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समाचार पत्रों से चयित अंश Newspapers Clippings

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THE ECONOMIC TIMES

Tue, 16 June 2020

This biodegradable mask resists pathogens, and has the goodness of neem, turmeric & basil

The 'pavitrapati' mask can be reused up to three washing cycles

Pune: The Defence Institute of Advanced Technology (DIAT) here on Sunday said it has developed a cotton mask using a herbal extract, and claimed that it acts as "virus-neutraliser and resists pathogens effectively.

A herbal extract obtained from neem oil, turmeric, tulsi (holy basil), ajwain (carom seeds), black pepper, gum arabic, clove, sandalwood and saffron has been used in the non-woven nano-fibre of this three-layered biodegradable mask, named 'pavitrapati', a patented invention, DIAT's metallurgical and materials engineering department Prof Balasubramanian K said.

This provides "antibacterial and antiviral properties", he claimed, adding that these additives are immunity-boosting agents for self-care, as per guidelines of the AYUSH Ministry.

"The product is antibacterial, anti-fungal, antiviral, porous, super-hydrophobic (outer layer of mask), hydrophilic (inner layer) and biodegradable and it will be very useful in our fight against COVID-19, said Balasubramanian.

Its samples were tested for air permeability/breathability, nano-fibre mat porosity, biodegradability and mechanical properties as per the American Society for Testing and Materials standards and the results are highly impressive, he claimed.

"It was found to be capable for use as surgical masks, and can be discarded after a single use or after soil exposure," he added.

The Pune-based DIAT is a deemed university supported by the Defence Research and Development Organisation (DRDO).

"The samples were tested to understand the de-naturing capability of protein molecules, and the results demonstrated that the ayurvedic natural herbal extracts interacted and neutralised or killed the aminoacids (that are normally constituents of the shell of virus pathogens) instantly," the official said.



The Defence Institute of Advanced Technology has developed a cotton mask using a herbal extract. (Representative Image)



Impressed by the results, three major mask manufacturing companies have approached DIAT and signed the transfer of technology (ToT) and non-disclosure agreements with the deemed university for mass production, he said.

The product can be extended for infection prevention and control as the personal protective equipment (PPE) and for waste management purpose, he said.

It can be used as a garment, gloves, gown, and for face protection and head cover, the official said

Unlike other masks which are made of synthetic material and are non-degradable in nature, the 'pavitrapati' mask is cotton-based, bio-degradable and can be reused up to three washing cycles.

"The biodegradable nanofibre mat/membrane finds application as a protective membrane for PPE. This technology has proved that the non-woven membrane between the woven fabrics supports to block droplets, splashes, sprays, bacteria, and viruses," he said.

<https://economictimes.indiatimes.com/magazines/panache/this-biodegradable-mask-resists-pathogens-and-has-the-goodness-of-neem-turmeric-basil/articleshow/76383623.cms>

International Business Times

Tue, 16 June 2020

Battle against coronavirus: Low-cost ventilators made using Skanray-DRDO technologies

The govt had set up an empowered group of scientists from DRDO who helped private firms to manufacture affordable ventilators to be used for Covid-19 treatment

By Shafa Reyaz

By March, it was well understood by the medical fraternity and policymakers that it was a matter of time when the cases of coronavirus would rise and hospitals around the country would need more medical equipment to deal with the influx of patients.

The availability of PPE and ventilators were considered the most crucial factor.

Empowered group to combat COVID-19

In order to be prepared for any unforeseen difficult situation, the government set up an empowered working group of defence scientists to manage COVID-19 that took several measures to combat the spread of the coronavirus.

One of the important aspects of their function was to collaborate with domestic medical equipment manufacturers to provide affordable solutions to the hospitals to treat COVID-19 patients.

DRDO technologies to help manufacture affordable ventilators

One such domestic manufacturers was Mysore-based Skanray Technologies, which in collaboration with Defence PSU Bharat Electricals Ltd, has been able to manufacture affordable ventilator using spinoff DRDO technology.

Dr Jagdish Hiremath, managing director of Ace Suhas Hospital, who worked on this project, said, "critical care medical ventilators (CCMV) designed and built by Skanray making use of the Bharat Electricals Ltd (BEL) technology succeeded in bringing down the cost considerably. It's a robust ventilator system and we will soon transform the same into a super-intelligent ventilator," The Pioneer reported him saying.

Steps towards self-reliance

Till now, India has been importing various components of ventilators and assembling it here. Believing this would not prove to be a foolproof way especially during these times, Dr Jagdish



Hiremath decided to work on ideas so that ventilators could be made within the country without depending on foreign countries.

"What would happen if there was a disruption in the supply chain? With the imports about 5000 ventilators could be made per year, a number that is far less than what we need now," he said.

On June 3, after clearing the post-production clinical trial, Dr Hiremath began to use the ventilator at his hospital.

Calling it "real love and hard work", Dr Hiremath said that the project took more than 10 years of labour by Skanray and BEL to develop the ventilator that would be effective to ensure patients' safety.

"Skanray has the capability to manufacture 30,000 CCMV per month as on date. Though the system is not a complete one like the products manufactured in foreign countries, these ventilators meet all our requirements and in the course of time, we can equip all primary health centres in the country with these easy to operate and maintain CCMVs," he said.

Though he didn't tell how much it would cost for private hospitals as the ventilators have been manufactured on the order of government, one estimate by The pioneer says that the cost for it comes around Rs 1 lakh.

An ordinary critical care medical ventilators in ICU in its hospitals cost around anything between Rs 10 lakh and Rs 15 lakh.

The government had ordered 30,00 units of the ventilator from Skanray. On Monday, BJP spokesperson Gandhi tweeted a picture of the ventilator with a logo of PM Cares implying the government has procured the first country made ventilators for the treatment of coronavirus patients.

<https://www.ibtimes.co.in/battle-against-coronavirus-low-cost-ventilators-made-using-skanray-drdo-technologies-822411>



NORTHEAST NOW

Tue, 16 June 2020

Assam completes 2.17 lakh Covid19 tests: Himanta

*GMCH has conducted highest 39,466 Covid19 tests, followed by FAA
Medical College & Hospital in Barpeta which has conducted 34,394 tests*

Guwahati: A total of 2.17 lakh Covid19 tests have been conducted so far in 11 laboratories in Assam.

The news has been shared by Assam health minister Himanta Biswa Sarma on Monday in his Twitter handle.

The health minister said this has been possible as the Assam government is pursuing a policy of "proactive & aggressive testing for COVID19".

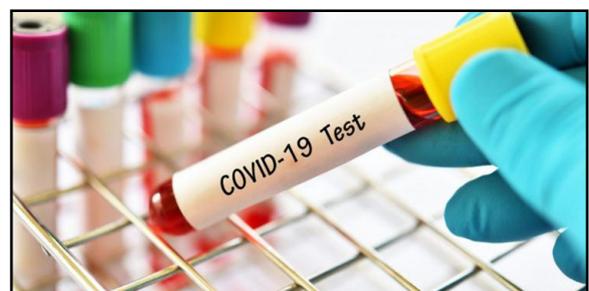
Sarma further informed approximately 10,000 Covid19 tests are conducted in Assam per day.

"Pleased to share that pursuing our policy of proactive & aggressive testing for #COVID19, Assam Govt has completed 2.17 lakh tests," health minister Sarma tweeted.

"We've been carrying out approx 10,000 tests per day after having ramped up our capacities," Sarma said.

The health minister has lauded the doctors and other staff for their efforts.

"My compliments to our doctors & staff," Sarma added.



Sarma informed that 25,937 tests have been conducted in Jorhat Medical College & Hospital (JMCH) and Silchar Medical College & Hospital (SMCH) has conducted 20,952 tests.

Gauhati Medical College & Hospital (GMCH) has conducted the highest 39,466 tests, Assam Medical College & Hospital (AMCH) has conducted 11,576 tests and Tezpur Medical College & Hospital (TMCH) has conducted 25,592 tests.

FAA Medical College & Hospital in Barpeta has conducted 34,394 tests, Diphu Medical College & Hospital (DMCH) has conducted 291 tests, Institute of Advanced Studies in Science & Technology (IASST) and Regional Medical Research Centre (RMRC-ICMR) has conducted 17,910 tests.

The Defence Research & Development Organisation (DRDO) has conducted 927 tests and the North East Institute of Science & Technology (NEIST) has conducted 109 Covid19 tests.

As per the data shared by health minister Sarma, 35,783 tests have been outsourced.

