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समाचार पत्रों से चयित अंश Newspapers Clippings

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Business Standard

Fri, 05 June 2020

DRDO develops device to keep PPE wearers comfortable, without sweating

DRDO developed a personal air circulation system which can be used inside the PPE as a small backpack of approximately 500 grams weight

New Delhi: The Defence Research Development Organisation (DRDO) has developed a device -- SUMERU-PACS -- that helps wearers of Personal Protective Equipment (PPE) to feel comfortable without sweating.

The DRDO officials found out, on the basis of the feedback received from doctors and medical staff, that the PPE wearers feel uncomfortable after wearing PPE for more than 30 to 45 minutes and start sweating which makes the situation worse.

After receiving the feedback, DRDO developed a personal air circulation system which can be used inside the PPE as a small backpack of approximately 500 grams weight which works well at an ambient temperature of 39 degrees Celsius and keeps wearer comfortable and cool without sweating.

The system is suitable for indoors especially for doctors and other medical staff wearing PPE cover all six hours in the hospitals. The device draws the outside air with the help of a filter and the moist air goes out from the front face opening thereby, cooling neck and head area.

https://www.business-standard.com/article/current-affairs/drdo-develops-device-to-keep-ppe-wearers-comfortable-without-sweating-120060400198_1.html



The system is suitable for indoors especially for doctors and other medical staff wearing PPE cover all six hours in the hospitals



Fri, 05 June 2020

New Made-In-India fighter cleared for development, first flight in 6 years

The new fighter-jet will be designed to operate from the deck of India's two aircraft carriers INS Vikramaditya and the soon to be inducted INS Vikrant

By Vishnu Som

New Delhi: Buoyed by the success of trial landings of the Tejas-N fighter on board the Navy aircraft carrier, INS Vikramaditya, the Aeronautical Development Agency (ADA) has given the go ahead for the development of a twin engine made-in-India fighter jet. The development phase is expected to cost between Rs 7,000 and Rs 8,000 crore.

NDTV has learnt that the development of this aircraft was discussed on May 22 at ADA's Annual General Body meet, its highest governing body. The meeting was chaired by Defence Minister Rajnath Singh and was attended by the Navy and Air Force Chiefs. Subsequent to this meeting, the Operational Requirements (ORs) for the new fighter were issued by the Integrated Headquarters, Ministry of Defence (Navy).



The twin-engine deck-based fighter is meant to operate on India's aircraft carriers.

Development of the new fighter jet comes at a time when the government announced a series of structural reforms in the Defence sector under the "Atmanirbhar" or self-reliance goal which is meant to result in India dramatically cutting down on its defence imports.

The prototype of the new fighter-jet, designed to operate from the deck of India's two aircraft carriers, INS Vikramaditya and the soon to be inducted INS Vikrant, is meant to fly within six years with induction of the fighter within a decade.

The fighter, plans for which were first reported on NDTV in January, is a twin-engine evolution of Tejas-N prototype which has been indigenously developed and extensively test-flown.

The Tejas-N programme culminated with a series of "arrested landings" and take-offs from INS Vikramaditya off the Goa coast where two prototypes of the jet were able to successfully land on the carrier in January by using its arrestor hook to snare steel wires spread across the deck of the ship. This allowed the fighters to decelerate from approximately 244 kmph (the landing speed) to a standstill in approximately two seconds in a distance under 90 metres, within the length of the deck of INS Vikramaditya.

Those involved in the design and development of the new Indian fighter, an advanced variant of the single-engine Tejas-N, say that they have benchmarked the performance characteristics of the jet to Boeing's F/A-18 E/F "Super Hornet", in service with the US Navy and the Marine Rafale, deployed on the French Navy aircraft carrier Charles de Gaulle. They say the new jet may imbibe technologies being developed for the IAF's Advanced Medium Combat Aircraft (AMCA) but will not be a stealth fighter in the same class.

At least three variations of the design of the new fighter are being studied presently and Computational Fluid Dynamics (CFD) tests and wind tunnel modelling will ensure the optimum shape of the fighter to match its projected operational capabilities. It's still unclear whether the new

fighter will be a tail-less delta platform, similar to the IAF's LCA Tejas fighter or, for that matter, feature canards, a small forewing placed ahead of the main wing of the aircraft to aid manoeuvrability.

The new fighter, once inducted, is meant to supplement and ultimately replace the Indian Navy's fleet of MiG-29K fighters presently in service on board the INS Vikramaditya. A high-performance jet, the MiG-29K has been plagued with serviceability issues in Indian Navy service. The new indigenous fighter is designed to be more reliable. Those close to the project have told NDTV that they expect the new fighter to be able to be armed with at least six air to air missiles with an operational endurance of approximately two hours.

The project to develop a twin engine deck-based fighter (TEDBF) reflects a maturity and confidence in the development of the Tejas fighter jet upon which the new fighter will be based. On May 27, the Indian Air Force operationalised its second Tejas fighter jet squadron after first inducting the jet in 2016. Multiple variants of the Tejas based on additional capabilities are being progressively inducted. The most advanced variant of the fighter for the IAF, the Tejas Mk-2 is expected to be inducted by 2025. The new fighter being developed for the Navy is being classified as an altogether different fighter and is expected to be superior to the IAF's Tejas Mk-2 in several respects, once developed.

<https://www.ndtv.com/india-news/new-made-in-india-fighter-cleared-for-development-first-flight-in-6-years-2240666>



Fri, 05 June 2020

DRDO and Australia Defense Scientists partner to strengthen Defence via MLSA

In a recent development, India and Australia will partner together, use each other's military base and share military logistics. DRDO even tweeted the development.

The first India-Australia virtual leaders' summit on June 4 said that both the countries will build on growing defence ties between the two sides. They will also move to a shared approach to a free, open and inclusive Indo-Pacific boundary. The development has come in the form of MLSA.



What is MLSA?

The Mutual Logistics Support Agreement (MLSA) will allow militaries of the two countries to use each other's bases for repair and replenishment of supplies. Besides, it will facilitate scaling up of overall defence cooperation. India has already signed similar agreements with the US, France and Singapore.

Australia has huge deposits of minerals, including rare earth metals, and the two sides have been working on cooperation in critical and strategic minerals, the people said. The virtual summit has provided an opportunity to the two sides to review the broad framework of the relationship and to discuss their responses to the Covid-19 pandemic.

The countries have also reflected the importance attached to the Indo-Pacific. They have also unveiled a declaration titled 'Shared Vision for Maritime Cooperation in the Indo-Pacific', outlining their commitment to promoting peace, security, stability, and prosperity in the region.

How will this Military relationship work?

The joint statement has revealed the following points:

1. Both sides agreed to continue to deepen and broaden defence cooperation. This will happen by enhancing the scope and complexity of their military exercises and engagement activities to develop new ways to address shared security challenges. Also, both sides agreed to increase military inter-operability through defence exercises through their Arrangement concerning Mutual Logistics Support (MLSA).
2. They have signed an MOU to implementing arrangement concerning cooperation in Defense Science and Technology on Defense Cooperation. This will provide a framework for growing collaboration between the defence research organisations of both countries.
3. The two countries have reached an understanding on enhancing cooperation between their navies and strengthen maritime domain awareness in the Indo-Pacific region.
4. India and Australia are also committed to supporting a rules-based maritime order that is based on respect for sovereignty and international law, particularly the United Nations Convention on the Law of the Sea (UNCLOS).
5. The countries will continue to work with the East Asia Summit (EAS) and other ASEAN-led institutions; the ASEAN Defense Ministers' Meeting (ADMM Plus), Indian Ocean Naval Symposium (IONS) and Indian Ocean Rim Association (IORA).

India and Australia trade relationship

At the plurilateral level, Australia has backed several of India's global initiatives. These include the International Solar Alliance and Coalition for Disaster Resilient Infrastructure. Australia also backs India's membership of an expanded UN Security Council. It also supported the country's membership of the Australia Group and Wassenaar Arrangement.

Further, the bilateral trade between both countries has been worth \$20.92 billion during the 2018-19. This includes India's exports of goods and services worth \$5.17 billion. Australia's cumulative investment in India is about \$10.74 billion while Indian investments in Australia is \$10.45 billion. The Australian Pension Fund has invested \$1 billion in India's National Investment and Infrastructure Fund.

