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Press Information Bureau
Government of India

Ministry of Defence

Thu, 09 Sept 2021 5:53PM

DRDO hands over air defence missile (MRSAM) System to Indian Air Force in presence of Raksha Mantri Shri Rajnath Singh at Jaisalmer, Rajasthan

MRSAM will prove to be a game changer in the air-defence-system: Raksha Mantri

Terms it as a giant leap towards achieving ‘Aatmanirbhar Bharat’

Key Highlights:

- *MRSAM provides air defence against aerial threats like fighter aircraft, UAVs, guided and unguided munitions & cruise missiles*
- *Capable of engaging multiple targets at ranges up to 70 kilometres*
- *Indigenously developed rocket motor & control system for achieving high manoeuvrability*
- *State-of-the-art missile system*

In a significant boost to India’s defence capabilities, the first deliverable Firing Unit (FU) of Medium Range Surface to Air Missile (MRSAM) System was handed over to Indian Air Force (IAF) in the presence of Raksha Mantri Shri Rajnath Singh at Air Force Station, Jaisalmer in Rajasthan on September 09, 2021. The MRSAM (IAF) is an advanced network centric combat Air Defence System developed jointly by Defence Research and Development Organisation (DRDO) and Israel Aerospace Industries (IAI) in collaboration with the Indian industry comprising of private and public sectors including MSMEs.

Secretary, Department of Defence R&D & Chairman DRDO Dr G Satheesh Reddy handed over the first deliverable Firing Unit to Chief of Air Staff Air Chief Marshal R K S Bhadauria in the presence of Shri Rajnath Singh. During the event, DRDO and IAI officials demonstrated the capabilities of MRSAM system, as part of On-Site Acceptance Test (OSAT).

In his address, Shri Rajnath Singh lauded the joint efforts of DRDO, IAI, various inspection agencies, public & private industry partners in developing, what he termed, one of the best state-of-the-art missile systems in the world. “With the handing over of MRSAM system to IAF, we have taken a giant leap towards achieving ‘Aatmanirbhar Bharat’ as envisioned by our Prime Minister Shri Narendra Modi. It will prove to be a game changer in the air-defence-system,” he said.



The Raksha Mantri reiterated the Government's resolve to strengthen the security infrastructure of the country to deal with any challenges arising out of the rapidly changing global strategic scenario. He stated that modernisation of the Armed Forces and building a self-reliant defence industry are being accorded top priority. Stressing on the need for a strong military, he said Government is leaving no stone unturned to ensure the security and overall development of the country. He listed out the measures taken by the Government, including setting up of Defence Industrials Corridors in Uttar Pradesh and Tamil Nadu; corporatisation of Ordnance Factory Board; notification of two positive indigenisation lists of over 200 items to increase exports and Transfer of Technology (ToT) by DRDO to the private sector. He expressed confidence that India will soon become self-reliant in defence manufacturing as well as a global manufacturing hub of defence systems.

Shri Rajnath Singh reaffirmed the Government's commitment to bolster the technological base through indigenous research, design and development, with focus on 'Make in India, 'Make for the world'. He highlighted that close cooperation between technology partners & friendly countries has led to rapid progress towards realising this vision and development of MRSAM is a great example of such collaborative effort.

The Raksha Mantri described the development of MRSAM system as a shining example of the close partnership between India and Israel, adding that handing over of the system to IAF has taken this decades-old friendship to greater heights. It has played an important role in strengthening the defence industrial base of India and Israel, he added. On the creation of new test facilities and infrastructure in the development of this programme, Shri Rajnath Singh said it will be helpful in producing quality products for both the countries in the future. He termed the sub-systems being manufactured for this programme as a great example of synergy between Indian public and private sector companies.

On the occasion, the Raksha Mantri remembered former President Dr A P J Abdul Kalam, terming him a visionary who paved the way for self-reliance in defence sector, especially in the missile development programme. He said around 30 years ago Dr Kalam initiated the Integrated Missile Development Programme at a time when scientists were facing various restrictions in the field of technology. Despite all this, the Raksha Mantri said, the success of the programme not only ensured self-reliance in missile development, but also thwarted possibility of any cross-border threat.

The MRSAM system provides point and area air defence for ground assets against a wide range of threats including fighter aircraft, UAVs, helicopters, guided and unguided munitions, sub-sonic & supersonic cruise missiles etc. It is capable of engaging multiple targets at ranges up to 70 kms in severe saturation scenarios. The missile is powered by indigenously developed rocket motor and control system for achieving high manoeuvrability during the terminal phase.

The firing unit comprises of Missiles, Combat Management System (CMS), Mobile Launcher Systems (MLS), Advanced Long Range Radar, Mobile Power System (MPS), Radar Power System (RPS), Reloader Vehicle (RV) and Field Service Vehicle (FSV).

Speaking on the occasion, Chief of Air Staff Air Chief Marshal R K S Bhaduria congratulated the efforts of the entire team of MRSAM (IAF) and stated that the system will bolster the air defence capabilities of the country. DRDO Chairman Dr G Satheesh Reddy complimented the teams involved in the development of MRSAM System.

Chief of Defence Staff General Bipin Rawat, AOC-in-C SWAC Air Marshal Sandeep Singh and President & IAI CEO Mr Boaz Levy and other senior civil & military officials were also present on the occasion.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1753559>



IAF inducts Barak 8 air defence system that can hit multiple targets 70km away

The MRSAM, or the Barak 8 air defence system, was inducted by the IAF in the presence of defence minister Rajnath Singh in Jaisalmer

By Rahul Singh

New Delhi: The Indian Air Force on Thursday inducted a medium range surface-to-air-missile (MRSAM) system capable of knocking out aerial threats such as enemy fighter jets, missiles, helicopters and unmanned aerial vehicles at a range of 70 km. Defence minister Rajnath Singh described the capability as a “game changer” in air defence.

India and Israel have jointly developed MRSAM or the Barak 8 air defence system that includes advanced radar, command and control systems, and mobile launchers. The missile is powered by a locally-developed rocket motor and control system for high manoeuvrability in the terminal phase.

“With the handing over of the MRSAM system to IAF, we have taken a giant leap towards achieving ‘Atmanirbhar Bharat’ (self-reliant India). The MRSAM will prove to be a game changer in air defence,” Singh said at the induction ceremony in Jaisalmer.

The system has been developed jointly by the Israel Aerospace Industries and the Defence Research and Development Organisation (DRDO). Other firms involved in the project include Israeli firm Rafael, Bharat Electronics Limited, Bharat Dynamics Limited and Larsen & Toubro.

DRDO chief G Satheesh Reddy handed over the first firing unit of the system to IAF chief Air Chief Marshal RKS Bhadauria in Singh’s presence.

“The system is capable of hitting multiple targets simultaneously up to a range of 70 km, even in bad weather. Its success in a string of stringent tests is a proof of its reliability,” the defence minister said.

A naval version of the MRSAM is already deployed on a few Indian warships to boost their anti-air warfare capabilities. The army too has placed orders for the MRSAM but it has not yet inducted the system. India and Israel have inked separate deals worth around \$3 billion over the last four years for advanced surface-to-air missile systems for the three services.

“The MRSAM system was long-awaited. Its induction now will boost the IAF’s air defence capability significantly. The impending arrival of the S-400 missile defence systems from Russia will make those capabilities even more formidable,” said Air Vice Marshal Manmohan Bahadur (retd), former additional director general, Centre for Air Power Studies.

India is set to soon begin induction of the S-400 Triumf air defence missile systems ordered from Russia in October 2018. New Delhi has placed orders for five such missile systems capable of destroying a variety of aerial threats, including enemy fighter jets and missiles, at a range of 400 km, and expects the first deliveries by the year-end.

Singh said MRSAM was one of the best missile systems available globally and the project highlighted the close partnership between Indian and Israel in the defence sector. The minister said the MRSAM project strengthened the defence industrial bases of both India and Israel, and was “a win-win situation” for both countries. It has also led to the creation of new test facilities and other infrastructure in the country, he said.



Jaisalmer: Defence Minister Rajnath Singh looks at MRSAM, or Barak 8 air defence system at an event in Jaisalmer to formally mark its induction into the IAF on Thursday. (PTI)

Israel has been among India's top three arms suppliers during the last five years, according to a report published by the Stockholm International Peace Research Institute (Sipri) in March 2021. India's top three arms suppliers during 2016-20 were Russia (accounting for 49% of India's imports), France (18%) and Israel (13%).

Singh said geo-political changes impacted trade, economy, power politics and the security scenario. "In such a situation, strengthening our security and self-reliance has become a necessity, not an achievement."

The minister said the global scenario was transforming very fast. "Equations between countries are also changing rapidly according to their interests. Whether it is the South China Sea, Indian Ocean Region, Indo-Pacific or Central Asia, uncertainty can be seen everywhere," Singh said.

The MRSAM induction ceremony took place after Singh and minister for road transport and highways Nitin Gadkari jointly inaugurated an emergency landing facility for the IAF on the Satta-Gandhav stretch of NH-925A near Barmer. The two ministers also witnessed aircraft operations on the new landing facility, which supports landing of all aircraft in the air force's fighter and transport fleets.

<https://www.hindustantimes.com/india-news/iaf-inducts-barak-8-air-defence-system-that-can-hit-multiple-targets-70km-away-101631198455089.html>

TIMESNOWNEWS.COM

Fri, 10 Sept 2021

Rajnath Singh inducts Medium-Range Surface-to-Air Missile defence system into IAF [Details]

The MR-SAM defence system was inducted into the 2204 Squadron of the Indian Air Force in Jaisalmer

Key Highlights

- ***The air defence system has a range of 70 kms and can hit any aircraft, helicopters and incoming missiles***
- ***With a speed of Mach-2, it will be crucial in protecting the Indian military establishments***
- ***It is jointly developed by the Israel Aerospace Industries and the Defence Research and Development Organisation***

New Delhi: In a major boost to the country's military infrastructure, Defence Minister Rajnath Singh on Thursday officially inducted the Medium-Range Surface-to-Air Missile Air Defence System into the Air Force in Rajasthan.

The MR-SAM defence system was inducted into the 2204 Squadron of the Indian Air Force in Jaisalmer.

"The MR-SAM System is being inducted into the Indian Air Force today. This is another step towards self-reliance in indigenous defence technologies... The global scenario is changing rapidly and unexpectedly, leading to changes in equations between different countries. Be it the South China Sea, Indian Ocean Region, Indo-Pacific or Central Asia, a situation of uncertainty can be seen. Recently what happened in Afghanistan is an example of this," Singh said.



Defence Minister Rajnath Singh with Air Chief Marshal RKS Bhaduria. | Photo Credit: Twitter

The air defence system has a range of 70 kms and can hit any aircraft, helicopters and incoming missiles. With a speed of Mach-2, it will be crucial in protecting the Indian military establishments. The deal between the Israel Aerospace Industries (IAI) and the Defence Research and Development Organisation (DRDO) to develop the system was signed a decade ago.

Earlier today, Singh and Union Road Transport and Highways Minister Nitin Gadkari jointly inaugurated an Emergency Landing Facility (ELF) for the IAF at Satta-Gandhav stretch on the NH-925A near Barmer in Rajasthan.

The first aircraft to land during the demonstration was the C-130J Super Hercules transport aircraft with Singh, Gadkari and Air Chief Marshal RKS Bhadauria on board.

Chief of Defence Staff General Bipin Rawat witnessed the landing demonstration at the National Highway in Jalore.

Singh lauded the IAF, NHA and the private sector for completing the Emergency Landing Field within 19 months despite the COVID-19 restrictions.

“It is a great example of coordination among multiple departments and ministries, government and private sector and, civil and defence... The landing of an IAF aircraft on the 3 km stretch is a historic new strength of New India as it coincides with the 75th year of Indian Independence and the 50th year of India’s victory in the 1971 war,” the Defence Minister noted.

<https://www.timesnownews.com/india/article/rajnath-singh-inducts-medium-range-surface-to-air-missile-defence-system-into-iaf-details/809875>

Business Standard

Fri, 10 Sept 2021

Air defence boost: Indian Air Force gets first Indo-Israeli missile

IAI has designed and developed 70-80 per cent of the MRSAM, including the Elta MF-STAR radar, which forms the heart of the system

By Ajai Shukla

New Delhi: In a significant boost to India’s air defence capabilities, the Indian Air Force (IAF) was handed over its first Medium Range Surface to Air Missile (MRSAM) system on Thursday, in the presence of Defence Minister Rajnath Singh, at Jaisalmer.