<https://nenow.in/north-east-news/assam/assam-completes-2-17-lakh-covid19-tests-himanta.html>

DRDO Technology News

DESIDOC
onmanorama

Tue, 16 June 2020

BrahMos becomes first desi missile to receive fleet release clearance

By Anantha Krishnan M

Bengaluru: BrahMos air launched cruise missile (ALCM) received the first ever fleet release clearance (FRC) issued by the certifying agency.

The supersonic and advanced ALCM with its proven capabilities for the Indian Air Force (IAF) there by becomes the first indigenous weapon to get the critical FRC.

According to military sources, the FRC was granted to BrahMos missile on June 10 during a high-profile meeting of various stakeholders held through video conferencing.

The meeting was attended by members from the Defence Research and Development Organisation (DRDO), BrahMos Aerospace, Aircraft and Systems Testing Establishment (ASTE), Software Development Institute (SDI), IAF HQ and the Centre for Military Airworthiness and Certification (CEMILAC).

The FRC for BrahMos airborne version was accorded by CEMILAC.

Aiding Missions

“The FRC paves the way for the IAF squadrons to use BrahMos ALCM during various combat missions. This is an important milestone for the missile makers,” a government official said.

The IAF had added unmatched capability in the Indian Ocean Region (IOR) when it inducted the mighty Sukhoi (Su-30MKIs) armed with BrahMos ALCMs into the resurrected No 222 Squadron at the Air Force Station (AFS) Thanjavur on January 20 this year.

The stand-off distance of BrahMos (300 km) and the range of Sukhoi (3000-plus km) along with refuelling have given the IAF a great advantage during its missions in the IOR.



Ahead of the induction into IAF, the BrahMos ALCM had demonstrated six spectacular test rings to validate its impeccable land-attack and anti-ship capabilities.

Out of these, there tests were from land-based launchers and three from Sukhois.

Since its first mission on June 12, 2001, BrahMos missile saw 26 launches from various Indian Navy platforms, 23 launches for Indian Army and six tests for the IAF.

In addition, there were close to 20 developmental launches as well.

During the DefExpo2020 held at Lucknow in February, Dr Sudhir Kumar Mishra, CEO & MD of BrahMos Aerospace, had told Onmanorama the missile variants will be tested with enhanced range this year.



In its ALCM role to be integrated on Sukhois, BrahMos underwent several changes including weight reduction from 2.9 tonne to 2.5 tonne.

As reported by Onmanorama earlier, the role of ASTE and SDI has been pivotal in the integration of BrahMos ALCM on Sukhois. Hindustan Aeronautics Ltd's Nashik Division too played a key role.

What's FRC?

FRC could be compared to the initial operational clearance (IOC) granted to Tejas. There will be another certification likely in future that will clear the missile for some advanced roles.



When asked about the relevance of FRC, an official said that it is a mandatory requirement considering the changes both the weapon and carrying platform have undergone.

“Sukhois have undergone several modifications during their integration of BrahMos ALCM. Factors like fatigue of aircraft and launcher comes into play now. It is important that we generate long-term data and FRC paves way for the same,” the official said.

Under the FRC, limited number of Sukhois have been chosen to carry BrahMos ALCM for immediate missions. In future, additional Sukhois will be added as per FRC.

A government official confirms that the FRC process was expedited following the current stand-off between India and China on the border.

“These are sensitive issues and can only confirm that there was an urgency on this matter,” an official said refusing to share more details.

Key Milestone

It is now certain that the missile will be given another round of final clearance after agencies analyse the data being generated from various IAF missions, post FRC.

“There are several factors that will be looked into, including production issues. All the learnings will help to enhance the scope of the missile in future missions of IAF,” an official said.

Similar to the final operational clearance (FOC) granted to Tejas, there will be another type of FRC that will be granted to BrahMos in future.

Ahead of this, the IAF will have to identify the Sukhoi batches that would undergo modifications to integrate the missile, the critical one being the launcher developed by BrahMos Aerospace Thiruvananthapuram Ltd (BATL).

Officials say that FRC is an important milestone for an indigenous missile which will now set the tone for other weapons as well.

“The IAF pilots have already begun their missions from AFS Thanjavur and more assets will be added to the squadron there. The FRC gives a stamp for the pilots to use these missiles in various modes as per the mission requirements,” an official said.

Gradually more desi missiles are expected to be given the FRC, including the Astra beyond visual range (BVR) missile, Rudram-1, Rudram-2, Rudram-3 and the New Generation Anti-Radiation Missile (NGARM).

(The writer is an independent aerospace and defence journalist, who blogs at Tarmak007 and tweets @writetake)

<https://english.manoramaonline.com/news/nation/2020/06/15/brahmos-becomes-first-desi-missile-to-receive-fleet-release-clea.html>

Defence News

Defence Strategic: National/International

The Tribune

Tue, 16 June 2020

China border faceoff may take time to ease

What we forget is that this is not 1962 for the PLA, too, that has greater numerical superiority over the Indian Army and also advanced material and infrastructure in the Tibet Autonomous Region that abuts the LoAC in eastern Ladakh. Many roads lead to mountain passes bordering India to facilitate PLA mobilization

By Rahul Bedi

The raft of former two and three-star Indian Army gladiators, agitated over the enduring military standoff with China in eastern Ladakh, continue to clamour daily on television networks that 2020 is not 1962 for India.

Their reference is to the four-week long border war between the neighbours over the disputed Line of Actual Control (LoAC) that ended in late November 1962 and in which India came off worse, leaving some three generations of Indian Army personnel variously scarred by the experience.

So much so, that even the TB Henderson Brooks inquiry report of 1963 into the border war — named after the three-star Army officer who conducted it — has not been made public after 57 years. Senior officials in governments have incredulously claimed that the report— of which just two copies exist— remains ‘sensitive’ and of ‘current operational value’.

But what these nocturnal warriors conveniently forget to mention in their nightly bombasts is that it is not 1962 for the People’s Liberation Army (PLA) too, that not only has greater numerical superiority over the Indian Army, but also vastly advanced material and infrastructure in the Tibet Autonomous Region (TAR) that abuts the LoAC in eastern Ladakh.

It is, after all, an open secret that China has developed a wide lateral road network crisscrossing the TAR, that includes axial carriageways built to stringent military specifications. Many such



Simmering tension: China has been boosting its strategic missile capability in Tibet that is targeted exclusively at India.

roads lead to mountain passes bordering India, with the sole purpose of facilitating rapid PLA mobilisation in anticipation of hostilities.

These roads are backed by an extensive regional rail network. The Golmund-Lhasa rail line, for instance, gives the PLA the capability to mobilise 10-12 divisions of 10,000-12,000 soldiers each, backed by artillery, armour and air defence formations, over a fortnight's timeframe. Similarly, rail links from Lanzhou to Kashi and on to Lhasa facilitate easy switching of reserves and logistics resources between the Chengdu and Lanzhou Military Region bordering India.

Additionally, six to eight, all-weather airfields across Tibet with blast-proof pens for combat aircraft, backed by 18-27 advanced landing grounds and innumerable helipads in contiguous areas, are capable of supporting extensive PLA Air Force (PLAAF) operations. The enhancement in the strategic lift capability of the PLAAF too guarantees faster troop induction. And to address the issue of rapid force application at these formidable altitudes, the PLA has constructed hyperbaric chambers for swift acclimatisation of troops launched into the area from the lower regions.

Over decades, the PLA has also increased the intensity and frequency of its exercises in the TAR, as evidenced by the recent manoeuvres earlier this year, after which neither the participating infantry units nor their artillery and armoured assets, withdrew. They simply moved closer to the LoAC and presently constitute the faceoff with the Indian Army in at least five spots over which India's control has, for decades, been indisputably acknowledged by China.

In all these exercises, the PLA had war gamed the induction of integrated command platforms along the LoAC, besides simulating the capture of mountain passes at heights over 5,000 metres, assisted by armoured vehicles and backed by drones and fighters armed with conventional and laser-guided ordnance. These drills progressively synchronised coordination between air power, ground and air defence forces with the eventual aim of totally dominating the border regions.

Furthermore, China has been boosting its conventional and strategic missile capability in the TAR that is targeted exclusively at India. This includes the nuclear-capable Dongfeng-3 (CSS-2) and Dongfeng-21 (CSS-5) intermediate and medium range ballistic missiles, with strike ranges between 3,000 and 2,500 km, respectively. Such coercive leverage against India in the TAR and along the LoAC is further backed by Beijing's wider regional encirclement, amplified by its Belt and Road Initiative (BRI) that involves infrastructure development and investments in nearly 70 countries and international organisations.