Australia is home to a 700,000-strong Indian diaspora and there are about 106,000 Indian students in Australia. Under Vande Bharat Mission, 1,560 Indian nationals were repatriated from Australia in seven flights in May. The flights also evacuated 1,096 Australians.

<https://www.ciol.com/drdo-news-india-australia-partner-strengthen-defence/>

THE ECONOMIC TIMES

Fri, 05 June 2020

Amethi AK-203 factory unlikely to start operations in 2020

As per the plan, the OFB-Kalashnikov joint venture (JV) was to arrive at a fair price for setting up and producing almost seven lakh rifles by May-end. This decision was crucial as official plans were in place to commence work at the factory by this year-end

By Manu Pubby

New Delhi: The Indo-Russian plan to make assault rifles in Amethi has missed another key milestone over differences in pricing and the travel ban imposed due to the Covid-19 pandemic, making it highly unlikely for the factory to start operations this year.

As per the plan, the OFB-Kalashnikov joint venture (JV) was to arrive at a fair price for setting up and producing almost seven lakh rifles by May-end. This decision was crucial as official plans were in place to commence work at the factory by this year-end.

However, sources said that the project has hit a roadblock now and with a resolution unlikely soon, the factory is not expected to start operations this year. A fresh price bid was to be submitted but commercial terms could not be agreed upon, given the complex nature of the project that involves complete transfer of technology and building the rifles completely in India for the armed forces as well as possible exports in the future.

Besides its political significance, the factory is expected to generate at least 200 new jobs, including those of specialists and would be geared to produce over 70,000 AK 203 rifles annually. It is also expected to foster a larger ecosystem of suppliers as several components are to be outsourced to MSMEs in Uttar Pradesh as part of the Defence corridor plan.

While negotiations are to continue, there are examples of Indo-Russian collaborative projects that have failed to take off even after agreements were signed at the highest levels. The plan to jointly develop a fifth generation fighter aircraft, for example, was shelved after years of work after the Air Force did not give a go ahead. Similarly, discussions have been on for five years to set up a factory to produce Kamov KA 226T light utility helicopters in India but the project has not moved to the contract signing stage.

The OFB is itself going through a churn after the government announced that it would be restructured and corporatised in the coming months, as part of a larger set of reforms for the defence manufacturing sector.

The stalemate is symptomatic of the larger issue that plagues Make in India — the setting up of new weapons facilities is cost intensive, pushing up the cost of domestically manufactured arms and making them more expensive than direct imports. However, these costs can be brought down in the long run by mass production and pursuing export opportunities.



The order to manufacture a record 670,00 Kalashnikov AK 203 rifles for the Indian Army has been under discussions for over a year now. The joint project is a high priority for both nations, with Prime Minister Modi and President Vladimir Putin known to have taken a personal initiative to take it ahead at the earliest.

The number is likely to increase to at least 750,000 later as requirements of other forces are added to the order. According to the plan, complete transfer of technology of all components will be achieved during the early stage of production. These rifles will replace the INSAS assault rifles currently in service.

<https://economictimes.indiatimes.com/news/defence/amethi-ak-203-factory-unlikely-to-start-operations-in-2020/articleshow/76183802.cms>

TIMESNOWNEWS.COM

Fri, 05 June 2020

After Indian Army delayed summer exercise along LAC due to COVID-19, China moved into key strategic positions

Both the countries have moved in artillery in the Eastern Ladakh sector where not a single shot has been fired since 1967 when the Indian Army defeated China's PLA in Nathu La and Cho La clashes

Key Highlights

- **Tensions between the two sides escalated over construction activities in the Galwan Nala area**
- **Indian Army and China's PLA held several meetings to resolve the face off**
- **China has made slight retreat at Galwan Valley**

New Delhi: China's People's Liberation Army (PLA) moved into key positions in Ladakh after the Indian Army delayed summer exercise along the Line of Actual Control (LAC) in early March due to COVID-19.

The exercise was delayed after some soldiers were infected with the coronavirus.

According to a report by *ET*, China moved its forces towards key strategic positions thereby cutting off the access to areas which were patrolled by Indian forces before.

Annual joint exercise postponed after Army personnel tested COVID-19 positive

The report further states that the joint exercise, which takes place in Sub Sector North (SSN) every year and conducted by the Army and Indo-Tibetan Border Police was postponed after Army personnel tested positive in March.

As per the report, China postponed its exercise too but surprised Indian troops by a quick redeployment in the Galwan valley and the Finger Area along Pangong Tso lake.

On March 18 it was reported that a 34-year-old soldier had tested positive for COVID-19 in Leh, becoming the first case of the coronavirus in the Indian Army.

Earlier today, security agencies submitted a detailed report to the government on the Chinese military build-up in Eastern Ladakh to analyze how it was able to bring in so many troops into the area.



[China has made slight retreat at Galwan Valley | Google Maps](#)

The report includes all the details about the Chinese build-up in different sectors from the topmost area including the Daulat Beg Oldi sector and the Pangong Tso sector, reported ANI.

China had planned deeper incursion into the Indian side

Beginning in the first week of May, China deployed more than 5,000 troops in the Eastern Ladakh sector along the Line of Actual Control.

The Chinese troops wanted to do a further deeper incursion into the Indian side but the timely deployment of troops by Indian forces thwarted their plans.

While talks are on to resolve the ongoing dispute in Ladakh there is no major movement of the PLA troops at the sites where it has stationed itself along the LAC.

<https://www.timesnownews.com/india/article/after-indian-army-delayed-summer-exercise-along-lac-due-to-covid-19-china-moved-into-key-strategic-positions/601634>

**INDIA
TODAY**

Fri, 05 June 2020

Lt Gen Harinder Singh: Meet the officer who will represent Army at crucial India-China border tensions meeting

Top generals from the Indian and Chinese armies will be meeting later this week to defuse tensions between the two forces whose soldiers are in standoff situations along the Line of Actual Control. The Indian Army will be represented by Lieutenant General Harinder Singh

By Manjeet Singh Negi

HIGHLIGHTS

- **India, China told hold top-level military meeting on Saturday**
- **Meeting will focus on defusing tensions along the Line of Actual Control**
- **India will be represented by Lt Gen Harinder Singh, the commander of 14 Corps**

New Delhi: Top generals from the Indian Army and the Chinese People's Liberation Army will be meeting later this week as the two forces look to bring down heightened border tensions that have led to a standoff between soldiers of the two countries. The meeting will be held between lieutenant general-ranked officers from the two armies on Saturday.

The meeting is being held around a month after a physical brawl between Indian and Chinese troops took place on the banks of Pangong Tso in Ladakh. The Line of Actual Control between India and China passes through this lake, though its exact location is disputed, leading to troops from the two countries coming across each other's paths.

In the days after the Pangong Tso lake brawl, Indian and Chinese soldiers were reported to have gotten into standoff-like situations at several points along the LAC in Ladakh. The standoffs have taken place in Pangong Tso, Galwan Valley, and Demchok. The Chinese are believed to have built up a large force of soldiers and equipment, forcing the Indian Army to make matching deployments.

Multiple meetings between local commanders have not defused tensions, turning the focus to diplomatic talks in Delhi and Beijing and Saturday's parley between top generals from the Indian Army and the People's Liberation Army.



Lieutenant General Harinder Singh (pictured with his arm extended) will represent the Army at the upcoming meeting the Indian Army and the Chinese PLA (File photo)

Lt Gen Harinder Singh

The Indian Army will be represented at that military meeting by Lieutenant General Harinder Singh, who is the commander of the Leh-based 14 Corps. Nicknamed the 'Fire and Fury Corps', the 14 Corps is part of the Udhampur-based Northern Command of the Indian Army and faces the "most hostile terrain, weather & altitude challenges".

An expert in counter insurgency, Lt Gen Harinder Singh took over the command of the 14 Corps in October last year. Prior to that, he held several crucial positions in the Indian Army, including the posts of Director General of Military Intelligence, Director General of Military Operations, and Director General of Operational Logistics and Strategic Movement.

