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समाचार पत्रों से चयित अंश Newspapers Clippings

A Daily service to keep DRDO Fraternity abreast with DRDO Technologies, Defence Technologies, Defence Policies, International Relations and Science & Technology

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Thu, 13 Jan 2022

For BrahMos to remain world's best tactical weapon, the design has continued to evolve: Atul Dinkar Rane DG BrahMos DRDO & CEO & MD BrahMos

The first time the announcement of possible export of the supersonic cruise missile to the Philippines was made by the Russian Deputy Chief of Mission Roman Babushkin in 2020.

By Huma Siddiqui

Negotiations with the Philippines are in the final stages for the sale of the Indo-Russian BrahMos Missile. This sale is through government to government route and will be the first ever to an ASEAN nation. The two countries have been in discussions for the sale of the supersonic cruise missile for years, as Philippines has been making efforts to ramp up its naval strength in the South China Sea, even as China continues its bullying tactics. The formal contract is expected to be sealed soon.

The first time the announcement of possible export of the supersonic cruise missile to the Philippines was made by the Russian Deputy Chief of Mission Roman Babushkin in 2020. He had told the media that the first export of the BrahMos will be to the Philippines.

In March of 2021, Financial Express Online was the first to report about a critical defence pact being inked between the two countries related to the first ever export of the missile and other military platforms and weapons.

An 'Implementing Arrangement' basically a government to government pact was signed by the two countries at the Headquarters of the Armed Forces of the Philippines.

Other ASEAN nations who have reached out to India seeking more details about the missile and export possibility include: Thailand, Vietnam, Singapore, Indonesia, and Malaysia. Also in discussions are countries from the Middle East (UAE, Qatar, and Saudi Arabia); South America (Brazil, Argentina and Chile) & Eastern Europe (Bulgaria) and South Africa, Egypt, South Korea.

In an exclusive interaction Atul Dinkar Rane DG BrahMos DRDO& CEO & MD BrahMos, shared more about the upcoming expected deal with Philippines and much more about the BrahMos with Huma Siddiqui.

Following are excerpts:

By when do you think the deal for BrahMos will be signed with the Philippines?

India and the Philippines have signed an "Implementing Arrangement" for "procurement of defense material and equipment procurement". This agreement has laid the groundwork for BrahMos cruise missile, through the government-to-government route. We are in an advanced



India and the Philippines have signed an "Implementing Arrangement" for "procurement of defense material and equipment procurement".

stage of discussions and if something concrete emerges both the Governments will make an announcement. Export of defence products is always a strategic decision involving Governments.

Which version will be exported? And why?

The BrahMos Missile is a universal missile capable of operation from various platforms be it launch from shore / land, ship or air. The universal precision strike missile has already been operationalised in all three Services of the Indian Armed Forces. Many countries have expressed their interest in the Missile System. The company will receive permission from the Government for export of any of the variants on a case to case basis.

Which are the countries where you have received requests from? And which is the preferred version they are seeking?

There are a number of countries across continents that have evinced interest in acquiring BRAHMOS for their military and we have been having discussions with them. Following the initiative of the Prime Minister for export of Defence equipment from India and the support we are getting from the Government of India we hope BrahMos will soon get some export orders. It won't be prudent to divulge all these details at this moment. As said earlier, BrahMos is ready for export. We at BrahMos Aerospace are fully prepared and committed to fulfill all export related demands as and when they arise.

In South America, Brazil and Chile have been seeking details about BrahMos – any updates on that?

Yes, we have been discussing (BrahMos) exports with some of the Latin American countries and hope to move further in this direction. It is too early to make any firm statement.

In India, any new tests being worked on, increasing the range etc?

For BrahMos to remain the world's best tactical weapon, the design has continued to evolve in terms of technological advancements. It has maintained its supremacy by incorporating several new advancements in terms of power, precision, manoeuvrability etc. Of late, we have successfully tested more advanced variants of the weapon which will further strengthen the Indian Armed Forces.

When do you plan to put it on board the French fighter jet Rafale for testing?

Our top-most priority is to evolve the current weapon system as a new generation of BrahMos. DRDO along with Brahmos Aerospace and our Russian partners will work on a design of a next generation variant of the missile which would be deployable by the Indian Defence Forces. We are looking forward to a smaller and lighter missile having improved capabilities including a design which could allow deployment in more numbers on a wider range of modern military platforms with pin-point accuracy and performance. The design will need to be proved through extensive testing following which production should commence. We are in discussion with the Indian Air Force regarding the platforms on which our weapon system would be integrated.

<https://www.financialexpress.com/defence/for-brahmos-to-remain-worlds-best-tactical-weapon-the-design-has-continued-to-evolve-atul-dinkar-rane-dg-brahmos-drdo-ceo-md-brahmos/2405069/>

भारत के घातक हथियार: दुश्मन का सीना चीर देने वाली मिसाइल, जिससे डरते हैं चीन और पाकिस्तान

दुनिया के सबसे बड़े सेनाओं में गिने जाने वाला भारत आज मिसाइल के क्षेत्र में देश के सबसे शक्तिशाली देशों को भी टक्कर देने में सक्षम है।

By Bishwa Maurya

दुनिया के सबसे बड़े सेनाओं में शुमार भारत अपने दुश्मनों को कड़ा संदेश देते हुए मंगलवार को ब्रह्मोस मिसाइल के लेटेस्ट मॉडल का एक सीक्रेट टेस्ट किया है। इस मिसाइल का टेस्ट भारतीय जल सेना के आई एन एस विशाखापत्तनम से किया गया। इस टेस्ट में ब्रह्मोस मिसाइल के लेटेस्ट मॉडल 'ब्रह्मोस सुपरसोनिक क्रूज' मिसाइल ने टारगेट के परखच्चे उड़ा दिए। बता दे इस मिसाइल की क्षमता 400 किलोमीटर तक के रेंज में प्रहार करने की है।

ब्रह्मोस सुपरसोनिक क्रूज मिसाइल के परीक्षण पर राष्ट्रीय डीआरडीओ ने बताया कि यह मिसाइल अपने लक्ष्य को बिल्कुल सटीक तरीके से भेदता है। इस टेस्ट को लेकर डीआरडीओ के तरफ से एक ट्वीट किया गया ट्वीट में लिखा था 'ब्रह्मोस सुपरसोनिक क्रूज मिसाइल



के समुद्र से समुद्र में प्रहार करने वाले आधुनिक संस्करण का आज INS विशाखापत्तनम से परीक्षण किया गया मिसाइल ने निर्धारित लक्ष्य पर सटीक तरीके से निशाना साधा।'

बता दे ब्रह्मोस मिसाइलों को 21वीं सदी की सबसे आधुनिक और घातक मिसाइलों में से गिना जाता है। भारत में समुद्र से चलाए जाने वाले ब्रह्मोस मिसाइलों के चार प्रकार मौजूद हैं। जिसमें युद्धपोत से चलाया जाने वाला लैंड अटैक मिसाइल, युद्धपोत से ही चलाया जाने वाला एंटी शिप ब्रह्मोस मिसाइल, पनडुब्बी से चलाया जाने वाला एंटी शिप ब्रह्मोस मिसाइल तथा पनडुब्बी से ही चलाए जाने वाला लैंड अटैक ब्रह्मोस मिसाइल।

चलिए आपको बताते हैं भारत के कुछ ऐसे मिसाइल के बारे में जिनसे डर से हमारे दुश्मन देश थरथर कांपते हैं।