The MRSAM provides protection against incoming enemy aircraft and tactical missiles. It is called a “network centric combat air defence system” and has been designed and developed by the Defence Research and Development Organisation (DRDO) in partnership with Israel Aerospace Industries (IAI).

Such is the military’s and DRDO’s confidence in this missile that it was operationally deployed in secret, even before it completed development. This was in September 2016, when the army was planning “cross border strikes” against Pakistan to avenge the killing of 19 Indian soldiers near Uri.

Pakistani retaliation was expected against a key IAF base, which was protected only by aging Soviet-era missiles. To fill this gap, the IAF’s first MR-SAM unit, which was still being built in Hyderabad by Bharat Dynamics Ltd, was quietly airlifted to the vulnerable base — a vote of confidence based on recent firing trials. And when Indian commandos crossed the LoC on the night of September 28, 2016, the MRSAM was poised for operational use.

About 20-30 per cent of the MRSAM has been developed by the DRDO, including the missile’s propulsion system that is based on a sophisticated dual-pulse rocket motor, its thrust vector controls, and electrical harness (wiring).

IAI has designed and developed 70-80 per cent of the MRSAM, including the Elta MF-STAR radar, which forms the heart of the system.



FILE PIC: Indian Air Force performing aerobatic maneuver with smoke trails | Photo: Shutterstock

This is the only missile that all three services have enthusiastically acquired. The naval version of the MRSAM, which is called the LRSAM (Long-Range Surface to Air Missile), is stored in, and fired from, sealed canisters below warship decks, in order to protect the missile from the corrosive marine environment. The LRSAM primarily protects Indian warships from sea-skimming, anti-ship missiles.

So far, the LRSAM has been operationally deployed only on three Indian Navy destroyers — INS Kolkata, Chennai and Kochi. Each carries 32 missiles in “vertical launch unit” canisters. Now the LRSAM is being fitted on four more destroyers being built under Project 15B and seven frigates being constructed under Project 17A.

The IAF version of the MRSAM is mounted on trailers, and is fired from the open at enemy fighters coming in to attack air bases and other high-priority targets. The army version of the MRSAM protects ground troops from enemy ground attack aircraft. Army MRSAMs are mounted on high-mobility vehicles that keep up with tank columns moving cross-country. All three versions of the missile are identical, except for the software that controls their “self-destruct” function.

https://www.business-standard.com/article/current-affairs/air-defence-boost-indian-air-force-gets-first-indo-israeli-missile-121091000050_1.html



Fri, 10 Sept 2021

एक समय में 16 टारगेट, 24 मिसाइल, IAF को मिल गया दुश्मनों के खिलाफ अचूक हथियार

नई दिल्ली: भारत के सैन्य इन्फ्रास्ट्रक्चर को मजबूत करने की दिशा में महत्वपूर्ण कदम उठाते हुए रक्षा मंत्री राजनाथ सिंह ने गुरुवार को राजस्थान में आधिकारिक तौर पर मध्यम दूरी के जमीन से आसमान में मार करने वाले मिसाइल एयर डिफेंस सिस्टम (Surface-to-Air Missile Air Defence System) को शामिल किया। भारतीय वायुसेना के 2204 स्कवॉड्रन एयरफोर्स की पहली स्कवॉड्रन बन गई है जिसमें MRSAM यानी मिडियम रेंज सर्फेस टू एयर मिसाइल आधिकारिक तौर पर शामिल कर लिया गया। डीआरडीओ और इजरायल एयरोस्पेस इंडस्ट्री ने इसे मिलकर डिवेलप किया है।



एक समय में 16 टारगेट, 24 मिसाइल, IAF को मिल गया दुश्मनों के खिलाफ अचूक हथियार'

जैसलमेर में एक कार्यक्रम में रक्षामंत्री राजनाथ सिंह ने वायुसेना को इस सिस्टम की चाबी सौंपी। यह डिफेंस सिस्टम दुश्मन के एयरक्राफ्ट और गाइडेड हथियार से अपने इलाके की और फोर्स की रक्षा करने में पूरी तरह से सक्षम है। यह सिस्टम डेडिकेटेड रेडार के सपोर्ट से अकेले फायरिंग यूनिट की तरह ऑपरेट कर सकता है। खतरा चाहे ट्रेडिशनल हो या फिर एडवांसड, ये सिस्टम बहुत जल्दी से रिएक्ट कर दुश्मन के खतरे को नष्ट कर सकता है।

यह सिस्टम एक ही वक्त में दुश्मन के अलग अलग 16 टारगेट पर 24 मिसाइल दाग सकता है। ये एक सुपरसोनिक मिसाइल हैं और इसमें एक ऐसा सीकर है जो दुश्मन को ढूँढकर उसे नष्ट कर देता है

सकी रेंज 70 किलोमीटर तक है। यही नहीं, यह दुश्मन के एयरक्राफ्ट को 110 किलोमीटर तक भी निशाना बना सकती है। ये एक मोबाइल वर्टिकल लान्चर है और कम समय में किसी भी जगह पर इसे तैनात किया जा सकेगा।

इस सिस्टम की एक बैटरी में तीन लान्चर हैं और हर लान्चर में 8ट्यूब है। एक बार सभी मिसाइल लॉन्च होने के बाद महज कुछ समय में ही इसे फिर से रीलोड भी किया जा सकता है। इस मौके पर रक्षामंत्री राजनाथ सिंह ने कहा कि सीमा पार से आने वाले किसी भी खतरे को तुरंत ही नष्ट कर दिया जाएगा। ये मिसाइल सिस्टम हमारी एयर डिफेंस सिस्टम में एक गेम चेंजर साबित होगा, ऐसा मेरा विश्वास है। एयरफोर्स ने इस मिसाइल का इंडक्शन, रक्षा क्षेत्र में आत्मनिर्भरता की ओर बढ़ते कदमों का भी एक बड़ा उदाहरण है।

क्यों खास है ये मिसाइल

- कई विशिष्ट क्षमताओं से लैस यह मिसाइल 70 किलोमीटर के दायरे में आने वाली किसी भी मिसाइल, लड़ाकू विमान, हेलीकॉप्टर, ड्रोन, निगरानी विमानों और हवाई शत्रुओं को मार गिराने में सक्षम है।

- 360 डिग्री घूम कर यह मिसाइल अपने दायरे में आने वाले कई हवाई दुश्मनों पर एक साथ हमला कर सकती है। बता दें, मिसाइल का 17 मई 2019 को नौसेना के जहाज से सफलतापूर्वक परीक्षण किया गया था।

<https://www.msn.com/hi-in/news/other/360-%E0%A4%A1-%E0%A4%97%E0%A5%8D%E0%A4%B0-%E0%A4%98%E0%A5%82%E0%A4%AE%E0%A4%95%E0%A4%B0-%E0%A4%A6%E0%A5%81%E0%A4%B6%E0%A5%8D%E0%A4%AE%E0%A4%A8-%E0%A4%AA%E0%A4%B0-%E0%A4%B9%E0%A4%AE%E0%A4%B2-%E0%A4%95%E0%A4%B0-%E0%A4%B8%E0%A4%95%E0%A4%A4-%E0%A4%B9%E0%A5%88-mr-sam-%E0%A4%B5-%E0%A4%AF%E0%A5%81%E0%A4%B8%E0%A5%87%E0%A4%A8-%E0%A4%AE%E0%A5%87%E0%A4%82-%E0%A4%B9%E0%A5%81%E0%A4%86-%E0%A4%B6-%E0%A4%AF-%E0%A4%B2/ar-AAOfuGS7i=AAuuC.i8>



Fri, 10 Sept 2021

दुश्मनों के विमानों को 70 KM दूर ही मार गिराएगा IAF का नया गेमचेंजर हथियार

दुश्मनों को मुंहतोड़ जवाब देने के लिए केंद्र की मोदी सरकार भारतीय वायुसेना को और मजबूत कर रही है। केंद्र सरकार की ओर से इस दिशा में एक कदम और आगे बढ़ा दिया गया है।

Edited By Deepak Pandey

नई दिल्ली: दुश्मनों को मुंहतोड़ जवाब देने के लिए केंद्र की मोदी सरकार भारतीय वायुसेना को और मजबूत कर रही है। केंद्र सरकार की ओर से इस दिशा में एक कदम और आगे बढ़ा दिया गया है।

इंडियन एयरफोर्स को मीडियम रेंज सरफेस-टु-एयर मिसाइल सिस्टम (MRSAM) मिल गया है, जोकि 70 किलोमीटर दूर से दुश्मनों के लड़ाकू विमान, हेलीकॉप्टर, मिसाइल या ड्रोन को मार गिराएगा। रक्षा मंत्री राजनाथ सिंह (Defense Minister Rajnath Singh) ने इस मिसाइल सिस्टम को एयर डिफेंस का गेम चेंजर बताया है। भारत



रक्षा मंत्री राजनाथ सिंह (Defense Minister Rajnath Singh)
(Photo Credit: Twitter)

और इजराइल ने संयुक्त रूप से मिलकर MRSAM या बराक 8 एयर डिफेंस सिस्टम को डेवलप किया है।

इस सिस्टम में अडवांस रडार, कमांड और कंट्रोल सिस्टम, मोबाइल लॉन्चर को एड किया गया है। देश में निर्मित रॉकेट मोटर मिसाइल को ताकत देता है और यह बेहद ही खास कंट्रोल सिस्टम है। जैसलमेर में आयोजित इंडक्शन सेरेमनी में रक्षा मंत्री राजनाथ सिंह ने कहा कि MRSAM को भारतीय वायुसेना को सौंपने के साथ ही हमने आत्मनिर्भर भारत की ओर बड़ी छलांग लगा दी है। हवाई रत्र में MRSAM बड़ा गेमचेंजर होगा।

इजराइल एयरोस्पेस इंडस्ट्रीज और डिफेंस रिसर्च एंड डिवेलपमेंट ऑर्गेनाइजेशन (डीआरडीओ) की ओर से संयुक्त रूप से इस सिस्टम को विकसित किया गया है। इजराइली कंपनी राफाइल, भारत इलेक्ट्रॉनिक्स लिमिटेड, भारत डानामिक्स लिमिटेड एंड L&T को इस प्रॉजेक्ट में शामिल किया गया था। रक्षामंत्री राजनाथ सिंह की मौजूदगी में डीआरडीओ के चीफ जी सतीश रेड्डी ने वायु सेना अध्यक्ष आरकेएस भदौरिया को पहला फायरिंग यूनिट सौंपा।

राजनाथ सिंह ने कहा कि खराब मौसम में भी यह सिस्टम 70 किलोमीटर रेंज में एक साथ कई टारगेट को मार गिरा सकता है। कड़े परीक्षणों की कड़ी में इसकी सफलता इसकी विश्वसनीयता का ही प्रमाण है। पहले ही इसका नेवल वर्जन कुछ भारतीय युद्धक जहाजों की क्षमता बढ़ा चुका है। भारतीय सेना ने MRSAM के लिए ऑर्डर दिया है। पिछले 4 सालों में भारत और इजराइल ने अडवांस सरफेस टु एयर मिसाइल सिस्टम के लिए 3 अरब डॉलर के अलग-अलग समझौते किए हैं।

<https://www.newsnationtv.com/india/news/indian-air-force-new-game-changer-weapon-to-shoot-down-enemy-aircraft-70-km-away-209350.html>



Fri, 10 Sept 2021

DRDO to develop new early warning jets for IAF under ₹11,000 crore project

The IAF inducted its first indigenously developed AEW&C system, mounted on a Brazilian Embraer-145 jet, in February 2017, beefing up its capability to detect enemy aircraft and missiles. The Netra AEW&C system was developed by the DRDO and has a range of around 200 km

By Rahul Singh

India's Cabinet Committee on Security (CCS) on Wednesday cleared a Defence Research and Development Organisation (DRDO) proposal to develop new airborne early warning and control (AEW&C) aircraft for the Indian Air Force using Airbus jets bought from Air India, people familiar with the developments said on Thursday.

The project is estimated to be worth around ₹11,000 crore, said one of the officials cited above. It was cleared along with the much-delayed purchase of 56 C-295 medium transport aircraft to replace the IAF's ageing fleet of Avro-748 planes. The C-295 project is estimated to be worth ₹22,000 crore.