Lt Gen Harinder Singh has also served in Africa as part of a United Nations mission and has seen combat experience in Jammu and Kashmir.

An alumnus of the National Defense Academy, Lt Gen Harinder Singh was commissioned into the Army's Maratha Light Infantry. Later during his military career, Lt Gen Singh graduated from the Defense Service Staff College (DSSC).

Lt Gen Singh was also a senior research fellow at the Institute of Defense Studies and Analyses (IDSA), New Delhi, and at the S. Rajaratanam School of International Studies (RSIS) in Singapore.

A prolific writer, Lt Gen Singh has published several essays and papers. His book titled 'Establishing India's Military Readiness Concerns and Strategy' is awaiting publication.

<https://www.indiatoday.in/india/story/lt-gen-haridner-singh-indian-army-china-pla-ladakh-border-lac-standoff-meeting-1685552-2020-06-04>



DEFENCE AVIATION POST
Your Connect To The World Of Defence And Aviation

Fri, 05 June 2020

Ex-Indian Army Colonel explains why thousands of Chinese troops can't enter contested site

New Delhi: Indian and Chinese troops have engaged in a stand-off for weeks at three or four locations along the 4,057 km Line of Actual Control. Both the sides have accused each other of breaching the loosely-demarkated border in the remote, snowy deserts of India's Ladakh region.

Colonel (Ret.) S. Dinny, who served as the commanding officer of the Pangong Tso battalion as late as 2017, spoke to Sputnik about the ongoing stand-off in eastern Ladakh and why it keeps happening in the region every year. The Colonel also refuted the claim made by the Indian media about the presence of thousands of People's Liberation Army troops inside Indian territory.



Sputnik: Many think that People's Liberation Army troops crossed the Indian side of the border in large numbers. Could you please elaborate upon the topography and where the current stand-off is going on?

Colonel Dinny: For understanding of the topography, different parts of lake are marked as finger 1 to finger 8. India claims that the Line of Actual Control passes near finger 8 while China claims that its side of boundary stretches to finger 4. So between finger 4 and finger 8, troops from both sides conduct patrols on a regular basis.

<https://www.defenceaviationpost.com/2020/06/ex-indian-army-colonel-explains-why-thousands-of-chinese-troops-cant-enter-contested-site/>

Air activity up; India reinforces troops along entire LAC before talks with China

While the activity, which seems to be a part of an air exercise being carried out by the People's Liberation Army Air Force, has not breached the 10 km no fly zone for fighter jets along the border, the IAF has stepped up its presence in the area as standard procedure

By Manu Pubby, Rahul Tripathi

New Delhi: Air activity in the Sino-Indian border has gone up significantly while Indian troops have reinforced positions along the entire Line of Actual Control (LAC) and the air force is on alert ahead of a key meeting on Saturday to resolve the month-long border stand off in eastern Ladakh.

Sources have told ET that increased activity by Chinese fighter jets has been detected in Aksai Chin over the past few days, well away from the LAC, and is being monitored closely by the air force that has also increased patrols.

While the activity, which seems to be a part of an air exercise being carried out by the People's Liberation Army Air Force, has not breached the 10 km no fly zone for fighter jets along the border, the Indian Air Force (IAF) has stepped up its presence in the area as standard procedure.

The IAF has a distinct advantage over China in the Ladakh sector, with a host of air bases including Srinagar and Chandigarh that can be used to quickly deploy fighter jets with a full fuel and weapons load.

Chinese airbases on the other hand are located at higher altitude, limiting them to a lower payload of weapons and fuel.

Besides, Indian troops have been reinforced and moved ahead at key places along the LAC from Ladakh to Arunachal Pradesh to counter Chinese deployments. In Uttarakhand and Sikkim, in particular, army units have moved ahead after reports of a Chinese build up on the other side.

Sources said the moves are not directly connected to the Lt Gen-level talks planned in eastern Ladakh on Saturday but have been taking place over the past few weeks to mirror similar deployments across the border.

Officials said that enhanced border patrol, cautious redeployment of troops and use of UAVs for surveillance have been intensified along the 3,488 km border that runs across Arunachal Pradesh, Uttarakhand, Himachal Pradesh, Sikkim and Ladakh.

Apart from Ladakh, PLA forces are believed to have cut off some areas in Sikkim, which were earlier patrolled by Indian forces, sources said, leading to a stand off. The current stand off in Ladakh has further led to high alert in other states as a "precautionary measure," officials said, adding that caution is being exercised by the security forces to ensure that major convoys of military trucks are not used for the movement as it may lead to escalation of the situation before the talks.

"We have deployed sufficient forces along the border," said another government official refusing to elaborate on the numbers. Indian forces however face connectivity issues in some of the



Indian buildup over the past few weeks mirrors deployments across the border.

Lt Gen-level talks planned in eastern Ladakh on Saturday

Apart from Ladakh, PLA forces are said to have cut off some areas in Sikkim

Chinese soldiers were re-deployed from an exercise in Aksai Chin at strategic positions along the LAC

India has enhanced border patrol, cautiously redeployed troops and is using UAVs along the 3,488 km border

border areas as compared to their PLA counterparts, according to multiple sources in security establishment.

The Centre is in touch with the chief ministers of four states and administrator of Ladakh for logistical requirements. Officials from the ministry of home affairs (MHA) refused to comment on the developments and a home ministry spokesperson added, "Official information on the Sino-India border issue will be dealt by ADGPI, ministry of defence." The defence ministry has not been commenting on the ongoing situation but officials say that there has been no current violence along the border.

Sources said that a detailed report on the Ladakh situation has also been submitted by intelligence agencies to the Centre last week that points to at least four incursion points at Galwan, Gogra and the Pangong Tso lake. The report has also explained the circumstances under which Chinese soldiers quickly redeployed from an exercise being carried out in Aksai Chin to occupy strategic positions along the LAC and across it to deny access to areas that were earlier being patrolled by the Indian side.

<https://economictimes.indiatimes.com/news/defence/air-activity-up-india-reinforces-troops-along-entire-lac-before-talks-with-china/articleshow/76203064.cms>

Business Standard

Fri, 05 June 2020

Ladakh stand-off: Chinese refuse to budge ahead of crucial border meet

Defence Minister Rajnath Singh on Tuesday said a meeting was possible on Saturday

By Ajai Shukla

New Delhi: As the lieutenant general commanding the Indian Army corps in Ladakh prepares for a crucial meeting with a counterpart in China's People's Liberation Army (PLA), there is little from the Chinese side to encourage hopes of de-escalation.

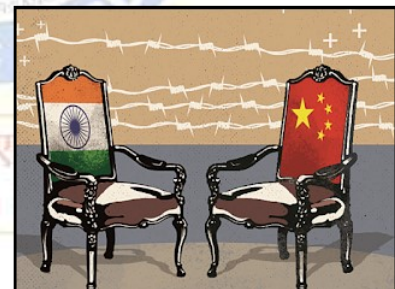
The PLA has not yet formally agreed to attend the military-to-military meeting that India is seeking to organise at the Line of Actual Control (LAC) in Chushul, Ladakh to work out a truce that would see the withdrawal of thousands of PLA soldiers that have occupied large chunks of Indian territory in the Pangong Lake north bank and the Galwan River valley over the preceding month.

Defence Minister Rajnath Singh announced on Tuesday that a meeting was possible on Saturday. However, after the Indian army cancelled several meetings before the crisis, citing Covid-19 fears, the Chinese have been paying back in the same coin.

While discussing the agenda for the meeting, Indian government sources say the Chinese side has flatly refused to discuss the incursion into the Galwan River Valley, where the PLA has entered 3-5 kilometres into Indian territory and established defences that overlook and dominate India's vital Darbuk-Shyok-Daulat Beg Oldi (DSDBO) road that links central and north Ladakh.

The PLA's occupation of large sections of the Galwan Valley in the first week of May is a troubling dimension of the current standoff. The Galwan Valley has been one of the peaceful sectors along the LAC, where both sides have traditionally agreed on the border alignment. By occupying this area, China is departing from settled practice and creating a new normal.