बराक-8 भारतीय सेना के पास सतह से हवा में मारने वाली कुछ मिसाइलों में सबसे बड़ा नाम 'बराक 8' का है बराक तेज़ी से लंबी दूरी तक वार करने वाला एक मिसाइल है। बराक की रफ्तार 2400 किलोमीटर प्रति घंटे से ज्यादा होती है। बराक 8 मिसाइल 100 किलोमीटर तक अपने लक्ष्य पर वार कर सकती है।

आकाश जमीन से हवा में वार करने वाली मिसाइलों में आकाश एक तीव्र मिसाइल है तीन प्रकार के होते हैं। जिसमें AkashNG, Akash MK-2 इत्यादि शामिल है।

शौर्य शौर्य मिसाइल रक्षा अनुसंधान और विकास संगठन (डीआरडीओ) द्वारा भारतीय सशस्त्र बलों के उपयोग के लिए बनाई गई मिसाइल है जिसकी मारक क्षमता 1900 किलोमीटर की दूरी तक है।

अग्नि भारतीय सेना के पास सतह से सतह में वार करने वाली मिसाइलों में अग्नि सीरीज के मिसाइलों का बड़ा नाम है। अग्नि मिसाइलों की पांच अलग-अलग तरह की वर्जन आती है। जिसमें Agni-I, Agni-II,

Agni-III, Agni-IV, Agni-V शामिल है। अग्नि सीरीज की मिसाइलों सतह से सतह पर लंबी दूरी तक वार करने के लिए जानी जाती हैं। अग्नि सीरीज के मिसाइलों की न्यूनतम रेंज 700 किलोमीटर तक होती है। वही अग्नि सीरीज की सबसे तेज मिसाइल 5000 किलोमीटर तक वार कर सकती है। बता दें भारत के पास Agni-V एक इकलौता अंतरमहाद्वीपीय बैलिस्टिक मिसाइल है जो 5000 किलोमीटर तक वार करने की क्षमता रखता है।

निर्भय निर्भय मिसाइल को बहुत ही घातक मिसाइल माना जाता है। क्योंकि यह परमाणु हथियार अपने साथ ले जाने में सक्षम मिसाइल है। इस सुपरसोनिक क्रूज मिसाइल की मारक क्षमता 1500 किलोमीटर से भी ज्यादा है तथा इसे आसानी से लांच किया जा सकता है।

ए-सैट मिसाइल ए-सैट मिसाइल भारत के सबसे ज्यादा आधुनिक मिसाइलों में से एक है। यह मिसाइल अंतरिक्ष में ही अपने लक्ष्य को भेदने की क्षमता रखता है। बता दें ऐसा मिसाइल दुनिया के कुछ बहुत चुनिंदा देशों के पास भी हैं। इस मिसाइल का निर्माण मिशन शक्ति के तहत हुआ था।

<https://newstrack.com/country/most-dangerous-and-powerful-missiles-of-india-i-army-list-of-deadliest-missiles-302844>

R. REPUBLICWORLD.COM

Thu, 13 Jan 2022

DRDO congratulates new ISRO Chief S Somanath; hopes for 'major gains' in space sector

Taking to Twitter, DRDO extended its best wishes to Somanath who will serve as the Chairman of ISRO and Secretary of the Department of Space.

By Harsh Vardhan

The Defense Research and Development Organisation (DRDO), on behalf of Chairman Dr. G Satheesh Reddy, congratulated senior rocket scientist S Somanath on his appointment as the new Chief of the Indian Space Research Organisation (ISRO) on January 12. Taking to Twitter, DRDO extended its best wishes to Somanath who will also serve as the Secretary of the Department of Space (DoS). "Dr G Satheesh Reddy along with DRDO fraternity congratulates Shri S Somanath on being appointed as Secretary, Dept of Space & Chairman, Space Commission. Best wishes for major gains in space journey under his stewardship", DRDO wrote in its tweet.



IMAGE: PTI

Previously serving as the Director of Vikram Sarabhai Space Center (VSSC) since 2018, Somanath will succeed K Sivan who was appointed ISRO Chairman in 2018 and is due to vacate his position on January 14. In an official release by the Centre's Ministry of Personnel, Public Grievances and Pensions, it was revealed that Somanath is being promoted for the aforementioned posts and will serve on the positions for a tenure of three years. In an exclusive interview with Republic Media Network, former ISRO scientist Nambi Narayan welcomed the appointment of Somanath as the new Chief and called him a 'capable scientist'.

Major projects await Somanath

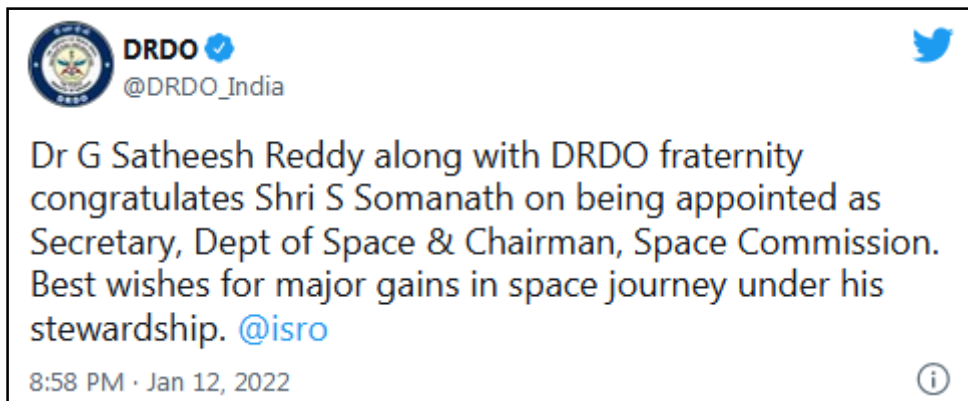
Although Somanath has vast experience as a rocket scientist, his appointment as ISRO Chief comes at a time when India is looking to kickstart the Gaganyaan project later this year along with many major missions. Somanath has been associated with the VSSC and ultimately ISRO since

1985 and has led major development projects such as the GSLV Mk-III launcher and the Polar Satellite Launch Vehicle (PSLV).

ISRO's plans for 2022, apart from the Gaganyaan mission includes Chandrayaan-3, which would mark India's return to the Moon, along with Aditya-L1 mission to the Sun. Under the Gaganyaan mission, ISRO will conduct two unmanned flights under the leadership of Somanath this year followed by the third flight in 2023, which will carry the first Indian astronauts to space. The Aditya L-1 mission on the other hand is an upgradation of the Aditya-1 mission under which a satellite with six payloads having enhanced science scope and objectives will be installed in a halo orbit around the Lagrangian point 1.

<https://www.republicworld.com/science/space/drdo-congratulates-new-isro-chief-s-somanath-hopes-for-major-gains-in-space-sector-articleshow.html>

DRDO on Twitter



Business Standard

Thu, 13 Jan 2022

Will match Chinese on Ladakh frontier, Says Army Chief M M Naravane

'We have inducted and billeted 25,000 additional troops along the LAC in Eastern Ladakh', said Naravane

By Ajai Shukla

New Delhi: In his last scheduled Army Day press conference as the chief of the Indian Army, General M M Naravane underlined its impressive performance in meeting “the twin challenges of Covid-19 and the Chinese intrusions in Eastern Ladakh, while also tackling the proxy war on the western front (with Pakistan)”.

“The army’s response to China’s attempts to unilaterally change the status quo along the LAC (Line of Actual Control) has been very robust and we have been able to thwart their designs,” said Naravane.

