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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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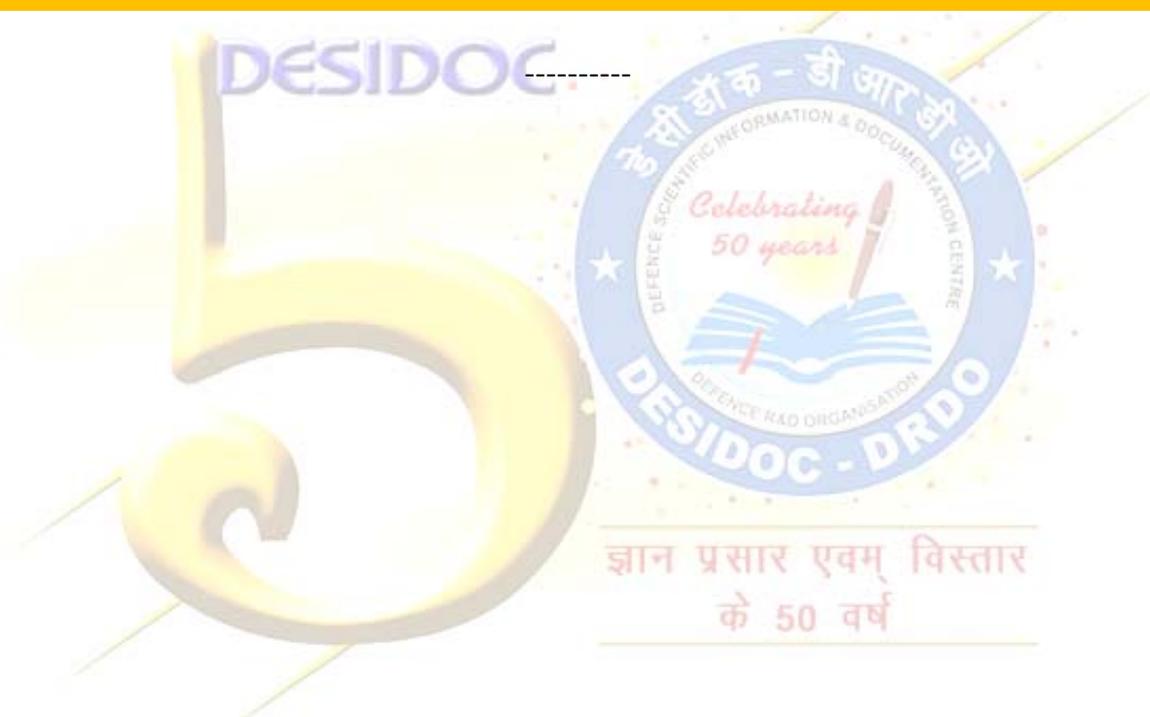
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## **DAC approves capital acquisition of various platforms & equipment worth Rs 38,900 crore**

*Focus on indigenous design and development; acquisitions from Indian industry of Rs 31,130 crore*

In the current situation and the need to strengthen the Armed Forces for the defence of our borders and in line with Prime Minister Shri Narendra Modi's clarion call for 'Atmanirbhar Bharat', Defence Acquisition Council (DAC) in its meeting of today held under the chairmanship of Raksha Mantri Shri Rajnath Singh accorded approval for capital acquisition of various platforms and equipment required by the Indian Armed Forces. Proposals for an approximate cost of Rs 38,900 crore were approved.

Focused on indigenous design and development these approvals include acquisitions from Indian industry of Rs 31,130 crore. The equipment are going to be manufactured in India involving Indian defence industry with participation of several MSMEs as prime tier vendors. The indigenous content in some of these projects is up to 80 per cent of the project cost. A large number of these projects have been made possible due to Transfer of Technology (ToT) by Defence Research and Development Organisation (DRDO) to the indigenous industry. These include Pinaka ammunitions, BMP armament upgrades and software defined radios for the Indian Army, Long Range Land Attack Cruise Missile Systems and Astra Missiles for the Indian Navy and Indian Air Force (IAF). The cost of these design and development proposals is in the range of Rs 20,400 crore.

Acquisition of new/additional missile systems will add to the fire power of three Services. While acquisition of Pinaka missile systems will enable raising additional regiments over and above the ones already inducted, addition of Long Range Land Attack Missile Systems having a firing range of 1,000 kilometres to the existing arsenal will bolster the attack capabilities of the Navy and the Air Force. Similarly induction of Astra Missiles having Beyond Visual Range capability will serve as a force multiplier and immensely add to the strike capability of the Navy and Air Force.

Further, addressing the long felt need of the IAF to increase its fighter squadrons, the DAC also approved the proposal for procurement of 21 MIG-29 along with upgradation of existing 59 MIG-29 aircraft and procurement of 12 Su-30 MKI aircraft. While the MIG 29 procurement and upgradation from Russia is estimated to cost Rs 7,418 crore, the Su-30 MKI will be procured from Hindustan Aeronautics Limited (HAL) at an estimated cost of Rs 10,730 crore.

<https://pib.gov.in/PressReleaseDetailm.aspx?PRID=1635916>



## डीएसी ने 38,900 करोड़ रुपये मूल्य के विभिन्न प्लेटफार्मों और उपकरणों से सम्बंधित सैन्य सामग्री के अधिग्रहण को मंजूरी दी; स्वदेशी डिजाइन और विकास पर विशेष जोर

*भारतीय उद्योग से 31,130 करोड़ रुपये मूल्य की सैन्य सामग्री का अधिग्रहण किया जायेगा*

वर्तमान स्थिति, हमारी सीमाओं की रक्षा के लिए सशस्त्र बलों को मजबूत करने की आवश्यकता व प्रधानमंत्री श्री नरेन्द्र मोदी के 'आत्मनिर्भर भारत' के आह्वान को ध्यान में रखते हुए, रक्षा मंत्री श्री राजनाथ सिंह की अध्यक्षता में रक्षा अधिग्रहण परिषद (डीएसी) की आज हुई बैठक में भारतीय सशस्त्र बलों द्वारा विभिन्न प्लेटफार्मों और उपकरणों से सम्बंधित सैन्य सामग्री के अधिग्रहण को मंजूरी दी गयी। 38,900 करोड़ रुपये की अनुमानित लागत के प्रस्तावों को स्वीकृति दी गई।

स्वदेशी डिजाइन और विकास पर केंद्रित इन स्वीकृतियों में भारतीय उद्योग से 31,130 करोड़ रुपये की सैन्य सामग्री का अधिग्रहण शामिल है। उपकरण भारत में निर्मित किये जायेंगे। निर्माण में भारतीय रक्षा उद्योग शामिल है जिन्हें कई एमएसएमई प्रमुख विक्रेताओं के रूप में सहयोग प्रदान करेंगे। इनमें से कुछ परियोजनाओं में स्वदेशी सामग्री का हिस्सा, परियोजना लागत के 80 प्रतिशत तक है। इन परियोजनाओं की बड़ी संख्या, रक्षा अनुसंधान और विकास संगठन (डीआरडीओ) द्वारा स्वदेशी उद्योग को प्रौद्योगिकी हस्तांतरण (टीओटी) के कारण संभव हुई हैं।

इनमें भारतीय सेना के लिए पिनाका गोला-बारूद, बीएमपी आयुध उन्नयन और सॉफ्टवेयर डिफाइंड रेडियो तथा भारतीय नौसेना एवं भारतीय वायु सेना (आईएएफ) के लिए लम्बी दूरी तक जमीन पर आक्रमण करने वाली क्रूज मिसाइल प्रणाली और एस्ट्रा मिसाइल शामिल हैं। इन डिजाइन व विकास प्रस्तावों की लागत 20,400 करोड़ रुपये है।

नई/अतिरिक्त मिसाइल प्रणालियों के अधिग्रहण से तीन सेनाओं की मारक क्षमता में वृद्धि होगी। पिनाका मिसाइल प्रणाली के अधिग्रहण के द्वारा पहले से शामिल सैन्यदलों व अतिरिक्त रेजिमेंट को सक्षम किया जा सकेगा तथा जमीन पर 1,000 किलोमीटर की लम्बी दूरी तक हमले करने वाली मिसाइल प्रणाली, नौसेना और वायु सेना की आक्रमण क्षमताओं को बढ़ाएगी। इसी तरह एस्ट्रा मिसाइलों को शामिल करने से नौसेना और वायु सेना की आक्रमण क्षमताओं में कई गुना वृद्धि होगी क्योंकि इस मिसाइल की मारक क्षमता हमारे विजुअल रेंज से भी अधिक है।

इसके अलावा, अपने लड़ाकू स्क्वाड्रनों को बढ़ाने से सम्बंधित भारतीय वायुसेना की जरूरत को देखते हुए, डीएसी ने मौजूदा 59 मिग-29 विमानों के उन्नयन के साथ 21 मिग-29 और 12 एसयू-30 एमकेआई विमानों की खरीद के प्रस्ताव को भी मंजूरी दी। रूस से मिग - 29 की खरीद और उन्नयन के मद में 7,418 करोड़ रुपये खर्च होने का अनुमान है, जबकि एसयू - 30 एमकेआई को हिंदुस्तान एयरोनॉटिक्स लिमिटेड (एचएएल) से खरीदा जाएगा जिनकी अनुमानित लागत 10,730 करोड़ रुपये है।

<https://pib.gov.in/PressReleaseDetailm.aspx?PRID=1635994>

## **Amid tensions with China, Govt approves purchase of fighter jets & missile systems worth Rs 38,900 crore**

*Twenty-one MiG-29 fighter jets are being bought from Russia while 12 Su-30 MKI aircraft will be procured from Russia. The ministry has also approved a separate proposal to upgrade existing 59 MiG-29 aircraft*

In the midst of India's tense border standoff with China, The Defence Ministry on Thursday approved procurement of a number of frontline fighter jets, missile systems and other platforms at a cost of Rs 38,900 crore to bolster the combat capability of the armed forces, officials said.

They said 21 MiG-29 fighter jets are being bought from Russia while 12 Su-30 MKI aircraft will be procured from Russia. The ministry has also approved a separate proposal to upgrade existing 59 MiG-29 aircraft.

The decisions were taken at a meeting of the Defence Acquisition Council (DAC) chaired by Defence Minister Rajnath Singh.

The ministry also cleared the acquisition of 248 Astra Beyond Visual Range air-time air missiles for the Indian Air Force (IAF) and the Navy along with the design and development of a new 1,000-kilometre strike range Land Attack Cruise Missile by the Defence Research and Development Organisation (DRDO), said officials.

The procurement of 21 MiG-29 and upgrading of the existing fleet of MiG-29 are estimated to cost the government Rs 7,418 crore while purchase of 12 new Su-30 MKI from the Hindustan Aeronautics Ltd will be made at a cost of Rs 10,730 crore, the officials said.

The decisions come in the backdrop of the ongoing crisis with China at the Line of Actual Control (LAC) in Eastern Ladakh. Last month, at least 20 personnel of the Indian Army were killed in Galwan Valley during violent clashes with China's People's Liberation Army (PLA).

Of the 38,900 crore, acquisitions worth Rs 31,130 crore would be from the Indian industry. The projects cleared include ammunition for Pinaka rocket launchers, BMP combat vehicle upgrades and software-defined radios for the Army.

"The equipment to be manufactured in India involving Indian defence industry with participation of several MSMEs as prime tier vendors," said a statement from the DAC. "The indigenous content in some of these projects is up to 80% of the project cost. A large number of these projects have been made possible due to transfer of technology by DRDO to the indigenous industry. These include Pinaka ammunitions, BMP armament upgrades and software-defined radios for the Army, long-range Land Attack Cruise Missile Systems and Astra Missiles for Navy and Air Force. The cost of these design and development proposals is in the range of Rs 20,400 crore."

G Satheesh Reddy, Secretary DD R&D and Chairman of DRDO, said, "Air-to-air missile Astra, software-defined radio, Pinaka munitions and Land Attack Cruise in missile are state-of-the-art systems developed by DRDO. The armed forces and the industry will be immensely benefitted with the manufacturing of these indigenous systems."

<https://www.news18.com/news/india/amid-lac-tensions-with-china-india-clears-acquisition-of-33-new-fighter-aircraft-from-russia-2697971.html>



Representative image.

## **Indigenous systems will immensely benefit forces: DRDO**

New Delhi: The Defence Research and Development Organisation (DRDO) said on Thursday that the armed forces and the industry will be immensely benefitted by the manufacturing of indigenous systems.

DRDO Chairman G. Satheesh Reddy said that air-to-air missile Astra, the Software Defined Radio, Pinaka munitions, and Land Attack Cruise Missile are state-of-the-art systems developed by the DRDO.

Astra is a beyond visual range (BVR) class of air-to-air missile (AAM) system designed to be mounted on fighter aircraft. The missile is designed to engage and destroy highly manoeuvring supersonic aircraft.

The missile has all-weather day and night capability. It is being developed in multiple variants to meet specific requirements.

The Astra Mk-I Weapon System integrated with SU-30 Mk-I aircraft is being inducted into the Indian Air Force (IAF). It can be launched in autonomous and buddy mode of operation with features for lock-on-before launch (LOBL) and lock-on-after launch (LOAL).

The Software Defined Radio (SDR) is a secure indigenous system with legacy communication support and secure digital voice/data communication for Naval application with 3-channel (2V/UHF band and 1HF band) and 4-channel (2V/UHF band and 2L-band) system for tactical communication and single channel operation in V/UHF (Manpack role) and UHF band (Handheld role).

Pinaka is an all-weather, indirect fire, free flight artillery rocket system. It provides a unique capability to accurately deliver a devastatingly lethal and responsive fire against a variety of area targets such as exposed enemy troops, armored and soft skin vehicles, communication centres, air terminal complexes, fuel and ammunition dumps.

The Pinaka weapon system consists of rocket, multi barrel rocket launcher, battery command post, loader-cum-replenishment vehicle, replenishment vehicle and Digicora MET radar.

The Long Range Land Attack Cruise Missile (LRLACM) demonstrated critical cruise missile technologies such as aerodynamic configuration, vertical launch using solid booster, thrust vector control system, booster separation, in-flight wing deployment, in-flight engine start and long range way-point navigation system.

Seeker development and testing by DRDO laboratories are at a high level of readiness. Thus, it is important to take up the proposed development of fully indigenous LRLACM that greatly enhance the operational capability of the forces, the DRDO said.

