable to manufacture and supply the modification kit to the IAF before September 2020 for system integration and testing.

Seeing the delay and an unprecedented locust attack across states, the IAF decided to develop the pesticide spraying kit.

The IAF tasked the Base Repair Depot located in Chandigarh to undertake the challenging task of indigenously designing and developing the ALCS for Mi-17 helicopters.

The nozzles used for the purpose are a mix of commercially available nozzles as well as nozzles developed by the CSIO, Chandigarh.

The pesticide Malathion in appropriate concentration will be filled in the internal auxiliary tank of 800-litre capacity fitted inside the helicopter and will be pumped into the nozzles by using an electrical pump as well as compressed air, achieving nearly 40 minutes of spaying duration in the infected zones covering an area of approximately 750 hectares in each mission.

A team of test pilots and test engineers of the Aircraft and Systems Testing Establishment, Bengaluru, has successfully carried out ground and airborne trials, the force said.

The system is being offered for use with Malathion for locust control operations.

Being an indigenously developed system, the ALCS would offer inherent advantages of in-house maintenance, future upgradeability, saving of foreign exchange and help in making the country self-reliant in aviation-related technology, said the officer.

https://www.timesnownews.com/india/article/iaf-develops-locust-control-system-for-mi-17-choppers/614434

THE ASIAN AGE

Wed, 01 July 2020

Soon, Indian Army soldiers and officers to be equipped with desi Swiss Army knives

Indian Army is procuring them for its infantry troops and they will form a part of individual equipment

By Pawan Bali

New Delhi: Indian soldiers and officers will soon carry their own version of Swiss Army knife, equipped with a detonator crimper, a wire cutter, a bottle opener for opening "soda bottles", and a blade which can be used as a dagger in close quarter hand to hand fight.

Indian Army is procuring them for its infantry troops and they will form a part of individual equipment. The army will soon issue an open tender for procuring such a "multi-purpose tool".

These knives will be able to function in a temperature ranging from minus 20 to plus 50 degree Celsius.

As per the army requirement, the multipurpose tool should come with a long nose plier with universal detonator crimper that could screw and remove maximum 14mm nuts or bolts and crimp universal size detonators. Nose and handle must have adequate hardness to perform routine task easily. It should also be able to cut binding wire upto 12 gauge and strip electric wire ranging from 24 to 12 gauge. The knife should be able to drive and remove cross tip screws, the army sources added.

The knife will carry a wood or bone saw capable of controlled sawing through wood (25mm thick), plastic (10mm thick), aluminum (26 Gauge) and metal tube (22 Gauge).

It will also carry a can and a separate bottle opener which will allow soldiers to open "commercially available canned goods" and "compressed bottle top" like a "soda bottle".

It should provide independent and automatic locking of components in operational and closed position. It should not cause injury when used with bare hands, the Indian Army said.

These knives will be black, olive Green or in camouflage pattern with matt finish. The army said that these knives should have a durable sheath with loop to fit on belt and should require minimal user maintenance. These should be capable of maintaining its performance in sand and dust.

https://www.asianage.com/india/all-india/300620/soon-indian-army-soldiers-and-officers-to-be-equipped-with-desi-swiss-army-knives.html

livemint

Wed, 01 July 2020

India plans to buy more Spice-2000 bombs amid China stand-off

The Spice-2000 bombs, which were used to destroy the Pakistani terrorist camp in Balakot last year, are planned to be acquired by the IAF as part of the emergency financial powers granted to the services in the middle of a row with China

New Delhi: Seeking to further strengthen its capability to hit ground targets, India is planning to acquire a lethal and more capable version of the Spice-2000 bombs.

The bombs, which were used effectively to destroy the Pakistani terrorist camp in Balakot town in Khyber Pakhtunkhwa province last year, are planned to be acquired by the Air Force as part of the emergency financial powers granted to the services in the middle of a row with China.

"The Indian Air Force already has the Spice-2000 bombs. It is now planning to acquire more stand-off weapons like the Spice-2000 bombs under the emergency procurement powers granted to the services," government sources told ANI.

The Spice-2000 bombs can hit targets upto 70 kms and the new variant inducted in the force can also destroy bunkers and hardened shelters, they said.

The version used in the Balakot airstrikes could penetrate into hardened shelters and buildings and cause destruction inside.

The Indian Air Force already has the Spice-2000 bombs that can hit targets upto 70 kms

Under the emergency powers, the Narendra Modi government has granted financial power to the defence forces under which they can buy any weapon system under ₹500 crore.

This emergency power was given close on the heels of recent clashes between Indian and Chinese troops in Galwan Valley of eastern Ladakh in which 20 Indian soldiers lost their lives.

The armed forces were granted similar financial power after the Uri terror attack and the Balakot airstrike against Pakistan.

As part of the process, the Army is planning to place orders for the Excalibur precision-guided missiles from the US under Foreign Military sales procedure while the Navy is also looking to buy equipment under the procedure this time.

https://www.livemint.com/news/india/india-plans-to-buy-more-spice-2000-bombs-amid-china-stand-off-11593521099083.html

ThePrint

Wed, 01 July 2020

Sumdorong Chu, Ladakh-like India-China face-off which took 9 yrs to end but without violence

The 9 years saw diplomatic wrangling, a defiant Indian general keen on 'teaching the Chinese a lesson' & a PM more inclined towards diplomacy, but not a single drop of blood

By Nayanima Basu and Srjan Shukla

New Delhi: The India-China face-off in Eastern Ladakh has been labelled by some as "unprecedented", especially due to the high number of deaths of Indian soldiers in the 15 June clashes in the Galwan Valley, even though the two countries fought a war in 1962 and were involved in a bloody conflict in 1967.

Indian Army personnel keep vigilance at Bumla pass at the India-China border in Arunachal Pradesh (Representational Image) | Photographer: Biju Boro via Getty Images | Bloomberg

But another confrontation in the summer of 1986, almost exactly 34 years ago, on the other end of the Line of Actual Control (LAC) in Arunachal Pradesh, has many similarities with the tensions between the world's two most populous nations today.

It was June of that year and New Delhi was caught in a sweltering summer when the temperature in the capital's policy-making circles went up several notches — the result of the heat being felt high up in the Himalayas.

On the morning of 14 June 1986, a patrol party of the Indian Army's 12 Assam Regiment spotted a Chinese post and a few structures right near the Thandrong pasture on the banks of the Sumdorong Chu rivulet in Tawang district of Arunachal Pradesh.

Alarms bells immediately went off and the information quickly made its way up the ranks.

The patrol informed its divisional headquarters, which then relayed the news to Fort William in Kolkata (then Calcutta), the headquarters of the Eastern Command.

By the time it reached the Ministry of Defence as well as the Ministry of External Affairs in New Delhi's South Block on 16 June 1986, the classified note from the Assam Regiment also mentioned the presence of 40-odd People's Liberation Army (PLA) soldiers in the area. Some Indian media reports, however, had pegged the number to be 200.

The development shattered a long-held assumption in New Delhi that the land on the banks of the Sumdorong Chu rivulet belonged to India.

A rattled Prime Minister Rajiv Gandhi-led Congress government set out to resolve the issue. Within 10-12 days of the alert from the Assam Regiment soldiers, the government lodged an official protest with the Chinese. It even summoned the then Chinese Ambassador to India, Li Lianqing, and handed over a diplomatic note.