Describing the army’s reaction after being surprised in May 2020 when thousands of People’s Liberation Army (PLA) troops crossed the LAC – the de facto Sino-Indian border – Naravane said: “We have inducted additional troops; we have made billeting arrangements for as many as 25,000 additional troops that had gone into that sector. Not only billeting but also roads and tracks, and storage facilities for ammunition and FOL (fuel, oil, lubricants); and additional facilities for more increments that might need to come into the sector.”

Naravane asserted his army was much better poised today than it was a year, or a year-and-a-half, ago to meet any challenge that was thrown up.

Describing the frantic troop redeployment and review of operational plans that followed the PLA’s intrusions into the Pangong Tso, Galwan, Gogra, Hot Springs and Depsang sectors in April-May 2020, the army chief said:

“This also gave us an opportunity to review our operational plans and a lot of activities were undertaken to augment our capabilities, not just in Eastern Ladakh but all along our northern front... (where we took) a very holistic view.”



Army chief M M Naravane

CHIEF POINTS

- | | |
|--|---|
| ▶ Indian Army has successfully met the twin challenges of Covid-19 and the Chinese intrusions in Eastern Ladakh | last resort. But if it comes to conflict, we will come out victorious |
| ▶ Army has responded robustly to China’s attempts to change the status quo along the LAC. We have thwarted their designs | ▶ Indian Army is evenly matched with China in infrastructure building |
| ▶ We have inducted and billeted 25,000 additional troops along the LAC in Eastern Ladakh | ▶ Improvement in security situation in the Northeast has allowed us to disengage two divisions deployed in C/ICT (counter-insurgency and counter-terrorism) duties in Manipur and Assam |
| ▶ Ongoing 14th round of senior officers’ talks is good. It shows we can resolve our differences through dialogue | ▶ Notwithstanding ceasefire with Pakistan, intelligence inputs suggest 350-400 terrorists ready for induction. So the threat has in no way receded |
| ▶ Conflict is an instrument of | |

“It was not just about augmentation of forces, but also of infrastructure weapons and equipment. I dare say that in the last year or year-and-a-half our capabilities have increased manifold in the northern front,” said Naravane.

Meanwhile, in Ladakh, the Indian and Chinese commanders were engaged on Wednesday in the 14th round of senior officers’ talks. “It is a good thing that talks are going on. It shows we can resolve our differences through dialogue,” said Naravane.

Describing the potential of the senior officers’ talks to defuse the situation, the army chief recounted the progress since 2020: “The 4th and 5th round of talks resulted in resolving the issue at PP 14. By the 9th and 10th round, we were able to resolve the issues in the north and south bank of Pangong Tso and the Kailash Range. By the 12th round, we were able to resolve the issue at PP 17... We have to keep talking to each other to understand each other’s viewpoints, perceptions and differences. And every time we have this dialogue, those differences keep getting narrowed down. And then we reach an understanding, which is based on mutual and equitable security and which is acceptable to both sides.”

“But to expect that every round of talks will have an outcome is also quite unreasonable. A number of rounds will be needed to resolve the situation one at a time. In the series of talks that are going on, we are hopeful that we will be able to resolve the talks at PP 15, which is the one that is pending right now. Once that is done, we will go on to the other issues which pre-date the current standoff. We are hopeful that those will also get resolved,” said Naravane.

Responding to a question on whether the Chinese presence in Eastern Ladakh was a permanent one, Naravane said: “Now that (the Chinese) are there and they have made a lot of infrastructure, it remains to be seen whether they will permanently garrison themselves there (in Eastern Ladakh), or whether they are going to be amenable to some kind of de-induction in times to come.”

Describing the steps towards de-escalation, the army chief said: “First, disengagement has to happen from certain areas. Once disengagement happens, we can think of a little bit of de-escalation. By that I mean moving back from being bang on the LAC to areas in depth, but remaining within that general area. Once this kind of confidence is built up, we can think of de-induction, wherein troops can go back to their garrisons and locations. But whatever we decide to do will be based on the principle of mutual and equal security, which will be our bottom line. But until that happens, we have to be prepared to stay there as long as it is required.”

Naravane, who has, since he became army chief, mooted the need for the Indian Army to shift its balance from the western (Pakistani) border to the northern (Chinese) border, said this did not require “clairvoyance”.

“This (shift in emphasis) has been discussed for a long time... Over the years, a lot of the augmentation of the northern borders had already taken place. In Sikkim, the armour has built up from none to an independent armoured squadron, which was built up to two armoured regiments. So force augmentation and a little bit of rebalancing to the northern borders was already being carried out.”

“We have always been cognisant of the dual threat that we face on the northern front and the western front and we have always been reviewing our operational plans. It shows we are a dynamic army,” said Naravane.

Asked whether China’s famed infrastructure development would result in the Indian Army being caught short on the LAC, Naravane said his soldiers are building infrastructure too: “Whatever they (the Chinese) are doing is being equally matched from our side. We too are building roads and bridges and in no way are we lagging behind. I think we are evenly matched as far as that is concerned.”

Responding to a question on the situation with Pakistan after a border ceasefire, Naravane was upbeat. “In February 2021, we were able to reach an understanding with the Pakistan side. There was a ceasefire in place since 2003, but that was being observed mainly in the breach. Post-February 2021, this understanding was renewed and, since then, ceasefire violations have come down drastically. In fact, none has happened except for two isolated incidents,” he said.

“That has created a little bit of normalcy on the western front. That, notwithstanding, the proxy war continues. Terrorists are still there in launch pads across the border. The combined intelligence inputs suggest as many as 350-400 terrorists on the other side or in training camps. So the threat has in no way receded. We have to remain alert and the threat from the western front is there and cannot be ignored,” said the army chief.

https://www.business-standard.com/article/current-affairs/will-match-chinese-on-ladakh-frontier-says-army-chief-m-m-naravane-122011201704_1.html



Thu, 13 Jan 2022

चीन से लगी सीमा पर कम नहीं हुआ खतरा, अभी बड़ी संख्या में तैनात रहेगी सेना, जानें क्या है इंडियन आर्मी की रणनीति

By Krishna Bihari Singh, संजय मिश्र

नई दिल्ली: सेना प्रमुख जनरल एमएम नरवणे ने बुधवार को कहा कि पूर्वी लद्दाख में वास्तविक नियंत्रण रेखा (एलएसी) पर चीन के साथ टकराव खत्म करने में आंशिक सफलता जरूर मिली है, लेकिन इसके बावजूद पूरी उत्तरी सीमा पर खतरा किसी तरह से कम नहीं हुआ है। इनके मद्देनजर ही सेना ने सीमा पर अपनी आपरेशनल तैयारियां सर्वोच्च स्तर पर रखी हुई हैं और हम चीन की पीपुल्स लिबरेशन आर्मी का पूरी दृढ़ता और ताकत से मुकाबला करने में सक्षम हैं।

संघर्ष हुआ तो जीतेंगे

पूर्वी लद्दाख के इलाकों में जारी सैन्य गतिरोध के बातचीत से हल की उम्मीद जताते हुए सेना प्रमुख ने कहा कि अगर संघर्ष ही अंतिम उपाय हुआ तो निसंदेह हम विजयी होंगे। सेना दिवस से पूर्व अपनी सालाना प्रेस कांफ्रेंस में जनरल नरवणे ने पूर्वी लद्दाख के साथ ही चीन से लगी समूची उत्तरी सीमा की मौजूदा स्थिति को लेकर खुलकर बात की।

