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Fri, 22 Jan 2021 1:22PM

डीआरडीओ ने किया स्मार्ट एंटी एयरफील्ड वेपन का सफल उड़ान परीक्षण

डीआरडीओ ने एक और उपलब्धि हासिल करते हुए स्वदेश में निर्मित स्मार्ट एंटी एयरफील्ड वेपन (एसएएडब्ल्यू) का कल 21 जनवरी, 2021 को ओडिशा तट से कुछ दूर सफल 'कैप्टिव एंड रिलीज' उड़ान परीक्षण किया। यह परीक्षण हिंदुस्तान एयरोनॉटिक्स लिमिटेड (एचएएल) के हॉक-I विमान के जरिए किया गया।

इस स्मार्ट वेपन का एचएएल में निर्मित भारतीय हॉक-एमके132 विमान से सफलतापूर्वक प्रायोगिक परीक्षण किया गया। डीआरडीओ द्वारा अब तक किए गए सफल परीक्षणों की श्रृंखला में एसएएडब्ल्यू का यह परीक्षण नौवां था। यह एक टेक्सट बुक परीक्षण था जिसने अपने सभी लक्ष्य हासिल किए। बालासोर स्थित अंतरिम परीक्षण अड्डे (आईटीआर) पर स्थापित टेलीमीट्री और ट्रैकिंग प्रणाली ने इस मिशन के सभी दृश्यों को कैमरे में कैद किया।

स्मार्ट एंटी एयरफील्ड वेपन का डिजाइन और विकास डीआरडीओ के हैदराबाद स्थित रिसर्च सेंटर इमारत (आरसीआई) द्वारा स्वेदशी तौर पर किया गया है। यह 125 किलोग्राम वजन श्रेणी का स्मार्ट वेपन है जो कि स्थल पर शत्रु की एयरफील्ड सम्पत्तियों जैसे रेडार, बंकर, टैक्सी ट्रैक और रनवे को 100 किलोमीटर की दूरी से निशाना बना सकता है। इसका उच्च सटीकता वाला निर्देशित बम भी इस श्रेणी की अन्य हथियार प्रणालियों की तुलना में कम वजन का है। इस हथियार का इससे पहले भी जगुआर विमान के जरिए एक सफल प्रायोगिक परीक्षण किया जा चुका है।

डीआरडीओ के अध्यक्ष एवं डीडीआरएंडडी के सचिव डॉ. जी. सतीश रेड्डी ने इस सफल परीक्षण में शामिल टीम को उसकी सफलता पर बधाई दी।

https://pib.gov.in/PressReleasePage.aspx?PRID=1691210

Press Information Bureau
Government of India

Ministry of Defence

Fri, 22 Jan 2021 1:22PM

Successful flight test of Smart Anti Airfield Weapon

In yet another milestone, DRDO successfully conducted captive and release trial of indigenously developed Smart Anti-Airfield Weapon (SAAW) from Hawk-I of Hindustan Aeronautics Limited (HAL) off the Odisha coast on 21 January 2021.

The smart weapon was successfully test fired from Indian Hawk-Mk132 of HAL. This was the 9th successful mission of SAAW conducted by DRDO till now. It was a text book launch, which met all mission objectives. The telemetry and tracking systems installed at Interim Test Range (ITR), Balasore captured all the mission events.

SAAW is indigenously designed and developed by DRDO's Research Centre Imarat (RCI) Hyderabad. This is 125 Kg class smart weapon, capable of engaging ground enemy airfield assets such as radars, bunkers, taxi tracks, and runways etc. up to a range of 100 kms. The high precision guided bomb is light weight as compared to weapon system of the same class. The weapon was earlier successfully test fired from Jaguar aircraft.

Dr G Satheesh Reddy, Secretary DDR&D & Chairman DRDO congratulated the teams involved in the successful trial.

https://pib.gov.in/PressReleasePage.aspx?PRID=1691176

Press Information Bureau
Government of India

Ministry of Defence

Fri, 22 Jan 2021 8:04PM

Visit of Vice Chief of the Air Staff to CAW, DRDO Hyderabad and Air Force Academy

Air Marshal HS Arora Param Vishisht Seva Medal Ati Vishisht Seva Medal Aide-De-Camp Vice Chief of the Air Staff (VCAS) visited College of Air Warfare (CAW), Dr APJ Abdul Kalam Missile Complex DRDO Hyderabad and Air Force Academy from 21 January to 22 January 2021.

On his arrival at Air Force Station Begumpet, he was received by Commandant, College of Air Warfare, who apprised him of various Courses being conducted at CAW.

During his visit to CAW, the VCAS delivered a talk on contemporary situation to the Course Officers undergoing prestigious Higher Air Command Course (HACC). He also interacted with the directing staff and impressed upon the necessity of Op readiness and expectations from future leadership of Indian Armed Forces.

The Air Marshal visited Dr APJ Abdul Kalam Missile Complex, DRDO, Hyderabad. Shri MSR Prasad, Distinguished Scientist and Director General, Missiles and Strategic Systems alongwith Dr Dashrath Ram, Director DRDL and Shri BHVS Narayana Murthy, Director RCI updated the progress on DRDO projects related to IAF.

During his visit to the various technology centres at RCI, the Air Marshal undertook review of MRSAM system which is soon to be inducted in the IAF. He interacted with senior scientists of RCI and DRDL. He emphasised on the need for indigenous and mission mode development of

missiles and weapon systems. He also assured scientists of full cooperation and support from IAF for the indigenous R&D efforts by DRDO.

At Air Force Academy, the VCAS was received by Air Marshal IP Vipin Vayusena Medal Commandant Air Force Academy. He was given a detailed presentation on the training activities being undertaken at the Academy.

During his visit to AFA, the VCAS inspected and reviewed progress of various critical infrastructure projects being developed at AFA. He also flew a sortie on Pilatus PC-7 Trainer Aircraft and Hawk Aircraft. Pilatus PC-7 trainer and Hawk aircraft have significantly transformed ab initio and intermediate flying training of Pilots in the Indian Air Force. Apart from imparting training to the fighter pilots of IAF, Hawk aircraft is also used by 'Suryakiran' the aerobatic team of IAF.

The Air Marshal lauded the relentless efforts and sincere hard work of the Officers and Airmen of Air Force Academy in the process of transforming young Cadets into professional competent Military Officers.

https://pib.gov.in/PressReleasePage.aspx?PRID=1691363

पत्र सूचना कार्यालय
भारत सरकार

रक्षा मंत्रालय

Fri, 22 Jan 2021 8:04PM

वायु सेना उपप्रमुख ने सीएडब्ल्यू, डीआरडीओ हैदराबाद और वायु सेना अकादमी का दौरा किया

परम विशिष्ट सेवा मेडल, अति विशिष्ट सेवा मेडल, वायु सेना उपप्रमुख (वीसीएएस) एयर मार्शल एचएस अरोड़ा ने 21 जनवरी से 22 जनवरी 2021 तक कॉलेज ऑफ एयर वारफेयर (सीएडब्ल्यू), डॉ. एपीजे अब्दुल कलाम मिसाइल कॉम्प्लेक्स डीआरडीओ हैदराबाद और वायु सेना अकादमी का दौरा किया।

वायु सेना स्टेशन बेगमपेट पहुंचने पर, कॉलेज ऑफ एयर वारफेयर के कमांडेंट ने उनकी अगवानी की और उन्हें सीएडब्ल्यू में संचालित किए जाने वाले विभिन्न पाठ्यक्रमों की जानकारी दी।

सीएडब्ल्यू की अपनी यात्रा के दौरान, वीसीएएस ने प्रतिष्ठित उच्च वायु कमान पाठ्यक्रम (एचएसीए) के अध्ययनरत अधिकारियों से समसामयिक स्थिति पर वार्तालाप किया। उन्होंने निर्देशन कर्मचारियों से भी चर्चा करते हुए भारतीय सशस्त्र बलों के भावी नेतृत्व की कारवाई से जुड़ी तत्परता और अपेक्षाओं पर भी ज़ोर दिया।

एयर मार्शल ने डॉ एपीजे अब्दुल कलाम मिसाइल कॉम्प्लेक्स, डीआरडीओ, हैदराबाद का भी दौरा किया। प्रतिष्ठित वैज्ञानिक और मिसाइल एवं रणनीतिक प्रणालियों के महानिदेशक, श्री एमएसआर प्रसाद, डीआरडीएल के निदेशक डॉ दशरथ राम और आरसीआई के निदेशक श्री बीएचवीएस नारायण मूर्ति ने भारतीय वायुसेना से संबंधित डीआरडीओ परियोजनाओं की प्रगति के बारे में नवीनतम जानकारी दी।

आरसीआई के विभिन्न प्रौद्योगिकी केंद्रों की अपनी यात्रा के दौरान, एयर मार्शल ने एमआरएसएएम प्रणाली की समीक्षा की, जिन्हें शीघ्र ही भारतीय वायुसेना में शामिल किया जाना है। उन्होंने आरसीआई और डीआरडीएल के वरिष्ठ वैज्ञानिकों के साथ भी वार्ता की। उन्होंने मिसाइलों और हथियार प्रणालियों की स्वदेश

में और मिशन मोड विकास आवश्यकताओं पर जोर दिया। उन्होंने डीआरडीओ के स्वदेशी अनुसंधान एवं विकास प्रयासों में भारतीय वायुसेना से पूर्ण सहयोग और समर्थन देने का आश्वासन भी दिया।

वायु सेना अकादमी में, वायु सेना के उप प्रमुख का वायसेना मेडल कमांडेंट एयर मार्शल आईपी विपिन द्वारा स्वागत किया गया। उन्हें अकादमी में जारी प्रशिक्षण गतिविधियों पर एक विस्तृत प्रस्तुति दी गई।

एएफए की अपनी यात्रा के दौरान, वीसीएएस ने एएफए में विकसित की जा रही विभिन्न महत्वपूर्ण ढांचागत परियोजनाओं की प्रगति का निरीक्षण एवं समीक्षा की। उन्होंने पिलाटस पीसी-7 ट्रेनर विमान और हॉक विमान पर उड़ान भी भरी। पिलाटस पीसी-7 ट्रेनर और हॉक विमानों ने भारतीय वायु सेना में पायलटों के के उड़ान प्रशिक्षण में महत्वपूर्ण रूप से बदलाव किया है। भारतीय वायुसेना के लड़ाकू पायलटों को प्रशिक्षण देने के अलावा, हॉक विमान का उपयोग भारतीय वायुसेना की एरोबेटिक टीम सूर्यकिरण द्वारा भी किया जाता है।

एयर मार्शल ने युवा कैडेटों को पेशेवर सक्षम सैन्य अधिकारियों में बदलने की प्रक्रिया में वायु सेना अकादमी के अधिकारियों और वायुसैनिकों के अथक प्रयासों एवं कठिन परिश्रम की सराहना की।

https://pib.gov.in/PressReleasePage.aspx?PRID=1691477

THE TIMES OF INDIA

Sun, 24 Jan 2021

India working on 5th-generation fighter planes: IAF Chief

Jaisalmer: Air Chief Marshal Rakesh Kumar Singh Bhadauria said that if China remains in aggressive mode then India is also ready to give a befitting reply in the same manner. We are completely ready to deal with any situation. We are working on a fifth generation fighter plane with DRDO. During the completion of this work, DRDO will start working on the sixth generation fighter plane.

He said that by the end of this month, three more Rafales will come to India and by next year their induction will get completed.

Through the Indo-French war exercise Desert Knights, a combination of Rafales, Mirage and Sukhoi was made and we have learnt a lot and operational capability will increase a lot. Bhadauria reached Jodhpur on Saturday to review the exercise. He was accompanied by South Western Command Air Commanding in Chief Air Marshal S K Ghotia, India's French Ambassador and commanders of French delegation participating in the exercise.

Air Chief Marshal Rakesh Kumar Singh Bhadauria addresses a press conference at Air Force Station in Jodhpur on Saturday

He said that the war exercise is very small but our pilots are getting so much to learn in this short span. Out of 36 Rafale fighter planes, we have got eight and three more will be received by this month. A few pilots are undergoing training in France and preparations are going on. Bhadauria said that instead of MiG-21, we are going to purchase an advanced version of Tejas. Order for 83 Tejas has been placed and along with DRDO the work on the fifth generation fighter plane is going on. Rafale is a 4.5 generation aircraft.

He said that China has an advanced version of fighter planes and we can fight by increasing the capability of this plane. He added that the process of purchasing 114 fighters is on. There are many options and Rafale is one among them. It will take some time.

When asked that Jodhpur despite being an important air base has only one squadron, he said that Sukhoi here is very efficient.

Apart from its frontline combat jets, the Indian Air Force (IAF) deployed its IL-78 flight refuelling plane as well as airborne warning and control system (AWACS) in the exercise, officials said.

The French side participated with Rafale, Airbus A-330 Multi-Role Tanker Transport (MRTT) and A-400M Tactical Transport aircraft.

The four-day-long mega drill concluded on Saturday.

https://timesofindia.indiatimes.com/city/jaipur/india-working-on-5th-generation-fighter-planes-iaf-chief/articleshow/80430023.cms

The Indian EXPRESS

Sat, 23 Jan 2021

DRDO successfully tests smart anti-airfield weapon for 9th time

The weapon is designed to strike ground targets, especially adversary airfield infrastructure or similar strategically important installations

Pune: The Defence Research and Development Organisation (DRDO) Thursday conducted a successful trial of the indigenously developed Smart Anti-Airfield Weapon (SAAW) off the Odisha coast from the Hawk-I jet of Hindustan Aeronautics Limited (HAL). This was the ninth successful test of the system conducted over the last five years.

A Defence Ministry press statement Friday said, "The smart weapon was successfully test fired from Indian Hawk-Mk132 of HAL. This was the ninth successful mission of SAAW conducted by DRDO till now. It was a text book launch, which met all mission objectives. The telemetry and tracking systems installed at Interim Test Range (ITR), Balasore captured all the mission events." While earlier tests have been conducted from Jaguar, this time HAL Hawk-1 was used, thus expanding the operating scope of weapons system.

A Defence Ministry press statement Friday said, "The smart weapon was successfully test fired from Indian Hawk-Mk132 of HAL. This was the ninth successful mission of SAAW conducted by DRDO till now." (ANI)

Officials said the system belongs to the glide bomb category and its development began around 2012-13, with crucial inputs from the Indian Air Force and the first test was carried out in 2016. The weapon is designed to strike ground targets, especially adversary airfield infrastructure or similar strategically important installations.

The press statement said, "SAAW is indigenously designed and developed by DRDO's Research Centre Imarat (RCI) Hyderabad. This is a 125-kilogram class smart weapon, capable of engaging ground enemy airfield assets such as radars, bunkers, taxi tracks, and runways, up to a range of 100 kilometres. The high precision guided bomb is lightweight compared to weapon system of the same class. The weapon was earlier successfully test fired from Jaguar aircraft. DRDO Chairman Dr G Satheesh Reddy congratulated the teams involved in the successful trial."

The test of SAAW comes a month after another weapon system designed to target enemy radar and communication assets, Rudram, was tested in October last year. Rudram, India's first indigenous anti-radiation missile developed for the Air Force (IAF), was successfully flight tested from a Sukhoi-30 MKI fighter in October, amidst a flurry of missile tests conducted by the DRDO.