But even amid the diplomatic haggling, Beijing increased its troop presence rapidly to over 200 soldiers and by August, had even built a helipad and a few permanent structures there.

The two sides also set out to control the narrative, with the Chinese denying New Delhi's allegations of an intrusion, and adopting the tone they did in 1962 — a Xinhua report of 1986, made available by the US government, quotes the Chinese complaining that it was India that was "nibbling at and expanding into Chinese territory", adding that the McMahon Line was "illegal and null and void".

The Chinese media was also awash with reports that it was India that had first built a "seasonal" post there in 1984, which they noticed and destroyed in 1986. They called it 'Sangduoluo He' in Chinese.

The Indian government quietly worked the channels and made the first offer of a truce in July that year — offering to not patrol the area that the Chinese have occupied if they pulled back. It was turned down.

Instead, it would take a whole nine years for the conflict to be resolved.

In those nine years, the issue saw a whole host of ups and downs — a series of diplomatic wrangling, a feisty, defiant Indian General keen on "teaching the Chinese a lesson", a Prime Minister more inclined towards diplomacy, and a country, having tasted defeat once, determined not to be cowed into ceding any more territory.

But far more significant is the fact that in those nine years, when Indian and Chinese troops were eyeball to eyeball, not a single shot was fired, nor a drop of blood spilt along the then contested Tawang region.

The hotly-contested Sumdorong Chu Valley region

The Sumdorong Chu Valley lies near the Thag La Ridge, which was one of the fighting hotspots during the 1962 Sino-Indian War. But the valley itself was seen to be "neutral" by both sides, and hence neither monitored it until 1980.

India resumed patrolling in the region in 1981 and by the summer of 1984, had already built a post in the valley, which was being manned by the Sashastra Seema Bal (SSB), the central police force that mans parts of the border region.

The Chinese began building infrastructure in 1986, including the helipad atop a hill overlooking the Sumdorong Chu Valley right as negotiations were under way in July of that year. They also positioned heavy guns there, according to Swedish journalist and author Bertil Lintner, who has given a detailed account on what led to this faceoff and how it was resolved in his book, *China's India War: Collision Course on the Roof of the World*.

For Indian soldiers stationed at the flashpoint there was very little information on developments in Delhi. "We had no idea what was going on in New Delhi. All we knew and cared for was that the Chinese had come in and occupied our territory and we had to push them back," Col. Ashish Das (retd) told ThePrint over the phone from his home in Kolkata. Das was then a Captain with the Assam Regiment and posted in Tawang when the situation flared up.

"They were not aggressive and they did not want to fight us. They did not want to fight us even in 1962 had we not provoked them," he added. "They know they cannot fight us. They know that even to this day. Their Army is not battle hardened, it's a political army not a professional one like ours."

Das has a ridgetop in the area named after him, 'Ashish Top', as he played a vital role in recapturing it. He, however, said it wasn't easy engaging the Chinese back then. "It was not a mapped area. We just moved on in the darkness of the night just by following the shadows of the mountains. There were days we went without food," he said. "The operation was not even sanctioned then. But we did push the PLA back and we came back to the plains by 1987-88 when India and China started talking on confidence-building measures."

Exploring and identifying confidence-building measures became the cornerstone of diplomatic talks at that time even as disengagement began taking place, albeit slowly and gradually.

"The government of India made an offer to China to withdraw from the area with an understanding that India would not reoccupy the vacated area, the following summer. This was rejected by the Chinese," writes Major General Mandip Singh, who has done extensive research on the incident. "At the seventh round of border talks that were held from 21-23 July 1986, despite the standoff, the issue was discussed intensively with no solution, resulting in acrimony and tension."

By the time autumn had set in, India realised it had to be ready for a long haul even as talks continued.

"The Indian government initially responded with confusion as its knowledge of the strength of this new PLA post at Sumdorong Chu was very sketchy. P. Shiv Shankar, the Indian Minister of External Affairs argued on 1 August 1986 that the PLA had not built a helipad in this region only to be countered by his deputy, K. R. Narayanan, three days later that there indeed was a PLA helipad in that region," writes Manjeet Pardesi, a senior lecturer of Political Science and International Relations and Asia Research Fellow at the Centre for Strategic Studies at Victoria University of Wellington.

"Shankar went on to state that there was some confusion over the exact location of the McMahon Line because of 'the thickness of the line' that was drawn on the original map at Simla in 1914," Pardesi added, further writing that the Indian government became "extremely concerned" of China's intention on the McMahon Line and of Beijing's plan to collect taxes in the region.

Between September and October of that year, the Indian Army embarked on what came to be known as 'Operation Falcon', which involved the occupation of ridges overlooking the Sumdorong Chu valley, including Langrola and the Hathung La ridge across the Namka Chu rivulet, that fell on the south of Thag La.

"The Chinese dug in to prepare to stay through the winter of 1986. The Indian Army then airlifted a Brigade from the 5 Mountain Division to Zemithang and occupied the ridges dominating the Sumdorong Chu," writes Major General Mandip Singh.

"Troop reinforcements on the Indian side – which had begun with Operation Falcon in late 1986 – continued through early 1987 under a massive air-land exercise. Titled Exercise Chequerboard, it involved several divisions of the Army and several squadrons of the IAF and redeployment of troops at several places in the North-East," said Maj Gen P.K. Mallick, VSM (retd).

"The Indian Army moved three divisions to positions around Wangdung, where they were supplied and maintained solely by air. Ground support and fighter-bomber aircraft of the Indian Air Force (IAF) were brought in to airfields in Assam and North Bengal," he added.

The Chinese were taken by surprise at the firmness of the Indian Army and the "over display of military power" by India, which had "effectively neutralised any adventurous step" by China, writes Keshav Mishra in *'Rapprochement Across The Himalayas: Emerging India-China Relations In The Post Cold War Period'*.

According to Neville Maxwell's *China's Borders: Settlements and Conflicts*, the then leadership in Beijing was gearing up for a "planned and prepared" divisional attack from India to remove the Chinese personnel from the Valley.

At the helm of the Indian Army was the legendary General K. Sundarji, who, according to a former diplomat who refused to be named, had categorically told Prime Minister Gandhi that while he was not opposed to the matter being settled diplomatically, he would "teach the Chinese side a lesson and a fitting reply if needed without even thinking for a second".

Lintner writes in his book that Sundarji "wanted to show the Chinese that this is not 1962". "He wanted to flex his muscles and demonstrate to the Chinese that it's a different Indian Army they were facing today," the Swedish journalist writes.

According to Lintner, Gandhi was "alarmed" even as he learned about the developments and wanted to visit Zemithang but could not as his officers warned him that bad weather made it tough for helicopters to land there.

"Gandhi and Sundarji were never really on the same page on this matter," said a former Army officer, recalling how visible differences arose between the two when the PM was shown a presentation at the army camp in Tawang. The Army chief had sought to deploy more troops and artillery on the frontline, which the prime minister opposed.

Arunachal Pradesh gets full statehood angering China

Matters escalated in 1987 when India granted full statehood to Arunachal Pradesh on 20 February that year. Until 1972, Arunachal was known as the North-East Frontier Agency (NEFA) but was granted union territory status on 20 January 1972.

