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समाचार पत्रों से चयित अंश Newspapers Clippings

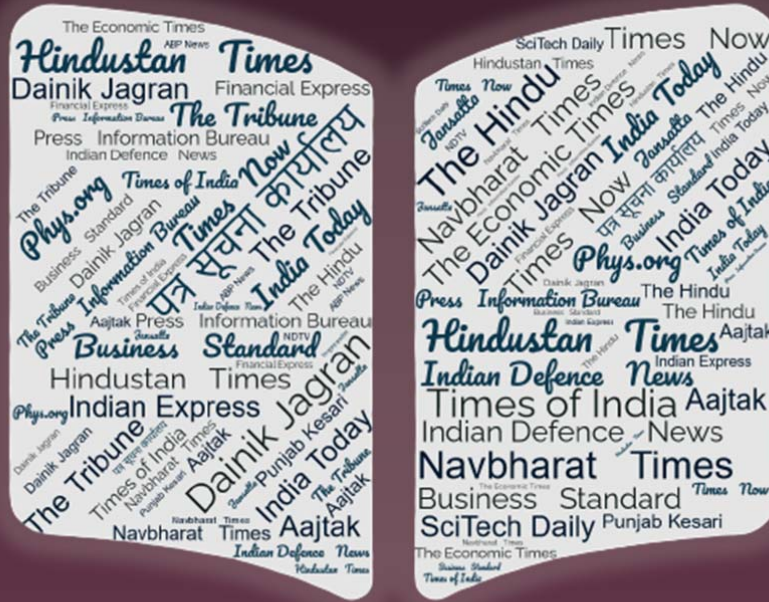
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नवभारत टाइम्स

शुक्रवार, 23 अक्टूबर 2022

भारत ने किया 'अग्नि प्राइम' मिसाइल का सफल परीक्षण, जानिए डिटेल

भारत ने शुक्रवार को देश में ही विकसित नई पीढ़ी की मध्यम दूरी की बैलिस्टिक मिसाइल 'अग्नि प्राइम' का ओडिशा के तट से सफल परीक्षण किया। रक्षा अनुसंधान व विकास संगठन (डीआरडीओ) के सूत्रों ने यह जानकारी दी। उन्होंने बताया कि मिसाइल एपीजे अब्दुल कलाम आयलैंड स्थित सचल लांचर से पूर्वाहन नौ बजकर 45 मिनट पर दागी गई। सूत्रों ने बताया कि ठोस ईंधन युक्त मिसाइल ने तय सभी मानकों को परीक्षण के दौरान प्राप्त किया।

अधिकारियों ने बताया कि मिसाइल के पूरे रास्ते की निगरानी राडार से की गई और दूरमापी उपकरण विभिन्न स्थानों पर लगाए गए थे। उन्होंने बताया कि यह मिसाइल एक हजार से दो हजार किलोमीटर तक के लक्ष्य को भेद सकती है। सूत्रों ने बताया कि इस मिसाइल का पिछला परीक्षण गत 18 दिसंबर को एपीजे अब्दुल कलाम आयलैंड से ही किया गया था, जो सफल रहा था।

<https://navbharattimes.indiatimes.com/india/agni-prime-new-generation-ballistic-missile-successfully-testfired-by-india/articleshow/95013690.cms>



शुक्रवार, 23 अक्टूबर 2022

भारत ने बैलिस्टिक मिसाइल अग्नि प्राइम का किया परीक्षण, दो हजार किलोमीटर तक के लक्ष्य को भेदने में सक्षम

भारत ने शुक्रवार (21 अक्टूबर) को देश में ही विकसित नयी पीढ़ी की मध्यम दूरी की बैलिस्टिक मिसाइल 'अग्नि प्राइम' का ओडिशा (Odisha) के तट से सफल परीक्षण किया. रक्षा अनुसंधान एवं विकास संगठन (DRDO) के सूत्रों ने यह जानकारी दी. उन्होंने बताया कि मिसाइल एपीजे अब्दुल कलाम आयलैंड स्थित सचल लांचर से सुबह नौ बजकर 45 मिनट पर दागी गई. सूत्रों ने बताया कि ठोस ईंधन युक्त मिसाइल ने तय सभी मानकों को परीक्षण के दौरान प्राप्त किया.

अधिकारियों ने बताया कि मिसाइल के पूरे रास्ते की निगरानी राडार से की गई और दूरमापी उपकरण विभिन्न स्थानों पर लगाए गए थे. उन्होंने बताया कि यह मिसाइल एक हजार से दो हजार किलोमीटर तक के लक्ष्य को भेद सकती है. सूत्रों ने बताया कि इस मिसाइल का पिछला परीक्षण गत 18 दिसंबर को एपीजे अब्दुल कलाम आइलैंड से ही किया गया था, जो सफल रहा था.

पहले भी हुए दो परीक्षण

अधिकारियों ने कहा कि यह मिसाइल स्वदेशी अग्नि मिसाइल का अपग्रेड वर्जन है. इस मिसाइल परीक्षण के दौरान अपनी अधिकतम रेंज पर सटीक निशाने पर फायर किया. इससे पहले इस मिसाइल के दो परीक्षण हुए थे. यह इसका तीसरा परीक्षण था, जिसमें यह खरी उतरी है. अग्नि प्राइम डबल स्टेज और सॉलिड फ्यूल पर आधारित मिसाइल है. इसको एडवांस रिंग लेजर गैरॉस्कोप पर आधारित नेविगेशन सिस्टम द्वारा निर्देशित किया जाता है. इसका गाइडेड सिस्टम इलेक्ट्रो मैकेनिकल एक्यूटर से पूरी तरह से लैस है.

परमाणु क्षमता से लैस

अग्नि प्राइम मिसाइल एक हजार से दो हजार किमी की रेंज पर निशाना साधने में पूरी तरह से सक्षम है. इसके इलावा अग्नि प्राइम मिसाइल MIRV (Multiple Independently Targetable Teentry Vehicle) टेक्नोलॉजी से भी लैस है. जो इसकी कार्य क्षमता को और अधिक बढ़ा देती है. इस मिसाइल में यह टेक्नोलॉजी इसे एक बार में कई परमाणु हथियार ले जाने में सक्षम बनाती है, जिसके जरिए अलग-अलग टारगेट को साधा जा सकता है.

भारत में अब तक अग्नि मिसाइल सिस्टम के कई वर्जन बन चुके हैं. अग्नि मिसाइल भारत में तैयार और विकसित की गई बैलिस्टिक मिसाइल है. यह परमाणु क्षमता से भी लैस है. इसके अलावा यह बैलेस्टिक मिसाइल सतह से सतह पर मार करने में भी सक्षम है.

<https://www.abplive.com/news/india/india-tests-ballistic-missile-agni-prime-capable-of-hitting-targets-up-to-two-thousand-kilometers-2243086>



Fri, 21 Oct 2022

India Successfully Test Fires Medium-Range Ballistic Missile

India on Friday successfully test-fired indigenously-developed new generation medium-range ballistic missile Agni Prime from the Odisha coast, Defence Research and Development Organisation (DRDO) sources said. The sleek missile was test fired from a mobile launcher from the APJ Abdul Kalam Island around 9.45 a.m., they said. The solid-fuelled canisterised missile met all mission parameter during the test, they added.

All its navigation was tracked and monitored by radars and telemetry equipment positioned along various points, the officials said.

The missile's strike range is between 1,000 km and 2,000 km, they said.

The last trial of the missile was conducted on December 18 last year from the same base, which was also successful.

<https://www.thehindu.com/news/national/india-successfully-test-fires-medium-range-ballistic-missile/article66040035.ece>

अमर उजाला

शुक्रवार, 21 अक्टूबर 2022

IIT BHU और DRDO का समझौता: रक्षा क्षेत्र के उत्पादों के लिए विदेशों पर निर्भरता होगी कम, जल्द बनेगा डीआईए-सीओई

भारतीय प्रौद्योगिकी संस्थान (बीएचयू) वाराणसी में जल्द ही डीआरडीओ उद्योग अकादमी-उत्कृष्टता केंद्र (डीआईए-सीओई) की स्थापना होगी। इसके लिए आईआईटी (बीएचयू) और डीआरडीओ के मध्य गुरुवार को गुजरात के गांधीनगर में आयोजित डेफएक्सपो-2022 में समझौता पत्र पर हस्ताक्षर हुआ। संस्थान के निदेशक प्रो. प्रमोद कुमार जैन ने माननीय रक्षा

मंत्री श्री राजनाथ सिंह जी, रक्षा मंत्री के वैज्ञानिक सलाहकार डॉ जी सतीश रेड्डी की उपस्थिति में डीआरडीओ के अध्यक्ष डॉ समीर वी कामत के साथ समझौता ज्ञापन का आदान-प्रदान किया। इस अवसर पर श्री हरि बाबू श्रीवास्तव महानिदेशक (प्रौद्योगिकी प्रबंधन) डीआरडीओ और कई अन्य गणमान्य व्यक्ति उपस्थित रहे।