The pivot of President Xi Jinping's grandiose 'Middle Kingdom' ambitions, the Belt enterprise, refers to overland industrial and transport corridors linking China to Eurasia, the rich Gulf Sheikdoms and the Middle East. The 'Road' part aims to network Beijing's industrial heartland with the resource-rich Indian Ocean Region (IOR) via a multi-layered web of strategic, economic and military alliances.

India considers the BRI an enlarged version of China's earlier undeclared 'string of pearls' strategy of entering into a labyrinth of unfolding competitive security, defence, commercial and diplomatic pacts with all its neighbours — Bangladesh, Bhutan, Myanmar, Nepal, Pakistan, Sri Lanka and Maldives and with Iran and Afghanistan.

In its endeavour to 'encircle' India, Beijing has pursued a Five-Finger policy of investing in each of these states in infrastructural projects, especially ports, with the potential of supporting PLAN operations and dominating sea lanes of communication in the Indian Ocean Region. China has also disbursed generous loans, delivered assorted materiel and funded joint commercial ventures to extend its strategic and financial influence.

The China-Pakistan Economic Corridor (CEPC), however, is Beijing's largest ever such overseas investment and entails building a 2,390 km long road and rail network, interwoven with oil and gas pipelines across the country. This elaborate, under-development grid, is aimed principally at connecting Pakistan's Gwadar port on the Arabian Sea with China's commercially rich western Xinjiang region in order to ensure delivery, within days, of China's oil and gas requirements from West Asia, which presently take four to six weeks to transport by sea.

Once fully operational, Gwadar will most certainly host PLAN warships and submarines, endangering vital Indian, US and other Western interests in the Persian Gulf and further threatening the Indian Navy in the Arabian Sea. Pakistan has reportedly ‘handed over’ Gwadar to China for 40 years, but little is publicly known of their secretive arrangement.

Back at the LoAC, the intended corridor will complicate matters for India, as the passageway traverses PoK. The incursion by PLA engineers into Gilgit-Baltistan to fabricate the corridor has triggered tension between Delhi and Beijing since 2010. The current LoAC faceoff, however, forebodes further hostility between the nuclear-armed neighbours.

<https://www.tribuneindia.com/news/comment/china-border-faceoff-may-take-time-to-ease-99749>

 **The Indian EXPRESS**

Tue, 16 June 2020

LAC talks on, but Army told to act as per need

The next round of talks at the Lt General level will happen only after disengagement at Patrolling Points 14, 15 and 17 in the Galwan and Hot Springs region

By Ravish Tiwari

New Delhi: As military and diplomatic talks look to lower tensions along the Line of Actual Control in eastern Ladakh, India will continue to assert its military strength at the field level till it reaches an honourable understanding with China, highly placed government sources have told The Indian Express.

China, sources said, has altered the status quo in the region and brought in additional troops. “We have to demonstrate our strength on the ground. Only then will they come to the talking table,” sources said, adding “there is no need to show aggression, only our strength”. The Indian Army, a top source said, has been given emergency powers to act according to the situation on the ground and assessment.

“Army has been given emergency powers for deployment there as per needs and new situations without looking towards Delhi,” the source said, suggesting that this allows the Army to demonstrate its strength on the ground.



India will continue to assert its military strength at the field level till it reaches an honourable understanding with China. (AP Photo/File)

The source also indicated that the next round of talks at the Lt General level will happen only after disengagement at Patrolling Points 14, 15 and 17 in the Galwan and Hot Springs region – on June 6, XIV Corps Commander Lt General Harinder Singh met South Xinjiang Military District Commander Major General Liu Lin at the Chushul-Moldo border point.

“They (Chinese) appear ready for another round of meeting at the senior military level (Lt General). We are waiting for disengagement at Patrolling Points 14, 15 and 17 before we go for another round of talks at the senior military level,” the source said, adding that the military dialogue will continue.

Last Saturday, Army chief General MM Naravane said “disengagement” has begun in the Galwan area, and both sides “are disengaging in a phased manner”.

He told reporters in Dehradun that military talks between the two sides have been “very fruitful” and “the situation will keep improving as we go on”.

“We have started from the north, from the area of the Galwan river, where a lot of disengagement has happened.”

General Naravane said that after the June 6 meeting between the Corps Commanders, there have been “a number of meetings at the local level between commanders of equivalent ranks. As a result

of this, a lot of disengagement has taken place, and we are hopeful, that through this continued dialogue that we are having, all perceived differences that we have will be set to rest.”

The Army chief did not comment on the situation in Pangong Tso where the faceoff continues on the north bank of the lake.

The Indian establishment is conscious of the change in the ground situation at Pangong Tso. Chinese troops have stopped Indian patrols at Finger 4, eight kilometres west of Finger 8 which India says marks the LAC.

At the moment, the establishment believes that this situation has arisen due to differences in perception about the LAC in the region. The Chinese side too, the source said, did not indicate any other motive for this change in status quo during the June 6 military talks.

“If there is any other motive behind this transgression, it was not made obvious during the Lt General level talks. Nor will it be communicated during military level talks,” the source said.

Given this backdrop, the source said, the situation does not warrant political calls for any show of aggression or acts of jingoism. “It’s a sensitive situation and it does not call for any adventurism. China plays at multiple levels. Whether this is about territory or some other ulterior objective, we are still not quite sure,” the source said.

Keeping this in mind, top BJP leaders too have been careful with their choice of words in public remarks.

On Sunday, Defence Minister Rajnath Singh, addressing a virtual rally, said: “While China has expressed the desire to resolve the (LAC) issue through talks, our effort too is to find a solution to the trouble between China and India through talks at the military and diplomatic levels.”

“We will not keep anyone in the dark, neither Parliament nor anyone else. We will disclose everything at an appropriate time,” he said, referring to questions being asked by the Opposition Congress on the LAC situation.

“India is no longer a weak nation; its power has increased. But we do not want to use this strength to frighten anyone. It is only to secure our country,” he said.

<https://indianexpress.com/article/india/india-china-lac-talks-army-6460948/>

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ज्ञान प्रसार एवम् विस्तारम् *Tue, 16 June 2020*

Chinese tanks conduct high-altitude drills amid border standoff with India

The exercises were announced by the PLA’s Tibet Military Region

By Ankit Panda

Chinese People’s Liberation Army tanks recently conducted military drills in high altitude conditions, according to a report in Chinese state media. According to the *Global Times*, a nationalistic newspaper with links to the Communist Party of China’s *People’s Daily* newspaper, Chinese People’s Liberation Army Type 15 lightweight tanks conducted exercises “in a low temperature mountainous plateau region.”

The report, which was published on Sunday, comes amid an ongoing standoff between India and China along their disputed border in the Himalayas. The two countries share one of the world’s longest unsettled land borders, which is divided into a western, middle, and eastern sectors. The most serious of the ongoing standoffs between Chinese and Indian troops have taken place along



Credit: [u/RefrigerRaider](#) via [Wikimedia Commons](#)

points in the western sector. The unofficial line that demarcates Indian-held and Chinese-held disputed territory is known as the Line of Actual Control.

According to a PLA Tibet Military Region statement quoted by *Global Times*, “An infantry battalion at the PLA Tibet Military Region recently organized infantry-tank cooperation drills at an undisclosed location at an elevation of more than 4,700 meters, putting the troops’ teamwork and rapid-response capabilities to a comprehensive test.”

After initial skirmishes between Indian and Chinese troops in early May in the western sector and along the settled border between China’s Tibet Autonomous Region and the Indian state of Sikkim, the People’s Liberation Army and the Indian Army have reinforced positions along the Line of Actual Control. According to Indian reports, China has moved heavy artillery and other equipment to territory on its side of the Line of Actual Control in the western sector.

While Sunday’s *Global Times* report did not disclose the location of the Type 15 lightweight tank drills, the fact that the PLA Tibet Military Region released a statement on the drills suggests that the exercises may have been designed to signal resolve to India amid the ongoing standoff. The *Global Times*, reported that “Military observers connected the PLA’s recent maneuvering and exercises of troops with the recent border tensions between China and India.”

India and China held talks at the military corps commanders’ level recently and have also been talking via established diplomatic channels. According to Indian reports citing official sources, both sides have conducted a limited disengagement, but the precise details remain unclear and contradictory across multiple reports. Neither the Indian nor the Chinese government has released an official statement on the outcome of ongoing talks between the two sides.