उच्च स्तर पर सेना की तैयारियां

सेना प्रमुख ने कहा कि सैन्य और कूटनीतिक वार्ताओं के जरिये टकराव के कुछ इलाकों में तनातनी खत्म करने में थोड़ी सफलता मिली है लेकिन यह किसी तरह खतरों को कम नहीं करता इसीलिए सेना ने समूची उत्तरी सीमा पर न केवल अपनी आपरेशनल तैयारी को सर्वोच्च स्तर पर रखा है बल्कि सैनिकों की तैनाती का समायोजन भी इसी हिसाब से किया गया है।

भारतीय सेना पूरी तरह तैयार

चीन के नए विवादित सीमा कानून की चुनौतियों से जुड़े सवाल पर सेना प्रमुख ने कहा कि हमारे लिए इसकी कोई कानूनी बंदिश नहीं है और इसकी सैन्य जटिलताओं से निपटने के लिए भारतीय सेना पूरी तरह तैयार है। हम टकराव के शांतिपूर्ण हल के हिमायती हैं, मगर चीनी सेना की चुनौतियों से पूरी दृढ़ता और प्रतिबद्धता से निपटते भी रहेंगे।

सेना तैयार

चीनी सेना को माकूल जवाब देने की पुख्ता तैयारी का साफ संदेश देते हुए जनरल नरवणे ने कहा कि टकराव की जो स्थिति हम पर थोपी गई, उससे निपटने के लिए सेना आज कहीं ज्यादा तैयार है।

भारत भी कर रहा ढांचागत निर्माण

एलएसी के निकट चीन के लगातार सैन्य ढांचों से लेकर पुल आदि के निर्माण से जुड़े सवाल पर उन्होंने कहा कि हमने भी पूरी उत्तरी सीमा पर न केवल 25,000 अतिरिक्त सैनिकों की तैनाती बढ़ाई है, बल्कि सीमावर्ती इलाकों में सड़कें, पुल, सैन्य साजो-समान रखने के लिए ढांचागत निर्माण किए हैं और इस मामले में हम उनके समान काम कर रहे हैं।

सीमा पर ही रहेगी सेना

एलएसी के निकट बड़ी संख्या में सैनिकों की तैनाती क्या पूर्वी लद्दाख में स्थायी स्थिति बन जाएगी? जनरल नरवणे ने कहा कि यह हालात स्थायी रहेंगे या नहीं, यह देखना होगा। पहले टकराव के बिंदुओं से सैनिकों की वापसी कराकर भरोसा बहाल करना होगा और फिर तनाव घटाने व सैनिकों के स्थायी बैरकों में जाने की बात आएगी। तब तक हमें अपनी सेना को वहां रखना ही होगा।

नतीजे की उम्मीद करना मुनासिब नहीं

भारत-चीन के कमांडरों के बीच बुधवार को 14वें दौर की वार्ता का नतीजा निकलने के सवाल पर सेना प्रमुख ने कहा कि अच्छा है कि टकराव का हल निकालने के लिए वार्ता चल रही है। चौथे, पांचवें, नौवें, 10वें और 12वें दौर की वार्ता में सार्थक नतीजे निकले, मगर हर दौर की वार्ता में नतीजे की उम्मीद करना मुनासिब नहीं।

<https://www.jagran.com/news/national-indian-army-will-be-deployed-on-border-with-china-army-chief-general-mm-naravane-on-strategy-of-india-22375959.html>



Thu, 13 Jan 2022

पाकिस्तान बॉर्डर के पास भारतीय वायुसेना के 150 लड़ाकू विमान ऐसे दिखाएंगे युद्ध कौशल

- 10 फरवरी को वायुशक्ति-2 का आयोजन
- पहली बार रफाल लड़ाकू विमानों के साथ चिनूक व अपाचे लड़ाकू हेलीकॉप्टर के भाग लेने की संभावना
- रियल टाइम टारगेट पर करेंगे बमबारी

जोधपुर: देश की पश्चिमी सीमा पर स्थित जैसलमेर की चांधण फील्ड फायरिंग रेंज में भारतीय वायुसेना के सबसे बड़े युद्धाभ्यास वायुशक्ति-2022 का आयोजन दस फरवरी को किया जाएगा। इस युद्धाभ्यास में वायुसेना पूरी ताकत के साथ हिस्सा लेती है। इसमें वायुसेना के 150 से अधिक लड़ाकू विमान, हेलिकॉप्टर्स, ट्रांसपोर्ट एयरक्राफ्ट्स हिस्सा लेंगे। युद्धाभ्यास में पहली बार रफाल लड़ाकू विमानों, मालवाहन चिनूक हेलीकॉप्टर और लड़ाकू हेलीकॉप्टर अपाचे के भाग लेने की संभावना है। कोरोना के कारण वायुशक्ति के टलने का खतरा था लेकिन फिलहाल वायुसेना ने इससे इनकार किया है। आयोजन में रक्षा मंत्री राजनाथ सिंह के साथ प्रधानमंत्री नरेंद्र मोदी भी हिस्सा ले सकते हैं।



IAF: पाकिस्तान बॉर्डर के पास भारतीय वायुसेना के 150 लड़ाकू विमान ऐसे दिखाएंगे युद्ध कौशल

वायुसेना हर तीन साल में रियल टाइम युद्धाभ्यास यानी फायर पावर डिस्प्ले का आयोजन करती है। इससे पहले 2019 में वायुशक्ति-1 का आयोजन किया गया था। इसमें लड़ाकू विमान और हेलीकॉप्टर्स

रियल टाइम टारगेट ध्वस्त करेंगे। युद्धाभ्यास में आकाश व अस्त्र मिसाइलों के साथ कई प्रकार के जीपीएस व लेजर गाइडेड बम, राकेट लांचर और हेलीकॉप्टर्स गनों का प्रयोग होगा। चांधण फील्ड फायरिंग रेंज में मॉक राडार साइट, यार्ड, आतंकवादी कैंप, रन-वे, ब्लास्ट पेन जैसी साइट बनाई जा रही है। युद्धाभ्यास का फोकस आतंकवादी गतिविधियों से निपटने की दिशा में भी होगा।

युद्धाभ्यास में ये भाग लेंगे

- वायुशक्ति के जरिए वायु सेना देशवासियों को सुरक्षा के लिए एयर डिफेंस की शक्ति बताता है।
- युद्धाभ्यास में मिग-21 बाइसन, मिग-29, मिराज-2000, सुखोई-30 एमकेआई, जगुआर, रफाल लड़ाकू विमान चांधण फील्ड फायरिंग रेंज में बनाए गए टारगेट पर लाइव हमला करेंगे।
- लड़ाकू विमान रॉकेट लॉन्चर, कैनन, लेजर गाइडेड बम व मिसाइलों का प्रयोग करेंगे।
- वायुशक्ति में एमआई-17, एमआई-35, रुद्र, अपाचे व चिनूक शक्ति प्रदर्शन दिखाएंगे। आपातकाल में लोगों को सुरक्षित निकालने का भी डेमो होगा।
- युद्ध स्थल पर ट्रांसपोर्ट एयरक्राफ्ट एएन-32, हरक्यूलिस सी-130, ग्लोबमास्टर सी-17 भी शामिल होंगे।
- वायुसेना की नेत्र प्रणाली, एवाक्स और यूएवी भी शामिल होगी।
- वायु सेना की गरुड़ कमांडो टीम भी भाग लेगी जो विभिन्न परिस्थितियों में दुश्मन पर हमला करने के अभ्यास का जीवंत प्रदर्शन करेगी।

<https://www.patrika.com/jodhpur-news/150-fighter-aircraft-of-iaf-show-combat-skills-near-pakistan-border-7272144/>

mint

Thu, 13 Jan 2022

Ladakh standoff: India, China 14th round of military talks lasted for 13 hours

- *India pressed for an early disengagement of troops in the remaining friction points in eastern Ladakh at the 14th round of military talks with China*
- *The Indian side also insisted on disengagement in all the friction points including resolution of issues in Depsang Bulge and Demchok.*

The 14th round of Corps Commander level talks which was held yesterday between India and China lasted for around 13 hours at the Chushul-Moldo meeting point.