इस संबंध में संस्थान के निदेशक प्रोफेसर प्रमोद कुमार जैन ने बताया कि इस केंद्र का फोकस भारत के रक्षा आयात को कम करने और रक्षा क्षेत्र में भारत आत्मनिर्भर बनाने के लिए स्वदेशी रक्षा प्रौद्योगिकियों को बढ़ावा देना होगा। यह माननीय प्रधान मंत्री के 'आत्मनिर्भर भारत' के सपने के अनुरूप रक्षा क्षेत्र को आत्मनिर्भर और टिकाऊ बनाने की दिशा में एक बड़ा कदम है। संस्थान एक डीआरडीओ उद्योग अकादमी-उत्कृष्टता केंद्र (डीआईए-सीओई) स्थापित करने जा रहा है। इस केंद्र का प्रारंभिक चरण तीन कार्यक्षेत्रों के तहत अनुसंधान समस्याओं में तेजी लाने पर ध्यान केंद्रित करेगा - पाउडर धातु विज्ञान, कार्यात्मक इलेक्ट्रॉनिक्स सामग्री और उच्च शक्ति माइक्रोवेव स्रोत और उपकरण।

इन अनुसंधान क्षेत्रों की पहचान वर्तमान रक्षा संबंधी चुनौतियों और मुद्दों के प्रति तत्काल समर्थन की दृष्टि से की गई थी। डीआईए-सीओई के तहत, डीआरडीओ पहचान किए गए कार्यक्षेत्रों के तहत प्रौद्योगिकी विकास कार्यक्रमों के लिए आवश्यक प्रमुख तकनीकी सुविधाओं और बुनियादी ढांचे की स्थापना करेगा। उन्होंने आगे बताया कि यह केंद्र लक्ष्य उन्मुख अनुसंधान को प्रेरित करेगा और यह रक्षा क्षेत्र के उन उत्पादों को वितरित करने का मार्ग खोलेगा जो विदेशों से आयात किए जाते हैं।

डीआरडीओ रक्षा क्षेत्र में अपनी ताकत के लिए जाना जाता है और आईआईटी (बीएचयू) वाराणसी रक्षा जरूरतों के लिए अत्याधुनिक तकनीकों के तकनीकी समाधानों का पूरक और समर्थन प्रदान करेगा। यह उत्कृष्टता केंद्र डीआरडीओ वैज्ञानिकों और संस्थान के संकाय सदस्यों के बीच सहयोग स्थापित करने के लिए एक मजबूत मंच प्रदान करेगा और रक्षा क्षेत्र के विकास और विकास पर बहुत प्रभाव डालेगा। डेफएक्सपो-2022 के दौरान पूर्व राष्ट्रपति और प्रख्यात वैज्ञानिक डॉ एपीजे अब्दुल कलाम को श्रद्धांजलि के रूप में आयोजित एक नवाचार प्रतियोगिता में डॉ राकेश कुमार सिंह, भौतिकी विभाग, आईआईटी (बीएचयू) वाराणसी को डेयर 2 ड्रीम 3 प्रतियोगिता में व्यक्तिगत श्रेणी में दूसरा पुरस्कार भी दिया गया। डेयर 2 ड्रीम 3 एक ऐसी प्रतियोगिता है जो उभरती प्रौद्योगिकियों में प्रमुख चुनौतियों को हल करने के लिए विचारों को आमंत्रित करता है जो भारत की रक्षा और एयरोस्पेस क्षमताओं को बढ़ावा देने में मदद कर सकते हैं।

<https://www.amarujala.com/uttar-pradesh/varanasi/iit-bhu-and-drdo-agreement-dependence-on-foreign-countries-for-defense-products-will-be-reduced?pageId=2>

IIT Hyderabad and DRDO to Work Together on Advanced Technologies, Collaborate with Industry

The new DRDO Industry Academia Center of Excellence (DIA-CoE) at the Indian Institute of Technology Hyderabad (IITH) will work on seven broad domains and engage other academic institutions, technology centres, start-ups and industries in the country, a press release from the institute said Saturday. The IITH has inked a memorandum of understanding (MoU) with the Defence Research and Development Organisation (DRDO) to set up the DIA-CoE. It envisions working in domains such as ultra-high-temperature materials for hypersonic vehicles, artificial intelligence for missile and missile defence, technologies for space application, adaptive imaging and image processing, nanoornithopter technologies, seeker and homing technologies, and additive manufacturing, among others.

Dr Samir V Kamat, chairman of DRDO and secretary of DDR&D (Department of Defence Research and Development), exchanged the MoU with Prof BS Murty, director, IITH, for setting up the DIA-CoE at the institute's campus in the presence of Defence Minister Rajnath Singh during DefExpo22 at Gandhinagar on October 20. Prof Murty said the institute is committed to serving humanity through invention and innovation in technology. "DIA-CoE is another indication of the high Innovation Quotient we are known for. IITH is among a few IITs that has been trusted for its capabilities and adored this unique opportunity to serve the nation profoundly."

According to the statement, as part of the DRDO cell established on campus in 2021, which worked as a satellite centre for the RIC-Chennai (IIT Madras Research park), IITH faculty and several DRDO scientists put tireless efforts in first drafting the proposals to cater to the exact requirement of the Defence sector. Many proposals in various areas, ranging from additive manufacturing to sensor design, and artificial intelligence to space technologies, were submitted, and 13 proposals worth several crores of rupees were quickly sanctioned. "The DIA-CoE will take this initiative to a higher level and enable IITH, DRDO, and the industry to contribute to nation-building," the press release said.

<https://indianexpress.com/article/cities/hyderabad/iit-hyderabad-drdo-work-advanced-technologies-collaborate-industry-8224992/>



शुक्रवार, 23 अक्टूबर 2022

DRDO के साथ रिसर्च करेंगे IIT जोधपुर के छात्र, राजनाथ सिंह की मौजूदगी में एमओयू पर हस्ताक्षर

भारतीय प्रौद्योगिकी संस्थान (IIT) जोधपुर ने रक्षा अनुसंधान और विकास संगठन (डीआरडीओ) के साथ एक सहमति करार कर एमओयू पर हस्ताक्षर किए. इसके तहत आईआईटी जोधपुर में डीआरडीओ-इंडस्ट्री-एकेडेमिया उत्कृष्टता का केंद्र (डीआईए-सीओई, आईआईटी जोधपुर) स्थापित किया जाएगा. गांधीनगर में रक्षा मंत्री राजनाथ सिंह (Rajnath Singh) की मौजूदगी में प्रोफेसर शांतनु चौधरी, निदेशक, आईआईटी जोधपुर और डीआरडीओ गांधीनगर के सचिव ने सहमति करार किए.

सहमति करार से मजबूत संबंध बनेगा

आईआईटी जोधपुर के निदेशक प्रो शांतनु चौधरी ने बताया कि इस सहमति करार से आईआईटी जोधपुर और उद्योग जगत के बीच मजबूत संबंध बनेगा. इसके तहत रक्षा क्षेत्र में आत्मनिर्भर भारत के लिए प्रौद्योगिकी का विकास किया जाएगा. यह केवल वर्तमान भारत के लिए नहीं बल्कि पूरी दुनिया के लिए भावी प्रौद्योगिकियों के विकास में सहायक होगा जो आधुनिक युद्धक्षेत्र की व्यावहारिक जरूरतों को पूरा करने के लिए प्रेरित होगा.

डीआरडीओ के अनुदान से स्थापित आईआईटी जोधपुर में उत्कृष्टता का केंद्र दोनों संगठनों के सहयोग से निर्धारित कार्य क्षेत्रों का अनुसंधान करेगा. डीआरडीओ की विभिन्न प्रयोगशालाओं के सहयोग और फिर उद्योग जगत और अन्य शैक्षिक अनुसंधान संस्थानों के साथ मिल कर आईआईटी जोधपुर के फैकल्टी और छात्र शोध करेंगे. सेंटर ऑफ एकसीलेंस में मुख्य रूप से निम्नलिखित कार्यक्षेत्रों में लक्षित अनुसंधान किए जाएंगे. डेजर्ट वेलफेयर टेक्नोलॉजीज, फ्यूचरिस्टिक ओमनी मोबिलिटी सिस्टम्स, इन्फॉर्मेशन और वारगेमिंग टेक्नोलॉजी के लिए आर्टिफिशियल इंटेलिजेंस, के साथ ही यह सेंटर डीआरडीओ के निर्धारित विज्ञान एवं प्रौद्योगिकी पहलों पर भी कार्य करेगा.