<https://thediplomat.com/2020/06/chinese-tanks-conduct-high-altitude-drills-amid-border-standoff-with-india/>



Tue, 16 June 2020

China started expanding its legs to the Indian Ocean, a bigger concern of India than LAC

India is all set to show china, its actual place in LAC but this is not the only concern. The main concern is it has now increased the activities in the Indian Ocean. China started its presence in the Indian Ocean

India is all set to show china, its actual place in LAC but this is not the only concern. The main concern is it has now increased the activities in the Indian Ocean. China started its presence in the Indian Ocean. For India, the Indian Ocean region and the countries located in the region including the Maldives are of strategic importance and New Delhi considers them as part of its sphere of influence. However, the satellite images show that India has a major threat developing right there.

According to the news and images provided by the satellite, the Chinese leased Maldivian island of Feydhoo Finolhu for \$4 million and started massive construction around there and with 250000 sq. feet this military base is no common, whereas Beijing denied any military action and named the construction of the military base as a natural right being a sovereign nation. The base made by China near the Maldives has the capacity of hosting 10000 troops at a time. Because of all this, it is hard to believe China when it says that they are merely for peacebuilding.

Not just the Base on the island, China has also increased the number of submarines and intelligent ships. Officials say that it is nothing but the projection of power into the Indian Ocean, feeding fears of strategic encirclement.

This is not the first time, a decade ago China had begun deploying warship off the coast of Somalia, initially Indian analysts believed that China just wants to improve its trade and maintain

its security. But now, it took no time for them to think of it as a threat as Beijing has started its border expansion and continuously trying to embed it into the geography of India through the Indian Ocean. China regularly sends research and survey ships and unmanned underwater Vehicles to map different parts of the water body. The presence of the 35th fleet of the Chinese Navy has added to the Indian Woes.

The Indian Navy needs to strategies for distant power projection. It includes employing a plan for a sustained presence in the Western Pacific, where there is a domination of Beijing. To improve the security dynamics in the Pacific, the Indian Navy must then meaningfully leverage logistics support agreements and capitalize on the close naval ties with the USA, Japan, Singapore, Vietnam, and Indonesia.

Although the Indian Navy is capable to match the actions of the Chinese Navy, there are some of the reasons which have restrained the Indian Navy to push the Chinese Navy back to its place. Some of the reasons are constantly decreasing the budget of the navy, gaps in the combat capability like conventional submarines, anti-submarine helicopters, and minesweepers, etc.

The Indian Ocean has the potential to become the new theatre of conflict between India and China. Although both the countries are already engaged in the stand-offs near Ladakh and Sikkim, Maldives could be the next location for a stand-off between the two Asian Giants.

<https://thepolicytimes.com/china-started-expanding-its-legs-to-the-indian-ocean-a-bigger-concern-of-india-than-lac/>



Tue, 16 June 2020

China turned down proposal to demarcate LAC for 174 yrs

On August 5 last year, when Parliament approved an amendment to Article 370 of the Constitution to carve out Ladakh as a separate Union Territory, China responded with angry statements.

Beijing questioned the “changed status” of the “boundary”, whereas in reality there is no boundary and it never was and largely due to the Chinese, who have rejected every such proposal in 174 years, or since 1846. The Line of Actual Control (LAC) is a kind of loose understanding with several disputes and overlapping claims, especially along the 826 front in Ladakh.



Since 1846, when the British took over J&K post the first Anglo-Sikh War, an attempt was made to have a boundary and was quickly followed up in 1847. In all, the British proposed boundaries — five separate ones in 1846-47, 1865, 1873, 1899 and 1914, China rejected each of them. Britain got China to send in troops during World War I and II, but the boundary remained undecided.

Major Alexander Cunningham, who led the British attempt in 1847 to demarcate the boundary, details this in his 1854 book “Ladakh Physical, Statistical and Geographical”. He narrates “The settlement of this boundary (between Ladakh and Tibet) was of some importance”.

In 1834, the Dogra Army, led by General Zorawar Singh, captured Ladakh. During the Sino-Sikh War (1841–42), the Qing Empire invaded Ladakh, but the Sino-Tibetan army was defeated and “a letter of agreement” was signed in 1842.

Since August last year, China's foreign affairs ministry has questioned the move on Article 370. At an informal session of the UN Security Council in August 2019, the Chinese Permanent Representative in the UN had argued that India's decision to abrogate Article 370 challenged China's sovereign interests and violated bilateral agreements on maintaining peace in the border area. In Ladakh, only two spots along the LAC are disputed.

One is at Trig Heights in the north-eastern edge of Ladakh and the other is Demchok. Besides, both sides carry out patrolling in what they perceive as the boundary — at the northern edge of Pangong Tso, Sppangur Gap, Kongka La, Chumur, Mount Sajun, Hot Springs and Samar Lungpa. However, not a bullet has been fired since November 1962 in Ladakh.

Sequence of events post Independence

- 1947: Chinese army enters Tibet
- 1950: India unilaterally declares McMahon Line in Arunachal as its boundary
- 1954: India claims Aksai Chin as part of its northern border
- 1958: India discovers China has built a road over the plateau of Aksai Chin
- 1959: PM Nehru rejects Chou En-lai's letter accusing Indians of overstepping McMahon Line
- 1960: China bizarrely expands its claim on another 5,100 sq km of the territory in eastern Ladakh
- 1960: China wants status quo — India keeps NEFA (now Arunachal), while China keeps Aksai Chin — northeast edge of J&K
- 1961: In November, India launches forward policy to retain control over territory
- 1962: In Oct-Nov, India-China go to war
- 1993: Pact is inked on maintenance of peace along LAC
- 2014: PM Modi suggests demarcation of LAC, China says let representatives resolve it

<https://idr.org/china-turned-down-proposal-to-demarcate-lac-for-174-yrs/>

THE ECONOMIC TIMES

Tue, 16 June 2020

India, China increased nuclear weapons since last year: SIPRI

China and Pakistan have more nuclear warheads as compared to India, according to the SIPRI Yearbook 2020. India has 150 nuclear warheads, while China and Pakistan have 320 and 160. The figures are until January. Last year, India had 130-140 warheads, while China had 290 and Pakistan 150-160

By Shaurya Karanbir Gurung

New Delhi: India and China have increased their nuclear arsenal over the last year, according to the Stockholm International Peace Research Institute (SIPRI). The Swedish think-tank that researches on conflict, armaments and arms control also pointed out on Monday that China is significantly modernising its nuclear arsenal.

China and Pakistan have more nuclear warheads as compared to India, according to the SIPRI Yearbook 2020. India has 150 nuclear warheads, while China and Pakistan have 320 and 160. The figures are until January. Last year, India had 130-140 warheads, while China had 290 and Pakistan 150-160.

“China is in the middle of a significant modernization of its nuclear arsenal. It is developing a so-called nuclear triad for the first time, made up of new land and sea-based missiles and nuclear-capable aircraft,” the think-tank said in a statement.

China's pace of growth of its nuclear weapons has increased in recent years with the fielding of new weapon systems, according to the report. Around 240 warheads are assigned to China's operational land and sea based ballistic missiles and nuclear configured aircraft. The rest are assigned to non-operational forces, such as new systems in development.

China has adopted a nuclear strategy of self-defence, which is to deter other countries from using or threatening to use nuclear weapons against it. Therefore, China has prioritised building an operational triad of land, sea and air based nuclear forces to strengthen its deterrence and counter-strike capabilities.

"China now publicly displays its nuclear forces more frequently than in the past but releases little information about force numbers or future development plans," it said.

The SIPRI also said that India and Pakistan make statements about some of their missile tests, but provide little information about the status or size of their arsenals. They too are slowly increasing the size and diversity of their nuclear forces.

"India is expanding the size of its nuclear weapon stockpile as well as its infrastructure for producing nuclear warheads," the report said.

Aircraft are the most mature component of India's nuclear strike capabilities. SIPRI estimates that there are about 48 nuclear bombs assigned to aircraft. To create a second strike capability, India is also developing the naval component of its nuclear triad. About 12 nuclear warheads have been delivered for potential deployment by the nuclear submarine, INS Arihant.

The details have come to light at a time when Indian and Chinese troops are engaged in a stand-off in Eastern Ladakh since May.