While the PLA seems more agreeable to discussing the Pangong Lake sector, it has refused to withdraw forces from their new positions on the north bank of the lake. Here, several thousand Chinese troops now occupy the area between India's claim line at Finger 8 and the new front line at Finger 4. A Chinese flag now flutters at the Green Top area.



This has effectively shifted the LAC three-to-five kilometres to the west. Earlier, Indian border patrols used to visit Finger 8 to assert their claim up to that point. Now, large numbers of PLA troops who have occupied Finger 4 are preventing Indian patrols from going up to their traditional patrolling point at Finger 8.

Nor is there any evident willingness on the PLA side to withdraw from their occupation of what used to be the Indian army's Patrolling Point 14 and 15, near the Galwan Nala. Here, over the last month, the PLA has built a motorable road running almost three kilometres on the Indian side of the LAC.

Nor has there been any PLA withdrawal from the Naku La area, in Sikkim. However, since this is a settled international border, the army believes Chinese withdrawal in that sector is inevitable.

https://www.business-standard.com/article/current-affairs/ladakh-stand-off-chinese-refuse-to-budge-ahead-of-crucial-border-meet-120060500064_1.html



Fri, 05 June 2020

China raises objection to India's construction near borders in Uttarakhand's Lipulekh area

It is a hut prepared for Mansarovar Yatris to safeguard them from extreme cold, rain and assist them in case of any medical help needed, added the source

By Mayank Singh

New Delhi: Chinese objections to border infrastructure improvement on the Indian side have now extended to Uttarakhand.

The Chinese military has raised objections on a structure near the borders in Lipulekh area which was meant to safeguard Mansarovar Yatris from the vagaries of weather and terrain. Nepal had earlier objected to the new road to Lipulekh Pass.

"Chinese have raised objection on the temporary shelter Hut constructed about a kilometre inside the Indian side from the border," a source said.

It is a hut prepared for Mansarovar Yatris to safeguard them from extreme cold, rain and assist them in case of any medical help needed, added the source.

On the contrary, sources informed, the Chinese side has built roads coming as near as about two hundred metres to the Lipulekh Pass where they have placed their communication and surveillance equipment.

Indian Army and Chinese Army clashed at Naku la in Sikkim and at Finger 5 on Northern flank of Pangong Tso Lake at the beginning of May month and since then they are in standoff position in Eastern Ladakh. Chinese objected to Indian road construction at Finger Four and in Galwan Valley. Uttarakhand objection was raised subsequently.

3488 km long Line of Actual Control is divided into three sectors viz Eastern, Central and Western sector with Uttarakhand falling in the Central Sector.

"This area has been peaceful but Chinese brought the issues after the May standoff in Ladakh and since the road to Lipulekh Pass on the Indian side was inaugurated on 8 May," the source said. The Chinese have increased their patrolling and we have matched it as required, told another source.

In an unexpected move, after the road was inaugurated, Nepal for the first time extended its claim from Kalapani to further include Lipulekh and Limpiyadhura as its territory and also objected to the road to Lipulekh Pass, gateway to Mansarovar.

Pilgrimage to Kailash-Manasarovar is considered sacred and revered by Hindus, Buddhists and Jains,

The decade-old plan of 80-kilometre road link from Dharchula (Uttarakhand) to Lipulekh (17,060 ft high) was inaugurated by Defence Minister Rajnath Singh on May 8 and was aimed to improve border area connectivity and to ease the trek. The altitude in this stretch has a steep rise from 6,000 to 17,060 feet, making the journey arduous. The road ends 5 km short of Lipulekh Pass.

“It is difficult to stay long at the pass due to height, extreme cold and unpredictable weather thus the Yatris used to be sheltered in the hut before they cross to the Chinese side.” The crossover at the boundary is planned in the early morning with Chinese receiving the Yatris on their side.

<https://www.newindianexpress.com/nation/2020/jun/04/china-raises-objection-to-indias-construction-near-borders-in-uttarakhands-lipulekh-area-2152337.html>

R. REPUBLICWORLD.COM

Fri, 05 June 2020

Amid tensions; ITBP establishes 2 new headquarters to look after India-China border

Amid tensions with China, The Indo-Tibetan Border Police (ITBP) on Thursday issued an order of establishing two command headquarters in Chandigarh and Guwahati

By Prachi Mankani

Amid tensions with China, The Indo-Tibetan Border Police (ITBP) on Thursday issued an order of establishing two command headquarters in Chandigarh and Guwahati. The Chandigarh headquarters will be headed by IG rank official who will work as Additional Director General (ADG) and look after Ladakh, Leh and Srinagar areas while the Guwahati sector will look after the north-eastern parts.

Last year in October, the Union Cabinet had approved two new headquarters for ITBP along with 60 extra posts. Two new posts of ADG have been sanctioned by the Cabinet. ITBP is majorly responsible for guarding over 3,400 km-long Line of Actual Control with China.

After Chinese choppers violated Indian airspace twice in recent weeks, the ITBP stepped up its vigil. These two new headquarters will also look after the international border with China.

Consequent upon sanction of the government for establishing of two Command Headquarters at Chandigarh and Guwahati respectively, an imperative need is felt to make these establishments functional immediately," DG ITBP SS Deswal said in an order.

"Accordingly, Manoj Singh Rawat, Inspector General (Ops, Int and Vet), Dt General has been transferred to Command HQ, ITBP, Chandigarh in public interest with immediate effect to function in the capacity of Additional Director General. The officer will continue to perform the duties of IG (Ops, Int and Vet) in addition to the duties of Additional Director General, Command HQ Chandigarh till posting of regular incumbent against the post of Inspector General (Ops, Int and Vet)," Deswal said.

India-China faceoff

Chinese military helicopters were spotted close to the border between India and China in eastern Ladakh after a clash between soldiers from both sides took place on two occasions. Thereafter, a fleet of Su-30 fighters of the Indian Air Force carried out sorties in the area. According to reports, Indian and Chinese Army personnel clashed along the northern bank of the Pangong Lake in



Ladakh on May 5. 4 days later, a face-off between the two sides was witnessed near Naku La Pass in Sikkim.

On May 28, the Ministry of External Affairs clarified that the Indian soldiers have taken a responsible approach and are following due protocols. It maintained that the Centre remains firm on maintaining sovereignty and national security. Speaking with Republic TV on Saturday, Defence Minister Rajnath Singh said that the Centre would not let India's self-respect come down. He added that diplomatic talks with China were going on.

<https://www.republicworld.com/india-news/general-news/itbp-establishes-2-new-headquarters.html>



Fri, 05 June 2020

Navy should barter for additional Submarines if Plans for new Carrier Battle Group (CBG) are shelved

By Tushkar Shirodkar

CDS General Bipin Rawat a while ago confirmed reports that Navy's plan for third aircraft carrier might be shelved as the country faces economic turmoil due to global pandemic situation and big-ticket projects like an aircraft carrier and Carrier Battle Group (CBG) in support of an aircraft carrier will simply drain the resources with the limited budget country has allocated for the Indian armed forces.

Indian Navy has been planning to have three Carrier Battle Groups (CBG) to tackle the Chinese Navy's growing plans to operate outside its domain, particularly focus kept to beef up its capabilities to operate in the Indian ocean which Indian Navy always calls its backyard. New Satellite images of Gwadar Port in Pakistan, Cambodia, and Myanmar confirms the Chinese Navy's plans to develop permanent naval facilities to operate and move warships in the area to secure its oil supplies in case of war in the region.



If India can't afford to operate a third Carrier Battle Groups (CBG) then it has to ensure that the Indian Navy at least gets the next big thing in the terms of offensive firepower in the sea which are submarines which Indian Navy lacks even at the moment. India's plan to operate 30 conventional submarines has been in teethers and slow execution of Project-75 and lack of progress in the tendering process of Project-75I only have made it difficult for the Indian Navy to operate desired submarines forces it once had planned.

India should procure more submarines under Project-75 and let Private sector shipyards to manufacture more submarines under Project-75I, while State-owned shipyards continue to focus on the development of Nuclear-Attack Submarines under a covert project which will take at least a decade to mature. Indian Navy's current fleet of conventional submarines is already aging and will need to be replaced soon and if we stick to original plans it will take another decade or more to reach one to one replacement capabilities which are not enough.