Rudram, an air-to-surface missile, has been developed to primarily to enhance the Suppression of Enemy Air Defence (SEAD) capability of the IAF and can detect, track and neutralise the radar, communication assets and other radio frequency sources belonging to the adversary, which are generally their air defence systems. Anti-radiation missiles are used in the initial part of an air conflict to strike at air defence assets of the enemy, ensuring higher survivability in subsequent strikes.

https://indianexpress.com/article/india/drdo-smart-anti-airfield-weapon-7157776/

Sun, 24 Jan 2021

भारत ने बनाया एक और खतरनाक और स्मार्ट हथियार, दुश्मन के हवाई रनवे को पलभर में कर देगा तबाह

स्मार्ट एंटी एयरफील्ड वेपन का डिजाइन और विकास डीआरडीओ के हैदराबाद स्थित रिसर्च सेंटर इमारत (आरसीआई) द्वारा स्वेदशी तौर पर किया गया है। यह 125 किलोग्राम वजन श्रेणी का स्मार्ट वेपन है जो कि किसी जगह पर दुश्मन की एयरफील्ड प्रॉपर्टीज जैसे रडार, बंकर, टैक्सी ट्रैक और रनवे को 100 किलोमीटर की दूरी से निशाना बना सकता है।

डिफेंस रिसर्च एंड डिजाइन ऑर्गनाइजेशन (डीआरडीओ) के हिस्से एक और उपलब्धि आई है। डीआरडीओ ने देश में बने स्मार्ट एंटी एयरफील्ड वेपन (एसएएडब्ल्यू) का सफल परीक्षण किया है। इस हथियार को ओडिशा तट से कुछ दूर सफल 'कैप्टिव एंड रिलीज' फ्लाइट के तहत टेस्ट किया। डीआरडीओ ने इस टेस्ट को हिंदुस्तान एयरोनॉटिक्स लिमिटेड (एचएएल) के हॉक-I विमान के जरिए अंजाम दिया।

125 किलोग्राम का बम

स्मार्ट वेपन प्रोजेक्ट को भारत सरकार ने सन् 2013 में मंजूरी दी थी

इस स्मार्ट वेपन का एचएएल में निर्मित भारतीय हॉक-एमके132 एयरक्राफ्ट से सफलतापूर्वक प्रायोगिक परीक्षण किया गया। डीआरडीओ द्वारा अब तक किए गए सफल परीक्षणों की श्रृंखला में एसएएडब्ल्यू का यह नौंवा टेस्ट था। यह एक टेक्स्ट बुक परीक्षण था जिसने अपने सभी लक्ष्य हासिल किए। बालासोर स्थित इंटीग्रेटेड टेस्ट रेंज (आईटीआर) पर बनी टेलीमीट्री और ट्रैकिंग प्रणाली ने इस मिशन के सभी तस्वीरों को कैमरे में कैद किया।

स्मार्ट एंटी एयरफील्ड वेपन का डिजाइन और विकास डीआरडीओ के हैदराबाद स्थित रिसर्च सेंटर इमारत (आरसीआई) द्वारा स्वेदशी तौर पर किया गया है। यह 125 किलोग्राम वजन श्रेणी का स्मार्ट वेपन है जो कि किसी जगह पर दुश्मन की एयरफील्ड प्रॉपर्टीज जैसे रडार, बंकर, टैक्सी ट्रैक और रनवे को 100 किलोमीटर की दूरी से निशाना बना सकता है।

नौसेना और वायुसेना का हथियार

स्मार्ट वेपन प्रोजेक्ट को भारत सरकार ने सन् 2013 में मंजूरी दी थी। मई 2016 में इस हथियार का पहला सफल परीक्षण किया गया था। इसके बाद इसी साल नवंबर में इसका एक और सफल परीक्षण हुआ। दिसंबर 2017 में एक और टेस्ट में इस स्मार्ट वेपन ने अपनी काबिलियत साबित की। 16 से 18 अगस्त

2018 तक तक इसके तीन सफल परीक्षण हुए और इसके बाद कुल परीक्षणों की संख्या आठ पर पहुंच गई।

सितंबर 2020 में सरकार ने भारतीय वायुसेना और नौसेना के लिए इस हथियार की खरीद को मंजूरी दी। इसका उच्च सटीकता वाला निर्देशित बम भी इस श्रेणी की अन्य हथियार प्रणालियों की तुलना में कम वजन का है। इस हथियार का इससे पहले भी जगुआर विमान के जरिए एक सफल प्रायोगिक परीक्षण किया जा चुका है।

लगातार सफलता हासिल करता डीआरडीओ

पूर्वी लद्दाख में चीन के साथ जारी टकराव के बीच ही डीआरडीओ लगातार नए टेस्ट्स को सफलतापूर्वक अंजाम दे रहा है। डीआरडीओ की तरफ से अब तक हाइपरसोनिक स्क्रैमजेट इंजन के सफल परीक्षण के अलावा रूस्तम ड्रोन से लेकर कई और हथियारों को टेस्ट किया जा चुका है। स्मार्ट वेपन की सफलता ने एक बार फिर डीआरडीओ के कौशल को साबित किया है।

इस सफल टेस्ट पर संगठन के अध्यक्ष और डीडीआरएंडडी के सचिव डॉ। जी। सतीश रेड्डी ने डीआरडीओ टीम को उसकी सफलता पर बधाई दी। इस स्मार्ट वेपन को अब तक जैसलमेर, बेंगलुरु, ओडिशा और पोखरण में टेस्ट किया जा चुका है। सुखोई और जगुआर जैसे फाइटर जेट्स से इसे दागा गया है और हर बार यह हथियार कसौटी पर खरा उतरा है।

https://www.tv9hindi.com/knowledge/drdo-successfully-test-fired-smart-anti-airfield-weapon-from-hawk-i-aircraft-489806.html

News Meter
We get it first, right

Sat, 23 Jan 2021

Air Marshal HS Arora Param visits DRDO Hyderabad, flies Pilatus PC-7 Trainer Aircraft sortie

Hyderabad: Air Marshal HS Arora Param, the Vice Chief of the Air Staff (VCAS) visited the College of Air Warfare (CAW), Dr. APJ Abdul Kalam Missile Complex, DRDO Hyderabad and Air Force Academy on January 22.

MSR Prasad, Distinguished Scientist and Director-General, Missiles and Strategic Systems, along with Dr. Dashrath Ram, Director DRDL, and BHVS Narayana Murthy, Director RCI, briefed him about the progress on DRDO projects related to IAF.

During his visit to the various technology centers at RCI, Air Marshal undertook a review of the MRSAM system which is soon to be inducted in the IAF. He interacted with senior scientists of RCI and DRDL. He emphasized the need for indigenous and mission mode development of missiles and weapon systems. He also assured scientists of full cooperation and support from IAF for the indigenous R&D efforts by DRDO.

At Air Force Academy, the VCAS was received by Air Marshal IP Vipin, Commandant Air Force Academy. He was given a detailed presentation on the training activities being undertaken at the Academy.

During his visit to AFA, the VCAS inspected and reviewed the progress of various critical infrastructure projects being developed at AFA. He also flew a sortie on Pilatus PC-7 Trainer

Aircraft and Hawk Aircraft. Pilatus PC-7 trainer and Hawk aircraft have significantly transformed ab initio and intermediate flying training of Pilots in the Indian Air Force. Apart from imparting training to the fighter pilots of IAF, Hawk aircraft is also used by 'Suryakiran' the aerobatic team of IAF.

The Air Marshal lauded the relentless efforts and sincere hard work of the Officers and Airmen of Air Force Academy in the process of transforming young Cadets into professional competent Military Officers.

https://newsmeter.in/defence/air-marshal-hs-arora-param-visits-drdo-hyderabad-flies-pilatus-pc-7-trainer-aircraft-sortie-673167

संजीवनी टुडे
SAMAY KE SATH BADHTA AKHABAR

Sat, 23 Jan 2021

एयर मार्शल ने स्वदेशी मिसाइलों और हथियार प्रणालियों पर दिया जोर

नई दिल्ली: वायुसेना के एयर मार्शल एचएस अरोड़ा ने अपने दो दिवसीय हैदराबाद के दौरे में कॉलेज ऑफ एयर वारफेयर, डीआरडीओ के डॉ. एपीजे अब्दुल कलाम मिसाइल कॉम्प्लेक्स और वायु सेना अकादमी का दौरा किया। इस दौरान एयर मार्शल ने मध्यम दूरी की सतह से हवा में मार करने वाली मिसाइल प्रणाली (एमआरएसएएम) की समीक्षा की, जिसे जल्द ही वायुसेना में शामिल किया जाना है। उन्होंने मिसाइलों और हथियार प्रणालियों के स्वदेशी और मिशन मोड विकास की आवश्यकता पर जोर दिया।

अपने दौरे के आखिरी दिन शुक्रवार को वायु सेना स्टेशन, बेगमपेट में पहुंचने पर एयर मार्शल अरोड़ा का स्वागत कॉलेज ऑफ एयर वारफेयर के कमांडेंट ने किया और उन्हें सीएडब्ल्यू में आयोजित किए जाने वाले विभिन्न पाठ्यक्रमों के बारे में जानकारी दी।उन्होंने कॉलेज के अधिकारियों से प्रतिष्ठित हायर एयर कमांड कोर्स (एचएसीए) के पाठ्यक्रम के बारे में बात की। एयर मार्शल ने डीआरडीओ के डॉ. एपीजे अब्दुल कलाम मिसाइल कॉम्प्लेक्स का दौरा किया। उन्होंने विशिष्ट वैज्ञानिक एमएसआर प्रसाद, मिसाइल और रणनीतिक प्रणाली के महानिदेशक दशरथ राम, डीआरडीएल के निदेशक और आरसीआई के निदेशक बीएचवीएस नारायण मूर्ति से मुलाक़ात करके वायुसेना से संबंधित डीआरडीओ की परियोजनाओं पर प्रगति के बारे में जानकारी ली।

एयर मार्शल अरोड़ा ने अपनी यात्रा के दौरान आरसीआई के विभिन्न प्रौद्योगिकी केंद्रों में जाकर मध्यम दूरी की सतह से हवा में मार करने वाली मिसाइल प्रणाली की समीक्षा की, जिसे जल्द ही भारतीय वायुसेना में शामिल किया जाना है। इस बारे में उन्होंने आरसीआई और डीआरडीएल के वरिष्ठ वैज्ञानिकों के साथ बातचीत की। उन्होंने मिसाइलों और हथियार प्रणालियों के स्वदेशी और मिशन मोड विकास की आवश्यकता पर जोर दिया। उन्होंने डीआरडीओ द्वारा स्वदेशी अनुसंधान एवं विकास के लिए किये जा रहे प्रयासों के लिए भारतीय वायुसेना की ओर से पूर्ण सहयोग और समर्थन का आश्वासन भी दिया।

वायु सेना अकादमी पहुंचने पर कमांडेंट एयर मार्शल आईपी विपिन ने एयर मार्शल अरोड़ा का स्वागत किया और उन्हें अकादमी में शुरू की जा रही प्रशिक्षण गतिविधियों पर एक विस्तृत प्रस्तुति दी। उन्होंने

वायु सेना अकादमी में विकसित की जा रही विभिन्न महत्वपूर्ण अवसंरचना परियोजनाओं का निरीक्षण करके समीक्षा की। इस दौरान उन्होंने पिलाटस पीसी-7 ट्रेनर एयरक्राफ्ट और हॉक एयरक्राफ्ट पर उड़ान भी भरी। पिलाटस पीसी-7 ट्रेनर और हॉक विमानों ने भारतीय वायु सेना में पायलटों के उड़ान प्रशिक्षण को महत्वपूर्ण रूप से बदल दिया है।

हॉक विमान का उपयोग भारतीय वायुसेना के लड़ाकू पायलटों को प्रशिक्षण देने के अलावा वायुसेना की एरोबेटिक टीम 'सूर्य किरण' द्वारा भी किया जाता है। एयर मार्शल ने युवा कैडेटों को पेशेवर सक्षम सैन्य अधिकारियों में बदलने की प्रक्रिया में अधिकारियों और वायु सेना अकादमी के एयरमेन की कड़ी मेहनत और ईमानदारी से काम करने की सराहना की।

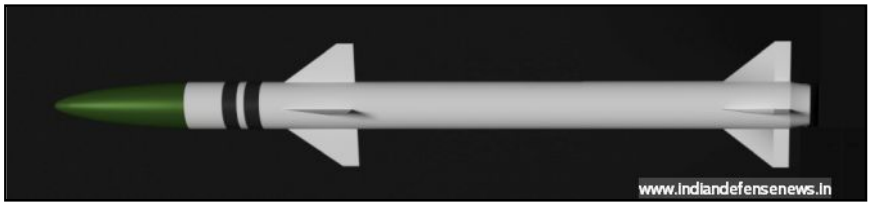
https://www.sanjeevnitoday.com/national/air-marshal-emphasizes-on-indigenous-missiles-and-weapon-systems/20210123/434629

IDN INDIAN DEFENCE NEWS
Global Defence, Aerospace & Security

Sat, 23 Jan 2021

DRDO to test Akash-NG soon

DRDO Akash-NG will be ready for testing soon. Other than having high SSKP, biggest takeaway of this system is the capability to engage up to 10 targets simultaneously, from subsonic to supersonic targets.



The highly agile, accurate and reliable missile features high single-shot kill probability (SSKP) and is capable of operating under all weather conditions.

The actual number of simultaneous target engagement of Akash-NG could be on a little higher side (more than 10), once an Akash-NG guides itself with its onboard seeker. That's a plus side of having active radar seeker onboard. Given the fact it has an active radar seeker, this ten target engagement capability is a certainty. The missile can get an initial cue from the ground based radar and fly out on inertial navigation till seeker kicks in. Or lock on via seeker before launch.

In a similar way, number of Akash-NG SAMs on air could be bit more than 10 as well, if the system uses two Akash-NG SAMs to home-in on a single target. Barak-8 too has similar advantages.

http://www.indiandefensenews.in/2021/01/drdo-to-test-akash-ng-soon.html

TIMESNOWNEWS.COM

Mon, 25 Jan 2021

Republic Day Parade: DRDO tableaux to showcase LCA Navy and Anti Tank Guided Missiles

DRDO has once again brought two important tableaux to the prestigious Republic Day parade 2021

New Delhi: At the Republic Day Parade later this month, the Defence Research and Development Organisation (DRDO) will be presenting two important tableaux showcasing the major achievements of the year, which are Light Combat Aircraft (LCA) Navy take-off and landing on board the aircraft carrier and the complete family of Anti Tank Guided Missiles.

"DRDO has been showcasing advanced defense technology products for tri-services at Rajpath on Republic Day every year. Delivering on its mandate of development of state of the art defence systems, DRDO once again has brought two important tableaux to the prestigious Republic Day parade 2021. Showcasing the major achievements of the year, are LCA Navy take-off and landing onboard the aircraft carrier and the complete family of Anti Tank Guided Missiles," read an official statement issued by the Ministry of Defence on Sunday.