Pakistan continues to prioritise the development of its nuclear weapons as part of its "full-spectrum deterrence posture" against India. Pakistan is seeking to create a nuclear triad by developing a sea-based nuclear force.

The nine nuclear-armed states—the US, Russia, the United Kingdom, France, China, India, Pakistan, Israel and North Korea—together possessed an estimated 13,400 nuclear weapons at the start of 2020. This marked a decrease from the 13,865 nuclear weapons that SIPRI estimated these states possessed at the beginning of 2019. Around 3,720 of the nuclear weapons are currently deployed with operational forces and nearly 1,800 of these are kept in a state of high operational alert.

The decrease in the overall number of nuclear weapons in the world last year was largely due to the dismantlement of retired nuclear weapons by Russia and the US. Together, they still possess over 90 per cent of global nuclear weapons.

<https://economictimes.indiatimes.com/news/defence/india-increased-nuclear-arsenal-in-2019-but-has-fewer-weapons-than-china-pakistan-sipri-report/articleshow/76384026.cms?from=mdr>



Tue, 16 June 2020

“There will be no conflict if Indian army does not enter our actual line of control”

A slice of history from the archives reveals that Beijing will be unyielding on the post-1962 status quo

By Amit Baruah

New Delhi: The Chinese have literally stuck to their guns since the 1962 border conflict when it comes to approaching a border settlement with India and reaching a common position on who sits where along the Line of Actual Control (LAC).

A slice of history from the archives reveals that Beijing would be unyielding if India tried to disturb the post-1962 status quo, something that could shine a light on current border incidents with China.

In December 1963, a year after the November 1962 border conflict with India, Chinese Premier Zhou Enlai told Egyptian President Gamal Abdel Nasser that there would be “no conflict between the two sides if the Indian army does not again enter our actual line of control.”

At pains to explain Chinese actions to President Nasser, Mr. Zhou said about the post-war situation: “What is the outlook for the Sino-Indian border conflict? Frankly speaking, all is well for now. Since our side has taken the initiative of a ceasefire and such mitigation measures as initiating a withdrawal of 20 kilometres along the entire front line, there will be no conflict between the two sides if the Indian army does not again enter our actual line of control.”

Chinese assessment

Given the recent impasse along the LAC and fisticuffs between Indian and Chinese soldiers, Mr. Zhou’s dictum holds good — all would be well as long as the Indian side did not assert itself.

A record of the Zhou-Nasser conversation, available on the Wilson Center Digital Archive, showed the Chinese assessment of New Delhi’s position: “India’s attitude is: for the eastern border, we must accept the McMahon line; for the western border, India wants it where it has never been, an area where Chinese have been living for several hundred years and made their own.” Mr. Zhou claimed that he visited India three times – in 1954, 1956 and 1957 – but the Indian side never put forth any proposals.

In July 1962, Foreign Minister Marshal Chen Yi and Defence Minister Krishna Menon met in Geneva in a “situation where both sides were prepared to settle through discussion in maintaining the border status quo [both the eastern and western border were more to India’s advantage at that time than at present] and hold talks without conditions to resolve the issue”.

No agreement

“At the time we assumed that the Indian side could accept a negotiated agreement reached with us on the basis of maintaining the border status quo. But unexpectedly, Menon wanted our side first to demarcate several areas to give to him, commit them in advance, and then hold talks again. Because of this, the two sides did not come to an agreement,” Mr. Zhou told Mr. Nasser.

The Chinese side seems stuck on this even today – they have not agreed to share maps on their perception on the eastern and western sectors of LAC first at the Joint Working Group (JWG) mechanism at foreign secretary-level agreed upon during Prime Minister Rajiv Gandhi’s path-breaking visit to Beijing in December 1988. Maps in the less contentious middle sector were shared at a JWG meeting in 2001.

In a major step-up, the two countries agreed to set up a dedicated mechanism at the level of Special Representatives (SRs) to resolve the border dispute during Prime Minister Atal Behari Vajpayee’s China trip in June 2003. This superseded the JWG.

Though the SR mechanism led to a “guiding principles” agreement in 2005, the two countries are still to exchange maps on where each side is in the eastern and western sectors. “Advance demarcation” still appears to be a problem for the Chinese side, although the contours of a possible settlement referred to by Mr. Zhou is no longer Beijing’s official position.

A pressing issue

Over the years, India and China have agreed on a number of mechanisms to enhance confidence at the military level, but their inability to agree to a border settlement have led to consistent problems – troops coming into conflict with each other – and continues to be a pressing issue.

Mercifully, there have been no fatalities on either side for the past 45 years – since the two countries restored full diplomatic relations in 1976.

<https://www.thehindu.com/news/national/there-will-be-no-conflict-if-indian-army-does-not-enter-our-actual-line-of-control/article31836317.ece>

Modi-Morrison summit: How Beijing's belligerence makes the 'Quad' more attractive for New Delhi

Australia may join the tri-lateral Malabar-2020 naval exercise scheduled between India, Japan and the US later this year, a Quadrilateral of democracies

By Sabdeep Unnithan

Prime Minister Narendra Modi and his Australian counterpart Scott Morrison bonded over 'Scomosas' and announced a Comprehensive Strategic Partnership in their virtual summit on June 4.

Both countries agreed to share a 'vision of an open, free, rules-based Indo-Pacific region' and inked a key Mutual Logistics Support Agreement which allows Indian and Australian warships to access each other's bases on a reciprocal basis. India has signed similar agreements with the US and France allowing its warships to extend their reach through the Indian Ocean. The PLA's muscle-flexing in Ladakh and veiled warnings to Delhi in Communist Party mouthpieces in Beijing didn't change the trajectory of the agreement. Delhi is playing a significant role in the realignments in the Indo-Pacific.



Prime Minister Modi and Australian PM Scott Morrison at the India-Australia virtual summit on June 4. (Photo: PTI)

A key aspect of the MLSA agreement— still under discussions—is for Indian military aircraft to use an Australian atoll in the Indian Ocean. The Cocos (Keeling) Islands located midway between Australia and Sri Lanka is proximate to all 'chokepoints'—narrow straits used by Chinese warships and submarines transiting to and from the South China Sea into the Indian Ocean.

The Sunda, Lombok and Ombai Straits can be covered by the Indian Navy's fleet of long-range maritime patrol and strike (LRMP/S) P8-I Poseidons flying out of Arakonam in Tamil Nadu, but with reduced 'time on target'. A P-8I flying from the Indian mainland would have barely an hour's endurance on these straits, whereas it would have at least eight hours if it operated out of the Cocos. Defence officials say there may be reciprocity sought by the Australians— such as the use of the Indian Navy's Andaman and Nicobar Islands. Both the Indian Navy and Royal Australian Air Force operate around a dozen P-8Is each. The Navy has six more P-8Is on order for India, which hopes to eventually deploy 24 of these aircraft. These LRMP/S aircraft are based on a commercial Boeing 737 airliner and so can be serviced by civil airports with a 2 km long runway. Australia may join the tri-lateral Malabar-2020 exercise scheduled between India, Japan and the US later this year, a Quadrilateral of democracies. The more belligerent Beijing becomes on the LAC, the more attractive groupings like the 'Quad' will become for New Delhi. (Courtesy of *Mail Today*)

<https://www.dailyo.in/politics/modi-scott-morrison-virtual-meet-india-china-border-tension-india-australia-ties-2020-malabar-naval-exercise/story/1/33113.html>

No power can break Indo-Nepal ties, will sort out misunderstanding, Says Defence Minister Rajnath

New Delhi: Rejecting Nepal's territorial claim, Defence Minister Rajnath Singh asserted on Monday that the Lipulekh-Dharchula road falls very much in India and conveyed that the Modi government's willingness to sort out the "misunderstanding" with the neighbouring country through dialogue.

Singh stressed on the centuries-old ties between the two countries, noting that they were not only social, geographical, historical and cultural but also spiritual.

India can never forget this reality and Indians can never have any bitterness towards Nepal, the Defence Minister added. "Our relations are not only of this world, but also of the 'other world', and they cannot be changed even if someone wishes so," he said at a BJP's virtual rally for Uttarakhand, the state in whose border region the road has been built. "These are no ordinary ties and we are bound by 'roti' and 'beti' (livelihood and marriage). No power in the world can break it," Singh said.

India-Nepal relations broken?