The IAF inducted its first indigenously developed AEW&C system, mounted on a Brazilian Embraer-145 jet, in February 2017, beefing up its capability to detect enemy aircraft



The first indigenously developed airborne early warning and control (AEW&C) system, called Netra, was handed over to the IAF in February 2017, on the first day of Aero India-2017 in Bengaluru. (HT PHOTO.)

and missiles. The Netra AEW&C system was developed by the DRDO and has a range of around 200 km.

The new AEW&C system, most likely to be mounted on the Airbus A321 aircraft, is expected to be more advanced than the Netra system, the official said. Currently, two Netra systems are in service.

The IAF also operates three Israeli Phalcon airborne warning and control system (AWACS) mounted on Russian IL-76 heavy-lift planes. The system has a range of 400 km. The IAF needs more such systems to cover the eastern and western sectors during offensive operations, experts have said.

The approval for the new AEW&C jets comes at a time when government has sharpened its focus on promoting self-reliance in the defence manufacturing sector and positioning itself as an exporter of military hardware.

Airbus Defence and Space and Tata Advanced Systems Limited (TASL) will jointly execute the C-295 project to equip the air force with the new transport aircraft under the Make-in-India initiative in the aerospace sector. Airbus will supply the first 16 aircraft in flyaway condition while the remaining 40 will be assembled in India by TASL.

In the last one year, the government has imposed a ban on the import of 209 defence items that will be implemented progressively from 2021 to 2025. AEW&C systems are covered under that ban.

From raising foreign direct investment (FDI) in defence manufacturing to creating a separate budget for buying locally made military hardware and notifying two lists of weapons/equipment that cannot be imported, the government has taken a raft of measures to boost self-reliance in the defence sector over the last two years.

Other than AEW&C systems, the 209 weapons and systems that cannot be imported include artillery guns, missile destroyers, ship-borne cruise missiles, light combat aircraft, long-range land attack cruise missiles, basic trainer aircraft, specified types of helicopters and next-generation corvettes.

India has set aside ₹70,221 crore this year for domestic defence procurement, accounting for 63% of the military's capital budget. Last year, the ministry spent over ₹51,000 crore, or 58% of the capital budget, on domestic purchases.

<https://www.hindustantimes.com/india-news/drdo-to-develop-new-early-warning-jets-for-iaf-under-rs-11000-crore-project-101631202114793.html>

Modi govt okays 6 more ‘eyes in the sky’ for IAF, DRDO project to cost Rs 11,000 crore

The DRDO will get 6 aircraft from Air India, get them modified & fit them with the Airborne Early Warning & Control system that can detect & track all flying objects faster than ground-based radars

By Snehesh Alex Philip, Edited by Poulomi Banerjee

New Delhi: The Prime Minister Narendra Modi-led Cabinet Committee on Security (CCS) Wednesday cleared a nearly Rs 11,000 crore project of the Defence Research and Development Organization (DRDO) to develop six new Airborne Early Warning and Control (AEW&C) aircraft for the Indian Air Force.

This is in addition to the nearly \$3 billion deal for procuring 56 C-295MW transport aircraft for the IAF, which was also cleared by the Committee, to replace the ageing fleet of Avro 748 transport aircraft that first flew in 1961.

While the CCS decision on the C-295 was the budgetary clearance for the actual signing of the contract, the Committee has cleared the “Acceptance of Necessity” (AoN) for the DRDO project, sources in the defence and security establishment told ThePrint.



[Representational Image | The existing Netra Airborne Early Warning and Control \(AEW&C\) aircraft | Wiki Commons](#)

This means that the DRDO will now be able to issue a “Request for Proposal” (RFP) for further work on the aircraft.

According to the plan, the six will be taken from the Air India fleet, which means they will be A-319s and A-321 variants.

The original plan, which had also got an AON clearance, was to procure two larger A-330 jets, which were then to be modified and fitted with the AEW&C systems.

However, now the six Airbus aircraft will be modified and the indigenous Active Electronically Scanned Array (AESA) radar will be mounted on them.

The DRDO will now issue RFP seeking bids for modification for the six passenger aircraft. Since Airbus is the original equipment manufacturer (OEM), the firm is the frontrunner to bag the contract.

Sources said that the majority share of the Rs 11,000 crore will go in for modification and setting up of the systems.

The actual cost of the aircraft is less and would come to about Rs 1,100 crore for the six since this is a book transfer within the government itself.

What is AEW&C

Known as the “eyes in the sky”, the AEW&C can detect and track all flying objects in the sky, including incoming fighters, cruise missiles and drones, faster than ground-based radars.

They can also act as an aerial control room for missions while also keeping track of ships out at sea.

The six will add to the existing fleet of the IAF, which includes three Israeli Phalcon AWACS on Ilyushin-76 transport aircraft, and two indigenous ‘Netra’ AEW&C aircraft on the Embraer aircraft.

The criticality of the AEW&C was felt during the aerial duel between India and Pakistan on 27 February 2019.

Pakistan, which has six Saab 2000 early warning aircraft besides four others, had taken advantage of IAF's changeover of the 'eye in the sky', when launching the attack.

The current stand-off between India and China has also meant that the existing assets are being put to use almost round-the-clock and the need for more has been felt.

<https://theprint.in/defence/modi-govt-okays-6-more-eyes-in-the-sky-for-iaf-drdo-project-to-cost-rs-11000-crore/730697/>



Fri, 10 Sept 2021

भारतीय वायुसेना के लिए वार्निंग जेट बनाएगा DRDO, 11000 करोड़ के प्रोजेक्ट को मंजूरी

11 हजार करोड़ की इस परियोजना को रक्षा अनुसंधान और विकास संगठन (DRDO) ने तैयार किया था। नए एयरबोर्न अर्ली वार्निंग एंड कंट्रोल (AEW&C) एयरक्राफ्ट के जरिए दूसरी ओर से आने वाली क्रूज मिसाइलों, लड़ाकू विमानों, ड्रोन समेत आकाश में उड़ने वाली सभी वस्तुओं का बेहद तेजी के साथ पता लग सकता है।

नई दिल्ली: देश की रक्षा मामलों की कैबिनेट कमेटी ने वायुसेना लिए 6 नए एयरबोर्न अर्ली वार्निंग एंड कंट्रोल (AEW&C) एयरक्राफ्ट की परियोजना को मंजूरी दे दी है। इस कमेटी के अध्यक्ष प्रधानमंत्री नरेंद्र मोदी हैं। 11 हजार करोड़ की इस परियोजना को रक्षा अनुसंधान और विकास संगठन (DRDO) ने तैयार किया था।

भारतीय वायुसेना ने स्वदेश निर्मित पहला AEW&C सिस्टम 2017 में शामिल किया था। ये सिस्टम ब्राजीलियन Embraer-145 जेट पर आधारित था। नेत्रा AEW&C नामक इस सिस्टम को डीआरडीओ द्वारा डेवलप किया गया था और इसकी रेंज करीब 200 किलोमीटर की है। नया AEW&C सिस्टम एयरबस ए321 पर आधारित होगा और माना जा रहा है कि ये नेत्रा सिस्टम से ज्यादा आधुनिक होगा। हिंदुस्तान टाइम्स पर प्रकाशित एक रिपोर्ट के मुताबिक वर्तमान समय में दो नेत्रा सिस्टम सर्विस में हैं। DRDO इन 6 विमानों को एयर इंडिया से हासिल करेगा। इन विमानों को मॉडिफाई कर उन्हें एयरबोर्न अर्ली वार्निंग एंड कंट्रोल सिस्टम (AEW&C) के साथ फिट करेगा।



भारतीय वायुसेना ने स्वदेश निर्मित पहला AEW&C सिस्टम 2017 में शामिल किया था. (तस्वीर: www.drdo.gov.in)

क्या होता है AEW&C

दरअसल AEW&C सिस्टम जमीन पर आधारित रडार की तुलना में दूसरी ओर से आने वाली क्रूज मिसाइलों, लड़ाकू विमानों, ड्रोन समेत आकाश में उड़ने वाली सभी वस्तुओं का बेहद तेजी के साथ पता लगा सकता है। साथ ही इन्हें ट्रैक भी करने की क्षमता रखता है। ये सिस्टम समुद्र में भी निगाहें रख सकता है और पोतों की सुरक्षा के लिए काम कर सकता है।

नए ट्रांसपोर्टर विमानों की खरीद को भी कैबिनेट से हरी झंडी

बता दें कि भारतीय वायुसेना के लिए नए ट्रांसपोर्टर विमानों की खरीद को भी कैबिनेट से हरी झंडी मिल गई है। भारतीय वायुसेना के पुराने हो चुके विमानों की जगह नए उन्नत और आधुनिक विमानों से बदलने की प्रक्रिया लगातार जारी है। लंबे समय से भारतीय वायुसेना में सेवाए दे रहे एवरो छोटे ट्रांसपोर्टर विमानों की जगह अब स्पेन के C-295MW लेंगे।

कैबिनेट ने 56 नए C-295MW विमानों की खरीद को मंजूरी दी है। इन 56 विमानों में से 16 विमान स्पेन से पूरी तरह से तैयार होकर फ्लाइट कंडीशन यानी की स्पेन से सीधे उड़ान भरकर भारत आएंगे जबकि बाकी 40 को लाइसेंस के तहत भारत में बनाया जाएगा। इस नए एयरक्राफ्ट की वजन ढोने की क्षमता 5 से 10 टन की है। इस एयरक्राफ्ट में सैनिक और कार्गो को पैरा ड्रॉप करने के लिए रीयर रैंप डोर भी है। कॉन्ट्रैक्ट साइन होने के बाद 48 महीनों के भीतर 16 एयरक्राफ्ट स्पेन से बनकर आएंगे बाकी बचे 40 एयरक्राफ्ट अगले दस साल के भीतर भारत में तैयार होंगे।

<https://hindi.news18.com/news/nation/drdo-to-develop-new-early-warning-jets-for-iaf-under-rs-11000-crore-project-3735582.html>



Fri, 10 Sept 2021

INS Dhruv: India gets its first nuclear missile tracking ship today. Details here

The Indian Navy is expected to be able to increase its presence in the Indo-Pacific region and beyond with the likes of INS Dhruv in its arsenal, considering largely persisting threats from its neighbours China and Pakistan

By Joydeep Bose, Edited by Meenakshi Ray

New Delhi: In what comes as a significant boost to the country's naval power, India is all set to launch its first satellite and ballistic missile tracking ship Dhruv on Friday. The 10,000-tonne vessel will be commissioned from Visakhapatnam in Andhra Pradesh in the presence of senior officials from the Indian Navy, the Defence Research and Development Organisation (DRDO), and the National Technical Research Organisation (NTRO), among others. INS Dhruv lies at the heart of India's future anti-ballistic capabilities and the ship will play a key role in advancing the country's presence in the Indo-Pacific region.



INS Dhruv is equipped with multiple features that make it a state-of-the-art instrument in modern naval warfare. (File Photo / HT)

INS Dhruv, the latest addition to the Indian Navy's arsenal, was built by the Hindustan Shipyard in collaboration with the DRDO and NTRO. The ship is equipped with multiple features that make it a state-of-the-art instrument in modern naval warfare.

Here's a look at some of the features of INS Dhruv.

INS Dhruv: A key contender in anti-ballistic warfare

- INS Dhruv, with its anti-ballistic missile capabilities, will act as an early warning system for enemy missiles headed towards Indian cities and military establishments.

- Dhruv also possesses a state-of-the-art active scanned array radar (AESA), developed by the DRDO, which will enable it to scan various spectrums and monitor spy satellites watching over India, as well as monitor missile tests in the entire region.
- Dhruv is India's first naval vessel that is capable of tracking nuclear missiles at a long range, which assumes a special significance with an increasing threat of nuclear ballistic warfare in the Indo-Pacific region.
- In addition to these, INS Dhruv is also equipped with the capability to map ocean beds for research and detection of enemy submarines.

How will India benefit from the addition of INS Dhruv to its arsenal?