The talk was held on the Chinese side and it ended around 10:30 PM. The Indian side was represented by new 14 Corps chief Lt General Anindya Sengupta, according to sources close to event.

The main focus of the talks was to carry forward the disengagement process at Hot Springs (Patrolling Point 15), the sources said.

Additionally, India on Wednesday pressed for an early disengagement of troops in the remaining friction points in eastern Ladakh at the 14th round of military talks with China, sources in the security establishment said.



The Indian side was represented by new 14 Corps chief Lt General Anindya Sengupta. (Arhaan)

The fresh round of Corps Commander-level talks took place at the Chushul-Moldo border point on the Chinese side of the Line of Actual Control (LAC) in eastern Ladakh, they said.

The Indian delegation at the talks was led by Lt Gen Anindya Sengupta, the newly-appointed Commander of the Leh-based 14 Corps. The Chinese team was to be headed by South Xinjiang Military District Chief Maj Gen Yang Lin.

The Indian side also insisted on disengagement as soon as possible in all the remaining friction points including resolution of issues in Depsang Bulge and Demchok. The 13th round of talks had taken place on October 10 and they ended in a stalemate.

Both sides failed to make any headway in the talks with the Indian Army saying after the dialogue that the "constructive suggestions" made by it were neither agreeable to the Chinese side nor it could provide any "forward-looking" proposals.

The fresh talks are taking place days after India hit out at China for building a bridge across Pangong lake in eastern Ladakh and said it is in an area that has been under illegal occupation of that country for around 60 years.

Last week, India also described China's renaming of some places in Arunachal Pradesh as a "ridiculous exercise" to support "untenable territorial" claims, asserting that the state has always been and will always remain an "inalienable" part of India.

In their virtual diplomatic talks on November 18, India and China agreed to hold the 14th round of military talks at an early date to achieve the objective of complete disengagement in remaining friction points in eastern Ladakh.

The eastern Ladakh border standoff between the Indian and Chinese militaries erupted on May 5, 2020, following a violent clash in the Pangong lake areas.

Both sides gradually enhanced their deployment by rushing in tens of thousands of soldiers as well as heavy weaponry. As a result of a series of military and diplomatic talks, the two sides completed the disengagement process last year in the north and south banks of the Pangong lake and in the Gogra area. Each side currently has around 50,000 to 60,000 troops along the Line of Actual Control (LAC) in the sensitive sector.

<https://www.livemint.com/news/india/ladakh-standoff-india-china-14th-round-of-military-talks-lasting-for-13-hours-11642041819914.html>



Thu, 13 Jan 2022

भारत-चीन सैन्य वार्ता से तय होगी नए साल में रिश्तों की दिशा, देर शाम तक जारी रही 14वें दौर की वार्ता

By Krishna Bihari Singh

नई दिल्ली: भारत और चीन के बीच मई, 2020 से चले आ रहे सैन्य तनाव को खत्म करने के लिए सैन्य अधिकारियों की वार्ता करीब तीन महीने बाद बुधवार सुबह शुरू हुई और देर शाम तक जारी रही। वार्ता को लेकर दोनों तरफ से आधिकारिक जानकारी संभवतः गुरुवार देर रात तक आएगी। भारत की तरफ से इस वार्ता को काफी अहम करार दिया गया है और यहां तक बताया जा रहा है कि नए वर्ष में दोनों देशों के बीच रिश्तों की दिशा कैसी रहेगी, इसका बहुत हद तक निर्धारण इससे होगा।

भारत पहले भी चीन के सामने स्पष्ट कर चुका है कि वास्तविक नियंत्रण रेखा (एलएसी) से चीनी सैनिकों की पूर्ण वापसी और पूर्वी लद्दाख के इलाके में मई, 2020 से पहले वाली स्थिति बहाल किए बगैर रिश्तों को सामान्य बनाना मुश्किल है।

भारत और चीन के सैन्य अधिकारियों के बीच यह 14वें दौर की वार्ता है। सूत्रों के मुताबिक, बुधवार की वार्ता में एलएसी पर स्थित उन स्थानों से सैनिकों की वापसी पर हुई जहां दोनों तरफ के सैनिक कुछ सौ मीटर की दूरी पर आमने-सामने तैनात हैं। मार्च, 2021 में हुई सैन्य कमांडर स्तर की वार्ता में ही यह तय किया गया था कि आमने-सामने तैनात सैनिकों को पीछे हटाया जाएगा।

इसके बाद चीन ने कुछ जगहों से सैनिकों को पीछे किया और वहां सामान्य स्थिति बहाल भी की गई, लेकिन उसके बाद चीन के रवैये में बदलाव नहीं देखा गया। अभी एलएसी पर स्थित हाट स्प्रिंग, डेपसांग व गोगरा के इलाके का मामला सबसे पेचीदा है। 12वें दौर की वार्ता में भी इन तीनों स्थलों पर सैनिकों की वापसी पर दोनों पक्षों की तरफ से अपना अपना प्रस्ताव पेश किया गया था।

बताते हैं कि शुरुआत में हाट स्प्रिंग एरिया से सैन्य वापसी के भारतीय प्रस्ताव पर तैयार होने के बाद चीनी पक्ष बाद में पलट गया था। 13वें दौर की वार्ता (अक्टूबर, 2021) में तो दोनों पक्षों के बीच कोई सहमति नहीं बन पाई थी। भारतीय पक्ष ने बताया था कि उसकी तरफ से काफी सकारात्मक सुझाव दिए गए थे, लेकिन चीन ने उन्हें स्वीकार नहीं किया था। चीन की तरफ से कोई नया प्रस्ताव भी नहीं आया था।

बुधवार की वार्ता में भारतीय पक्ष का नेतृत्व लेफ्टिनेंट जनरल अंनदया सेनगुप्ता ने किया, जबकि चीनी दल का नेतृत्व साउथ शिनजियांग मिलिट्री डिस्ट्रिक्ट के प्रमुख मेजर जनरल चांग लीन कर रहे थे। यह वार्ता ऐसे समय हुई है जब चीन की तरफ से पेंगोंग झील के पास नया निर्माण कार्य करने, भूटान सीमा पर नए सिरे से ढांचागत सुविधाएं जुटाने और अरुणाचल प्रदेश सीमा के पास नए गांव बसाने की सूचनाएं और तस्वीरें लगातार आ रही हैं।

एक दिन पहले चीन के विदेश मंत्रालय ने भारत के साथ रिश्तों को सुधारने की बात कही थी, लेकिन वास्तविक नियंत्रण रेखा पर उसका व्यवहार इससे मेल नहीं खा रहा। एलएसी के संवेदनशील इलाकों में भयंकर सर्दी (शून्य से 30-40 डिग्री नीचे तापमान) के बावजूद दोनों तरफ से 50-60 हजार सैनिकों के तैनात होने की सूचना है।



भारत और चीन के सैन्य अधिकारियों की वार्ता करीब तीन महीने बाद बुधवार सुबह शुरू हुई और देर शाम तक जारी रही। नए वर्ष में दोनों देशों के बीच रिश्तों की दिशा कैसी रहेगी इसका बहुत हद तक निर्धारण इससे होगा।

<https://www.jagran.com/news/national-indian-army-and-chinese-military-commanders-going-to-hold-the-14th-round-of-military-commanders-level-talks-22376638.html>

How irregular warfare has become a new threat to India's national security

India must prepare itself for the 'gray zone' warfare that is going to be upon it sooner than later, especially in the North East

By Jaideep Saikia

Irregular warfare is perhaps the newest manner by which belligerent groups are seeking to wage war with India. Although this phenomenon has manifested itself in various theatres around the world in earlier times as well, the institutionalised approach by which it is coming to the fore of late warrants careful study. Indeed, in a plethora of ways "kleinkrieg" or "small wars" is achieving greater significance in the conflict continuum across the globe.