The bilateral ties between the two countries came under strain after Singh inaugurated a 80-km-long strategically-crucial road connecting the Lipulekh pass with Dharchula in Uttarakhand on May 8. Nepal's Parliament had on Saturday unanimously voted to amend the Constitution to update the country's new political map, laying claim over three strategically key areas, including Lipulekh, along the border with India. "If the Lipulekh-Dharchula road has given rise to some misunderstanding among the people of Nepal, I believe we can sit together to address it. We can do it through dialogue," the defence minister said.

Singh, however, reiterated India's stand that the 80-km road had been built in Indian territory, while acknowledging that this had caused some misunderstanding in Nepal. The road will shorten the duration of the Kailash Mansarovar pilgrimage by six days, according to Singh.

Nepal had reacted sharply to the inauguration of the road, claiming that it passed through Nepalese territory. India rejected the claim asserting that the road lies completely within its territory.

Nepal had last month released the revised political and administrative map of the country laying claim over the strategically key areas, more than six months after India published a new map in November.

At pains to highlight the deep ties between the two countries, the Defence Minister spoke about the valour of the Gorkha regiment, whose soldiers are mostly drawn from Nepal, and noted that its battle cry is "Maha Kali, Aayo Gorkhali" (Goddess Kali, Gorkhas are here).

"How can the India-Nepal relations be broken?" he asked. "No matter how much fencing one does across Dharchula, these ties cannot be ended," he said.

No crisis of credibility

In his address, Singh also highlighted the work done by the Modi government and said it had delivered on a host of promises like abrogation of Article 370 and prohibiting instant triple talaq.

Gap between politicians' promises and their work had caused a "crisis of credibility", but the Modi government has triumphed over it by delivering on the party's manifesto, Singh said.

The government has also been working to reduce India's dependence on imports in the defence sector by boosting domestic manufacturing and exports of defence equipment. It has set an export target of USD 5 billion by 2024, he said.

According to Singh, India has progressed a lot under the six years of Prime Minister Narendra Modi-led NDA government and its economy had become fifth largest in the world from the ninth earlier.

<https://www.thehindubusinessline.com/news/no-power-can-break-indo-nepal-ties-will-sort-out-misunderstanding-says-defence-minister-rajnath/article31832450.ece#>



Tue, 16 June 2020

GRSE delivers its 5th Rajshree-class Fast Patrol Vessel to Indian Coast Guard

According to a Tweet released on June 9, 2020 by Garden Reach Shipbuilders and Engineers (GRSE) Indian shipbuilders, the company has delivered the fifth and final Flight II Rajshree-class Fast Patrol Vessel (FPV), ICGS Kanaklata Barua, to the Indian Coast Guard.

The Rajshree-class patrol vessels are a series of eight inshore patrol vessels built by Garden Reach Shipbuilders & Engineers (GRSE), Kolkata for the Indian Coast Guard. It can undertake day and night patrolling for anti-smuggling, anti-poaching and fisheries monitoring in shallow waters. They also carry on board a high-speed fiber-reinforced plastic boat, two Gemini boats and one water scooter for search and rescue operations. It can accommodate a crew of 6 officers and 34 sailors.



Indian Coast Guard Rajshree-class Fast Patrol Vessel. (Picture source Indian Coast Guard)

The Rajshree class has a displacement of 303 tons and a length of 48.9 meters (160 ft). The vessel is fitted with an integrated bridge system (IBS), an integrated machine control system (IMCS).

The Rajshree-class patrol vessel is powered by three MTU 4000 series engines and three 71S2 Rolls Royce Kamewa water jets. Each engine generates a maximum power output of 2,720bhp (2,028kW). Each vessel can generate 320kW of electricity to power onboard systems such as sensors, ship equipment, and weapons.

The propulsion plant provides a maximum speed of 34 kt. The vessels can reach a maximum range of 1,500 nmi at an economical speed of 16 kt. It has a maximum operational range of 3,000 nmi.

The patrol vessel is armed with a 30 mm CRN 91 Naval Gun, which is gyro-stabilized with an electro-optical fire control system.

<https://navyrecognition.com/index.php/news/defence-news/2020/june/8593-grse-delivers-its-5th-rajshree-class-fast-patrol-vessel-to-indian-coast-guard.html>



Tue, 16 June 2020

In comparison to Pakistan, India betters its nuclear warhead numbers in 2020 alongside an advanced deterrence

The much talked-about Defensive Offence strategic doctrine of India outlined by NSA Ajit Doval, has ensured that country's defence structures remain confident of its Nuclear deterrence capabilities. While Pakistan, India's terror-exporting neighbour remains marginally, ahead of India in terms of the number of nuclear warheads, India's deterrence mechanism against nuclear arms remains far more advanced and synchronised with its overall requirements.

In its 2020 yearbook, (SIPRI) Stockholm International Peace Research Institute, a Swedish think-tank, has estimated India's total number of nuclear warheads at 150, while that of Pakistan at 160. Earlier, in 2019, SIPRI had estimated India's nuclear warhead numbers at 130-140, while that of Pakistan at 150-160, implying a clear increase in India's nuclear warhead number just in one year.

Decrease in the number of Global N-warheads

A total of 465 nuclear warheads have been made to retire, mainly by the US and Russia, between 2019 and 2020.

The nine on-the-record nuclear armed states, that is, the United States, Russia, the United Kingdom, France, China, India, Pakistan, Israel and North Korea had 13,865 Nuclear warheads in 2019, which have come down to 13,400 in 2020.

The US and Russia, with 5,800 and 6,375 nuclear warheads respectively account for close to ninety per cent of total number of Nuclear Warheads, globally.

Why SIPRI report is significant right now?

The report comes at a time when India is at crossheads with China in Ladakh's Galwan valley, with China reportedly having breached India's perceptive Line of Actual Control (LAC) earlier in May, amid on-going de-escalation efforts.

Pakistan, on other hand continues to export the terror and turmoil in the Kashmir valley, with tens of infiltration attempts already even in the middle of a pandemic.

The military build-ups along the 3,488 km Line of Actual Control with China remains intense on both sides, alongside the concentrated volatility along the Line of Control with Pakistan.

"India and Pakistan are slowly increasing the size and diversity of their nuclear forces," SIPRI's 2020 yearbook says, implying towards the nuclear triad (from under/above the sea, air and land) capabilities of India which Pakistan lacks.

In April this year, with an expenditure of \$71.1 billion in 2019, SIPRI found India as the third largest military spender in the world, just behind the US and China.

<https://idrw.org/in-comparison-to-pakistan-india-betters-its-nuclear-warhead-numbers-in-2020-alongside-an-advanced-deterrence/>



Meil group forays into defence weapons production in Telangana

In a statement on Monday, the infrastructure conglomerate with presence in 20 countries, announced obtaining approvals to manufacture weapons and equipment for the defence sector. Meil had sought approvals to produce weapons, vehicles, ancillaries and arms under Defence procurement policy 2020

By CR Sukumar

Hyderabad: Hyderabad headquartered multi-disciplinary infrastructure conglomerate Megha Engineering and Infrastructures (Meil) group has announced foray into defence weapons manufacturing by setting up a Greenfield production facility in Telangana involving an initial capital outlay of Rs 500 crore.

Meil, which reported a net profit of Rs 2,984 crore on an income of Rs 19,492 crore while enjoying a robust order book of over Rs 85,000 crore in 2018-19, currently has interests in hydrocarbons, power, aviation, EV buses, irrigation and drinking water, among others.

In a statement on Monday, the infrastructure conglomerate with presence in 20 countries, announced obtaining approvals to manufacture weapons and equipment for the defence sector. Meil had sought approvals to produce weapons, vehicles, ancillaries and arms under Defence procurement policy 2020, a part of the Make in India initiative, and obtained clearances from the Ministry of Home and Ministry of Commerce and Industry to set up a manufacturing facility at Jeedimetla in Hyderabad outskirts.



A recent project in Andhra Pradesh executed by Megha Engineering and Infrastructures (Meil) group

Meil is among the few Indian companies to obtain approvals from the government to manufacture defence weapons and equipment.

The proposed defence manufacturing facility of Meil will take up production of ancillaries to the combat vehicles, light combat vehicles, armoured engineer recovery vehicles, armoured recovery vehicles. The production facility will also manufacture soldiers carrying vehicles (APC), infantry combat vehicles (ICV), armed multi-purpose vehicles, mine-laying vehicles, bridge laying vehicle, all-terrain light combat vehicle (ACTV).

Further, the upcoming facility in the Hyderabad outskirts will also manufacture missiles, multi-barrel rocket launchers, machine guns, rockets, cannons and equipment to missiles, said Meil.