*(Disclaimer: This story has not been edited by Outlook staff and is auto-generated from news agency feeds. Source: IANS)*

<https://www.outlookindia.com/newscroll/indigenous-systems-will-immensely-benefit-forces-drdo/1883955>

## 'असूत्र' का वार है घातक, चीन से खतरे के मद्देनजर भारत कर रहा अपनी स्थिति मजबूत

*उत्तरी सीमा पर चीन के दुस्साहस को देखते हुए भारत जमीन और आसमान में अपनी स्थिति को मजबूत कर रहा है। असूत्र मिसाइल इसका ही एक जरिया है।*

नई दिल्ली : चीन से बढ़ते खतरे के मद्देनजर भारत लगातार अपनी स्थिति क्षेत्र में मजबूत करने में लगा है। इसके लिए भारत ने सीमा पर मिसाइलों की तैनाती भी कर दी है। अब चीन के किसी भी दुस्साहस को करारा जवाब देने के लिए और उससे होने वाले संभावित खतरे के मद्देनजर भारत अपने लड़ाकू विमानों को असूत्र मिसाइल की ताकत से लैस करना चाहता है। ये मिसाइल पूरी तरह से स्वदेशी तकनीक से निर्मित है। आपको बता दें कि असूत्र मिसाइल की शुरुआत 1990 में हुई थी। 1998 में पहली बार भारत में एयरो इंडिया में इसको सार्वजनिक किया गया था। इसको डीआरडीओ के अलावा हिंदुस्तान एयरोनॉटिक्स लिमिटेड और इलेक्ट्रॉनिक्स कारपोरेशन ऑफ इंडिया ने मिलकर तैयार किया है। 2003 में इसका पहला टेस्ट तेजस से किया गया था। गौरतलब है कि ये एक क्रूज मिसाइल है जो कई तरह की खूबियों से लैस है। आइये जानते हैं इस मिसाइल की खूबियां।

- स्वदेशी तकनीक से निर्मित असूत्र मिसाइल को मुख्य रूप से भारत के रक्षा अनुसंधान एवं विकास संगठन ने तैयार किया है। ये एक आल वेदर बियॉड विजुअल रेंज एयर टू एयर मिसाइल है।
- बीते वर्ष सितंबर में भी इस मिसाइल का ओडिशा के बालासोर तट से सफलतापूर्वक टेस्ट किया गया था। उस वक्त इसको सुखोई 30 एमकेआई से लॉन्च किया गया था। हिन्दुस्तान एरोनटिक्स लिमिटेड ने इस मिसाइल के लिए सुखोई में कुछ खास बदलाव किए हैं। इस दौरान इस मिसाइल ने 70 किमी का सफर तय कर अपने टार्गेट पर जबरदस्त हमला किया था।



*उत्तरी सीमा पर चीन के दुस्साहस को देखते हुए भारत जमीन और आसमान में अपनी स्थिति को मजबूत कर रहा है। असूत्र मिसाइल इसका ही एक जरिया है।*

- इस मिसाइल को मिराज 2000, मिग 29, मिग 21, तेजस और सुखोई 30 से भी दागा जा सकता है।
- यह मिसाइल पूरी तरह से स्वदेशी तकनीकी से निर्मित है। ये मिसाइल 5555 किमी. प्रति घंटे की रफ्तार से गति चल सकती है।
- ये मिसाइल हर तरह के मौसम में दुश्मन पर सटीक हमला करने में सक्षम है। ये आवाज की गति से भी तेज चलते हुए दुश्मन पर वार करती है।
- असूत्र मिसाइल करीब 3.8 मीटर लंबी और महज 7 इंच चौड़ी है। छोटे आकार की वजह से इसको कई परिस्थितियों में इस्तेमाल किया जा सकता है। इसका वजन महज 154 किया है।
- छोटा आकार होने और वजन में हल्की होने की वजह से इसको अलग-अलग ऊंचाई से दागा जा सकता है। 15 किलोमीटर की ऊंचाई से छोड़े जाने पर यह मिसाइल 110 किलोमीटर की दूरी तक मार कर सकती है जबकि आठ किलोमीटर की ऊंचाई से छोड़े जाने पर यह 44 किलोमीटर की दूरी तक जा सकती है। वहीं 3 किमी की ऊंचाई से लॉन्च करने पर ये मिसाइल अपनी अधिकतम दूरी तक मार कर सकती है।

- इससे पहले अस्त्र का सफल परीक्षण चार 2018, 2017, मई 2014, जनवरी 2010, सितंबर 2008, मार्च 2007 और मई 2003 में भी इसका सफलतापूर्वक टेस्ट किया गया था। जून 2010 को इस मिसाइल का टेस्ट रात में किया गया था जो सफल रहा था।
- ये मिसाइल 80-100 किमी की दूरी पर सटीक निशाना लगाने में सक्षम है। ये मिसाइल अपने साथ 15 किग्रा विस्फोटक ले जा सकती है।

<https://www.jagran.com/news/national-know-more-about-air-to-air-missile-astra-developed-by-drdo-jagran-special-20465611.html>



Fri, 03 July 2020

## DAC approves Capital acquisitions of various platforms worth Rs 38,900 crore

By JK Jha

### Highlights

***Acknowledging the seriousness of the situation in Ladakh, where Indian soldiers are facing off Chinese intruders, the Ministry of Defence (MOD) yesterday approved capital acquisitions of various platforms and equipment required by the Indian Armed Forces.***

Acknowledging the seriousness of the situation in Ladakh, where Indian soldiers are facing off Chinese intruders, the Ministry of Defence (MOD) yesterday approved capital acquisitions of various platforms and equipment required by the Indian Armed Forces. The proposals for an approximate cost of Rs 38,900 crore were approved by the Defence Acquisition Council (DAC).

The meet Chaired by Defence minister Rajnath Singh focused on indigenous design and development.

Further, addressing the long-felt need of the Indian Air Force to increase its fighter squadrons, the DAC also approved the proposal for procurement of 21 MIG-29. It also approved upgradation of existing 59 Mig-29 aircraft and procurement of 12 Su-30 MKI aircraft.

These approvals include acquisitions from Indian Industry amounting to Rs 31,130 Crore. The indigenous equipment to be manufactured includes Indian Defence Industry with the participation of several MSMEs (medium, small, and micro enterprises) as prime-tier vendors. The indigenous content in some of these projects is up to 80 per cent of the project cost.

A large number of these projects have been made possible due to Transfer of Technology by DRDO to the Indigenous Industry. These include Pinaka ammunitions, BMP armament upgrades and Software Defined Radios for the Army, Long Range Land Attack Cruise Missile Systems and Astra Missiles for Navy and Air Force. The cost of these Design and Development proposals is in the range of Rs 20,400 crore.

Acquisition of new and additional missile systems will add to the firepower of the three Services. While the acquisition of Pinaka missile systems will enable raising additional regiments over and above the ones already inducted, the addition of the long range Land Attack Missile Systems having a firing range of 1000 Km to the existing arsenal will bolster the attack capabilities of the Navy and the Air Force. Induction of Astra Missiles having Beyond Visual Range capability will serve as a force multiplier and immensely add to the strike capability of Navy and Air Force.

<https://www.thehansindia.com/business/dac-approves-capital-acquisitions-of-various-platforms-worth-rs-38900-crore-631519?infinite-scroll=1>

## Explained: From Pinaka to Astra, the new weapons DAC has approved 'for defence of borders'

*The most prominent of these proposals include missile systems for the three services, and additional fighter jets for the Air Force. The aircraft will be bought from Russia, and also from the domestic Hindustan Aeronautics Limited*

*By Krishn Kaushik*

New Delhi: As the government expects the standoff with China to continue well into the winters, and the armed forces ready for the long-haul, preparing for all eventualities, the Defence Acquisition Council (DAC) chaired by Defence Minister Rajanath Singh on Thursday cleared several proposals worth close to Rs 39,000 crore that will boost the combat capabilities of all three services—Army, Navy and the Air Force.

The most prominent of these proposals include missile systems for the three services, and additional fighter jets for the Air Force. The aircraft will be bought from Russia, and also from the domestic Hindustan Aeronautics Limited.

Government said in a statement, that “in the current situation and the need to strengthen the Armed Forces for the defence of our borders” the DAC “accorded approval for capital acquisitions of various platforms and equipment required by the Indian Armed Forces” for an “approximate cost of Rs 38900 crore”.

The approvals, it said, “include acquisitions from Indian Industry of Rs 31,130 crore”. A large number of these projects, government said, have been made possible due to Transfer of Technology by DRDO to the Indigenous Industry.

G Satheesh Reddy, Chairman of Defence Research and Development Organisation called the air-to-air Astra missile, Pinaka munitions and Land Attack Cruise Missile as “state of the art systems developed by DRDO”. He said the “armed forces and industry will be immensely benefitted with the manufacturing of these indigenous systems”.

### **Pinaka missile system for the Army**

It will enable raising additional regiments over and above the ones already inducted. It is an all-weather, indirect fire, free flight artillery rocket system, according to the DRDO.

“It provides a unique capability to accurately deliver a devastatingly lethal and responsive fire against a variety of area targets such as exposed enemy troops, armored and soft skin vehicles, communication centers, air terminal complexes, fuel and ammunition dumps. The Pinaka weapon system consists of Rocket, Multi Barrel Rocket launcher, Battery Command Post, Loader cum Replenishment Vehicle, Replenishment Vehicle and Digicora MET Radar.”

### **Astra Missiles for Navy and Air Force**

Astra Missiles, with Beyond Visual Range capability will serve as a force multiplier and immensely add to the strike capability of Navy and Air Force, the government said on Thursday.



Astra Missiles, with Beyond Visual Range capability will serve as a force multiplier and immensely add to the strike capability of Navy and Air Force (Source: DRDO)



The Pinaka weapon system consists of Rocket, Multi Barrel Rocket launcher, Battery Command Post, Loader cum Replenishment Vehicle, Replenishment Vehicle and Digicora MET Radar

The BVR class of Air-to-Air Missile (AAM) system designed to be mounted on fighter aircraft, says DRDO and adds that it is “designed to engage and destroy highly manoeuvring supersonic aircraft”.

“The missile has all weather day and night capability. The missile is being developed in multiple variants to meet specific requirements. The ASTRA Mk-I Weapon System integrated with SU-30 Mk-I aircraft is being inducted into the Indian Air Force (IAF). It can be launched in autonomous and buddy mode of operation with features for Lock-On-Before Launch (LOBL) and Lock-On After Launch (LOAL).”

### **MIG 29 & Su-30 MKI Fighter jets**

To address the long felt need of the Indian Air Force to increase its fighter squadrons, the government said, the DAC approved procurement of 21 MIG-29 from Russia. It is a twin-engine, multirole fighter jets, developed by the Soviets in 1970s, but has been upgraded since. Russia will also upgrade existing 59 Mig-29 aircraft of India. The deal will cost Rs 7,418 crore.

Government will also buy 12 Sukhoi Su-30 MKI from Hindustan Aeronautics Limited at an estimated cost of Rs 10,730 crore.

### **Development of Long-Range Land Attack Cruise Missile Systems (LRLACM) for Navy and Air Force**

It is aimed at enhancing India’s firing range from between 400 km and 500 km of the Brahmos to 1000 km. DRDO says “presently, lead projects have developed, demonstrated and matured critical cruise missile technologies such as aerodynamic configuration, vertical launch using solid booster, thrust vector control system, booster separation, in-flight wing deployment, in-flight engine start and long range way-point navigation system”.

The seeker development and testing by DRDO laboratories, it said, are demonstrated and is at a high-level of readiness. The proposed development of fully indigenous long-range land attack cruise missile can greatly enhance the operational capability of services, DRDO says.

<https://indianexpress.com/article/explained/astra-missile-pinaka-air-to-air-iaf-drdo6487261/>



*Fri, 03 July 2020*

## **Defence Ministry clears 248 Astra Missile, 200 for IAF and 48 for Navy**

In a major boost to the Indian armed forces, the Defence Ministry has cleared the acquisition of 248 Astra Beyond Visual Range air-to-air missiles, marking the first acquisition of the indigenous DRDO-developed missiles. Of these missiles, the Navy will get 48 Astra missiles for its MiG-29K fighter jets, while 200 missiles have been acquired for its 33 new Russian fighter planes including 12 Su-30 MKIs and 21 MiG-29s. Proposals worth Rs 38,900 crore have been cleared by the Defence Acquisition Council, of which Rs 31,130 crore would be from the Indian industry.

ASTRA is a Beyond Visual Range (BVR) class of Air-to-Air Missile (AAM) system designed to be mounted on fighter aircraft. The missile is designed to engage and destroy highly maneuvering supersonic aircraft. The missile has all-weather day and night capability. The missile is being developed in multiple variants to meet specific requirements. The ASTRA Mk-I Weapon System integrated with SU-30 MkI aircraft is being inducted into



the Indian Air Force (IAF) and can be launched in autonomous and buddy mode of operation with features for Lock-On-Before Launch (LOBL) and Lock-On After Launch (LOAL).

<https://idrw.org/defence-ministry-clears-248-astra-missile-200-for-iaf-and-48-for-navy/#more-230271>

## THE TIMES OF INDIA

Fri, 03 July 2020

# Government approves purchase of fighter jets, missile systems, weapons worth Rs 38,900 crore

New Delhi: The Defence Acquisition Council (DAC) on Thursday approved a proposal for procurement of armament, including Russian fighter jets, indigenous missile systems and radars, worth Rs 38,900 crore.

Focused on indigenous design and development these approvals include acquisitions from Indian defence industry of Rs 31,130 crore. The decisions were taken at a meeting of the DAC chaired by defence minister Rajnath Singh.

The council also approved proposals to procure fighter jets and upgrade existing ones. Twenty-one MiG-29 fighter jets are being bought from Russia while 12 Su-30 MKI aircraft will be procured from Russia. The ministry has also approved a separate proposal to upgrade existing 59 MiG-29 aircraft.

The procurement of 21 MiG-29 and upgrading of the existing fleet of MiG-29 are estimated to cost the government Rs 7,418 crore while the purchase of 12 new Su-30 MKI from the Hindustan Aeronautics Ltd will be made for Rs 10,730 crore, the officials said.

Keeping in line with Prime Minister Narendra Modi's clarion call for "Atma Nirbhar Bharat", the council said that the equipment will be manufactured in India involving Indian defence industry with the participation of several MSMEs as prime-tier vendors.

The Indigenous content in some of these projects is up to 80% of the project cost, it added.

A large number of these projects have been made possible due to Transfer of Technology by DRDO to the indigenous industry. These include Pinaka ammunition, BMP armament upgrades and Software Defined Radios for the Army, Long Range Land Attack Cruise Missile Systems and Astra Missiles for Navy and Air Force. The cost of these Design and Development proposals is in the range of Rs 20,400 crore, the council elaborated.

The council said that the acquisition of new/additional missile systems will add to the firepower of three Services.

The acquisition of Pinaka missile systems will enable raising additional regiments over and above the ones already inducted, the addition of Long-Range Land Attack Missile Systems having a firing range of 1000 Km to the existing arsenal will bolster the attack capabilities of the Navy and the Air Force.

Similarly, the induction of Astra Missiles having Beyond Visual Range capability will serve as a force multiplier and immensely add to the strike capability of Navy and Air Force. *(With inputs from agencies)*

<https://timesofindia.indiatimes.com/india/government-approves-purchase-of-fighter-jets-missile-systems-weapons-worth-rs-38900-crore/articleshow/76750301.cms>



Government approves purchase of fighter jets, missile systems, weapons worth Rs 38,900 crore

## Indian Air Force to get more firepower! IAF to buy more MiG 29 and Su-30 MKI fighters

*According to the MoD, these equipment are to be manufactured locally with the help of the several MSMEs as the prime tier vendors and defence industry and these systems should have indigenous content*

*By Huma Siddiqui*

In view of the current tensions along the Line of Actual Control (LAC) the Defence Acquisition Council which met in New Delhi today has put its stamp of approval on the Indian Air Force's proposal to procure 21 MIG-29, up-gradation of existing 59 Mig-29 aircraft and purchase of 12 Su-30 MKI aircraft.

According to an official announcement from the Ministry of Defence (MoD), "This approval has been given to increase the IAF's fighter squadrons." The MiG-29 from Russia, including the plans to upgrade the existing fleets of the MiG-29 in service is estimated to cost Rs 7418 crore. And the Su-30 MKI (which are being manufactured here as per Indian specifications) are going to be procured from state-owned Hindustan Aeronautics Limited (HAL) at an estimated cost of Rs 10,730 crore.