DRDO के सामने सबसे अच्छा विकल्प बना जोधपुर IIT

आईआईटी जोधपुर विभिन्न रणनीति और युद्ध कौशल से सीधे जुड़े कई डोमेन में विशेषज्ञता रखता है. जैसे कि डेजर्ट ऑपरेशंस के लिए टेक्नोलॉजीज, आर्टिफिशियल इंटेलिजेंस, ऑगमेंटेड

रियलिटी, वर्चुअल रियलिटी, मोबिलिटी, स्वदेशी और विशिष्ट प्रौद्योगिकियों के विकास में उपयोगी रोबोटिक्स.

ये वारगेमिंग, सूचना युद्ध और फ्युचरिस्टिक ओमनी मोबिलिटी सिस्टम जो जमीन, हवा और पानी जैसे विभिन्न भौगोलिक क्षेत्रों में कार्य करने में सक्षम हैं. आईआईटी जोधपुर अपने इन गुणों की वजह से सीओई की स्थापना के लिए डीआरडीओ के सामने सबसे अच्छा विकल्प बन गया.

डीआईए-सीओई, आईआईटी जोधपुर के प्रमुख एक निदेशक होंगे. निदेशक की नियुक्ति सेंटर का एक शासी निकाय करेगा जिसके अध्यक्ष डीआरडीओ के अध्यक्ष होंगे और आईआईटी जोधपुर के निदेशक सह-अध्यक्ष होंगे. शासी निकाय के सदस्य आईआईटी जोधपुर के निदेशक के नामित वरिष्ठ शिक्षाविद, आईआईटी जोधपुर के डीन (शोध एवं विकास) और रजिस्ट्रार होंगे. अनुसंधान सलाहकार बोर्ड में आईआईटी जोधपुर के सदस्य भी होंगे.

<https://www.abplive.com/states/rajasthan/jodhpur-iit-and-drdo-sign-mou-agreement-signed-in-presence-of-rajnath-singh-ann-2243300>



Fri, 21Oct 2022

IIT Jodhpur and DRDO Set up DRDO-Industry-Academia Centre of Excellence

Indian Institute of Technology, Jodhpur has collaborated with DRDO to set up DRDO-Industry-Academia Centre of Excellence. The newly setup Centre of Excellence will help students to pursue directed research in different verticals. The MoU was exchanged between Prof. Santanu Chaudhary, Director, IIT Jodhpur, and Secretary, DRDO, at Gandhinagar in the presence of Rajnath Singh, Defence Minister of the country. The Centre of Excellence at IIT Jodhpur which is funded by DRDO will carry out directed research in verticals as identified jointly by both the bodies. The research will be carried out by the faculty members and students of IIT Jodhpur in collaboration with different laboratories of DRDO as well as Industry and other academic/ research institutes, read the statement issued by the Institute.

Furthermore, the Centre of Excellence will primarily pursue directed research in the identified verticals including- Desert Welfare Technologies, Futuristic Omni Mobility Systems and Artificial Intelligence for Information and Wargaming Technologies. Along with this, the Centre will also undertake science & technology initiatives as identified by DRDO. According to the press statement, the Centre will be headed by a Director who will be appointed by the Governing Council of the Centre which is Chaired by the Chairman DRDO and co-chaired by the Director, IIT Jodhpur.

<https://www.hindustantimes.com/education/news/iit-jodhpur-and-drdo-set-up-drdo-industry-academia-centre-of-excellence-101666344003540.html>

IIT Kanpur के विज्ञानी DRDO के साथ मिलकर करेंगे शोधकार्य, गांधीनगर में चल रहा Defence Expo

रक्षा उत्पादों में देश को आत्मनिर्भर बनाने के लिए भारतीय प्रौद्योगिकी संस्थान (आइआइटी) कानपुर के विज्ञानी अब रक्षा अनुसंधान विकास संगठन (डीआरडीओ) के विज्ञानियों के साथ मिलकर शोधकार्य करेंगे।

गांधीनगर में चल रही रक्षा प्रदर्शनी (डिफेंस एक्सपो) के तीसरे दिन गुरुवार को रक्षा मंत्री राजनाथ सिंह की मौजूदगी में आइआइटी के निदेशक प्रो. अभय करंदीकर व डीआरडीओ के अधिकारियों के बीच एमओयू (करार) पर हस्ताक्षर हुए।

डिफेंस एक्सपो में देश के विभिन्न रक्षा संस्थानों, इकाइयों के अलावा विभिन्न भारतीय प्रौद्योगिकी संस्थानों की ओर से विकसित रक्षा संबंधी उत्पादों का भी प्रदर्शन किया जा रहा है।

गुरुवार को रक्षा मंत्री राजनाथ सिंह ने इन तकनीक को देखकर भारतीय प्रौद्योगिकी संस्थानों में किए जा रहे कार्यों की सराहना की और तकनीक संस्थानों में हो रहे शोधकार्यों को उत्पाद के रूप में धरातल पर लाने को डीआरडीओ को कदम बढ़ाने के लिए कहा।

संस्थान के निदेशक प्रो. अभय करंदीकर के मुताबिक डिफेंस एक्सपो में कई और समझौते भी हुए हैं, जिसके तहत देश को रक्षा क्षेत्र में आत्मनिर्भर बनाने में मदद मिलेगी। आइआइटी कानपुर में एडवांस मैटीरियल एंड फ्लेक्सिबल इलेक्ट्रॉनिक्स पर अब अनुसंधान शुरू होगा।

यही नहीं, अन्य कई क्षेत्रों में शोधकार्यों के लिए आइआइटी का रुड़की, खड़गपुर, बीएचयू, जोधपुर स्थित आइआइटी और हैदराबाद स्थित ट्रिपल आइटी के साथ भी करार हुआ है।

<https://www.jagran.com/uttar-pradesh/kanpur-city-scientists-from-iit-kanpur-will-do-research-work-in-collaboration-with-drdo-scientists-23155039.html>



**Press Information Bureau
Government of India**

Ministry of Defence

Fri, 21 Oct 2022

16 Licensing Agreements for Transfer of Technology for 10 Indigenous Technologies Handed over to 13 Industries by DRDO during ‘Bandhan’ Ceremony of DefExpo 2022

Defence Research & Development Organisation (DRDO) handed over 16 Licensing Agreements for Transfer of Technology (LAToT) for 10 DRDO-developed technologies to 13 industries during the ‘Bandhan’ ceremony of the 12th DefExpo in Gandhinagar, Gujarat on October 20, 2022. RakshaMantriShriRajnath Singh presided over the ceremony, which saw a total of 451 Memoranda of Understanding, Transfer of Technology agreements and Product Launches. Of the 451, there were 345 MoUs, 42 Major Announcements, 46 Product Launches and 18 ToTs. The contribution of Gujarat was 28 MoUs and one Product Launch. It envisages investment worth Rs 1.5 lakh crore. Indian Air Force and Hindustan Aeronautics Limited concluded a contract for 70 HTT-40 indigenous trainer aircraft worth Rs 6,800 crore.

The technologies transferred by DRDO are from the area of electronics, laser technology, armaments, material science, combat vehicles, naval systems and sensors etc. The products include Handheld Ground Penetrating Radar (GPR), Unexploded Ordnance Handling Robot (UXOR), Semi-Solid Metal (SSM) Processing Technology for Aluminum Alloys, High Oxidative and Thermal Stability Oil (DMS Hots Oil-I), Nuclear Shielding Pads for Combat Vehicles, 120mm Tandem Warhead System for Anti-Tank Application, High Energy Material (TNSTAD), Laser-Based End Game Fuze, Multi-kW Laser Beam Directing Optical Channel (BDOC), SHAKTI EW System. These high-technology products will provide impetus to ‘Aatmanirbhar Bharat’ drive of the Government and boost the defence manufacturing sector through self-reliance, besides enhancing the operational capabilities of the Armed Forces.

Gujarat Governor ShriAcharyaDevvrat, RakshaRajyaMantriShri Ajay Bhatt, Chief of Defence Staff General Anil Chauhan, Chief of the Air Staff Air Chief Marshal VR Chaudhari, Chief of the Naval Staff Admiral R Hari Kumar, Chief of the Army Staff General ManojPande, Defence Secretary Dr Ajay Kumar and OSD, Department of DefenceShriGiridharAramane were among those who attended the ceremony.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1870041>

DRDO Hands Over Licensing Agreements for Transfer of its Technology to 13 Industries

Defence Research & Development Organisation (DRDO) handed over 16 Licensing Agreements for Transfer of Technology (LAToT) for 10 DRDO-developed technologies to 13 industries during the 'Bandhan' ceremony of the 12th DefExpo in Gandhinagar, Gujarat, the Ministry of Defence said in a statement on Friday. "Defence Minister Rajnath Singh presided over the ceremony, which saw a total of 451 Memoranda of Understanding, Transfer of Technology agreements and Product Launches. Of the 451, there were 345 MoUs, 42 Major Announcements, 46 Product Launches and 18 ToTs," the ministry said in a press release. The contribution of Gujarat was 28 MoUs and one Product Launch. It envisages investment worth Rs. 1.5 lakh crore. Indian Air Force and Hindustan Aeronautics Limited concluded a contract for 70 HTT-40 indigenous trainer aircraft worth Rs. 6,800 crore. The technologies transferred by DRDO are from the area of electronics, laser technology, armaments, material science, combat vehicles, naval systems and sensors etc.