Meil president Srinivas Bommareddy said the company will be “setting up most modern manufacturing facilities to produce various cutting-edge defence equipment indigenously” at its upcoming facility at Hyderabad.

Srinivas said Meil is setting up the defence equipment production facility in partnership with foreign technology and original equipment manufacturing (OEM) giants. He said apart from participating in the tenders to be floated by India’s defence ministry, Meil will also export its defence equipment going forward.

“We have tied up with leading (foreign) OEMs,” Srinivas ET, while refusing to divulge their identity owing to “confidentiality clauses.” Admitting that the foreign players would also invest in the defence equipment entity to pick up an equity stake at a later stage, he said the proposed manufacturing facility at Hyderabad will take off in the next 24 months.

In April, the Meil group firm iCOMM Tele, which is into defence electronics and communications technologies, has teamed up with the Defence Research and Development

Organisation (DRDO) and others to develop mobile virology research and diagnostics laboratory to test Covid-19 samples.

iCOMM Tele also supplies advanced communication radios, jammer amplifiers, and containers to missile programs like Brahmos, Akash, PGAD, Pralay, MSRAM, and electronic warfare systems. This Meil firm had also developed wind profile radars to the Indian Air Force.

Apart from defence electronics and communications technologies, this firm is also into power transmission and distribution, solar and oil and gas sectors as an engineering, procurement and construction (EPC) company and currently executing 750 MW of solar projects across Tamil Nadu, Andhra Pradesh, Telangana, and Punjab.

<https://economictimes.indiatimes.com/news/defence/meil-group-forays-into-defence-weapons-production-in-telangana/articleshow/76383126.cms>

Science & Technology News

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Tue, 16 June 2020

ISRO, Japan collaborate for lunar polar exploration; scheduled to liftoff after 2023

By Sharmishte Datti

Defence Minister Rajnath Singh on Sunday said the Indian government would not keep anyone in the dark about the India-China tussle in Ladakh and at the appropriate time, the government would reveal everything about it.

ISRO is teaming up with the Japan Aerospace Exploration Agency (JAXA) for space exploration. Together, the ISRO and JAXA will be launching the Lunar Polar Exploration, as the name suggests, to explore the Moon. The new collaboration is a major boost to the Indo-Japanese ties.

ISRO Lunar Polar Exploration The new Lunar Polar Exploration will have both the countries working to send a lander and a rover on the Moon's surface. The Japan Aerospace Exploration Agency will be building the overall landing module and rover for the new mission. On the other hand, ISRO will be designing and building the lander system.

According to the report from the Times of India, the new lunar exploration mission is scheduled for liftoff after 2023. Most likely, the mission will launch from Japan on the H3 rocket, developed by Mitsubishi Heavy Industries. The date ensures that it won't coincide with other space missions scheduled by ISRO, like the Gaganyaan mission, expected to liftoff in 2022.

Both ISRO and JAXA have setup a pre-project team earlier this year to develop a comprehensive management plan for the lunar exploration project. The team will be investigating the spacecraft system requirements and other interface specifications.

Purpose Of Lunar Polar Exploration

The Lunar Polar Exploration aims to collect actual data regarding the quantity of water on the Moon, from areas where water is already anticipated to exist according to previous observational data. The mission also aims to better understand the distribution, condition, and other parameters of the lunar water resources at the polar regions.

This is where the lander and the rover will come to play an important role. The newly-developed rover is expected to observe up to 2m underground. This further allows water detection and

possible water resource in that area. At the same time, the rover will continue to observe the Moon's surface, sending vital information back to Earth.

Different From Chandrayaa-3 Mission

After the hard landing of the Vikram lander of the Chandryaan-2 mission, ISRO announced that it would get back on the Moon with the Chandryaan-3 mission. However, the joint operation between ISRO and JAXA for the Lunar Polar Exploration is different from the Chandryaan-3 mission. Although there isn't a date fixed for the mission, it will liftoff from India with a lander and a rover, all developed by ISRO.

<https://www.gizbot.com/news/isro-japan-collaborate-for-lunar-polar-exploration-068301.html>



Tue, 16 June 2020

Discovery of graphene switch

Researchers at Japan Advanced Institute of Science and Technology (JAIST) have successfully measured the current-voltage curve of graphene nanoribbons (GNRs) that were suspended between two electrodes. Measurements were performed using transmission electron microscopy (TEM) observation. Results revealed that, in contrast to the findings of previous reports, the electrical conductance of GNRs with a zigzag edge structure (zigzag GNRs) abruptly increased above the critical bias voltage. This finding is worth noting because the abrupt change in these GNRs can be applied to switching devices, which are the smallest devices in the world.

The electrical structure of GNRs have been systematically investigated through theoretical calculations. Studies have reported that both zigzag and armchair GNRs exhibit semiconducting behavior below several nm in width, although the origin of the energy gap is different. On the other hand, the electrical transport properties have rarely been calculated owing to the non-equilibrium calculations required. In 2009, Nikolic et al. predicted that sharp increments in electrical conductance would occur for extremely thin and short zigzag GNRs as the magnetic-insulator-nonmagnetic-metal phase transition occurs above a certain bias voltage [Phys. Rev.B 79, 205430 (2009)]. The obtained experimental results correspond closely to the results of this non-equilibrium calculation.

A research team led by Ms. Chumeng LIU, Professor Yoshifumi OSHIMA and Associate Professor Xiaobin ZHANG (now of Shibaura Institute of Technology) has developed a special in situ TEM holder and a GNR device for TEM observation. This combination is aimed at clarifying the relationship between the edge structure of GNRs and electrical transport properties. Ms. Liu, the doctoral student of JAIST, said, "The fabrication process of our GNR device is much more difficult than the conventional one because we need to make very narrow GNR which should be stably suspended between both electrodes." She reviewed the literature focused on the fabrication process of GNR devices and verified their process en route to establishing her original fabrication method. Assoc. Prof. ZHANG said, "We were really happy to see that the I-V curve obviously changed when changing the edge structure to zigzag. I suppose we have encountered new possibilities for graphene nanoribbons." The team has successfully performed the in situ TEM observation of extremely narrow GNRs, and they plan to continue identifying electrical transport properties that are sensitive to the edge structure of these GNRs.

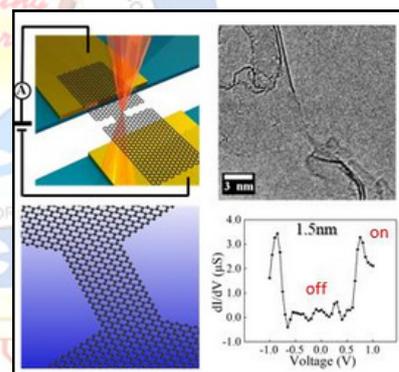


IMAGE: Researchers at Japan Advanced Institute of Science and Technology (JAIST) successfully developed the special in-situ transmission electron microscope technique to measure the current-voltage curve of graphene nanoribbon (GNR) with observing...
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This research was supported by the research grants from the Sasakawa Scientific Research, the Izumi Science Foundation, and the Iketani Science Foundation. C. Liu gratefully acknowledges the China Scholarship Council (No.201808050001).

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https://www.eurekalert.org/pub_releases/2020-06/jaio-dog061520.php

COVID-19 Research News



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Moderna COVID-19 vaccine appears to clear safety hurdle in mouse study

Prior studies on a vaccine for SARS - a close cousin to the new virus that causes COVID-19 - suggests vaccines against this type of virus might have the unintended effect of causing more severe disease when the vaccinated person is later exposed to the pathogen, especially in individuals who do not produce an adequately strong immune response

A series of studies in mice of Moderna's COVID-19 vaccine research lent some assurance that it may not increase the risk of more severe disease, and that one dose may provide protection against the novel coronavirus, according to preliminary data.

Prior studies on a vaccine for SARS – a close cousin to the new virus that causes COVID-19 – suggests vaccines against this type of virus might have the unintended effect of causing more severe disease when the vaccinated person is later exposed to the pathogen, especially in individuals who do not produce an adequately strong immune response.

Scientists have seen this risk as a hurdle to clear before vaccines can be safely tested in thousands of healthy people.

While the data released by the US National Institutes of Allergy and Infectious Disease (NIAID) and Moderna offered some assurance, the studies do not fully answer the question.

“This is the barest beginning of preliminary information,” said Dr. Gregory Poland, an immunologist and vaccine researcher at the Mayo Clinic who has seen the paper, which has yet to undergo peer-review.

