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समाचार पत्रों से चयित अंश Newspapers Clippings

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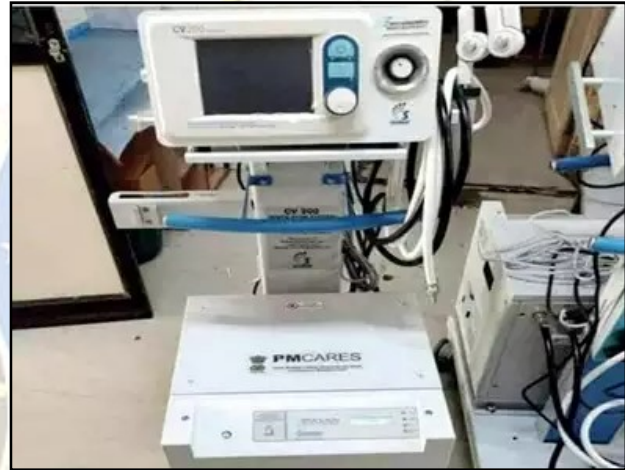
Ventilators to give a new lease of life

By Kumaran P

Bangalore: In mid-March, a team comprising a doctor from Bengaluru, a Mysuru-based company, Bharat Electronics Limited (BEL) and Defence Research and Development Organisation (DRDO) got to work to ensure that the country doesn't face a shortage of ventilators when the need arises.

Within a month, these experts manufactured a ventilator model, which was then clinically tested at two hospitals in the city-National Institute of Mental Health and Neurosciences (NIMHANS) and Ace Suhas hospital in Jigani. Now, these ventilators are being released under the PM CARES initiative.

Dr Jagadish Hiremath, CEO of Ace Suhas hospital and a key domain area expert, who worked with the team, told BM, "We started around March 15, when there were projections that we might need more than 15 lakh ventilators in the country to handle the crisis. The PMO took stock of the situation and directed the officers to find a solution. Bharat Electronics Limited (BEL) was contacted as they were the suppliers for another company. They were scouting for Indian makers. The main issue was we needed 30,000 ventilators by the end of June or July."



He said the Chairman and Managing Director (CMD) of BEL brought all their vendor systems together to procure the required items.

<https://bangaloremirror.indiatimes.com/bangalore/others/ventilators-to-give-a-new-lease-of-life/articleshow/76393738.cms>

क्या है DRDO का SUMERU PACK जाने

By Abhinav Tripathi

दिल्ली: डीआरडीओ के वैज्ञानिकों ने पाया कि पीपीई पहनने वाले 30 मिनट से अधिक समय तक पहनने के बाद बहुत असहज महसूस करते हैं। उन्हें पसीना आने लगता है और इससे स्थिति और बिगड़ जाती है। इस समस्या को हल करने के लिए, DRDO द्वारा व्यक्तिगत वायु संचलन प्रणाली विकसित की गई। सिस्टम को पीपीई के अंदर 500 ग्राम के छोटे बैकपैक के रूप में उपयोग किया जाना है। इसे SUMERU PACS नाम दिया गया है। वे पहनने वाले को पसीने से दूर रखते हैं।

कैसे काम करती है ये DRDO की SUMERU PACS मशीन ?

सिस्टम हवा से बाहर निकलता है और सामने की ओर खुलने से नम हवा बाहर जाती है। यह गर्दन और सिर के क्षेत्र को ठंडा करता है। यह प्रणाली डॉक्टरों और चिकित्सा कर्मचारियों के लिए अत्यधिक सहायक है जो अस्पतालों में छह घंटे से अधिक पीपीई पहनने के लिए मजबूर हैं।

<https://kanvkanv.com/technology/what-is-drdsos-sumeru-pack/>

DRDO Technology News

Business Today

Wed, 17 June 2020

BrahMos gets 'war-ready' amid India-China border stand off

The Sukhoi-30MKI fighter aircraft was inducted at Thanjavur IAF airbase equipped with BrahMos supersonic cruise missile in January

By Shiv Aroor

New Delhi: Amid the ongoing border standoff with China, the BrahMos air launched cruise missile has received clearance for combat use. The BrahMos armed SU-30 squadron was inaugurated earlier this year in January. "The fleet release clearance certification has paved the way for the pilots of the Indian Air Force (IAF) squadrons to use the missile during combat missions," BrahMos Corporation told India Today.

The Sukhoi-30MKI fighter aircraft was inducted at Thanjavur IAF airbase equipped with BrahMos supersonic cruise missile in January. The BrahMos-A is a supersonic land attack cruise missile capable of ranges in excess of 300 km.



The issuance of the fleet release clearance is the final step clearing the way for the Indian Air Force (IAF) to deploy the missile in a combat mission, if deemed necessary. To put it in simple words, BrahMos-A is now fully operational and war-ready.

Meanwhile, one officer and two jawans of the Indian Army lost their lives in a violent scuffle which took place between Indian and Chinese Armies at Galwan Valley in Ladakh on Monday night. It follows weeks of rising tensions and the deployment of thousands of extra troops from both sides. "A violent face-off took place yesterday (Monday) night with casualties. The loss of lives on the Indian side includes an officer and two soldiers," an Indian army spokesman said in a statement.

The tensions between the Indian and Chinese armies have been high for the last few weeks over border related issues in Ladakh. The situation in eastern Ladakh deteriorated after around 250 Chinese and Indian soldiers were engaged in a violent face-off on the evening of May 5 which extended over to the next day before the two sides agreed to disengage. But, the standoff continued.

<https://www.businesstoday.in/current/economy-politics/brahmos-gets-war-ready-amid-india-china-border-stand-off/story/407087.html>

DESIGN oneindia®

Wed, 17 June 2020

BrahMos missile gets clearance amid India-China border stand off

By Simran Kashyap

New Delhi: Amid the ongoing border standoff with China, the air-launched Brahmos had received combat clearance before the India-China troops clashed on Tuesday.

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) thereby becomes the first indigenous weapon to get the critical FRC.

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



Representational Image

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.

The BrahMos is a medium-range ramjet supersonic cruise missile that can be launched from submarine, ships, aircraft, or land. It is the fastest supersonic cruise missile in the world.

It is a joint venture between the Russian Federation's NPO Mashinostroyeniya and India's Defence Research and Development Organisation (DRDO), who together have formed BrahMos Aerospace.

It is based on the Russian P-800 Oniks cruise missile and other similar sea-skimming Russian cruise missile technology. The name BrahMos is a portmanteau formed from the names of two

rivers, the Brahmaputra of India and the Moskva of Russia. It is the world's fastest anti-ship cruise missile in operation.

The missile travels at speeds of Mach 4, which is being upgraded to Mach 5.0. The land-launched and ship-launched versions are already in service, with the air and submarine-launched versions currently in the testing phase.

<https://www.oneindia.com/india/brahmos-missile-gets-clearance-amid-india-china-border-stand-off-3105594.html>

Defence News

Defence Strategic: National/International

THE TIMES OF INDIA

Wed, 17 June 2020

Misguided dragon – playing with fire

By Lt Gen Abhay Krishna

This summer, India was in the process of completing construction of a road network as also related infrastructure up to Daulat Beg Oldi (DBO) well within her territory, to ensure quick supply lines if the need arises. The strategic importance of DBO (Eastern Ladakh) which is adjacent to the Chip Chap river and nine km West of the Line of Actual Control (LAC) with aerial distance to the Karakoram Pass from DBO being just 10 km, is well-established. India has never raised any objection to China building roads and other infrastructure up to the LAC on their side; but somehow, whenever India tries to build anything for the benefit of her own populace for giving them better facilities for living, then China always has serious objections to it. Citing perception difference, as if a birth right of theirs, China continues to keep the friction points alive with repeated transgressions all along the LAC.

This helps them to build a historical documented record of dispute for generation after generation to see. India has always conducted itself as a very responsible and mature Nation abiding by the various LAC-related peace and tranquillity agreements that have been signed with China over the years. It is a matter of record that while India undertakes construction activities in the vicinity of the LAC on its own side, China keeps violating the same adding to the number of such incidents every year all along the LAC from Arunachal Pradesh to Ladakh. And as evident from violent incidents of night 15-16 Jun China also aims to keep creating fresh friction points to suit their devious motives.

Current transgression

The violent incident of night 15-16 June at Galwan valley has undoubtedly taken the Indian army by surprise as such a pre-planned violent aggression on part of the PLA could never be anticipated at this stage when simultaneous talks at many levels were going on for de-escalation. PLA soldiers were prepared with steel rods and stones to execute a premeditated assault followed by a pre-planned information war campaign narrative spreading a blatant lie that the Indian army had come close to PLA camp which resulted in this unwarranted scuffle leading to loss of life on both sides.

To say that it is a blatant lie on their part will be an understatement. It was a very well thought out and well executed action to inflict casualty without firing a bullet on unsuspecting Indian Army troops camping close by followed by a blame game to make India look very irresponsible in the

eyes of the world. The present transgression by China in the area of Pangong Tso, therefore, is nowhere similar in pattern to their routine patrol transgressions which keeps taking place every year all along the LAC. By executing a violent action China has very cleverly tried to convey to India as also to the rest of the world that China will not hesitate to drop dead bodies when provoked, but at the same time despite such a provocation by India, China being a responsible power (self-proclaimed) will still choose to offer India a chance for mutual understanding and peace by agreeing to de-escalate the standoff. A very diabolical and devious strategy comes out, indeed akin to a rouge state. By falsely labelling India as an aggressor in this incident China is very cleverly denying the current narrative to draw parallel with Pulwama and Balakot narrative. It is obvious that if China had not started spreading lies right from early morning then only one narrative would have prevailed in the country uniting the national sentiments.

China's intentions

Several face offs keep taking place, but India has never raised any additional territorial claim on China. However, it seems quite possible that India's move to connect with DBO through land route has perhaps, made China apprehensive of India challenging their interests especially with respect to Aksai Chin sooner than later. With India's tight control over Siachen and DBO, China seems apprehensive that India's option of taking away Gilgit Baltistan is becoming more viable. China's high stake in both the China-Pakistan Economic Corridor (CPEC) and Daimar Bhasha Dam in Gilgit Baltistan, thus adds to their fear.

What could be China's end game in the current ongoing violent standoff in Eastern Ladakh? In all probability, the Dragon is trying to intimidate and pressure testing India's resolve to continue with the ongoing construction of road network and other connected infrastructure development. At this stage does India have an option to back track and succumb to the pressure and let China have its own way? The answer is not so difficult to find. Notwithstanding the violent incident of Galwan valley, Dragon just cannot afford any military confrontation with India at this juncture when it has already opened up a number of fronts with most of the world powers. Global sentiment against China is at its peak, with a dwindling economy, falling GDP, an exodus of international investors, millions of Chinese going unemployed with losing market, CPEC in the dumps, and rising Uyghurs insurgency in the restive Western region with porous borders.

China's single most trustworthy ally, Pakistan, is also now in a state of turmoil, struggling between abiding with Chinese interests or towing the US line to save itself from getting disintegrated due to economic bankruptcy and rising unrest getting out of control in provinces of Baluchistan, Khyber Pakhtunkhwa and Gilgit Baltistan.

The current intrusion into Indian territory by China, disregarding every agreement signed with India for ensuring peace and tranquility on the LAC, adequately demonstrates the prevailing deep sense of fear in their mind that sooner or later, India may take back Gilgit Baltistan to heal the wounds of Kashmir as also threaten Aksai Chin and their critical Western highway passing through it. With Gilgit Baltistan falling in India's lap, India will get land route access to Afghanistan and the Central Asian Republic region.

The past two decades of China's growth as a powerful Nation at the global level, has brought in lot of changes in their approach and specially so, in dealing with their immediate neighbours. China has 14 immediate neighbours and presently they have strained relations with 11 of them. It is possible that their devious expansionist nature arising out of arrogance of having achieved a \$13tn economy, has taken the better of their rational thinking as a matured nation. The present incursion by the People's Liberation Army (PLA) is, therefore, considered a very immature conduct on part of a country like China that presently looks at itself as a rising global power both economically and militarily. It is a strange contradiction that on the one hand, China is sending messages to India through their CCP mouth piece called Global Times that India should stay away from getting involved in their conflict with the US and on the other hand, China provoking through unwarranted violence is building a conflict-like situation with India in Ladakh.