"The products include Handheld Ground Penetrating Radar (GPR), Unexploded Ordnance Handling Robot (UXOR), Semi-Solid Metal (SSM) Processing Technology for Aluminum Alloys, High Oxidative and Thermal Stability Oil (DMS Hots Oil-I), Nuclear Shielding Pads for Combat Vehicles, 120mm Tandem Warhead System for Anti-Tank Application, High Energy Material (TNSTAD), Laser-Based End Game Fuze, Multi-kW Laser Beam Directing Optical Channel (BDOC), SHAKTI EW System," the ministry said. These high-technology products will provide impetus to 'Aatmanirbhar Bharat' drive of the Government and boost the defence manufacturing sector through self-reliance, besides enhancing the operational capabilities of the Armed Forces. Gujarat Governor AcharyaDevvrat, MoSDefence Ajay Bhatt, Chief of Defence Staff General Anil Chauhan, Chief of the Air Staff Air Chief Marshal VR Chaudhari, Chief of the Naval Staff Admiral R Hari Kumar, Chief of the Army Staff General ManojPande, Defence Secretary Ajay Kumar and OSD, Department of DefenceGiridharAramane were among those who attended the ceremony.

<https://www.livemint.com/news/india/drdo-hands-over-licensing-agreements-for-transfer-of-its-technology-to-13-industries/amp-11666358810782.html>



LCA to be Integrated with Lighter BrahMos-NG Supersonic Cruise Missile in Few Years

In few years from now, the indigenous Light Combat Aircraft (LCA) Tejas will be able to carry and launch the BrahMos supersonic cruise missile. This will be possible once the lighter version

of the supersonic cruise missile, BrahMos-NG (next generation), is ready, according to the company officials. “The BrahMos-NG development is expected to make first flight in two years and will be ready for production in 2-3 years after that, according to a BrahMos official. The focus of the development as of now is on the air-launched version,” a BrahMos official said on the sidelines of DefExpo-2022. “The NG will weigh almost half as much as the current air-launched version, making it possible to be mounted on the LCA in future, the official said. Stating that during the development phase it is being integrated on the Su-30MKI, the official said it would later be integrated on the LCA and also other fighters of the Air Force. The current air-launched missile weighs 2.65 tonnes, which will come down to 1.33 tonnes with the NG. With this, a SU-30MKI will be able to carry up to four BrahMos-NG missiles, while the LCA can carry two missiles, the official added.

BrahMos is a joint venture between DRDO and Russia’s NPO Mashinostroyeniya and the missile derives its name from Brahmaputra and Moskva rivers. The missile is capable of being launched from land, sea, sub-sea and air against surface and sea-based targets and has been long inducted by the Indian armed forces. The range of the missile was originally capped at 290 km as per obligations of the Missile Technology Control Regime (MTCR). Following India’s entry into the club in June 2016, DRDO officials had stated that the range would be extended to 450 km and to 600 km at a later stage. The ER version has been tested several times both by the Navy and IAF.

<https://www.thehindu.com/news/national/lca-to-be-integrated-with-lighter-brahmos-ng-supersonic-cruise-missile-in-few-years/article66040783.ece>

DRDO on Twitter





Defence News

DefExpo 2022 News



Press Information Bureau
Government of India

Ministry of Defence

Sat, 22 Oct 2022

NCC Cadets Showcase Tech Innovations at DefExpo 2022 for the First Time Ever; Display Potential to Support R&D in Defence; Visitors Throng Their Stall

In a first, National Cadet Corps (NCC) cadets of Bihar & Jharkhand Directorate participated as exhibitors during the 12th DefExpo in Gandhinagar, Gujarat and displayed three advanced technology prototypes, showcasing the might of the largest uniformed youth organisation in the world. The three prototypes were:

UAV: Designed and developed by the cadets, it is a versatile platform which can be used for tactical missions ranging from counter insurgency/counter terrorist operations for reconnaissance using remotely controlled cameras. It can also be used as a destroyer using GPS. The UAV is a highly economical version and can be easily made for training purposes as well for defence. Currently, the overall weight of the UAV is 1kg and it can carry a payload of around 0.7 Kgs. “The current version of the UAV can be well utilised for training army and air force personnel. We will be shortly coming up with an upgraded version,”, said UO Somya Garg, NCC, BIT Mesra and a 4th Year Mechanical Engg. Student.

All-Terrain Vehicle: Developed and designed for all terrain mobility, it is most suitable for last mile connectivity in extreme rugged terrain to deliver ammunition and supplies and can also be used for patrolling and search and destroy operations. It has features like all wheel independent suspension and can withstand a free fall of six feet. The ATV is capable of towing vehicles upto 1500 kg. “The vehicle can be well utilised for defence applications,”, said Cdt. Harsh Rana, NCC, BIT Mesra and a 4th Year Chemical Engg. Student. “Being a part of the ATV team, I feel proud and my exposure to DefExpo 2022 will help me to further upgrade the ATV based on the requirement,”, said Cdt Aditya Kumar, NCC, BIT Mesra and a 2nd Year Mechanical Engg. Student

Hand gesture sensing BOT: Remotely controlled robot which can find multifarious military uses without exposure of soldiers to enemy. “I received a lot of compliments from senior official of Armed Forces and MoD for developing the hand gesture bot. I will certainly upgrade the current prototype for meeting armed forces requirement and commercialise this product,”, said Cdt. Jainam Nahar, NCC, BIT Mesra and a 2nd Year Electronics and Communication Engg. Student. All these prototypes were displayed to senior dignitaries from Armed Forces and MoD. They showed keen interest about the displayed prototypes and lauded the efforts of Bihar and Jharkhand Directorate NCC for showcasing the talent of cadets at such an event.

“Products developed at BIT Mesra, Ranchi were displayed in the DefExpo 2022. I congratulate and wish the cadets all the very best,” said Shri Arjun Munda, Union Minister of Tribal Affairs. “The maiden innovation display by NCC cadets at the prestigious DefExpo 2022 establishes their tech potential to support the vision of ‘Aatmanirbhar Bharat’ through indigenous R&D. NCC is uniquely positioned to become the interface between military, academia students, and research institutes,”, said Maj Gen Indrabalan, ADG NCC B&J. “I feel proud to see that the NCC cadets have come up with such a useful innovative product and they have displayed in the DefExpo 2022. I am sure that their innovation will not only address the defence requirements but also will be useful for the social needs,”, said Shri Sudhir K Mishra, Ex-CMD, Brahmos.

“BIT Mersa is delighted that NCC provided such a great platform to the student’s innovations. It will inspire the cadets to aim for lofty goals and develop interest and confidence in many others,”, said Dr Priyank Kumar, AICTE Idea Lab, BIT Mersa. I admire the work done by the NCC cadets. Keep up the good work,”, said Chief of Naval Staff Admiral R Hari Kumar. “Absolutely amazing to see the NCC cadets showcasing their innovations at DefExpo,”, Col Sonam Wangchuk, Maha Vir Chakra awardee.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1870232>

Fri, 21 Oct 2022

Defense Expo 2022: A Big Step towards Self-Reliance in Defense with a New Tank, Gun System, and More

The Defence Expo 2022 was inaugurated by Prime Minister Narendra Modi on 19 October at Mahatma Gandhi Convention and Exhibition Centre in Gandhinagar. This 12th edition of the event had been organized on the theme 'Path to Pride'. Speaking at the event, PM Modi said that the Defence Expo is introducing Indian defense manufacturing capabilities to the world. Further, he added, India was globally known only as one of the biggest defense importers, now, India is exporting defense equipment and products to more than 75 countries worldwide. In the last five years, Indian defense exports have grown eight times and stood at USD 1.59 billion (United States dollar) in 2021-2022. According to the Prime Minister, the country now aims to increase defense exports to 5 billion USDs in the near future. With 1,300 defense companies and representatives from over 50 countries, the Defence Expo 2022 is said to be the largest expo held in the country. During the Defence Expo 2022, 451 Memorandums of Understanding (MoUs) and agreements worth Rs. 1.53 lakh crore were signed.

Mounted Gun System (MGS)



DRDO is developing an Advanced Towed Artillery Gun System 155mm/ 52 cal (ATAGS) in partnership with the Tata and Kalyani group. In a Mounted Gun System (MGS), the entire gun is mounted onto a wheeled tractor, from where it can be fired without any dismounting or lengthy preparation. MGS can be brought into action in just 80 seconds. The MGS weighs 15 tonnes, and the KolosTatra tractor weighs 15 tonnes. MGS has cleared tests in deserts and high-altitude areas where it displayed accuracy and consistency.