Light Combat Aircraft Tejas has achieved a major technology capability milestone by landing and taking off from the Aircraft Carrier of the Indian Navy.

"The LCA Navy tableau celebrates the successful demonstration of carrier operations of LCA Navy from INS Vikramaditya on the sea. The tableau of LCA Navy shows landing, takeoff and lift operation, three most important operations required to be met by an aircraft onboard a carrier ship," the statement said adding that Commander Abhishek C Gawande of Indian Navy is the commander of the tableau.

R-Day Parade: DRDO to showcase LCA Navy and Anti Tank Guided Missiles | Photo Credit: ANI

LCA Navy is India's first 4+ Generation STOBAR (Ski-Jump Takeoff but Arrested Recovery) fighter aircraft capable of operating from an aircraft carrier.

The statement further said, "Symbolizing India's strides in anti-tank missile technologies will be the tableau showcasing the full complement of DRDOs Anti-Tank Guided Missile (ATGM) Systems. This tableau showcases NAG, HELINA, MPATGM, SANT, and Laser Guided ATGM for MBT Arjun. The ATGM tableau will be represented by Shri ShiladityaBhowmick Scientist 'D', a young scientist of DRDL in Hyderabad."

NAG is a 3rd generation fire and forget missile developed for mechanized formations to engage heavily fortified enemy tanks.

HELINA, the Helicopter launched anti-tank missile is a 3rd generation fire and forget missile with a range of 7 km designed and developed for integration on weaponised version of Advanced Light Helicopter (ALH).

MPATGM is a Man-Portable Anti-Tank Guided Missile with a range of 2.5 km with Fire and Forget and Top Attack capabilities for infantry use.

SANT is a smart Stand-off Anti-Tank Missile being developed for launch from Mi-35 Helicopter for Air Force anti-tank operations.

ATGM for MBT Arjun is a laser-guided PGM (Precision Guided Munition) which is launched from the 120 mm rifled gun of Arjun tank to engage and defeat Explosive Reactive Armour (ERA) protected armoured targets.

"LCA Tejas model is also part of Indian Air Force (IAF) tableau and adorning the Ministry of Information and Broadcasting Tableau representing the theme of 'Vocal for Local'. Other DRDO products on Rajpath this year are Akash Surface to Air Missile and Astra Air to Air Missile on IAF tableau," the ministry said.

https://www.timesnownews.com/india/article/republic-day-parade-drdo-tableaux-to-showcase-lca-navy-and-anti-tank-guided-missiles/711421

Hindustan Times

Sun, 24 Jan 2021

From Pinaka to Bhishma Tank: India to showcase its weapons on R-Day

The BrahMos missile, a joint venture of Defence Research and Development Organisation (DRDO) and Russia's NPO Mashinostroyeniya, has a maximum speed of 2.8 Mach (around 3,450 kmph or 2,148 mph) and is difficult to intercept by surface-to-air missiles

Edited By Mallika Soni

India will showcase its military might as it will mark its 72nd Republic Day on Tuesday during the country's biggest ceremonial parade. Pinaka Multi-Barrel Rocket System, BMP-2, T-90 Bhishma Tank, BrahMos cruise missile and upgraded Schilka Air Defence system are among the weapons that will be showcased during the celebrations this year.

Here is what you need to know:

Pinaka Multi-Barrel Rocket System

The Pinaka is primarily a multi-barrel rocket system (MBRL) system which can fire a salvo of 12 rockets over a period of 44 seconds. One battery of the Pinaka system consists of six launch vehicles, accompanied by the loader systems, radar and links with network-based systems and a command post. The Mark-I version of Pinaka has a range of around 40 kilometres and the Mark-II version can fire up to 75 kilometres.

Soldiers on T-90 (Bhisma) tanks march along the Rajpath during the full dress rehearsal for the upcoming Republic Day Parade in New Delhi on January 23, 2021. (AP)

BMP-2

The Sarath BMP 2 is an amphibian vehicle, with a 7kmph on water. It can go over slopes up to 35 degrees and due to its low weight can be transported by air. There are armoured plates all around it which help in ensuring a high degree of protection to the combatants. It comes with a rapid-fire 7.62 MM medium coaxial machine gun, a 30 MM cannon, and a second-generation homing type anti-tank guided missile.

T-90 Bhishma Tank

The T-90S is the latest development in the T-series of Russian tanks manufactured by Uralvagonzavod in Nizhny Tagil, Russia. The locally assembled tanks were christened 'Bhishma' and are fitted with the Shtora self-protection system and Catherine thermal imagers from Thales of France and Peleng of Belarus.

BrahMos cruise missile

The BrahMos missile, a joint venture of Defence Research and Development Organisation (DRDO) and Russia's NPO Mashinostroyeniya, has a maximum speed of 2.8 Mach (around 3,450 kmph or 2,148 mph) and is difficult to intercept by surface-to-air missiles. The missile's cruising altitude could be up to 15 km, and the lowest it can fly is 10 metres above the surface. The missile is capable of carrying a conventional warhead (non-nuclear) weighing 200-300 kg. The two-stage

missile has a solid propellant booster engine that kicks in the first stage and brings the missile to supersonic speed before separating. After this, the liquid ramjet comes into action and takes the missile closer to Mach 3 in the cruise phase.

Schilka Air Defence system

In February 2020, the Indian Army upgraded its Russian Schilka Air Defence system to a modern weapon platform. The up-gradation process included replacing the existing Radar, analogue computer, engine, GTE with state of the art system and addition of air conditioning system for crew comfort. The newly upgraded system also provides drastic improvements in operational performance, accuracies, power consumption and MTBF and enables accurate identification, acquisition and tracking of targets while operating in an ECM environment.

https://www.hindustantimes.com/india-news/from-pinaka-to-bhishma-tank-india-to-showcase-its-weapons-on-rday-101611396362089.html

अमर उजाला

Mon, 25 Jan 2021

गणतंत्र दिवस परेड में डीआरडीओ निकालेगा दो झांकियां, एंटी टैंक गाइडेड मिसाइलों की दिखेगी झलक

दिल्ली: नई दिल्ली के राज पथ पर हर वर्ष की तरह इस साल भी गणतंत्र दिवस परेड में रक्षा अनुसंधान और विकास संगठन-डीआरडीओ तीनों सेनाओं के लिए उन्नत रक्षा प्रौद्योगिकी उत्पादों का प्रदर्शन करने जा रहा है।

एलसीए नेवी - फोटो: PTI

अत्याधुनिक रक्षा प्रणालियों के विकास के अपने भरोसे को बनाए रखते हुए, डीआरडीओ एक बार फिर प्रतिष्ठित गणतंत्र दिवस परेड 2021 के लिए दो महत्वपूर्ण झाँकियाँ लेकर आया है।

वर्ष की प्रमुख उपलब्धियों का प्रदर्शन करते हुए, लाइट कॉम्बैट एयरक्राफ्ट-एलसीए नेवी का उडान भरना और विमान वाहक पोत पर उतारना शामिल है। इसके अलावा एंटी टैंक गाइडेड मिसाइलों के पूरे परिवार को प्रदर्शित करेगा।

लाइट कॉम्बैट एयरक्राफ्ट तेजस ने भारतीय नौ सेना के विमान वाहक जहा से उडान भरने और उतरने की एक बड़ी प्रौद्योगिकी क्षमता का मील का पत्थर हासिल किया है। एलसीए नौ सेना की झांकी समुद्र में नौ सैनिक जहाज आईएनएस विक्रमादित्य से एलसीए नौसेना के वाहक संचालन के सफल प्रदर्शन का जश्न मनाती है।

एलसीए नेवी की झांकी लैंडिंग, टेकऑफ और भार उठाने की प्रक्रिया का प्रदर्शन करती है। एक वाहक जहाज पर एक विमान द्वारा तीन सबसे महत्वपूर्ण संचालन की आवश्यकता होती है। वर्ष 2020 में एलसीए नेवी ने 90 मीटर लम्बे रनवे पर सफलतापूर्वक उतरने और 145 मीटर के छोटे से रनवे से उडान भरने का सफल प्रदर्शन किया।

एलसीए नेवी भारत की पहली चौथी पीढ़ी से आगे का एसटीओबीएआर (स्की-जंप टेक ऑफ बट अरेस्ड रिकवरी) लड़ाकू विमान है जो किसी भी विमान वाहक जहाज से संचालित होने में सक्षम है। भारतीय नौसेना के कमोडोर अभिषेक सी गावंडे झांकी का नेतृत्व कर रहे हैं।

टैंक-रोधी प्रक्षेपास्त्र प्रौद्योगिकियों में भारत की सफलता को प्रदर्शित करते हुए डीआरडीओ की एंटी-टैंक गाइडेड मिसाइल (एटीजीएम) सिस्टम के पूर्ण परिशिष्ट को दर्शाने वाली झांकी होगी।

इस झांकी में नाग (एनएजी), हेलिना (एचईएलआईएनए), एमपीएटीजीएम, सैंट(एसएएनटी) और एमबीटी अर्जुन के लिए लेजर गाइडेड एटीजीएम दिखाई देंगे। एंटी-टैंक गाइडेड मिसाइल (एटीजीएम) झांकी का प्रतिनिधित्व डीआरडीएल हैदराबाद के युवा वैज्ञानिक श्री शिलादित्य भौमिक, वैज्ञानिक 'डी' द्वारा किया जाएगा।

नाग (एनएजी) एक तीसरी पीढ़ी की मिसाइल है और दुश्मन के भारी भरकम टैंकों से मुकाबला करने के लिए यंत्रीकृत संरचनाओं के लिए विकसित मिसाइल है। हेलिना, हेलिकॉप्टर से छोड़ी जाने वाली एंटी टैंक मिसाइल तीसरी पीढी की मिसाइल है और इसकी रेंज 7 किलोमीटर की है।

यह मिसाइल उन्नत लाइट हेलीकॉप्टर (एएलएच) के हथियार वाले संस्करण पर एकीकरण के लिए विकसित की गई है। एमपीएटीजीटीजीएम एक मैन-पोर्टेबल एंटी-टैंक गाइडेड मिसाइल है जिसकी रेंज 2.5 किलोमीटर है और पैदल सेना के उपयोग के लिए बडे हमले की क्षमता है। SANT एक स्मार्ट स्टैंड-ऑफ एंटी-टैंक मिसाइल है जिसे वायुसेना के एंटी टैंक ऑपरेशन के लिए एमआई-35 हेलीकाप्टर से लॉन्च करने के लिए विकसित किया जा रहा है।

एमबीटी अर्जुन के लिए एटीजीएम एक लेजर गाइडेड पीजीएम (प्रिसिजन गाइडेड म्यूनिशन) है, जो विस्फोटक रिएक्टिव कवच (ईआरए) संरक्षित बख्तरबंद लक्ष्यों को से मुकाबला करने और हराने के लिए अर्जुन टैंक की 120 मिली मीटर राइफल वाली बंदूक से लॉन्च किया जाता है।

लाइट कॉम्बेट एयरक्राफ्ट-एलसीए तेजस मॉडल भारतीय वायु सेना की झांकी का भी हिस्सा है और सूचना एवं प्रसारण मंत्रालय की झांकी में वोकल फॉर लोकल की थीम का प्रतिनिधित्व करता है। इस वर्ष राजपथ पर डीआरडीओ के अन्य उत्पादन में जमीन से हवा में मार करने वाली आकाश मिसाइल और हवा से हवा में मार करने वाली एस्ट्रा मिसाइल वायुसेना की झांकी में शामिल हैं।

रक्षा अनुसंधान और विकास संगठन-डीआरडीओ सशस्त्र बलों के लिए एक डिजाइन और विकास एजेंसी रही है। आत्मनिर्भर भारत की भावना को सुदृढ़ करने के लिए, डीआरडीओ रक्षा पारिस्थितिकी तंत्र के सभी हितधारकों के साथ साझेदारी कर रहा है। इसमें शिक्षा, उद्योग और सेना के लिये नवीनतम तकनीक विकसित करना शामिल है।

https://www.amarujala.com/india-news/drdo-to-showcase-lca-navy-and-anti-tank-guided-missiles-in-republic-day-parade

Sat, 23 Jan 2021

सेनाओं के ये 6 खतरनाक हथियार पूरी तरह से हुए हैं देश में तैयार, कैसे दुश्मन को पल भर में कर सकते हैं ढेर

राजपथ पर सेनाओं की ताकत का प्रदर्शन होता है और पूरी दुनिया उसे देखती है।एलसीए तेजस से लेकर आकाश मिसाइल सिस्टम तक सेनाओं के इन 6 हथियारों को पूरी तरह से देश में तैयार किया गया है।

26 जनवरी को देश अपना एक और गणतंत्र दिवस मनाएगा। यह सिर्फ गणतंत्र दिवस नहीं है बल्कि सात दशकों में देश ने क्या तरक्की की है, इसे दुनिया के सामने बताने का एक जरिया भी है। गुलामी से निकलकर देश ने आज अंतरराष्ट्रीय समुदाय में अपनी एक अलग पहचान बनाई है। राजपथ पर सेनाओं की ताकत का प्रदर्शन होता है और पूरी दुनिया उसे देखती है। कोरोना काल में जब 'आत्मनिर्भर भारत' अभियान चलाया जा रहा हो और जब कोविड-19 में गणतंत्र दिवस का आयोजन हो रहा हो तो उस समय आपको ऐसी चीजों के बारे में जानना चाहिए जो पूरी तरह से देश में बनी हैं। जानिए उन 6 हथियारों के बारे में जो इस समय सेनाओं के लिए काफी महत्वपूर्ण हैं और जिन्हें देश में तैयार किया गया है।

तेजस

हाल ही में केंद्र सरकार की कैबिनेट कमेटी ऑन सिक्योरिटी (सीसीएस) की तरफ से भारतीय वायुसेना (आईएएफ) के लिए 83 तेजस लाइट कॉम्बेट एयरक्राफ्ट (एससीए) की खरीद को मंजूरी दे दी गई है। तेजस जो इस समय लद्दाख से लेकर तमिलनाडु तक तैनात है, निश्चित तौर पर चीन और पाकिस्तान को घेरने वाला एक बड़ा हथियार बनने वाला है।

इन 6 हथियारों के बारे में जानिए जो इस समय सेनाओं के लिए काफी महत्वपूर्ण हैं और जिन्हें देश में तैयार किया गया है।

तेजस को एरोनॉटिकल डेवलपमेंट एजेंसी (एडीए) ने डिजाइन किया है और इसे हिन्दुस्तान एरोनॉटिक्स लिमिटेड (एचएएल) की तरफ से तैयार किया जा रहा है। जो तेजस आईएएफ को मिलने वाले हैं वह स्वदेशी एक्टिव इलेक्ट्रॉनिकली स्कैन्ड ऐरे (AESA) रडार के अलावा इलेक्ट्रॉनिक वॉरफेयर (ईडब्लू) सूईट और बियॉन्ड विजुअल रेंज (बीवीआर) मिसाइल क्षमताओं से लैस है। इसके साथ ही अब इसे हवा के बीच ही रि-फ्यूल भी किया जा सकता है।