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<https://idrw.org/navy-should-barter-for-additional-submarines-if-plans-for-new-carrier-battle-group-cbg-are-shelved/#more-228580>



Fri, 05 June 2020

Swiss cheese and defence reforms

The holes in the three cheese slices comprising the defence set-up must align for a nation to be prepared militarily

By Manmohan Bahadur

The Swiss cheese model is associated with accident investigation in an organisation or a system. A system consists of multiple domains or layers, each having some shortcomings. These layers are visualised in the model as slices of Swiss cheese, with the holes in them being the imperfections. Normally, weaknesses get nullified, other than when, at some point, the holes in every slice align to let a hazard pass through and cause an accident.

Three slices in defence set-up

When applied to a nation's defence preparedness, the Swiss cheese model, in its simplest form, works the reverse way. The slices represent the major constituents in a nation's war-making potential, while the holes are pathways through which the domains interact. At the macro level, there are only three slices with holes in each. These must align to ensure that a nation's defence posture is in tune with its political objectives; any mismatch may turn out to be detrimental to the nation's *aatma samman* (self-respect) when the balloon goes up. In these days of the Aatmanirbhar Bharat Abhiyan, a clinical analysis is necessary to obviate any missteps that may prove costly a few years or decades down the line.



In the Indian defence set-up, the three slices are: one, the policymaking apparatus comprising the Department of Military Affairs (DMA) and Ministry of Defence (MoD); two, the defence research and development (R&D) establishment and domestic manufacturing industry; and three, the three services. When the MoD alone existed, a certain relationship between the three layers saw India prosecute four major wars since independence. The holes in the three slices were aligned to different degrees and hence the results were varied in each conflict; that the system required an overhaul would be an understatement.

With technology progressing exponentially, a single service prosecution of war was no longer tenable, because the advent of smart munitions, computer processing, networking capabilities and the skyrocketing cost of equipment brought in the concept of parallel warfare. Synergised application of tools of national power became an imperative. Thus, it became essential for militaries to be joint to apply violence in an economical way — economical in terms of time, casualties, costs incurred, and political gains achieved. The setting up of the DMA and the creation of the post of Chief of Defence Staff (CDS) to achieve synergy are the most fundamental changes; as further modifications and tweaking take place in the way the services prepare to go to war, it is imperative that the transformation be thought through with clinical analysis, without any external, emotional, political or rhetorical pressure.

Access to the right equipment

India's security managers have to factor in the increasingly belligerent posture of the country's two adversaries. Terrorist activities have not reduced in Jammu and Kashmir, ongoing incidents along the northern border with China do not foretell a peaceful future, and the China-Pakistan nexus can only be expected to get stronger and portentous. Such a security environment demands that capability accretion of the three services proceed unhindered. To elaborate, the Indian Air Force at a minimum requires 300 fighters to bolster its squadron strength; the Army needs guns of all types; and the Navy wants ships, helicopters, etc. The requirements are worth billions of dollars but with COVID-19-induced cuts in defence spending, and their diversion to the social sector, getting all of them is a joint mirage. Enter the well-meaning government diktat for buying indigenous only, but for that, in-house R&D and manufacturing entities have to play ball. Hindustan Aeronautics Limited can, at best, produce just eight Tejas fighters per year presently; the Army has had to import rifles due to the failure of the Defence Research and Development Organisation to produce them; and the Navy has earnest hopes that the hull designs that its internal R&D makes get the vital innards for going to war. So, the Swiss cheese slice representing indigenous R&D and a manufacturing supply chain that ensures quality war-fighting equipment, at the right time and in required quantities, is still some years away. Wars cannot be fought and won on well-meaning policy intentions and nationalist rhetoric; wars are won when war fighters have access to the right equipment to prosecute them.

Creating theatre commands

The forthcoming reform of creating theatre commands is the most talked about result of jointness expected from the Swiss cheese slice in which lie the DMA and a restructured MoD. Doing so would be a shake-up of huge proportions as it strikes at the very foundation of the war-fighting structure of the services. The three-year deadline spoken about by the CDS must take into account the not-so-comfortable state of assets of each service which would need to be carved up for each theatre. The Chinese announced their 'theaterisation' concept in 2015; it is still work in progress. The U.S. had a bruising debate for decades before the Goldwater-Nichols Act came into force in 1986. Turf wars are not a patent of any one nation. New relationships take time to smooth out, and in the arena of defence policymaking, which is where the DMA and MoD lie, the element of time has a value of its own: any ramming through, just to meet a publicly declared timeline, could result in creating a not-so-optimal war-fighting organisation to our detriment.

So, the three services that constitute the third Swiss cheese slice have to contend with the other two slices being in a state of flux for some time to come. It's a no-brainer that this disruption requires level-headed non-parochial handling. The political, civil and military leadership must have their feet firmly on ground to ensure that the holes in their Swiss cheese continue to stay aligned; impractical timelines and pressures of public pronouncements must not be the drivers in such a fundamental overhaul of our defence apparatus. To paraphrase Deng Xiaoping, shun publicity and build capability first.

(Manmohan Bahadur is Additional Director General, Centre for Air Power Studies. The views expressed here are personal)

<https://www.thehindu.com/opinion/lead/swiss-cheese-and-defence-reforms/article31751073.ece>



Fri, 05 June 2020

Air Marshal Suresh visits Halwara station

Amid the ongoing standoff at the Line of Actual Control with China in eastern Ladakh, Air Marshal B. Suresh, Air Officer Commanding-in-Chief of Western Air Command visited the air force station at Halwara in Punjab to assess the operational preparedness on Wednesday. Halwara is the base station of frontline fighter jets Sukhoi 30 MKIs.

Air Commodore A. Bhadra, Air Officer Commanding, Air Force Station Halwara, received Air Marshal Suresh where he inspected vital installations and assessed operational preparedness.

“He reviewed all measures taken against COVID-19 pandemic,” Indian Air Force said in a statement.

Air Marshal Suresh said there are developing security threats along with the pandemic threat, and emphasised the importance of ensuring operational capability through diligent planning and utilisation of resources during these challenging times.

He also appreciated the excellent involvement and commitment to duty displayed by all personnel of the station and advised them to stay fit and “be vigilant considering the current security situation”.

<https://www.defenceaviationpost.com/2020/06/air-marshal-suresh-visits-halwara-station/>



THE TIMES OF INDIA

Fri, 05 June 2020

After US, France, South Korea, Singapore & Australia, India now looking to ink military logistics pact with Japan

By Rahat Pandit

New Delhi: India is fast inking reciprocal military logistics pacts with like-minded countries to extend its strategic and naval operational reach in the entire Indian Ocean Region (IOR) and beyond, with an eye firmly on China’s expansionist behavior in the Indo-Pacific.

After similar agreements with the US, France, South Korea and Singapore, it was India’s turn to ink the mutual logistics support arrangement (MLSA) with Australia during the virtual summit between the two PMs on Thursday.

That’s not all. India is set to ink a military logistics pact with Japan next, while similar agreements with Russia and UK are also being negotiated, said sources. “The MLSA will enable our warships to get refueling from Australian tankers on the high seas, while also availing of berthing, maintenance and storage facilities at Australian naval bases. It will, of course, be on a reciprocal basis,” said a source.



The Logistics Exchange Memorandum of Agreement (LEMOA) inked with the US in 2016 similarly gives India refueling facilities and access to American bases in Djibouti, Diego Garcia, Guam and Subic Bay.

The one inked with France in 2018, in turn, also extends the Indian Navy's reach in south-western IOR due to French bases in the Reunion Islands near Madagascar and Djibouti on the Horn of Africa.

"The MLSA with Australia will help us to extend the reach of our warships in southern IOR as well as the Western Pacific region. The region south of the Indonesian Straits is also important for us," said the source.

The pacts are crucial for India in the backdrop of China fast expanding its strategic footprint in the IOR after its first overseas military base at Djibouti became operational in August 2017.

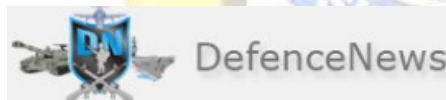
China, of course, also has access to Karachi and Gwadar ports in Pakistan for turnaround facilities for its submarines and warships. It is also trying for military bases in Cambodia, Vanuatu and other countries to further consolidate its presence in the Indo-Pacific.