The light tank

After the encroachment of the Chinese army across the Line of Actual Control, DRDO was pushed to resume working on a much-debated project, the development of a 25-tonne light tank that would be mobile enough for India's high mountain border areas, jungle terrain and narrow roads and bridges. The tank has high-grade armor protecting STANAG level 4 and a high-pressure tank gun (105mm or 120mm).

Wheeled Armoured Platform (WhaP)



This multi-purpose vehicle is developed by DRDO and can handle chemical, biological, radiological, and nuclear attacks. This vehicle can also be used as a lightly armored ambulance. It is 8x8 wheeled and will weigh around 24.5 tonnes. Also, it will be amphibious, meaning capable of floating. Under the hood, the vehicle will have a 600HP Cummins engine coupled with an Allison transmission.

Trainer Aircraft HTT-40



PM Modi unveiled HTT-40, an indigenous trainer aircraft designed and developed by Hindustan Aeronautics Limited. The aircraft has been designed with pilot-friendly features, with over 60 percent in-house parts and collaboration with private industry. The HTT-40 will be used for basic flight training, aerobatics, instrument flying, and close formation flights, including night flying. The HTT-40 has completed all tests, including hot weather, and cross-wind trials.

Ballbot



The Ballbot is an ideal solution for surveillance, reconnaissance, and patrolling. It has a modular

chassis and sensors that can be reconfigured per specific requirements. The Ballbot can be used for counter-intelligence and counter-terrorism as it will provide a remote eye on the ground.

EyeRov Tuna



The EyeRov Tuna is fitted with a camera that sends live video feeds of the underwater environment. It can inspect railway bridge piers, ship hulls, dams, and port structures.

<https://www.businessinsider.in/defense/news/defense-expo-2022-a-big-step-towards-self-reliance-in-defense-with-a-new-tank-gun-system-and-more/articleshow/95006121.cms>

Outlook

Fri, 21 Oct 2022

451 Memorandum of Understandings Worth Rs 1,53,000 Crore Signed at DefExpo

A senior official said 451 Memorandums of Understanding (MoUs) worth Rs 1,53,000crore were signed in Gandhinagar during the DefExpo 2022. “This was the most outstanding defence expo ever. It saw the highest number of exhibitors, which is in addition to tens of thousands of business visitors. The extent of business this defence expo has generated has surpassed all the previous records,” Defence Secretary Ajay Kumar told news agency Press Trust of India. At DefExpo 2020 in Lucknow, 201 agreements were finalised between “industry and industry, industry and state governments and industry and central governments,” Kumar said.

Out of 451 deals, the Uttar Pradesh (UP) Government has signed 13 worth Rs 564 crore, said State Cabinet Minister NandGopal Gupta. He added that these MoUs are with the UP Expressways Industrial Development Authority (UPEIDA), with investments to be made in the UP Defence Corridor developed by the UPEIDA. In the 2018-19 General Budget, the government announced plans to establish two defence corridors, in UP and Tamil Nadu. This will help fill the gap in indigenous defence production and is in line with India’s Make in India and defenceAtmanirbharta (self-reliance) campaign.

Defence Minister Rajnath Singh stated, “This is the beginning of self-reliance in the Indian Defence sector. This expo has shown that the future belongs to India. This expo has also shown that India will become a global defence manufacturing hub.” DefExpo 2022 will have two firsts: it is India’s first defence expo exclusively for Indian firms and the erstwhile Ordinance Factory

Board's seven new companies will be presenting. 75 countries will be present, with 45 of them from Africa represented by their defence ministers.

<https://www.outlookindia.com/business/451-memorandum-of-understandings-worth-rs-1-53-000-crore-signed-at-defexpo-news-231578>

THE HINDU BusinessLine

Fri, 21 Oct 2022

Bharat Dynamics Launches Anti-Tank and Anti-Aircraft Weapon Systems at DefExpo 2022

Anti-tank guided missile Sangramika and armoured vehicle-mounted laser-guided short range anti-aircraft weapon Sanharika to be used by defence forces. Public sector major Bharat Dynamics Limited (BDL) on Friday announced the launch of three new defence products to mitigate product-dependency on foreign countries. Adding to its existing wide range of product defence portfolio, BDL launched three new products during the ongoing Defexpo – 2022 at Gandhinagar, Gujarat.

The products include anti-tank guided missile (ATGM) for MBT ARJUN, a lightweight vehicle-mounted anti-tank guided weapon system - the Sangramika and Sanharika — an armoured vehicle mounted laser-guided short range anti-aircraft weapon system during the Bandhan Ceremony at Defexpo - 2022. Commodore Siddharth Mishra (Retd), Chairman and Managing Director, BDL, handed over the first model of the new products to RakshaMantriRajnath Singh during the ceremony.

World-class quality

Mishra informed that BDL products meet international standards in terms of quality and performance which qualify them to be of world-class. “Anti-tank guided missile for MBT Arjun, with a range of 5 km for MBT Arjun, is designed and developed by ARDE, DRDO and BDL is the manufacturing agency. The Missile is laser guided, as well as, has its own laser seeker,” said the company. Sangramika is the anti-tank guided weapon system comprises inhouse — designed and developed anti-tank guided missile, Amogha - III, mounted on light specialist vehicle of Ashok Leyland.

Quick deployment

“This is one of the best in the class ATGM system. A highly manoeuvrable light specialist vehicle from the stable of Ashok Leyland has been adapted to mount the Amogha – III weapon system. This has enabled quick deployment over a longer range of the man portable third generation anti-tank guided weapon system,” it added. The weapon system will be able to meet requirements of Indian Army and to the export market.

The Sanharika an armoured vehicle-mounted laser guided short range anti- aircraft weapon system. The laser beam riding missile or LBRM is being manufactured by BDL under Joint development programme with Thales, UK. The ARMADO, a light strike Vehicle of Mahindra

Defence Systems Limited (MDSL), has been adapted to mount the LBRM weapon system. This Joint Development of BDL and MDSL will enable quicker deployment of the system over longer ranges to meet the requirements of the Indian armed forces and export market, the company statement said.

<https://www.thehindubusinessline.com/companies/bharat-dynamics-launches-anti-tank-and-anti-aircraft-weapon-systems-at-defexpo-2022/article66040906.ece>



Fri, 21 Oct 2022

Kalyani Group's Mounting Artillery Gun System 8X8 HMV Unveiled by Defence Research and Development Organisation (DRDO).

Kalyani Group's MGS 8X8 HMV was unveiled today by Dr. Samir V Kamat, Secretary R&D and Chairman Defence Research and Development Organization (DRDO) at the Defence Expo 2022. The MGS 8x8 is a 155mm/52cal Mounted Artillery Gun System, the only artillery gun in the world with the capability of firing from Zone 1 to Zone 7. With a diverse operating temperature range and capability to fire in extreme diverse weather conditions of – 4 to 45 degrees. The gun comes equipped with quick shoot and scoot capability with a high degree of accuracy and consistency. The 8x8 has a high chamber volume of 25 litres, with future provision of up gunning.

Key Modern Features of the MGS 8X8

- Auto loading and positioning system
- Automatic Ammunition Handling system
- Auto Laying
- Safety interlocks and redundancy systems
- All Electric drives ensuring least maintainability and failures
- Muzzle Velocity Radar

About Kalyani Group

Kalyani Group, established in mid 1960s, is an Indian multi-national with high technology, engineering & manufacturing capability across critical sectors such as Automotive, Electric Vehicles and Lightweighting, Industrial, Renewable Energy, Urban Infrastructure, Specialty Chemicals, and Engineering Steel with end-to-end capability and manufacturing footprint across India, Germany, Sweden, France, and North America. Guided by the visionary leadership of Mr. Baba N. Kalyani, Group Chairman, with strong emphasis on market leadership through technology and it's over 10,000 strong engineering global workforce, the group today is a market leader in all its respective business segments.

<https://www.punekarnews.in/kalyani-groups-mounting-artillery-gun-system-8x8-hmv-unveiled-by-defence-research-and-development-organisation-drdo/>

Business Standard

Fri, 21 Oct 2022

Lankan Defence Minister Meets CDS Gen Anil Chauhan on Sidelines of DefExpo

On the sidelines of DefExpo, Sri Lankan Defence Minister Premitha Bandara Tennakoon met Chief of Defence Staff General Anil Chauhan and appreciated the continued support of India for the island countries' armed forces. Tennakoon also praised India's impressive progress in establishing a strong defence industrial base. Apart from Tennakoon, several other countries' Defence Ministers were also present in DefExpo. Earlier, on October 18, the Sri Lankan Defence Minister had met Chief of Naval Staff Admiral R Hari Kumar. "Enriching consultations on collaborative Maritime Security & avenues to strengthen bilateral defence cooperation," Indian Navy spokesperson tweeted. Yesterday, Rajnath Singh addressed HQIDS-FICCI seminar on 'Atmanirbhar Bharat and Make in India' in Gandhinagar, where he said that the country "must have technological and production capability" if the "reliability of supplies" of defence items has to be maintained.