The Indian Navy is expected to be able to increase its presence in the Indo-Pacific region and beyond with the likes of INS Dhruv in its arsenal, considering largely persisting threats from its neighbours China and Pakistan. Here's a look at how the country is likely to benefit from the addition of INS Dhruv to its arsenal of naval warfare instruments:

- INS Dhruv will play a key role in India's maritime awareness in the Indo-Pacific since it is being commissioned at a time when an era of underwater warfare and surveillance drones with the use of advanced submarines has arrived.
- Both China and Pakistan currently have nuclear ballistic capabilities and harbour land disputes against India. In such a scenario, INS Dhruv arrives as a major upgrade to India's fortification and force multiplier in the maritime security architecture.
- INS Dhruv, with its state-of-the-art detection facilities, will also help the country's defence and military researchers understand the true missile capability of the adversary when they test their ballistic missiles.
- With Dhruv monitoring the seas for spy satellites across a variety of spectrums, the Indian Navy can now keep an eye out in the entire region from the Gulf of Aden to the ingress route to the South China Sea via Malacca, Sunda, Lombok, Ombai and Wetar straits. India's electronic intelligence-gathering spy agency, the NTRO, will be able to gather more data across these regions and be on the lookout for threats.
- Moreover, with INS Dhruv on its side, the Indian Navy can now strategise its military operations better across all three dimensions of naval warfare – sub-surface, surface, and aerial. This is especially important since China has recently moved to a 'sea-based military doctrine' with huge investments in long-range aircraft carriers, warships, and submarines.

India's nuclear missile tracking ship will be manned by Indian Navy personnel with the Strategic Forces Command (SFC). With the addition of INS Dhruv, India will join an elite list of countries that presently consists of only France, the US, the UK, Russia, and China, who possess and operate such vessels.

<https://www.hindustantimes.com/india-news/ins-dhruv-india-gets-its-first-nuclear-missile-tracking-ship-today-details-here-101631233967587.html>

देश का पहला न्यूक्लियर मिसाइल ट्रेकिंग जहाज INS ध्रुव आज होगा लांच, चीन-पाक की हर चाल पर होगी नजर

भारत देश के पहले लंबी दूरी की न्यूक्लियर मिसाइल व हवाई हमलों की निगरानी वाले जहाज आईएनएस ध्रुव की तैनाती करने जा रहा है। यह स्पेशल रिसर्च शिप दुश्मन के मिसाइल को ट्रेक करने के साथ ही पृथ्वी की निचली कक्षा में सैटेलाइटों की निगरानी भी करेगी।

Edited By Kuldeep Singh

Highlights

- INS ध्रुव जहाज की लागत लगभग 725 करोड़ रुपये
- बैलिस्टिक मिसाइलों को भी करेगा ट्रेक करने की खासियत
- जहाज को ऑपरेट करने वाला भारत विश्व का छठा देश होगा

नई दिल्ली: भारत देश के पहले लंबी दूरी की न्यूक्लियर मिसाइल व हवाई हमलों की निगरानी वाले जहाज आईएनएस ध्रुव की तैनाती करने जा रहा है। यह स्पेशल रिसर्च शिप दुश्मन के मिसाइल को ट्रेक करने के साथ ही पृथ्वी की निचली कक्षा में सैटेलाइटों की निगरानी भी करेगी। राष्ट्रीय सुरक्षा सलाहकार (NSA) अजीत डोभाल (Ajit Doval) आज यानि शुक्रवार को भारत का पहला सैटेलाइट और बैलिस्टिक मिसाइल ट्रेकिंग जहाज ध्रुव (Dhruv Ship) लॉन्च करेंगे। इसकी शुरुआत विशाखापट्टनम से होगी। इसे रक्षा अनुसंधान और विकास संगठन (DRDO) और राष्ट्रीय तकनीकी अनुसंधान संगठन (NTRO) के सहयोग से हिंदुस्तान शिपयार्ड तैयार किया है। INS ध्रुव में दुश्मन की पनडुब्बियों के रिसर्च का पता लगाने के लिए समुद्र के तल को मैप करने की क्षमता है।



आईएनएस ध्रुव (Photo Credit: न्यूज नेशन)

15,000 टन मिसाइल रेंज इंस्ट्रूमेंटेशन की शिप

स्वदेश निर्मित 15,000 टन मिसाइल रेंज इंस्ट्रूमेंटेशन जहाज को लंबी दूरी के राडार, गुंबद के आकार के ट्रेकिंग एंटीना और एडवांस इलेक्ट्रॉनिक्स सिस्टम से लैस किया गया है। 175 मीटर लंबी मिसाइल-ट्रेकिंग पोत को पहले एक सीक्रेट प्रोजेक्ट के हिस्से के रूप में 'वीसी 11184' नाम दिया गया था। इस शिप की तैनाती ऐसे समय में हो रही है जब ऐसा ही एक चीनी पोत वर्तमान में हिंद महासागर क्षेत्र (आईओआर) में एक और निगरानी और निगरानी मिशन पर चल रहा है।

ऐसा करने वाला भारत बना 6वां देश

चीन नियमित रूप से हिंद महासागर क्षेत्र में ऐसे जहाजों और सर्वे शिप को भेजता है। इनका उपयोग नेविगेशन और पनडुब्बी संचालन के लिए उपयोगी समुद्री विज्ञान और अन्य डेटा का पता लगाने में भी किया जाता है। स्पेशल पोत आईएनएस ध्रुव के साथ ही भारत अमेरिका, रूस, चीन और फ्रांस जैसे देशों के एक चुनिंदा समूह में शामिल हो जाएगा।

नेवी की एनटीआरओ टीम करेगी संचालित

आईएनएस ध्रुव को नेवी की नेशनल रिसर्च टेक्निकल ऑर्गनाइजेशन (एनटीआरओ) और रक्षा अनुसंधान और विकास संगठन (DRDO) के मंबर संचालित करेंगे। आईएनएस ध्रुव पर एडवांस टेक्निकल इक्यूपमेंट्स की एक बड़ी रेंज है। साथ ही इस पर एक हेलीकॉप्टर डेक भी है। यह दुश्मनों के बैलिस्टिक मिसाइलों का पता लगाने और ट्रैक करने के लिए समुद्र पर एक अर्ली अलर्ट सिस्टम के रूप में कार्य करेगा। यह जमीन से छोड़े गए कई वारहेड्स के साथ या पनडुब्बियों को भी निशाना बना सकता है।

मिसाइल का पता लगा बीएमडी को देगा सूचना

एक बार शिप के राडार पर इस तरह की आने वाली मिसाइलों का पता लगने के बाद, लैंड बेस्ड बैलिस्टिक मिसाइल रक्षा (बीएमडी) सिस्टम उन्हें ट्रैक कर मार गिराएगा। वर्तमान में DRDO की तरफ से विकसित की जा रही दो स्तरीय BMD प्रणाली में 2,000 किलोमीटर की रेंज में दुश्मन की मिसाइलों को रोकने के लिए AAD (उन्नत वायु रक्षा) और PAD (पृथ्वी वायु रक्षा) इंटरसेप्टर मिसाइल हैं। ऐसे शक्तिशाली सेंसर के साथ INS ध्रुव का भी उपयोग किया जा सकता है।

क्या है INS ध्रुव की खासियत

- 15,000 टन वजनी INS ध्रुव जहाज की लागत लगभग 725 करोड़ रुपये
- INS ध्रुव इलेक्ट्रॉनिक स्कैन एरे (AESA) रडार से लैस है, दुश्मन देश की मिसाइल रेंज के सटीक डेटा को ट्रेस कर सकता है।
- बैलिस्टिक मिसाइलों को भी करेगा ट्रैक।
- जासूसी उपग्रहों की निगरानी के साथ-साथ, मिसाइल परीक्षणों की निगरानी के लिए विभिन्न स्पेक्ट्रमों को स्कैन करने की क्षमता।
- सर्विलांस सिस्टम के ऑपरेशन में 14 मेगावाट बिजली की आवश्यकता होगी जो INS ध्रुव खुद बनाएगा।
- इस प्रकार के जहाज को ऑपरेट करने वाला अब विश्व का छठा देश होगा भारत।

<https://www.newsnationtv.com/india/news/ajit-doval-will-launch-indias-successful-nuclear-missile-tracking-ship-dhruv-on-today-september-10-2019385.html>

बड़ी मदद: तीसरी लहर के लिए रायपुर को डीआरडीओ से 300 ऑक्सीजन सिलेंडर, राज्य से 8.5 करोड़ रुपए

प्रदेश में कोरोना से निपटने 300 करोड़ के खर्च का अनुमान, अलग फंड मिलेगा

By अमिताभ अरुण दुबे

रायपुर: कोरोना संक्रमण के मामले में छत्तीसगढ़ अभी काफी सुरक्षित है, लेकिन तीसरी लहर के हिसाब से मदद मिलनी शुरू हो गई है। पीएम केयर फंड से सबसे पहले भारतीय रक्षा अनुसंधान (डीआरडीओ) में तैयार किए गए 300 से अधिक ऑक्सीजन सिलेंडर रायपुर को मिल गए हैं। यही नहीं, प्रदेश के स्वास्थ्य विभाग से रायपुर को तीसरी लहर के निपटने के लिए 8.5 करोड़ रुपए का फंड मंजूर हुआ है।

जिले से एक्शन प्लान भी मांगा गया है कि यह रकम किस तरह खर्च की जाए, ताकि कोरोना के इलाज से जुड़े संसाधन जुटाए जा सकें। प्रदेश में तीसरी लहर से मुकाबले का एक्शन प्लान और रणनीति तैयार हो गई है। स्वास्थ्य विभाग ने सभी जिलों से बिंदुवार जरूरतें और प्लान मांगा था। अब इस हिसाब से फंड का आवंटन शुरू कर दिया गया है। मिली जानकारी के मुताबिक प्रदेश में तीसरी लहर की तैयारी के लिए आरंभिक रूप से करीब 300 करोड़ रुपए के खर्च का अनुमान लगाया है।



रायपुर सीएमओ कार्यालय में डीआरडीओ में बने ऑक्सीजन सिलेंडर की खेप पहुंची।

यह रकम जिलों को इलाज के लिए संसाधन जुटाने में मददगार होगी। कॉरपोरेट सेक्टर से भी मदद के लिए जो संसाधन मिल रहे हैं, वह अलग से जिलों में भेजे जाएंगे। चूंकि रायपुर प्रदेश में इलाज का केंद्र है इसलिए यहीं सबसे पहले मदद पहुंची है। प्रदेश में तीसरी लहर के मद्देनजर 100 से अधिक ऑक्सीजन प्लांट बनाने का काम भी 80 फीसदी से अधिक पूरा हो चुका है।

प्रदेश के 28 जिलों में 13203 से अधिक अतिरिक्त बिस्तरों की व्यवस्था बनाई जा रही है, जिसमें से 6589 से अधिक बेड ऑक्सीजन वाले होंगे। इसके अलावा दूसरी लहर के अंत तक 32 हजार बेड का इंतजाम किया जा चुका था, जिसमें नए बेड और जुड़ेंगे।

- 918 से अधिक अतिरिक्त वेंटिलेटर लगे हैं जिलों में।
- 350 वेंटिलेटर की व्यवस्था बच्चों के लिए की जा रही है।

जब जैसी जरूरत मिलेगा फंड

कोरोना कोर कमेटी के असेसमेंट के मुताबिक प्रदेश में अगर कोरोना के केस बढ़ते भी हैं, तो दवाइयों वगैरह का बंदोबस्त नवंबर तक के लिए है। एंटीजन जांच हर जगह हो सके, इसके लिए पर्याप्त किट की

व्यवस्था भी हो रही है। तीसरी लहर के पहले ही हेल्थ वर्कर्स को गांव गांव में टेस्ट करने की ट्रेनिंग दी जा रही है। जिला अस्पतालों और सामुदायिक स्वास्थ्य केंद्रों में एंटीजन, आरटीपीसीआर और डूनेट तीनों तरह के टेस्ट की व्यवस्था रहेगी।

बजट की कमी नहीं

- तीसरी लहर की चुनौती से निपटने के लिए जिलों में फंड या बजट की कमी नहीं होगी। जरूरत के हिसाब से हर जिले को पर्याप्त मात्रा में बजट और संसाधन मिल सकें, इसका बंदोबस्त किया गया है।
- डॉ. सुभाष मिश्रा, डायरेक्टर, एपिडेमिक कंट्रोल

प्लान तैयार कर रहे

- रायपुर को साढ़े 8 करोड़ रुपए मिले हैं। इसके अनुरूप प्लान तैयार कर रहे हैं। ग्रामीण स्तर पर भी मरीजों को टेस्ट, इलाज और दवाएं मिल सकें इसके लिए पर्याप्त बंदोबस्त किया जा रहा है। - डॉ. मीरा बघेल, सीएमओ, रायपुर

<https://www.bhaskar.com/local/chhattisgarh/raipur/news/300-oxygen-cylinders-from-drdo-to-raipur-for-the-third-wave-rs-85-crore-from-the-state-128908838.html>

DRDO on Twitter





Rajnath Singh ✓
@rajnathsingh

The MRSAM System is being inducted in the IAF today. This is another step towards self-reliance in indigenous defence technologies.