आकाश मिसाइल सिस्टम

आकाश मिसाइल सिस्टम फिलहाल सेना और वायुसेना दोनों में ही शामिल है। आकाश एक मध्यम रेंज मिसाइल है जिसे डिफेंस रिसर्च एंड डिजाइन ऑर्गनाइजेशन (डीआरडीओ) और भारत डायनामिक्स की तरफ से डेवलप किया गया है। यह मिसाइल सिस्टम 30 किलोमीटर दूर से निशाना लगा सकता है और 18,000 मीटर तक की ऊंचाई तक जा सकता है। यह लद्दाख में ठंडी जगह पर भी दुश्मन को निशाना बना सकती है तो थार के रेगिस्तान में भी दुश्मन को पलभर में ढेर कर देती है। इसकी यही खासियत इसे बाकी मिसाइल सिस्टम से अलग बनाती है।

अर्जुन टैंक

अर्जुन टैंक तीसरी पीढ़ी का वह मेन बैटल टैंक है जिसे डीआरडीओ ने तैयार किया है। अर्जुन 120 एमएम की मेन राइफल के अलावा पूरी तरह से देश में निर्मित सुरक्षा कवच से लैस है। इसमें एक पीकेटी 7.62 एमएम की कोआक्सियल मशीन गन के अलावा एक एनएसवीटी12.7 एमएम की मशीन गन भी है।

एचएएल ध्रुव

एचएएल ध्रुव एक यूटिलिटी हेलीकॉप्टर है जिसे एचएएल ने तैयार किया है। इस हेलीकॉप्टर ने पहली उड़ान सन् 1992 में भरी थी। हालांकि इस हेलीकॉप्टर के डेवलपमेंट में कई वजहों से देरी होती गई। हेलीकॉप्टर में सेना की जरूरतों के मुताबिक डिजाइन में बदलाव किए गए। भारत ने इस हेलीकॉप्टर को पोखरण में हुए परमाणु प्रतिबंधों के बावजूद तैयार करने में सफलता हासिल की थी।

पिनाका मिसाइल

पिनाका एक मल्टीपल रॉकेट लॉन्चर है जिसे डीआरडीओ ने डेवलप किया है। इसे सेना की जरूरतों के मुताबिक तैयार किया गया है। इस सिस्टम की अधिकतम रेंज 40 किलोमीटर है। मार्क I पिनाका सिस्टम के तहत 40 किलोमीटर और मार्क II के लिए 65 किलोमीटर है। यह रॉकेट सिस्टम 44 सेकेंड में 12 रॉकेट्स दाग सकता है।

नाग मिसाइल

नाग एक तीसरी पीढ़ी की मिसाइल है और यह मिसाइल एक फायर एंड फॉरगेट पर फंक्शन करती है। यह एक एंटी-टैंक मिसाइल है जिसे डीआरडीओ ने तैयार किया है। मिसाइल को पूरी तरह से भारतीय टेक्नोलॉजी पर डिजाइन किया गया है। नाग एक इंटीग्रेटेड गाइडेड मिसाइल डेवलपमेंट प्रोग्राम के तहत डेवलप की गई मिसाइल है।

https://www.tv9hindi.com/knowledge/republic-day-special-these-6-weapons-used-by-indian-forces-are-fully-made-in-india-488793.html

THE HINDU

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Several countries have shown interest in procuring Tejas aircraft: HAL Chairman Madhavan

Mr Madhavan said that Tejas Mark 1A jet has superior performance levels compared to China's JF-17 combat aircraft as it has a better engine, radar system and electronic warfare suit, besides an edge in the overall technology

New Delhi: The delivery of the Tejas Light Combat Aircraft (LCA) to the Indian Air Force under a ₹48,000-crore deal will begin from March 2024 and around 16 aircraft will be rolled out annually till the completion of the total supply of 83 jets, Chairman and Managing Director of Hindustan Aeronautics Limited R. Madhavan said on Sunday.

In an interview to *PTI*, Mr Madhavan also said that a number of countries have shown keen interest in procurement of the Tejas aircraft and that the first export order is likely to come by in the next couple of years.

Mr Madhavan said that Tejas Mark 1A jet has superior performance levels compared to China's JF-17 combat aircraft as it has a better engine, radar system and electronic warfare suit, besides an edge in the overall technology.

"The biggest difference, of course, is the air-to-air refuelling which is non-existent in the competitor's plane," he said.

The Cabinet Committee on Security (CCS) chaired by Prime Minister Narendra Modi on January 13 approved the ₹48,000-crore deal to procure 73 Tejas Mk-1A variants and 10 LCA Tejas Mk-1 trainer aircraft from the HAL to boost the Indian Air Force's combat prowess.

Price break-up

Giving a break-up of the cost components, Mr Madhavan said the basic price of the aircraft will be around ₹25,000 crore while Rs 11,000 crore will be used for ground support equipment and other required infrastructure at the bases and around ₹7,000 for basic customs duty and output GST.

The HAL chairman said the cost for each fighter version of the aircraft will be ₹309 crore and ₹280 crore for the trainer.

LCA Tejas combat aircraft. File | Photo Credit: Somashekar G R N

"The price is tight but we are fine with it," Mr Madhavan said. The total cost of ₹48,000 crore includes design and development cost of ₹2,500 crore to be given to Aeronautical Development Agency (ADA) and around ₹2,250 crore set aside for variations in foreign currency exchange rate.

The Tejas Mk-1A will be equipped with an active electronically scanned array radar, beyond visual range missile, electronic warfare suite and air-to-air refuelling system.

A formal contract for the deal is expected to be signed between the HAL and the IAF on February 5 at the Aero India exhibition in the presence of President Ram Nath Kovind.

"Three years is the strategic timeline for developing infrastructure as well as delivery of the aircraft. We will meet the timeline. The first aircraft is expected to be delivered by March 2024.

"Initially we will supply around four aircraft and increase the number to 16 annually from 2025," Mr Madhavan said.

Asked whether a possible export order will push the delivery deadline for supplies to the IAF, Mr Madhavan said the HAL will strictly follow the timeline for domestic order and can always set up additional production lines when necessary.

"We are planning for more than 16 aircraft annually so that in case of any other order coming in, we can take it up. We are already increasing production rates.

"The second phase of the LCA plant has already come up, though we need it after 2024-25," he said.

The IAF has already inducted a batch of Tejas aircraft as part of its initial order of 40 jets.

Mr Madhavan said the Tejas programme will boost the overall aerospace sector in India, noting that it currently involves 563 domestic enterprises. "And it will go up to 600 to 650. This is important for the ecosystem." He said Tejas will be able to operate as efficiently as any other aircraft in all regions including mountainous Ladakh.

The government has been majorly focusing on boosting domestic defence production and set a target of ₹1.75 lakh crore (USD 25 billion) turnover in defence manufacturing by 2025.

According to estimates, the Indian armed forces are projected to spend around USD 130 billion in capital procurement in the next five years.

In May last year, Finance Minister Nirmala Sitharaman rolled out several reform measures for the defence sector including making separate budgetary outlay to procure Indian-made military hardware, increasing FDI limit from 49% to 74% under the automatic route and generating a year-wise negative list of weapons which won't be imported.

https://www.thehindu.com/news/national/several-countries-have-shown-interest-in-procuring-tejas-aircraft-hal-chairman-madhavan/article33650063.ece

THE HANS INDIA

Sun, 24 Jan 2021

SVIMS to set up bio-safety lab for virology research

By V Pradeep Kumar

Highlights

- ***Collaborates with DRDO to set up Rs 69-lakh level-3 lab***

Tirupati: A bio-safety lab level – 3, worth Rs 69 lakh, will come up at SVIMS soon in collaboration with the Defence Research and Development Organisation (DRDO). This modern lab is intended for research in virology where viral cultures and mutations among other advanced studies can be done. This facility will be established under mobile shelter which looks like a container so as to be positioned anywhere to study the viruses based on the requirements. Apart from performing various laboratory screenings etc, it enables the test services at remote places and extensive research on identification of viruses and related agents causing morbidity. This proposed lab will also enable the researchers and doctors to undertake research activities on the existing as well as new viruses. The BSL – 3 lab equipped with a negative pressure, ante room and air lock with HEPA filters in exhaust air design for specimen processing and virus culture as per WHO guidelines. When a particular virus is found at any specific area, the lab can be put up there to start research on that.

SVIMS Director Dr B Vengamma. (R) A replica of BSL-3 lab

Modern technology and advanced equipment will be made available in it as required by the researchers and medical experts. All precautions will be taken into consideration from the PPEs to be used inside the lab to sample collection and experiments to ensure the safety of the researchers and other staff.

The SVIMS is currently having BSL-2 and BSL-3 is soon going to upgrade the facility in the Institute. While the equipment to be set up in BSL-3 used to be imported in the past, now DRDO has taken initiative to manufacture it indigenously with other companies. They have given the quotation for Rs 69 lakh to SVIMS for this laboratory.

Speaking to The Hans India, the Director cum Vice Chancellor Dr B Vengamma said that the equipment is ready and DRDO has arranged Rs 25 lakh donation through Sri City MD Ravindra Sannareddy. The equipment worth Rs 30 lakh will be sponsored by the DRDO recommended company which manufactured it.

SVIMS has been planning to use the funds from Sri Balaji Aarogya Vara Prasadini (SBAVP) scheme to meet its obligation of providing the balance Rs 14 lakh. Now it is under the approval stage and the lab will become a reality very soon which will be located near the Centre for Advanced Research (CfAR) building in the campus. Specialised virologists are also to be appointed to carryout research in BSL-3, she disclosed.

The institute is also contemplating the idea of launching three new branches in the institute – Geriatrics, Clinical Immunology and Genetics which was in principle approved, said Dr Vengamma. They were planning to take the financial support from SBAVP for these courses too.

https://www.thehansindia.com/news/cities/tirupathi/svims-to-set-up-bio-safety-lab-for-virology-research-668328

Defence News

Defence Strategic: National/International

Press Information Bureau
Government of India

Ministry of Defence

Fri, 22 Jan 2021 7:34PM

Andaman and Nicobar Command conducts tri-services para jumping and freefall skydiving training course

Andaman and Nicobar Command has accomplished yet another milestone by conducting the first ever Tri-Services Para Jumping and Freefall skydiving training course at Air Force Station Car Nicobar. The course was conducted by the Indian Air Force which trains personnel of Indian Armed Forces.

During the Joint para jumping and skydiving course with participants from the Indian Army, Indian Navy and Indian Air Force, a total of 267 jumps were undertaken within a short span of 04 days and a total of 31 persons qualified the basic and advanced course. The participants of basic course earned Para Wing. The training course was a great success and of historic significance for the Command to wars enhancing the jointmanship and operational capability.

https://pib.gov.in/PressReleasePage.aspx?PRID=1691287

पत्र सूचना कार्यालय
भारत सरकार

रक्षा मंत्रालय

Fri, 22 Jan 2021 7:34PM

अंडमान-निकोबार कमान ने ट्राई-सर्विसेज पैरा जंपिंग एंड फ्रीफॉल स्काईडाइविंग प्रशिक्षण कोर्स का संचालन किया

अंडमान-निकोबार कमान ने वायु सेना स्टेशन कार निकोबार में पहली बार ट्राई-सर्विसेज पैरा जंपिंग एंड फ्रीफॉल स्काईडाइविंग प्रशिक्षण कोर्स आयोजित करके एक और उपलब्धि हासिल की है। इस कोर्स का संचालन भारतीय वायु सेना द्वारा किया जाता था जो भारतीय सशस्त्र बलों के कर्मियों को प्रशिक्षित करता था।

भारतीय सेना, भारतीय नौसेना और भारतीय वायु सेना के प्रतिभागियों के साथ संयुक्त पैरा जंपिंग एंड स्काईडाइविंग कोर्स के दौरान मह 4 दिनों की छोटी अवधि में कुल 267 जंप किए गए और कुल 31 लोगों ने बेसिक एवं एडवांस्ड कोर्स को पूरा किया। बेसिक कोर्स के प्रतिभागियों ने पैरा विंग हासिल किया। युद्ध के दौरान संयुक्त कौशल एवं परिचालन क्षमता बढ़ाने के लिहाज से यह कोर्स कमान के लिए काफी सफल और ऐतिहासिक महत्व रहा।

https://pib.gov.in/PressReleasePage.aspx?PRID=1691802

Press Information Bureau
Government of India

Ministry of Defence

Sat, 23 Jan 2021 9:10PM

IAF and FASF conclude Ex Desert Knight 2021

The Indian Air Force and French Air and Space Force participated in Ex Desert Knight 2021 at Air Force Station Jodhpur. A first of its kind bilateral exercise (Ex DK-21), Rafale aircraft from both sides along with Su-30 MKI and Mirage 2000 aircraft of the IAF undertook complex missions including Large Force Engagements. Combat enablers included AWACS, AEW&C aircraft of the IAF as well as A400M and A330 based MRTT (Medium Range Tanker and Transport) aircraft of the FASF. Both Air Forces exercised in realistic settings with an aim to enhance operational capabilities and interoperability. The exercise provided an opportunity to share best practices and evolve operational concepts; particularly for effective combat employment of the Rafale fleet.

Chief of Defence Staff, General Bipin Rawat PVSM UYSM AVSM YSM SM VSM ADC visited Air Force Station Jodhpur on 21st January 2021 and interacted with participating forces. He also flew on-board the MRTT along with Maj Gen Laurent Lherbette, the FASF contingent leader where he was given an overview on conduct of the exercise and witnessed air-to-air refuelling operations by IAF & FASF fighters.