Western diplomats began murmuring that India and China were preparing for another 1962-like conflagration even as the Chinese began to establish a counter build-up, with Beijing's top leader Deng Xiaoping proclaiming that it was going to "teach India a lesson".

During this time, India was recognised as an emerging nuclear power but it was also known for taking a "recessed deterrent" posture, as described by Shivshankar Menon in his book *Choices: Inside the Making of Indian Foreign Policy*. Menon is a former National Security Advisor, prior to which, he was Foreign Secretary. He also served as special representative of the prime minister of India on the China boundary issue from 2010 to 2014.

"Western diplomats predicted war and Prime Minister Rajiv Gandhi's advisers said Sundarji's recklessness was responsible for this. But the general stood firm, at one point telling a senior Rajiv aide, 'Please make alternate arrangements if you think you are not getting adequate professional advice'. The civilians backed off, so did the Chinese," writes French author Claude Arpi, who is also historian and Tibetologist.

Beijing's 'olive branch' to PM Rajiv Gandhi

Even though the Prime Minister preferred diplomacy, his government stood its ground in the face-off.

On 3 March 1987, in a speech in Parliament, Gandhi said, "There has been tension on our border with China. We want a peaceful settlement of the border issue. It will need wisdom and statesmanship. It will need vision and firmness. Firmness is included in wisdom…It is this perspective that should guide our countries in seeking a solution to the problem."

Subsequently in April, then Defence Minister K.C. Pant told Parliament that Beijing's reaction to New Delhi's legislation on Arunachal "made it obligatory for India to take appropriate measures for the defence of the border".

In the same month, Pant also made a short visit to Beijing to find a way out of the crisis. This was followed by another visit to China by then External Affairs Minister N.D. Tiwari in May that year. Tiwari's visit was more of a stopover at Beijing while he was on his way to Pyongyang, North Korea.

All this culminated into another round of border talks in August when both sides agreed to "end military confrontation" even as they decided to "pull back", which finally ended with China extending an "olive branch" to Gandhi. The Prime Minister visited Beijing in 1988 even as the border standoff continued with both sides deploying heavy military personnel along the McMahon Line. It was the first such Prime Ministerial visit since Gandhi's grandfather, Jawaharlal Nehru.

During his visit, Gandhi took the stance of a statesman and indicated that he was keen on injecting a fresh lease of life in the bilateral ties between India and China. This paved the way for a series of talks on the boundary question between both sides.

These talks did not end the crisis immediately but they at least soothed nerves on both sides that the political leadership in New Delhi as well as in Beijing was giving the matter topmost priority.

Then External Affairs Minister of India P.V. Narasimha Rao told Parliament in November 1988 that the dialogue "is an ongoing one pending a lasting peaceful and mutually acceptable solution of the boundary question, it has been agreed that peace and tranquillity should be maintained all along the border".

By December, both sides set up a Joint Working Group (JWG) on the boundary issue. This was seen as a "major step forward", recalls a former diplomat who was then involved in the matters as a junior officer at the Ministry of External Affairs.

But the larger solution was seen in the bonhomie between Gandhi and Deng, with the latter informing the Indian Prime Minister that due to his visit amidst a standoff, "China and India will restore friendship between the two countries, peoples and leaders".

Sumdorong Chu crisis comes to an end in August 1995

The first meeting of the JWG took place in Beijing from 30 June until 4 July 1989, thus triggering a series of high-level visits between both sides even as soldiers sat eyeball-to-eyeball at Sumdorong Chu.

Eventually in October 1989, then Chinese Vice Foreign Premier Wu Xueqian visited India to meet Gandhi and Rao.

In March 1990, then Chinese Foreign Minister Qian Qichen visited India, which also coincided with the 40th anniversary of establishment of diplomatic ties between the two countries. This visit also ended on a positive note.

"In the Sumdorong Chu or Wangdung crisis, which began in 1986, although our troops were eyeball to eyeball with Chinese troops, the numbers were much smaller than the current standoff in eastern Ladakh. However, that crisis was resolved through dialogue and negotiations over several years," said Gautam Bambawale, former Secretary (East) at the Ministry of External Affairs and former Indian envoy to Beijing.

With improvement in bilateral ties, India and China finally signed the key 1993 agreement on the Maintenance of Peace and Tranquility along the Line of Actual Control (LAC).

"Sumdorong Chu crisis went on until August 1995. It took nine long years to resolve the crisis but it was solved through diplomatic talks. When the confrontation happened the Chinese and Indian troops were in an eyeball-to-eyeball situation. But we were finally able to negotiate a pullback," said another former Indian envoy to China, who refused to be identified.

Under the agreement, India and China negotiated that both sides will remove their posts. It was agreed that each side will remove two posts from their respective sides. "Although they wanted us to pull back from our original position, we didn't. We stayed firm on their withdrawal," the former diplomat said. "But the larger point is it was resolved without any bloodshed and only through talks even though it took nine years."

https://theprint.in/past-forward/sumdorong-chu-ladakh-like-india-china-face-off-which-took-9-yrs-to-end-but-without-violence/451517/

THE WEEK

Wed, 01 July 2020

Why IAF is counting on 1 missile on the Rafale fighter to counter China

Media reports claim delivery of the Meteor missile has already started

Multiple media agencies have reported in recent days that France has agreed to send "additional" Rafale jets to India even as the first couple of aircraft ordered by the Indian Air Force touch down on July 27. *PTI* reported on Monday that at least six Rafale jets will arrive in July.

The Print on Monday reported that consignments of weaponry for the Rafale have already begun arriving in India following a request from the Indian Air Force. *The Print* noted that "These missiles include the beyond-visual range (BVR) air-to-air missile, Meteor, which has the capability to hit targets over 120 km away..."

A Rafale fighter test-firing a Meteor missile | Twitter handle of MBDA

The Meteor is a radar-guided air-to-air missile like the US-made AIM-120 AMRAAM, which was fired by Pakistani F-16s in the aerial skirmish with India in February last year. At the time, it was reported the Indian Air Force lacked an air-to-air missile that could match the AMRAAM, which is believed to have a range of around 100km.

The common perception is that the Meteor's capability is linked to its long range, which is estimated to be well over 120km. However, this is not the only reason why the Meteor is unique. The US Navy developed an air-to-air missile called the AIM-154 'Phoenix' in the 1960s, which had a range of close to 200km. The Phoenix would become the primary armament of the iconic F-14 Tomcat fighter, the aircraft that featured in the movie *Top Gun*. However, the Phoenix missile weighed nearly 500kg, which meant it never served on any other aircraft until its retirement at the turn of the century.

The Soviet Union and Russia developed long-range, radar-guided air-to-air missiles like the R-33 and R-37, both of which were carried on the MiG-31 Foxhound interceptor and had ranges varying from 150km to 300km. These Russian weapons, like the Phoenix, were bulky and were not carried by smaller fighters. The Phoenix, R-33 and R-37 were primarily meant to shoot down bombers and surveillance aircraft.