These two procurement proposals have been under consideration for almost two years now (Reuters image)

Financial Express Online last month had reported first that DAC was expected to approve the procurement of MiG-29 and the Su-30 MKI, to help enhance the dwindling strength of fighter squadrons in service.

These two procurement proposals have been under consideration for almost two years now. And, in view of the security situation in the region, the DAC has given a green signal for purchasing these.

Though the approval has been given today, it is still a long way off before the contracts are inked and their deliveries which will take a couple of years. The IAF already has both the MiG-29 and a fleet of Su-30 MKI in service.

### Upgrade of MiG 29

The upgrade of the existing MiG-29 in the IAF will change them from an air superiority fighter to a multi-role aircraft. With modern technology and customization, the aircraft will have an added life of 40 more years.

Upgradation of the MiG 29 has earlier been done by HAL and these are now MiG 29 UPG. "This means that the up-gradation of the fleet will take place at HAL and will have the kits will come from Russia. The technology transfer, as well as the training of the personnel who will work on these aircraft, is undertaken by Russia.

The plans are being modified at the HAL facility and upgraded machines have onboard include the latest avionics as well have been modified to carry new weapons.

The MiG-29UPG now has the capability of hitting the ground and naval targets (both static and moving) and with weapons of high precision.

### DAC approves more deals

At the DAC meeting headed by the defence minister Rajnath Singh, cleared proposals worth Rs 38900 crore.

At today's meeting the focus was on indigenous design and development of various platforms and their acquisitions from the private Industry of Rs 31,130 crore.

According to the MoD, these equipment are to be manufactured locally with the help of the several MSMEs as the prime tier vendors and defence industry and these systems should have indigenous content.

Several projects have been made possible due to Transfer of Technology by DRDO to the local industry and these include Long Range Land Attack Cruise Missile Systems and Astra Missiles for Navy and Air Force, Pinaka ammunitions, BMP armament upgrades and Software Defined Radios for the Army. “The cost of these Design and Development proposals is in the range of Rs 20400 crore,” stated MoD.

Also, with the acquisition of new/additional missile systems more firepower will be added in the three services.

With the acquisition of Pinaka missile systems, additional regiments over and above the ones already inducted will be raised. The addition of Long-Range Land Attack Missile Systems having a firing range of 1000 Km to the existing arsenal will bolster the attack capabilities of the Navy and the Air Force.

And the induction of Astra Missiles with Beyond Visual Range capability will be a force multiplier and will enhance the strike capability of Navy and Air Force.

<https://www.financialexpress.com/defence/indian-air-force-to-get-more-firepower-iaf-to-buy-more-mig-29-and-su-30-mki-fighters/2011458/>



**The Indian EXPRESS**

Fri, 03 July 2020

## What is Astra missile?

*Indigenously developed Beyond Visual Range (BVR) air-to-air missile, Astra is designed to be mounted on a fighter aircraft and is also designed to engage and destroy highly manoeuvring supersonic aircraft*

New Delhi: In a bid to provide a fillip to the armed forces, the Ministry of Defence Thursday approved procurement of Astra missiles and long-range land attack cruise missile systems with a range of 1,000 km for Air Force and Navy. Aside from these, the Defence Acquisition Council (DAC), chaired by Defence Minister Rajnath Singh, also approved procurement of a number of frontline fighter jets—21 MiG-29 fighter jets are being bought from Russia while 12 Su-30 MKI aircraft will be procured from Hindustan Aeronautics Ltd.

A first of its kind indigenous missile, Astra was flight-tested successfully from a Sukhoi-30 MKI jet as a part of user trials by the Indian Air Force off the coast of Odisha on September 19 last year.

### What is Astra missile?

Indigenously developed Beyond Visual Range (BVR) air-to-air missile, Astra is designed to be mounted on a fighter aircraft and is also designed to engage and destroy highly manoeuvring supersonic aircraft.

With a 15-kilogram high-explosive pre-fragmented warhead, Astra has a range of over 70 km and can fly towards its target at a speed of over 5,555 km per hour. The missile has all-weather day and night capability.

The missile has been developed by the Defence Research and Development Organisation (DRDO), along with almost 50 other public and private organisations, which were involved in multiple variants to meet specific requirements.

For the IAF trials, the Astra Mk-I Weapon system integrated with SU-30 Mk-I aircraft was carried out by state-owned Hindustan Aeronautics Limited.

<https://indianexpress.com/article/what-is/astra-missile-air-to-air-iaf-drdo-6486936/>

## सरकार ने 38,900 करोड़ रुपये की लागत से लड़ाकू विमानों, मिसाइल सिस्टम, हथियारों की खरीद को मंजूरी दी

नयी दिल्ली: चीन के साथ सीमा पर बढ़े तनाव के बीच रक्षा मंत्रालय ने सैन्य बलों की युद्धक क्षमता बढ़ाने के लिए 38,900 करोड़ रुपये की लागत से 33 अग्रिम लड़ाकू विमानों, मिसाइल सिस्टम और अन्य सैन्य उपकरणों की खरीद को बृहस्पतिवार को मंजूरी दी। अधिकारियों ने इस बारे में बताया है।

उन्होंने बताया कि 21 मिग-29 लड़ाकू विमान रूस से जबकि 12 एसयू-30 एमकेआई विमान हिन्दुस्तान एरोनॉटिक्स लिमिटेड से खरीदे जाएंगे। मंत्रालय ने मौजूदा 59 मिग-29 विमानों को उन्नत बनाने के एक अलग प्रस्ताव को भी मंजूरी दी है। अधिकारियों ने बताया कि मंत्रालय ने 248 अस्त्र बीवीआर मिसाइल सिस्टम की खरीद को भी स्वीकृति दी है। हवा से हवा में लड़ाई में सक्षम ये मिसाइल सिस्टम सुपरसोनिक लड़ाकू विमानों से मुकाबला कर सकते हैं और सभी तरह के मौसम में दिन-रात हमेशा इनके काम करने की क्षमता होगी।



रक्षा मंत्री राजनाथ सिंह की अध्यक्षता में रक्षा खरीद परिषद (डीएसी) की बैठक में ये फैसले लिए गए। खरीद के संबंध में डीएसी रक्षा मंत्रालय की निर्णय लेने वाली सर्वोच्च इकाई है। डीएसी ने पिनाका मिसाइल सिस्टम के साथ ही लंबी दूरी तक मारक क्षमता वाले मिसाइल सिस्टम की खरीद को भी मंजूरी दी है। इसकी क्षमता 1,000 किलोमीटर तक होगी।

एक प्रेस विज्ञप्ति में मंत्रालय ने कहा है कि “मौजूदा परिस्थिति और हमारी सीमाओं पर रक्षा के लिए सैन्य बलों को मजबूत” करने के वास्ते डीएसी ने ये निर्णय किया है। पिछले सात हफ्ते से पूर्वी लद्दाख में कई स्थानों पर भारतीय और चीनी सेनाओं के बीच तनाव गहरा गया है। गलवान घाटी में 15 जून को भारत के 20 सैन्यकर्मियों की शहादत के बाद तनाव और बढ़ गया है। चीनी सेना को भी नुकसान हुआ लेकिन उसने हताहत सैनिकों के बारे में कुछ नहीं बताया है।

डीएसी द्वारा मंजूर प्रस्तावों में पिनाका हथियार की खरीद तथा अन्य उपकरण शामिल हैं। अधिकारियों ने बताया कि 21 मिग-29 लड़ाकू विमानों और मिग-29 के मौजूदा बेड़े को उन्नत बनाने पर अनुमानित तौर पर 7,418 करोड़ रुपये खर्च होंगे। जबकि, हिन्दुस्तान एरोनॉटिक्स लिमिटेड से 12 नए एसयू-30 एमकेआई विमान की खरीद पर 10,730 करोड़ रुपये की लागत आएगी।

मंत्रालय ने एक बयान में कहा कि डीएसी ने करीब 38,900 करोड़ रुपये की लागत से खरीद को मंजूरी दी है। मंत्रालय ने कहा, “स्वदेशी डिजाइन और विकास पर जोर दिया गया है। इस मंजूरी में भारतीय उद्योग से 31,130 करोड़ रुपये की खरीद भी शामिल है। उपकरण का निर्माण भारत में होगा। अग्रणी विक्रेता के तौर पर कई एमएसएमई की भागीदारी से भारतीय रक्षा उद्योग इसे अंजाम देगा।”

मंत्रालय ने कहा, “इनमें से कुछ परियोजनाओं में स्वदेशी सामग्री का खर्च परियोजना लागत के 80 प्रतिशत तक होगा। इनमें से काफी परियोजनाएं डीआरडीओ (रक्षा अनुसंधान और विकास संगठन) द्वारा तकनीक हस्तांतरण के कारण संभव हो पाएंगी।” अधिकारियों ने बताया कि इस रूपरेखा और विकास प्रस्तावों की लागत 20,400 करोड़ रुपये है।

मंत्रालय ने बताया, “पिनाका मिसाइल सिस्टम से भी मारक क्षमता बढ़ेगी। इसके साथ ही एक हजार किलोमीटर लंबी दूरी की मारक क्षमता वाले मिसाइल सिस्टम से नौसेना और वायुसेना की मारक क्षमता में कई गुणा बढ़ोतरी

होगी।” मंत्रालय ने कहा, “इसी तरह, अस्त्र मिसाइलों को बेड़े में शामिल करने से बल की ताकत में और इजाफा होगा। इससे भारतीय नौसेना और भारतीय वायु सेना की मारक क्षमता में जबरदस्त बढ़ोतरी होगी।”

<https://www.navabharat.news/national-news/government-approved-the-purchase-of-fighter-planes-missile-systems-at-a-cost-of-rs-38900-crore/>



*Fri, 03 July 2020*

## **LRLACM: India's Next Cruise missile will have Range of Nirbhay and Speed of BrahMos**

*By Raunak Kunde*

Indian Ministry of Defence has cleared the proposed development of Long-Range Land Attack Cruise Missile (LRLACM) for Ship launched cruise missile for Land-based strikes for the Indian Navy which will also be adopted later for the Air force and Army variant with a range of 1000 km, just like Nirbhay Cruise missile with a hint of BrahMos speed.

Nirbhay Cruise missile program has been officially closed but the technology of seeker and booster propulsion will be carried on the LRLACM program too which includes Small Turbofan Engines (STFE) or the Manik turbofan engine for the second stage propulsion which is near identical to what now scrapped Nirbhay Cruise missile had to offer but this is where it gets interesting and separates Nirbhay from LRLACM.



LRLACM will fly most of its flight at subsonic speeds but it will perform a supersonic sprint in the terminal approach to the target which considerably will reduce the reaction time for the target's defense systems to react.

LRLACM will have a booster with thrust vectoring capability at the initial launch stage, once its jettisoned, Turbofan will kick in and maintain at subsonic speed while it's flying at Tree-top levels cover for the 1000 km at approximately 20 minutes then it does its supersonic sprint in the terminal approach to the target.

DRDO and Russia already have been developing similar missiles in the Anti-Ship version role and LRLACM will be a land attack based version of the same missile with changes in seeker technology for land attack roles for the air force and Army. DRDO also is developing Naval Anti-Shipping Missile Short Range (NASM-SR) with a 55 km range for use from Sea King helicopters and eventually equip the MH60R helicopters.

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<https://idrw.org/lrlacm-indias-next-cruise-missile-will-have-range-of-nirbhay-and-speed-of-brahmos/#more-230273>

*Fri, 03 July 2020*

## **‘Why has indian Navy been mute spectator to HAL’S allegation?’**

In the aftermath of COVID19, the government has offered fiscal tranches, financial stimuli, revolutionary monetary policies thereby doing the best to change the hue of self-reliance from “Make in India” to “Atma-Nirbharta”. Will this slew of measures herald this dream and transform the present state of Indian economy or is there something else required? For any idea to be successful at the national stage there needs to be strategic vision, policy guidelines and framework of rules for implementation.

The 111 Naval Utility Helicopters (NUH) program is one such strategic project aimed at galvanising the aerospace sector in the country. In August 2018, the Defence Acquisition Council (DAC) had directed that the procurement of NUH be processed under the Strategic Partnership (SP) model. An Empowered Project Committee with representatives from almost 10 departments of the Government including DRDO, Defence Finance, Production, Acquisition and Quality Assurance was formed to progress the procurement case from issuance of ‘Expression of Interest’ to contract conclusion in accordance with Chapter VII of DPP 2016.

The NUH case has been a lot in the news lately with parleys between Hindustan Aeronautics Limited (HAL) and eminent journalists as well as revered retired naval officers especially aviators. Recently, CMD HAL was on social media wanting the Advanced Light Helicopter (ALH) to be included in the NUH Project levelling allegations against the Navy by stating ‘Earlier they had gone through the SP route wherein they were looking at some foreign OEM aircraft particularly one of the aircraft’. I am sure that prior to making a statement, CMD of HAL was aware that the decision to progress the case under SP Route was that of the DAC and that the entire procurement process for NUH is being progressed by an Empowered Project Committee (EPC) and not by the Navy. Moreover, the SP Model envisions an Indian Private company to partner with a foreign OEM and therefore helicopters of foreign OEMs can only be considered as NUH. With the CMD stating that ‘particularly one of the aircraft’ he has cast aspersion on the entire governmental acquisition process which squarely rests on the shoulders of the bureaucrats, the Defence Secretary being at the apex. It surprises me to see such blatant and open criticism and allegations by head of a DPSU against the bureaucracy. Has our system become so open to accept allegations from another Governmental organisation head in the media?

The Naval QRs for NUH were first uploaded in 2008 followed by revision in 2014 as directed by DAC. HAL had in a written correspondence provided to the Navy informed that the ALH does not meet the QRs laid down by the Navy and that the Navy could purchase a suitable foreign helicopter. The same has also been stated by Shiv Aroor in the interview of CMD HAL. The moot point is that ALH has never met the QRs and nor does it meet the QRs presently. Is it appropriate for a CMD of a DPSU to make such sweeping statements that the ‘specific NUH RFQ/RFI was designed for that’ without assessing the facts?

<https://www.defenceaviationpost.com/2020/07/why-has-indian-navy-been-mute-spectator-to-hals-allegation/>

# India's DAC clears proposal to buy 21 Mikoyan-Gurevich MiG-29s, 12 Sukhoi Su-30MKIs from Russia

*Defence Acquisition Council (DAC) on Thursday approved the proposal for procurement of 21 MIG-29 along with upgradation of existing 59 Mig-29 aircraft and procurement of 12 Su-30 MKI aircraft from Russia*

*Edited By Ritesh K Srivastava*

New Delhi: The Defence Acquisition Council (DAC) on Thursday approved the proposal for procurement of 21 MIG-29 along with upgradation of existing 59 Mig-29 aircraft and procurement of 12 Su-30 MKI aircraft from Russia.

While the MIG 29 procurement and upgradation from Russia is estimated to cost Rs 7418 crore, the Su-30 MKI will be procured from HAL at an estimated cost of Rs 10730 crore, the Defence Ministry said in a statement.

“In the current situation and the need to strengthen the Armed Forces for the Defence of our borders and in line with Prime Minister’s clarion call for ‘Atma Nirbhar Bharat’, the Defence Acquisition Council in its meeting of July 2, 2020, held under the Chairmanship of Defence Minister Rajnath Singh accorded approval for capital acquisitions of various platforms and equipment required by the Indian Armed Forces,” the statement said.