Closer to India, China has six to eight warships deployed in the IOR at any given time. Furiously modernizing its naval forces, from long-range nuclear ballistic missiles and anti-ship cruise missiles to submarines and aircraft carriers, China has commissioned well over 80 warships in the last six years.

Though India is yet to formally invite Australia to join the trilateral Malabar naval exercise it conducts with the US and Japan, India is steadily cranking up its bilateral military engagements with the country.

India and Australia conducted their biggest-ever naval exercise called "AusIndEx" to "build inter-operability" off the Visakhapatnam coast in April last year. So, in effect, there is already a military construct to the so-called "Quad" of like-minded democracies for a free, open and rules-based order in the Indo-Pacific, said sources.

<https://timesofindia.indiatimes.com/india/after-us-france-south-korea-singapore-australia-india-now-looking-to-ink-military-logistics-pact-with-japan/articleshow/76201701.cms>



Fri, 05 June 2020

As LAC hots up, ISI Chief Lt Gen Faiz Hameed secretly visits LoC, meets top terror commanders

Taking advantage of the India-China border standoff on Line of Actual Control (LAC), the Inter-Services Intelligence (ISI) of Pakistan is pushing militant cadres along the Line of Control (LoC) in Jammu & Kashmir, in a bid to infiltrate hundreds of trained terrorists into Indian territory.

A week ago, ISI chief, Lt Gen Faiz Hameed, and senior officials of Pakistan Army held a meeting at a guest house in Lower Gojra area of Muzaffarabad (Pakistan-occupied Kashmir) with terror kingpins including Mohammed Tahir Anwar, brother of Jaish-e-Mohammed boss Maulana Masood Azhar, reveals a report of Indian intelligence agencies.

As per the intelligence report, Lt Gen Hameed, perceived close to Pakistan Prime Minister Imran Khan, held a long meeting with Chief of Army Staff, Gen Qamar Javed Bajwa, prior to his secret visit to border areas of PoK.

"On 6th of May last month, another important meeting between ISI chief Faiz Hameed and PM Imran Khan took place in which Dr Moeed Yusuf, National Security Advisor, and Assistant to PM was also present. Several important strategic decisions were taken in this meeting," says the report.

However, contrary to the agenda of discussion, PM Imran Khan, after the conclusion of the meeting, publicly denied reports of "infiltration" on LOC in a surprise tweet.

According to a senior official in the Intelligence Bureau, Lt Gen Hameed's secret visit to PoK was aimed at boosting the morale of training commanders of different terrorist organisations, patronised by the Pakistan establishment to continue executing violent attacks inside Indian territory.

"This is not for the first time that the ISI chief and his team of key officials have presided over secret meetings with terror kingpins in Muzaffarabad. For years, ISI's primary focus has been to foment subversive activities, particularly in Jammu and Kashmir," the official told IANS.

The intelligence report says that the Covert Action Division of the ISI and Pakistan Army has provided logistics to several hundred armed terrorists, who have presently gathered in terror camps and near 15 launching pads along the Pakistan side of the LoC. The cadres including fidayeen groups of Pakistan-based terror outfits Jaish-e-Mohammed and Lashkar-e-Taiba are equipped with grenade launchers, sniper rifles, and other sophisticated weapons like M16A2 and AK 56 rifles.

Earlier, top Indian army commander Lt Gen BS Raju has said that terrorist camps and launch pads in PoK are full of Pakistani terrorists who seem desperate to infiltrate across the border into India.

Lt Gen Raju had told media that the Pakistan army was desperately abetting infiltrators as Indian forces have eliminated a number of foreign militants operating on the Indian soil. He felt that during summers Pakistan would try to push more and more terrorists inside Jammu and Kashmir but Indian forces are ready to crush such attempts.

<https://www.defencenews.in/article/As-LAC-hots-up,-ISI-chief-Lt-Gen-Faiz-Hameed-secretly-visits-LoC,-meets-top-terror-commanders-840935>

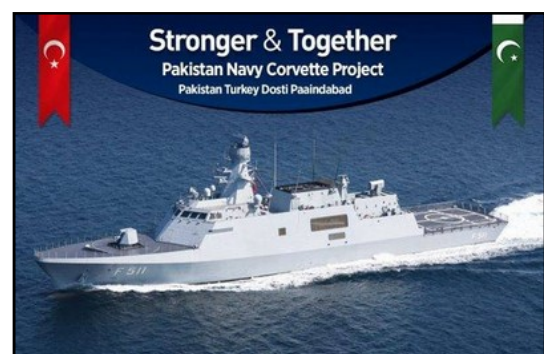


Fri, 05 June 2020

Pakistan Navy lays the keel of 1st milgem class corvette in Turkey

The keel-laying ceremony of 1st MILGEM Class Corvette for Pakistan Navy was held at Istanbul Naval Shipyard (INSY), Turkey. Chief Naval Overseas (Turkey), Commodore Syed Rizwan Khalid graced the occasion as Chief Guest.

For the record, the contract for four corvettes for Pakistan Navy with Transfer of Technology was signed with ASFAT. The PN is to receive its first two MILGEM ships in 2023, and the last two by 2025. Two of the ships will be built in Turkey, while the other two will be built in Pakistan by Karachi Shipyards & Engineering Works. Istanbul Shipyard cut the steel of the first PN MILGEM in September 2019.



Speaking at the occasion, the Chief Guest highlighted that the project is the manifestation of strong relations between Pakistan and Turkey. He appreciated the MILGEM project for its construction standards, outfitting and performance.

The ceremony was attended by officials of Pakistan Navy, dignities and representatives of ASFAT, Istanbul Naval Shipyard and Turkish Lloyd.

About MILGEM Class Corvettes:

The MILGEM Class Corvettes will be state-of-the-art Surface platform equipped with a modern surface, subsurface and anti-air weapons, sensors and Combat Management System. These ships will be among the most technologically advanced platforms of Pakistan Navy and will significantly contribute in maintaining peace, stability and balance of power in the Indian Ocean Region.

The corvettes are armed with a 76-millimeter gun, missiles and torpedoes. The ship is capable of carrying Sikorsky S-70 helicopter or unmanned aircraft, along with the associated armaments, 20 tons of JP-5 aircraft fuel, aerial refuelling systems and maintenance facilities.

During AMAN-19, the Pakistan Navy's biennial multi-national exercise, the PN Chief of Naval Staff (CNS), Admiral Zafar Mahmood Abbasi, said that the PN's MILGEMs will be equipped with the Chinese HQ-16 surface-to-air missile (SAM) system through a 16-cell vertical launch system (VLS). In a sense, the MILGEM for Pakistan can be the fourth variant, though it is more of a side or lateral branch-out from the Ada-class than a vertical development like the Istanbul-class or TF-2000. In addition, the PN's MILGEMs will deploy a modified version of the GENESIS combat management system (CMS).

<https://idr.org/pakistan-navy-lays-the-keel-of-1st-milgem-class-corvette-in-turkey/#more-228610>

Science & Technology News

ASIANSCIENTIST

Fri, 05 June 2020

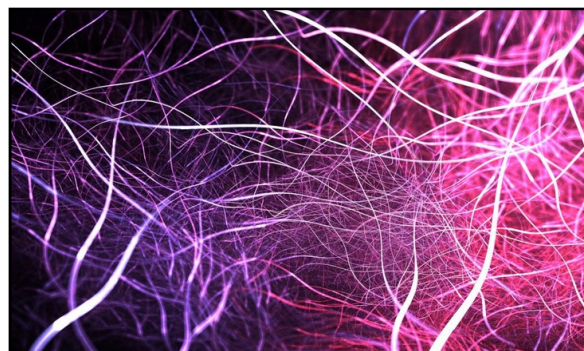
Scientists develop cellulose-based plastic substitute

This cellulose-based material that is four times stronger than steel and as heat-resistant as ceramics could one day displace plastics

AsianScientist (Jun. 4, 2020) – Researchers at the University of Science and Technology of China have used cellulose, the most abundant organic molecule on Earth, to develop a strong and light plastic substitute. Their findings have been published in Science Advances.