On 23rd January 2021, Chief of the Air Staff, Air Chief Marshal RKS Bhadauria PVSM AVSM VM ADC visited Air Force Station Jodhpur along with the Ambassador of France to India, H.E. Mr Emmanuel Lenain. The Distinguished Visitors were received by Air Marshal SK Ghotia PVSM VSM AOC-in-C SWAC. CAS interacted with members of IAF and FASF contingents. He expressed his appreciation on the complexity of operations conducted and interoperability achieved by participants within a short span of 4 days. He also commended the planning, operational and maintenance staff from both sides for smooth and safe conduct of the exercise. CAS wished the FASF contingent the very best for the next phase of their Skyros deployment.

https://pib.gov.in/PressReleasePage.aspx?PRID=1691712

पत्र सूचना कार्यालय
भारत सरकार

रक्षा मंत्रालय

Sat, 23 Jan 2021 9:10PM

भारतीय वायुसेना एवं एफएएसएफ में युद्धाभ्यास डेजर्ट नाइट 2021 का समापन किया

इंडियन एयरफोर्स और फ्रेंच एयरफोर्स एंड स्पेस फोर्स ने एयरफोर्स स्टेशन जोधपुर में युद्धाभ्यास डेज़र्ट नाइट 2021 में हिस्सा लिया । अपनी तरह का पहले द्विपक्षीय अभ्यास (युद्धाभ्यास डीके-21) में भारतीय वायु सेना के सुखोई-30 एमकेआई और मिराज 2000 विमानों के साथ साथ दोनों देशों की वायुसेना की ओर से राफेल लड़ाकू विमानों की भागीदारी ने लार्ज फ़ोर्स इंगेजमेंट समेत जटिल अभियानों को अंजाम दिया । भारतीय वायु सेना के एडब्ल्यूएसीएस, एईडब्ल्यूएंडसी विमान के साथ-साथ एफएएसएफ के ए400एम और ए330 आधारित एमआरटीटी (मध्यम दूरी के टैंकर और परिवहन) विमान युद्धाभ्यास में शामिल थे । दोनों वायु सेनाओं ने परिचालन क्षमताओं और अंतरसंचालनीयता को बढ़ाने के उद्देश्य से यथार्थवादी तौर तरीक़ों का प्रयोग किया । इस अभ्यास ने ययुद्ध की स्थिति में सर्वश्रेष्ठ प्रथाओं को साझा करने और परिचालन अवधारणाओं को विकसित करने का अवसर प्रदान किया; विशेष रूप से राफेल लड़ाकू विमान के बेड़े को प्रभावी तौर पर शामिल कर ।

चीफ ऑफ डिफेंस स्टाफ जनरल बिपिन रावत, पीवीएसएम यूवाईएसएम एवीएसएम वाईएसएम एसएम वीएसएम एडीसी, ने 21 जनवरी 2021 को एयरफोर्स स्टेशन जोधपुर का दौरा किया और प्रतिभागी सेनाओं से बातचीत की । उन्होंने फ्रेंच एयरफोर्स एंड स्पेस फोर्स (एफएएसएफ) दल के नेता मेजर जनरल लॉरेंट लहेरबेटे के साथ एमआरटीटी पर भी उड़ान भरी, जहां उन्हें अभ्यास के संचालन का खाका पेश किया गया और उन्होंने भारतीय वायु सेना और एफएएसएफ के लड़ाकू विमानों द्वारा हवा से हवा में ईंधन भरने का अभियान भी देखा ।

23 जनवरी, 2021 को, वायुसेना प्रमुख एयर चीफ मार्शल आर के एस भदौरिया, पीवीएसएम एवीएसएम वीएम एडीसी, ने भारत में फ्रांस के राजदूत महामहिम श्री इमैनुएल लेनिन के साथ वायु सेना स्टेशन जोधपुर का दौरा किया । विशिष्ट अतिथियों का स्वागत एयर मार्शल एस के घोटिया पीवीएसएम वीएसएम एओसी-इन-सी एसडब्ल्यूएसी ने किया । वायुसेना प्रमुख आर के एस भदौरिया ने भारतीय वायुसेना और फ्रेंच एयरफोर्स एंड स्पेस फोर्स (एफएएसएफ) टुकड़ियों के सदस्यों से बातचीत की । उन्होंने 4 दिनों की छोटी अवधि के भीतर प्रतिभागियों द्वारा युद्धाभ्यास के दौरान किए गए संचालन की जटिलता और अंतरसंचालनीयता की सराहना की । उन्होंने अभ्यास के सुचारू और सुरक्षित संचालन के लिए दोनों पक्षों के योजना, परिचालन और रखरखाव कर्मचारियों की भी सराहना की । वायुसेना प्रमुख ने फ्रेंच एयरफोर्स एंड स्पेस फोर्स (एफएएसएफ) दल को अपनी स्काईरोस तैनाती के अगले चरण के लिए शुभकामनाएं दीं ।

https://pib.gov.in/PressReleasePage.aspx?PRID=1691793

THE HINDU

Sun, 24 Jan 2021

Netaji would have been proud of a new, self-reliant India: Modi

India giving befitting reply to those interfering in its territorial sovereignty, says PM

By Shiv Sahay Singh

Kolkata: Prime Minister Narendra Modi on Saturday wondered how Netaji Subhas Chandra Bose would have felt had he seen the new India, which is not only becoming self-reliant but also giving a befitting reply to those interfering in its territorial sovereignty.

"Netaji had imagined a kind of strong India. Today the world is seeing India in its new avatar; from LAC to LoC wherever anyone is trying to pose any challenge to the territorial sovereignty of the country is given a befitting reply," Mr. Modi said.

The Prime Minister was speaking in Kolkata while participating in the 125th birth anniversary celebrations of the iconic freedom fighter.

Addressing a gathering on the lawns of the Victoria Memorial Hall, Mr. Modi said Netaji would be satisfied and proud to see the new self-reliant India.

Prime Minister Narendra Modi and West Bengal Chief Minister Mamata Banerjee release a book during an event to mark the 125th birth anniversary of Netaji Subash Chandra Bose at the Victoria Memorial in Kolkata on January 23, 2021. | Photo Credit: PTI

'Equipped with Rafales'

The Prime Minister said, "Today our forces have jets such as Rafale and it is manufacturing advanced jets such as Tejas. When he [Netaji] would see that the armed forces of his country are so strong and have the advanced equipment which he wanted, how would he feel," the Prime Minister asked.

He went on to say that Netaji would be proud to see that his country had not only fought the COVID-19 pandemic and but also developed a vaccine and is helping other countries with the technology.

"Netaji once asked people not to lose hope of free India; similarly, no one can stop India from being self-reliant," he added.

During his speech of more than 40 minutes, Mr. Modi referred to a question that Netaji asked his nephew Sisir Bose before executing the daring escape from the country in January 1941. Netaji had asked his nephew in Bengali "Amar ekta kaaj korbe (Will you do something for me)?"

"If today, every Indian places his hand on his heart and feels the presence of Netaji, then he will hear the same question: will you do something for me? This work, this task, this goal is to make India self-reliant today," Mr. Modi said.

Reflecting on the contribution of West Bengal in the freedom struggle, the Prime Minister said the State will have to take up new responsibility for a self-reliant India (Atmanirbhar Bharat).

"Along with the dream of self-reliant India, Netaji is the biggest inspiration for Sonar Bangla (Golden Bengal). As with the role played by Netaji in the freedom struggle, West Bengal will have to take up the same responsibility for a self-reliant India. A self-reliant and Sonar Bangla will have to take lead in making a self-reliant India," he said.

The reference to "Sonar Bangla' by Mr Modi is significant as the term is the BJP's catch phrase for its campaigns in the State, scheduled to hold Assembly polls in the next few months. Mr. Modi called on the people of the State to come forward and restore their pride and like Netaji not rest till the objective is achieved.

Pointing out that all the 130 crore Indians are indebted and will remain so to Netaji Subhas Chandra Bose, Mr. Modi said January 23 is not only the birth anniversary of the national icon but also the day of birth of "self-pride" of the country.

https://www.thehindu.com/news/national/netaji-would-have-been-proud-of-new-self-reliant-india-modi/article33645982.ece

THE HINDU

Sun, 24 Jan 2021

'Sukhoi helped maritime security'

Commanders' Conference held at Southern Air Command

Thiruvananthapuram: The resurrection of 222 Squadron at Thanjavur with Sukhoi-30 aircraft has paved the way for strengthening maritime security in the southern peninsula and maintaining Indian interests in the Indian Ocean region, Air Marshal Amit Tiwari, Air Officer Commanding-in-Chief, Southern Air Command (SAC), has said.

Flight path: Air Marshal Amit Tiwari addressing the Commanders' Conference in Thiruvananthapuram

Speaking at a Commanders' Conference held at the SAC, Akkulam, on Saturday, he outlined efforts by the command in fast-tracking infrastructure development for fighters, deployment of radars, and successful conduct of Combined Guided Weapons Firing at Suryalanka on varied firing platforms.

The Air Marshal expressed satisfaction over the induction of an additional indigenously built LCA (light combat aircraft) Tejas aircraft squadron at Sulur. The Air Force is in a highly accelerated growth stage and induction of indigenous systems is in tandem with the government's 'Make in India' initiative, he said.

At the conference, the Air Marshal reviewed the operations, maintenance, and administration activities undertaken by the SAC during the past year. He provided the Commanders with a vision for maritime operations in peninsular India for the next decade. He also emphasised the need to maintain a very high level of operational preparedness and orientation. Air Officers Commanding and Station Commanders of all Air Force Stations under the Southern Air Command attended the day-long conclave.

https://www.thehindu.com/news/cities/Thiruvananthapuram/sukhoi-helped-maritime-security/article33646140.ece

THE WEEK

Sun, 24 Jan 2021

Information security biggest challenge to national security: Army Chief

"Cyber warfare is one of the non-traditional threats," he said

Army Chief General M.M. Naravane said information security is the biggest challenge to national security in the present scenario "which can give a strong shock to the economy and can handicap government machinery also".

(File) Indian Army chief General Manoj Mukund Naravane | Arvind Jain

In his virtual address on the topic of "India's National Security Scenario: Past, Present and Future" at a function organised by a college in Maharashtra, General Naravane said national security was not limited to armed security only but is based on six other important foundations.

Speaking about non-traditional threats to national security, General Naravane said, "Information security is the biggest challenge to national security in the present scenario".

"Cyber warfare is one of the non-traditional threats. It is not the only threat to our information system, but it is also a threat to leaking of sensitive information of our country," he added.

"Nowadays, government and private sector data is available online, and in this situation, a big cyber attack can give a strong shock to the economy and can handicap the government machinery also," the Army chief said.

He said national security is based on six important foundations viz "Army security, financial security, health security, food security, energy security and environment security, which needs effort of the entire nation".

He observed that the use of drone technology has increased in the world for launching a precision attack.

"A strong drone attack was witnessed in Saudi oil fields in September 2019 and a drone was used in Armenia and Azerbaijan conflict. These are examples that technology will be an important factor in the future conflicts. The Indian army is aware of these challenges and showed it capabilities on the Army Day parade held on January 15 this year," the General said.

The Army chief highlighted other "non-traditional challenges like economic challenges due to COVID-19; changes in environment, pollution, infectious diseases, drug trafficking and radicalisation".

"There is a need to adopt a multi-pronged approach to tackle these national security threats. Our Army needs to use its strategic, financial and legal power in a planned manner. Our country is a developing country and has limited resources and it has to do allocation under limited budget," he said.

General Naravane also underlined the need to give an equal attention to the development of infrastructure and to the welfare of citizens along with national security.

"There can be no compromise on the security of the nation. When our land and sea borders will remain protected, then only will we be able to attract more and more investments into the county and create more job opportunities for the people," he added.

General Naravane further observed that allocation of funds in the defence sector will strengthen the development of the country and it should be seen as a "future investment".

"Allocations for defence is therefore a catalyst for growth and should be seen as an investment for the future," he said.

The Army chief praised the "Aatmanirbhar" initiative of Prime Minister Narendra Modi, saying it has inspired in fulfilling the national security needs through self reliance.

"'Aatmanirbhar Bharat' has become a strategic necessity in the defence sector. New technologies like artificial intelligence, autonomous and unmanned system, long-range precision technology, 5G technology, quantum computing and directed energy systems needed to be adopted. The Indian Army is contributing in this swadeshi initiative," he said.

He said "Aatmanirbhar Bharat" is not a choice anymore but it is an inevitable reality.

General Naravane further said that every young student is an important and integral part of the nation-building process.

"There is a need to move forward towards providing solutions rather than finding solutions. Young innovators and entrepreneurs are bringing this change. Recently, a start-up company set up by students of IIT-Bombay, called Idea forge, made cutting edge high altitude drone for the Indian Army and bagged an order worth Rs 130 crore.

"The India Army, Navy and Air Force provide opportunities for youth to fulfil their dreams and contribute towards national security," he said.

https://www.theweek.in/news/india/2021/01/24/information-security-biggest-challenge-to-national-security-army-chief.html

Hindustan Times

Sun, 24 Jan 2021

'If China gets aggressive, so will India': IAF Chief on eve of talks with PLA

The corps commander-level talks between the Indian Army and the Chinese People's Liberation Army (PLA) will be held at Moldo on the Chinese side of the Line of Actual Control (LAC) on Sunday

By Rahul Singh, Dinesh Bothra, Edited By Sohini Sarkar

Indian Air Force Chief Air Chief Marshal RKS Bhadauria on Saturday said that India was ready to match China's aggression in the eastern Ladakh theatre, where the two countries have been locked in a border row since May 2020.

"If they (China) can get aggressive, we will also get aggressive. We have full preparations (to meet any eventuality,)" the IAF chief said during a media interaction at Jodhpur, where India and France are carrying out joint air force drills.

IAF chief RKS Bhadauria's comments came on the eve of the ninth round of military talks with China to defuse border tensions in Ladakh. (ANI PHOTO)

Bhadauria's comments came on the eve of the ninth round of military talks with China to defuse border tensions in Ladakh. The corps commander-level talks between the Indian Army and the Chinese People's Liberation Army (PLA) will be held at Moldo on the Chinese side of the Line of Actual Control (LAC) on Sunday, said officials familiar with the development.

Last month, the IAF chief said the likely reasons for Chinese actions could include a planned escalation and an attempt to establish border claim lines and start border talks on the new positions, military signalling, domination efforts with escalation control and deployment and training of their Western Theatre forces in real war-like scenarios wherein the Galwan Valley incident was an overreach.

Senior Indian and Chinese commanders had last met on November 6. The situation in the Ladakh sector remains tense and the ongoing military dialogue has not led to any breakthrough. "Talks may not yield a positive outcome in the short-term but the dialogue has to go on," said one of the officials cited above.

Experts are also not expecting much from the military talks.

It is a good thing that talks are going on and communication is being maintained between the two sides, said former Northern Army commander Lieutenant General DS Hooda (retd).

"However, it is unlikely that any breakthrough will take place as there does not seem to be any common ground on the basis of which an agreement can take place. This common ground has to be established in political or diplomatic level engagements. Since this has not happened, we should not expect much from the military talks," Hooda said.

On January 12, army chief General Manoj Mukund Naravane said that the Indian Army was prepared to hold its ground in eastern Ladakh "for as long as it takes" to achieve national objectives in case the ongoing military and diplomatic talks with China are prolonged.

During the eighth round of talks on November 6, the Indian Army and the PLA said they will ensure their front-line soldiers "exercise restraint and avoid misunderstanding and miscalculation" along the LAC.

Both India and China are prepared for a long haul in the Ladakh sector and firm about holding forward positions along the LAC through the harsh winter months.

The PLA has moved back at least 10,000 soldiers from depth areas in the Ladakh theatre to rear positions but its frontline deployments remain unchanged, as previously reported by Hindustan Times.

Earlier, Naravane said India should not read too much into the withdrawal of Chinese troops from depth areas on the Tibetan plateau as there has been absolutely no reduction of troops by either side at friction points in the Ladakh sector where the border standoff between the two nuclear powers is in its ninth month.

He said India hoped to reach an agreement with China based on the principles of "mutual and equal security" that would result in disengagement of border troops at friction points and subsequent de-escalation of conflict in the Ladakh theatre.

India has consistently pushed for comprehensive disengagement at all flashpoints and restoration of status quo ante of early April during the ongoing military talks whereas the Chinese side wants the Indian Army to first pull back troops deployed on strategic heights on the southern bank of Pangong Tso.

https://www.hindustantimes.com/india-news/if-china-gets-aggressive-so-will-india-iaf-chief-on-eve-of-talks-with-pla-101611410201793.html

The Indian EXPRESS

Sun, 24 Jan 2021

Number of studies underway to decide suitable model for joint theatre commands, says Army Commander

As we look at the manner in which it is going to happen, there are a number of models which are available all over the world. We are studying various models. The best model that is most suited for the Indian Armed forces will be adopted in due course of time

By Sushant Kulkarni

The Southern Army Commander, Lieutenant General CP Mohanty, said on Saturday that a number of studies were underway to decide a suitable model for Indian Armed forces towards setting up the joint theatre command structures. He also highlighted the need to enhance amphibious operational capabilities of Armed forces.