12:38 13.8K viewers



Rajnath Singh ✓ @rajnathsingh

The MRSAM System is being inducted in the IAF today. This is another step towards self-reliance in indigenous defence technologies.



A. Bharat Bhushan Babu ✓ @SpokespersonMoD · 12h

In a significant boost to India's defence capabilities, the first deliverable #FiringUnit of #MRSAM System was handed over to #IndianAirForce by @DRDO_India in the presence of Raksha Mantri Shri @rajnathsingh at #AF Stn, Jaisalmer in Rajasthan, today.
pib.gov.in/PressReleasePa...





DRDO
@DRDO_India

In a major boost to Air Defence capabilities, Raksha Mantri Shri Rajnath Singh handed over 1st Firing Unit of #MRSAM System to #IndianAirForce today. He congratulated #DRDO, IAF, IAI Israel & Indian Industries for their synergistic efforts in developing the System. #Atmanirbharta



4:12 PM · Sep 9, 2021 · Twitter for Android



Hindustan Times
@HindustanTimes

'Self-reliance in defence necessity due to fast changing global scenario': Rajnath Singh at MRSAM induction



'Self-reliance in defence necessity due to fast changing global scenario': Rajna...

"The impact of changing geo-politics can also be seen on trade, economy, power politics and in turn the security scenario. In such a situation, the strength

[hindustantimes.com](https://www.hindustantimes.com)

Medium-Range Surface-to-Air Missile Air Defence System being inducted into the 2204 Squadron of the Indian Air Force in Jaisalmer, Rajasthan. Defence Minister Rajnath Singh would be officially inducting the missile system into the Air Force here.



Defence Strategic: National/International



Press Information Bureau
Government of India

Ministry of Defence

Thu, 09 Sept 2021 2:31PM

Raksha Mantri Shri Rajnath Singh and Minister for Road Transport & Highways Shri Nitin Gadkari inaugurate emergency landing facility for Indian Air Force in Barmer, Rajasthan

Raksha Mantri terms it new strength of New India

Says, the landing strip will further cement basic infrastructure along the western border & strengthen national security

Key Highlights:

- **National Highway used for emergency landing of IAF aircraft for the first time**
- **ELF to facilitate landing of all types of IAF aircraft**
- **Raksha Mantri describes it as a shining example of Government's readiness to protect the unity & sovereignty of the nation**
- **Lauds the public-private partnership in completing the construction in just 19 months despite COVID-19 restrictions**
- **Terms Cabinet's approval to procurement of 56 C-295MW transport aircraft for IAF a big step towards 'Aatmanirbhar Bharat'**

Raksha Mantri Shri Rajnath Singh and Minister for Road Transport and Highways Shri Nitin Gadkari jointly inaugurated Emergency Landing Facility (ELF) for the Indian Air Force (IAF) at Satta-Gandhav stretch on NH-925A near Barmer, Rajasthan on September 09, 2021. The two Ministers travelled to Barmer on C-130J aircraft to inaugurate the facility. They also witnessed aircraft operations on the ELF, which has been constructed in just 19 months by M/S GHV India Pvt. Ltd. under the supervision of IAF and National Highways Authority of India (NHAI). This is the first time that a National Highway has been used for emergency landing of aircraft of Indian Air Force. This landing strip will be able to facilitate landing of all types of IAF aircraft.

In his address, Shri Rajnath Singh lauded the IAF, NHAI & the private sector for joining hands and completing the construction of Emergency Landing Field in 19 months despite COVID-19 restrictions. It is a great example of coordination among multiple departments & Ministries; Government & private sector and Civil & Defence, he added. The Raksha Mantri defined the landing of IAF aircraft on the 3 km stretch as a historic new strength of New India, as it coincides with the 75th year of Independence and 50th year of India's victory in the 1971 war.

The Raksha Mantri described ELF near the International Border as a shining example of the Government's commitment to protect the unity and sovereignty of the nation. "This highway and landing field will further cement the basic infrastructure along the western border and strengthen

national security. Such emergency fields will provide more edge to the operational and civil assistance of our forces. It will also play a crucial role in facing natural calamities,” he said.

Shri Rajnath Singh commended the Armed Forces for displaying the same level of courage, dedication and promptness during natural calamities as they show when they face their adversaries. He lauded the Indian Air Force for playing a central role in dealing with the situation arising out of the COVID-19 pandemic.

The Raksha Mantri reiterated the Government’s resolve to bolster the network of roads and highways across the country, with focus on constructing emergency landing fields at strategic and important places. He stated that the continuous construction of roads, highways and bridges across the country reflects the Government’s commitment towards nation building. “The roads and highways projects being undertaken by our government have proved that defence and development are not two separate entities. Both complement each other,” he added.

Saying that development of border areas is one of the top priorities of the Government, Shri Rajnath Singh highlighted the crucial role played by Border Roads Organisation in strengthening border infrastructure. The inauguration of Atal Tunnel, Rohtang and construction of highest motorable road in the world at 19,300 ft at Umlingla Pass in Eastern Ladakh are some such examples, he said.

Referring to the Cabinet’s approval to procurement of 56 C-295MW transport aircraft for Indian Air Force, the Raksha Mantri said the decision was a big step towards ‘Aatmanirbhar Bharat’ as envisioned by Prime Minister Shri Narendra Modi, as the aircraft would be manufactured under the ‘Make in India’ initiative.

The NHAI has developed the three-kilometre section as an ELF for Indian Air Force. It is part of the newly-developed two-lane paved shoulder of Gagariya-Bakhasar & Satta-Gandhav Section having total length of 196.97 kilometres and costing Rs 765.52 crore under Bharatmala Pariyojana. The work commenced in July 2019 and was completed in January 2021.

This project will improve connectivity between villages of Barmer & Jalore districts located on the international border. The stretch located in the western border area will facilitate the vigilance of the Indian Army and strengthen the basic infrastructure of the country. During normal time, the ELF will be used for smooth flow of road traffic.

Apart from the Emergency Landing Strip, three helipads have been constructed in Kundanpura, Singhania & Bakhasar villages under this project as per the requirements of the Armed Forces.

Minister of Jal Shakti Gajendra Singh Shekhawat, Chief of Defence Staff General Bipin Rawat, Chief of Air Staff Air Chief Marshal RKS Bhadauria, Secretary, Department of Defence R&D & Chairman, Defence Research and Development Organisation (DRDO) Dr G Satheesh Reddy and other senior central & state government officials were present during the inauguration of the Emergency Landing Facility.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1753478>



पत्र सूचना कार्यालय
भारत सरकार

रक्षा मंत्रालय

Thu, 09 Sept 2021 2:31PM

रक्षा मंत्री श्री राजनाथ सिंह और सड़क परिवहन एवं राजमार्ग मंत्री श्री नितिन गडकरी ने राजस्थान के बाड़मेर में भारतीय वायुसेना के लिए आपातकालीन लैंडिंग सुविधा का उद्घाटन किया

रक्षा मंत्री ने इसको नए भारत की नई ताकत बताया

रक्षा मंत्री ने कहा कि लैंडिंग स्ट्रिप से पश्चिमी सीमा पर बुनियादी ढांचे को और मजबूती मिलेगी और राष्ट्रीय सुरक्षा मजबूत होगी

प्रमुख बातें:

- भारतीय वायुसेना के विमान की आपात लैंडिंग के लिए पहली बार राष्ट्रीय राजमार्ग का इस्तेमाल
- ईएलएफ सभी प्रकार के भारतीय वायुसेना के विमानों की लैंडिंग की सुविधा प्रदान करेगा
- रक्षा मंत्री ने इसे राष्ट्र की एकता व संप्रभुता की रक्षा के लिए सरकार की तत्परता का एक शानदार उदाहरण बताया
- कोविड-19 प्रतिबंधों के बावजूद सिर्फ 19 महीनों में निर्माण पूरा करने में सार्वजनिक-निजी भागीदारी की प्रशंसा की
- भारतीय वायुसेना के लिए 56 सी-295 एमडब्ल्यू परिवहन विमान की खरीद को कैबिनेट की मंजूरी 'आत्मनिर्भर भारत' की दिशा में एक बड़ा कदम

रक्षा मंत्री श्री राजनाथ सिंह और सड़क परिवहन और राजमार्ग मंत्री श्री नितिन गडकरी ने संयुक्त रूप से दिनांक 9 सितंबर, 2021 को राजस्थान के बाड़मेर के पास एनएच-925ए पर सट्टा-गंधव खंड पर भारतीय वायुसेना के लिए आपातकालीन लैंडिंग सुविधा (ईएलएफ) का उद्घाटन किया। दोनों मंत्रियों ने इस सुविधा का उद्घाटन करने के लिए सी-130जे विमान से बाड़मेर की यात्रा की। उन्होंने ईएलएफ पर, जिसे मैसर्स जीएचवी इंडिया प्राइवेट लिमिटेड द्वारा भारतीय वायुसेना और भारतीय राष्ट्रीय राजमार्ग प्राधिकरण की देखरेख में केवल 19 महीनों में बनाया गया है, विमान का संचालन भी देखा। यह पहली बार है जब भारतीय वायु सेना के विमानों की आपात लैंडिंग के लिए किसी राष्ट्रीय राजमार्ग का इस्तेमाल किया गया है। यह लैंडिंग स्ट्रिप भारतीय वायुसेना के सभी प्रकार के विमानों की लैंडिंग की सुविधा प्रदान करने में सक्षम होगी।

अपने संबोधन में श्री राजनाथ सिंह ने कोविड-19 प्रतिबंधों के बावजूद 19 महीनों में आपातकालीन लैंडिंग फील्ड के निर्माण को पूरा करने और इसके लिए मिल-जुलकर काम करने के लिए भारतीय वायुसेना, राष्ट्रीय राजमार्ग प्राधिकरण और निजी क्षेत्र की सराहना की। उन्होंने कहा कि यह कई विभागों और मंत्रालयों, सरकारी और निजी क्षेत्र और नागरिक और रक्षा विभागों के बीच समन्वय का एक बेहतरीन उदाहरण है। रक्षा मंत्री ने भारतीय वायुसेना के विमानों की 3 किमी की दूरी पर लैंडिंग को नए भारत की एक ऐतिहासिक नई ताकत के रूप में परिभाषित किया, क्योंकि यह लैंडिंग स्वतंत्रता के 75 वें वर्ष और 1971 के युद्ध में भारत की जीत के 50 वें वर्ष के साथ मेल खाती है।

रक्षा मंत्री ने अंतर्राष्ट्रीय सीमा के पास ईएलएफ को राष्ट्र की एकता और संप्रभुता की रक्षा के लिए सरकार की प्रतिबद्धता का एक सजीव उदाहरण बताया। उन्होंने कहा, "यह राजमार्ग और लैंडिंग क्षेत्र पश्चिमी सीमा के साथ बुनियादी ढांचे और राष्ट्रीय सुरक्षा को मजबूत करेगा। इस तरह के आपातकालीन क्षेत्र हमारे बलों की अभियानगत और नागरिक सहायता को और अधिक प्रोत्साहन प्रदान करेंगे। यह प्राकृतिक आपदाओं का सामना करने में भी अहम भूमिका निभाएगा।"

श्री राजनाथ सिंह ने प्राकृतिक आपदाओं के दौरान उसी तरह के साहस, समर्पण और तत्परता का प्रदर्शन करने के लिए सशस्त्र बलों की सराहना की, जिस प्रकार वे अपने विरोधियों का सामना करते हैं। उन्होंने कोविड-19 महामारी से उत्पन्न स्थिति से निपटने में केंद्रीय भूमिका निभाने के लिए भारतीय वायु सेना की सराहना की। रक्षा मंत्री ने रणनीतिक और महत्वपूर्ण स्थानों पर आपातकालीन लैंडिंग फील्ड के निर्माण पर ध्यान देने के साथ देशभर में सड़कों और राजमार्गों के नेटवर्क को मजबूत करने के सरकार के संकल्प को दोहराया। उन्होंने कहा कि देशभर में सड़कों, राजमार्गों और पुलों का निरंतर निर्माण राष्ट्र निर्माण के प्रति सरकार की प्रतिबद्धता को दर्शाता है। उन्होंने कहा, "हमारी सरकार द्वारा शुरू की जा रही सड़कों और राजमार्ग परियोजनाओं ने साबित कर दिया है कि रक्षा और विकास दो अलग-अलग संस्थाएँ नहीं हैं। दोनों एक दूसरे के पूरक हैं।"