To that end, whether it is the Al-Qaeda-ISIS combine that are decisively coming together in Afghanistan or the ethnic insurgencies in the North East that are beginning to exhibit non-traditional violence, novel methodologies are increasingly being espoused by such formations in order to engineer irregular manoeuvre.

Therefore, even as radical Islam by way of the global Salafi movement is forcefully spreading "Op Confusion" onto a bewildered establishment, there are instances by which other forms of conflict are also adopting out-of-the-box methods to carry out subterfuge.

In the universe of Islamist terror discourse an *avant-garde* Operation Inherent Resolve which could have impounded all the radically deviant minds of the globe into a single area with proper surveillance instead permitted Abu Ibrahim al-Hashimi al-Qurashi and his group to spirit away. The total territorial ouster of ISIS from Iraq-Syria turned out to be detrimental in the long run. ISIS is no longer restrained to a region where its "aggression threshold" could have been appropriately controlled. After all, even radicals across the globe were undertaking the *hijrah* to the neo-caliphate's domain after having taken the *Bay'ah* or the oath of allegiance!

Indeed, ISIS could presently be anywhere in the world, cloaked in different *avatars* including as the *salar-e-allah* of the Afghanistan-based Islamic State of Khorasan Province and *Waliyah-i-Hind* inside India preparing for the "Third Wave of Radicalisation". The fact that the Taliban notwithstanding the Doha Agreement would continue to sustain both al-Qaeda and ISIS is also no longer in doubt.

Another important aspect is the manner in which insurgent groups in India's eastern extremity are planning and executing dastardly attacks on security forces in the region. A manifestation of one such act was the 13 November, 2021, Churachandpur ambush in Manipur. While such attacks have been carried out in the past as well, indeed at times with greater ferocity as was the case when soldiers of the Indian Army's 6 Dogras were attacked



Representational image. Reuters

in 2015, the fact of the matter is that insurgent organisations in the North East are progressively becoming bolder, almost attesting to the fact that the state may have lost the plot despite the fact that there had been considerable forward movement to bring round the wayward groups in the past.

In any event, the prognosis that accompanies the appearance of such pattern clearly attests to the fact that Myanmar post 1 February, 2021, has presented itself as a ready launching detachment for groups that have long jettisoned their founding principles and have graduated into distasteful mercenary conduct much of which is driven by narco-terrorism.

Indeed, many insurgent outfits have come into an agreement with the Tatmadaw and are believed to be aiding the Myanmar Army to quell the civil unrest that erupted after the February

putsch. In fact, one of the principal introspection exercises that need to occupy Raisina Hill is the about-face that Naypyidaw engineered after the junta took over the reins of governance.

This is unfortunate as it had been quite forthcoming in ousting the insurgent groups from its soil by way of Op Sunrise-I and II. However, the most important aspect that forbiddingly lends itself to irregular warfare behaviour is the fact that China, perturbed by its inability to intimidate India by conventional methods, is utilising the insurgents to mount a proxy war against India by way of the North East. While this, too, is not new, the fact of the matter is China's "import of revolution" had ceased when Deng Xiaoping was in the seat of power.

The entry of the Chinese into the North East insurgency game in the aftermath of the Chinese humiliation in eastern Ladakh indicates that Beijing is resorting to irregular warfare initiative in order to, alongside its surrogate Pakistan, "bleed India with a thousand cuts". Such facets that are beginning to endanger India must be carefully factored in and studied by the security managers of India.

On the other hand, the atmospherics that have come to roost in Bangladesh are fraught with a possibility that despite Sheikh Hasina's best efforts, a rise in radicalisation might be taking place. This is becoming increasingly palpable with the growing intimacy of the country's population with Pakistan in recent times. The Pakistanisation of a section of Bangladesh has become particularly pronounced after the Taliban takeover in Afghanistan with a "butterfly" effect being felt in the erstwhile East Pakistan.

The post-1971 generation seems to be identifying itself with not only Pakistan, but the global Salafi movement as well. This was in ample evidence when a hostage situation was engineered in Dhaka in 2016. The Islamist groups in Bangladesh like the Jama'atul Mujahideen Bangladesh (JMB) and the Ansarullah Bangla Team had, of course, already identified themselves with groups such as the al-Qaeda and the ISIS. The expanse is, therefore, ripe for a concerted fundamentalist resurgence.

Coupled with the aforesaid resurgence a spill over effect from Bangladesh into India is also being felt. Eastern India and Assam would be the first ports of call for the Islamists. After all, the JMB had set up shop in Assam, Bengal and Bihar in 2014. Indeed, one of the *modus operandi* of the radicalised elements from Bangladesh as also from South East Asia has been to utilise the demographic jungles of lower Assam and employ it as a "gateway" to the rest of India in order to perpetrate terror alongside Pakistan-based *tanzeems* such as Lashkar-e-Taiba and Jaish-e-Mohammad. An expedited radicalisation effort of the sort that is being analysed would have far-reaching implication for India.

The state must, therefore, prepare itself for the "gray zone" warfare that is going to be upon it sooner than later. The prudent course of action would be to chart and cull from non-orthodox stratagems from theatres across the world. The consecration of novel approaches for combating "irregular warfare" is an important objective. As aforesaid, this is so not only because of the unconventional behaviour in Islamist terror conduct but in the insurgencies that India is faced with in the North East.

The pincer movements from the two extremities of India that are slowly making their way to "marry-up" in the traditional perches of East and North East India must be outflanked. A correctly anvilled anti-terror doctrine which is overarching and takes into account non-foreseeable eventualities would have gone a long way in the direction of countering the new threat. It is, therefore, important to be clear-eyed and construct an integrated approach whereby deception management is comprehended and acted upon with foresight.

Such an exercise would also calibrate the construction of a mainframe around the concept of irregular warfare that is all set to proliferate. Strategic acumen decrees that a course correction exercise be put in place which would counter the new threat with fortitude.

<https://www.firstpost.com/india/how-irregular-warfare-has-become-a-new-threat-to-indias-national-security-10279391.html>

Underwater drones herald sea change in Pacific warfare

US, UK, China and Russia are all developing and deploying underwater drones to gain a subaqueous advantage

By Gabriel Honrada

The drones that have changed the complexion of war from the sky are being replicated at sea, as great powers develop and deploy unmanned underwater vessels (UUVs) to gain a strategic edge in the Pacific and beyond.

The United States, United Kingdom, China and Russia are all developing and deploying the vessels, indicating the “dronification” of future maritime warfare.

The UK, which is expanding its military presence in the Pacific, is set to operate its first extra-large underwater drone to complement its Astute-class submarines. The Royal Navy’s efforts to design, build, and test such a drone have been designated Project CETUS, and aim to produce a 27-tonne, 12-meter Autonomous Underwater Vehicle (AUV) demonstrator.