China knows very well that they are at a great disadvantage for various tactical, technical and administrative reasons in waging a localized border level conflict with India anywhere on the LAC,

Besides the mountainous terrain favouring India barring a few geographical pockets as also military equipment parity in high altitude terrain, the biggest strength which India enjoys is that Indian Army soldiers are not only very battle-hardened, well acclimatised with unlimited stamina to operate under very adverse conditions; but also are highly motivated and committed to do or die for their Nation unlike the soldiers of the PLA which actually belongs to CCP and not to the Chinese Nation. China has fought no war since the one in 1979 in which they had to make a hasty retreat to save themselves.

The Indian Navy and Indian Air Force are adequately geared up to take care of the skies and Indian Ocean Region through which more than 70 percent of China's trade takes place. So, they stand to gain nothing. Thus, if India builds up military resources and conveys firmly their intent of being ready to escalate the present level, if required, then either China will seek a face-saving opportunity to back off or alternatively choose to raise the level of conflict by getting into other domains of warfare like cyber and aerospace including use of ICBM where they have an edge over India today. However, if we graduate to that level of escalation, then the war between the two nations will certainly go beyond regional control giving adequate reasons for the US and other world powers to get directly involved in support of India to settle scores with China.

Thucydides trap

India will suffer losses in trying to teach China a hard lesson, but it won't be without a worthwhile pay back. No matter what belligerence the Dragon may demonstrate outwardly, the CCP is definitely clever enough to understand that a war with India at this stage will push the Dragon back in time by decades from its dream of becoming a global power and competing with the US. It will once again prove right what Thucydides Trap says, that whenever a rising power starts posing a challenge to the prevailing global superpower as well as the rest of the world, it has resulted into a world war. Is China ready to face the similar consequences what historically since 16th century every rising power has faced while challenging the existing global superpower of that century. If this happens, the CCP will be doomed to exist anymore thereafter. Now the time has, therefore, come for the silent People of China to wake up and drive home some sense into the CCP.

Options for India

India must continue to consolidate its military strength extending from land borders to the maritime zone for a possible wider conflict if the need so arises. India must also leverage from the prevailing situation in Hong Kong, Taiwan, Tibet and Xingjiang with restive Western borders besides adopting a firm position at the World Health Organisation (WHO). India has accommodated China for far too long right from Panchsheel to Wuhan. We are now in 21st century and India is no more the same what China had last militarily experienced in 1962. Military coercion mantra, therefore, will not work anymore, whatever be the cost.

Today, all Indians need to stand together as a fortress and not get influenced by the information warfare in which China has an edge. The pseudo arm-chair intellectuals must guard against attributing success to China in its coercion tactics adopted against India through such intrusions. Negative comments based on lack of understanding essentially with the sole aim of showing the Government of India in bad light, acts as a psychological dampener specially for the younger generation which must be avoided in the best interest of national security.

Way ahead for the Chinese people

Countries across the world are noting China's increasing coercion and aggression since the last few years leading to a coalition of the willing and rule-based countries in various spheres. The effect of these has already started to take shape at the global level and especially in the Asia-Pacific Region. Chinese strategy has started to backfire with trade rivalries and resulting hostility with several countries.

Today at this juncture one is reminded of the time when Chairman Mao Zedong was still alive, Deng had provided a definition of a superpower in a speech at the United Nations in 1974. To quote, he said "A superpower is an imperialist country which everywhere subjects other countries

to its aggression, interference, control, subversion or plunder and strives for world hegemony. “Unquote. In fact, in the same address Deng went much further than promising that China would never behave like a superpower. Making such an extraordinary exhortation he said that, “If one day should China change her colour and turn into a superpower, if she too should play the tyrant in the world, and everywhere subject others to her bullying, aggression and exploitation, the people of the world should identify her as social-imperialism, expose it, oppose it and work together with the Chinese people to overthrow it.” Later in 1978, when Deng emerged as China’s new paramount leader after the death of Mao, he made a promise to members of a visiting delegation from Madagascar and, through them, to the developing countries of the Third World that even after China had become a powerful modern state, it would never seek hegemony.

Those were the strong words which China’s leaders of today must remember to keep in their mind. Time has, therefore, come for the common people of China to rise and demand a say in how the country is being run by one single party. Hopefully, before it is late, some good sense will also prevail from within the CCP to consider giving up aggression and confrontation and instead re-evaluate the potential of cooperation and collaboration and especially with a country like India which can give them a great economic and geographical leverage.

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

<https://timesofindia.indiatimes.com/blogs/voices/misguided-dragon-playing-with-fire/>



The Sentinel
of this land, for its people

Wed, 17 June 2020

Expansionist China continues to push borders behind the News

***Since there is no defined border but a LAC it is always easy to push the envelope,
but the prism through which the Chinese view this is most often different***

New Delhi: "There was a meeting with Chinese Vice Foreign Minister Luo Zhaohui at the (Chinese) foreign ministry" during which what happened at the Line of Actual Control (LAC) on Monday was discussed, said Indian Ambassador in Beijing Vikram Misri. When asked if China has lodged the protest, Misri said, "Yes, it was mentioned in the meeting," but clarified that he was not summoned.

Pot calling the kettle black as China is repeatedly talking of Indian provocation, lies and prevarication taking centre stage. Since there is no defined border but an LAC, it is always easy to push the envelope, but the prism through which the Chinese view this is most often different from the way we view it in New Delhi.



The resultant savagery from the Chinese side cannot be condoned. It is an abomination. And this comes immediately after Indian and Chinese soldiers brawling at Pangong lake in Ladakh earlier in May, leading to a bust up which left many in hospital. Transgressions have been reported in at least three spots: the confluence of the Galwan and Shyok rivers; the Hot Springs area; and the northern bank of Pangong lake. Clearly the tension was building up.

REWIND: On January 11, 1966, Prime Minister Lal Bahadur Shastri died in Tashkent, a feisty young Indira Gandhi took charge in a faction-ridden Congress party where the Kamaraj-led Syndicate called the shots. The Syndicate was all-powerful — K. Kamaraj, the former Chief Minister of Madras; Neelam Sanjiva Reddy, an Andhra leader; S. Nijalingappa, Chief Minister of Mysore state; and Atulya Ghosh, the president of the Bengal Congress Committee, along with Maharashtra leader S.K. Patil.

Against this backdrop comes one of India's finest military victories in a distant place called Nathu La and Cho La. The Chinese, who revel in their military might, have received a bloody nose twice in recent memory — a disaster called Nathu La in 1967 followed years later with the Sino-Vietnam war, where the unceasing waves were taught a lesson in 1979.

Nathu La can be described as a largish skirmish, but it resulted in the deaths of 300 to 400 Chinese soldiers. More than 80 Indian soldiers were killed. In many ways, like the 73-day-long Doklam standoff and now Galwan Valley, what began in Nathu La are mirror images.

Nathu La also began with pushing, jostling and shoving. As has Galwan Valley, although the pushing and shoving has got out of hand with Chinese troops encircling our men and resorting to serious hand-to-hand combat. Nathu La was a result of the Chinese being irked over the Indian military presence in Sikkim, then a protectorate of India, while Doklam is at the tri-junction of Bhutan, India and China, where India has the heights and the Chinese the valley below.

The aggressive mien being displayed by a muscular China has been ceaselessly pushed repeatedly with as many as 326 incursions in 2018, 426 border transgressions in 2017, on the back of 273 in 2016. Many of these have resulted in actual physical contact between the two sides with the Indian Army keeping the PLA at bay.

The new Chinese mindset is a result of anger over India's infrastructure buildup across the undefined border running for over 4,057 km from Ladakh to Arunachal. With no commonly delineated Line of Actual Control (LAC) between India and China and there are areas where both sides have differing perceptions about it.

In January this year, the Indian Army conducted its biggest airborne exercise called the 'Winged Raider' comprising more than 500 special forces troops in the North-Eastern theatre.

The exercise conducted on January 10 had over 500 soldiers of the Special Forces parachuting from C-130 Hercules and C-17 Globemaster transport aircraft of the Indian Air Force, besides Dhruv helicopters during the day and night.

Previously in October last year, the Army carried out Exercise 'Him Vijay' to test its new war-fighting concept of Integrated Battle Groups (IBG) in mountain warfare under the 17 Corps in Arunachal Pradesh.

An IBG, which has a varying mix of infantry, tanks, artillery, air defence, signals and logistics, is part of the Army's plan to restructure itself to meet emerging challenges. A capacity building strategy, which includes building roads to forward areas, habitats, storage for ammunition and moving advanced weapons systems to the eastern side is what worries an expansionist China.

It must be added here that for the first time in years due to lower levels of insurgency, the Army did pull out two battalions amounting to approximately 1,500 troops from the Northeast earlier this year. But bulking up remains at the core of its north eastern plans viz., China.

Ground Zero reports say that four infantry mountain divisions (each with over 15,000 combat troops and 8,000 support elements) under the 3 Corps (Dimapur) and 4 Corps (Tezpur), with two more divisions in reserve, are for example tasked for the defence of Arunachal Pradesh alone.

The troop density at Tawang, which China claims to be part of south Tibet, is particularly high to thwart any nefarious designs. Then, of course, the new 17 Mountain Strike Corps and associated units, with a total of 90,274 soldiers for "quick-reaction ground offensive capabilities", will be fully raised by 2021-2022. After the 59 Infantry Division of 17 Corps became fully operational at Panagarh (West Bengal), the 72 Infantry Division, to be headquartered in Dehradun, is now taking shape, with its first brigade to be raised at Roorkee.

Despite a depleting squadron strength, two full Sukhoi-30 squadrons armed with the Brahmos have been readied at Tezpur. Further, an Akash SAM squadron has been deployed at the airbase. China has three airbases just 350 km from Tezpur. Similarly, more Sukhoi-30s are parked at Chabua, also in Assam.

The controversial Rafales, when they arrive, will be stationed at Hasimara airbase in West Bengal to replace the ageing MiG-27s. The second Rafale squadron is expected to be stationed at Sarsawa base in Uttar Pradesh.

The IAF has already activated the advance landing ground (ALG) at Tuting, in Arunachal's Upper Siang district. It is the sixth such ALG to be made operational in Arunachal apart from the ones in eastern Ladakh, all with China in their crosshairs. The Panagarh base in West Bengal is also set to get its six C-130J Super Hercules aircraft. Panagarh, of course, is also going to be the headquarters of the Army's new 17 Mountain Strike Corps being raised with two high-altitude infantry divisions, apart from other armoured, artillery, air defence and engineer brigades spread from Ladakh to Arunachal.

China has to understand that in this constant territorial standoff India has the sovereign right to protect its territory. The border infra buildup is obviously being viewed by China with great trepidation, but India will not succumb to these ruthless pressure tactics by the Chinese. (IANS)

<https://www.sentinelassam.com/topheadlines/expansionist-china-continues-to-push-borders-behind-the-news-483217?infinitescroll=1>

THEWEEK

Wed, 17 June 2020

Clear warning of Chinese intentions for 4 weeks, says ex-Army officer

Panag called the clash at Ladakh the Modi government's "Kongka La" moment

Retired officers of the armed forces and defence analysts have expressed alarm at the "violent" faceoff between Indian and Chinese Armies at Ladakh on Monday night. An Indian Army colonel and two soldiers were killed in the incident, which is the first fatal clash between India and China in 45 years.

Retired Lt-General H.S. Panag tweeted he was "Deeply anguished that we came this pass despite clear warning of Chinese intentions for last 4 weeks". Panag called the clash at Ladakh the Modi government's "Kongka La" moment, adding "What we were hiding is out in the open". In October 1959, nine Indian soldiers were killed when they clashed with Chinese troops at the Kongka Pass on the border with Tibet. The Kongka La incident led to the worsening of ties between India and China, culminating in the war of 1962.