Lieutenant General CP Mohanty interacts with the media at Southern Command Headquarters Saturday. (Photo: Pavan Khengre)

Lt Gen Mohanty, who is soon slated to move as Vice Chief of the Army Staff, was interacting with the media at the Headquarters of the Southern Command in Pune. When asked how the role of Southern Command will transform as Armed forces move towards theaterisation or setting up joint theatre command structures, he said, "The Chief of Army Staff has spoken in great details about the joint theatre commands. Right now we fight our battles in different domains and the triservices coordinate resources when required. But the moment joint theatre commands come into picture, we would be ab initio integrated under one single headquarters, which would be manned by all the three services. There would be integration from the beginning, right from the process of planning and training to the execution of the operations.

As we look at the manner in which it is going to happen, there are a number of models which are available all over the world. We are studying various models. The best model that is most suited for the Indian Armed forces will be adopted in due course of time. Towards that end, there are a number of studies which are underway. As the things get approved by the government, they would be executed in a phased manner."

Lt Gen Mohanty added, "As far as Southern Command is concerned, we are also working towards integration with our sister services of the Navy and Air Force. We have a large number of establishments of all the three services and towards that end we have achieved a lot of jointness between the three services and we are working together towards achievement of our goal of joint theatre commands."

Referring to the review of tri-services Amphibious Task Force he conducted recently, Lt Gen Mohanty said, "Very recently I have witnessed an important tri-service exercise and I am pleased to inform you that the level of integration has been of extremely high order. There is still more needed towards that end and we are working together."

He added, "Our maritime and amphibious capabilities need to be developed. We are an emerging power and a regional power. I am sure that there would be always requirements for amphibious operations."

Speaking about the emerging threats, Lt Gen Mohanty said, "We are continuously analysing the emerging threats and the new technologies to ensure that we are a future ready force. The

conventional, non-conventional and emerging threats are being monitored continuously and protections measures are being constantly evolved."

On the revenue deficit in the cantonment boards, the General officer said, "I am already in touch with the senior hierarchy. We have bid for the funds. The pandemic has had its effect as far as revenue generations are concerned. It will take us time. I am in dialogue with the Integrated Headquarters of MoD and Defence Estates to meet the aspirations of the cantonments."

Speaking on the Army's response to the Covid-19 pandemic, Lt Gen Mohanty said, "Key challenges before us during pandemic have been to keep ourselves safe and simultaneously provide aid wherever needed may that be civil administration or the populace around us. Priority was to keep our force safe so if there is any crisis at the border we would be ready to fight it out. Many quarantine facilities were built by us. As far as the Army is concerned, we have prioritised our vaccination drive. We have started vaccinating our unsung heroes and heroines — our health workers — across military hospitals. Till date, around 6,000 have been vaccinated. We will proceed as per priority."

The Army Commander also said, "We have also carried out with our partners the refurbishing of the National War Memorial and the museum.

This would be inaugurated soon and will be reopened to the public in a new avatar. I am sure it will continue to inspire the youth to join the Armed forces."

https://indianexpress.com/article/india/number-of-studies-underway-to-decide-suitable-model-for-joint-theatre-commands-says-army-commander-7159208/

iDR
INDIAN DEFENCE REVIEW

Sun, 24 Jan 2021

Challenges before Theatre Commands

By Prakash Nanda

Will the year 2021 see the realisation of the Chief of Defence Staff (CDS) General Bipin Rawat's proposed road¬map for the restructuring of the Indian Armed Forces into five distinct 'Theatre commands'? This is, indeed, a radical reform-proposal pertaining to our armed forces. And as has been the case with every reform that India has witnessed over the years, the CDS's idea, which was originally brought up by Prime Minister Narendra Modi at the Combined Commanders Conference in 2015, is facing resistance from the critics, which include voices from the forces as well.

In essence, there are two reasons that are cited in favour of the creation of theatre-commands. At a time when the national economy is in a very bad shape, there has to be tightening of the belt by the three forces. One should not be surprised if finance minister Nirmala Sitharaman does not add much in her coming budget proposals to the total of Rs.3,23,053 crore provided in 2020-21 for the defence. And if at all extra money is added, primacy may well be on spending that to expedite the border-infrastructure development projects, given the military standoff with China.

Secondly, tightening of the belt has to be done in a manner that will not affect the combat capabilities of our forces. And, that, in turn, will be possible when all the assets belonging to all the services in a given theatre are marshalled together. For instance, in a given situation, the assets of the Indian Air Force can be combined with that of the Army Aviation Wing and the Navy's fighter

aircraft and helicopters. The argument here is that in the event of a war or threat to the nation if there is one theatre commander, he will be competent enough to take a decision speedily (speed being the essence in fighting future wars that are going to be short and intense) as he has all the assets laid in front of him which he can utilise to achieve a particular goal. There will be no need for the Army to request the Air Force or Navy for the support. And the vice-versa. The Theatre Commander will be empowered to marshal any asset, be it naval, air or land as per the requirement of the operation.

At the moment, India may have a total of 19 commands — seven army commands (six operational); seven air force commands (five operational); three naval commands (two operational); and two joint commands – but none of them are co-located and their geographical zones of responsibilities have little commonality. In most cases, the command of one service overlaps or is linked with two or more commands of sister services. This leads to increased duplication, as each service attempts to fulfil all of its desired operational roles within its own span of command.

Against this background, the proposed Commands are believed to be five in number: The Northern Command – along the border with China, from the Karakoram Pass in Ladakh to the last outpost Kibithu in Arunachal Pradesh; the Western Command will look after the border with Pakistan, from Indira Col on Saltoro Ridge in the Siachen Glacier region to the tip of Gujarat; the Peninsular Command by merging the Western and the Eastern Command of the Indian Navy; a full-fledged air defence command that will not only spearhead the country's aerial attack but also be responsible for defending Indian airspace through multi-role fighters and anti-aircraft missiles; and the Command tasked with protecting the Indian Ocean and India's Island territories as well as keeping the sea lanes free and open from any outside pressure.

However, it is the second factor of operational coordination and cohesiveness that is debatable, with critics pointing out that without common training, common perceptions and common career-advancement schemes, integration of the services in any theatre will be highly problematic, affecting badly the country's combat capabilities. India does not have a common military doctrine; the respective forces have their own, as a result of which these are at best tactical only. Besides, when theatre commands are created, the three ser¬vice chiefs will have to give up some of their turf to the theatre commander, a logical follow-up for which none of our service chiefs seems prepared at the moment.

Though General Rawat is hopeful that the situation will change for better as things are being sorted out and that "we are gradually moving forward in the direction of integration", the fact remains that even his own post, which was created in January 2020 as the biggest reform in the armed forces towards the integration, is still not powerful enough to bring down expenses in the face of a shrinking defence budget, rationalize manpower and ensure that the armed forces fight as a cohesive unit.

The CDS lacks full operational power. Though the CDS is now the Secretary of the newly created Department of Military Affairs (DMA) in the Ministry of Defence (MoD), it is really absurd that a four-star General like him is equated with a Secretary to the Government of India, whereas as per the protocol, a four-star General (or equivalent) is supposed to be on par with the Cabinet Secretary, the country's No. 1 civil servant. The CDS is not even the commander of all the armed forces of the country; he is on par with the three service chiefs in military status. He is not even the principal military adviser to provide impartial advice to the political leadership.

Those against the idea of theatre commands argue that the idea may suit the American troops who have a global presence but it cannot be applied to India whose military is only meant for protecting and defending the country's borders. It is an open secret that the Indian Air Force has serious reservations on the concept of the US – types where the theatre commander, leading forces from all the services, reports directly to the Secretary of Defense through the Joint Chief of Staff. The respective service chiefs in the US play only supporting roles in the recruitment and management of their forces.

Will the Indian Service Chiefs like such reduced roles for themselves, with the Theatre Commanders, who will be of Lieutenant General and equivalent ranks with three stars, reporting directly to the Defence Minister? Will they like the idea of just being providers of the resources to the Theatre Commanders without any control over them? General Rawat has to find answers to these questions. And that is going to be a Herculean task.

The views expressed are of the author and do not necessarily represent the opinions or policies of the Indian Defence Review.

http://www.indiandefencereview.com/news/challenges-before-theatre-commands/

THE HINDU

Sun, 24 Jan 2021

HAL to deliver three Light Combat Helicopters before March 31

It will deliver 12 more in the next financial year

By Dinakar Peri

New Delhi: The Hindustan Aeronautics Limited (HAL) is scheduled to deliver the first batch of three indigenous Light Combat Helicopters (LCH) to Army and Air Force before March 31, a defence official said. They are part of the 15 Limited Series Production (LSP) LCH helicopters approved by the Defence Acquisition Council (DAC).

HAL's indigenously developed Light Combat Helicopter deployed for operations in Leh. File. | Photo Credit: ANI

"HAL has received the Letter of Intent from Army and Air Force. Once the order is given, it will deliver the remaining 12 helicopters of the LSP in the next financial year," the source said.

Early this month, the Defence Ministry said in its annual report the contracts for the procurement of the LCH from HAL, additional Harop (P-IV) loitering drones from Israel and upgrade of Unmanned Aerial Systems (UAV) in service are "likely to be signed in the first quarter of 2021".

The Army variant of the Light Utility Helicopter (LUH), which has completed all tests and also demonstrated its high-altitude capability in hot and high weather conditions last September, is scheduled to receive its Initial Operational Clearance (IOC) at the Aero India. "The Acceptance of Necessity (AoN) for 12 LUH from DAC is also in the pipeline," the official said. HAL is also planning to develop a civilian version of the LUH.

With a range of helicopters in the smaller range, HAL is working on a 12-tonne Indian Multi-Role Helicopter (IMRH) as a replacement for the MI-17 helicopters in service. The Army and the Air Force are working out the Service Quality Requirements (SQR), the source said.

The LCH and the LUCH along with the weaponised Advanced Light Helicopter (ALH) will be showcased inside the Indian pavilion at Aero India to showcase the range of indigenous development.

The LUH is a three-tonne helicopter positioned as replacement for the Cheetah and Chetak helicopters. According to HAL, it is capable of flying at 220 kmph, service ceiling of 6.5 km and a range of 350 km with 500 kg payload.

https://www.thehindu.com/news/national/hal-to-deliver-three-light-combat-helicopters-before-march-31/article33643697.ece

The Tribune

Mon, 25 Jan 2021

To meet global requirements, IAF transport planes to get satellite tracking system

Some countries have already made Automatic Dependent Surveillance-Broadcast capability mandatory in aircraft now being registered in or operating within their airspace

By Vijay Mohan

Chandigarh: With the aviation sector worldwide switching over to a new generation, highly accurate satellite-based aircraft positioning and tracking system, the Indian Air Force is also modifying some of its transport aircraft with the new navigational aid.

The new equipment, called the Automatic Dependent Surveillance-Broadcast (ADS-B), is a satellite-based system that replaces the current ground-based secondary surveillance radar network. Some countries have already made ADS-B capability mandatory in aircraft now being registered in or operating within their airspace.

Photo for representation. PTI file

A senior Air Force officer said initially the IAF's fleet of 12 C-130 Super Hercules would be upgraded with the additional avionics package. Besides retrofitting the hardware, processors and antennae, the work would also integrating the ADS-B with the aircraft's existing navigation suite and mission computer.

ADS-B transponder broadcasts the precise position and location information of an aircraft in real time, giving air traffic control better visibility to track and manage aircraft while enhancing aviation safety by providing aircrew more situational awareness of nearby aircraft.

The IAF's transport aircraft often fly overseas for various purposes, including humanitarian aid, joint exercises, support of UN peace missions, military diplomacy and logistics tasks. ADS-B will enable the IAF flights to shorten routes, reduce minimum separation distances, reduce fuel-burn and cut emissions. This in turn, will save time and money while granting access to safety indications and alerts on ground.

According to the IAF officers, installation of ADS-B on other transport fleets like the IL-76, Embrarer and Boeing BBJ, which may be required to fly in international airspace, will be taken up at a later stage.

The civil aviation sector in India is also gearing up to fully integrate ADS-B systems in its network. In 2014, the Directorate General of Civil Aviation (DGCA) had issued a detailed note on the installation, certification and use of ADS-B in Indian civilian aircraft and its use in Indian controlled airspace, though it was not mandatory at that time. Infrastructure for using ADS-B data already exists at several stations in India.

Since ADS-B is a satellite-based system, it can locate an aircraft carrying the requisite equipment virtually anywhere on the globe and track aircraft where no ground-based radar coverage is available such as over oceans or remote areas.

The disappearance of Malaysia Airlines flight MH-370 in March 2014, when flying from Kuala Lumpur to Beijing, and of an IAFAN-32 in July 2016 over the Bay of Bengal (en route to Port Blair from Chennai), are two recent examples of gaps in ground-based secondary radar coverage.

https://www.tribuneindia.com/news/nation/to-meet-global-requirement-iaf-installs-satellite-tracking-systems-on-transport-aircraft-203045

DefenceNews

Sat, 23 Jan 2021

Pearson Engineering to supply 1,500 track width mine ploughs to Indian Army

Pearson Engineering is pleased to announce that we are now under contract to supply over 1,500 Track Width Mine Ploughs (TWMP) to the Indian Ministry of Defence. The order, which will see the Pearson plough integrated with the T-90 S/SK tank, will be delivered in partnership with BEML Limited.

With previous experience in integrating counter-mine capabilities with the T-72, T-90, Arjun Mk1

Main Battle Tank and BMP-2 Armoured Vehicles, Pearson Engineering is proud to be a current supplier to the Indian Army.

Dr. Deepak Kumar Hota, Chairman and Managing Director of BEML said, "We are proud to be associated with MoD to enhance the combat capabilities of the Indian Army. This is another example of BEML's capability to meet the specific requirements for our armed forces. BEML signifies the true spirit of Make in India".

Mr Richard Beatson, Business Development Director at Pearson Engineering said, "We are delighted to have received this important order alongside our partners at BEML. Having been committed to developing capability for India for many years, we look forward to further developing our relationships, both with the end-user and Indian industry."

The track width mine plough will enable the Indian Army's T-90 tanks to move through mined areas, whilst remaining highly mobile. Pearson Engineering has a long heritage in the supply and integration of mine ploughs to Armed Forces around the world.

BEML is a leading multi-technology company that plays a pivotal role in serving India's core sectors of Defence, Rail, Power, Mining and Construction by offering world class products from state-of-the art manufacturing facilities located across India.

Pearson Engineering is based at the Armstrong Works in Newcastle upon Tyne. The site, formerly the home of Vickers Defence, has long historic links with India, having previously supplied Vijayanta

Main Battle Tanks for the Indian Armoured Corps.

https://www.defencenews.in/article/Pearson-Engineering-to-Supply-1,500-Track-Width-Mine-Ploughs-to-Indian-Army-1033528

TIMESNOWNEWS.COM

Sun, 24 Jan 2021

CRPF to get Micro UAV A-410 by May for Maoist operation

The Unmanned Aerial Vehicle (UAV) weighing 6 kg with payload and battery is an updated version of Netra-V2 -- the drone being used by the CRPF for several years in Maoist-affected areas

New Delhi: In a bid to gear up its force for a "big" anti-extremist operation in the Maoist hotbeds, especially in areas prone to attacks, the Central Reserve Police Force (CRPF) is engaged in adding updated gadgets and arms to its armoury. In the process, the force will use an upgraded version of the Netra-V2 drone named 'Micro UAV A-410'.