The Meteor missile was developed by a consortium of six European nations: UK, Germany, Italy, France, Spain and Sweden. The project that resulted in the Meteor missile began in the 1990s and was primarily driven by the need to counter the then new generation of highly-agile Russian fighter jets like the MiG-29 and Sukhoi Su-27. The Sukhoi Su-27 is the design from which the Indian Air Force's Su-30MKI fighter is derived. The Su-27 and Su-30 fighters were purchased from Russia by China in the 1990s and the Su-27 has also been adapted into multiple local versions such as the J-11 and J-16. According to media reports, China operates at least 500 units of the Su-27 and its local derivatives.

The Meteor missile's USP is not its range, but its unique propulsion system. The Phoenix, R-33 and AMRAAM all have rocket engines. In such air-to-air missiles, the rocket engine delivers a uniform amount of thrust over certain duration of flight after which the motor burns out. The missile then 'coasts', or glides at high speed, to its target, which it tracks through radar. US defence website *The Drive* explains the longer the distance a rocket-powered missile has to travel to its target, "the less energy the missile will have for its critical terminal phase of flight, and that is not a good thing". As an air-to-air missile approaches, a target aircraft will engage in steep manoeuvring and deploy countermeasures to confuse the incoming missile.

Interestingly, Su-30MKI fighters of the Indian Air Force were able to dodge the AMRAAM missiles fired by Pakistan's F-16s last February.

The Meteor missile has a miniature supersonic jet engine, called a ramjet. Explaining the aerodynamic advantage of the Meteor, *The Drive* notes, "Instead of burning off all its fuel right after launch, it [Meteor] can throttle its engine back during cruise, thus saving fuel. As it approaches its target it can throttle up, eventually making its terminal attack while at its highest possible energy state, around mach 4.5, even when fired over long ranges." This helps the Meteor missile engage rapidly manoeuvring targets like China's Su-30 and J-11 jets.

MBDA, the pan-European consortium that builds the Meteor, claims the weapon has the "largest no-escape zone of any air-to-air missile". No-escape zone is the zone in which an aircraft cannot rely on mere agility to evade a incoming missile. Former Indian Air Force chief A.Y. Tipnis estimates the NEZ of the Meteor "is thrice that of the current AIM-120 AMRAAM missile". A major advantage of the Meteor is that its relatively low weight of 190kg means a single Rafale can carry four or more missiles at a time.

The Meteor first entered service with the Swedish Air Force's fleet of Gripen fighters in 2016 and is being adopted by France for its Rafale fleet and by nations using the Eurofighter jets. The Meteor is also integrated on the US F-35 Lightning stealth fighter. Both Russia and China have been reported to be pursuing research into air-to-air missiles powered by ramjet engines. However, there is little evidence to suggest these countries have inducted such weapons yet.

In 2019, Chinese state-run media reported the country's air force had begun deploying a new air-to-air missile on its fleet of J-11 fighters. The weapon, called the PL-15, is estimated to have a range over 200km. The PL-15 employs a rocket motor. Military experts in China and overseas have claimed the primary role of the PL-15 may be to destroy 'high-value' targets such as airborne early-warning aircraft and aerial refuelling aircraft.

In a recent research paper, retired Indian Air Force air vice marshal Arjun Subramanian estimated China could have around 1,000 fourth-generation fighter aircraft by 2050. The majority of these are expected to be derivatives of the Su-27 fighter. Hence, the Indian Air Force would be counting on the Meteor missile to retain its tenuous edge in the event of conflict with China.

https://www.theweek.in/news/india/2020/06/30/why-iaf-is-counting-on-1-missile-on-rafale-fighter-to-counter-china.html

THE HINDU

Wed, 01 July 2020

China expresses concern over India's ban on 59 Chinese apps

State-run media warn of fall in Chinese exports and investments in India

By Ananth Krishnan

Beijing: China on Tuesday said it was "seriously concerned" by India's move to block 59 Chinese apps, which it described as "a deliberate interference in practical cooperation" between the two countries.

China's State media warned the move would bring economic repercussions including affecting outbound Chinese investment into India.

In separate statements issued by China's Foreign Ministry in Beijing and its Embassy in New Delhi, the Chinese government called on India to review the move.

"I want to stress that the Chinese government consistently asks Chinese enterprises to abide by international rules and

File photo for representational purpose. | Photo Credit: AP

local laws and regulations when conducting external cooperation," Foreign Ministry spokesperson Zhao Lijian said, expressing "strong concern".

"The Indian government has the responsibility to protect the legitimate rights and interests of international investors in India, including Chinese businesses, in accordance with market principles," Mr Zhao said. "Practical cooperation between China and India is mutually beneficial. Deliberate interference in such cooperation will not serve the interests of the Indian side."

In a separate statement, the Chinese Embassy in Delhi said it was "seriously concerned with and firmly opposed to such action".

"India's measure, selectively and discriminatorily aims at certain Chinese apps on ambiguous and far-fetched grounds, runs against fair and transparent procedure requirements, abuses national security exceptions, and suspects of violating the WTO rules. It also goes against the general trend of international trade and E-commerce, and is not conducive to consumer interests and the market competition in India," the statement said.

The Embassy said the ban "will affect not only the employment of local Indian workers who support these apps, but also the interests of Indian users and the employment and livelihoods of many creators and entrepreneurs."

"We expect India acknowledges the mutually beneficial nature of China-India economic and trade cooperation, and urge the Indian side to change its discriminatory practices, maintain the momentum of China-India economic and trade cooperation, treat all investments and service providers equally, and create an open, fair and just business environment, while bearing in mind the fundamental interests of both sides and the overall interests of bilateral relations," the statement added said.

Chinese media and social media widely discussed the ban on Tuesday. China restricts a number of foreign apps and websites in the mainland, and among those blocked are WhatsApp, Facebook, Twitter and YouTube.

In an editorial, the Communist Party-run *Global Times* slammed what it said was "a lacklustre explanation for the nonsensical move".

"If India's sovereignty can be damaged by a handful of apps, just how vulnerable is it?" the paper said. "Some anti-China groups and radical individuals in India have been calling for a boycott of Chinese products after the recent deadly border clash. Yet it was not long before Indians realised that turning nationalist rhetoric into action is more difficult, as there are no available and affordable alternatives to Chinese-made products such as smartphones, chemicals, automotive components and many other items… It seems that not only has the Modi government failed to rein in the rising nationalism among Indians, it has also yielded to domestic pressure and even encouraged such a boycott to escalate."

The newspaper said it had conducted a survey of experts who "predicted Chinese overseas direct investment (ODI) into India will drop sharply in 2020, with two experts forecasting a more than 50 %."

"Bad feelings go both ways, and the chance for China-India relationship to pick up in the short-term is slim. Chinese investors are on the edge with risk-aversion instinct kicking in," Qian Feng, director of the research department of the National Strategy Institute at Tsinghua University, was quoted as saying by the paper. He added that the coming year would not only see a 50% fall in Chinese investment into India, but would be "a turning point" in economic relations.

https://www.thehindu.com/news/international/china-expresses-concern-over-indias-ban-on-59-chinese-apps/article31952665.ece

Wed, 01 July 2020

US highlights CAATSA risk in Indian fighter procurement

The United States government has urged India to reconsider its planned acquisition of Russian fighter aircraft, a move that risks potential sanctions under the Countering America's Adversaries Through Sanctions Act (CAATSA). In comments to Janes on 26 June an official from the US Department of State did not make specific reference to the Indian Air Force (IAF) procurement but said that India has not been safeguarded from possible penalties under the law.