यह बताते हुए कि सीमावर्ती क्षेत्रों का विकास सरकार की सर्वोच्च प्राथमिकताओं में से एक है, श्री राजनाथ सिंह ने सीमा पर ढांचागत अवसंरचना को मजबूत करने में सीमा सड़क संगठन द्वारा निभाई गई महत्वपूर्ण भूमिका पर प्रकाश डाला। उन्होंने कहा कि अटल सुरंग, रोहतांग का उद्घाटन और पूर्वी लद्दाख के उमलिंगला दर्रे में 19,300 फीट की ऊंचाई पर दुनिया की सबसे ऊंची वाहन चलाने योग्य सड़क का निर्माण कुछ ऐसे उदाहरण हैं।

भारतीय वायु सेना के लिए 56 सी-295 एमडब्ल्यू परिवहन विमान की खरीद के लिए कैबिनेट की मंजूरी का उल्लेख करते हुए, रक्षा मंत्री ने कहा कि प्रधानमंत्री श्री नरेन्द्र मोदी की कल्पना के अनुरूप यह निर्णय 'आत्मनिर्भर भारत' की दिशा में एक बड़ा कदम था, क्योंकि विमान का निर्माण 'मेक इन इंडिया' पहल के अंतर्गत किया जाएगा।

राष्ट्रीय राजमार्ग प्राधिकरण ने भारतीय वायु सेना के लिए तीन किलोमीटर के खंड को ईएलएफ के रूप में विकसित किया है। यह भारतमाला परियोजना के तहत गगरिया-बखासर और सट्टा-गंधव खंड के नव-विकसित टू-लेन पक्के हिस्से का भाग है, जिसकी कुल लंबाई 196.97 किलोमीटर है और इसकी लागत 765.52 करोड़ रुपये है। यह काम जुलाई 2019 में शुरू हुआ और जनवरी 2021 में पूरा हुआ।

यह परियोजना अंतर्राष्ट्रीय सीमा पर स्थित बाड़मेर और जालोर जिलों के गांवों के बीच संपर्क में सुधार करेगी। पश्चिमी सीमा क्षेत्र में स्थित सड़क का खंड भारतीय सेना की सतर्कता सुनिश्चित करेगा और देश के बुनियादी ढांचे को मजबूत करेगा। सामान्य समय के दौरान सड़क यातायात के सुचारु संचालन के लिए ईएलएफ का उपयोग किया जाएगा।

इस परियोजना के तहत सशस्त्र बलों की आवश्यकता के अनुसार आपातकालीन लैंडिंग पट्टी के अलावा कुंदनपुरा, सिंघानिया और बखासर गांवों में तीन हेलीपैड का निर्माण किया गया है।

जल शक्ति मंत्री गजेंद्र सिंह शेखावत, चीफ ऑफ डिफेंस स्टाफ जनरल बिपिन रावत, वायु सेना प्रमुख एयर चीफ मार्शल आर के एस भदौरिया, रक्षा अनुसंधान एवं विकास विभाग के सचिव तथा रक्षा अनुसंधान एवं विकास संगठन (डीआरडीओ) के अध्यक्ष डॉ. जी सतीश रेड्डी और राज्य सरकार के अन्य वरिष्ठ अधिकारी आपात लैंडिंग सुविधा के उद्घाटन के दौरान केंद्र मौजूद थे।

<https://pib.gov.in/PressReleasePage.aspx?PRID=1753654>



Opening ceremony exercise ZAPAD 2021

1. The Exercise ZAPAD 2021 commenced on 04th September 2021 at Nizhniy in Russia with an aim to train troops to undertake joint operations in conventional battlefield scenario. The exercise aims at strengthening long standing strategic partnership between India and Russia and also enhance better understanding, cooperation with all other participating Nations.
2. The opening ceremony was conducted in Mulino Training Ground near Nizhniy in Novgograd region, Russia at 1000 hours on 09 September 2021. The ceremony commenced with Guard of Honour by Russian Army followed by march past of participating Contingents. The Contingents were addressed by General Nikolay Pankov, Deputy Minister of Defence of the Russian Federation and General of the Army.
3. As part of the exercise, important lectures, drills and demonstrations related to both Counter Terrorism and Conventional operations will be conducted. The Armies of all participating nations will also be sharing their valuable experiences in varied theatres as also refine their drills and procedures for joint operations.
4. The exercise will culminate on 16th September 2021 with a Fire Power Demonstration by the Russian Armed Forces. During the course of the exercise, the Contingents will also participate in various sporting and cultural events.



5. <https://pib.gov.in/PressReleasePage.aspx?PRID=1753522>



पत्र सूचना कार्यालय
भारत सरकार

रक्षा मंत्रालय

Thu, 09 Sept 2021 4:32PM

अभ्यास जपड़ - 2021 का उद्घाटन समारोह

1. पारंपरिक युद्धक्षेत्र परिदृश्य में संयुक्त अभियान चलाने के लिए सैनिकों को प्रशिक्षित करने के उद्देश्य से रूस के निज़नी में 04 सितंबर, 2021 को अभ्यास जपड़ - 2021 शुरू हुआ। इस अभ्यास का उद्देश्य भारत और रूस के बीच लंबे समय से चली आ रही रणनीतिक साझेदारी को मजबूत करना और इस अभ्यास में भाग लेने वाले अन्य सभी देशों के साथ बेहतर समझ और सहयोग को बढ़ाना है।

2. इस अभ्यास का उद्घाटन समारोह 09 सितंबर, 2021 को 10:00 बजे रूस के नोवगोग्राड क्षेत्र में निज़नी के पास मुलिनो ट्रेनिंग ग्राउंड में आयोजित किया गया। इस समारोह की शुरुआत रूसी सेना द्वारा गार्ड ऑफ ऑनर के साथ हुई और इसके बाद इस अभ्यास में भाग लेने वाली टुकड़ियों का मार्च पास्ट हुआ। इस अभ्यास में भाग लेने वाली टुकड़ियों को रूसी संघ के उप रक्षा मंत्री और थल सेनाध्यक्ष जनरल निकोले पंकोव ने संबोधित किया।

3. इस अभ्यास के हिस्से के रूप में आतंकवाद विरोधी और पारंपरिक अभियान, दोनों, से संबंधित महत्वपूर्ण व्याख्यान, कवायद और प्रदर्शन आयोजित किए जायेंगे। इस अभ्यास में भाग लेने वाले सभी देशों की सेनाएं भी विभिन्न क्षेत्रों से जुड़े अपने बहुमूल्य अनुभवों को साझा करेंगी और साथ ही संयुक्त अभियानों के लिए अपनी कवायदों और प्रक्रियाओं को परिष्कृत करेंगी।

4. इस अभ्यास का समापन 16 सितंबर, 2021 को रूसी सशस्त्र बलों द्वारा अपनी शक्ति के प्रदर्शन के साथ होगा। इस अभ्यास के दौरान, इसमें शामिल होने वाली टुकड़ियां विभिन्न खेल और सांस्कृतिक कार्यक्रमों में भी भाग लेंगी।



<https://pib.gov.in/PressReleasePage.aspx?PRID=1753623>

As IAF inaugurates highway for fighters, does Sweden offer lessons?

Airbases and aircraft on the ground have remained targets vulnerable to attack

Defence Minister Rajnath Singh and Road Transport and Highways Minister Nitin Gadkari arrived at a stretch of National Highway 925 in Rajasthan on Thursday and made history.

The two ministers arrived at the highway on the Satta-Gandhav stretch, landing on a C-130J transport aircraft of the Indian Air Force.

Their landing was used to inaugurate the first national highway used for emergency landing of Indian Air Force aircraft. A number of Indian Air Force aircraft, including An-32 transport aircraft, Mi-17 helicopters and Su-30MKI and Jaguar fighters landed on the highway in the presence of the ministers.

Interestingly, the Su-30MKI was also serviced on the highway.

The National Highways Authority of India (NHAI) has developed the 3km section of Satta-Gandhav stretch of NH-925 as an emergency landing field for the IAF. In October 2017, fighter jets and transport planes of the IAF had conducted mock landings on the Lucknow-Agra Expressway to show that such highways can be used by the IAF planes for landing in case of an emergency.

Previously, stretches of expressways have been used to test landing strips for fighter aircraft.

Why highways as runways matter

While airpower has dominated nearly all conflicts since the First World War, airbases and aircraft on the ground have remained targets vulnerable to attack. Arguably, the most famous conflict where destruction of airbases decided the fate of a war in hours was Israel's attack on airbases of Egypt, Syria, Jordan and Iraq in the Six-Day War in 1967.

'Dispersing' aircraft around the country to operate off runways, thus, becomes a necessity. However, merely, being capable of landing an aircraft and allowing it to take off from a road will not be enough to fulfil military objectives in a conflict. Aircraft need to be serviced, refuelled and re-armed, which warrants training and deployment of technicians and logistics personnel to operate under a variety of circumstances.

Speaking about this on *News 18*, retired Indian Air Force air vice marshal Manmohan Bahadur said "You would have seen the Sukhoi (Su-30MKI), after landing, was being serviced and would have taken off. That's the good thing that has been done... because just making an airstrip on a road does not complete the project... when you have to activate an airstrip, a lot of work goes into activating an airstrip."

The need for operational flexibility is exacerbated by China stocking up its arsenal of ballistic missiles and cruise missiles capable of attacking airbases.

A number of countries practise 'dispersed' operations including Switzerland, Taiwan, Israel, Pakistan and Sweden. In particular, the Swedish Air Force has been considered a pioneer in dispersed operations. While a non-aligned nation, since the 1950s, Sweden built a strong air force given worries about the intentions of the Soviet Union. All Swedish fighter aircraft built since the 1950s—the Saab J-35 Draken, J-37 Viggen and JAS-39 Gripen—were designed to be capable of operating from highways.



An Su-30MKI on NH-925 | Twitter handle of Nitin Gadkari

The rationale behind using highways was explained by the website of the Aerozeum aircraft museum in Gothenburg as "Having so many widely dispersed bases meant it would be impossible for an aggressor to know exactly where all the aircraft would be located at any particular time and it would thus be impossible to destroy every aircraft in a surprise attack."

Saab highlights the Gripen's capability to operate off runways, including refuelling and rearming in less than 10 minutes. "Gripen E can take off in strips of road that are only 16m wide 500m long and can land in a 600m long road, without any tailhook or brake chute. This capability also allows the fighter to take off from small taxiways, small civil airfields or highways. A Gripen can also taxi using its own power to flightline positions for maintenance, refuelling and rearming, with the help of limited crew members. Gripen was designed for a minimal turnaround time—tasks like refuelling and rearming do not take more than 10 minutes, further increasing the operability and availability of the fighter," claims Saab.