Panag, currently a noted defence analyst, had commanded the Northern Command and Central Command of Indian Army during his four-decade long tenure. In an article in *The Print* on June 4, Panag had warned China had taken control of "approximately 40-60 square km of Indian territory in three different areas" and was negotiating with India from a "position of strength". Panag argued the Narendra Modi government and Indian military had "gone into 'denial' about any loss of territory, attributing the present situation to differing perceptions about the LAC." Panag even warned that if a diplomatic solution to the dispute at Ladakh was not found, "China has come prepared for a border skirmish or a limited war."

Retired Indian Navy commodore C. Uday Bhaskar tweeted that the clash at Ladakh was a serious development that needed a response that was "calibrated but resolute". Bhaskar noted India had to counter "China's use of 3 warfares framework & shaping of narrative". The "three warfares" strategy—consisting of public opinion warfare, psychological warfare and legal warfare—is considered by many experts as a key element of China's attempts to meet its geopolitical goals without going to war.

Noted strategic commentator Brahma Chellaney tweeted the clash at Ladakh was a "major escalation". Chellaney tweeted, "China's stealth occupation of some vantage locations in Indian Ladakh marked a major escalation. The killing of an Indian Army colonel and two soldiers makes it worse. By starting a conflict with India, Xi is creating a climate hostile to the realization of his 'Chinese dream'."

In another tweet, Chellaney declared, "... The invading Chinese forces did not start a 'physical brawl' with Indian troops but an 'armed confrontation' in which they used a variety of improvised weapons other than guns."

<https://www.theweek.in/news/india/2020/06/16/clear-warning-of-chinese-intentions-for-4-weeks-says-ex-army-officer.html>



Wed, 17 June 2020

China reacting to India ties with Quad?

The Galwan clashes, the bloodiest India and China have ever experienced since at least 1975, shows the rising ferocity of the India-China engagement on the borders. With one of the largest losses in recent years, an Indian retaliation is assured. But on a larger scale, China lost India on Tuesday.

In many ways, this government, like previous ones, has been guilty of being almost indulgent of Chinese intrusions into Indian territory which have become more insistent and violent in the past few years. The stock explanation from ministers, even the defence minister, is about "differing perceptions of the LAC". In fact, it may be this that has emboldened the Chinese to take greater liberties. At this point, the Chinese are well entrenched in Pangong Tso, while the Galwan Valley has become a face-off point. In far away Naku La, a Chinese presence has persisted at a place between the point India sees as the LAC (a ridge) and a stone wall (which China claims is the LAC).



It is to be seen whether the de-escalation process continues or whether the Chinese dig in even further. At any rate, even without further clashes, the stand-off is likely to continue through the summer and get more belligerent. India has promised to continue building its border infrastructure, even as the risk of inviting further face-offs with the Chinese.

Why China undertook these intrusions into Indian territory remains the top question of this year. The best guess scenario involves punishing India for its greater involvement with "anti-China" allies like the Quad. It could be a consequence of Xi Jinping needing to divert attention away from a series of troubles like Hong Kong, economic slump and a slow de-coupling with the US. It could also be a way to send a message to the US and other countries who China believes is ranged against it — by messing with India, putting it off balance and humiliated with loss of men and territory.

China may have seriously miscalculated. For one, India is now almost politically bound to take action, if the Modi government isn't to be seen as a global walkover. Second, China's actions in the past weeks achieved precisely the opposite of what it wanted — it has pushed India into much closer partnerships with the west. Third, much more than a military retaliation, India is likely to take more economic steps against China.

Certainly, this year will not see a Wuhan-III. The India-China 70th anniversary celebrations have just been shot to pieces — PM Narendra Modi and Xi had planned 70 events this year. Modi will not visit China, not with the deaths of 20 Indian soldiers and officers on his mind. On the multilateral front, with India in the UN Security Council, New Delhi is likely to push back against China appropriating the top jobs in the UN.

After India put Chinese investments on a prior approval list, there is talk in the government of slowly weaponising the Indian market which, frankly, is the largest that China can hope for now.

Chinese companies are unlikely to get Indian government — or many private sector — contracts any time soon.

Most important, Huawei's already dim chances of bagging India's 5G market just got a lot dimmer. But first, India will have to work much harder to get the Chinese off Indian territory.

<https://idr.w.org/china-reacting-to-india-ties-with-quad/#more-229325>



Wed, 17 June 2020

How the South China Sea situation plays out will be critical for India's security

The Singapore Prime Minister Lee Hsien Loong's perceptive essay in the latest issue of Foreign Affairs cogently spells out the dilemma that confronts Singapore, and indeed the rest of us in the Indo-Pacific, as the two most consequential powers of the world, the United States, which PM Lee calls the "resident power", and China, which he says is "the reality on the doorstep", are engaged in a fundamental transformation of their relationship. Almost nobody any longer thinks that China will conform to the US worldview, or that China's rise from hereon will be unchallenged.

The Indo-Pacific has prospered under American hegemony for the previous 40 years not just because of their huge investments — \$328.8 billion in the Association of Southeast Asian Nations (ASEAN) alone and a further \$107 billion in China — but also because of the security blanket that it provides. China might have replaced the US as the primary engine of growth in the last decade, but it has come with a cost — the assertion of Chinese power.



Difficult as it might be to admit, the truth is that the benign American military presence has afforded countries the opportunity to pursue economic prosperity without substantial increases in their own defence expenditures or having to look over their shoulders. No group of nations has benefitted more from the presence of the US than the ASEAN.

Chinese military postures, on the other hand, give cause for concern ever since they unilaterally put forward the Nine-Dash Line in 2009 to declare the South China Sea as territorial waters. Their territorial claim itself is tenuous, neither treaty-based nor legally sound. They act in ways that are neither benign nor helpful for long-term peace and stability. In the first half of 2020 alone, Chinese naval or militia forces have rammed a Vietnamese fishing boat, "buzzed" a Philippines naval vessel and harassed a Malaysian oil drilling operation, all within their respective EEZs. Since 2015, they have built a runway and underground storage facilities on the Subi Reef and Thitu Island as well as radar sites and missile shelters on Fiery Cross Reef and Mischief Reef. They conducted ballistic missile tests in the South China Sea in June 2019 and continue to enhance naval patrols to enforce area denial for others.

PM Lee is absolutely correct in that going forward, the US and China face fundamental choices. But then, so do the rest of us living in the Indo-Pacific. America's role in the preservation of the region's peace and security should not be taken for granted. As COVID imposes crushing costs on all economies, the US may also be weighing its options. Finding justification for Chinese actions in the South China Sea, even as countries in the region help themselves to Chinese economic opportunities while sheltering under the US security blanket, is also fraught with risk. Accommodation may have worked thus far but regional prosperity has come at a mounting cost in

geo-strategic terms. The South China Sea is effectively militarised. In the post-COVID age, enjoying the best of both worlds may no longer be an option.

Yet nobody should expect that ASEAN will suddenly reverse course when faced with possibly heightened Sino-US competition. China is a major power that will continue to receive the respect of ASEAN and, for that matter, many others in the Indo-Pacific, especially in a post-COVID world where they are struggling to revive their economies. ASEAN overtook the European Union to become China's largest trading partner in the first quarter of 2020, and China is the third-largest investor (\$150 billion) in ASEAN. The South East Asians are skilled at finding the wiggle room to accommodate competing hegemonies while advancing their interests. This does not, however, mean that they are not concerned over Chinese behaviour in the South China Sea. They need others to help them in managing the situation.

A robust US military presence is one guarantee. A stronger validation by the littoral states of the South China Sea helps the US Administration in justifying their presence to the American taxpayer. Others who have stakes in the region also need to collectively encourage an increasingly powerful China to pursue strategic interests in a legitimate way, and on the basis of respect for international law, in the South China Sea. The real choice is not between China and America — it is between keeping the global commons open for all or surrendering the right to choose one's partners for the foreseeable future.

How the South China Sea situation plays out will be critical for our security and well-being. In the first place, the South China Sea is not China's sea but a global common. Second, it has been an important sea-lane of communication since the very beginning, and passage has been unimpeded over the centuries. Third, Indians have sailed these waters for well over 1,500 years — there is ample historical and archaeological proof of a continuous Indian trading presence from Kedah in Malaysia to Quanzhou in China. Fourth, nearly \$200 billion of our trade passes through the South China Sea and thousands of our citizens study, work and invest in ASEAN, China, Japan and the Republic of Korea. Fifth, we have stakes in the peace and security of this region in common with others who reside there, and freedom of navigation, as well as other normal activities with friendly countries, are essential for our economic well-being. In short, the South China Sea is our business. We have historical rights established by practice and tradition to traverse the South China Sea without impediment. We have mutually contributed to each other's prosperity for two thousand years. We continue to do so. The proposition that nations that have plied these waters in the centuries past for trade and other peaceful purposes are somehow outsiders who should not be permitted to engage in legitimate activity in the South China Sea, or have a voice without China's say, should be firmly resisted.

In return, we too have to be responsive to ASEAN's expectations. While strategic partnerships and high-level engagements are important, ASEAN expects longer-lasting buy-ins by India in their future. They have taken the initiative time and again to involve India in Indo-Pacific affairs. It is not as if our current level of trade or investment with ASEAN makes a compelling argument for them to automatically involve us. They have deliberately taken a longer-term view. A restructuring of global trade is unlikely to happen any time soon in the post-COVID context. Regional arrangements will become even more important for our economic recovery and rejuvenation. If we intend to heed the clarion call of "Think Global Act Local", India has to be part of the global supply chains in the world's leading growth region for the next half-century. It is worth paying heed to the words from Singapore's prime minister, who writes that something significant is lost in an RCEP without India, and urges us to recognise that the value of such agreements goes beyond the economic gains they generate. Singapore is playing the long game. Are we willing to do so, even if it imposes some costs in the short-term?

<https://idr.org/how-the-south-china-sea-situation-plays-out-will-be-critical-for-indias-security/#more-229313>



Wed, 17 June 2020

Increase in Chinese chopper activity across LAC to airlift casualties suffered in face-off: Report

Indian and Chinese troops have disengaged at Galwan area where they had earlier clashed on the night of 15/16 June, reported news agency ANI. 17 Indian troops, who were critically injured in the line of duty at stand-off location, succumbed to their injuries after being exposed to sub-zero temperatures in the high altitude terrain, the report said quoting the Indian Army.

India lost 20 soldiers including 3 who martyred during the face-off. Meanwhile, the ANI report quoting sources said that an increase in the Chinese chopper activity was observed across the LAC to airlift casualties suffered by them during the face-off with Indian troops in Galwan valley.

Indian intercepts also revealed that Chinese side suffered 43 casualties including dead and seriously injured in a face-off in the Galwan valley, sources confirmed to ANI

<https://idrww.org/increase-in-chinese-chopper-activity-across-lac-to-airlift-casualties-suffered-in-face-off-report/>

THEWEEK

Wed, 17 June 2020

As India-China talks continue, 1,600 workers to join road projects in Ladakh

A special train with workers from Jharkhand reached Udhampur in Jammu on Monday

By Pradip R Sagar

As the militaries of India and China make efforts to disengage from the standoff points to defuse the tension prevailing for nearly two months on the border in eastern Ladakh, over 1,600 workers are on their way to Leh to rejoin the construction projects of Border Roads Organisation in Ladakh. Commanders of Indian Army and Chinese PLA are doing multiple meetings to keep the situation under control on the disputed border. Even on Monday, a meeting between brigade commanders happened close to the patrolling point in Galwan valley.

A special train with workers from Jharkhand reached Udhampur in Jammu on Monday morning, who will go further to Leh and other areas in Ladakh, according to a senior government official.