"If we have to maintain sustainability and reliability of supplies of our defence items, then we must have technological and production capability within the country so that whenever we face a long-drawn conflict, our capabilities remain intact," he added. "Our armed forces should provide more support to the domestic industry. It's a matter of happiness that our forces have given full support in the self-reliance of the defence sector," he added. Noting that the Indian armed forces are passing through an important phase of transformation, the Minister said that the country's preparedness to deal with the challenges of the changing geo-political scenario has strengthened.

"Our preparedness to deal with a rapidly changing geo-political scenario, and challenges arising out of it, especially neighbourhood threat, has strengthened significantly in recent past," he said. "Not only the assurance of procurement of defence products but also the objective of developing world-class technologies is very clear in front of us. For this, for the first time, the government has allocated 25 per cent of the Defence R & D budget for industry, start-ups and academia," Singh added. He said the government fully understands the role of MSMEs and start-ups in the defence sector. "Hence, to create more opportunities for MSMEs and start-ups, the scope of the Defence Innovation Start-Up Challenges and Technology Development Fund has been further expanded," he said. Rajnath Singh also inspected arms and ammunition displayed at DefExpo-2022.

https://wap.business-standard.com/article-amp/current-affairs/lankan-defence-minister-meets-cds-gen-anil-chauhan-on-sidelines-of-defexpo-122102100374_1.html

DefExpo 2022 Opens to Public; AK-203, Rafale Model on Display

Though the 12th edition of DefExpo 2022 was largely meant for Indian exhibitors, some foreign counterparts operating through Indian joint-venture firms, including from the US, UK, France and Israel, had also placed exhibits. Visitors huddled the DefExpo 2022 venue to see the AK-203 by put on display by the Indo-Russian Rifles Pvt Ltd, as the exhibition in Gandhinagar opened to public on Friday. Though the 12th edition of DefExpo 2022 was largely meant for Indian exhibitors, some foreign counterparts operating through Indian joint-venture firms, including from the US, UK, France and Israel, had also placed exhibits.

“We cannot interact. We have been asked not to,” said a one of the Russian executives, while hurriedly packing up at Hall number 11. The counter belonged to the Indo-Russian joint firm that manufactures AK-203 assault rifles — from the Kalashnikov family of rifles — in Amethi district of Uttar Pradesh. This firm has both Kalashnikov and Rosoboronexport producing rifles with Indian Defence public sector undertakings (PSUs). The only other major Russian presence at the DefExpo was Brahmos Aerospace.

A few metres away in Hall number 9, a French Dassault Aviation and Airbus had their stalls in close proximity with British Rolls-Royce. In Hall 8 and 12, Boeing and Lockheed Martin had set up displays of their Indian joint ventures. Dassault Aircraft Service India Pvt Ltd has exhibited a model of Rafale fighter jets that have been delivered in India recently. “We have also displayed the Rafale M, a single-seat Naval version which we plan to sell to the Indian Navy,” said a French executive at the company’s stall who declined to be identified as he is was not the spokesperson of the company.

“We brought these exhibits in March 2022. But we had to ship everything back after the DefExpo was postponed. Now we have brought everything back,” the French executive added about the DefExpo 2022 which was originally scheduled to be held from March 10-14 at the same venue. The exhibition was postponed by the Government of India, just four days before the scheduled beginning. The outbreak of the Russia-Ukraine war was cited as the reason for postponing the event, which had foreign exhibitors, including Russians, Ukrainians, Americans and British.

The Russia-Ukraine war continues to remain an subject, about which many hesitate to speak about. When asked about the challenges faced by RollsRoyce while attending the DefExpo 2022, an Indian executive representing the company exhibiting Diesel engines for Naval and Coast Guard ships said, “I cannot comment. I am not sure if I can speak on the subject especially when our officials from HR and Brands are not around.” During the events held alongside the DefExpo, it was only Defence Minister Rajnath Singh who touched up on the Ukraine-Russia war to drive home the point of stability and peace in the Indian Ocean Region to visiting African defence ministers.

Israel was represented by Israel Aerospace India and Astra Rafael Comsys Pvt Ltd, among others. The DefExpo saw over 1,300 Indian firms participating and most of it was dominated by

defence PSUs. A discount of 25 per cent was also offered to space bookings to encourage wider participation of Indian companies.

<https://indianexpress.com/article/cities/gandhinagar/defexpo-2022-opens-to-public-ak-203-rafale-model-on-display-8224059/>



Sat, 22 Oct 2022

Polycab India Showcases its New-Age Range of Defense Sector Offerings

Mumbai (Maharashtra) [India], October 22 (ANI/BusinessWire India): India's leading electrical goods company, Polycab India Limited (PIL) showcased its specialized and wide range of customized offerings for the Defense sector at the ongoing DEFEXPO 2022 being held at Gandhinagar, Gujarat. Polycab's special cables for naval range find multiple uses such as SONAR control system, Radar control system, Torpedo Tube launcher and Gun Control system. The cables are further available in various forms such as multicore screened, multicore overall screened, multipair individual & collective screened and multicore-screened power. These cables are used in ships for main line power and lighting micro grid circuits. Some of the prominent applications enabled by Polycab special naval cables are electrical main powerline networks, control & signal application, power generation circuits, motor & drive circuits, control panel & switchgear applications, auxiliary power micro grids in battery banks & inverters, pulse load sensor system and pulse load weapon control system.

<https://www.aninews.in/news/business/business/polycab-india-showcases-its-new-age-range-of-defense-sector-offerings20221022155211/>

Defence Strategic : National/International



Press Information Bureau
Government of India

Ministry of Defence

Mon, 24 Oct 2022

Chief of Defence Staff General Anil Chauhan Visits Forward Posts in Rajouri Sector of Jammu & Kashmir; Reviews Security Scenario & Operational Preparedness along LoC Celebrates Diwali with Soldiers Posted on the Frontlines

Chief of Defence Staff (CDS) Gen Anil Chauhan, accompanied by White Knight Corps Commander Lt Gen Manjinder Singh, visited forward posts in Rajouri sector of Jammu & Kashmir on October 24, 2022 and celebrated Diwali with soldiers posted on the frontlines. The CDS also laid a wreath at Naman Sthal, the war memorial of Naushera Sector and paid his respects to the bravehearts who had laid down their lives in the service of the nation. Gen Anil Chauhan was briefed by field commanders on the current operational situation and security scenario along the Line of Control (LoC). He also reviewed the development of defence infrastructure and operational preparedness undertaken despite challenging terrain and weather conditions in the region.

The CDS, while addressing the troops, exhorted them to inculcate professionalism and carry forward the rich tradition of courage and valour of the Indian Army. He also emphasised the need for operational preparedness of the highest order. The visit by the CDS on the occasion of Diwali acted as a great morale booster for troops deployed on the frontlines in challenging conditions.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1870628>



Press Information Bureau
Government of India

Ministry of Defence

Mon, 24 Oct 2022

Army Chief Reviews Security Situation and Celebrates Deepavali with Troops in Northern Borders of Sikkim

General Manoj Pande, Chief of the Army Staff visited military stations in North Bengal and border areas of Sikkim on 23rd & 24th October 2022. He wished all ranks on the occasion of Deepavali and also reviewed the security situation along the Northern borders of Sikkim. The Army Chief appreciated the troops for maintaining a high level of operational efficiency and

morale. The Army Chief expressed satisfaction at the pace of infrastructure development along the border areas. He was accompanied by Lt Gen RP Kalita Army Commander, Eastern Command and Lt Gen Tarun Kumar Aich, GOC Trishakti Corps. On arrival at Sukna Military Station on 23rd October, the COAS interacted with the troops over a programme, showcasing India's cultural heritage and unity in diversity, organised on Deepavali eve.