"The proposals for an approximate cost of Rs 38900 Cr were approved. With a focus on indigenous design and development, these approvals include acquisitions from Indian Industry of Rs 31130 Cr. All equipment are to be manufactured in India involving the Defence Industry with the participation of several MSMEs as prime-tier vendors. The Indigenous content in some of these projects is up to 80% of the project cost. A large number of these projects have been made possible due to Transfer of Technology by DRDO to the Indigenous Industry. These include Pinaka ammunitions, BMP armament upgrades and Software Defined Radios for the Army, Long Range Land Attack Cruise Missile Systems and Astra Missiles for Navy and Air Force. The cost of these Design and Development proposals is in the range of Rs 20400 cr." the DAC said in a release.

Acquisition of new and additional missile systems will add to the firepower of three armed services, it added. While the acquisition of Pinaka missile systems will enable raising additional regiments over and above the ones already inducted, the addition of Long-Range Land Attack Missile Systems having a firing range of 1000 Km to the existing arsenal will bolster the attack capabilities of the Navy and the Air Force, the DAC release said.

Similarly, induction of Astra Missiles having Beyond Visual Range capability will serve as a force multiplier and immensely add to the strike capability of Navy and Air Force. Further, addressing the long-felt need of the Indian Air Force to increase its fighter squadrons, the DAC also approved the proposal for procurement of 21 MIG-29 along with upgradation of existing 59 Mig-29 aircraft and procurement of 12 Su-30 MKI aircraft.

While the MIG 29 procurement and upgradation from Russia is estimated to cost Rs 7418 Cr, the Su-30 MKI will be procured from HAL at an estimated cost of Rs 10730 Crore.

It was earlier reported that Russia is ready to deliver Sukhoi Su-30 MKI and Mikoyan-Gurevich MiG-29 fighter jets to India in the shortest possible timeframe. In a government to government



deal which comes amidst the India-China border tension, the Indian Air Force (IAF) has plans to order and induct 33 fighters - 12 Sukhoi Su-30 MKIs and 21 MiG-29s - from Russia.

Russia is ready to assess the issue of early delivery even as the country is already helping the IAF in the MiG-29 modernisation programme. IAF got its first MiG-29 in 1985 and the modernisation will help increase combat capabilities of the MiG-29 fighters to a level comparable to the 4th Generation jets.

Post-modernisation MiG-29s will allow integration of Russian and foreign origin weapons including tracking of aerial targets in a wide range of flight speeds and altitudes, tracking of heat-contrasting air objects & perform “hidden” (without the use of radar) attacks on them. Modern materials and technologies for corrosion protection will increase the service life of MiG-29 fighters by up to 40 years.

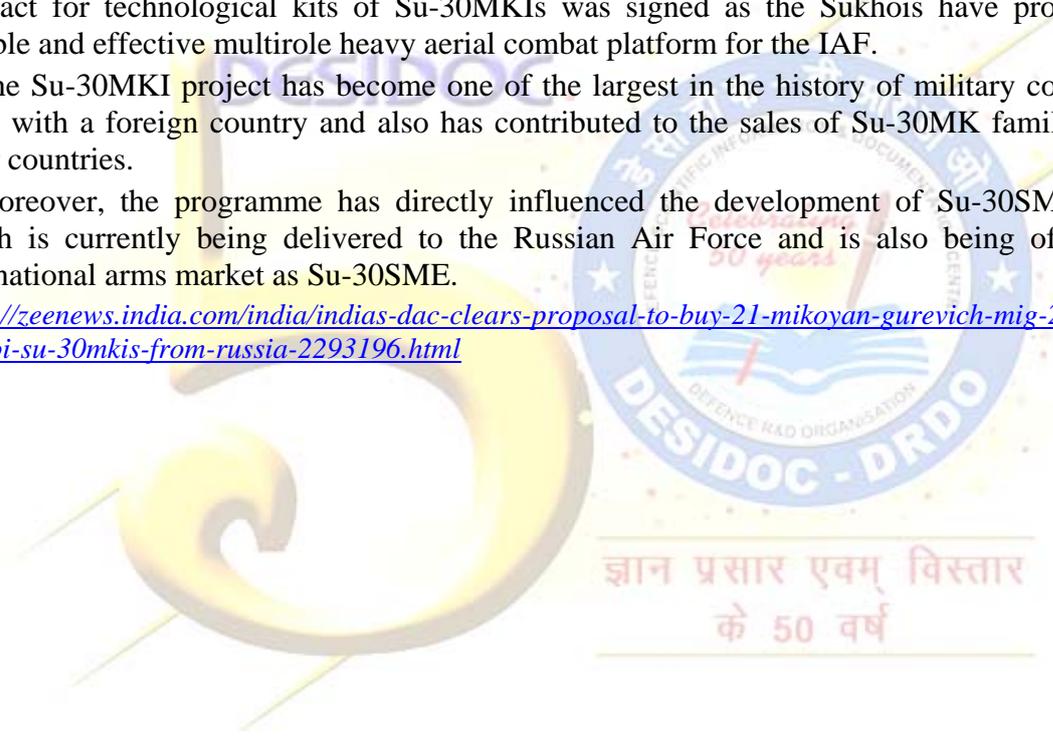
The first contract to deliver Su-30MKI jets to the IAF was signed on November 30, 1996, in Irkutsk, Russia, between Rosvooruzhenie state intermediary company and the Indian Defence Ministry. It envisaged the delivery of 32 Su-30s, all of which were produced in 2002-2004.

Satisfied with the performance of the aircraft, the Indian Defence Ministry placed additional orders. In December 2000, both countries signed a contract for organising the licensed production of Su-30MKIs in India at the Hindustan Aeronautics Limited facilities. Then in 2012, another contract for technological kits of Su-30MKIs was signed as the Sukhois have proved to be a reliable and effective multirole heavy aerial combat platform for the IAF.

The Su-30MKI project has become one of the largest in the history of military cooperation of India with a foreign country and also has contributed to the sales of Su-30MK family aircraft to other countries.

Moreover, the programme has directly influenced the development of Su-30SM fighter jet, which is currently being delivered to the Russian Air Force and is also being offered at the international arms market as Su-30SME.

<https://zeenews.india.com/india/indias-dac-clears-proposal-to-buy-21-mikoyan-gurevich-mig-29s-12-sukhoi-su-30mkis-from-russia-2293196.html>



DESIDOC - DRDO  
ज्ञान प्रसार एवम् विस्तार  
के 50 वर्ष

## गुजरात की कंपनी MEIPL ने बनाए वायरस खत्म करने वाले टावर, DRDO से किया समझौता

By Vijay

अहमदाबाद। गुजरात में अहमदाबाद स्थित मोटिवेशन इंजीनियर्स एंड इंफ्रास्ट्रक्चर प्राइवेट लिमिटेड (MEIPL) ने अल्ट्रा वायलेट (यूवी) डिसइंफेक्शन टॉवर बनाने के लिए रक्षा अनुसंधान और विकास संगठन (DRDO) के साथ एक प्रौद्योगिकी हस्तांतरण समझौता किया है, जिसे विबान (VIBAN) नाम दिया गया है।

विबान एक अल्ट्रा वायलेट आधारित डिसइंफेक्शन टॉवर है, जो कि किसी इलाके में सैनिटाइजर के तौर पर उपयोग में लिया जाएगा। इसके जरिए उच्च संक्रमण फैलने वाले क्षेत्रों को केमिकल के जरिए डिसइंफेक्टेड किया जा सकेगा। विबान को लेजर साइंस एंड टेक्नोलॉजी सेंटर (LASTEC) द्वारा डिजाइन किया गया है। यहीं इसे विकसित भी किया जा रहा है। इसके लिए डीआरडीओ की प्रमुख प्रयोगशाला काम पर लगी हुई है।



न्यूज एजेंसी एएनआई की रिपोर्ट में आज बताया गया कि, अल्ट्रा वायलेट-आधारित सैनिटाइजर का उपयोग इलेक्ट्रॉनिक उपकरणों की तरह उच्च तकनीक के तौर पर सतहों और ऐसे क्षेत्रों में भी किया जा सकता है, जहां बड़ी संख्या में लोग हों।

मोटिवेशन इंजीनियर्स एंड इंफ्रास्ट्रक्चर प्राइवेट लिमिटेड कंपनी के एमडी सुनील शाह ने कहा, "हम अगले 10 दिनों में डिवाइस को बाजार में लॉन्च करने की उम्मीद कर रहे हैं। अल्ट्रा वायलेट डिसइंफेक्शन टावरों के निर्माण के लिए डीआरडीओ के साथ एक टेक्नोलॉजी ट्रांसफर का एग्रीमेंट हुआ है।"

एमडी सुनील शाह ने यह भी कहा कि, यह डिवाइस किसी भी सतह से 99.9% वायरस को मिटा सकता है। यह मोशन सेंसर से लैस है और इसे मोबाइल फोन द्वारा संचालित किया जा सकता है। यह किसी भी क्षेत्र को बहुत कम समय में कीटाणुरहित कर सकता है। यानी कोरोना जैसे वायरस का भी खात्मा हो जाएगा।

<https://hindi.oneindia.com/news/gujarat/ahmedabad-firm-meipl-gets-drdo-tech-for-disinfection-tower-as-uv-sanitizer-568027.html>

## Ahmedabad co enters tech transfer pact with DRDO for UV disinfection tower

*The UV-based sanitizer can be used to disinfect high tech surfaces like electronic equipment and also areas which see a large number of people*

*By Vinay Umarji*

Ahmedabad: Ahmedabad-based technology solutions provider Motivation Engineers & Infrastructure Pvt Ltd (MEIPL) has entered into an agreement for technology transfer with the Defence Research and Development Organization (DRDO), for an Ultra Violet (UV) disinfection tower.

The UV-based sanitizer can be used to disinfect high tech surfaces like electronic equipment and also areas which see a large number of people.

Named VIBAN, the Disinfection Tower is a UV based area sanitizer used for rapid and chemical-free disinfection of high infection prone areas. VIBAN has been designed and developed by Laser Science & Technology Centre (LASTEC), the Delhi based premier laboratory of DRDO.

With the ability to be operated remotely through phone or computer using Wi-Fi, the tower offers 360-degree illumination, and a room of about 12x12 feet can be disinfected in just ten minutes.

According to MEIPL founder and director Sunil Shah, the UV disinfectant tower can be useful in disinfecting high tech surfaces such as electronic equipment, computers and other gadgets in laboratories and offices that are not suitable for disinfection with conventional chemical methods. "In fact, chemical-based sanitizers are harmful to electronic gadgets," said Shah.

Possibilities of use of VIBAN range from those by companies and factories to even civic bodies. According to Shah, VIBAN is also effective for areas with a large flow of people such as airports, shopping malls, metros, hotels, factories, and offices, among others.

"VIBAN can be especially effective in times like the ongoing Covid-19 pandemic when large areas need to be disinfected," Shah said while adding that the tower switches off upon accidental opening of the room or human intervention, while another safety feature is the key-to-arm operation.

Currently, MEIPL is the market leader in MFV Vermiculite, a novel product for 'over the deck insulation' for all type of buildings, Mbient Turbo Ventilator, a Zero Energy Ventilation system for any closed area, Mbientlite Solar daylight, which is used for Solar light without Battery and Panel during the day, and Mbientbrite or natural daylight.

[https://www.business-standard.com/article/current-affairs/ahmedabad-co-enters-tech-transfer-pact-with-drdo-for-uv-disinfection-tower-120070201254\\_1.html](https://www.business-standard.com/article/current-affairs/ahmedabad-co-enters-tech-transfer-pact-with-drdo-for-uv-disinfection-tower-120070201254_1.html)



Health workers collecting swab samples for Covid-19 testing at a govt school in, New Delhi on Sunday.

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## Need to further enhance our operational capabilities: IAF Chief

*In his inaugural speech at the two-day conference of Senior Air Staff Officers (SASOs), the chief highlighted the “need for sustenance of existing fleets and optimum operational exploitation of new inductions in order to make the Indian Air Force (IAF) a formidable combat force”*

New Delhi: The Indian Air Force needs to further enhance its operational capabilities and improve serviceability of its mission critical systems, Air Chief Marshal R K S Bhadauria said on Thursday, at a time when the force is on high alert due to escalating tension with China.

In his inaugural speech at the two-day conference of Senior Air Staff Officers (SASOs), the chief highlighted the “need for sustenance of existing fleets and optimum operational exploitation of new inductions in order to make the Indian Air Force (IAF) a formidable combat force”.

The Indian and Chinese armies are locked in a bitter stand-off in multiple locations in eastern Ladakh for the last seven weeks. The tension escalated manifold after 20 Indian soldiers were killed in a violent clash in Galwan Valley on June 15. The Chinese side also suffered casualties but it is yet to give out the details.

“The CAS (Chief of the Air Staff) while addressing the SASOs emphasised the need for further enhancing our operational capabilities as well as improving serviceability of mission critical systems,” a press release by the IAF said.

He also appreciated the operational readiness of IAF Commands and subordinate formations, it said. Moreover, Bhadauria commended the effort put in towards “integrated training of air warriors of all streams” to meet the present and future operational requirements.



Air Chief Marshal RKS

“The bi-annual conference of Senior Air Staff Officers is being held on Thursday and Friday, wherein pointed discussions would take place towards operational capability enhancements, focused training to tackle contemporary challenges with available assets and automation efforts in the IAF,” the release stated.

The conference was conducted through video conferencing, in a first-of-its-kind effort, in the backdrop of the prevailing security environment and Covid-19 pandemic, the IAF said.

Meanwhile, the defence ministry on Thursday approved procurement of 33 frontline fighter jets, a number of missile systems and other military hardware at a cost of Rs 38,900 crore to bolster the combat capability of the armed forces, officials said.

They said 21 MiG-29 fighter jets will be procured from Russia, while 12 Su-30 MKI aircraft will be bought from state-run aerospace behemoth Hindustan Aeronautics Ltd (HAL).

A separate proposal to upgrade existing 59 MiG-29 aircraft has also been approved. The ministry has also approved procurement of 248 ASTRA beyond visual range (BVR) air-to-air

missile systems. The missile is designed to engage and destroy highly maneuvering supersonic aircraft and has all weather day and night capability, the officials said.

Following the Galwan Valley clashes, the Army has sent thousands of additional troops to forward locations along the border besides moving in heavy weapons.

The IAF has also moved air defence systems as well as a sizeable number of its frontline combat jets and attack helicopters to several key air bases.

<https://www.hindustantimes.com/india-news/need-to-further-enhance-our-operational-capabilities-iaf-chief/story-oQyUYd3JMFrtO08zSc6pSN.html>



Fri, 03 July 2020

## **Navy increases monitoring of vessels in Indian Ocean amid China's combativeness**

*The Navy, along with other services, Indian Army and Indian Air Force is in the heightened state of alert in the aftermath of the Galwan incident in eastern Ladakh*

*By Siddhant Sibbal*

New Delhi: With increased Chinese combativeness, the Indian Navy has increased the monitoring of vessels in the Indian Ocean. The Navy, along with other services, Indian Army and Indian Air Force is in the heightened state of alert in the aftermath of the Galwan incident in eastern Ladakh.