While plastics are strong, lightweight and inexpensive, plastic waste poses an environmental risk. Broken down by waves, sunlight and marine animals, a single plastic bag can become 1.75 million microscopic fragments that end up in our bodies through the food chain and water supply.

To develop an alternative to plastics, a team led by Professor Yu Shu-Hong has turned to cellulose, the main material in the cell walls of plants. Cellulose nanofibers, which can be derived from plants or bacteria, are stronger than steel and more heat resistant than silica glass, making them an ideal nanoscale building block for constructing high-performance materials, Yu said.



Using the bacteria *Gluconacetobacter xylinus*, the team first produced cellulose hydrogels that they cut into sheets. After treatment, the sheets were stacked, pressed together and heated until they were completely dry, resulting in cellulose nanofiber plates. These cellulose nanofiber plates were

four times stronger than steel and tougher than aluminum alloy, despite being only half its density. Unlike plastics or other polymer-based materials, the cellulose nanofiber plates were extremely heat resistant, with a thermal expansion coefficient similar to that of ceramic materials. Furthermore, the plates retained their strength despite undergoing ten rapid thermal shocks where they were baked at 120°C and then immersed in -196°C liquid nitrogen.

The researchers reported that the plates could be produced for as little as US\$0.50/kg, making them cheaper than—and thus likely to displace—most plastics. In particular, they suggested that the low density, toughness and thermal stability of the cellulose nanofiber plates makes it an attractive and environmentally-friendly engineering material particularly useful for aerospace applications.

<https://www.asianscientist.com/2020/06/in-the-lab/cellulose-nanofiber-plates-plastic-substitute/>

Forbes

Fri, 05 June 2020

New studies shed light on the origins of life on Earth

By Elizabeth Fernandez

How did life begin? How did the Earth go from a molten, lifeless rock to one flourishing with life - from bacteria to redwoods? How were the building blocks of life - the RNA and DNA that are responsible for the origin of life - first assembled? Understanding these very first steps is one of the greatest mysteries of science. But this week, two studies move us closer to understanding how life began.

Three Ingredients for the Origin of Life

You probably wouldn't recognize the early Earth. It had little oxygen and no ozone layer, so the sun's radiation was intense. But somehow, it had the ingredients for life to eventually form. These ingredients are water, radiation, and the right molecules.

Why water? Astronomers who search for life among the stars always look for water. When they say a planet is potentially "habitable", they mean liquid water can exist on the surface. Everything else is details. After all, there is life on Earth that doesn't need sunlight, that doesn't need oxygen, and life that can survive in high radiation. But all life (at least that we know of) needs water.

Water is a polar molecule. As such, it can dissolve all sorts of materials within it, taking them apart at the molecular level and rearranging them. It is this ability to dissolve and reassemble that gives water its superpower - the ability to create new, complex compounds.

There may be other liquids that could work - namely, ammonia and formamide. Both are polar and are good solvents. However, ammonia needs to be very cold to be a liquid, and formamide has no indication so far it could support life. You may wonder - what about methane or ethane? Lakes of methane exist on Saturn's moon Titan. While methane is not polar, it is a good solvent.

But both methane and ethane need to be quite cold to be in liquid form. So for Earth, water is perfect. Earth's temperature exists in the sweet spot for water - where water can exist as a solid, a liquid, and a gas, allowing it to cycle through the atmosphere and on the ground.

Secondly - we need radiation. Radiation was also common on the young Earth. Without an ozone layer, the Earth's surface was bombarded with UV radiation from the sun. There were also radioactive materials on the Earth's crust itself.

Water and radiation, the first two ingredients, allow the mixture of compounds that may exist in the young Earth to be disassembled, rearranged, and eventually create the building blocks of RNA and DNA.

Building RNA

The first study, published in the PNAS, was presented by researchers from the Tokyo Institute of Technology, the University of New South Wales and the Department of Planetary Sciences at the University of Arizona. These researchers utilized something called “continuous reaction networks” which can simulate the conditions of the early Earth. You can think of it as a “hands-off” approach. Once the reaction begins, the researchers don’t remove side products, purify compounds or add more reagents. The reaction takes its course, just like it would in the prebiotic Earth.

The researchers added just a few compounds at the start of the reaction - hydrogen cyanide, ammonia, phosphate, and salt (like you would find on your table) - plus, of course, water. To simulate the effect of radioactive materials in the early Earth, they added a gamma-ray source. Then they allowed the mixture to dry out occasionally, just like it would in a shallow puddle or at the seashore on Earth.

The result? Complex compounds that could be the building blocks for RNA.

“These types of continuous reaction networks may be quite common in chemistry, but we are only now beginning to build the tools to detect, measure, and understand them,” says Jim Cleaves, one of the authors of the paper at the Earth-Life Science Institute at the Tokyo Institute of Technology.

What about DNA?

It was commonly thought that the first steps to life was the generation of RNA. While DNA can carry complex instructions and blueprints for genes, RNA can also act like little machines, generating proteins needed for life. It was commonly believed that RNA came first, followed by DNA.

But a recent study published in Nature challenges this idea.

The researchers, from the MRC Laboratory of Molecular Biology on the Cambridge Biomedical Campus, Cambridge, the Wrocław University of Science and Technology, the University of Edinburgh and the Polish Academy of Sciences, performed an experiment. Again, they used a mixture of compounds, water, and radiation (this time, a UV source that mimics the sun) and allowed the mixture to periodically dry out.

They saw the appearance of the building blocks of RNA - cytidine and uridine - but they also saw a building block of DNA - deoxyadenosine. The researchers suggest that DNA did not necessarily follow from RNA, but could have “evolved” alongside it.

These two studies move us one step closer to understanding the origins of life on our planet, one of the biggest mysteries of science. It may also help with another of the great mysteries of science - helping us to understand where to look for life on other planets. In any case, understanding where and why DNA and RNA form helps us to better understand where we come from.

<https://www.forbes.com/sites/fernandezelizabeth/2020/06/04/new-studies-shed-light-on-the-origins-of-life-on-earth/#33fad63f649c>

India joins UK's global vaccine mission, commits \$15 million over next five years

According to Gavi, India is the only country that has moved from being a recipient to a donor.

India is also now its largest manufacturer, accounting for more than 60% of Gavi vaccines

New Delhi: India on Thursday joined the UK's vaccine mission during the Global Vaccine Summit 2020, which helped secure \$7.4 billion in funding to support global vaccine supply and immunisation.

The virtual event saw representatives of more than 50 countries – including Prime Minister Narendra Modi, other heads of state and government, business leaders, UN agencies and civil society – pledging their support to Gavi, the vaccine alliance, in its commitment to help save up to eight million lives over the next five years.

India committed \$15 million to Gavi over the next five years at Thursday's summit.

According to Gavi, India is the only country that has moved from being a recipient to a donor. India is also now its largest manufacturer, accounting for more than 60% of Gavi vaccines.

The acting UK high commissioner, Jan Thompson, said: "I was pleased to see such a strong endorsement from Prime Minister Modi at today's summit, and to hear his message about the importance of global solidarity.

"As he said, India's capacity to produce vaccines at low cost and research expertise will play a very important role. The UK is Gavi's leading donor and already playing a major role in the international response to Coronavirus. I'm delighted to see the continuing and excellent UK-India collaboration as a force for good against Covid-19 – from vaccine development to keeping essential medical supply routes open."

UK Prime Minister Boris Johnson said he hoped the summit will be the "moment when the world comes together to unite humanity in the fight against disease".

Gavi's efforts, including during the Covid-19 pandemic, help stop the spread of infectious diseases and resurgence of other epidemics. "If a safe and effective coronavirus vaccine is developed, it will also have a role in its delivery around the world. Global access will ensure a collective international recovery," said a statement from the UK high commission.

Gavi has immunised more than 760 million children in the poorest countries, saving more than 13 million lives. It holds a pledging conference every five years to raise funds for its next strategic period, and Thursday's summit secured funding for 2021-25.