<https://www.theweek.in/news/india/2021/09/09/as-iaf-inaugurates-highway-for-fighters-does-sweden-offer-lessons.html>

अमर उजाला

Fri, 10 Sept 2021

हिंदुस्तान की बढ़ी ताकत: पाक सीमा के पास आपात लैंडिंग फील्ड का उद्घाटन, राजनाथ सिंह बोले- अब सड़क पर विमान भी उतर रहे

सार

यह देश की पहली इमरजेंसी नेशनल हाइवे हवाई पट्टी है। केंद्रीय रक्षा मंत्री राजनाथ सिंह और केंद्रीय सड़क परिवहन मंत्री नितिन गडकरी ने एनएच 925 पर आपात लैंडिंग फील्ड का उद्घाटन किया। इमरजेंसी लैंडिंग फील्ड का निर्माण तय समय से पहले पूरा कर लिया गया है। भारतीय वायुसेना और एनएचएआई की देखरेख में यह निर्माण कार्य पूरा हुआ है।

विस्तार

नई दिल्ली: पाकिस्तान के साथ लगी अंतरराष्ट्रीय सीमा से कुछ किलोमीटर की दूरी पर देश की वायुसेना ने आज इतिहास रच दिया। राजस्थान के बाड़मेर में बने नेशनल हाइवे पर बने इमरजेंसी लैंडिंग फील्ड (ईएलएफ) का केंद्रीय रक्षामंत्री राजनाथ सिंह और केंद्रीय सड़क परिवहन मंत्री नितिन गडकरी ने उद्घाटन किया। दोनों केंद्रीय मंत्रियों ने एनएच 925 ए पर 3 किलोमीटर लंबी हवाई पट्टी का उद्घाटन किया। उद्घाटन के बाद वायुसेना के लड़ाकू विमान सीधे हाइवे पर उतरे। सुखोई, जगुआर और हरक्यूलिस ने आसमान में अपना दम दिखाया और फिर हाइवे पर लैंडिंग की



आपात लैंडिंग फील्ड - फोटो : ANI

। भारत-पाक सीमा से महज 40 किमी दूरी पर बाड़मेर-जालोर बॉर्डर के अड़गावा में बनी इमरजेंसी हाइवे हवाई पट्टी का उद्घाटन करने के लिए दोनों केंद्रीय मंत्री एक साथ दिल्ली से हरक्यूलिस विमान में सवार होकर बाड़मेर पहुंचे। आपात लैंडिंग फील्ड का उद्घाटन करते हुए राजनाथ सिंह ने कहा कि आज

एतिहासिक दिन है। पहले सड़क पर वाहन चला करते थे, लेकिन 21वीं सदी में सड़क पर भी विमान उतरेंगे। भारत किसी भी चुनौती से निपटने के लिए तैयार है।

मात्र 19 महीनों में तैयार हुआ यह प्रोजेक्ट

बुधवार को वायुसेना ने इस हवाई पट्टी पर अपनी पहली रिहर्सल की। इस दौरान तीन फाइटर विमान उतारे। सबसे पहले हरक्यूलिस प्लेन को लैंड कराया गया। इसके बाद सुखोई, मिग और अगस्ता हेलिकॉप्टर की लैंडिंग कराई गई। देश में यह पहली बार हुआ है जब किसी नेशनल हाइवे का इस्तेमाल भारतीय वायुसेना के विमानों की इमरजेंसी लैंडिंग के लिए किया जा रहा है। इस दौरान एसयू-30 एमकेआई, सुपर हरक्यूलिस एंड जगुआर फाइटर विमानों का फ्लाईपास्ट हुआ। इस प्रोजेक्ट को तैयार करने के लिए 24 महीने का लक्ष्य रखा गया था, लेकिन इमरजेंसी लैंडिंग फील्ड का निर्माण 19 महीनों के भीतर ही कर लिया गया। जुलाई 2019 में इसकी शुरुआत की गई थी और इसी साल जनवरी में पूरा कर लिया गया।

देश में 12 हाइवे हो रहे तैयार

इसे भारतमाला प्रोजेक्ट के तहत तैयार किया गया है। वायुसेना की इमरजेंसी लैंडिंग के लिए तैयार किया गया है। यह युद्ध और इमरजेंसी में बेहद उपयोगी साबित होगा। 32.95 करोड़ रुपये की लागत से बनी यह हवाई पट्टी तीन किलोमीटर लंबी और 33 मीटर चौड़ी है। रक्षा और परिवहन मंत्रालय के सहयोग से देश में इस तरह के 12 हाइवे तैयार किए जा रहे हैं, जहां विमानों की लैंडिंग कराई जा सके। इससे पहले वायुसेना प्रमुख आरकेएस भदौरिया ने कहा कि भारतीय वायुसेना अगले दो दशक में 350 विमान खरीदने की योजना बना रही है। उन्होंने चीन और पाकिस्तान की चुनौतियों को देखते हुए भारतीय वायुसेना की समग्र ताकत को बढ़ाने के लिए विषम क्षमताओं को विकसित करने की आवश्यकता पर जोर दिया।

मिसाइल डिफेंस सिस्टम वायुसेना में शामिल

मध्यम दूरी के सतह से हवा में मार करने वाले मिसाइल एयर डिफेंस सिस्टम को राजस्थान के जैसलमेर में वायुसेना की 2204 स्क्वाड्रन में शामिल किया जा रहा है। रक्षा मंत्री राजनाथ सिंह इस मिसाइल हवाई सुरक्षा प्रणाली को वायुसेना में शामिल करेंगे।

<https://www.amarujala.com/india-news/indian-air-force-launch-indias-first-airstrip-situated-on-national-highway-barmer-rajasthan-rajnath-singh-nitin-gadkari-to-inaugurate>

All hands on Deck: GRSE and Naval Group of France tie up to make surface ships in India

The two companies will collaborate and engage to offer high-end surface ships based on the sea-proven Gowind design developed for the export market

By Kamalika Sengupta

In a development that some analysts have termed a step towards transitioning from ‘Make in India’ to ‘Make from India’, Garden Reach Shipbuilders and Engineers Ltd, (GRSE), a Miniratna (Category 1) defence PSU and a leading warship-building company, signed a memorandum of understanding (MoU) on Thursday with Naval Group of France, a leader in the European maritime defence industry. The two firms will collaborate in the field of surface ships that will cater to the requirements of India and international naval forces.

Under the administrative control of the defence ministry, GRSE primarily attends to the shipbuilding needs of the Indian Navy and the Indian Coast Guard.

The MoU was signed for GRSE by its director of personnel Commodore PR Hari (retd). Under the agreement, the two entities will collaborate and engage to offer high-end surface ships based on the sea-proven Gowind design developed for the export market. Having built over 100 warships for Indian and foreign naval forces, GRSE will work closely with French and Indian industries.

The pact also seeks to leverage the capabilities of both firms for meeting the growing requirements of the shipbuilding industry and offer a robust world-class product, utilising the state-of-the-art capabilities of both the organisations. This blend of modern technology, innovation and management of resources by Indian and French naval industrial leaders will be a real value proposition for international navies, officials say.

Highlighting the importance of the collaboration Rear Admiral VK Saxena (retd), chairman and managing director of GRSE, said, “Our association with Naval Group of France aims to set a new benchmark in capitalising the export market in the Indo-Pacific region. The partnership will set new ground for surface shipbuilding using design and technology assistance from Naval Group. This will not only bring mutual benefit to both the nations but also enable GRSE to deliver surface ships to Friendly Foreign Countries in line with our Hon’ble Prime Minister’s vision of ‘SAGAR’.”

On the occasion of the inking of the MoU, Alain Guillou, senior executive vice president of international development, Naval Group, congratulated the teams. “This extension of cooperation with GRSE, with whom we had worked for the propulsion system of Kamorta Class ASW Corvettes, clearly highlights our long-term investment in India and emphasises the potential of strategic relations between France & India in the Indo-Pacific region,” he said.

<https://www.news18.com/news/india/all-hands-on-deck-grse-and-naval-group-of-france-tie-up-to-make-surface-ships-in-india-4185155.html>



The MoU also seeks to leverage the capabilities of both companies for meeting the growing requirements of the shipbuilding industry and offer a robust world-class product, by utilising their state-of-the-art capabilities.

Second phase of Malabar exercise likely from Oct 11-14 in Bay of Bengal

India, Australia and the UK are expected to participate in another exercise after the culmination of the second phase of the Malabar exercise

The second phase of the high-voltage Malabar exercise featuring the navies of all four Quad countries -- India, the US, Australia and Japan -- is scheduled to take place in the Bay of Bengal from October 11 to 14, diplomatic sources said on Thursday.

The first phase of the mega wargame took place off the coast of Guam in the Western Pacific from August 26-29 that featured a number of complex drills involving many frontline warships and other assets of the four navies.

The sources said the navies of India, Australia and the UK are expected to participate in another exercise after the culmination of the second phase of the Malabar exercise. There is no immediate comment from the Indian Navy on the second phase of the Malabar exercise.



Following India's invitation, Australia participated in the Malabar exercise last year that effectively made it a drill by all four member nations of the Quad or Quadrilateral coalition.

Following India's invitation, Australia participated in the Malabar exercise last year that effectively made it a drill by all four member nations of the Quad or Quadrilateral coalition.

The Indian Navy deployed its stealth frigate INS Shivalik, anti-submarine warfare corvette INS Kadmatt and a fleet of P8I maritime surveillance aircraft in the first phase of the exercise.

The exercise witnessed renewed momentum in the backdrop of the growing convergence of interests in the maritime domain among the four Quad countries.

China has been suspicious about the purpose of the Malabar exercise as it feels that the annual war game is an effort to contain its influence in the Indo-Pacific region.

The Malabar exercise started in 1992 as a bilateral drill between the Indian Navy and the US Navy in the Indian Ocean. Japan became a permanent member of the exercise in 2015.

This annual exercise was conducted off the coast of Guam in 2018 and off the coast of Japan in 2019. Last year, the exercise was hosted in two phases in the Bay of Bengal and the Arabian Sea.

There have been mounting global concerns over China's growing military assertiveness in the Indo-Pacific region. India, the US, Australia, Japan and many other like-minded countries are working towards ensuring a free, open and inclusive Indo-Pacific.

<https://www.livemint.com/news/india/second-phase-of-malabar-exercise-likely-from-oct-11-14-in-bay-of-bengal-11631208854907.html>

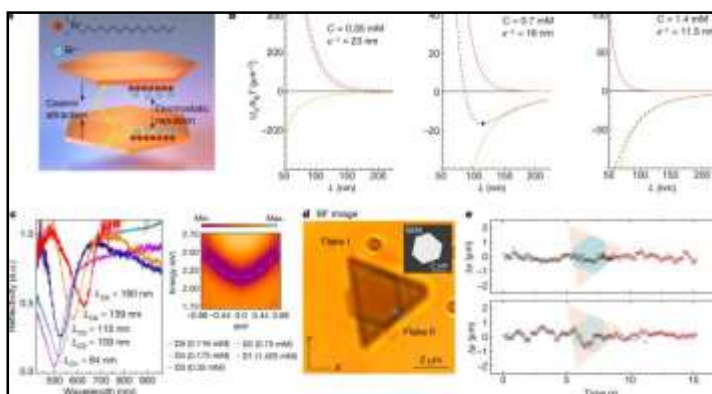


Fri, 10 Sept 2021

Self-assembled optical cavities can reach a strong-coupling state that supports polariton formation

By Bob Yirka

A team of researchers at Chalmers University of Technology has found a way to create self-assembling optical cavities that can reach a strong-coupling state that supports polariton formation. In their paper published in the journal *Nature*, the group describes how their optical cavities were made and possible uses for them. Johannes Feist with the Autonomous University of Madrid has published a News and Views piece on the work done by the team on this effort in the same journal issue.



Credit: DOI: [10.1038/s41586-021-03826-3](https://doi.org/10.1038/s41586-021-03826-3)

Optical cavities are arrangements of mirrors that trap light. They are one of the major components of lasers. In this new effort, the researchers were working with tiny metal flakes that they believed could be used to create an optical cavity. To that end, they created an organic, ionic compound solution that held charged ions (both positive and negative). They then suspended tiny metal flakes in the solution, which coated the flakes with double layers of the ions, giving them a net positive charge—a situation that would normally lead to the flakes repelling one another completely. However, the flakes were also characterized by a Casimir force, which served to counterbalance the repelling forces. They arose due to random electron motion in the metal flakes. Together, the two forces resulted in the metal flakes self-assembling into mirrored pairs with a very small distance between them (approximately 100–200 nm), notably smaller than the diameter of the flakes. That space was found to trap light, which meant it was an optical cavity.

Optical cavities, such as those produced by the metal flakes, do not trap all the light in a system. They trap only certain frequencies, which allows them to form a standing wave. In such systems, the wavelength of the light that is trapped is determined by the length of the cavity. The researchers found that by manipulating the optical cavities, they could push them to support polariton formation. They note also that changing the distance between the metal flakes by altering the concentration of ions in the solution allowed for creating polaritons from different materials. They conclude that their approach could be used in a wide variety of applications, from optomechanical to polaritonic chemistry to nano-machinery.

More information: Battulga Munkhbat et al, Tunable self-assembled Casimir microcavities and polaritons, *Nature* (2021). DOI: [10.1038/s41586-021-03826-3](https://doi.org/10.1038/s41586-021-03826-3)

Johannes Feist, Hybrid light–matter states formed in self-assembling cavities, *Nature* (2021). DOI: [10.1038/d41586-021-02376-y](https://doi.org/10.1038/d41586-021-02376-y)

Journal information: *Nature*

<https://phys.org/news/2021-09-self-assembled-optical-cavities-strong-coupling-state.html>

New substance classes for nanomaterials: Nano spheres and diamond slivers made of silicon and germanium

The latest generations of computer chips are only a few nanometres in size and are becoming ever more energy-saving and powerful as a result of progressive miniaturization. Since the etching processes traditionally used in chip production are increasingly reaching their limits, the development of new, nanostructured semiconductor materials is essential. Such nano semiconductors also play a central role in converting electricity into light and vice versa.