The Army Chief lauded the troops for the dedication and wished all ranks and the families on the occasion of Deepavali. The COAS also complimented the Mountaineering Team that summited Mt Jonsang and Mt Domekhang and the Shooting Team of Trishakti Corps that came first in the Skill at Arms competition recently held at Mhow. On 24th October, the COAS accompanied by Army Commander and GOC visited forward areas in North and East Sikkim. Reviewing the operational situation and preparedness of the field formations deployed along the Northern Borders in Sikkim Sector, the COAS expressed his satisfaction and exhorted the troops to maintain readiness for all types of challenges. Greeting the soldiers on the occasion of Deepavali, the COAS presented and shared sweets with them. The Chief also complimented the soldiers for their professionalism and dedication to duty.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1870618>

THE TIMES OF INDIA

Fri, 21 Oct 2022

Desi UAVs: India is a Laggard in Domestic Drone Development and Military Deployment. This has to Change

EDITORIAL

India's fourth negative arms import list has 101 products including high-altitude and long-endurance drones. Domestic production and procurement of such drones is now a necessity. The military utility of drones is no longer in question. From Armenia-Azerbaijan skirmishes to the current Ukraine conflict, drones have been pivotal. Turkish Bayraktar TB2 combat drones helped turn the tide for Ukrainian forces in the earlier part of the war. Kyiv has gone on to acquire other UAV systems like the Switchblade 300 and Phoenix Ghost loitering munitions or kamikaze drones that have helped it resist a much larger Russian army. And Russia deployed Iranian Shahed-136 kamikaze drones that have wreaked havoc on Ukrainian cities.

India has been a drone laggard. Pakistan and China are ahead in the game. Recall the drone attack on the Jammu Air Force Station in June last year, widely believed to be the handiwork of Pakistan-backed elements. But India for years did not see drones as a priority, viewing them only as supplementary platforms. Add to this the inability of DRDO to deliver on UAV design and operational requirements. Now that we recognise the importance of drones, our import dependence is high.

The army is in the process of inducting kamikaze drones under an emergency procurement contract with an Indian-Israeli private joint venture. But, importantly, the army is also looking at procuring indigenous kamikaze drones and mini drones for surveillance and for aiding our artillery units in eastern Ladakh. Indian private players are now getting into drone development in a big way, which should help create an indigenous UAV ecosystem. The new drone policy is

helping, but to catch up with drone technology leaders, GoI needs to handhold promising private developers.

<https://timesofindia.indiatimes.com/blogs/toi-editorials/desi-uavs-india-is-a-laggard-in-domestic-drone-development-and-military-deployment-this-has-to-change/>



Sat, 22 Oct 2022

Garud and Para SF Commandos Conduct High Altitude Combat Free Fall Under Joint Exercise

Commandos from the Garud commando unit of the Indian Air Force (IAF) and the Para Special Forces (Para SF) battalion of the Indian Army carried out a High Altitude Combat Free Fall mission on 22 October, Saturday. The mission was carried out under a joint exercise between the Indian Army and the IAF. The troops conducted the free fall jump from a C-130J aircraft of the Indian Airforce, according to a statement by PRO Shillong, Ministry of Defense.

According to the IAF, the C-130J is a multi-engine transport aircraft primarily employed in Special Operations. It is a versatile machine with capability to take-off and land from short runways making it a highly effective platform for humanitarian assistance and disaster relief missions. As per the statement, the exercise was carried out in the eastern sector of the nation. PRO Shillong termed the success of the exercise as “another operational milestone & validation of integration and professionalism of the Indian Armed Forces.”

What is High-Altitude Combat Free Fall?

High-altitude military parachuting, also known as military free fall (MFF), is a method of delivering military troops, equipment, and other military supplies from a transport aircraft by carrying out a parachute jump from a high altitude. The tactic is also called free-fall parachute insertion. Two techniques are used under the method: HALO (High-Altitude low opening) and HAHO (High-Altitude high opening). In the HALO technique, the parachute operator opens the parachute at a low altitude after free-falling for a duration of time. In the HAHO technique, the parachute operator opens the parachute at a high altitude just a few seconds after jumping from the aircraft.

The CFF parachute system, developed by the Defense Research and Development Organization (DRDO) is utilised by the Indian Tri-services to carry out such parachute jumps. According to the DRDO, the system provides total solutions to Paratrooper for jumping from an altitude as high as 30,000 feet. The system is capable of both HAHO as well as HALO modes.

More on Indian Special Forces

The special forces units of the Indian Army come under the highly recognised Parachute Regiment. The Parachute Regiment comprises 23 battalions out of which 15 are special forces battalions. Out of the remaining battalions, five are airborne, two are Territorial Army and one is a Rashtriya Rifles battalion. The Indian Army’s special forces are the oldest among the tri-services and are dreaded by the adversaries. The Para-SF personnel undergo rigorous training

and are capable of conducting hostage rescue, counter-terrorism, unconventional warfare, special reconnaissance, foreign internal defence, counter-proliferation, counter-insurgency, and seek-and-destroy missions.

The youngest of the special forces among the tri-services, the Garud Commando Force is the special forces unit of the Indian Airforce. Formed in September 2004, the unit derives its name from Garuda, a divine bird-like creature from Hindu mythology. The Garuds undergo rigorous physical training for a total duration of 3 years, the longest among the tri-services before they can qualify as fully operational Garud. The responsibilities of the commando force include direct action, special reconnaissance, and rescue of downed pilots in hostile territory. The Garuds have seen combat in a number of high-risk operations which include Op RakhHajin in Kashmir. In 2016, Garud commando Gursewak Singh was killed in action in the Pathankot terror attack.

The Marine Commandos (MARCOS) are the Special Operations Forces unit of the Indian Navy. The Marine Commandos are capable of operating in all types of environments; at sea, in the air and on land. The MARCOS force has acquired an international reputation for professionalism. The MARCOS personnel are selected from the Indian Navy when they are in their early 20s and undergo a stringent selection process and training. The training regimen of the MARCOS includes airborne operations, combat diving courses, counter-terrorism, anti-piracy operations, infiltration and exfiltration tactics, special reconnaissance and unconventional warfare.

<https://www.republicworld.com/india-news/general-news/garud-and-para-sf-commandos-conduct-high-altitude-combat-free-fall-under-joint-exercise-articleshow.html>

The Tribune

Sat, 22 Oct 2022

All 300 ALH Copters to Undergo Check

All advanced light helicopters (ALH) with the three armed forces will undergo a one-time check, the decision coming a day after five Army personnel died in a crash near Tuting in Arunachal Pradesh on Friday.

There are some 300 ALHs across the Indian Air Force, Navy and the Army Aviation, besides a few with the Coast Guard. “One-time preventive check has been ordered on the entire fleet,” sources across the tri-services confirmed to The Tribune.

Had flagged technical fault

Army copter that crashed near Tuting sent out a Mayday’ call, suggested technical failure

‘Mayday’ is an emergency call pilots make over radio in case of major issue with the aircraft

About the ALHs

Advanced light helicopters or ALHs are stationed in the Himalayas and at key locations in peninsular India

The ALH category has four variants: ALH Mark 1, Mark 2, Mark 3 and ALH-WSI

The copter that crashed in Arunachal was ALH-WSI, which is the latest version

The ALHs are deployed across the country, stationed in the Himalayas from Ladakh to Arunachal Pradesh and at key locations in peninsular India. Checks will be conducted by helicopter maintenance and repair units stationed with the squadrons of the respective forces. Some of the helicopters are learnt to have been cleared following checks over the past 24 hours. The entire fleet of 300 is expected to be inspected over the next two days.

Sources said the check was for mechanical and technical “stress points” on the copter, including its engines, rotor-blades and the ‘collective’ (component that controls power from engine to both rotors, one on top and other at tail). The check has been necessitated as the Army Aviation helicopter that crashed near Tuting did send out a “Mayday” stress call. “Prior to the crash, the Air Traffic Control had received a ‘Mayday’ call suggesting a technical or mechanical failure,” Army officials in Delhi said. “Mayday” is an emergency call pilots make over radio in case of any major issue with the aircraft.

The weather at Tuting was good for flying operations. The pilots had more than 600 combined flying hours on the ALH and over 1,800 flying hours between them. Both the facets would form the focus of a court of inquiry, which was constituted to investigate the cause of the accident, an official said. The copter with five on board crashed at 10.45 am. The Army said all five bodies had been found. The dead include MajVikasBhambhu, Maj Mustafa Bohara, NaikRohitashva Kumar, Technician Aswin KV and HavildarBireshSinha.

The ALH has four variants—ALH Mark 1, Mark 2, Mark 3 and ALH-WSI (weapons systems integrated). All the four variants are twin-engine machines. Across these four variants, two types of engines are used. The ones in the Mark 3 and ALH-WSI versions have more powerful engine, called Shakti, co-developed by Hindustan Aeronautics Limited (HAL) and Safran of France. The copter that crashed yesterday was ALH-WSI, the latest version. It was inducted into service in June 2015. The newly inducted light combat aircraft (LCH) also uses Shakti engine.

<https://www.tribuneindia.com/news/nation/all-300-alh-copters-to-undergo-check-443859>

The Tribune

Fri, 21 Oct 2022

On Track to Deliver Tejas Mark 1A in 16 Months: HAL Chief

With the Indian Air Force planning to induct new fighter jets, Hindustan Aeronautics Limited (HAL), the manufacturer of LCA Tejas, has said it will start delivering the next version of the plane, Tejas Mark 1A, from February 2024. CB Ananthkrishnan, Chairman and Managing Director, HAL, told The Tribune at the DefExpo here, “For Mark1A, we have positioned all material. The engines are available and certifications are going on simultaneously. We will be in position to deliver the first plane on schedule in February 2024. We are even trying to advance the delivery of the first plane by a month or so.”