The official said, "Without commentating on private diplomatic conversations, I can confirm that we urge all of our allies and partners to forgo transactions with Russia that risk triggering sanctions under the Countering America's Adversaries Through Sanctions Act (CAATSA)."

The official added, "While we cannot prejudge whether a specific transaction would result in sanctions, it is important to note that CAATSA does not have any blanket or country-specific waiver provision. "There are strict criteria for considering a waiver, and each transaction is evaluated on a case-by-case basis. The Secretary of State has not made any determination regarding the significance of any transaction involving India."

The comments come after Janes reported on 19 June that the IAF was looking to fast-track the procurement – valued at about USD1.4 billion – of 21 used Mikoyan MiG-29 and 12 new Sukhoi Su-30MKI combat aircraft to boost its air combat capabilities.

The move is partly in response to heightened border tensions between India and China. The IAF would aim to take delivery of the aircraft in 2022.

https://idrw.org/us-highlights-caatsa-risk-in-indian-fighter-procurement/#more-230112

THE NEW INDIAN EXPRESS

Wed, 01 July 2020

Chennai start-up building India's first private smallsat rocket, eyes ISRO help for testing

Srinath Ravichandran, co-founder and CEO, Agnikul Cosmos, confirmed to The New Indian Express that the rocket would be ready by 2022

By SV Krishna Chaitanya

Chennai: Chennai start-up Agnikul Cosmos is building India's first private small satellite rocket and will be seeking the help of the Indian Space Research Organisation (ISRO) for conducting tests.

The IIT Madras incubated start-up received a much needed boost with the announcement of the Indian National Space Promotion and Authorisation Centre (IN-SPACe), an autonomous body under the Department of Space, which would help private prayers gain access to ISRO infrastructure.

Named 'Agnibaan', the rocket will be a two-stage LOX/Kerosene vehicle with a third "baby stage". The launch vehicle will be capable of carrying up to 100 kg of payload to low Earth orbits up to 700 km with a plug-and-play engine configuration.

Srinath Ravichandran, co-founder and CEO, Agnikul Cosmos, confirmed to *The New Indian Express* that the rocket would be ready by 2022.

"We have realised the engine for the upper stage or third stage and design work is on for the first and second stage engines of the rocket. Seven identical engines using 3D printing will be fitted to the first stage, while one engine each will be used for the second and third stages. Basically, it will be a modular rocket that can be customised depending on the client's requirement," Ravichandran said and added that the vehicle will be powered by semi-cryogenic fuel.

The rocket height will be 18 metres and it would weigh about 13 tons at lift-off. The start-up has raised Rs 26 crore recently from various sources, which will be used for ground testing, fabrication and expanding the team. The company is operating out of the National Centre for Combustion Research and Development (NCCRD) at IIT Madras.

SR Chakravarthy, head of NCCRD and founder-adviser of Agnikul, told *The New Indian Express* that ISRO help would be needed during the testing stage. "We have to do something called 'static tests', where individual rocket stages will be fired on the ground under controlled conditions. In view of safety and security, we would prefer to use ISRO testing facilities and this is where the role of IN-SPACe would come in handy."

Ravichandran said the whole purpose of 'Agnibaan' was to eliminate the long wait periods for nano and micro satellite launch. Presently, small satellites are carried as piggyback luggage by bigger rockets. "We will be able to build a rocket within two weeks from the date of order and it can be launched from any launch site," Ravichandran said.

Besides Agnikul, there are two other Indian start-ups working on building small satellite vehicles. Bellatrix is building a 'Chetak' launch vehicle designed to deliver a 50 kg payload. The other start-up is Skyroot, which is working on the 'Vikram' series of launch vehicles.

https://www.newindianexpress.com/cities/chennai/2020/jun/30/chennai-start-up-building-indias-first-private-smallsat-rocket-eyes-isro-help-for-testing-2163503.html

EurekAlert!

Wed, 01 July 2020

Scientists develop novel predictable multi-nucleotide deletion systems in plants

Many small regulatory elements, including miRNAs, miRNA binding sites, and cis-acting elements, comprise only 5~24 nucleotides and play important roles in regulating gene expression, transcription and translation, and protein structure, and thus are promising targets for gene function studies and crop improvement.

The CRISPR-Cas9 system has been widely applied in genome engineering. In this system, a sgRNA-guided Cas9 nuclease generates chromosomal double-strand breaks (DSBs), which are mainly repaired by nonhomologous end joining (NHEJ), resulting in frequent short insertions and deletions (indels) of 1~3 bp. However, the heterogeneity of these small indels makes it technically challenging to disrupt these regulatory DNAs. Thus, the development of a precise, predictable multi-nucleotide deletion system is of great significance to gene function analysis and application of these regulatory DNAs.

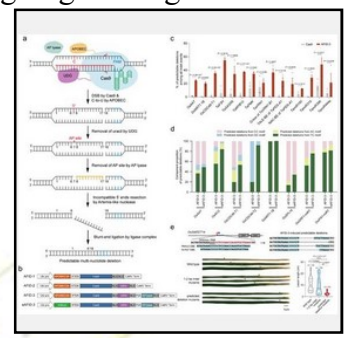


IMAGE: (a). Schematic representation of the AFID system. (b). Structures of AFIDs 1-3 and eAFID-3. (c). The proportions of predictable deletions generated by Cas9 and AFID-3. (d). Comparison of predictable deletion... view more

A research team led by Prof. GAO Caixia from the Institute of Genetics and Developmental Biology of the Chinese Academy of Sciences (CAS) has been focusing on developing novel technologies to achieve efficient and specific genome engineering. Based on the cytidine deamination and base excision repair (BER) mechanism, the researchers developed a series of APOBEC-Cas9 fusion-induced deletion systems (AFIDs) that combine Cas9 with human APOBEC3A (A3A), uracil DNA-glucosidase (UDG) and AP lyase, and successfully induced novel precise, predictable multi-nucleotide deletions in rice and wheat genomes.

"AFID-3 produced a variety of predictable deletions extending from the 5?-deaminated Cs to the Cas9 cleavage sites, with the average predicted proportions over 30%," said Prof. GAO.

The researchers further screened the deamination activity of different cytosine deaminases in rice protoplasts, and found that the truncated APOBEC3B (A3Bctd) displayed not only a higher base-editing efficiency but also a narrower window than other deaminases.

They therefore replaced A3A in AFID-3 with A3Bctd, generating eAFID-3. The latter produces more uniform deletions from the preferred TC motifs to double-strand breaks, 1.52-fold higher than AFID-3.

Moreover, the researchers used the AFID system to target the effector-binding element of OsSWEET14 in rice, and found that the predictable deletion mutants conferred enhanced resistance to rice bacterial blight.

AFID systems are superior to other current tools for generating predictable multi-nucleotide targeted deletions within the protospacer, and thus promise to provide robust deletion tools for basic research and genetic improvement.

The team's scientific paper, entitled "Precise, predictable multi-nucleotide deletions in rice and wheat using APOBEC-Cas9," was published in *Nature Biotechnology*.

https://eurekalert.org/pub_releases/2020-06/caos-sdn063020.php

ScienceDaily

Wed, 01 July 2020

Research reveals fishing pressures affect tropical and temperate reefs differently

Summary: An international team of researchers focused on what can happen to ocean ecosystems when fishing pressure increases or decreases, and how this differs between tropical to temperate marine ecosystems. The team found ecosystems do not respond universally to fishing.