Underwater drones are changing the complexion of maritime warfare. Image: Facebook

The contract for Project CETUS is projected to be finalized in financial year 2021-2022, with a projected cost of 21.5 million pounds (US\$29.3 million.)

The Royal Navy is also working on the Manta underwater drone, an unmanned version of the existing S201 manned submersible made by MSubs, a British manufacturer.

The US is working on the similar Orca Extra Large Unmanned Undersea Vehicle (XLUUV), as the US Navy awarded Boeing contracts worth a total of \$274.4 million to produce five Orca XLUUVs in 2019.

The Orca can be used for mine countermeasures, anti-submarine warfare, anti-surface warfare, electronic warfare and strike missions without risking the lives of its operators.

China is also known to be using underwater drones, with Indonesia seizing three Chinese drones labeled “Shenyang Institute of Automation Chinese Academy of Sciences” near South Sulawesi’s Selayar Island in December 2020.

The same year, China allegedly deployed 12 Sea Glider underwater drones in the Indian Ocean to gather oceanographic data to support submarine operations.

Moreover, China operates the HSU-001 underwater drone, which is roughly analogous to the Project CETUS, Manta, and Orca drones. The HSU-001 was reportedly tested off Fujian or the Taiwan Strait, simulating anti-submarine operations.

The proliferation of underwater drones in the Pacific region is changing the complexion of underwater warfare, as the region’s maritime environment poses unique operational challenges to underwater operations.

The contested South China Sea is a semi-enclosed body of water with numerous unmapped underwater features and shallows, which makes navigation hazardous for both crewed surface and underwater combatants.

At the same time, the South China Sea provides an ideal operating environment for shallow-water conventional submarines, as the area’s underwater features and high shipping traffic enables

such vessels to stay undetected for prolonged periods by using environmental factors to mask their signatures.

By extension, the South China Sea is an ideal proving ground for underwater drones, as they can perform underwater tasks that may be too dull, demanding, dangerous or even dirty for humans.

Underwater drones can be used for bathymetric mapping, alongside recording the thermal, magnetic, and acoustic properties of specific underwater passages to find blind spots where submarines can travel undetected safely.

As such, this capability is particularly suited for use in the South China Sea, which is among the most challenging bodies of water for submarine navigation due to its shallow waters, numerous underwater peaks and sandbars.

The recent collision of the USS Connecticut submarine with an unmapped seamount in the South China Sea illustrates the danger. In addition, these drones can also find submarine hiding spots to serve as staging areas for underwater operations, or sanctuaries to avoid enemy anti-submarine warfare operations.

They can also potentially be used for mine-hunting and minelaying operations. Underwater drones can scout underwater minefields and possibly disarm naval mines. They may reduce, but not eliminate, the need for specialized diver teams to reconnoiter, identify, and demine potential landing beaches for amphibious warfare operations.

The drones can also perform anti-submarine operations by actively searching and tracking enemy submarines, without endangering manned surface vessels or submarines. The 1971 sinking of the Indian frigate INS Kukri by the Pakistani submarine PNS Hangor illustrates the possibility of anti-submarine warships becoming easy prey for enemy submarines.

The use of underwater drones for anti-submarine purposes will thus minimize the need to commit manned warships for such operations.

More significantly, underwater drones can become strategic weapons when loaded with nuclear weapons. Such nuclear-armed underwater drones can bypass enemy missile defenses by traveling underwater, slipping near or into major coastal cities, ports and naval bases for attack purposes.

One such weapon is Russia's Poseidon drone, which gives Russia a credible second-strike capability in the event of a nuclear attack.

<https://asiatimes.com/2022/01/underwater-drones-herald-sea-change-in-pacific-warfare/>

THE TIMES OF INDIA

Thu, 13 Jan 2022

Explainer: North Korea tests 'hypersonic missiles' in global race for new rockets

Seoul: North Korea began the New Year with increasingly capable missile tests, including at least one it claims was a hypersonic missile, amid an intensifying race for the next generation of long-range weapons that are harder to detect and intercept.

South Korean military officials have cast doubts on North Korea's claim a missile fired last week was hypersonic, but on Tuesday officials in Seoul said the North appeared to have test fired another missile that flew at relatively low altitudes at up to 10 times the speed of sound (12,348 kmh/7,673 mph).

North Korea did not immediately confirm the launch. The performance and the launch location reported by South Korea, however, suggested it may be another hypersonic missile.

North Korea tested its first such missile last year, joining other countries such as China, United States and Russia, which have conducted tests of hypersonic weapons in recent months.

How the missiles work

Hypersonic missiles typically launch a warhead that travels at more than five times the speed of sound - or about 6,200 km per hour (3,850 mph), often manoeuvring at relatively low altitudes.

Despite their name, analysts say the main feature of hypersonic weapons is not speed - which can sometimes be matched or exceeded by traditional ballistic missile warheads - but their manoeuvrability.

North Korea's first hypersonic missile test in September featured a glider-shaped warhead, while last week's launch involved what analysts and South Korean military officials said was actually a conical manoeuvrable reentry vehicle (MaRV), or a ballistic missile warhead capable of manoeuvring to hit a target.

Combining a glide vehicle with a missile that can launch it partially into orbit - a so-called fractional orbital bombardment system (FOBS) - could strip adversaries of reaction time and traditional defences mechanisms.

Intercontinental ballistic missiles (ICBMs), by contrast, carry nuclear warheads on ballistic trajectories that travel into space but never reach orbit.

Who leads the race

Last year China launched a rocket carrying a hypersonic glide vehicle that flew through space, circling the globe before cruising down toward its target, which it missed by about two dozen miles.

In July, Russia successfully tested a Tsirkon (Zircon) hypersonic cruise missile, which President Vladimir Putin touted as part of a new generation of missile systems. Moscow also tested the weapon from a submarine for the first time.

The United States said in late September that it had tested an air-breathing hypersonic weapon - meaning it sustains flight on its own through the atmosphere like a cruise missile - marking the first successful test of that class of weapon since 2013.

Days after the US announcement, North Korea fired a newly developed hypersonic missile for the first time, calling it a "strategic weapon" that boosted its defence capabilities, though some South Korean analysts described the test as a failure.

Why it matters

The recent tests are the moves in a dangerous arms race in which smaller Asian nations are striving to develop advanced long-range missiles, alongside major military powers.

Hypersonic weapons, and FOBS, could be a concern as they can potentially evade missile shields and early warning systems.

Some experts cautioned against hype surrounding missiles such as the one China tested in August.

"China already has 100 nuclear-armed ICBMs that can strike the US," Jeffrey Lewis, a missile specialist at the US-based James Martin Center for Nonproliferation Studies, said on Twitter at the time. "Although the glider is a nice touch ... this is an old concept that is newly relevant as a way to defeat missile defences."

<https://timesofindia.indiatimes.com/world/rest-of-world/explainer-north-korea-tests-hypersonic-missiles-in-global-race-for-new-rockets/articleshow/88852538.cms>



Hypersonic missiles typically launch a warhead that travels at more than five times the speed of sound - or about 6,200 km per hour (3,850 mph), often manoeuvring at relatively low altitudes

THE TIMES OF INDIA

Thu, 13 Jan 2022

ISRO successfully conducts cryo engine test for Gaganyaan rocket

By Surendra Singh

New Delhi: Achieving another milestone in its ongoing Gaganyaan programme, Indian Space Research Organisation (Isro) on Wednesday successfully conducted the qualification test of the cryogenic engine of the human-rated GSLV rocket to be used in the country's maiden human spaceflight mission, scheduled to be launched in 2023.