It is notable that the road construction by India has always triggered the face-offs between Indian Army and the Chinese People's Liberation Army (PLA), including the recent ones. The latest troop build-up by Indian Army and PLA at multiple locations on Galwan valley was also



Border Roads Organisation at work | BRO website

due to Chinese objection to Darbuk-Shyok-Daulat Beg Oldi (DBO) Road in Ladakh, which provides access to Depsang plain, Galwan valley and Karakoram pass. This strategic road was completed by the Border Roads Organisation (BRO) exactly a year ago. The road is opposite to the Aksai Chin plateau, which is under the occupation of China. Galwan river, which is a 1962 flashpoint that saw Chinese aggression, has once again become a flashpoint between the two sides.

Despite objection from China, India has already made it clear that infrastructure build-up along border, including Ladakh, Uttarakhand, Sikkim and Arunachal Pradesh, will continue.

Construction activities of the BRO were affected due to nationwide lockdown because of COVID-19 pandemic. Several special trains have been planned to bring back labourers from states like Jharkhand, Bihar and Odisha to restart the construction activities on the remote areas of border. Earlier this month, the Jharkhand state government expressed its displeasure over payment and other welfare facilities provided to migrant labourers by BRO. In response, BRO headquarters responded to the Jharkhand government by detailing all perks and other medical facilities to migrant labourers. After intervention by the Central and state governments to provide employment opportunities to migrant labourers, officials of BRO signed an agreement with the state government finishing the role of middlemen in the registration process.

Five more such trains carrying migrant labourers from districts of Pakur, Sahibganj, Dumka and Godda will leave from Dumka this month after the mandatory registration of labourers is completed at their respective districts. BRO will recruit over 11,800 workers from Jharkhand for critical projects.

Building roads leading to the disputed Line of Actual Control, considered as the world's largest disputed or unresolved border, has been a fraught exercise for the government. India-China border roads on Himalayan frontier were conceptualised in the late 1990s by a consultative group called the China Studies Group, subsequently cleared at the highest level of the Cabinet Committee on Security and given the go-ahead for construction in 1999.

Till then, Indian forces were following an old military belief that if roads were metalled, they would provide easier mobility to the enemy (Chinese) in the event of hostilities.

Eventually in 2012, the government identified 73 roads of 3,812 km length for construction along India-China border.

While asking for higher budgetary allocation for the Border Roads Organisation, an arm of the ministry of defence, a parliamentary panel in March 2019 flagged the ICBRs (India-China border roads) as a crucial element in “effective border management, security and development of infrastructure in inaccessible areas adjoining the China Border”.

BRO is constructing 61 India-China Border Roads with total length of 3,346 km (across the Himalayan frontier) along the country’s northern border with China, spread across Arunachal Pradesh, Jammu and Kashmir, Sikkim, Uttarakhand and Himachal Pradesh.

The Cabinet Committee on Security last year had also cleared the construction of 44 more “strategically important roads” along the India-China border with cost of around Rs 21,040 crore.

The overall budget allocation of BRO between 2009 to 2014-15 generally remained stagnant at around Rs 4,000 crore. But in last couple of years, there has been a huge jump in the budgetary allocation of BRO, reaching Rs.5,400 crore in 2018, and going up to Rs 8,000 crore in 2019-20 financial years. And it is expected to cross Rs 10,000 crore in 2020-21; infusion of capital fund has also increased.

The Standing Committee on Defence, in its 2017-2018 report, noted that “the country, being surrounded by some difficult neighbours, with a view to keeping pace, construction of roads and development of adequate infrastructure along the borders is a vital necessity”.

When the CAG, in 2016, pointed to cost escalation, as BRO had spent 98 per cent of allocated budget for 61 India-China border roads for completing only 22 roads, the ministry of defence made a submission that main reason for cost escalation was time overrun, which occurred due to delay in forest wildlife clearances, restricted working season, inadequate air logistics support, terrain and technical constraints, extreme remoteness of the area, resulting non-availability of skilled labour and inadequate availability of construction material. It also blamed survey technology used at the time of planning these ICBRs in 1997-99, as accuracy was not up to the mark and it led to inferior estimation compared with modern-day survey techniques.

<https://www.theweek.in/news/india/2020/06/16/as-india-china-talks-continue-1-6-workers-to-join-road-projects-in-ladakh.html>

Galwan: 10 things to know about the latest India-China battle at 14,000 ft

At least 20 Indian soldiers were killed in a face-off with Chinese. There are no details on Chinese toll yet

At least 20 Indian Army personnel lost their lives at the hands of Chinese troops during a faceoff at Galwan, the new trouble spot along the Line of Actual Control (LAC), as two nuclear armed powers took to fighting with sticks and stones at a height of 14,000 feet.

Casualties took place on both sides, an Indian Army statement said. However, there are no details on the Chinese toll yet.

Following the killings last night, the situation is now poised on a dagger's edge at the site where de-escalation was in process after several weeks of tense standoff. A significant number of Indian and Chinese troops had been locked in an eyeball-to-eyeball confrontation in Galwan Valley and a few other spots in eastern Ladakh for weeks.

Here we collate 10 significant things about the place that has suddenly found itself at the centre of frantic media coverage.

1. The Indian casualties include an officer and 19 soldiers. It has been reported that the Army officer killed in the clash was the commanding officer of a battalion at Galwan. The last time such a thing happened was in Tung La of Arunachal 45 years ago, way back in 1975, when four Assam Rifles men had been killed.

2. The situation turned worse after around scores of soldiers were engaged in a violent face-off on May 5-6 at Pangong Tso, following which another similar episode occurred at north Sikkim three days later.

3. The faceoff took place during the de-escalation process underway in the Galwan Valley. The incident comes days after Army Chief General Naravane said both sides have begun disengaging "in a phased manner" from the Galwan Valley. "We have started from the north, from the area of the Galwan river where a lot of disengagement has taken place. It has been a very fruitful dialogue that we have had," said the General.

4. No bullets were fired in the clash; instead, stones and clubs were used, according to sources. According to reports, the Army men died due to injuries sustained from stone-pelting by the Chinese. However, there is no official word on it, news agency PTI said.

5. The two armies are engaged in a standoff in Pangong Tso, Galwan Valley, Demchok and Daulat Beg Oldie in eastern Ladakh. A significant number of Chinese troops have transgressed into the Indian side at several places including Pangong Tso. The latest border feud was triggered after China took offence with India laying a key road in the Finger area around the Pangong Tso Lake. The road is crucial for India to carry out patrol. Another factor was the construction of another road connecting the Darbuk-Shayok-Daulat Beg Oldie road in Galwan Valley.

6. The border crisis started at Eastern Ladakh when Chinese troops intruded at four locations and set up forces in depth. In early May, China began building up in strength along the LAC in Eastern Ladakh. This included heavy vehicles, tanks, artillery and more than 6,000 troops.

7. The ongoing standoff at Ladakh different from earlier episodes like Depsang and Chumar. This is not a clash triggered during patrolling. This is a well-thought out move on China's part to pressure India simultaneously at multiple locations.

8. China has mobilised troops at equipment at those locations, including artillery and even tanks on its side of LAC. and digging defences there. PLA has been ramping up its strategic reserves in its rear bases near LAC with artillery guns, infantry combat vehicles and heavy military equipment.

9. Meanwhile, India has also set up the intended infra in those locations. The India Army has stationed troops and equipment matching the Chinese numbers. India has decided not to stall any border infra projects because of Chinese protests. The India-China border feud straddles many points along the 3,488-km-long LAC, one prime such example being Arunachal which China claims as part of southern Tibet.

10. Although high-level efforts are on to defuse the situation, a quick resolution of this standoff at Galwan doesn't seem likely now. Chances are that it could be prolonged impasse, with India unlikely to budge even as China appears unwilling to pull back. China's state-run newspaper Global Times has already made a claim that "clashes were triggered by Indian troops as they crossed over to the Chinese side and carried out attacks on Chinese soldiers."

<https://economictimes.indiatimes.com/news/defence/galwan-10-things-to-know-about-the-latest-india-china-battle-at-14000-ft/articleshow/76402649.cms>



DEFENCE AVIATION POST

Your Connect To The World Of Defence And Aviation

Wed, 17 June 2020

Blade folding in indigenous naval advance light helicopter: what 'automatic' vs 'manual' mean

A debate is raging on the suitability of the indigenous Advanced Light Helicopter (ALH) for an Indian Navy warship. This article is from an expert naval aviator and is a very important contribution for readers to understand the technical issues involved in the debate. The Defence Acquisition Council (DAC), the highest procurement decision making body in the Indian Ministry of Defence, was to meet in May 2020 to take a call on progressing with the Strategic Partnership (SP) project to buy and build 111 Naval Utility Helicopters in India for \$3 billion. The meetings were postponed as the Department of Defence Production was pushing for including the state-run Hindustan Aeronautics Limited (HAL), as a bidder in the acquisition that was originally envisaged as private sector-only project through a DAC decision of 2018. This last minute interference in the SP project is delaying a decision in arming the Indian Navy with the NUH it badly needs to boost operational preparedness.)

This is a short post to address a debate that came up in media about main rotor blade folding requirements of naval variant 'Dhruv' ALH.

The Naval Staff Qualitative Requirements (NSQR) for ALH were released in 1985. Messerschmitt-BolkowBlohm (MBB) of erstwhile West Germany was HAL's design consultant in initial years (1984-94). Similarities between MBB's BK 117 helicopter and the ALH are evident at first glance.

<https://www.defenceaviationpost.com/2020/06/blade-folding-in-indigenous-naval-advance-light-helicopter-what-automatic-vs-manual-mean/>

Wed, 17 June 2020

Diego Garcia: India's conundrum

New Delhi declared unequivocal support for "all peoples striving for decolonisation", only to keep conspicuously quiet

By Abhijit Singh

The tug-of-war between the United Kingdom and Mauritius over Chagos archipelago – and the US military base on Diego Garcia – is hotting up. In 2019, the United Nations General Assembly passed a resolution which endorsed a non binding decision from the International Court of Justice that supported Mauritius's claim to the Chagos. London has so far stoutly resisted calls to hand over the islands.

Given its regional proximity, what role should India play in resolving the dispute consistent with its own interests?

Both Britain and the United States expect help from India on Chagos. At the UN General Assembly in May 2019, Washington and London had hoped New Delhi would modify and even dilute the provisions of the draft resolution.

Instead India voted in favour of Mauritius, with the Indian representation stating unequivocal support for "all peoples striving for decolonisation". But Indian officials have since refrained from commenting on the issue.

Some British commentators have explained India's move as an attempt to position itself as a leader among post-colonial states. New Delhi, they contend, remains enamored of South-South cooperation, prioritising partnerships with Southern states over cooperation with Euro-Atlantic partners. They argue that supporting Mauritius was a "symbolic" rather than substantive win, with New Delhi overlooking its long-term interests in countering China's growing presence in the Indian Ocean. With its own ambitions to develop a base in the Mauritian island of Agalega stalled, New Delhi's move at the UN backfired.

Indian observers have been more understanding of their country's imperatives. As they see it, Diego Garcia presents New Delhi with a predicament with no easy answers. On one hand, Indian policymakers must demonstrate solidarity with Mauritius, a close Indian Ocean partner. On the other, they must consider their country's burgeoning ties with the United States and Britain. If New Delhi now seems reticent on the matter, it is because it finds itself in a debilitating dilemma.

But India's conundrum may seem more severe than it really is. For all the talk about India not wanting China to fill an Indian Ocean strategic vacuum created by any departure of US forces, supporting Mauritius has always been a fairly straightforward choice for New Delhi. Diego Garcia's controversial history has meant that room for manoeuvre on the issue has been limited. As much as they value political ties with London and Washington, Indian policymakers cannot be seen to favour a US military presence over indigenous people's rights.

A second reason that New Delhi has not supported the US over Diego Garcia is the constrained nature of India-US military cooperation in the Western Indian Ocean, a space where Indian and US strategic objectives do not properly align. In particular, New Delhi does not support US naval operations in the Persian Gulf intended at coercing Iran. With growing maritime interests in the



Middle East, India is keen to improve naval ties with all regional capitals, including Tehran. New Delhi can't get itself to deploy naval assets to a US facility used to facilitate anti-Iran naval operations.