In a study published recently in *Ecology and Evolution*, an international team of researchers focused on what can happen to ocean ecosystems when fishing pressure increases or decreases, and how this differs between tropical to temperate marine ecosystems. The team, led by Elizabeth Madin, researcher at the Hawai'i Institute of Marine Biology (HIMB) in the University of Hawai'i (UH) at M?noa School of Ocean and Earth Science and Technology (SOEST), found ecosystems do not respond universally to fishing.

There has been much debate about the degree to which ocean ecosystems are impacted by fishing, also termed "top-down forcing" because such changes occur when predators at the top of the food web are removed, versus the availability of nutrients and other resources in an ecosystem, termed "bottom-up forcing."

"Examples from a variety of marine systems of exploitation-induced, top-down forcing have led to a general view that human-induced predator perturbations can disrupt entire marine food webs, yet other studies that have found no such evidence provide a counterpoint," said Madin.

Madin worked with an amazing team of marine ecologists from all over the world, particularly those from the Australian Institute of Marine Science (AIMS) and the University of Tasmania (UTas). Using time?series data for 104 reef communities spanning tropical to temperate Australia from 1992 to 2013, they aimed to quantify relationships among populations of predators, prey, and algae at the base of the food web; latitude; and exploitation status over a continental scale.

As expected, no-take marine reserves -- where fishing is prohibited -- led to long-term increases in predator population sizes.

"This is good news for fishers, because as populations increase, the fish don't recognize the reserve boundaries and are likely to 'spill over' into adjacent areas where fishing is allowed, creating a kind of insurance policy whereby marine reserves ensure the ability of fishers to catch fish into the future," said Madin.

Surprisingly though, the team found that in the tropics, the system tends to be driven predominantly by bottom-up forcing, whereas colder, temperate ecosystems are more driven by top-down forcing.

"I assumed at the start of the project that in places where fishing pressure was high and predators were depleted, we would see consequent increases in the population sizes of the predators' prey species, and the decreases in the prey's prey species," explained Madin. "However, in the tropical part of our study system, that is, Australia's Great Barrier Reef, this simply wasn't the case. This result had me scratching my head for quite some time, until I realized that this type of domino effect, called a trophic cascade, is simply a real, but rare, phenomenon in the tropics."

These kinds of continent-scale analyses are only possible with large, long-term datasets.

This study relied on data from the AIMS long-term coral reef monitoring program and the UTas Australian Temperate Reef Collaboration -- creating one enormous, continental-scale reef dataset.

"Only by looking at the very big picture, it turned out, were we able to find these trends," said Madin.

Predator loss is now a globally pervasive phenomenon that touches nearly every marine ecosystem on the planet. Ecosystem destabilization is a widely-assumed consequence of predator

loss. However, the extent to which top-down versus bottom-up forcing predominates in different types of marine systems is not definitively understood.

"Understanding how our fisheries are likely to impact other parts of the food web is important in making the best possible decisions in terms of how we manage our fisheries," said Madin. "By understanding how coral reef food webs are likely to respond to fishing pressure, or conversely to marine reserves, we can make more informed decisions about how much fishing our reefs can safely handle. Likewise, this knowledge gives us a better idea of what will happen when we create marine reserves designed to serve as an insurance policy so communities can continue to catch fish long into the future."

Story Source:

Materials provided by **University of Hawaii at Manoa**. *Note: Content may be edited for style and length.*

Journal Reference:

1. Elizabeth M. P. Madin, Joshua S. Madin, Aaron M. T. Harmer, Neville S. Barrett, David J. Booth, M. Julian Caley, Alistair J. Cheal, Graham J. Edgar, Michael J. Emslie, Steven D. Gaines, Hugh P. A. Sweatman. **Latitude and protection affect decadal trends in reef trophic structure over a continental scale**. *Ecology and Evolution*, 2020; DOI: 10.1002/ece3.6347

https://www.sciencedaily.com/releases/2020/06/200630092209.htm

COVID-19 Research News

The Indian EXPRESS

Wed, 01 July 2020

Explained: What is Covaxin, India's Covid-19 vaccine candidate; how long before approval?

India's Covid-19 vaccine candidate Covaxin: How does Covaxin compare to other vaccine candidates around the world? Where does it figure in the global race for a Covid-19 vaccine?

By Prabha Raghavan

India's top drug regulator, the Central Drugs Standard Control Organisation, has allowed Bharat Biotech India (BBIL) to conduct human clinical trials for 'Covaxin', making it the first indigenously developed Covid-19 vaccine candidate to receive this approval, the firm said. These trials are scheduled to start across India in July.

What is 'Covaxin' and how was it developed?

Covaxin is a vaccine candidate to developed by BBIL against the novel coronavirus (Covid-19) in collaboration with the Indian Council of Medical Research's National Institute of Virology (NIV).

As part of this collaboration, NIV isolated a strain of the virus from an asymptomatic Covid-19 patient and transferred it to BBIL early in May. The firm then used it to work on developing an "inactivated" vaccine–a vaccine that uses a the dead virus–at its high containment facility in Hyderabad.

Covaxin coronavirus vaccine candidate: Bharat Biotech plans to begin its phase I and II trials in July, but is unsure of the overall timeline for testing and approving its vaccine.

"Once the vaccine is injected into a human, it has no potential to infect or replicate, since it is a killed virus. It just serves to the immune system as a dead virus and mounts an antibody response

towards the virus," said the company, adding that inactivated vaccines usually have a better safety record.

BBIL's Covaxin then underwent pre-clinical testing, which is when the vaccine is tested on animals like guinea pigs and mice to see if it is safe, before the firm approached CDSCO for approvals to move on to the next stage of testing–human trials.

What does the approval mean for India?

The Drug Controller General of India, who heads CDSCO, has given Bharat Biotech approvals to begin testing its vaccines on humans through phase I and II clinical trials. This brings India a step closer to finalising a domestically developed Covid-19 vaccine for its population–a positive sign at a time when the country's cases continue to surge, especially in the national capital.

The first phase, usually conducted on a small group of individuals, tries to find what dosage of the vaccine is safe for use, whether it is effective in building their immunity to the virus and whether there are any side effects. The second phase is conducted on a larger group comprising hundreds of persons fitting the description of those for whom the vaccine is intended using characteristics like age and sex. This phase tests how effective the vaccine is on the population group being studied.

How many more stages of testing would the vaccine have to go through before approval?

Vaccines, like most new drugs, are meant to follow a clinical testing process spanning four stages, starting with pre-clinical tests and ending with phase III studies conducted on thousands of patients. After approval from the regulator, the firm has to continue monitoring the use of its vaccine on patients and submit post-marketing surveillance details, which checks for any long-term unintended adverse effects of the product.

Bharat Biotech plans to begin its phase I and II trials in July, but is unsure of the overall timeline for testing and approving its vaccine.

"At the moment we are not sure how the vaccine is going to perform in the humans, as clinical trials are about to commence. Based on the success results of phase I and phase II, we will progress to the larger clinical trials. Thereafter, the licensure timelines will be set out upon receiving regulatory approvals," said BBIL.