The Unmanned Aerial Vehicle (UAV) weighing 6 kg with payload and battery is an updated version of Netra-V2 -- the drone being used by the CRPF for several years in Maoist-affected areas to carry out operations against the rebel groups, which has proved to be an indispensable asset in surveillance, reconnaissance and rescue operations on numerous occasions.

With a "cruise speed" of 35 km per hour, the UAV A-410 has the capacity to fly for around 60 minutes in one go at an altitude of 600 metres, covering 5 km range. It has dual camera system both for day and night. The day camera has 1,280 x 720 pixel resolution with 10x optical zoom and 4x digital zoom. The night camera has thermal imaging capacity of 640 x 480 pixel resolution and 4x digital zoom.

"Micro UAV A-410 is a vertical takeoff and landing small RPAS for quick deployment from confined locations with 60-minute endurance. It provides autonomous operation from takeoff to landing with digital encrypted communication link. It has full HD camera and reliable aerial imaging for surveillance and security operations," said an CRPF officer.

CRPF to get Micro UAV A-410 by May for Maoist operation | Photo Credit: IANS

The 'Made in India' drone being manufactured by Asteria Aerospace is expected to be included in the CRPF armoury by April or May end, sources in the CRPF told IANS.

The CRPF, a 3.5 lakh strong force under the Ministry of Home Affairs (MHA) with mandatory responsibility to provide internal security across the country as well as Maoist-hit states and Jammu and Kashmir, will procure 40 such drones and use them in different regions of its deployments.

One Micro UAV A-410 is expected to cost between Rs 12 lakh and Rs 15 lakh.

Sources in the CRPF and the MHA told IANS that the procurement of the drone is part of a process to upgrade the force's armoury to launch a "big operation against Maoists before the monsoon this year". However, it is not yet clear as to which of the Maoist hit hotbeds will be targeted by the security force.

There are 90 Maoist-affected districts across 11 states in India which are covered under the Security Related Expenditure scheme. This includes 19 districts in Jharkhand, 16 in Bihar, 15 in Odisha, 14 in Chhattisgarh, 8 in Telangana, 6 in Andhra Pradesh, three each in Maharashtra, Uttar Pradesh and Kerala and one district in West Bengal.

In reply to unstarred questions in the Rajya Sabha, Minister of State for Home G. Kishan Reddy had said in the Monsoon Session last year that Maoist violence was reported in only 61 districts in 2019 and in 46 districts in the first half of 2020.

He said there has been a steady decline in violence and the geographical influence of Maoists in the country. He cited that the number of civilians and security personnel killed in Maoist violence

has reduced from 1,005 in 2010 to 202 in 2019. In 2020 till September, the number of fatalities stood at 102. Moreover, 4,022 Left-wing extremists had surrendered till then since 2015.

https://www.timesnownews.com/india/article/crpf-to-get-micro-uav-a-410-by-may-for-maoist-operation/711207

ThePrint

Sat, 23 Jan 2021

Satellite catches Chinese survey ship mapping seabed in eastern Indian Ocean

The Chinese govt survey ship, accused of operating without notifying its position last week, is suspected to be collecting data that can be used for civilian & military purposes

By Snehesh Alex Philip

New Delhi: A Chinese government survey ship, the Xiang Yang Hong 03, is currently operating in the Indian Ocean and carrying out a search pattern west of Sumatra, the latest satellite and open source intelligence (OSINT) has revealed.

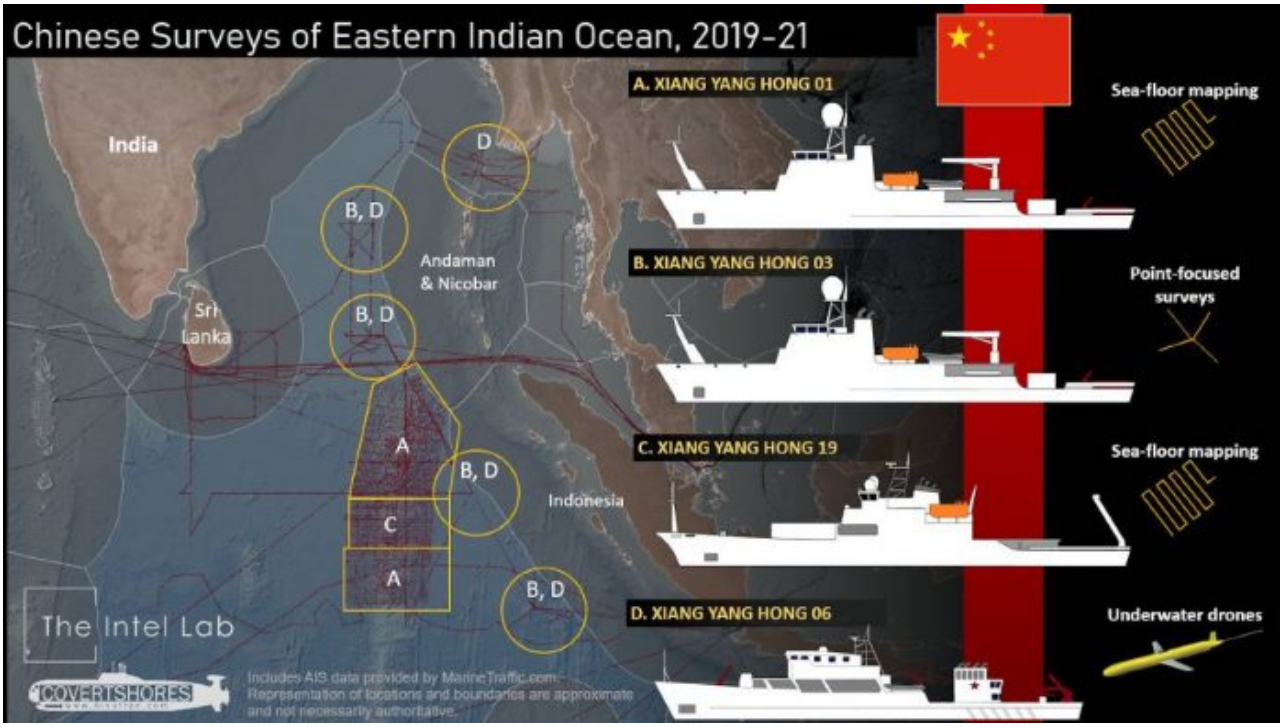


Image courtesy The Intel Lab and H I Sutton

This same vessel was last week accused of 'running dark', i.e., operating without broadcasting its position, in Indonesian territorial waters.

China's Xiang Yang Hong survey ships are suspected of operating underwater gliders in the Indian Ocean to map the sea bed.

"The suspicion is that, as well as conducting civilian research, these ships may be gathering information for naval planners — currents, bathymetry, salinity of the water — which are all relevant to submarine warfare," H.I. Sutton, defence and OSINT analyst told ThePrint. He added that hydrographic data is civilian-defence agnostic, which means that it can be used for both civilian and military purposes.

“The eastern Indian Ocean is likely to be of particular interest to the Chinese Navy as they expand their submarine capabilities. The data from these surveys may help submarines navigate, or improve their chances of remaining undetected,” Sutton said.

What China could be up to

In an article published on NavalNews, Sutton wrote that some of the survey activities, nearer to Indonesia and the Andaman and Nicobar islands, could relate to finding the US Navy’s reputed ‘fish hook’ sensor networks.

“These are designed to track Chinese submarines entering the Indian Ocean. Naturally this cannot be confirmed,” he said.

ThePrint in November 2020 reported that two Chinese research and survey vessels in Sri Lankan waters had caught the attention of the Indian Navy, which sees them as possibly being part of a larger ploy to gather data.

A note prepared by the defence establishment at the time said that survey and research vessels primarily gather data vital for conduct of naval operations, especially that of submarines.

“Such unencumbered and suspicious activity within Sri Lankan waters will surely raise the hackles of other nations in the region and also has the potential to upset the delicate maritime balance in the IOR,” the note had said.

Sutton said that four of the Xiang Yang Hong (‘Facing the Red Sun’) research ships have been particularly active over the past two years — Xiang Yang Hong 01, 03, 06 and 19.

“The ships are operated by the State Oceanic Administration (SOA). In December 2019, Xiang Yang Hong 06 deployed at least 12 underwater gliders in the Indian Ocean. These long-endurance uncrewed underwater vehicles (UUVs) gather data on currents and the water properties. Their data is also civilian-defense agnostic, and particularly relevant to submarine warfare,” he said.

Incidentally, the gliders deployed were of the Sea Wing (Haiyi) type, which is the same model found in the Indonesian waters.

“This raises the possibility that as well as the Xiang Yang Hong 06, other Chinese ships may be deploying the gliders. It is difficult to determine the launch point for the gliders found in Indonesian waters. But it is not a great leap to suggest that China has deployed more in the Eastern Indian Ocean,” Sutton said.

https://theprint.in/defence/satellite-catches-chinese-survey-ship-mapping-seabed-in-eastern-indian-ocean/590083/

INDIA TODAY

Sat, 23 Jan 2021

Chandrayaan-3 work going at full speed, says ISRO Chief K Sivan

Indian Space Research Organisation chief K Sivan on Wednesday said the work on Chandrayaan-3 -- India's third lunar mission -- has already started and is going at "full speed"

New Delhi: Indian Space Research Organisation Chief K Sivan on Wednesday said the work on Chandrayaan-3 -- India's third lunar mission -- has already started and is going at "full speed".

K Sivan had earlier announced that the Chandrayaan-3 has been approved by the government and is slated to launch in 2021.

Indian Space Research Organisation Chief K Sivan (Photo: PTI)

"The work on Chandrayaan-3 has started and it is going at full speed," Isro chief K Sivan told reporters on Wednesday.

Earlier, K Sivan said Isro is planning to land Chandrayaan-3 at the same location where the Chandrayaan-2 lander of crash-landed on the Moon's surface just moments before it was supposed to soft-land.

The Chandrayaan-3's configuration will be similar to that of its predecessor, the Chandrayaan-2. This means that the Chandrayaan-3 will also have a lander and a rover with a propulsion module.

Isro chief K Sivan also said that the lander and rover of the third lunar mission will cost approximately Rs 250 crore.

K Sivan also spoke on India's upcoming Gaganyaan mission and said the training of four astronauts, who have been shortlisted for the programme, will begin in the third week of January in Russia.

"Four astronauts have been short-listed and they will go to Russia for training by this month-end. In 1984, Rakesh Sharma flew in a Russian module, but this time the Indian astronauts will fly in an Indian module from India," K Sivan said.

Rakesh Sharma, the first Indian to travel to space, was part of the Soviet Union's Soyuz T-11 expedition, launched on April 2, 1984, as part of the Intercosmos programme.

Gaganyaan is a crewed orbital spacecraft intended to send astronauts to space for a minimum of seven days by 2022, as part of the Indian Human Spaceflight Programme.

The project is tentatively scheduled for launch in December 2021.

On being asked if Isro considers a manned mission to the Moon, Isro chief K Sivan said: "Definitely some day but not immediately."

https://www.indiatoday.in/science/story/chandrayaan-3-gaganyaan-isro-chief-k-sivan-1639059-2020-01-22

THE TIMES OF INDIA

Sat, 23 Jan 2021

ISRO likely to launch rocket dedicated to private satellites on February 28

By Surendra Singh

New Delhi: Indian Space Research Organisation (Isro) is set to launch a rocket that will solely carry private satellites, including three satellites made by Indian startups, from Sriharikota on February 28. The PSLV-C51, whose primary payload will be Brazil-developed Amazonia-1 satellite, will be launched from the first launchpad, sources said.

ISRO Chairman K Sivan has called the upcoming PSLV launch, dedicated to private satellites, "as part of space reforms", which are aimed at increasing participation of private companies in the space sector.

Amazonia-1, which Brazil took eight years to develop for monitoring the ecosystem of the Amazon forest, has already landed at the Sriharikota launch centre via Chennai from the south American country. Four members of Brazil's National Institute for Space Research team, which developed Amazonia-1, also travelled with the satellite to oversee its successful launch.

The other three privately built desi satellites are 'ANAND' from startup Pixel India, 'SATISH SAT' from Space Kids India and 'UNIT-SAT' by a consortium of universities.

On the three satellites built by Indian startups, Sivan had said, "PSLV-C51 (mission) is going to initiate a new era of space reforms in India and I am sure that these private people will take this activity further and provide services for the entire country." The move to allow private players in space exploration follows the Modi Cabinet's decision in June 2020, allowing participation of the private sector in the entire range of space activities, including interplanetary missions.

https://timesofindia.indiatimes.com/india/isro-likely-to-launch-rocket-dedicated-to-private-satellites-on-february-28/articleshow/80415771.cms

PHYS.ORG

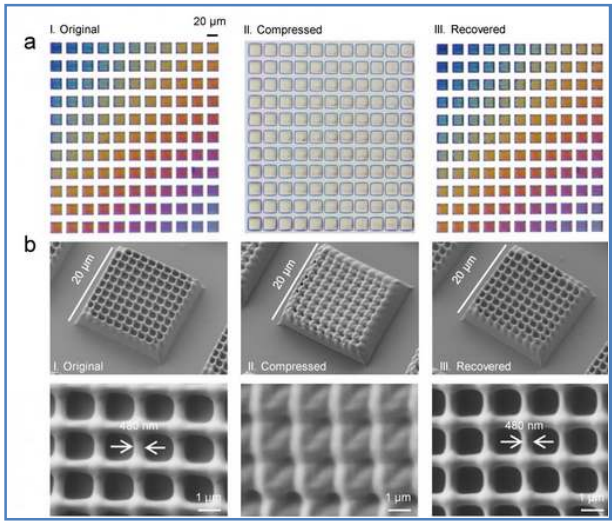
Sat, 23 Jan 2021

Research team extends 4-D printing to nanophotonics

The Singapore University of Technology and Design (SUTD) and its research collaborators have successfully demonstrated the four-dimensional (4-D) printing of shape memory polymers in submicron dimensions which are comparable to the wavelength of visible light. This novel development has allowed researchers to now explore new applications in the field of nanophotonics.

4-D printing enables 3-D printed structures to change its configurations over time and is used in a wide variety of fields such as soft robotics, flexible electronics, and medical devices.

Different materials such as hydrogels, liquid crystal elastomers and magnetic nanoparticles embedded resists along with corresponding printing methods like Direct Ink Writing (DIW), Polyjet, Digital Light Processing (DLP) lithography and Stereolithography (SLA) have been developed for 4-D printing. However, the material and patterning challenges inherent to these methods limit the resolution of 4-D printing to ~10 µm at best.