Lastly, Indian realists are concerned about strategic reciprocity. If Indian warships and surveillance aircraft publicly use Diego Garcia, Washington would expect access to India's bases in the Andaman and Nicobar islands. New Delhi has a mutual logistics agreement with the United States but has been slow to operationalise the pact for fear of opening up its island bases to the US navy. While maritime "access" in South and Southeast Asia has never really been an issue for Washington, the regular presence of US warships in the Andaman Sea, Indian analysts reckon, could more credibly threaten China's use of the regional sea lines of communication, potentially creating discord in the region.

Some say that China's well-known salami slicing strategy is increasingly at play in South Asia.

Notwithstanding closing bilateral military relations between India and the US – including a tri-services exercise and joint anti-submarine patrols – a strategic quid pro quo involving Diego Garcia could also force the Indian navy into a framework of closer strategic engagement with the US navy in South Asia. This could impinge on New Delhi's strategic autonomy, rendering India a de facto alliance partner of the United States – a proposition wholly unacceptable to Indian policymakers.

Further, many in India's strategic establishment are convinced that Beijing's expanding maritime footprint in the Indian Ocean isn't merely the result of greater PLAN deployments. Belt and Road infrastructure projects have played an equally significant part, enmeshing regional states in a Chinese-led initiative. This isn't the type of presence that India-US joint naval operations seem capable of effectively pushing back.

And yet events are moving fast, and in ways unanticipated by India. Since the beginning of this year, there have been reports of an expansion of the PLA base in Djibouti, greater Chinese naval operations in the Western Indian Ocean, growing Chinese intelligence and survey ships in the Andaman Seas and, perhaps, the beginnings of a Chinese military presence in the Pakistani port of Gwadar. Some say that China's well-known salami slicing strategy is increasingly at play in South Asia.

India's Ladakh standoff with China confirms that belief. So far New Delhi has treated its land skirmishes with the PLA as a localised matter. Yet the need for a maritime hedge and greater strategic alignment with the US in the Indian Ocean is clearer than ever.

Indian officials know that brokering a settlement on Diego Garcia could form part of the expected give-and-take. New Delhi could, for example, facilitate an agreement giving Port Louis sovereignty, whilst tempering Mauritian expectations that it could impose restrictions on the positioning of US nuclear assets.

India might realise that a failure to make common cause with Washington in the Western Indian Ocean, including Diego Garcia, might adversely implicate New Delhi's attempts to dominate littoral-South Asia.

(This commentary originally appeared in [*The Interpreter*](#).)

<https://www.orfonline.org/research/diego-garcia-indias-conundrum-67934/>

Army tweaks battle physical efficiency test policy for women

BEPT, which involves series of physical tests, now mandatory for above 35 years category

By Man Aman Singh Chhina

Chandigarh: Changing its policy regarding applicability of Battle Physical Efficiency Test (BPET) for women officers/women cadets/women recruits, the Army has made it mandatory for all women officers, including those commissioned before 2009 and above 35 years of age, who were earlier exempt from it.

The BPET is a series of physical tests that are meant to test the physical fitness of an officer or a jawan to perform military tasks. For women officers, this includes a 5-km run, a 60-metre sprint, climbing vertical rope up to a certain height, traversing horizontal rope up to a certain distance and jumping 6-foot ditch.

The Indian Express has accessed the directions by the Directorate General of Military Training (DGMT) of Army Headquarters, New Delhi, issued in this regard on May 12, 2020.

The letter states, "The standards will be applicable to all categories of women entries and trainees in all training academies and regimental centres of all arms and services with immediate effect irrespective of date of joining training establishments/commission/enrollment".

These new directions supersede the directions issued in March 2011 which read, "Lady officers, who are commissioned before April 2009 and are above 35 years of age, will be excused BPET and only Physical Proficiency Test (PPT) will be applicable for them."

The new order has also laid out new standards which have to be met by women in the Army, including the time in which they have to complete the tasks etc.

As per the new directions, the time taken to run at height of 5000 feet/1500 metres in age category for women officers below 30 years should be 30 minutes of less for 'Excellent' grading, 31 minutes 30 seconds for 'Good' grading and 33 minutes for 'Satisfactory' grading. In comparison, the 2011 letter stipulated 32 minutes for 'Excellent', 33 minutes 30 seconds for 'Good' and 35 minutes for 'Satisfactory'.

Similar decrease in time frame has been made for distance run at height from 5000 feet to 9000 feet. In the category of 60 metre sprint the 'Excellent' grading time has been reduced from 16 seconds to 15 seconds, 19 seconds to 17 seconds for 'good' grading and 20 seconds to 19 seconds for 'Satisfactory' grading.

In another move, after the Supreme Court order on February 17, 2020 granting permanent commission to all women officers with all consequential benefits, the Army has started detailing women officers of the rank of Lt Colonels for Junior Command (JC) course at Army War College, Mhow. Women officers have been asked to attend the courses being conducted at the war college between July to October this year (tentatively).

This course, which is normally done by male officers between 5 to 10 years of service, will now see women officers of much senior service bracket of 15 and 16 years of service and more attending it. As per the directions of the DGMT consequent to the SC order the women officers considered for permanent commission will have to undergo mandatory courses of their respective branches along with JC course.



The new order has also laid out new standards which have to be met by women in the Army, including the time in which they have to complete the tasks etc.

When contacted, a senior officer at Army HQs said that this was being done because undergoing JC course was a mandatory requirement for promotion to the rank of Colonel.

“Many of the women officers would be considered for promotion to rank of Colonel therefore they need to do this course which was hitherto not compulsory for them,” the officer said.

Speaking on condition of anonymity a woman officer reacted negatively to the inclusion of women officers above the age of 35 years for BPET.

“Why has this been done only after the SC gave a favourable ruling for permanent commission to women officers? Is it a move to ensure that women in higher age bracket who have not been doing BPET due to 2011 orders fail in their endeavour and are forced out of service?” she questioned.

<https://indianexpress.com/article/india/army-tweaks-battle-physical-efficiency-test-policy-for-women-6460580/>

FlightGlobal

Wed, 17 June 2020

Lockheed wins customisation contract for Indian navy MH-60Rs

By Greg Waldron

Lockheed Martin has won a \$375 million contract for bespoke hardware and software for India’s acquisition of 24 Sikorsky MH-60R anti-submarine warfare helicopters.

“This modification provides non-recurring efforts to design and develop unique hardware and software for the Multi-Role Helicopter MH-60R development programme for the government of India,” says a US Department of Defense contract announcement.

In May, Lockheed’s Sikorsky rotorcraft unit signed a \$905 million contract with the US Navy to provide 24 MH-60Rs to the Indian navy via the US government’s Foreign Military Sales (FMS) process.

The \$905 million contract was far less than the original notice, which valued the deal at \$2.6 billion.

At the time of the May award, Tom Kane, director of Sikorsky naval helicopter programmes, said the \$905 million would cover production of the helicopters, but that additional work would be necessary for “unique modifications and systems”.

The MH-60R is New Delhi’s second acquisition of a major US Navy anti-submarine warfare platform, following its acquisition of the Boeing P-8I Neptune in a 2009 deal.

In Indian navy service the P-8I is understood to feature several Indian-produced systems, such as Bharat Electronics identification friend or foe equipment, and a locally developed datalink.

<https://www.flightglobal.com/helicopters/sikorsky-wins-customisation-contract-for-indian-navy-mh-60rs/138849.article>

Expanding horizons: Asia-Pacific services adapt unmanned solutions for the conventional, and beyond

Asia-Pacific navies are increasingly turning towards unmanned solutions for operational taskings beyond the 'dull, dirty, and dangerous'. Ridzwan Rahmat takes a look at a handful of notable programmes across the region

By Ridzwan Rahmat

Berlin: The Modi government is reportedly planning to launch a board to promote private engagement in space activities. The proposal is a promising move towards addressing some of the biggest problems that are keeping the local space industry from achieving its potential.

There are many factors that have led to the proliferation of military-deployed unmanned aerial, surface, and underwater vehicles in recent years. These include the increasing miniaturisation of sensors and combat systems, more robust navigation algorithms, the proliferation and increasing 'democratisation' of technology, and falling component and maintenance costs. Given this confluence of factors, armed forces are increasingly finding it more feasible to deploy unmanned vehicles in place of humans for tasks deemed as too 'dull, dirty or dangerous'.

Another important factor is the challenge faced by armed services in reconciling an increasing workload with a dwindling pool of manpower resources. According to the latest demographic statistics from the United Nations Economic and Social Commission for Asia and the Pacific, population growth in the region is slowing down at a rate of 0.96% per annum. In some parts of this region, especially in East Asia, populations are shrinking even faster than this.

And, given the increasing prevalence of maritime tensions in the region, navies and armed maritime agencies are turning towards unmanned technologies as a force multiplier.

A service that is rapidly incorporating unmanned solutions is the Republic of Singapore Navy (RSN). The republic has one of the lowest birth rates in the Asia-Pacific region, and given that the Singapore Armed Forces (SAF) relies largely on citizens-by-birth conscripts for its manpower pool, the RSN is at risk of being understaffed for future security requirements.

The SAF has been experimenting with unmanned technologies since the early 2000s, and was the first service in the region to operate a shipborne UAV capability – the ScanEagle unmanned aerial system (UAS) – from on board its Victory-class corvettes in the 2010s. Most were not complex operations, however, and to meet the country's future security requirements the RSN needed to rapidly inject the service with more demanding unmanned operating concepts.

With this consideration in mind, the RSN designed its new Independence-class Littoral Mission Vessels (LMVs) as a platform from which it could prove out more complex unmanned naval concepts, such as unmanned surface interdiction, autonomous clearance of sea obstructions, and beyond visual line of sight (BVLOS) UAV operations. These roles will be critical in Singapore's quest to reconcile the need to secure its busy sea lanes with a dwindling pool of available manpower.

The RSN's fleet of eight 80 m LMVs were commissioned between 2017 and 2020 as a replacement for the service's Fearless-class patrol vessels. Each LMV is equipped with two



A view of the automated launch-and-recovery system installed on an Independence-class vessel. (Janes/Ridzwan Rahmat)

stern ramps featuring an automated launch-and-recovery system (LARS) for USVs such as the Protector from ST Engineering.

While all vessels have been built with weight and strength considerations to embark an S-70B Seahawk helicopter on the flight deck, the class' second, third, fourth, and fifth ships have been equipped only for UAV operations for now.

Beginning in late 2017, the second of class, RSS *Sovereignty* (16), conducted at-sea trials of the Schiebel Camcopter S-100 UAV as part of efforts to establish operating envelopes for the class. The trials have since concluded, but the RSN has yet to disclose its decision on the type of rotary-winged UAVs that will be deployed from the Independence class in the future.

However, the experience gathered by the RSN via the LMV's unmanned vehicles are destined to be taken even further with a future vessel class known as the Multi-Role Combat Vehicle (MRCV).

First announced in 2018, The MRCV will be the RSN's boldest move yet to exploit unmanned operating concepts. The frigate-sized vessels are meant to replace the RSN's Victory-class corvettes, but will be about 50 m longer than the ships being replaced so that it can accommodate significantly more mission systems.

More pertinently, the MRCV is being conceived as a modular 'mother ship' platform for a variety of mission sets that can be undertaken by unmanned aerial, surface, and underwater vehicles – ranging from high-tempo warfare to low-tempo maritime security patrols and benign humanitarian assistance and disaster relief (HADR) operations.

The RSN has yet to disclose specifications of the MRCV, but among concepts being considered is the latest iteration of ST Engineering's Vanguard series of modular surface vessels, the Vanguard 130. The 130 m vessel can be equipped with an indigenously designed automated boat deployment and retrieval system for rigid-hull inflatable boats (RHIBs) and USVs known as the Q-LARS 2.0.

The vessel has also been designed with a flight deck that can accommodate a 15-tonne helicopter or rotary-winged UAVs. The Vanguard 130 has also been designed with flushed doors on the port and starboard side to support the launch and recovery of remotely operated vehicles (ROVs) and unmanned underwater vehicles (UUVs).