What other Indian companies are working on a Covid-19 vaccine candidate? What stage are they at?

Other Indian firms engaged in the development of Covid-19 vaccines include Zydus Cadila, Serum Institute of India and, since earlier this month, Panacea Biotec.

While Panacea is still in the pre-clinical stage, it is not clear whether Zydus and Serum have completed their preclinical studies and have also applied to CDSCO for approval to conduct human trials yet.

How does Covaxin compare to other vaccine candidates around the world? Where does it figure in the global race for a Covid-19 vaccine?

Covaxin has reached a more advanced stage of testing than two other vaccine candidates that Bharat Biotech is developing through global collaborations–the first is in collaboration with Thomas Jefferson University, while the second is with the University of Wisconsin-Madison and vaccine maker FluGen. Both these candidates are currently in the pre-clinical stage, according to the World Health Organisation's draft landscape of Covid-19 candidate vaccines.

However, it is still far behind in the global race for a Covid-19 vaccine. AstraZeneca, whose vaccine candidate "ChAdOx1-S" with the University of Oxford is already at phase III trials, is the frontrunner. Serum Institute has an agreement to manufacture this vaccine.

Moderna, which is also close to beginning phase III trials for its LNP-encapsulated mRNA vaccine candidate with the National Institute of Allergy and Infectious Diseases, is close behind.

Apart from Covaxin, which is not listed among the vaccines being tried globally, at least six other candidates are in Phase I/II trials and another five are in Phase I trials globally.

Globally, Zydus Cadila's DNA plasmid and measles vector vaccines as well as Serum's codon deoptimised live attenuated vaccine, which it is developing with Codagenix, are still in the pre-clinical stage, according to WHO.

https://indianexpress.com/article/explained/explained-what-is-covaxin-indias-covid-19-vaccine-candidate-how-long-before-approval-6483553/

Wed, 01 July 2020

U.S. FDA comes out with guidance for COVID-19 vaccine approval

More than 100 vaccines are being tested worldwide against the virus, which has claimed over 126,100 lives in the United States, according to a Reuters tally. The Trump administration in May announced a program called "Operation Warp Speed" to speed up the development of COVID-19 therapeutics and vaccines, as the country has none approved for treating COVID-19

Washington DC: The U.S. Food and Drug Administration on Tuesday released guidance for approving a coronavirus vaccine, saying the vaccine has to prevent or decrease disease severity in at least 50% of people who are inoculated. More than 100 vaccines are being tested worldwide against the virus, which has claimed over 126,100 lives in the United States, according to a Reuters tally.

The Trump administration in May announced a program called "Operation Warp Speed" to speed up the development of COVID-19 therapeutics and vaccines, as the country has none approved for treating COVID-19. Several companies such as Moderna Inc, Pfizer Inc and AstraZeneca Plc are in the race to develop a vaccine.

"While the FDA is committed to expediting this work, we will not cut corners in our decisions," the FDA said on Tuesday. (https://bit.ly/38fyVS3) Experts have said it could take 12 to 18 months for a vaccine to be developed.

Vaccine developers have also been asked for data to support use during pregnancy and to show safety and effectiveness in children, the health regulator said. "The guidelines are pretty standard, they look pretty much like influenza vaccine guidelines," Gregory Poland, director of Mayo Vaccine Research Group said.

"I don't think that's a high bar. I think that's a low to maybe an appropriate bar for a first-generation COVID-19 vaccine." Flu vaccines are 30%-70% effective in any given year, according to Jefferies analyst Michael Yee. The guidelines could be seen as a relatively high bar given the urgency to accelerate availability of a vaccine, Yee added.

Dr. Anthony Fauci, the United States government's top infectious diseases expert, cautioned that there is no guarantee of a safe and effective vaccine.

https://www.devdiscourse.com/article/health/1112556-us-fda-comes-out-with-guidance-for-covid-19-vaccine-approval

Scroll.in

Wed, 01 July 2020

Explainer: Covid-19 vaccine development and why India has to be a player in this

A virologist explains how vaccines are developed and put through clinical trials.

As the novel coronavirus continues to devastate lives and livelihoods across the world, scientists are racing to find a vaccine that could stop its march.

On Monday, India announced its first experimental vaccine to go into human clinical trials in July. It has been jointly developed by a private firm Bharat Biotech and the Indian Council for Medical Research.

The World Health Organisation's latest draft landscape of Covid-19 candidate vaccines shows 16 candidate vaccines in clinical trials and 125 candidate vaccines in preclinical evaluation.

One of the leading candidates in terms of timing is the University of Oxford-AstraZeneca Covid-19 experimental vaccine, which is already in the stage of human trials. Not far behind is the Moderna vaccine, said WHO chief scientist Soumya Swaminathan last week.

As cautious optimism builds over this global effort, unprecedented in scope, experts also caution that an effective vaccine could never be developed.

While vaccines have been acknowledged as among the greatest public health interventions, there has, arguably, never been so much focus on the development of a single vaccine.

Virologist and Chief Executive Officer of Wellcome Trust/DBT India Alliance, Dr Shahid Jameel, answers some of the most frequently asked questions on vaccine development.

We understand that the candidate vaccines are tested for their 'immunogenicity' and 'protective efficacy'. What do these terms mean?

Immunogenicity means whether the vaccine candidate raises immune responses. Immune responses are mainly seen in terms of antibodies, does it raise antibody responses. Sometimes researchers also look at cellular response, but mainly it is antibody.

Protective efficacy means, does it protect from infection or disease. And all vaccines do not protect against infection but they do protect against disease. For example, take the influenza vaccine. The influenza vaccine does not prevent infection from the virus but it prevents the disease that develops and many people will feel very mild disease but it won't become severe.

Everything that raises an immune response, does not necessarily have to be protective. People have been working on an AIDS vaccine for decades. And so far all the AIDS vaccine candidates have raised very robust immune responses but these responses are not protective.

In a clinical trial process, do researchers aim for diversity in age, gender, race, in the volunteer pool. Is that of consequence in testing the immunogenicity and protective efficacy of a candidate vaccine?

Yes, absolutely. It's a critical thing. In a population, we have different protective genes and therefore we respond very differently to infection. Ideally a good vaccine has to be tested in multiple geographies. But the truth of the matter is that the testing is done in countries where it has been approved to be tested. For example, if the regulator in the US has given approval, the vaccine will be tested there, unless, simultaneously there is clearance from the regulator in India and the regulator in China. Ideally, it should be tested in multiple populations.

Even both genders, because sometimes you see that men and women respond differently to the same candidate. Different age groups sometimes respond differently. So, yes, all those things matter.

Can you explain what a typical phase-wise clinical trial process is?

I will tell you the traditional way of doing trial. But a lot of things have been turned on their head in the approvals that are required for the Covid-19 vaccine.

In a typical trial, the sequence is that you have to test the candidate in an animal. And in the animal you first do a toxicity study to make sure that the vaccine is not toxic. And then you also look at the immune response – whether it is raising antibodies, whether it is raising cellular immunity or not. It has to be proven to be both immunogenic and non-toxic in animals.

Once the candidate has gone through these phases, and there is approval to now test it in humans, the vaccine has to go through phases I, II and III.