In the past, the Indian Navy has steadily developed the capability of being able to monitor movements through the Indian Ocean region, and interdict them as and when required. As far as the People's Liberation Army Navy units are concerned, there are only a few straits through which they can enter the Indian Ocean, which can be kept under continuous surveillance.

Meanwhile, India in 2015 had articulated its strategic vision under the acronym SAGAR-- Security And Growth for All in the Region. It seeks to deepen economic and security cooperation with maritime neighbours and assist them in building maritime security capabilities. It is part of strengthening cooperation with littoral states.

While it is unlikely that any Galwan Valley-type misadventure by the Chinese forces could happen at sea, chances of strong response will be in the offing. China has developed ports in Myanmar, Sri Lanka, Pakistan, Djibouti etc. which could also be put to dual-use by the PLA Navy, Coast Guard and Maritime Militia. While they are part of the Belt and Road Initiative (BRI) infrastructure project, it can impact countries hosting them.

China claims that participating countries stand to gain 2-3 per cent increase in their GDP and reduction in transportation tariffs, by participating in BRI but it is known to be a debt trap with countries unable to repay loans leading to losses, some time territorial.

A big worry for Beijing is that India is not a member of BRI, but is strategically placed as well as militarily capable, of threatening both the 'Belt' in Occupied-Ladakh and the 'Road' in the Indian Ocean, should the need arise. China's prospects of succeeding in their BRI endeavour, therefore, revolve around breaching this 'Great Wall of India'.

The Chinese Communist Party (CCP) has also been pushing towards the West using its BRI, which was announced in 2013. BRI aims to undertake infrastructure development and investment to strengthen China's connectivity with over 70 countries across the continents of Asia, Africa and Europe.

<https://zeenews.india.com/india/navy-increases-monitoring-of-vessels-in-indian-ocean-amid-chinas-combativeness-2293210.html>

## Rajnath Singh's Ladakh visit put off as India 'Waits to see China's commitment to disengagement'

*No one is entirely clear why the trip is being "rescheduled". Sources indicate that India wants to wait and watch if the Chinese honour the commitment made during the Corps Commander-level talks over three rounds on June 6, June 22 and June 30*

*By Shreya Dhoundial*

New Delhi: Defence Minister Rajnath Singh's visit to Ladakh has been put off for the moment. Singh was to leave for Leh early on Friday morning to review operational preparedness, visit forward locations and drop in at the Leh Hospital to meet soldiers injured in the violent clashes with China in Eastern Ladakh's Galwan Valley last month.

No one is entirely clear why the trip was "rescheduled". Sources indicate India wants to wait and watch if the Chinese honour the commitment made during the Corps Commander-level talks over three rounds -- on June 6, June 22 and June 30.

"When the Defence Minister comes to meet soldiers deployed at the front, it is a huge morale booster. It's also a signal to the enemy that we are ready in case there is an escalation. We are not lowering our guard," a source said.

After the third round of meetings in Chushul on June 30, the Indian Army released a cautious statement. "Both sides have emphasised the need for an expeditious, phased and step wise de-escalation as a priority. The discussions reflected the commitment of both sides to reduce tensions along the LAC. The process of dis-engagement is complex and in such a context, speculative and unsubstantiated reports need to be avoided," it said.

The Chinese were more optimistic about the outcomes of the meeting on June 30. *Global Times*, the official mouth piece of the Communist regime, said, "China and India have agreed to disengage front-line border troops in batches and take effective measures to ease the situation in border areas."

Sources in South Block confirm that the Chinese have agreed to "step back" a bit from Galwan Valley, Hot Springs and Pangong Tso. There is a consensus to create some distance between Indian and Chinese troops, who are eyeball to eyeball at these flash points, and create a buffer zone to avoid any further escalation. Then why is the Army being careful with its words?

Sources in South Block said, "Last time we had issued a rather optimistic statement based on what was agreed upon by Lt Gen Harinder Singh and Maj Gen Lui Lin. And then for the next 10 days there was no movement from the Chinese side to honour their commitment. It later emerged that as the two commanders were talking, the Chinese had come into PP14 in Galwan Valley, where the bloody clash took place, and built a wall and put up tents. Now they have put up a signage in Mandarin that says 'China at Finger 4 in Pangong Tso'. They say something at meetings but go back and do nothing. We have decided we will not use the word 'dis-engage' till it actually happens on the ground."

The disengagement process will be long, tedious and in phases. After every step taken back, there will be a verification after which another step will be taken.

The Indian Army has already started stocking up for the winter for the 40,000 extra soldiers deployed in Eastern Ladakh in response to the massive Chinese build-up. Each day, more convoys with men and material are making their way up the mountains.

Most questions to Army officials these days are met with two phrases: "Let's wait and watch" and "long haul".

It has been 59 days. Singh's visit to Ladakh, as and when it happens, would be the first time a political leader would land there. The significance will not be lost on any one. Is his visit being rescheduled for the weekend or for Monday? Let's wait and watch.

<https://www.news18.com/news/india/rajnath-singhs-ladakh-visit-put-off-as-india-waits-to-see-chinas-commitment-on-disengagement-at-lac-2697771.html>

## THE TIMES OF INDIA

Fri, 03 July 2020

# Ladakh standoff: India, China agree to restart Galwan, Hot Springs pullback

By Rajat Pandit

New Delhi: India and China have broadly agreed to restart the gradual and verifiable troop disengagement from 'friction points' in Galwan Valley and Gogra-Hot Springs areas of eastern Ladakh, which got derailed the last time after Chinese soldiers reneged on the pullback agreement, leading to the bloody clashes on June 15.

However, there has been no breakthrough as yet in defusing the major troop confrontation at Pangong Tso, where PLA soldiers have built a large number of fortifications as well as taken the dominating heights after occupying the 'Finger-4 to 8 area' (mountainous spurs separated by 8-km distance) on the north bank of the lake since early May.

Official sources on Wednesday said "both sides emphasised the need for an expeditious, phased and step-wise de-escalation as a priority" during the 12-hour marathon meeting between 14 Corps commander Lt-General Harinder Singh and South Xinjiang Military District chief Major General Liu Lin at Chushul on Tuesday. This was the third such meeting since June 6.

It will, however, be a long-drawn process, with a lot of finetuning yet to be done. Moreover, India will be extremely cautious this time, closely verifying each de-escalation and disengagement step at the troop confrontation sites on Indian territory at Patrolling Points (PP) 14, 15 and 17A in the Galwan and Hot Springs areas.

The trust deficit is huge due to the premeditated attack on Indian soldiers near PP-14 in Galwan Valley on June 15, in which 20 Indian soldiers led by Colonel Santosh Babu and an unspecified number of Chinese troops were killed.

"After agreeing to the disengagement plan for Galwan and Hot Springs during the June 6 and 22 meetings between the corps commanders, the PLA promises did not translate into concrete action on the ground. Pangong Tso also remains a tough nut to crack, with the PLA in no hurry to move back," said a source.

The top military meeting, held in a "business-like manner" on Tuesday, was in keeping with the "agreement" between Indian and Chinese foreign ministers during their June 17 conversation that "the overall situation would be handled in a responsible manner" and both sides would "sincerely" implement the disengagement understanding of June 6".

As per the proposed disengagement plan, the rival troops will gradually move back 2.5 to 3 km in phases to de-escalate tensions at the face-off sites, which will be followed later by de-induction of the huge military build-up along the LAC.

The PLA has deployed well over 20,000 soldiers from its 4th Motorised Infantry Division and 6th Mechanised Infantry Division as well as 'reserves' from the Western Theatre Command along the LAC in eastern Ladakh, especially in the strategically-located Daulat Beg Oldie (DBO)-Depsang sector.

Apart from also blocking Indian patrols beyond the 'Bottleneck' area in Depsang after intruding deeply into Indian territory, the PLA has simultaneously stepped up activities in the middle (Uttarakhand and Himachal) and eastern (Sikkim and Arunachal) sectors of the 3,488-km LAC.

India has undertaken 'mirror deployments' by inducting three additional infantry divisions (each has 10,000-12,000 soldiers), artillery guns, surface-to-air missile systems, tanks and armoured vehicles in eastern Ladakh alone, along with deploying fighter as well as attack and heavy-lift helicopters in forward bases, as was reported by TOI last month.

Government sources said the discussions on Tuesday reflected the commitment of both sides to reduce the tensions along the LAC. "But the process of dis-engagement along the LAC is going to be complex," a source said.

"More meetings are expected, both at the military and at the diplomatic level in the future, to arrive at a mutually agreeable solution and to ensure peace and tranquillity along the LAC as per bilateral agreements and protocols," he added.

<https://timesofindia.indiatimes.com/india/india-china-agree-to-restart-galwan-hot-springs-pullback/articleshow/76739019.cms>

INDIA  
TODAY

Fri, 03 July 2020

## India deploys Special Forces units in Ladakh amid military standoff with China

*Special Forces units have already been deployed along forward locations in eastern Ladakh and apprised of their roles, if and when needed*

*By Manjeet Singh Negi*

Amid the ongoing dispute with China along the Line of Actual Control (LAC), India has now deployed its Special Forces units in Ladakh for operational roles, if required.

"Para special forces units have been moved from different locations in the country to the Ladakh region where they are already carrying out exercises," government sources told Aajtak and India Today. Special Forces units played a key role in the 2017 surgical strikes against Pakistan-based terror camps and can be used effectively on the Chinese front if and when needed, sources added.

Most recent inputs indicate that Special Forces units have already been deployed along forward locations in eastern Ladakh. Troops have been fully apprised about roles they may have to assume in case hostilities with China escalate.

India has more than 12 Special Forces regiments who train on different terrains and have developed specialisation in desert, mountains and jungle terrain. The Special Forces units deployed in Jammu and Kashmir regularly practice war games in high-altitude areas in and around Leh.

While raiding them, Indian Army Special Forces had destroyed multiple launch pads near the Line of Control (LOC) during the 2017 surgical strikes. Troops had targeted and eliminated a number of terrorists, along with Pakistan Army personnel tasked with training and guiding them to India through different routes.

At present, India and China are engaged in a military standoff along the LAC in eastern Ladakh. Tensions have been high since June 15 when a violent face-off between soldiers of the Indian Army and People's Liberation Army (PLA) troops resulted in casualties on both sides in the Galwan Valley.

<https://www.indiatoday.in/india/story/india-deploys-special-forces-units-in-ladakh-amid-military-standoff-with-china-1696317-2020-07-02>



*Fri, 03 July 2020*

## **India is ready to abandon the Su-57 and focus on buying the American F-35s**

According to various military sources in India, as well as according to the Chinese publication Sohu, there is a high probability that India will abandon the acquisition of the Russian Su-57 Super Sukhoi and move to the American F-35, learned BulgarianMilitary.com. The high cost of the upgraded version of the Russian Su-57 Super Sukhoi fighter, and the purchase of the basic version of the Indian Air Force is not considered due to the “dampness” of this version.

The Su-57 purchase could be unbearable for India, betting that the first deliveries of this combat aircraft are planned only in five years, in this connection, India began to consider the possibility of acquiring the American F-35A. According to some reports, the cost of the upgraded version of the Su-57 will vary from 150 to 200 million dollars, and given the fact that India plans to acquire several hundred fifth-generation fighters, it is obvious that we are talking about billions of dollars.



Given that the export value of American F-35s is about 120-140 million dollars, and this combat aircraft was seen performing military operations, India is likely to really abandon Russian fighters.

“It would not be an exaggeration to say that the Su-57 of the second stage, which is planned to be released in 2024, is the “ real Su-57. At the current stage, the Su-57 can only be considered a pre-production Su-57, and its degree of completion is relatively low. Even the Russian Air Force does not want to receive them in large quantities” experts said.

“At this stage, the Su-57 with a very low degree of readiness will obviously not be accepted by the Indian Air Force, so even if India wants to buy a Su-57 fighter, it will have to wait at least until the second stage fighter appears around 2025. If India wants to buy a fifth-generation car in five years, the F-35A/B is the most ideal choice. The likelihood of buying a Su-57 is very small. As for the value of the Russian export fighter for India, it is inexpedient for the Russians not to demand more than 150 million US dollars.” Sohu reports.

Earlier, India abandoned the joint development of a fifth-generation fighter with Russia, declaring its low efficiency and overpriced.

### **Russia is desperately trying to find a market for its Su-57**

Russia is ready together with India to create a fifth-generation fighter; a positive signal to intensify this work may be a contract with the Russian Ministry of Defense for the purchase of Su-57, according to Minister of Industry and Trade Denis Manturov statement on February 4.

Manturov said that the Russian side is ready to “continue negotiations on a fifth-generation fighter,” RIA Novosti reports.

“An important event took place in the Su-57 program – the Ministry of Defense placed an order for 76 fighters. I believe that this is a positive signal for our Indian partners, but we will discuss specific formats for cooperation,” he added.

The Minister also noted that the Russian new MiG-35 fighter, which was announced to participate in the Indian tender, surpasses many competitors “in flight performance and combat properties.”

In addition, we must not forget about economic feasibility, as well as a significant level of continuity for the Indian Air Force, which has successfully operated Russian-made equipment for over 50 years.

“Of course, the decision will be made by the Indian side, but I am convinced that Russia is the best supplier of modern combat aircraft for India,” the head of the Ministry of Industry and Trade emphasized.

### **The US has warned India not to rely on Russian fighter jets in combat**

On June 22 the American columnist of Forbes, David Ax, recalls that recently it became known about the death of 20 Indian soldiers in a shootout along the disputed Indian-Chinese border, passing through a towering mountain range. He also notes that, according to media reports [Forbes – ed.], forty-three Chinese soldiers were injured in the clash.

“It is not surprising that India this week allegedly placed an order with Russia for \$780 million for 33 fighters with Russia, which is enough to equip or re-equip two squadrons,” the publication says.

It is known that New Delhi plans to acquire 21 MiG-29 fighters and several Su-30.

The Indian Air Force has long planned to purchase additional aircraft to strengthen the existing arsenal of service, consisting of about 230 Su-30s and 60 MiG-29s. New Delhi also plans to acquire 83 local Tejas light fighters, as well as 144 foreign medium-sized fighters, in the coming years.

David Ax notes that all new fighters are part of the effort to increase the air force from 28 front-line squadrons to 40, the number of which New Delhi considers sufficient to fight simultaneously with Pakistan and China.

“These 28 squadrons fly on a stunning variety of fighters, including Indian and Russian types, the French Mirage 2000s and Rafales, and European Jaguars,” recalls an observer for the American publication. Tom Cooper, an author and aviation expert, expressed his surprise that the Indian Air Force wants the Su-30 and MiG-29 to meet the extraordinary requirements for a pair of aircraft squadrons. Su-30, although it seems impressive on paper, in comparison with Western models does not have performance and combat efficiency.

David Ax explains that Cooper’s point of view is this: for decades, the Mirage 2000 was a more effective fighter in the Indian service than the Su-30. Rafale, the successor to the French-made Mirage, is also one of India’s finest fighters. However, the Indians ordered a total of 36 Rafale.

“The Su-30 not only does not have the latest high-precision air-to-ground ammunition, but also does not work well with high-altitude air bases supporting Indian operations along the so-called border,” the Forbes publication says.

The lighter MiG-29 is better suited for the Indian Air Force than the Su-30. However, this does not mean that the old MiG is the right choice for New Delhi.

### **Even the Russians do not believe the Su-57 will defeat the F-35 in an air battle**

The Russian Su-57 fighter is already a good combat vehicle. However, there is still something to improve, for example, in order to bypass the American F-35 in terms of basic indicators, expert Vladimir Vasiliev believes and said on January 11 this year.