However, unlike the LMVs, the MRCVs will be able to embark considerably larger USVs. At the IMDEX defence exhibition in 2019, the RSN confirmed that the MRCVs will embark the 16 m-class USV, known as the Venus 16, from ST Engineering. The USV has an overall length of 16 m, a 5 m beam, and displaces approximately 30 tonnes in its baseline configuration. The Venus 16 is propelled by waterjets and can attain an economical cruise speed of 25 kt and a top speed of 40 kt.

The RSN is expected to announce a decision on the MRCV soon, given that delivery of the first vessel is scheduled for about 2025, with all ships reaching full operational capability by 2030. At the time of writing, the service has yet to disclose the expected class size for the MRCV.

Unmanned ambitions

The Venus 16 is an instrumental part of the RSN's pursuit to stand up a fully unmanned mine countermeasures (MCM) capability. This ambition – which would make the RSN a pioneering service in this branch of warfare – was first disclosed by the country's defence minister, Ng Eng Hen, in 2016, and was forged against the backdrop of a projected 30% fall in the pool of conscripts by 2030.



The flight deck of RSS *Sovereignty*, which has been designed to embark rotary-wing UAVs but not helicopters. (Janes/Ridzwan Rahmat)

In his speech to commemorate SAF Day in 2016, Ng described the move to do so as one that would place the RSN among the world's first to adopt a fully unmanned MCM capability. "You use unmanned systems to detect, you use unmanned systems to dispose of or to detonate mines. That would improve effectiveness and efficiency," he said.

The RSN currently operates a fleet of four purpose-built Bedok-class mine countermeasures vessels, all of which were commissioned in October 1995. The class completed a mid-life modernisation programme in 2014, with upgrades that included the addition of an ECA K-STER expendable mine-disposal system (EMDS).

The Bedok class is expected to reach the end of its operational life closer to the 2030s, and the RSN will not be replacing these vessels with dedicated MCM platforms. The service will conduct MCM operations from the MRCVs instead, using the Venus 16 as its initial primary effector.

The Venus 16 has been developed in two MCM-specific variants – one configured for mine detection and classification, and the other focused on mine identification and disposal.

The version configured for mine-detection and classification missions will be equipped with the Thales Towed Synthetic Aperture Sonar (T-SAS) and a customised LARS that enables an operator to remotely deploy or recover the sonar in about 10 minutes.

The T-SAS is a high-resolution towed side-scan sonar that can operate at a maximum speed of 11 kt and at an operating depth of up to 200 m. In its synthetic aperture sonar mode the towed array can scan at a rate of 3 km² per hour and identify mine-like objects as small as 3.5×5 cm and up to a range of 150 m.

The version configured for mine identification and disposal will deploy both versions of the ECA Robotics Group K-ster expendable mine-disposal system – the K-ster I (Identification), which is designed to verify suspected mines at close range, and the K-ster C (Charge), which is armed with an explosive charge to detonate mines.

Both variants of the Venus 16 USV are being introduced into operational service in 2020 and will serve alongside the Bedok-class MCMVs. The USVs are expected to progressively transition to the MRCV mother ships before the Bedok class is retired.

A third variant of the Venus 16, which will be armed with light anti-surface weapons for coastal defence operations, will soon be introduced. This variant will eventually take over the maritime security-related patrols in the Singapore Strait that are currently undertaken by LMVs. "This will allow our manned warships, like the LMVs, to be deployed at further ranges from Singapore, and more strategically for complex missions," said MINDEF.

All three variants of the USV will feature a locally developed Collision Detection and Collision Avoidance (CDCA) system, which would allow the USVs to operate safely among the more than 1,000 commercial vessels that are present in the Singapore Strait, which is one of the world's most congested, at any one point of time. The system was developed by DSO National Laboratories, Singapore's national defence research agency.

Once all three variants are introduced into service, the event will cap the RSN's nearly three-decade quest to incorporate unmanned systems into its operations, from its participation in the US Navy Spartan Scout USV programme in the early 2000s, to the incorporation of shipborne ScanEagle UAVs onboard the Victory-class corvettes in the early 2010s, to a fully unmanned MCM capability in the 2020s.

Maritime Security Initiative

The RSN's success in operating the ScanEagle UAVs from the Victory class is now being emulated by at least three navies or armed maritime services in the region.

Under the US-sponsored Maritime Security Initiative (MSI), which was first announced by then US Secretary of Defense Ashton Carter at the 2015 iteration of the Shangri-La Dialogue in Singapore, Indonesia, Malaysia, the Philippines, and Vietnam are each in the process of receiving donations of the ScanEagle UAS to boost their respective maritime patrol capabilities.

This capability is especially important for the Malaysian Armed Forces (MAF), which is facing a dearth of serviceable assets that can undertake extended maritime patrol capabilities. The country received its first batch of six ScanEagle UASs in May 2020, and will receive a second batch of six toward the end of the year. The MAF has confirmed that all 12 units will be operated by the Royal Malaysian Navy (RMN).

The ScanEagle UAV has an overall length of 1.37 m, a wingspan of 3.11 m, and a maximum take-off weight of 20 kg. It is powered by a single piston engine, has a minimum endurance of 24 hours, and can reach a maximum altitude of 5,945 m.

In terms of payload, the ScanEagle can be equipped with electro-optical imagers, long-wave infrared sensors, and X-band radars. The UAV is launched from a Mk 2 ‘wedge’ pneumatic catapult when operated on land, and a low-pressure pneumatic catapult when deployed on board ships. If it is deployed from land, the vehicle can be retrieved via belly landing, although this method can only be employed with an area allowance of at least 100×600 ft, according to recommendations from the manufacturer.

Janes understands from an industry source that vessels being considered by Malaysian naval planners as a deployment platform for the system include the Chinese-made Keris-class littoral mission ships (LMS), four of which have been ordered. Should this option be taken, these vessels will have to be equipped with the Insitu’s SkyHook retrieval system and will be the first known Chinese-made ships to be integrated with the ScanEagle UAS.

According to the same industry source, other vessels being considered by the RMN as at-sea platforms for the ScanEagle include *Bunga Mas Lima* and *Tun Azizan*, former commercial freighters that have since been converted into auxiliary ships/floating bases for special forces operations. Should this option be taken, the RMN will be the only armed service in the region to operate Mil-Spec UAVs from ships designed for freight.

Meanwhile, the Philippines received a donation of six ScanEagles from the United States in 2018. The equipment is operated by the Philippine Air Force’s 300 Air Intelligence and Security Wing (AISW).

Indonesia is also anticipating a delivery of the equipment. The country was initially scheduled to receive six units, but the Indonesian government has requested up to 14. The Indonesian Navy (Tentara Nasional Indonesia – Angkatan Laut: TNI-AL) has been designated as the operator of the ScanEagle units.

As the service does not have extensive experience in operating UAVs, a decision has been taken to stand up a new formation within the TNI-AL known as the Skadron Udara 700 (Aviation Squadron 700). The unit is being established at the naval aviation base in Juanda, Surabaya, and among the squadron’s first tasks will be to draw up operating doctrines and training plans to ensure that the service can operationalise the UAVs quickly. The TNI-AL has yet to decide on the ships that will deploy the ScanEagle UAVs.

However, the TNI-AL will not allow its lack of experience with unmanned platforms to hinder its ambitions. The service has already planned how it can exploit unmanned systems on future vessels. In January 2020, it began soliciting prequalification proposals for a new offshore patrol vessel (OPV) class. The ship must have an overall length of about 90 m, be able to carry containerised mission modules, and act as a mother ship for UAVs, USVs, and UUVs.

The service has requested from the government a sum of USD340 million for a class of four hulls, and documents provided to *Janes* indicate that USD79 million has been set aside for the first of class. However, it is unclear when a formal tender for the programme will begin.

Beyond maritime surveillance

While the ScanEagle is seeing action in mainly lower tempo maritime surveillance missions across Southeast Asia, it has been deployed for more complex operations by the Royal Australian Navy (RAN).

In 2017 the service’s Adelaide (Oliver Hazard Perry)-class guided-missile frigate HMAS *Newcastle* (06) facilitated Australia’s first-ever man-unmanned teaming (MUM-T)

integrated flying serials, involving a ScanEagle UAV and *Newcastle*'s embarked MH-60R helicopter. This operation was conducted while the frigate was on a two-week attachment with the US Fifth Fleet in the Gulf.

Since then, the RAN's experimental UAV unit, known as 822X Squadron, has been exploring various ways in which the service can benefit from the ScanEagle beyond maritime surveillance operations.

At the Pacific 2019 maritime exhibition in Sydney, a representative from 822X Squadron told *Janes* that the service had begun conducting limited trials with the ScanEagle in 2018 to assess its suitability for shallow-water MCM operations. The trials were conducted at Jervis Bay with a UAV unit equipped with a Headwall Nano Hyperspectral instrument integrated by the manufacturer into the ScanEagle's rear payload bay.



822X Squadron launching a ScanEagle via a pneumatic launcher. (Commonwealth of Australia)

“These were early stage trials, and there were challenges making use of the imagery captured due to technical difficulties experienced on the trial,” an 822X spokesperson told *Janes* on 5 June. “The issues were soluble, given time and resources, and therefore we anticipate an opportunity to trial the platform and instrument further.”

The trials are not yet concluded, the spokesperson added. “Additional trials have been conducted on different platforms, using other hyperspectral sensors for the same outcome, with promising results that are under ongoing investigation. Preliminary conclusions are that hyperspectral imaging spectroscopy is a useful tool for shallow-water mine-countermeasure sensing.

“Further work is required to definitively determine if the desired operational modes of the ScanEagle, with a hyperspectral payload, is suitable for operational mine countermeasures. No hyperspectral trials are currently programmed with 822X Squadron.”

Regardless of whether the ScanEagle will eventually be deployed for permanent MCM taskings, however, the UAV's fixed-wing form factor looks set to be a mainstay on RAN vessels. The service has equipped its lead *Leeuwin*-class hydrographic survey ship with the ScanEagle for training purposes. A shipborne launcher and the Skyhook retrieval system were installed on the ship's flight deck in August 2019. Data gathered from the ScanEagle's deployment on board



A ScanEagle UAV unit on display at Pacific 2019. (Janes/Ridzwan Rahmat)

HMAS *Leeuwin* over the next few years will equip the RAN with the necessary information from which it can establish various operating envelopes, such as maximum and minimum speeds from which the UAV can be launched.

Other RAN vessels that are expected to be equipped with fixed- and rotary-winged UAVs include the Hunter-class frigates and the Arafura-class offshore patrol vessels (OPVs).

In addition to the ScanEagle, 822X has also been preparing the RAN for rotary-winged UAVs, including the S-100 Camcopter, which has been selected for the service's interim vertical take-off and landing (VTOL) unmanned aircraft system (UAS) requirement. More specifically, the formation is exploring how these Camcopters can work with the RAN's fleet of MH-60R helicopters in MUM-T arrangements. One of the ongoing projects involves a study on whether the Camcopter can 'lase' targets for the MH-60R, so that the aircraft can deploy hellfire missiles onto an objective from a safer stand-off distance.

Underwater dragons

Meanwhile, China has also been making several notable forays into the unmanned domain in recent years. In November 2019, the Chinese Academy of Sciences (CAS) disclosed that it has completed a 37-day trial of the locally developed Haijing 2000 (Sea Whale 2000) autonomous underwater vehicle (AUV) in the South China Sea, with the total distance covered at about 1,086 n miles.

The institute did not reveal the AUV's mission path, but indicated that the distance covered by the claimed distance set a national record and is the equivalent of a round trip from the People's Liberation Army Navy (PLAN)'s naval base for nuclear submarines in Yulin, to the disputed features known as the Spratly Islands.