Phase I is typically a small trial done in about 10-50 people. And that looks mainly at safety. Whether the vaccine candidate is safe in humans. In Phase I they also sometimes see if the vaccine makes the right kind of antibodies or not, but primarily it is a safety trial. That typically takes a few weeks.

Phase II is a larger trial. You go with more than 100 volunteers. You test dosage. You will figure out whether I should give, say, 1 injection of 20 micrograms or should I give two injections of 10 micrograms each. What should be the frequency with which I should give the vaccine? Usually a single injection doesn't work, you have to give at least two to three shots. In phase II you also look at how the immune responses have developed in the various arms of the trail.

Phase III is basically a very large efficacy trial. Here you are asking whether those who get the vaccine are protected, compared to those who don't get the vaccine. This is typically tested in thousands of volunteers. And they are usually done in an area where the infection is prevalent. Otherwise you will never have enough people getting naturally infected to be able to make a distinction between those who are protected versus those who are not.

(Cases in China are tapering off, which is why Chinese vaccine candidate Sinovac Biotech is now looking to test in Brazil, the epicentre of Latin America's outbreak, for its final testing.)

In Phase III, let's say you have 1,000 volunteers. You randomise and about 500 will get the vaccine and 500 will get the placebo. And after a few months you estimate, how many with the vaccine got infected versus how many people in the placebo arm got infected. And that is how you determine the efficacy of a vaccine. The entire process could take from 6 to 10 years.

Over 25,000 people have volunteered for human challenge trials for Covid-19. What does this mean and what are the ethical questions surrounding the use of this method?

In human challenge trials, instead of letting people get naturally infected, you purposely infect them and figure out how many of those were protected. It would be unethical to inject a known pathogen, knowingly into somebody. Normally human challenge trials are for those diseases for which there is a drug available. Human challenge trials have been done for example in a malaria vaccine, and that is mainly because there is no good animal model system to do trials for malaria. And there are good drugs to treat malaria.

If you were to do a human challenge trial for Covid, for which there is no drug available, that would be hugely unethical. But some regulators will give permission for that because they have to weigh the public good against individual harm.

In the normal course if it takes nearly a decade for a vaccine to reach the market, what are researchers doing differently that is giving us hope of one or more vaccine candidates clearing regulatory approvals by early next year?

See, in a regular clinical trial, you do things sequentially. But what has happened now is, regulators have allowed the vaccine to go into humans, even before it has been tested in animals. So it is sort of like, animal and human running parallely, instead of serially. Also, they have allowed a combination of phase 1 and 2. So instead of doing it serially, you do it parallely. So that has really shortened the time. And they are also monitoring, following up the response in volunteers for a lesser amount of time. This is unprecedented. It has never happened before.

What are the different kinds of vaccines?

There are multiple types of vaccines that are in various stages of development right now.

You have the **live vaccine, the killed or inactivated vaccine**. The killed vaccine would be where the virus is produced in culture, large amounts of it, and the virus is inactivated using chemicals. An example of that is the injectable polio vaccine.

Another kind of vaccine is the live attenuated vaccine. Here you have somehow weakened the virus, so that when it infects, it replicates but it does not produce disease. And an example of that is the oral polio vaccine which has been a big part of our pulse polio programme.

We also have the replicating **viral vector vaccine**. Here, you would take another virus, and use that to deliver genes of the SARS-CoV-2 (the coronavirus causing the Covid-19 disease) into cells.

In this case the common cold virus, called the adenovirus. In the adenovirus you put in one of the genes of the SARS-CoV-2. The Covid-19 gene that is expressed, makes the spike protein, which triggers an immune response. Remember, the coronavirus used the spike protein to break into human cells.

The Oxford-Astrazeneca is the most advanced vaccine right now. And that vaccine is based on a chimpanzee adenovirus from which the spike protein of the SarsCoV2 Virus is expressed.

There are other vaccines based on human adenovirus that are in the pipeline. There is a vaccine based on a measles virus that is in development. There are multiple vaccines based on this platform.

Then there are what we call **genetic vaccines**. Genetic vaccines can be produced much faster than vaccines using traditional methods.

Genetic vaccines mean that instead of injecting the protein, you inject a genetic material which then makes the protein. As you know DNA makes RNA and RNA makes protein.

So researchers are injecting DNA directly and the idea is that the DNA will be taken up by the cells, the cells will make RNA and the RNA will make protein. There are a couple of vaccine candidates which are based on this platform.

And finally, for the first time we are seeing the RNA vaccines. The Moderna vaccine, which is the first one to go into trials, is a mRNA vaccine (messenger RNA). Here the RNA which expresses the Covid-19 spike protein is injected. Now the trouble is that the RNA is a very labile (susceptible to alteration or destruction) molecule. If it is given just by itself, it will degrade very quickly. So the RNA has to be packaged into a carrier and then given.

While the RNA technology is simple, it is not simple to develop the particle which will carry the RNA. Moderna has been using this platform for other vaccines and they quickly adapted it to make the Covid-19 vaccine candidate.

Is there, presently, any vaccine produced using this approach that has got regulatory approval?

Moderna has been working on this but no nMRNA vaccines have got approval yet. I don't know if any of them have gone to human trials or not. Certainly they have developed the platform and if this Covid-19 vaccine candidate even raises immune responses, it's going to be a very simple way of doing it and this could be the way vaccines will be made in the future. It will become very easy to make vaccines, if this technology is perfected.

Whether a person who has recovered from Covid-19 could be reinfected, is a question that doesn't have a definite answer. So, is it possible to say, how long would vaccine induced immunity last?

That is very hard to predict. If you look at various vaccines that are in use, you will see that there are all kinds. The flu vaccine for example gives immunity only for about a year. So every year there is a new flu strain and you have to essentially get a new vaccine. On the other hand, polio vaccine gives you life long immunity. Hepatitis-B vaccine, which is the first recombinant vaccine to have been approved, gives you immunity which lasts about 5 years and every 5 years you need to get a booster shot.

Dr. William Haseltine, known for his groundbreaking work in fighting cancer and HIV/AIDS has said in interviews that it is not a question of when, but a question of if at all a vaccine would make it. He points out, for example, that it would be near impossible to vaccinate the most Covid-vulnerable population – the elderly.

It is true that the older you get, the more difficult it becomes to raise protective responses, your immune system starts slowing down. But the point is, if you were to successfully vaccinate the younger population, especially in countries like India, where the majority of the population is young, then you achieve what is called herd immunity.

Herd immunity will therefore protect even susceptible people from getting infected. So there is certainly value in vaccines, and vaccines have proven to be the most cost effective public health measure.

What about vaccine geopolitics? Some are fearing a repeat of the HIV/AIDS situation, when the world's most infected areas were denied drugs.

Who will decide who gets the vaccine first. You know, countries which have developed and manufactured the vaccine will have the first claim on it. It is upto international agencies to ensure an equitable mechanism.

Sure, imbalance is there in medicines also. This is an unequal world. So to expect anything other than that would be foolish.

I think where India will really contribute is its manufacturing ability. India has some of the largest vaccine manufacturing capability in the world. And if you see some of the partnerships international vaccine developers have built with Indian companies is a testament to the manufacturing capabilities in India.

If the world has to be vaccinated, India has to be a player in this, there is no doubt about it.

https://scroll.in/article/966086/explainer-covid-19-vaccine-development-and-why-india-has-to-be-a-player-in-this