If we compare the Su-57 with an American competitor, then the domestic aircraft surpasses the opponent in terms of maneuverability, flight range and top speed, which makes it more attractive for buyers in foreign markets. It is not in vain that Turkey, being in danger of breaking the F-35 supply contract, is increasingly thinking about buying new Su-57s from Russia.

Be that as it may, but the F-35 has one important feature that has been acquired by him historically, the expert emphasizes. The fact is that American fighters are always designed as aircraft carrier-based vehicles, and therefore have the ability to take off and land in short bands.

It is noteworthy that even in this component the Russian fighter has some groundwork for improvements. Russian designers, among other things, have experience in creating aircraft with a vertical take-off and landing system, so they can combine the qualities of the latest fighter with the capabilities of the famous Yak-141 in the future to inherit the best properties of previous prototypes and get ahead of the F-35 in all respects.

<https://idrw.org/india-is-ready-to-abandon-the-su-57-and-focus-on-buying-the-american-f-35s/#more-230246>

## THE TIMES OF INDIA

Fri, 03 July 2020

### LAC face-off: High-speed interceptor boats being sent to Pangong lake

New Delhi: The country's defence establishment is finalising a plan to send a dozen new high-speed interceptor boats armed with the latest surveillance gear to Pangong Tso in eastern Ladakh, where Indian and Chinese soldiers have been locked in a fierce confrontation since early May.

Sources said the Indian Army does have 17 QRT (quick-reaction team) boats for patrolling the lake located an altitude of 13,900-feet since 2012-2013, but the need has been felt to further augment the force's capabilities to match the heavier Type-928B patrol boats being used by the People's Liberation Army there.



"But the plan will face a huge logistical challenge because it will be extremely tough to transport the new boats or fast-interceptor crafts to the high-altitude region. The boats may have to be dismantled and airlifted by C-17 Globemaster-III aircraft to Leh and then taken forward from there to reach the lake. It will take time," said a source.

The 134-km-long Pangong lake, two-thirds of which is controlled by China as it extends from Tibet to India, has been a major flashpoint between the two countries over the years.

Before the Army got the QRT boats around eight years ago, it used to be quite hamstrung by its then outdated slow-moving boats. The PLA had often even disabled the Indian boats by ramming into them with its heavier boats.

Since the rival troops clashed on its north bank on May 5-6 this year, the PLA has physically occupied the entire 8-km stretch from 'Finger-4 to Finger-8' (mountainous spurs), taken control of the dominating heights and built dozens of new fortifications, bunkers and pill-boxes in the area.

All Indian patrols have since been blocked going from west to east till the Finger-8 area, where the Line of Actual Control runs north to south. The PLA has even created a massive signage in the area to claim it as Chinese territory.

<https://timesofindia.indiatimes.com/india/high-speed-interceptor-boats-being-sent-to-pangong-lake/articleshow/76739598.cms>

## India to strengthen maritime alliance in Indo-Pacific region to counter Chinese aggression

*Amid the rising tensions between India and China at Line of Actual Control (LAC) in Ladakh, India is taking steps to strengthen maritime alliance in the Indian Ocean region*

*By Siddhant Sibbal*

Amid the rising tensions between India and China at Line of Actual Control (LAC) in Ladakh, India is taking steps to strengthen maritime alliance in the Indian Ocean region.

The details of the plan are still in the works but could include countries impacted by Chinese aggression in the South China Sea.

The alliance will not only help maintain balance in the Indo-Pacific region but will also provide strength to the QUAD grouping made up of Japan, US, India and Australia.



In contrast to Atlantic or the Pacific ocean, the Indian ocean which is the third largest ocean is not an open one and entry into it is via straits like Strait of Malacca. India could use its maritime capability by deploying warships near the Malacca Strait, which is regarded as China's jugular vein to send a strong message to the Chinese communist party that it means business.

India has been an active player of the 22-member strong Indian Ocean Rim Association which consists of countries that share a boundary with the Indian Ocean and expected to be more vocal on illegal fishing by Chinese vessels in the region.

India is not in a mood to believe in China after the June 15 violent face-off that resulted in the martyrdom of 20 Indian soldiers. It is believed that any retreat at this juncture would be taken as a sign of weakness, further emboldening China to broaden its strategy of 'salami-slicing'.

"The martyrdom of 20 Indian soldiers - a first on the LAC after 1975 - has the potential to permanently alter the prism through which India steers its China strategy and also transform Indo-Chinese dynamics," said a source.

China's new claim on Galwan Valley has only added to the suspicion as the region is strategically important for India since the mountain peaks on either side overlook the crucial Darbuk-Shyok-Daulat Beg Oldi (DSDBO) road that connects Sub-Sector North (SSN) with the rest of Ladakh.

<https://zeenews.india.com/india/india-to-strengthen-maritime-alliance-in-indo-pacific-region-to-counter-chinese-aggression-2293133.html>

# The great Indian trade wall: From App ban to Huawei Snub to highway hurdle, India hits China where it hurts

*This economic escalation is designed to send a message to Beijing that India will not hesitate to rethink a trade relationship with a country actively seeking to harm it*

*Edited By Aakarshuk Sarna*

Even as Indian and Chinese military officials work towards reaching a consensus to disengage from friction areas along the Line of Actual Control, New Delhi has taken a series of steps that form part of an economic offense against Beijing.

Within a span of 48 hours, the central government banned 59 of the largest Chinese apps in the country, including the likes of TikTok and UC browser; targeted Chinese telecom and tech giants Huawei and ZTE by cancelling 4G upgrade tenders, and barred Chinese companies from participating in Indian highway projects, including through the joint venture route.

This economic escalation, in the backdrop of a two-month-long standoff that led to a bloody fracas on June 15, is designed to send a message to Beijing that India will not hesitate to rethink a trade relationship with a country actively seeking to harm it.

The government's decisions, measured in response to a military conflict, strike at a number of China's leading technology companies like ByteDance, Alibaba, Tencent and Baidu- that are key to China's ambitions to expand its power.

**The Indian government's policy threatens to undo the success these companies have enjoyed as they are shut out of the world's fastest growing mobile arena.**

These companies, which themselves thrived behind a China-imposed Great Firewall that kept out America's best-known internet names, help Beijing increase its soft power, weaponise its economic and technological ability, and wage an information war in the digital age.

China had itself began putting up walls within the global internet years ago, by blocking Silicon Valley giants like Google, Facebook and Twitter. This created a controlled environment in which homegrown companies flourished, and helped the Communist Party could keep a tight grip on online conversation.

But now as Chinese tech businesses are trying to make it big overseas, the Indian government's policy threatens to undo the success these companies have enjoyed as they are shut out of the world's fastest growing mobile arena.

TikTok, which built a huge audience in India as part of a forceful and well-funded expansion around the world, will be the most affected. The app has been installed more than 61 crore times in India, accounting for nearly a third of its worldwide user base.

The Indian government's decision will also have wider geopolitical ramifications as it comes at a time when misgivings about the Communist Party are growing in the United States and European nations.

**All these steps will come with certain costs as China could hit back through economic coercion in sectors like pharmaceuticals, taking advantage of a severely unbalanced trade relationship.**

The tensions have already caused a severe hit to Huawei, the Chinese smartphone and telecom equipment giant, which was cut off from US technology suppliers after accusations that it is a Trojan horse for Beijing's cyberspies.

India is also now looking to bar China's telecommunications infrastructure for upgrade of its 4G network, and more significantly, the rollout of the 5G networks. With several other countries also signalling intent to control Chinese expansion in such critical sectors, India's decisions could be the beginning of a trend.

Yet all these steps will come with certain costs as China could hit back through economic coercion in sectors like pharmaceuticals or other industries, taking advantage of a severely unbalanced trade relationship.

India's trade deficit with China was roughly \$57 billion last year, and the figure has only increased over the last six years. In addition, India does not matter quite as much to China as it matters to us, in trade terms.

While China's share in India's import basket is 13-14 per cent, the estimated share of exports to India in China's entire export basket is about 3 per cent.

However, along with the decision to shut out Chinese companies, what is also significant is the relaxation of norms to encourage Indian firms – both in telecommunications and in the highway sector. Time is now ripe for India to frame a long term policy of import substitution and increasing manufacturing competitiveness.

The message to Beijing, government officials say, is clear: Aggression at the border and preferential treatment on cross-border trade, commerce and investment will not go hand-in-hand.

<https://www.news18.com/news/india/the-great-indian-trade-wall-from-app-ban-to-huawei-snub-to-highway-hurdle-india-hits-china-where-it-hurts-2697513.html>

**ThePrint**

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## India's options against China shrinks to two — limited war or another Wuhan

*China's military preemption has baited India. A quick and emotional response would be a strategic folly. India can 'counter bait' China by maintaining the 'status quo' indefinitely*

*By Lt Gen H S Panag (Retd)*

Ideally, both India and China want to achieve their political aims without any further escalation of the military situation on the Line of Actual Control in eastern Ladakh. However, at this juncture, diplomacy is making little or no progress, at least from what is available in the public domain.

### Diplomatic impasse

Since the 22 June talks between 14 Corps Commander Lt Gen. Harinder Singh and South Xinjiang Military District commander Maj. Gen. Liu Lin, the disengagement process to avoid fresh clashes has not made much headway. The commanders met again on 30 June, with the talks lasting for 12 hours without much progress. "Army is preparing for the long haul and the standoff is expected to continue well into the winter," Indian Army sources, the current



Representational image | Soham Sen | ThePrint

substitute for formal situational briefs, told *The Indian Express*. *India Today* reported that far from de-escalation, the Line of Actual Control (LAC) has witnessed greater mobilisation and concentration of troops on both sides of the border in the past 72 hours. And the mobilisation shows no signs of abating.

On the diplomatic front, the 15th meeting of the Working Mechanism for Consultation & Coordination (WMCC) on India-China border affairs was held on 24 June via video conference. The two sides recalled the conversation of 17 June between External Affairs Minister S. Jaishankar and Chinese Foreign Minister H.E. Wang Yi, and reaffirmed the necessity to sincerely implement

the understanding on disengagement and de-escalation that was reached by the senior commanders on 6 June and 22 June. News agency ANI, citing unidentified government sources, reported that India and China have decided to hold WMCC meetings every week to resolve the dispute.

The ambassadors of both countries were interviewed by the Press Trust of India (PTI). In diplomatic language, they reiterated the absolute position of their respective countries and accused the other side of aggression and violating various agreements. However, they reiterated their faith in diplomacy to resolve the problem.

The indications are that unless there is a Wuhan-style breakthrough, diplomacy faces a dead end.

### **Worst-case scenario**

India's sovereignty and territorial integrity is at stake. Territorial integrity and reunification of lost territories is the *raison d'être* of the ideology of the Bharatiya Janata Party (BJP). On this issue, the Narendra Modi government has the support of the entire nation. The prime minister's strongman image is the lynchpin of his popularity. And so, it is logical that India may have to exercise the military option to restore status quo ante April 2020. However, the differential in comprehensive national power, particularly in the military domain, economic cost of war and the political consequences of a setback, impose caution.

China's military preemption indicates its political intent — impose its will on India. Its coercive diplomacy has not achieved the desired results. Loss of face is defeat for the superior power. If India does not relent, limited war is almost a compulsion for China.

At this juncture, both sides must be preparing for the worst-case scenario of a limited war. Through its preemptive actions, China has baited India. A quick and emotional response would be a strategic folly. India can 'counter bait' China by maintaining the 'status quo' indefinitely. Winter, which will affect the strategic calculations of both militaries, is still five months away.

### **Likely pattern of PLA offensive**

The likely military aim of the People's Liberation Army (PLA) would be to decisively defeat the adversary forces in eastern Ladakh in selected sectors and in doing so, provide strategic depth to Chinese territories claimed/threatened, enhance the security of the China-Pakistan Economic Corridor (CPEC), and destroy military infrastructure.

It is pertinent to mention that the places of current confrontation — Sub Sector North (SSN) or Daulat Beg Oldi (DBO) Sector, Galwan River, Hot Springs-Gogra, Pangong Tso, Chushul, and Demchok — are the same where the battles of 1962 were fought.

The PLA will avoid, to the extent possible, directly attacking the main defences of the Indian Army at heights of 15,000-16,000 feet and above as well as engaging in close combat from a position of disadvantage. Given the peculiarities of the terrain, the main defences are located 10-80 km from the LAC. It is these areas ahead of the main defences and other isolated vulnerable sectors such as the SSN that the PLA is likely to focus on. These areas allow predominant employment of mechanised forces. The offensive will be driven by high technology, with focus on cyber and electromagnetic domains, and precision-guided munitions.

Keeping the above in view, the operational-level objectives of the Chinese PLA are likely to be as follows:

- Capture SSN Sector and threaten Indian defences in Siachen Glacier.
- Cut off the Darbuk-Shyok-DBO Road at Galwan Valley — Shyok River junction to assist the offensive in SSN.
- Capture Chang Chenmo River Valley and all areas up to the north bank of Pangong Tso.
- Secure/capture the Kailash Range in Chushul Sector.
- Capture the Indus Valley up to the Ladakh Range via Demchok and Changla Pass on the Kailash Range and contact Indian defences on the Ladakh Range.
- Pakistan is also likely to launch a complementary offensive in the Shyok River Valley in the Turtuk Sector.

The PLA lost the advantage of surprise, preemption and the window that was available upto end June while the Indian Army reserves were being mobilised, acclimatised and deployed. The likely plans of the PLA have been war-gamed for years by the Indian Army, and I have no doubts that the PLA will come to grief.

*(Lt Gen H S Panag PVSM, AVSM (R) served in the Indian Army for 40 years. He was GOC in C Northern Command and Central Command. Post-retirement, he was Member of Armed Forces Tribunal. Views are personal.)*

<https://theprint.in/opinion/indias-options-against-china-shrinks-to-two-limited-war-or-another-wuhan/452796/>



*Fri, 03 July 2020*

## **Indra receives contract to supply navigational aids for 37 Indian military airfields**

Spanish defense systems company, Indra has been awarded a contract for the supply of navigational aids to 37 of Indian military airfields. The contract is part of the ongoing Modernization of Air Field Infrastructure (MAFI) project by the Indian Ministry of Defence (MoD). The systems will be supplied through the Indian company Tata Power SED which was awarded the INR 1,200 crore (~USD 159 million) MAFI contract.

The 37 military airfields belong to the Indian Air Force (IAF), Indian Navy (IN) and Indian Coast Guard (ICG). The modernization of India's airfields started in 2011 with Indra supplying navigational aids to IAF's 30 airfields under the MAFI Phase-I program. According to Indian MoD, the airfields modernized under MAFI Phase-I have been of immense benefit to both military and civil users.



With the new contract, Indra will deliver an additional 24 instrument landing systems (ILS) and 29 Doppler Very High Frequency (VHF) Omni Range (DVOR) guidance systems during a project period of three years. The company has also supplied navigational aids to most of the country's civil airports, making Indra a major contributor to flight safety for air traffic in India.

The instrument landing system (ILS) guides aircraft safely to the runway by transmitting ground-based radio signals. The DVOR system supports air navigation by providing pilots with the exact location of the aircraft relative to a position on the ground.

Indra's Normarc landing and guidance systems are known to be the most reliable systems in the market, having ensured safe landings for several hundred millions flights at 1400 airports worldwide.