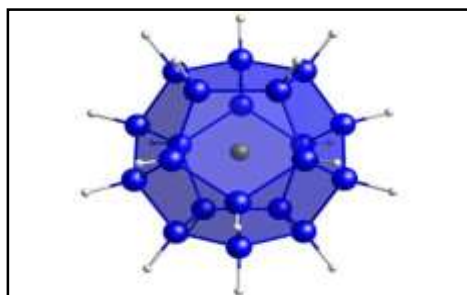
A team at Goethe University Frankfurt led by Matthias Wagner has now succeeded in synthesizing molecular nano "spheres" made of 20 silicon atoms, so-called silafulleranes. The second new class of materials are crystal building blocks made of 10 silicon and germanium atoms that have a diamond-like structure. Decisive insights into the electronic structures of the new compounds were provided by computer-based theoretical analyses from Stefan Grimme's research group in Bonn.

The 20 silicon atoms of silafullerane form a dodecahedron, a body composed of regular pentagons. It encapsulates a chloride ion. A hydrogen atom protrudes outward at each silicon corner of the body. Doctoral student Marcel Bamberg, who synthesized the molecule, explains: "Our silafullerane is the long-sought progenitor of this new class of substances. The hydrogen atoms can easily be replaced with functional groups, thus giving the silafullerane different properties." Bonn quantum chemist Markus Bursch adds: "We support the targeted generation of potentially useful properties with theoretical predictions of their resulting effects."

The silicon-germanium adamantane represents the building block of a mixed silicon-germanium alloy. Benedikt Köstler, who is developing the compounds as part of his doctoral thesis, says that "recent studies have shown that silicon-germanium alloys are superior to pure silicon semiconductors in important application areas. However, the production of such alloys is very difficult and you often get mixtures of different compositions. We have succeeded in developing a simple synthesis path for the basic building block of silicon-germanium alloys. Our silicon-germanium adamantane therefore enables the investigation of important chemical and physical properties of silicon-germanium alloys on the molecular model. We also want to use it in the future to produce silicon-germanium alloys with faultless crystal structures."

Carbon, which is chemically very similar to the elements silicon and germanium, occurs in comparable forms to the two new classes of substances: Hollow spheres of carbon atoms ("fullerenes") correspond to silafulleranes, and diamonds consisting of carbon are composed of adamantane subunits. Among other things, fullerenes increase the efficiency of organic solar cells, could make the batteries of electric cars safer, and promise progress in high-temperature superconductivity. Nanodiamonds also have a wide range of applications, from pharmaceuticals to catalysis research.

Against this background, the researchers in Frankfurt and Bonn are excited to see in which fields their silafulleranes and silicon-germanium adamantanes will become established. Matthias Wagner says: "It is already possible to generate light in all colors of the visible spectrum with nanostructured silicon and germanium in the form of quantum dots, and this is being tested for



The silicon sphere [Cl@Si₂₀H₂₀]-, synthesized for the first time by chemists from Goethe University Frankfurt, promises new applications in semiconductor technology. Blue: silicon, green: chloride ion, gray: hydrogen. Credit: Goethe University Frankfurt

computer and mobile phone displays, as well as in telecommunications. Apart from the chemical-technical potential, I am personally fascinated by the high symmetry of our compounds: For example, our silafullerane is one of the five Platonic solids and possesses a timeless beauty."

More information: Marcel Bamberg et al, $[\text{Cl}@\text{Si}_{20}\text{H}_{20}]^-$: Parent Siladodecahedrane with Endohedral Chloride Ion, *Journal of the American Chemical Society* (2021). DOI: [10.1021/jacs.1c05598](https://doi.org/10.1021/jacs.1c05598)

Benedikt Koestler et al, Selective One-Pot Syntheses of Mixed Silicon-Germanium Heteroadamantane Clusters, *Chemistry – A European Journal* (2021). DOI: [10.1002/chem.202102732](https://doi.org/10.1002/chem.202102732)

Journal information: *Journal of the American Chemical Society*, *Chemistry – A European Journal*
<https://phys.org/news/2021-09-substance-classes-nanomaterials-nano-spheres.html>



Fri, 10 Sept 2021

Lead-free rare-earth-based double perovskite nanocrystals with near-infrared emission

By Li Yuan

Lead-free halide perovskite nanocrystals (NCs) with unique optical properties are promising in light-emitting diodes (LEDs), photodetectors, and solar cells.

Previous studies mainly focused on the photoluminescence (PL) in the visible region, and those on the near-infrared (NIR) PL of lead-free perovskite NCs are rare.

Recently, a research group led by Prof. Han Keli from the Dalian Institute of Chemical Physics (DICP) of the Chinese Academy of Sciences (CAS), in collaboration with Prof. Miao Xiangyang's group from Shanxi Normal University, designed colloidal synthesis of all-inorganic rare-earth-based double perovskite NCs with NIR emission, and revealed their exciton dynamics.

This study was published in *Laser & Photonics Reviews* on August 27.

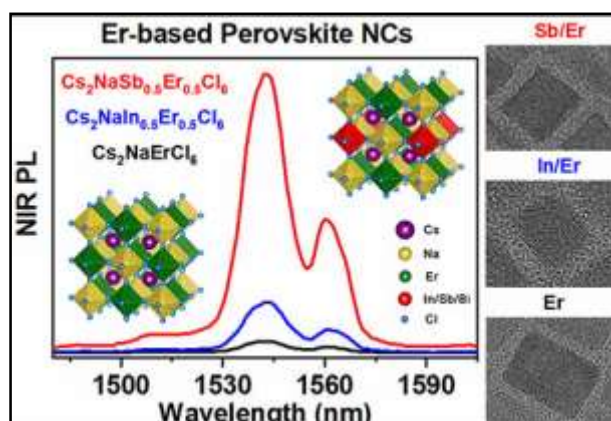
The researchers synthesized all-inorganic rare-earth-based $\text{Cs}_2\text{NaEr}_{1-x}\text{B}_x\text{Cl}_6$ (B: In, Sb, Bi; $x = 0, 0.13, 0.5$) double perovskite NCs by hot injection with variable temperature.

They found that all these NCs exhibited a NIR PL emission from $^4\text{I}_{13/2} \rightarrow ^4\text{I}_{15/2}$ transition of Er^{3+} , and on account of the incorporated Sb^{3+} , $\text{Cs}_2\text{NaEr}_{0.5}\text{Sb}_{0.5}\text{Cl}_6$ NCs showed a 23-fold NIR PL enhancement with the average lifetime of 119.1 μs .

"The origin of NIR PL enhancement was attributed to the increase of exciton absorption, the longer PL lifetime, the suitable phonon-assisted process caused by the indirect band structure, and the process of long-lived dark trap state assisted NIR PL emission," said Prof. Han.

More information: Ruixiang Wu et al, All-Inorganic Rare-Earth-Based Double Perovskite Nanocrystals with Near-Infrared Emission, *Laser & Photonics Reviews* (2021). DOI: [10.1002/lpor.202100218](https://doi.org/10.1002/lpor.202100218)

<https://phys.org/news/2021-09-lead-free-rare-earth-based-perovskite-nanocrystals-near-infrared.html>



NIR PL emission spectra and HRTEM images of $\text{Cs}_2\text{NaEr}_{0.5}\text{Sb}_{0.5}\text{Cl}_6$ NCs. Credit: HAN Peigeng and WU Ruixiang

Explained: How Covid-19 vaccines fare with the Delta variant

Compared to the original strain, Delta is 8 times more likely to infect those vaccinated and 6 times more likely to re-infect those recovered, finds study based on data from India. Yet, vaccines are important, experts stress

By Anuradha Mascarenhas

In a possible explanation for the rapid spread of the Delta variant of SARS-CoV2 virus, a study published in the journal Nature has found this particular variant to have a much higher ability to infect, and to evade the immune response gained through previous infections or vaccines.

The Delta variant, or the B.1.617.2 lineage, first discovered in Maharashtra, is dominant not just in India but also in several other countries. According to the World Health Organization, the Delta variant is now present in at least 170 countries.

The Nature study, carried out by an international team of researchers including from several Indian institutions, is based on data collected from India till the end of May. Its results were first reported in June when the pre-print version was made available, before peer review.

What are the key findings?

The study found that the Delta variant was 6 times less sensitive to serum neutralising antibodies from recovered individuals, and 8 times less sensitive to vaccine-induced antibodies compared to the original Wuhan strain of the virus.

In other words, compared to the original virus, the Delta variant was 8 times more likely to cause breakthrough infections among vaccinated people, and 6 times more likely to re-infect people who have recovered from previous infections. The vaccines considered for the study were those developed by AstraZeneca and Oxford University, and Pfizer and BioNTech.

Additionally, the study reported a higher “replication and spike mediated entry” in the Delta variant, meaning it had a greater ability to infect and multiply within the human body, compared to the B.1.617.1 lineage.

The study also looked at 130 cases of breakthrough infections among fully vaccinated healthcare workers at three Delhi hospitals, and found reduced vaccine effectiveness against the Delta variant.

“The results of the study show that Delta variant does spread faster and reduces protection gained from previous infections or vaccines,” said Anurag Agrawal, director of the Delhi-based CSIR-Institute of Genomics and Integrative Biology, and a joint author of the study.

“However, the good news is that vaccination does lead to reduced severity of the disease, and so does previous infection,” he said.



Vaccination at Shahaji Raje Sport Complex, Mumbai. Experts have stressed that the study must not lead people to believe vaccines are not useful. (PTI Photo)

What other evidence is available on the effectiveness of vaccines against Delta?

Recently, the World Health Organization cited four studies — two in the United States, one in the UK, and the other one in Qatar — that have presented similar evidence for reduced effectiveness of vaccines against the Delta variant.

The UK study, for example, showed reduced effectiveness of the AstraZeneca vaccine in a period when the Delta variant was the most dominant in the country, compared to when the Alpha variant was dominant there.

How important are vaccines, then?

Vineeta Bal, an immunologist with the Indian Institute of Science Education and Research (IISER) in Pune, pointed out that the study must not lead people to believe that vaccines were not useful. She pointed out that the Nature study was carried out on in vitro samples, in a laboratory environment.

“All data emerging from in vitro studies are surrogate evaluations in lieu of what actually happens inside the body. The limitation is that neutralising antibodies (which were tested in the study) do not provide the entire answer. Immune protection is offered by neutralising antibodies as well as the T-cell responses. In vaccinated or previously infected individuals, both antibodies and T-cells contribute to protection. This study does not show data on T-cells, thus leaving a major component of immune response out of consideration,” she said.

Bal said the results of the study were not surprising, however.

“Currently, the majority of infections are being caused by Delta variant, and it is no surprise that it is the commonest virus found in re-infection cases or in cases post vaccination,” she said.

“No vaccination provides 100% protection. Breakthrough infections are not unusual or unheard of. However, the incidence of severe disease, and hospitalisation would be significantly lower than in the vaccinated groups compared to the unvaccinated, or uninfected, groups,” she said.

Anu Raghunathan, a scientist at the National Chemical Laboratory in Pune, said the study simply means that larger amounts of antibodies would be required to block the Delta variant.

“Vaccines are still effective. The Delta variant is just less sensitive to neutralising antibodies. It means that it would require five to eight times more antibodies to elicit the same kind immune response as against the original virus during the first wave to block the Delta variant,” she said.

What is the way forward in dealing with newer variants?

The original Wuhan virus mutated into the successively more dangerous Alpha, Beta, Kappa and Delta variants. The virus will likely continue to mutate into newer forms. But all mutations need not necessarily mean they are more harmful.

Experts say the only effective way to slow down the emergence of new variants is to reduce the spread of infections through measures like vaccination, or observance of Covid-appropriate behaviour.

“Like this study, there is a critical need for continuous surveillance of the effectiveness of antibody response against new variants, and to keep assessing whether booster vaccine doses are required, or whether vaccines themselves need to be updated. Simultaneously, a genomic surveillance of new variants has to be continued,” Raghunathan said.

“This will help us in improving our vaccines and producing newer, more effective ones. In the current context, it is possible that we might require additional booster shots of vaccines. Additionally, we must ensure that when newer and more effective vaccines arrive the market, they are made accessible to everyone at a quick pace,” she said.

<https://indianexpress.com/article/explained/how-vaccines-fare-with-delta-variant-coronavirus-7495317/>