The Sea Whale has a top speed of 2 kt and a maximum operating depth of 6,561 ft (2,000 m). CAS claims that Sea Whale 200 is mainly equipped with environmental survey sensors similar to those deployed by the Qianlong-2 (Dive Dragon-2) and Qianlong-3 (Dive Dragon-3) AUVs. The former was involved in a March 2018 scientific expedition to the southwest Indian Ocean. Once in service, these AUVs will most likely be deployed for benign operations, such as survey missions, on Chinese research vessels.

An unmanned vehicle that may not be as benign made its first public appearance at a military parade to commemorate the 70th anniversary of China's founding in Beijing on 1 October 2019. At the parade, the PLA showcased two militarised UUVs with the in-service designation of HSU001.

China has predictably given no details on the system, but it is equipped with two propellers at the stern, with thrusters in its main hull for increased manoeuvrability. These suggests that the UUV is designed to conduct long-range patrols, including in littoral waters.

The HSU001 is equipped with two masts that can be folded into cavities when not in use, improving its portability when deployed from mother ships. Its dull livery is in stark contrast to brighter hues seen on research AUVs, and this suggests it has been designed for covert missions, such as surveillance of enemy installations.

Regardless of its mission sets, the HSU001 is China's largest militarised UUV seen to date and will most likely be at the forefront of the PLAN's effort to incorporate unmanned vehicles into its concept of operations.

Comment

Navies and armed maritime services in the Asia-Pacific region are increasingly deploying unmanned systems to overcome challenges in mustering limited manpower resources. In the process, new concepts of operations (CONOPs) are emerging, such as a fully unmanned MCM formation and unmanned aerial MCM sorties. As navies explore pushing the envelope on these CONOPs, the resulting developments have the potential to further define the role that unmanned vehicles will play in modern naval warfare.

https://janes.ihs.com/Janes/Display/FG_3186496-JNI



A screen capture of China's military parade on 1 October 2019, showing two HSU001 unmanned underwater vehicles for the first time. (CGTN)

Why Indian space start-ups are feeling forced to set up base abroad

India makes a great place for building a space business as a startup. But several local startups are still searching for foreign shores

By Narayan Prasad

Berlin: The Modi government is reportedly planning to launch a board to promote private engagement in space activities. The proposal is a promising move towards addressing some of the biggest problems that are keeping the local space industry from achieving its potential.

India makes a great place for building a space business as a startup. It has experienced space professionals who have been nurtured in an ecosystem that has 60 years of space mission experiences.

It has the entrepreneurial spirit, with perhaps one of the youngest sets of founders among space startup hubs around the world. It has established a small and medium enterprises landscape that can cater to the manufacturing and testing of satellites and rockets.

It has academic institutions that produce globally-matched human resources, which can be employed by the emerging startups in the space industry.

Yet, we are seeing several Indian space startups set up entities abroad. To understand what motivates Indian startups to look at the option of setting up abroad, one should look at what is missing locally, and this is where the board may step in.

The perspective of an Indian space startup

Let's take the example of a startup that wants to build its own satellite and operate it to provide a service. Such a startup will need access to frequencies to operate the satellite.

It is still not clear how startups/private companies in India can get access to space frequencies to conduct routine telemetry, telecommand and payload data operations. India does have a satellite communication policy, but it was instituted with a Direct-To-Home (DTH) service provider in mind, rather than companies that would want other services (e.g. remote sensing). This also extends to setting up ground station facilities to uplink and downlink to space assets over Indian geography.

In the US, for example, this role is played by the Federal Communications Commission (FCC), which provides the guidelines for private companies that either want to set up ground station facilities or access frequencies to operate their space assets.

India's Wireless Planning Commission or the Department of Telecommunications (DOT), in contrast, do not provide any clarity to space startups on how this process can be pursued in the country.

This creates uncertainty for the startups that plan to operate their own satellites, which is why they might have to look at setting up entities in friendly geographies. This allows them to operate and collect their data over India or other areas of interest without having to go through the hassle of dealing with uncertainty in bureaucratic processes.

The local disadvantage

A foreign company that wants to launch onboard the Polar Satellite Launch Vehicle (PSLV), which is often touted as one of the most cost-effective and reliable launch vehicles in the world, pay 0 per cent Goods and Services Tax (GST).

In contrast, an Indian space startup has to cough up 18 per cent GST to launch from India. If a company is planning to build and launch a 10 kg satellite, at a rough order-of-magnitude price of about \$30,000/kg (Rs 22.8 lakh/kg) to launch on the PSLV, it would mean a payment of \$54,000 (Rs 41.1 lakh) in taxes alone.

Therefore, it might be easier for an entrepreneur to go set up a company in Singapore or any other destination instead of attempting a PSLV launch as an Indian company.

Access to government support

To incentivise product/service development, several spacefaring nations provide support programmes to help entrepreneurs develop their ideas. For example, the European Space Agency (ESA) has several programmes such as the Business Incubation Centres (BICs), which incubate over 100 space startups every year.

There are also several funding instruments for startups and small/medium-scale enterprises that allow competent companies to develop state of the art intellectual property that forms the basis of novel products/services.

In the US, the Small Business Innovation Research (SBIR) and the Small Business Technology Transfer (STTR) programmes support such innovation in startups and small/medium-scale enterprises. These programmes not only provide an initial thrust to develop products/services, they also add a mark of trust, with space agencies like the ESA and NASA backing some of the work done by the startups.

In contrast, there are no programmes or instruments that provide such support to entrepreneurs who want to create new space products/services in India. With the US still imposing some rules that restrict several grants/programmes to citizens, several Indian founders have now started leveraging the ESA startup programmes to realise their ideas.

A bottoms-up approach to reforms

Entrepreneurs will take advantage of incentives wherever they are available for them. In the present setting, space entrepreneurs in India may just want to leverage the operating cost, the infrastructure and human resources available locally, and have local entities just to manage them. However, to solve some of the significant hurdles mentioned above, they will look to or have already created entities abroad. Ultimately, the government is set to lose out any tax revenue that is generated by them.

It is very important that the proposed board for the promotion of space industry in India work closely with emerging startups to put in place reforms and incentives that allow them to operate locally for the country to benefit from their success.

(Narayan Prasad is the Chief Operations Officer of satsearch.co, a global marketplace for space supported by the European Space Agency and the host of the [NewSpace India podcast](#).)

<https://theprint.in/science/why-indian-space-start-ups-are-feeling-forced-to-set-up-base-abroad/441982/>

New method developed to study the “Traces” of coronal mass ejections at the Sun

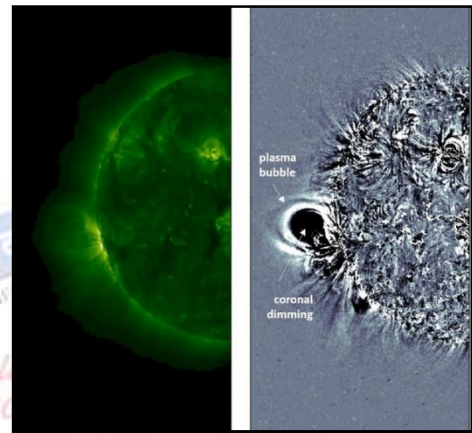
Scientists at Skolkovo Institute of Science and Technology (skoltech), together with colleagues from the Karl-Franzens University of Graz and the Kanzelhoehe Observatory (Austria) developed an automatic method for detecting “coronal dimmings,” or “traces” of coronal mass ejections at the Sun, and also proved that they are reliable indicators of the early diagnosis of powerful emissions of energy from the atmosphere of the Sun, traveling to Earth at great speed. The results of the study are published in the *Astrophysical Journal*.

Coronal mass ejections are among the most striking manifestations of solar activity. Huge plasma clouds pierced by magnetic lines are ejected from the atmosphere of the Sun into the surrounding space at speeds of 100-3500 km/s. If a stream of charged particles reaches the Earth, auroras and magnetic storms arise in its atmosphere. This can lead to serious problems in the operation of electrical equipment and signal loss, and spacecraft and astronauts in outer space are most exposed to danger.

Coronal mass ejections occur in the atmosphere of the Sun, the solar corona, which is very sparse and does not shine as bright as the solar disk. Therefore, the evolution of these ejections can be observed only with the help of special tools – coronagraphs, creating an artificial solar eclipse and blocking the bright Sun with a dark disk. Coronagraphs installed on Earth do not provide accurate results due to the bright glow of the sky, therefore they are usually installed on spacecraft. To date, there are only two coronagraphs in space: aboard the STEREO-A and SOHO satellites; new missions are expected no earlier than in a few years. However, coronagraph observations have a significant drawback: blocking the solar disk by several radii makes it impossible to discern the early evolution of the ejection, but only its shape at a developed stage.

But one can approach the solution of this problem from another angle and study the “trace” directly on the Sun – coronal dimmings, rather than the coronal ejection itself. If you observe the solar corona in the ultraviolet, then you can see the gaps in the intensity – dark spots that are associated with the loss of substance in the corona during the ejection of plasma, – these are dimmings. Due to the unique position of the STEREO-A, STEREO-B and SDO satellites, it was for the first time possible to compare the size and brightness of coronal dimming from different observation points. The obtained results confirm the earlier work of the co-authors of the study from the University of Graz, where the same dimmings were studied on the solar disk using images of the SDO satellite.

“We showed that by observing dimmings on the Sun, it is possible to estimate the mass and speed of the coronal mass ejection at early stages – key parameters that allow us to predict the scale of the event and the time of its expected consequences on Earth. This is of great applied importance for the development of operational space weather services, as well as for future space missions to the Lagrange point L5. Spacecraft will be located in the orbit, always retaining the same position with respect to the Earth. This will make it possible to detect traces of coronal mass ejections directly on the Sun, as well as to predict the parameters of powerful ejections before they are seen from Earth, ”says a graduate student at the Skoltech Space Center and the first author of the study, Galina Chikunova.



Coronal dimming and the associated coronal mass ejection. Credit: STEREO/EUVI

“Humanity is entering a new era in the exploration of outer space, the creation of new space technologies that are gradually moving into our daily lives. At present, it is very important to study the nature of explosions on the Sun, to develop methods for their early forecasting, in order to protect our society and technologies from the dangers of space weather, to turn off equipment in satellites in time, to move astronauts to a protected area, to cancel satellite maneuvers, air travel through the polar regions, report possible navigation problems. And whatever storms may rage, we wish everyone a good weather in space,” says Tatyana Podladchikova, professor at the Skoltech Space Center, research co-author.

Reference:

“Coronal Dimmings Associated with Coronal Mass Ejections on the Solar Limb” by Galina Chikunova, Karin Dissauer, Tatiana Podladchikova and Astrid M. Veronig, 9 June 2020, *Astrophysical Journal*. DOI: [10.3847/1538-4357/ab9105](https://doi.org/10.3847/1538-4357/ab9105)
<https://scitechdaily.com/new-method-developed-to-study-the-traces-of-coronal-mass-ejections-at-the-sun/>



Wed, 17 June 2020

“Amazing!” – Black Hole’s Heart Still Beating

The first confirmed heartbeat of a supermassive black hole is still going strong more than ten years after first being observed.

X-ray satellite observations spotted the repeated beat after its signal had been blocked by our Sun for a number of years.

Astronomers say this is the most long lived heartbeat ever seen in a black hole and tells us more about the size and structure close to its event horizon – the space around a black hole from which nothing, including light, can escape.

The research, by National Astronomical Observatories of Chinese Academy of Sciences, China, and Durham University, UK, was published in the journal *Monthly Notices of the Royal Astronomical Society*.

The black hole’s heartbeat was first detected in 2007 at the center of a galaxy called RE J1034+396, which is approximately 600 million light years from Earth.