Indra is the leading Air Traffic Management supplier in India. With The Airports Authority of India (AAI) it has implemented its air traffic control system in four of the main control centers of the country and 38 airport. Indra has also deployed a network of radars that cover 80% of India Airspace and implemented nearly a 100 landing systems in different airports in the last decade.

<https://idr.org/indra-receives-contract-to-supply-navigational-aids-for-37-indian-military-airfields/#more-230278>



*Fri, 03 July 2020*

## **First China, now Pakistan: How India's battling on two fronts**

The Indian military has been talking about a two-front war with neighbors Pakistan and China for decades to keep politicians focused on defense spending. Now that scenario is looking ever more realistic, with conflicts flaring on both its disputed borders.

Talks earlier this week between top Chinese and Indian army commanders in the Ladakh region ended without a major breakthrough, the second such attempt to cool things down since 20 Indian soldiers and an unknown number of Chinese troops were killed on June 15 in their worst clash in four decades. Around the same time, weapons and explosives were recovered and two suspected terrorists were killed after a 15-hour gun battle some 660 kilometers (410 miles) away in south Kashmir, officials said.

India has fought four wars with China and Pakistan since it gained freedom from British rule in 1947, but it has never had to defend both borders at the same time. Indian military officials are growing concerned that China and Pakistan might gang up on New Delhi at a time when Prime Minister Narendra Modi's government is faced with surging coronavirus infections.

"New Delhi is clearly under great pressure, whether from Covid-19, along the Line of Control in Kashmir, or from China," said Ian Hall, professor of international relations at Griffith University in Queensland, Australia, and author of 'Modi and the Reinvention of Indian Foreign Policy.' "We have seen relations with both Islamabad and Beijing worsen over the past few years, and the result is that both have decided to escalate things during the pandemic, when the Modi government is stretched and distracted."

The Indian military is huge and contingencies are always kept in mind, said a senior security official who wasn't authorized to speak to the press. But despite the planning, the need to commit resources to two fronts at the same time would stretch the armed forces.

It's an eventuality India's army chief has warned of, urging the government — including its diplomatic corps — to be prepared to step in to avoid it.

### **Stretched Resources**

"As far as two front war is concerned it is a possibility," General Manoj Mukund Naravane, India's Chief of Army Staff, said in May. "A country does not go to war with its armed forces alone. It has other pillars like diplomatic corp and other organs of government which will come into play to make sure that we are not forced into a corner where we will have to deal with two adversaries at the same time and in full strength."

Indian and Chinese troops remain deployed eyeball-to-eyeball along the country's northern boundary, the unmarked and contested Line of Actual Control, which saw tensions rise in early May. Both sides have amassed thousands of troops, artillery guns and tanks at multiple locations.

The army said Wednesday more diplomatic and military talks were planned "to ensure peace and tranquility" after military level negotiations ended without a clear outcome. In Beijing Foreign Ministry spokesman Zhao Lijian told reporters China hoped the two sides would "keep up close communication through military and diplomatic channels, and ease the situation and lower the temperature along the border."

At the same time, India's 742-kilometer (460 miles) Line of Control with Pakistan has become equally active and tense. Indian troops have faced regular cross-border firing and engaged in counter-terror operations in the hinterland.

India's army said it killed 127 "terrorists" in the first six months of the year, about 30% higher from a year ago, according to a senior security official who asked not to be identified, citing rules for speaking with reporters. The incidents of cross-border firing recorded by the Indian military also doubled in 2020 compared to 2019, the official said.

Pakistan's foreign ministry in a statement Wednesday blamed India for more than 1,500 "cease-fire violations" including deaths and injuries of civilians on their side of the Kashmir frontier this year.

Some military formations which normally move to Jammu & Kashmir to bolster the counter-insurgency operations along the Pakistan border in the summer months have now moved to the India-China border.

"The Indian Army is a well-led professional force organized, equipped, trained, experienced and motivated to take on any commitments that it may be called for, be it internal or external," Indian Army spokesperson Colonel Aman Anand said in response to questions.

### **Under Pressure**

Collusion between Pakistan and China to keep India's western and northern borders on simmer at the same time is difficult to prove but cannot be ruled out, said Vipin Narang, associate professor of political science at MIT and author of 'Nuclear Strategy in the Modern Era: Regional Powers and International Conflict.'

"But my general sense is that Pakistan may feel like it needs to show resolve at home and to India in Jammu & Kashmir" after India changed the province's constitutional status in August last year, Narang said. Islamabad may "also be opportunistically taking advantage of India's distraction and focus on the LAC."

The clash with "China is obviously a major embarrassment for India. What are India's choices? It can't attack China and throw them out and they know it," said Mahmud Durrani, a retired lieutenant general and national security adviser in Pakistan. "The fallout of that can be that to prove their strength and muscles, they are going to do something with Pakistan — the smaller partner of China. They will do something to prove to its people that 'we are still strong'."

Durrani said a "connection between the strategic movements between China and Pakistan" could also "be a possibility."

Whichever way it plays out, "it could be a very tense and bloody summer for India on both of its disputed borders," Narang said.

<https://idr.org/first-china-now-pakistan-how-indias-battling-on-two-fronts/#more-230290>



Fri, 03 July 2020

## Scientists discover how to smash quantum limits

Scientists from The University of Western Australia's Centre of Excellence for Gravitational Wave Discovery (OzGrav) are part of a global team of researchers that has made a surprising discovery, working out how to break quantum limits. The research was published today in the prestigious *Nature* journal.

A quantum limit comes about from the interaction between light and a test mass, and breaking this limit, just like breaking the sound barrier, once seemed impossible.

The scientists surpassed the limit in their quest to build better gravitational wave detectors using squeezed light technology on 40kg test masses in LIGO detectors.

The technology was pioneered by the Australian National University and refined at Massachusetts Institute of Technology, which led to the development of the squeezed light apparatus at the LIGO and the groundbreaking result.

Gravitational wave detectors are the most precise measurement devices ever built, and the result shows they are now poised to see and exploit the effects of quantum physics, which governs the smallest objects in the universe, on human-sized objects like their 40kg test masses.

UWA physicist Dr Carl Blair, who was part of the team to make the discovery said discovering how to break quantum limits was significant for physics and science.

"It's amazing to think that sitting in the control room at LIGO, by manipulating some controls on a computer you can manipulate the quantum noise of a 40 kg mirror," he said.

"We were able to break the limit doing something very mysterious - squeezing the quantum vacuum," he said.

"Now that it has been proven possible, this new technology can be used to build more sensitive machines to explore the Universe.

"In breaking this limit, we are now entering a world where quantum limits on measurements can be routinely surpassed."

Scientist Dr Xu Chen, also from UWA, said OzGrav and their collaborators were able to smash through the quantum noise barrier of gravitational-wave detectors. "At UWA, we aim to improve the sensitivity further with a white-light cavity.

This works best at higher frequencies where we can see more binary neutron stars colliding," she said.

Australian National University PhD student Nutsinee Kijbunchoo and postdoctoral fellow Dr Terry McRae spent more than a year at the LIGO sites building and commissioning the squeezed light system that led to the quantum physics breakthrough.

<http://www.news.uwa.edu.au/2020070212207/research/scientists-discover-how-smash-quantum-limits>

# The protein that stands between us and autoimmunity

*Researchers from Osaka University identify the proteins Tet2 and Tet3 as key regulators of B cell activity and autoimmunity*

Osaka, Japan - Our immune system is supposed to protect us from external microbial invaders, but sometimes it turns its efforts inward, potentially resulting in autoimmune diseases. In a new study, researchers from Osaka University discovered how reversible modifications to our DNA by certain proteins protect us from autoimmune diseases and, conversely, how the absence of these proteins paves the way to autoimmunity.

DNA contains all information that cells in our body need to function by providing specific codes to produce specific proteins. Nonetheless, not all parts of DNA are accessible in all cells at all times. The regulated production of proteins ensures that different cells and organs can be developed from the same DNA code. An important regulatory mechanism is the reversible addition (methylation) or removal (demethylation) of chemical bonds, so-called methyl groups, to segments of DNA. This modifies the readout of said DNA segment. Proteins of the ten-eleven translocation (Tet) family are known DNA demethylases that decrease the production of certain proteins in immune cells. How Tet proteins play into the development of autoimmune diseases has remained unknown--until now.

"Epigenetics deals with how reversible changes in DNA affect gene activity and protein expression," says corresponding author of the study Tomohiro Kurosaki. "Disrupting this machinery can have dramatic effects on cellular function. The goal of our study was to understand how epigenetic control in a specific type of immune cells, called B cells, affects the development of autoimmune diseases."

To achieve their goal, the researchers developed a novel mouse line in which B cells did not produce the epigenetic regulator proteins Tet2 and Tet3. They found that these mice developed a mild form of systemic lupus erythematosus, an autoimmune disease that can affect the joints, skin, kidneys and other organs, and for which there is currently no curative treatment. Similar to human patients, the mice showed increased serum levels of autoantibodies and damage to their kidneys, lungs and liver.

"These findings suggest that Tet2 and Tet3, as well as proteins whose expression is regulated by Tet2 and Tet3, might play a fundamental role in the development of systemic lupus erythematosus," says lead author of the study Shinya Tanaka. "We wanted to gain a deeper molecular understanding of the mechanism behind the effects of Tet2 and Tet3 on the immune system."

The researchers next investigated a different type of immune cell, called T cells, which often interact with B cells, and found that T cells were excessively activated in the Tet2/Tet3 knockout mice. By examining the molecular interaction between B and T cells closer, the researchers found that the protein CD86 was produced at higher levels in B cells of Tet2/Tet3 knockout mice, leading to aberrant T cell activation and autoimmunity.

"These are striking results that show how Tet proteins suppress autoimmune diseases by inactivating B cells and thus ultimately preventing them from attacking our bodies," says Kurosaki. "Our findings provide new insights into the contribution of epigenetics to the development of

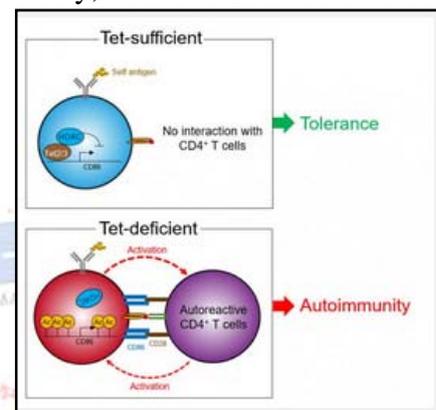


IMAGE: Tet2/3-deficient B cells are activated by self-antigen and express exaggerated amount of CD86. Then those B cells stimulate autoreactive CD4+ T cells, resulting in autoimmune response.... [view more](#)

autoimmune disease. Regulating Tet proteins and their downstream effectors could be a novel treatment for autoimmune diseases."

The article, "Tet2 and Tet3 in B cells are required to suppress CD86 and prevent autoimmunity," was published in *Nature Immunology* at DOI: <https://doi.org/10.1038/s41590-020-0700-y>  
[https://www.eurekalert.org/pub\\_releases/2020-07/ou-tpt070220.php](https://www.eurekalert.org/pub_releases/2020-07/ou-tpt070220.php)



Fri, 03 July 2020

## **New algorithm for personalized models of human cardiac electrophysiology**

Researchers from the Moscow Institute of Physics and Technology, Kazan Federal University, and George Washington University have proposed an algorithm for producing patient-specific mathematical models describing the electrical excitation of human heart cells. Published in *PLOS One*, the study looks at two possible approaches - one using experimental records of electrical activity and the other based on gene expression profiles.

Each heart contraction is caused by a preceding electrical excitation, the so-called action potential. The latter results from electrical currents through ion channels. The number of such channels forming ion currents varies with both pathological conditions and the individual properties of heart tissue in healthy patients. When the balance between various types of ion currents gets disrupted, this may lead to dangerous arrhythmias and death.

Since many factors are involved in excitation propagation, the studies investigating the basic principles underlying arrhythmia have relied on mathematical models over the past 50 years. Despite the effort behind developing these models, they are so far rarely used in the clinical practice, mainly because they describe a hypothesized average patient. The research reported in this story addresses the challenging task of applying such models to real individual patients.

The first approach discussed in the paper relies on experimental recordings of action potential and subsequent model optimization using dedicated computer algorithms. They employ evolutionary principles to find the parameters that make the model reproduce the experiment. Randomly generated models are subjected to selection, crossover, and mutation. Prior research by a number of scientific groups has identified the key challenge faced by this approach. Namely, it is hard to find the unique solution, because of the numerous distinct combinations of parameters that result in the same action potential waveform.

Study co-author Andrey Pikunov from the MIPT Laboratory of Human Physiology commented: "We have closely examined and optimized the algorithm's pipeline at every stage. For instance, previously, model parameters were subjected to mutation independently from each other, whereas we used 'vector mutation,' affecting all parameters at once. This makes the search for the right model parameters considerably more efficient. Along with other modifications we have developed an algorithm that determines the conductivities of the main ion channels with a high degree of precision."

The second approach discussed in the article uses the gene expression data, which determine how the genetic information is converted into RNAs and proteins. Each ion channel in the cell membrane is made of protein subunits incorporated into the membrane following translation from the matrix RNA. The amount of such expressed RNA can be measured, but it has so far been impossible to use these data to predict the electrophysiological features specific to a certain patient. The researchers calibrated the model on one actual patient, using the algorithms mentioned above. Then the differences between gene expression profiles were used to create mathematical models

successfully predicting the action potential for other patients based on their individual gene expression profiles.

The head of the MIPT Laboratory of Human Physiology, study co-author Roman Syunyaev added: "Aside from the fundamental interest, this research has far-reaching practical applications, from using patient-specific models in the clinical practice to drug design. Many medications act on ion channels, and our algorithms can provide insights into how certain drugs affect the heart cells' electrophysiology. This information can be extracted from measurements of the action potential."

The research reported in this story was supported by grants of the Russian Foundation for Basic Research and the Russian Science Foundation.

The Laboratory of Human Physiology is part of the Phystech School of Biological and Medical Physics, a division of the Moscow Institute of Physics and Technology. The laboratory employs computer modeling to study the formation of rhythm, arrhythmia, and fibrillation in the heart, and the dynamics of vortex autowave structures.

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[https://www.eurekalert.org/pub\\_releases/2020-07/miop-naf070220.php](https://www.eurekalert.org/pub_releases/2020-07/miop-naf070220.php)

## The Himalayan

Fri, 03 July 2020

### Australian scientists discover ancient underwater aboriginal sites

Sydney: Australia's first underwater archaeological sites off its west coast dating to more than 7,000 years ago will help with the understanding of the cultural and technology development of its first peoples, scientists said Thursday.

Archaeologists in Western Australia discovered hundreds of stone tools made by aboriginal people when the seabed was dry, at two ancient sites now submerged in the Dampier Archipelago.

While the region is well known for its rich ancient history and its rock-art carvings, the two sites are the first confirmed underwater locations holding evidence of human civilization on Australia's continental shelf.

"The future work that we will be doing is ... to look at the skill, the technology, how they made these tools, to see if they represent a different cultural approach to tool making that we haven't yet identified in Australia," marine geoscientist Mick O'Leary, a co-director of the project, told Reuters.

Divers from Flinders University plunge into the water on the Pilbara Coast to retrieve the aboriginal objects from what was once dry land, at a depth of between 2.4 metres and 11 metres (8-36 feet).