(a) Different colors as printed, compressed and recovered respectively, observed by the objective lens. (b) Tilted (30° tilt angle) and top view of SEM images before and after programming and after recovery. Credit: SUTD

To improve the resolution of 4-D printing, the research team developed a shape memory polymer (SMP) photoresist suitable for two-photon polymerization lithography (TPL). Integrating this newly developed resist with TPL, they investigated submicron 4-D printing of SMPs at which scale the printed structures can interact strongly with visible light. By programming with pressure and heat, the submicron structures can switch between colorless and colorful states (see image).

"It's remarkable that these 3-D printed nanostructures are able to recover their shapes and structural color after they've been mechanically flattened into a colorless, transparent state. This new resist that we've concocted allows for really fine structures to be printed while still retaining their properties as a shape memory polymer," said Associate Professor Joel K. W. Yang, principal investigator of the team from SUTD.

"By characterizing the photoresist, we printed the SMPs with ~300nm half pitch. The resolution is an order of magnitude higher than traditional high-resolution printing methods such as DLP and SLA. The dimensions of the structures can be conveniently controlled by varying the printing parameters such as laser power, write speed and nominal height," added Wang Zhang, first author and Ph.D. student from SUTD.

More information: Wang Zhang et al, Structural multi-colour invisible inks with submicron 4D printing of shape memory polymers, *Nature Communications* (2021). DOI: 10.1038/s41467-020-20300-2

Journal information: *Nature Communications*

https://phys.org/news/2021-01-team-d-nanophotonics.html

PHYS.ORG

Sat, 23 Jan 2021

Using the unpredictable nature of quantum mechanics to generate truly random numbers

By Bob Yirka

A team of researchers from the U.K., Germany and Russia has used the unpredictable nature of quantum mechanics to create a device capable of generating truly random numbers. In their paper published in the journal *Physical Review Letters*, the group describes using aspects of quantum theory to develop a framework for building a truly random number generator.

For many years, computer scientists have been looking for a way to generate truly random numbers—the random number generator found on most home and business computers is far from random due to hardware limitations. Random number generation is important because it forms the basis of cryptography. Messages that are encoded using numbers that are not truly random can be hacked given enough computing power. In this new effort, the researchers looked to the quantum world to create a truly random number generator.

Credit: CC0 Public Domain

Unlike the natural world around us, the quantum world has instances of true randomness—the unpredictable nature of photon behavior, for example. In this new effort, the researchers found a way to harness this unpredictability to build a truly random number generator.

The device built by the team consisted of a laser fired directed into one of the inputs of a generic beam splitter. The other input was kept void. This resulted in a zero signal. The outgoing beam was then measured using two independent detectors. In their setup, each of the photons arriving at the beam splitter had an even chance of being either transmitted or reflected, which meant that the difference between measurements taken by the detectors could not be predicted. Because of that, the numbers generated were truly random.

The researchers then took their work another step by measuring the states of the protons before they were split. That verified that the numbers generated by their device truly were random. The end result was a device capable of generating random numbers at a pace of 8.05 gigabits per second, each of which were certifiably random—all in real time. Remarkably, the device they built was made using off-the-shelf equipment.

More information: David Drahi et al. Certified Quantum Random Numbers from Untrusted Light, *Physical Review X* (2020). DOI: 10.1103/PhysRevX.10.041048

Journal information: *Physical Review X* , *Physical Review Letters*

https://phys.org/news/2021-01-unpredictable-nature-quantum-mechanics-random.html

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Sat, 23 Jan 2021

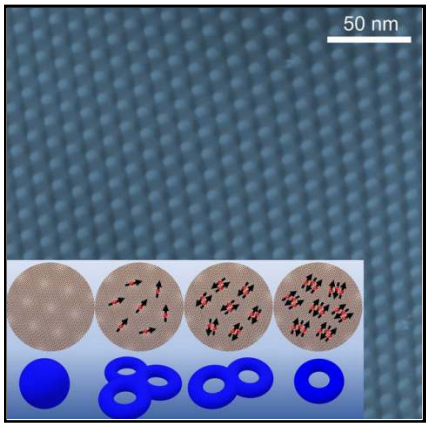
Specially oriented twisted bilayer graphene hosts topological electronic states

By Robert Perkins

A sheet of magic-angle twisted bilayer graphene can host novel topological phases of matter, a study has revealed.

Magic-angle twisted graphene, first discovered in 2018, is made from two sheets of graphene (a form of carbon consisting of a single layer of atoms in a honeycomb-like lattice pattern), layered atop one another, with one sheet twisted at precisely 1.05 degrees with respect to the other. The resulting bilayer has unusual electronic properties: for example, it can be made into an insulator or a superconductor depending on how many electrons are added.

The discovery launched a new field of research into magic-angle twisted graphene, known as "twistronics." At Caltech, Stevan Nadj-Perge, assistant professor of applied physics and materials science, has been among the researchers leading the charge: in 2019, he and his colleagues directly imaged the electronic properties of magic-angle twisted graphene at atomic-length scales; and in 2020, they demonstrated that superconductivity in twisted bilayer graphene can exist away from the magic angle when coupled to a two-dimensional semiconductor.



Real-space periodic potential in magic-angle twisted bilayer graphene imaged with scanning tunneling microscope. The inset shows the main result of the study: As more electrons illustrated by arrows are added to bilayer graphene, due to strong electronic correlations, the topology of the electronic bands changes in analogy to adding holes in the sphere. Credit: Stevan Nadj-Perge

Now, Nadj-Perge and his colleagues have found that magic-angle twisted bilayer graphene also has unexpected topological quantum phases. A paper about the work appears in the January 18 issue of *Nature*.

What are topological quantum phases and why are they important? Traditionally, materials are classified as either insulators, which impede the flow of electrons and thus do not conduct electricity; metals, which conduct electricity well; and semiconductors, which conduct electricity between metals and insulators.

However, when strong magnetic fields are applied to the various types of materials, the behavior of electrons through them is modified, producing other possible states—or topological quantum phases. For example, under strong magnetic fields, the bulk of a material can become insulating while the surfaces (or edges, in the case of a two-dimensional material) are highly conductive. Theoretically, topological quantum phases could have many applications, including in quantum information processing.

In the new work, Nadj-Perge and colleagues used scanning tunneling microscopy to directly image twisted bilayer graphene with atomic resolution, and found that the strong interactions between electrons in twisted bilayer graphene enable the emergence of these topological phases without the need for a strong magnetic field. They also studied graphene twisted to alternative angles, but found the new topological phases to be present only at the magic angle.

"The discovery of topological phases in magic-angle twisted bilayer graphene opens up yet another chapter about this amazing material and brings us closer to understanding its electronic properties." says Nadj-Perge, corresponding author of the paper. "Most importantly, however, our findings also point toward new ways of engineering topological phases that can be pursued in the future." These materials could, in theory, have many applications; for example, certain excitations

of topological phases could be used to perform information processing in future quantum computers.

Their paper is titled "Correlation-driven topological phases in magic-angle twisted bilayer graphene."

More information: Youngjoon Choi et al. Correlation-driven topological phases in magic-angle twisted bilayer graphene, *Nature* (2021). DOI: 10.1038/s41586-020-03159-7

Journal information: *Nature*

https://phys.org/news/2021-01-specially-bilayer-graphene-hosts-topological.html

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Sat, 23 Jan 2021

Researchers propose new method for accurate measurement of electro-optic coefficient

By Zhang Nannan

Recently, researchers from the Shanghai Institute of Optics and Fine Mechanics (SIOM) of the Chinese Academy of Sciences (CAS) have proposed a novel measurement method of the electro-optic (EO) coefficient based on the $\chi^{(2)}$ nonlinear optical technology to measure the linear EO coefficients of KH_2PO_4 (KDP) and $K(H_{1-x}D_x)_2PO_4$ (DKDP) precisely. Relevant results were published in *Optics Express* on Jan. 18, 2021.

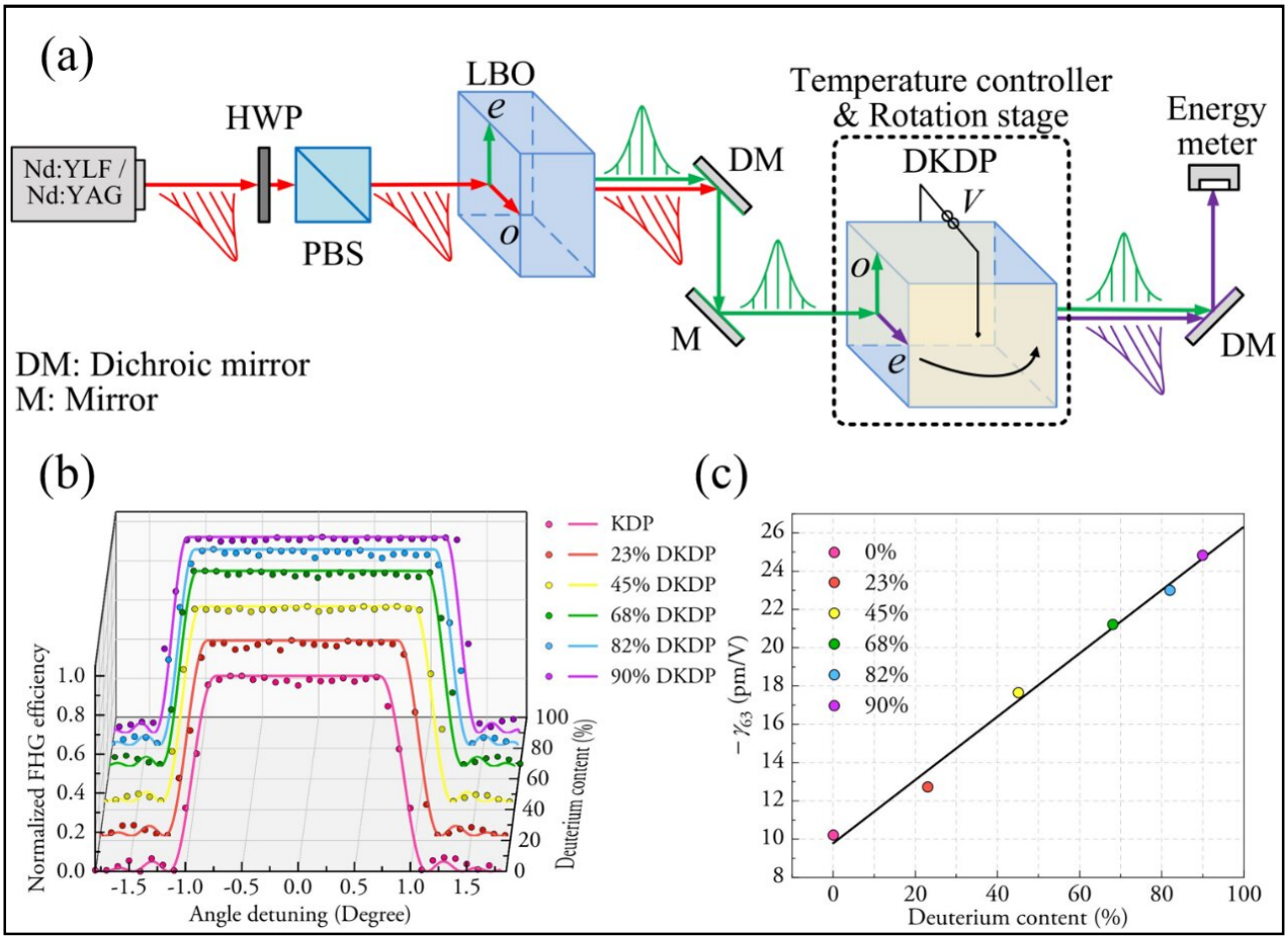

Fig.1 (a) experiment setup for measuring the linear EO coefficient of K(H1-xDx)2PO4 crystals; (b) FHG characteristics of different deuterium content DKDP crystals based on the VTPM; (c) Linear EO coefficients of K(H1-xDx)2PO4 crystals. Credit: SIOM

Current studies and applications of the EO effect of KDP-family crystals mainly focus on KDP and DKDP with high deuterium content. For the partially deuterated KDP crystals, their EO coefficients are sporadically reported, although they have crucial applications in many fields. Meanwhile, the existing EO coefficient measurement methods are mainly based on the linear optical effect, which requires the laser to strictly keep the stability of polarization in the whole measurement system.

In this study, the researchers presented a novel method utilizing the $\chi^{(2)}$ nonlinear optical technology. This measurement only depends on the nonlinear process in nonlinear materials, and other transfer processes will not affect it.

Based on this method, the linear EO coefficients of a series of different deuterated KDP crystals were measured precisely, and a conclusion formula for determining the linear EO coefficients of DKDP crystals with different deuterium content was given.

Moreover, the stability of output fourth harmonic generation (FHG) energy can be greatly improved by using the EO properties of crystals, which provides important references for the deep ultraviolet laser generation and expanding the application of KDP-family crystals in the field of laser technology and nonlinear optics.

More information: Ziming Sun et al. Electro-optic coefficient measurement of a $K(H_{1-x}D_x)_2PO_4$ crystal based on $\chi^{(2)}$ nonlinear optical technology, *Optics Express* (2021). DOI: 10.1364/OE.415262

Journal information: *Optics Express*

https://phys.org/news/2021-01-method-accurate-electro-optic-coefficient.html

COVID-19 Research News

mint

Sun, 24 Jan 2021

Canadian study says oral medicine effective in treating Covid-19

- ***The study results show that colchicine reduced by 21 percent the risk of death or hospitalizations in patients with Covid-19***
- ***The study was carried out in Canada, the US, Europe and South America among a population of 4,488 patients***

A major clinical trial shows that an inflammatory drug called colchicine is effective in treating Covid-19 and reduces the risk of complications from the disease, doctors in Canada said.

The results of the study are a "major scientific discovery" and make colchicine -- a medicine used to treat gout -- "the world's first oral drug that could be used to treat non-hospitalized patients with Covid-19," the Montreal Heart Institute said in a statement late Friday.

The study results show that colchicine reduced by 21 percent the risk of death or hospitalizations in patients with Covid-19 compared to placebo, the institute said.

The study was carried out in Canada, the US, Europe and South America among a population of 4,488 patients.

A healthcare worker in protective gear speaks with a person standing in line to enter a Covid-19 testing site in Montreal, Quebec, Canada (Bloomberg)

In 4,159 of these patients, in whom the diagnosis of Covid-19 was proven by a naso-pharyngeal PCR test, use of colchicine reduced hospitalizations by

25 percent, the need for mechanical ventilation by 50 percent, and deaths by 44 percent, the study concluded.

Colchicine is effective in preventing dangerous inflammatory syndromes called "cytokine storms" and reducing complications associated with Covid-19, said Dr Jean-Claude Tardif, director of the MHI Research Center and principal investigator in this study.

"We are pleased to offer the first oral medication in the world whose use could have a significant impact on public health and potentially prevent Covid-19 complications for millions of patients," Tardif said.

The study was conducted among Covid-19 patients not hospitalized at the time of enrollment in the trial, and with at least one risk factor for Covid-19 complications.

"This is the world's largest study testing an orally administered drug in non-hospitalized patients with Covid-19," the heart institute said.

(This story has been published from a wire agency feed without modifications to the text.)

https://www.livemint.com/news/world/canadian-study-says-oral-medicine-effective-in-treating-covid19-11611423303706.html