"Isro successfully conducted the qualification test of cryogenic engine for Gaganyaan programme for a duration of 720 seconds at ISRO Propulsion Complex (IPRC), Mahendragiri, Tamil Nadu. The performance of the engine met the test objectives and the engine parameters were closely matching with the predictions during the entire duration of the test, the space agency said in a statement.

The successful long-duration test is a major milestone as it ensured the reliability and robustness of the cryogenic engine for induction into the human-rated launch vehicle. Further, the engine will undergo four more tests for a cumulative duration of 1810 seconds. Subsequently, one more engine will undergo two short-duration tests and one long-duration test to complete the cryogenic engine qualification for the manned mission.

Before the final manned mission in 2023, Isro has scheduled to send a 'vyommitra' (a human-like robot) to space in two unmanned missions, one of which is likely to be launched around the middle of this year.

Till now, Isro chairman K Sivan had been overseeing different aspects of the Gaganyaan programme from setting up the Human Space Flight Centre to accelerate the programme to signing a slew of agreements with Russia and France for training of gagannauts, spacesuits, other space material and space medicine to several demonstration tests of the crew module. With Sivan's one-year extended term ending on January 14, Vikram Sarabhai Space Centre director and rocket scientist S Somanath, who was appointed new chairman on Wednesday, will now oversee the programme, which includes the launches of the two unmanned missions this year and the final manned mission next year.

<https://timesofindia.indiatimes.com/india/isro-successfully-conducts-cryo-engine-test-for-gaganyaan-rocket/articleshow/88861681.cms>



The qualification test of the cryogenic engine of the human-rated GSLV rocket for Gaganyaan programme going on at ISRO Propulsion Complex (IPRC), Mahendragiri, Tamil Nadu on Wednesday.



Special electro-active nanoparticles developed for potential applications in touch & acoustic sensor

The scientists have achieved δ -phase in PVDF nanoparticles at lowest possible electric field till date --- 10^3 times lesser electric field than the conventional method. This makes the finding more convenient for application-based commercial technologies. This work has been published recently in the journal '*Applied Physical Letters*'.

"The new method not only provides an excellent way to induce the piezoelectric δ -phase in PVDF under lowest possible electrical field till date but also enables controlling the morphologies of the nanostructures in a single step process. So, this work would open up possibilities of use of nanotechnology in this field and would open more possibilities to explore further on the application of the delta phase, which was earlier stuck due to requirement of higher electric field. In addition, it was limited to only film-based samples. So, we would score it 10/10 in terms of novelty and existing technology that we proposed," said Dr. Mandal.



The application-based possibilities were earlier due to the requirement of high electric field. Moreover, the applications were limited to film-based devices. The current findings go beyond this and explore this phase with the new processing technique at room temperature as well as different nanostructures fabrication of this phase.

As a proof of concept, the INST team has also shown a few applications in pressure mapping sensor, acoustic sensor, and as a piezoelectric energy harvester. A piezoelectric nanogenerator was also fabricated to demonstrate the application of piezoelectric properties of these nanoparticles, and its practical applications as pressure mapping sensor, acoustic sensor, and energy harvesting studies were performed.

The high acoustic sensitivity of the device also indicates the detection ability of acoustic noises, speech signals, respiration motion, thus widening its technological applicability. Besides this, the INST team also noticed anti-fibrillizing effect when the δ -phase comprising PVDF nanoparticles were utilized, which is very essential to protect the diseases like Alzheimer creating opportunities for emerging futuristic applications in the health care sector.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1789384>



Thu, 13 Jan 2022

New tiny sensor makes the invisible visible

A TU/e research group has developed a new near-infrared sensor that is easy to make, comparable in size to sensors in smartphones, and ready for immediate use in industrial process monitoring and agriculture. This breakthrough has just been published in *Nature Communications*, with co-first author Kaylee Hakkell defending her Ph.D. thesis on January 14th.

The human eye is a marvelous sensor. Using three photoreceptor cells that convert visible light into signals for different colors, the eye gives essential information about the world around us.

"When our brain puts the signals together, it makes a prediction of what the signals mean based on our experiences. For example, a red strawberry is sweet, but a green one is not," explains

Kaylee Hakkel, Ph.D. researcher in the Photonics and Semiconductor Nanophysics group at the department of Applied Physics and co-first author of the study.

Size does matter

While the human eye is impressive, it's far from being the most advanced natural light sensor out there. "The eyes of the Mantis shrimp have 16 different cells, which are sensitive to ultraviolet light, visible, and near-infrared (NIR) light," says Hakkel. "And measuring the spectrum in the infrared is most interesting for applications in industry and agriculture, but there's one major issue—current near-infrared spectrometers are just too big and expensive."

Hakkel and her collaborators have solved this issue by developing a near-infrared sensor that fits onto a small chip. And just like the eye of the Mantis shrimp, it's got 16 different sensors—but they are all sensitive in the near-infrared. "Miniaturization of the sensors while keeping costs low was a major challenge. So, we designed a new wafer-scale fabrication process to achieve this."

"It's low-cost because we can produce multiple sensors at the same time, and it's ready, right now, for use in practical applications in the real world," Hakkel adds. "The sensor chip is small and could even be embedded in future smartphones."

Department of Applied Physics and the Eindhoven Hendrik Casimir Institute, is delighted with their research team's work. "We've been investigating this technology for a number of years. And now we've successfully integrated the spectral sensors on a chip, while also dealing with another key issue—efficient use of the data"

Normally, when a sensor measures light, the generated signal is used to reconstruct the optical spectrum—or optical fingerprint—for the material. Sensing algorithms are then used to analyze the data. In this new approach, the researchers show that the step of spectral reconstruction isn't needed. In other words, the signals generated by the sensors can be sent straight to the analysis algorithms. "This significantly simplifies the design requirements for the device," notes Fiore.

Analyzing milk and plastics

With the sensor in hand, the researchers then tested the sensor in a number of experiments, as explained by co-first author Maurangelo Petruzzella, who is also working at the startup company MantiSpectra. "We used the sensor to measure the nutritional properties of many materials including milk. Our sensor provided comparable accuracy in the prediction of fat content in milk as conventional spectrometers. And then we used the sensor to classify different types of plastic."

The nutritional properties of milk determine its economic value, and the sensor has been proven to accurately measure these properties. In addition, these measurements could be used to monitor the cow's overall health. Classification of plastic types using the sensor can help to optimize waste sorting processes.

"Besides these applications, we anticipate that the sensor could be used for personalized health care, precision agriculture (monitoring the ripeness of fruit and vegetable for instance), process control, and lab-on-chip testing. We now have a full development kit available based on this technology, the SpectraPod, that companies and research institutes are using to build their applications. And the great thing is that this sensor could even be commonplace in the smartphones of the future meaning that people could use it at home to check the quality of their food or check aspects of their health," adds Petruzzella.

Mantispectra future

And things are just starting to get exciting for Hakkel, who defends her thesis on January 14th at TU/e. Afterwards, she'll be joining Petruzzella at the startup company MantiSpectra where they will strive to advance the sensor for more practical applications. "I'm really excited to start working on the next phase of the sensor development with MantiSpectra. This sensor could contribute to a cleaner environment and address food waste, applications that are important for everyone."

More information: Kaylee D. Hakkel et al, Integrated near-infrared spectral sensing, *Nature Communications* (2022). DOI: [10.1038/s41467-021-27662-1](https://doi.org/10.1038/s41467-021-27662-1)

Journal information: [Nature Communications](https://phys.org/news/2022-01-tiny-sensor-invisible-visible.html)
<https://phys.org/news/2022-01-tiny-sensor-invisible-visible.html>