They have found cutting and grinding tools and hammer stones that date back thousands of years, said archaeologist Jonathan Benjamin, leader of the project.



This undated handout picture shows underwater artefacts dated back thousands of years when the sea bed was dry land, found by researchers from Flinders University, University of Western Australia and James Cook University. Image: Videograb of Deep History of Sea Country Project & Flinders University, Maritime Archaeology Program/Handout via Reuters

“You can start to recreate what the people were doing and how they were making their life way in their economy,” Benjamin said.

Data from the find is being analysed for precise dating, however radiocarbon dating and analysis of sea-level changes show the site is at least 7,000 years old.

Benjamin said the vast majority of artefacts remain on the seabed. The ones taken have been scanned for further research and then handed to the indigenous land owners, the Murujuga Aboriginal Corporation.

<https://thehimalayantimes.com/science-technology/australian-scientists-discover-ancient-underwater-aboriginal-sites/>

## PHYSICIAN'S WEEKLY

*Fri, 03 July 2020*

### **Age-of-onset information helps identify 76 genetic variants associated with allergic disease.**

Risk factors that contribute to inter-individual differences in the age-of-onset of allergic diseases are poorly understood. The aim of this study was to identify genetic risk variants associated with the age at which symptoms of allergic disease first develop, considering information from asthma, hay fever and eczema. Self-reported age-of-onset information was available for 117,130 genotyped individuals of European ancestry from the UK Biobank study. For each individual, we identified the earliest age at which asthma, hay fever and/or eczema was first diagnosed and performed a genome-wide association study (GWAS) of this combined age-of-onset phenotype. We identified 50 variants with a significant independent association ( $P < 3 \times 10^{-8}$ ) with age-of-onset. Forty-five variants had comparable effects on the onset of the three individual diseases and 38 were also associated with allergic disease case-control status in an independent study ( $n = 222,484$ ). We observed a strong negative genetic correlation between age-of-onset and case-control status of allergic disease ( $r_g = -0.63$ ,  $P = 4.5 \times 10^{-61}$ ), indicating that cases with early disease onset have a greater burden of allergy risk alleles than those with late disease onset. Subsequently, a multivariate GWAS of age-of-onset and case-control status identified a further 26 associations that were missed by the univariate analyses of age-of-onset or case-control status only. Collectively, of the 76 variants identified, 18 represent novel associations for allergic disease. We identified 81 likely target genes of the 76 associated variants based on information from expression quantitative trait loci (eQTL) and non-synonymous variants, of which we highlight ADAM15, FOSL2, TRIM8, BMP2, CD200R1, PRKCQ, NOD2, SMAD4, ABCA7 and UBE2L3. Our results support the notion that early and late onset allergic disease have partly distinct genetic architectures, potentially explaining known differences in pathophysiology between individuals.

<https://www.physiciansweekly.com/age-of-onset-information-helps-identify-76-genetic-variants-associated-with-allergic-disease/>

## Coronavirus Covid-19 vaccine latest update: Pfizer, BioNTech SE candidate shows promise; India joins race

*Coronavirus Covid-19 vaccine latest update, status, progress, human trials, latest news: India has joined the race with Oxford, Moderna and China to produce the Coronavirus COVID-19 vaccine and so far positive signs have emerged during the research process*

*By Debjit Sinha*

**Coronavirus Covid-19 vaccine latest update, status, progress, human trials, latest news:** Oxford, Pfizer Inc., and BioNTech coronavirus COVID-19 vaccine trials have shown positive results even as India and China joined the race. Coronavirus has thrown a challenge in front of humankind and researchers around the world are endeavouring tirelessly towards developing the COVID-19 vaccine. As per the latest information, scientists are working on more than 150 probable vaccines for coronavirus. Out of these, 130 are at preclinical phases, 13 are at Phase I, nine have managed to reach Phase II, three are at Phase III.

### **Vaccine candidate by Pfizer, BioNtech shows promise in early trials**

According to a study, the COVID-19 vaccine candidate, tested by the American pharmaceutical giant Pfizer, and German biotech firm BioNTech SE, is safe, well-tolerated, and can generate antibodies in people. The research has been published in the preprint server medRxiv. It is, however, yet to be peer-reviewed, PTI reported today. The report describes the preliminary clinical data for the candidate vaccine — nucleoside-modified messenger RNA (modRNA), BNT162b1.

### **Coronavirus COVID19 Pfizer, BioNTech**

The US-based pharmaceutical giant Pfizer Inc. and European biotechnology company BioNTech SE have joined hands to produce coronavirus covid19 vaccine. The initial experimental trial has shown that the COVID-19 vaccine is capable of generating antibodies in the patients and found as safe and well-tolerated.

### **Coronavirus COVID-19 vaccine India COVAXIN**

India has joined the race to produce the Coronavirus COVID-19 vaccine and so far positive signs have emerged during the research process. Hyderabad-based Bharat Biotech has received approval from Drug Controller General of India (DGCI) to start phase I and II clinical trials. Bharat Biotech is producing the vaccine in collaboration with the Indian Council of Medical Research (ICMR) and the National Institute of Virology (NIV). As per reports, pre-clinical trials yielded positive results.



**Coronavirus Covid-19 vaccine latest update, status, progress, human trials, latest news: Hyderabad-based Bharat Biotech has received approval from Drug Controller General of India (DGCI) to start phase I and II clinical trials. (Reuters image)**

Assam's Dibrugarh-based Regional Medical Research Centre has successfully isolated SARS-CoV-2 virus. This can be used for the production of a Coronavirus COVID-19 vaccine, state Health Minister Himanta Biswa Sarma was quoted as saying by PTI. The RMRC has become the third government laboratory in the country after the NIV, Pune; and the CCMB, Hyderabad, to isolate the virus.

#### **Coronavirus COVID-19 vaccine Oxford**

University of Oxford's potential Coronavirus COVID-19 vaccine trial has got "right sort of immune response". A professor of vaccinology at the university said 8,000 volunteers were enrolled for the Phase III of its trial into the vaccine, AZD1222. This has been licensed to AstraZeneca. Phase III of the human trials will assess and monitor how the vaccine works in a large number of people over the age of 18, and how well the vaccine works to prevent people from becoming infected and unwell with COVID-19, as per Reuters report.

#### **Coronavirus COVID-19 vaccine USA Moderna**

US-based pharmaceutical giant Moderna Inc. has shown many promises with its probable Coronavirus COVID-19 vaccine. In July, the company will start the largest phase of the clinical trials of its Coronavirus COVID-19 vaccine. The top official has revealed that the results of the company's vaccine 'mRNA-1273' will be out by October this year.

#### **Coronavirus COVID-19 vaccine China**

China has been developing its own Coronavirus COVID-19 vaccine through a research and biotech firm, CanSino. The organization has started clinical trials. However, China's Central Military Commission has given its approval for use in a restricted manner. Chinese Academy of Military Medical Sciences is co-producing the Coronavirus COVID-19 vaccine.

#### **Coronavirus COVID-19 vaccine Imperial College of London**

Imperial College of London has successfully started phase I clinical trial for its Coronavirus COVID-19 vaccine. The UK government is funding the research process for this vaccine. The organization is hopeful about achieving final results by the first half of next year.

#### **Coronavirus COVID-19 vaccine Sanofi GlaxoSmithKline**

Two pharmaceutical giants Sanofi and GlaxoSmithKline have joined together to produce a Coronavirus COVID-19 vaccine. Sanofi has stated that it was hopeful of speeding the process of phase I and II from September to December. The company has promised to produce as many as 100 million vaccine doses.

#### **Coronavirus COVID-19 vaccine Thailand**

Thailand-based medical researchers have been working on developing a coronavirus COVID-19 vaccine. Chulalongkorn University's Center of Excellence in Vaccine Research and Development has yielded positive results during the animal testing phase and is hopeful of starting human clinical trials in October.

<https://www.financialexpress.com/lifestyle/health/coronavirus-covid-19-vaccine-latest-update-status-progress-human-trials-latest-news-oxford-india-moderna-china/2010708/>

# **Covaxin: India's first Coronavirus vaccine candidate approved for human trials. Here's all you need to know**

**01/7 Covaxin: India's first COVID 19 vaccine candidate approved for human trials. Here's all you need to know**

With over 6,00,000 cases of Coronavirus, India ranks as the fourth highest affected country in the world. While the numbers continue to rise, a ray of hope has appeared with India's first COVID 19 vaccine candidate, developed by Bharat Biotech India (BBIL), Hyderabad-based biotechnology firm working closely with the Indian Council of Medical Research (ICMR) and the National Institute of Virology (NIV).

India's drug control authority, the Central Drugs Standard Control Organisation (CDSCO) has allowed BBIL to hold Phase I and II of human clinical trials, which are scheduled to start across India in July.

**02/7 Covaxin: What is it and how was it developed?**

Covaxin is the first indigenous vaccine candidate to fight against the novel coronavirus, created and developed by BBIL. It is the first vaccine candidate to be approved for human trials.

According to the firm, "The SARS-CoV-2 strain was isolated in NIV, Pune and transferred to Bharat Biotech. The indigenous, inactivated vaccine was developed and manufactured in Bharat Biotech's BSL-3 (Bio-Safety Level 3) High Containment facility located in Genome Valley, Hyderabad, India."

Also known as an inactivated virus, the virus has no possibility of infecting a person or multiplying in number, as it is already dead. However, when presented to the immune system, the dead viruses has the ability to activate the antibodies that can fight against these viruses.

**03/7 The stages of approval**

After having undergone a series of pre-clinical testing, involving multiple animal trials, the firm approached the drug control authorities i.e. CDSCO, for an approval to proceed to the next level of testing, consisting of human clinical trials.

Covaxin, having received the approval from the authorities are scheduled to start their trials in July. Bharat Biotech India (BBIL) will be help in two phases. Phase I will be conducted in small groups of individuals, where the dosage of the vaccine will be determined. The concerned personnel will study the effectiveness and side effects of the vaccine in accordance with the number of dosage.

Phase II will comprise of a larger group of people where they will be organized and categorized according to certain characteristics such as age and sex.

**04/7 Testing before the human trials**

To check for its safety and efficacy for the human trials, the Covaxin vaccine was first tested on mice and guinea pigs. It was only after its safety was evaluated on animals that Central Drugs Standard Control Organisation (CDSCO) gave the go-ahead to conduct human trials for the COVID-19 vaccine candidate from India.

**05/7 When will it be ready?**

Approval of a vaccine, usually undergoes four stages. Pre-clinical testing, Phase I and II and lastly Phase III. Phase three is usually the most difficult stage where thousands of people are involved. However, although the vaccine is approved at stage three, the battle is not over yet. The vaccine will be under close observation and its use on patients will be heavily monitored.

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

### **06/7 Other Indian vaccine candidate for COVID -19**

Apart from Bharat Biotech, Zydus Cadila, Pune-based Serum Institute of India and other four or five home-grown vaccines are in their early stages of development. Panacea Biotec, another company indulged in developing a vaccine, is still in the pre-clinical stage.

### **07/7 How advanced is Covaxin?**

Having secured an approval for human trials, Covaxin has reached a more advanced phase. Not only is BBIL in close contact with locally developed institutes, but they are also in a global collaboration with Thomas Jefferson University and the University of Wisconsin-Madison and vaccine maker FluGen.

However, considering the global race to developing a vaccine, India is still at a struggling stage. AstraZeneca with its vaccine candidate “ChAdOx1-S” in collaboration with the University of Oxford is already at phase III trials. Apart from Covaxin, atleast six other vaccine candidates have made it to Phase I/II trials and another five are in Phase I trials globally.

<https://timesofindia.indiatimes.com/life-style/health-fitness/health-news/covaxin-indias-first-coronavirus-vaccine-candidate-approved-for-human-trials-heres-all-you-need-to-know/photostory/76746150.cms?picid=76746289>

The logo for BusinessLine, featuring the word "BusinessLine" in a blue, serif font. The background of the logo includes a circular emblem with text in Hindi and English, and a stylized pen nib.

*Fri, 03 July 2020*

## **Pfizer upbeat on Covid-19 vaccine candidate's early results**

*Vaccine race has at least 150 candidates at various stages of development*

*By PT Jyothi Dutta*

As the race for a vaccine against Covid-19 continues to power ahead, multinational drugmaker Pfizer and BioNTech SE have revealed preliminary data from their “Project Lightspeed”.

The BNT162 mRNA-based vaccine programme is evaluating at least four experimental vaccines, each with a unique combination of an mRNA format and target antigen, the companies said. “Overall, the preliminary data demonstrated that BNT162b1 could be administered in a dose that was well tolerated and generated dose-dependent immunogenicity,” they said, of data that was undergoing scientific peer review that comes before publication.

A clutch of multinational companies, including AstraZeneca (AZ) — which is working with the Oxford University on a potential vaccine — Johnson & Johnson and GlaxoSmithKline are also in the fray in search of a suitable candidate. Indian vaccine major Serum Institute is in alliance with AZ on the Oxford candidate and has other candidates under development with partners Codagenix and Themis, respectively. Zydus Cadila is another early entrant from India. Last month, Panacea Biotec announced its vaccine candidate with partner Refana Inc. And this month, Bharat Biotech said it was starting human trials on its home-grown vaccine candidate in India.

According to the vaccine landscape mapped by the World Health Organisation, AZ’s candidate is ahead in Phase III trials. There are 17 vaccine candidates in clinical evaluation, including CanSino Biological Inc/Beijing Institute of Biotechnology, US-based Moderna, Wuhan Institute of Biological Products/Sinopharm and Sinovac, for instance. Another 132 candidate vaccines are in preclinical evaluation.

## **Pfizer trial plans**

Kathrin U Jansen, Pfizer's Senior Vice-President and Head of Vaccine Research & Development, said of their candidate: "We are encouraged by the clinical data of BNT162b1, one of four mRNA constructs we are evaluating clinically, and for which we have positive, preliminary, topline findings."

The ongoing US Phase 1/2 randomised, placebo-controlled, observer-blinded study is evaluating the safety, tolerability, and immunogenicity of escalating dose levels of BNT162b1, the company said. The initial part of the study included 45 healthy adults aged between 18 and 55 years. Preliminary data for BNT162b1 was evaluated for 24 subjects who received two injections of 10 µg and 30 µg; 12 subjects who received a single injection of 100 µg; and nine subjects who received two doses of placebo control, it added.

The preliminary data, together with additional preclinical and clinical data being generated, will be used by the two companies to determine a dose level and select from among multiple vaccine candidates to seek to progress to a large, global Phase 2b/3 safety and efficacy trial. This could involve up to 30,000 healthy participants and is anticipated to begin in late July 2020, if regulatory approval to proceed is received, they said.

The vaccine candidate is under clinical study and is not currently approved for distribution anywhere in the world. But if the trials proceed well and the candidate eventually received regulatory approval, the companies expect to manufacture up to 100 million doses by the end of 2020 and potentially more than 1.2 billion doses by the end of 2021, they added. In fact, BioNTech and Pfizer would distribute the potential vaccine worldwide (excluding China, where BioNTech has a collaboration with Fosun Pharma for BNT162 for both clinical development and commercialisation), the company said.

The vaccine development is also supported by partners like Acuitas Therapeutics, a Canadian company that provides lipid nanoparticles for the formulation of various mRNA vaccines, it said.

<https://www.thehindubusinessline.com/news/science/pfizer-biontech-experimental-covid-19-vaccine-shows-promise-in-early-trial-study/article31969232.ece>