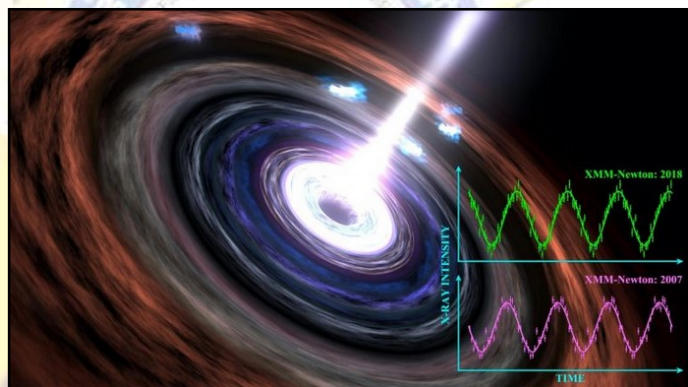
The signal from this galactic giant repeated every hour and this behavior was seen in several snapshots taken before satellite observations were blocked by our Sun in 2011.

In 2018, the European Space Agency’s XMM-Newton X-ray satellite was able to finally re-observe the black hole and to scientists’ amazement the same repeated heartbeat could still be seen.

Matter falling on to a supermassive black hole as it feeds from the accretion disc of material surrounding it releases an enormous amount of power from a comparatively tiny region of space, but this is rarely seen as a specific repeatable pattern like a heartbeat.

The time between beats can tell us about the size and structure of the matter close to the black hole’s event horizon.

Prof. Chris Done, in Durham University’s Centre for Extragalactic Astronomy, collaborated on the findings with colleague Prof. Martin Ward, Temple Chevallier Chair of Astronomy.



A black hole including the heartbeat signal observed in 2007 and 2018. Credit: Dr Chichuan Jin, of the National Astronomical Observatories, Chinese Academy of Sciences and NASA/Goddard Space Flight Center Conceptual Image Lab

“The main idea for how this heartbeat is formed is that the inner parts of the accretion disc are expanding and contracting,” said Prof. Done. “The only other system we know which seems to do the same thing is a 100,000 times smaller stellar-mass black hole in our Milky Way, fed by a binary companion star, with correspondingly smaller luminosities and timescales. This shows us that simple scalings with black hole mass work even for the rarest types of behavior.”

“This heartbeat is amazing! It proves that such signals arising from a supermassive black hole can be very strong and persistent. It also provides the best opportunity for scientists to further investigate the nature and origin of this heartbeat signal,” said Dr. JIN Chichuan from the National Astronomical Observatories of the Chinese Academy of Sciences, lead author of the study.

The next step in the research is to perform a comprehensive analysis of this intriguing signal, and compare it with the behavior of stellar-mass black holes in our Milky Way.

Reference:

“Reobserving the NLS1 galaxy RE J1034+396 – I. The long-term, recurrent X-ray QPO with a high significance” by Chichuan Jin, Chris Done and Martin Ward, 10 June 2020, *Monthly Notices of the Royal Astronomical Society*.

[DOI: 10.1093/mnras/staa1356](https://doi.org/10.1093/mnras/staa1356)

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<https://scitechdaily.com/amazing-black-holes-heart-still-beating/>



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MIT makes tissue – Such as human brain – stretchable, compressible, and nearly indestructible

Chemical process called ELAST allows labeling probes to infuse more quickly, and makes samples tough enough for repeated handling

By David Orenstein

When there’s a vexing problem to be solved, people sometimes offer metaphorical advice such as “stretching the mind” or engaging in “flexible” thinking, but in confronting a problem facing many biomedical research labs, a team of MIT researchers has engineered a solution that is much more literal. To make imaging cells and molecules in brain and other large tissues easier while also making samples tough enough for years of handling in the lab, they have come up with a chemical process that makes tissue stretchable, compressible, and pretty much indestructible.

“ELAST” technology, described in a new paper in *Nature Methods*, provides scientists a very fast way to fluorescently label cells, proteins, genetic material, and other molecules within brains, kidneys, lungs, hearts, and other organs. That’s because when such tissues can be stretched out or squished down thin, labeling probes can infuse them far more rapidly. Several demonstrations in the paper show that even after repeated expansions or compressions to speed up labeling, tissues snap back to their original form unaltered except for the new labels.

The lab of Kwanghun Chung, an associate professor of chemical engineering and a member of MIT’s Institute for Medical Engineering and Science, and Picower Institute for Learning and Memory, developed ELAST amid work on a five-year project, funded by the National Institutes of Health, to make the most comprehensive map yet of the entire human brain. That requires being able to label and scan every fine cellular and molecular detail in the thickest slabs possible to

preserve 3D structure. It also means the lab must be able to keep samples perfectly intact for years, even as they must accomplish numerous individual rounds of labeling quickly and efficiently. Each round of labeling — maybe a particular kind of neuron one day, or a key protein the next — will tell them something new about how the brain is structured and how it works.

“When people donate their brain, it is like they are donating a library,” says Chung. “Each one contains a library worth of information. You cannot access all the books in the library at the same time. We have to repeatedly be able to access the library without damaging it. Each of these brains is an extremely precious resource.”

Former lab postdoc Taeyun Ku, now an assistant professor at the Korea Advanced Institute of Science and Technology, is the study’s lead author. He says the particular difficulty of working with human tissues, which of course are much larger than those of lab animals like mice, inspired him to take this new engineering approach. Late one night in the lab around Christmas 2017, he was mulling over how to transform tissue for quicker labeling and began to tinker with repeated compression of an elastic gel.

“We changed our way of thinking: Biological tissue doesn’t need to be very biological,” Ku says. “If our goal is not to image living events but to image appearances, we can change the material type of the tissue while maintaining the appearances. Our work shows how higher-level engineering of the brain enables us to better look into what inside the brain.”

The team’s efforts to engineer ELAST came down to finding the right formulation of a gel-like chemical called polyacrylamide. In the past, Chung has used the substance in a different formulation with crosslinking chemicals to make tissues strong but fairly brittle, says study co-author Webster Guan, a chemical engineering graduate student. When that formulation infused the tissues, cells and molecules would become directly attached to a grid-like mesh.

In the new formulation, the team used a high concentration of acrylamide with much less crosslinker and initiator. The result was an entanglement of long polymer chains with links that are able to slip around, giving the gel a structural integrity but with much more flexibility. Moreover, rather than attaching to the chains, Guan says, the cells and molecules of the tissue just become entangled within it, adding further to the ability of the acrylamide-infused tissues to withstand stretching or squashing without anything becoming torn or permanently displaced in the process.

In the study the team reports stretching human or mouse brain tissues to twice their width and length simultaneously, or compressing their thickness by 10 times with virtually no distortion after returning to their regular size.

“These results demonstrate that ELAST enables fully reversible tissue shape transformation while preserving structural and molecular information in the tissue,” they wrote.

Fully integrating the polyacrylamide into a large amount of tissue to achieve the elasticity can take as long as 21 days, they report, but from then on, any individual labeling step, such as labeling a particular kind of cell to determine its abundance, or a specific protein to see where it is expressed, can proceed far more quickly than with prior methods.

In one case, by repeatedly compressing a 5-millimeter thick cross section of a human brain, the team needed only 24 hours to label it all the way through. For comparison, back in 2013 when Chung and colleagues debuted “CLARITY,” a method of making brain tissue transparent and fixing it with an acrylamide gel, they needed 24 hours to label a slice only a tenth as thick. Because labeling time is estimated by squaring the depth that probes must penetrate, calculations suggest labeling with ELAST proceeds 100 times faster than with CLARITY.

Though Chung’s lab mostly focuses on brains, the applicability to other organs can aid in other cell mapping efforts, Chung says. He adds that even if labeling tissue isn’t a goal at all, having an easy new way to make a durable, elastic gel could have other applications, for instance in creating soft robotics. Resources for learning more about ELAST are available at Chung’s website.

In addition to Ku, Guan, and Chung, the paper’s other authors are Nicholas Evans, Chang Ho Sohn, Alexandre Albanese, Joon-Goon Kim, and Matthew Frosch, a professor at Massachusetts General Hospital and Harvard Medical School.

Reference:

“Elasticizing tissues for reversible shape transformation and accelerated molecular labeling” by Taeyun Ku, Webster Guan, Nicholas B. Evans, Chang Ho Sohn, Alexandre Albanese, Joon-Goon Kim, Matthew P. Frosch and Kwanghun Chung, 18 May 2020, *Nature Methods*.
[DOI: 10.1038/s41592-020-0823-y](https://doi.org/10.1038/s41592-020-0823-y)

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<https://scitechdaily.com/mit-makes-tissue-such-as-human-brain-stretchable-compressible-and-nearly-indestructible/>

COVID-19 Research News

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UK: Imperial college to start human trials of potential covid-19 vaccine

Clinical researchers at Imperial College London will start human trials of a potential COVID-19 vaccine this week with strong backing from the UK government

By Kunal Gaurav

Clinical researchers at Imperial College London will start human trials of a potential COVID-19 vaccine this week with strong backing from the UK government. The public research university will soon be recruiting more participants for the first phase of the vaccine trial, commencing at its West London study facility.

The team of researchers at Imperial College won £41 million funding from the government and £5 million in philanthropic donations. According to the university, the trial is supported by UK government, UK Research and Innovation (UKRI), the Medical Research Council (MRC), the National Institute for Health Research (NIHR) and Imperial College's donor-backed COVID-19 Response Fund.



Professor Robin Shattock, who has been leading the research work, said in a statement that a viable vaccine could be vital for protecting the most vulnerable, enabling restrictions to be eased and helping people to get back to normal life. He said that the team has been able to produce a vaccine from scratch and take it to human trials in just a few months which has never been done before with this type of vaccine.

If our approach works and the vaccine provides effective protection against disease, it could revolutionise how we respond to disease outbreaks in future,” he added.

Gradually increase volunteers

Scientists in China isolated samples of the SARS-CoV-2 virus from COVID-19 patients and sequenced its genetic code. The team, led by Professor Shattock, focused on the part of the sequence that holds the blueprint for the spike protein. They were able to recreate the sequence using enzymes in the lab and generate copies of the RNA without the need for animal cells or human stem cells.

During the first phase of the trial, the scientists will be gathering data from a small group of participants to understand how the immune system responds to the candidate vaccine. The study team will initially start with a very low dose and it will be administered to a single individual and will slowly increase the dose and the number of volunteers until all the remaining participants have been vaccinated.

<https://www.republicworld.com/world-news/uk-news/uk-imperial-college-to-start-human-trials-of-potential-covid-19-vaccci.html>



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Coronavirus | Dexamethasone reduces deaths from COVID-19, say researchers in U.K.

The drug was given either orally or through an IV.

Oxford: Researchers in the U.K. say they have the first evidence that a drug can improve COVID-19 survival: A steroid called dexamethasone reduced deaths by up to one third in severely ill hospitalised patients.

Results were announced on Tuesday and researchers said they would publish them soon. The study is a large, strict test that randomly assigned 2,104 patients to get the drug and compared them with 4,321 patients getting only usual care.

The drug was given either orally or through an IV. It reduced deaths by 35% in patients who needed treatment with breathing machines and by 20% in those only needing supplemental oxygen. It did not appear to help less ill patients.

This is an extremely welcome result, one study leader, Peter Horby of the University of Oxford, said in a statement. "The survival benefit is clear and large in those patients who are sick enough to require oxygen treatment, so dexamethasone should now become standard of care in these patients. Dexamethasone is inexpensive, on the shelf, and can be used immediately to save lives worldwide.

This is the same study that earlier this month showed the malaria drug hydroxychloroquine was not working against the coronavirus. The study enrolled more than 11,000 patients in the U.K., Scotland, Wales and Northern Ireland who were given either standard of care or that plus one of several treatments: the HIV combo drug lopinavir-ritonavir, the antibiotic azithromycin; the steroid dexamethasone, the anti-inflammatory drug tocilizumab, or plasma from people who have recovered from COVID-19 that contains antibodies to fight the virus.

Research is continuing on the other treatments. The research is funded by government health agencies in the United Kingdom and private donors including the Bill and Melinda Gates Foundation.

<https://www.thehindu.com/sci-tech/health/coronavirus-dexamethasone-reduces-deaths-from-covid-19-say-oxford-researchers/article31843586.ece>



A pharmacist holds a box of dexamethasone tablets at a shop in London on June 16, 2020. | Photo Credit: AFP