The UK has supported Gavi since its inception in 2000 and is its largest donor, with a pledge of £1.65 billion for the next five years. The Global Vaccine Summit 2020 built on the UK's recent role as co-lead for the Global Coronavirus Response Initiative on May 4, which raised 7.4 billion euros (about £6.64 billion) for vaccines, tests and treatment to tackle the Coronavirus.

UK-India collaboration for a possible coronavirus vaccine includes a consortium comprising Serum Institute, Gates Foundation, MIT and Spy Biotech, a UK-based biotech company, which is trying to develop a vaccine using the new "spy-tag vaccine development technology".



The virtual event saw representatives of more than 50 countries – including Prime Minister Narendra Modi, other heads of state and government, business leaders, UN agencies and civil society. (PTI File Photo)

Oxford Nanopore is also working with some of India's leading scientific institutions to focus on rapid analysis of Coronavirus samples, while a long-term Merck and Wellcome Trust venture on vaccine research, policy and manufacturing will be based in Delhi.

<https://www.hindustantimes.com/india-news/india-joins-uk-s-global-vaccine-mission-commits-15-million-over-next-five-years/story-5clucvV0EQVEqEgmTJ7RAO.html>



Fri, 05 June 2020

5 promising Covid-19 vaccines now selected for Trump's operation warp speed

Five companies have now been picked by the Trump administration as the most likely candidates to produce a coronavirus vaccine, The New York Times reports.

This comes as part of Operation Warp Speed (OWS), the administration's national program to accelerate the development, manufacturing, and distribution of COVID-19 vaccines, therapeutics, and diagnostics.

Among its other objectives, Operation Warp Speed aims to have substantial quantities of a safe and effective vaccine available for Americans by January 2021.

The five companies selected are as follows:

Moderna's ([MRNA](#)) mRNA1273 which is currently undergoing Phase 2 trials;

A joint collaboration between AstraZeneca ([AZN](#)) and Oxford University on AZD1222 which is now in clinical trials at multiple UK sites;

Johnson & Johnson ([JNJ](#)) which plans to start a Phase 1 clinical trial in September with an ultimate goal of supplying more than one billion doses of its coronavirus vaccine globally;

Merck ([MRK](#)) which is trying to develop a vaccine using similar technology to its successful Ebola vaccine through a partnership with non-profit research organization IAVI, and;

Pfizer ([PFE](#)) is working with German drugmaker BioNTech ([BNTX](#)) on clinical trials of BNT162, with plans to have a vaccine ready by the end of October, and produce "hundreds of millions" of doses in 2021.

GlaxoSmithKline and Sanofi did not make the cut.

On May 15 Operation Warp Speed revealed plans to select the most promising countermeasure candidates and provide coordinated government support to support their development.

Large-scale randomized trials for the demonstration of safety and efficacy will proceed for three to five of the candidates, with as many as 150,000 people vaccinated if all five vaccine candidates reach the Phase 3 stage.

Indeed, Congress has directed almost \$10 billion to this effort through supplemental funding, including the CARES Act, with \$3 billion directed for NIH research.

"Vaccines are coming along really well," President Trump told the Twittersphere on Tuesday. "Moving faster than anticipated. Good news ahead."

Shares in Moderna have exploded over 200% year-to-date, and optimism continues to rise after the company recently announced that it has started dosing the first patients in a Phase 2 study with its experimental mRNA-1273 vaccine candidate.

The Phase 2 study, being conducted by Moderna under its own Investigational New Drug (IND) application, seeks to evaluate the safety, reactogenicity and immunogenicity of two vaccinations of mRNA-1273 given 28 days apart. The biotech company plans to enroll 600 healthy participants across two cohorts of adults ages 18-55 years and older adults ages 55 years and above.

Earlier this month, Moderna reported “positive” interim clinical data saying that the Phase 1 study of its mRNA-1273 vaccine candidate produced antibodies that would be able to “neutralize” the virus in patients. The company reiterated plans to start the Phase 3 trial in July, subject to the finalization of the clinical trial protocol.

Five-star analyst Cory Kasimov at J.P. Morgan recently reiterated a Buy rating on the stock, saying “How to appropriately capture this in MRNA’s valuation is a tough question to answer (especially given all the unknowns around COVID-19 and the ultimate opportunity) and one that we suspect will be a key investor debate going forward.”

Overall, Wall Street analysts are bullish on Moderna stock with 10 Buy and 2 Hold ratings giving it a Strong Buy consensus. Despite the recent rally, the \$89.33 average price target still indicates 50% upside potential from current levels. (See Moderna stock analysis on TipRanks).

<https://finance.yahoo.com/news/5-promising-covid-19-vaccines-061050035.html>

NEWS

Fri, 05 June 2020

Coronavirus vaccine research takes step forward as UQ, CSL, CEPI sign deal for human trials and production

By Sophie Scott, Marry Llyd

Key points:

- *The deal is being hailed as a major step forward in the race for a COVID-19 vaccine*
- *Human trials of the UQ vaccine candidate are due to begin in July*
- *CSL and a global alliance of researchers will fund the trials*

Australian scientists hope to produce up to 100 million doses of a COVID-19 vaccine by the end of next year as Queensland researchers sign a major partnership with pharmaceutical giant CSL.

A deal between the University of Queensland (UQ), CSL and the Coalition for Epidemic Preparedness Innovations (CEPI) comes after promising early results in the laboratory and aims to fast-track the development of a home-grown vaccine.

Under the deal, CSL and CEPI will fund human trials of the UQ-developed vaccine candidate.

The trials will start next month.

UQ researcher Paul Young said 120 people would be recruited for the first trial, to test the vaccine's safety and monitor the impact on the immune system.

All going well, a further 800 to 1,000 people would take part in the next stage of the vaccine trial.

Professor Young said he was hopeful his team would have results by the middle of 2021.

The first trial is likely to take place in Brisbane, but subsequent trials will need to be carried out where the virus is more prevalent to test the vaccine's effectiveness.

'Molecular clamp' shows promise

The vaccine is distinct from other candidates under development because it uses what is known as a "molecular clamp" — a technology patented by the university.

It involves the use of a "backbone" in the vaccine, which can be rapidly adapted for use against different pathogens by inserting new genetic or protein sequences.



The University of Queensland research team is confident about holding human trials.(ABC News: Curtis Rodda)

It is designed to stimulate an immune response and protect against people developing COVID-19.

In the human trials, a boosting agent will be added with the aim of increasing the vaccine's effectiveness.

If trials are successful, initial large-scale production of the vaccine would happen at CSL's biotech manufacturing headquarters in Melbourne.

"While there are a number of critical milestones to be met before the vaccine can be considered successful, CSL anticipates that the production technology can be scaled to produce up to 100 million doses towards the end of 2021," a joint statement said.

"CSL would also subcontract other global manufacturers to increase the number of doses that can be produced and broaden the geographical distribution of vaccine production."

CSL's chief scientific officer, Andrew Cuthbertson, said making a vaccine for coronaviruses was "really hard".

"It's high risk, but we have enough confidence in the science and technological approach to give it a red hot go," he said.

The alliance has a successful track record. CSL partnered with UQ to make the cervical cancer vaccine.

That research took 15 years, but the COVID-19 vaccine work is being fast-tracked.

CSL also produced 21 million doses of the swine flu H1N1 vaccine for the Australian population in 2009 after becoming the first in the world to start mass production.

'Ring endorsement' for UQ

CEPI chair Jane Halton said UQ's effort to find a vaccine had "received a ring endorsement from our scientific committee".

CEPI has partnered with a number of scientific institutions that are working on developing a vaccine for COVID-19, four of which have entered clinical trials.

Ms Halton said her organisation was focused on developing vaccines that were globally accessible, and on vaccinating people who needed it most, wherever they were.

A number of other candidate COVID-19 vaccines are in the pipeline, with several already being trialled in humans.

So far, only one vaccine, developed by Chinese scientists, has delivered promising findings in human trials which have been published in a medical journal.

Other companies working on vaccines have released patient results which have not been peer-reviewed.

CSL is Australia's most valuable company and the Australian Government's biosecurity partner and manufacturer of the seasonal flu vaccine.

<https://www.abc.net.au/news/2020-06-05/coronavirus-covid-19-vaccine-csl-uq-cepi/12324596>