Poland said the paper was incomplete, disorganized and the numbers of animals tested were small.

The authors said they have submitted the work to a top-tier journal. Moderna's vaccine is in midstage testing in healthy volunteers. Moderna said on Thursday it plans to begin final-stage trials enrolling 30,000 people in July.

In the animal studies, mice received one or two shots of a variety of doses of Moderna's vaccine, including doses considered not strong enough to elicit a protective immune response. Researchers then exposed the mice to the virus.

Subsequent analyses suggest “sub-protective” immune responses do not cause what is known as vaccine-associated enhanced respiratory disease, a susceptibility to more severe disease in the lungs.

“Subprotective doses did not prime mice for enhanced immunopathology following (exposure),” Dr. Barney Graham of the Vaccine Research Center at NIAID and colleagues wrote in the manuscript, posted on the bioRxiv website.

Further testing suggested the vaccine induces antibody responses to block the virus from infecting cells.

The vaccine also appeared to protect against infection by the coronavirus in the lungs and noses without evidence of toxic effects, the team wrote.

They noted the mice that received just one dose before exposure to the virus seven weeks later were “completely protected against lung viral replication,” suggesting a single vaccination prevented the virus from replicating in the lungs.

“At first glance, it looks promising in inducing neutralizing antibody protection in mice,” Dr. Peter Hotez, a researcher at Baylor College of Medicine said in an email. He had not reviewed the paper in detail.

Poland, who was not involved with the research, said the paper leaves out “important parameters” that could help scientists judge the work.

“The results, such as they are presented, provide interesting data that are reassuring ... This needs to be replicated and it needs to be peer-reviewed,” he said.

<https://www.expresspharma.in/latest-updates/moderna-covid-19-vaccine-appears-to-clear-safety-hurdle-in-mouse-study/>



Indonesian COVID-19 vaccines to undergo strict human, animal testing

By Made Anthony Iswara

Indonesian researchers and authorities have assured that COVID-19 vaccine testing on animals and humans will meet ethical standards and undergo strict procedures, as animal rights organizations have objected to animal testing in formulating the vaccine.

Indonesia is trying to fast-track the local development of a COVID-19 vaccine. It has established a consortium involving, among others, state-owned pharmaceutical company PT Bio Farma and the Eijkman Institute for Molecular Biology, which has finished the first complete genome sequence of coronavirus samples from Indonesia in early May, as part of the initial stage of vaccine development.

Indonesian Food and Drug Monitoring Agency (BPOM) head Penny K. Lukito said researchers must clearly and objectively explain their research to their human subjects, who would have to give consent before continuing the trials. The vaccine prototypes also have to go through animal trials to prevent adverse effects in humans and assure the vaccine’s safety and effectiveness.

A 2015 BPOM regulation on clinical trial procedures also requires the study sponsors to report any “serious” adverse effects no later than seven days after reports of life-threatening experiments, in addition to progress reports every six months, she said.

“Those who violate these provisions may be subject to administrative sanctions in the form of a warning, suspension, or the cessation of clinical trials,” Penny told *The Jakarta Post* in a statement on Saturday.

The BPOM will evaluate the protocols for clinical trials to verify whether the labs have fulfilled Good Clinical Practice (GCP) principles and get more information on the potential vaccines. If

researchers meet all the requirements, the agency will then issue permits to start the human clinical trials.

Eijkman Institute director Amin Soebandrio said animal testing was to ensure that the vaccine's antigens could form antibodies in humans, which could help protect them from COVID-19.

"We have to ensure that vaccines fulfill ethical requirements. At a minimum, it could be proven beneficial [...] and pose no danger or as little danger as possible to the subject," he said, adding that the vaccines would also need to secure halal certification from the Indonesian Ulema Council (MUI).

He said while human testing would have stricter standards than that of animals, such as a higher sterility level during the vaccine production, the COVID-19 health emergency may call for fewer numbers of human trials and shorter time for clinical testing, without sacrificing the vaccine's safety and quality.

Animal rights organizations have voiced their objections to animal testing despite researchers ensuring that they will adhere to ethical norms.

Jakarta Animal Aid Network (JAAN) founder Karin Franken said it was "ridiculous" to artificially induce different species in situations that they would never normally contract the virus, keep them in an "unnatural and stressful" environment, and try to apply the results of experiments on animals to human beings.

This was because physiological reactions to drugs "vary enormously" from species to species, she said. Animals in labs typically displayed behaviors indicating extreme psychological distress, she added, warning against possible invalid data produced from stressed lab animals.

"So, all these poor animals are suffering for nothing," Karin said.

In 2018, the People for the Ethical Treatment of Animals (PETA) published findings showing that 95 percent of pharmaceutical drugs that were tested safe and effective in animals failed in human clinical trials during experiments at the United States' medical research agency the National Institute of Health (NIH).

University of Indonesia (UI) health law researcher Djarot Dimas Achmad Andaru said, however, animal testing was not prohibited by ethical norms. Instead, the United Nations' Convention Against Torture and the UN Universal Declaration of Human Rights only forbid human trials that are inflicting "greater pain" or unnecessary damage as well as those carried out without consent.

Bio Farma's R&D project integration manager Neni Nurainy said researchers would prioritize the use of rats and house mice before using long-tailed macaques, also known as crab-eating macaques -- primates native to Southeast Asia and not considered an endangered species in Indonesia.

In the short term, Bio Farma is working with Sinovac Biotech, China's leading coronavirus vaccine developer, which has started mid-stage human trials for its candidate vaccine, to obtain the formulation, technology and active ingredients for a potential COVID-19 vaccine, she said. Bio Farma is also creating another vaccine from scratch with the Eijkman Institute.

Neni has said that it expects to start a pre-clinical trial for its vaccine with the Eijkman Institute next year, with a seed vaccine being pushed back to February 2021 from what was initially the end of 2020. The company also aims to commercialize its vaccine with Sinovac Biotech in the first quarter of 2021.

Indonesia needs to secure a minimum of 340 million ampoules of COVID-19 vaccine to accommodate at least 170 million people -- nearly two-thirds of the country's total population -- in the archipelago, Coordinating Economic Minister Airlangga Hartanto has said.

There are still no proven vaccines or antiviral drugs to treat COVID-19, with most patients only receiving palliative care. The World Health Organization (WHO) has listed 136 vaccines that are being developed worldwide as of June 9, with 10 already undergoing clinical trials.

<https://www.thejakartapost.com/news/2020/06/15/indonesian-covid-19-vaccines-to-undergo-strict-human-animal-testing.html>

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Daiichi Sankyo to develop Covid-19 vaccine candidate in Japan

Japanese pharmaceutical company Daiichi Sankyo is set to develop a mRNA vaccine candidate to protect against Covid-19 infection in the country.

Currently, the company is part of Covid-19 vaccine research and development (R&D) being led by the University of Tokyo.

The project, Fundamental Research on the Control of a Novel Coronavirus (2019-nCoV), is supported by the Japan Agency for Medical Research and Development (AMED).

In addition, the company is part of a basic, genetic (mRNA) vaccine research project, titled Development of a Genetic Vaccine for 2019-nCoV. This project leverages Daiichi Sankyo's nucleic acid delivery technology.

The technology is designed to form lipid nanoparticle structures, stabilise pharmaceutical active ingredients and deliver nucleic acids into immune cells, said to have shown the ability to trigger optimal immune response compared to standard vaccine technology.

In a pharmacological assessment with animal models, a prototype mRNA vaccine was found to increase antibody titers to SARS-CoV-2, the novel coronavirus, said the company.

Based on these findings, the company intends to prioritise the development of the mRNA vaccine and is considering an increase in scale to form a supply system.

The company aims to advance the vaccine into clinical studies by around March next year. It will use the 'New Influenza Vaccine Development and Production System Development Project' facilities to establish the supply system.

In a statement, Daiichi Sankyo said: "Through collaboration with the Ministry of Health Labour and Welfare, the Pharmaceutical and Medical Devices Agency (PMDA), our research partner the University of Tokyo, and other organisations, we will proceed with the research and development of this mRNA vaccine and make efforts to ensure that it can be supplied as soon as possible."

Last week, the company signed a basic agreement with the University of Tokyo, Nichi-Iko Pharmaceutical and RIKEN for R&D of a Nafamostat inhalation formulation to treat Covid-19.

<https://www.pharmaceutical-technology.com/news/daiichi-sankyo-plans-covid-vaccine/>