As per the Tejas Mark1A contract for 83 jets, the first three planes have to be delivered before March 31, 2024. Thereafter, 16 aircraft have to be delivered per year and complete handover is to be completed in five years. The plane has 43 improvements over the existing version of Tejas. On being asked about Tejas Mark 2, the HAL Chairman said, “We will be able to deliver the first prototype in 2025-26 and have the first flight in 2026-27.” The HAL is looking to make 13-tonne IMRH (Indian multi-role helicopter) that is expected to compete with Russian Mi-17 choppers. The HAL and French engine-maker Safran have a tie up to make an engine for the same.

<https://www.tribuneindia.com/news/nation/on-track-to-deliver-tejas-mark-1a-in-16-months-hal-chief-443564>



Mon, 24 Oct 2022

India’s Tri-Services Enhancing Defense Integration and Synergy through Joint Drills

The Indian Armed Forces are rapidly undergoing major changes to meet the requirements of modern warfare. One key development to address the existing challenges to the nation’s security was the introduction of joint manship between the Indian Army, Indian Navy and the Indian Airforce. The Tri-services have carried out a series of land and air exercises in the Eastern Sector which included not just ground assault by the forces in high altitude areas but also the joint air insertion drills by the Special Forces of the Indian Army and the Indian Airforce. The Trishakti Corps (33 Corps) of the Indian Army stated on Sunday, “Validation of Combat Free fall operations by Indian Army Special Forces in narrow valleys of Super High-Altitude areas of Sikkim — first time, using C-130 special operations fixed wing platforms.”

In another joint exercise between the IAF’s Garud commandos and the Indian Army’s Para Special Forces, a High-altitude Combat Free Fall mission was carried from IAF C-130J aircraft in the Eastern sector. The exercise was termed “yet another successful operational milestone achieved by Indian Armed Forces” by the Eastern Command of the Indian Air Force.

Moreover, earlier this month, an integrated tactical Exercise SingheePrahaar was conducted at 17,500 feet in North Sikkim. It showcased the prowess of the Indian Army in integrated operations in Super High-Altitude Areas. The exercises are a part of the program to increase the synchronisation of operations and synergy between the Indian forces under the Integrated Defense Staff.

Integrated Defense Staff

The formation of Integrated Defense Staff (IDS), which is headed by the Chief of Defense Staff (CDS), is catering to the needs of enhancing the ability of the Tri-services to address challenges to the nation’s security by acting as a point organisation between the Ministry of Defense.

The Integrated Defense Staff integrates policy, doctrine, warfighting and procurement by employing best management practices. Moreover, under the leadership of the CDS, the organisation would assign inter-services prioritisation to capital acquisition proposals, act as the central command for tri-service agencies, and head the Department of Military Affairs. The CDS is further bestowed with the responsibility of overall defence planning.

Roots of the integrated defence staff program

The requirement for the creation of a central entity to cater to the needs of the tri-services was felt as early as 1948, immediately after India's independence and subsequent aggression by the nation's newborn nefarious neighbour, Pakistan. Following the Indo-Pak war of 1947, various committees were formed to advise the Indian government and the Defence Minister. The main one was the Defence Committee of the Cabinet, according to a statement by Integrated Defense Staff.

However, the committees became defunct in subsequent years, following India's adherence to a policy of peace and non-alignment and the ceasefire in Kashmir. Eventually, such committees were formed again after the Chinese aggression in 1962. The Defence Committee of the Cabinet was replaced by the Emergency Committee of the Cabinet. Moreover, several other committees came into existence to expedite the defence build-up. However, as the Chinese threat receded, most of these committees again became defunct.

The 1999 Kargil war made it clear that the requirement for a permanent establishment to integrate the Tri-services under one leadership was realised. During the Kargil war, to counter Pakistan's military aggression and subsequently push the Pakistani army out of the Indian posts they had occupied in the areas of Kargil, Dras, Mushkoh and Batalik, the Indian Army, Navy and Airforce launched separate operations.

The Indian Army launched Operation Vijay from May-July 1999 to flush out the Pakistan army troops from Indian territory. Meanwhile, the Indian Airforce launched Operation SafedSagar on 11 May 1999 to provide support to the ground troops of the Indian Army. Meanwhile, the Indian Navy launched Operation Talwar with the objective to choke Pakistani trade channels during the war.

History is evidence of an Indian victory following the culmination of the conflict. However, it was the Kargil Review Committee set up by the Indian Government on 29 July 1999, which recommended the formation of the post of the Chief of Defense Staff. This was done citing numerous flaws on multiple levels of intelligence gathering, operational strategies and procedural sharing of data.

Tri-services Special Forces to operate under AFSOD

Part of the Integrated Defense Staff, the Armed Forces Special Operations Division (AFSOD) functions with the objective to carry out special operations. The AFSOD draws personnel from all three Special Forces (SF) branches of the Armed Forces. These include Indian Army's Para Special Forces, the Indian Navy's MARCOS and Indian Airforce's Guards. The idea behind the formation of the division is to pool the special abilities of each of the SF units of the Tri-services to enable them to operate together.

The Special Forces units of the Indian Army, Navy and Airforce are already engaged in counter-terrorism and counter-insurgency operations in the Kashmir valley under the AFSOD.

<https://www.republicworld.com/india-news/general-news/indias-tri-services-enhancing-defense-integration-and-synergy-through-joint-drills-articleshow.html>



रविवार, 23 अक्टूबर 2022

पाकिस्तान नहीं चीन है टारगेट? समझिए INS अरिहंत से अग्नि-P मिसाइल के परीक्षण के मायने

स्वदेशी हथियारों और मिसाइलों की तरफ देश तेजी से आगे बढ़ता जा रहा है. विदेशी मुल्क ये बढ़त देख परेशान है. खासतौर पर आतंक परस्त पाकिस्तान और विस्तारवादी नियत रखने वाला चीन. भारत भी इनको चिढ़ाने का कोई मौका नहीं छोड़ता. भारत की खतरनाक 'अग्नि प्राइम' मिसाइल का तीसरी बार सफल परीक्षण किया. यह नई पीढ़ी की मीडियम रेंज बैलिस्टिक मिसाइल है. सबसे खास बात ये है कि इसे पूरी तरह देश में विकसित किया गया. इसकी रेंज में पाकिस्तान और चीन हैं.

एक बात पर गौर करना चाहिए कि ये परीक्षण तब किया गया जब अमेरिकी ने अरब सागर में गुजरात और पाकिस्तान की जलसीमा के पास अपनी महाविनाशक परमाणु पनडुब्बी 'यूएसएस वेस्ट वर्जीनिया' को तैनात किया. इसका सार्वजनिक ऐलान भी किया गया. जबकि अमेरिका कभी भी अपने परमाणु तैनातियों को नहीं बताता. ये बताता है कि भारत और अमेरिका साउथ चाइना सी में चीन के बढ़ते दबदबे को रोकना चाहते हैं. चूंकि इस वक्त रूस-चीन की दोस्ती भी मजबूत हो गई है ऐसा में ये खतरा और भी ज्यादा बढ़ गया है.

क्या है अमेरिका का इससे कनेक्शन?

मिसाइल विशेषज्ञों के अनुसार अग्नि-पी की डेवलपमेंट टेस्टिंग तीन परीक्षणों के साथ पूरी हो गई. इसमें सबसे पहला पहला 28 जून, 2021 को बालासोर में और दूसरा 18 दिसंबर, 2021 और तीसरा 21 अक्टूबर को किया गया था. फ्लेक्सि के साथ 10 मीटर लंबी मिसाइल नोजल और कम्पोजिट मोटर को मोबाइल लॉन्चर से दागा जा सकता है. हिंदुस्तान टाइम्स की एक रिपोर्ट के मुताबिक आमतौर पर भारत में सर्दियों के महीनों का उपयोग आम तौर पर टेस्टिंग फायरिंग और परीक्षणों के लिए किया जाता है. लेकिन अमेरिका ने तीन दिन पहले अरब सागर में गुजरात और पाकिस्तान की जलसीमा के पास अपनी महाविनाशक परमाणु पनडुब्बी को तैनात किया. इतना ही नहीं अमेरिका ने परमाणु बम से लैस मिसाइलों को ले जाने में सक्षम पनडुब्बी 'यूएसएस वेस्ट वर्जीनिया' के तैनाती का सार्वजनिक तौर पर ऐलान भी किया. ऐसा अपने आप

में ही अनोखा मामला है. जबकि अमेरिकी कभी भी अपनी परमाणु तैनाती के बारे में खुलेआम नहीं बताता.

तीनों चरण पूरे, भारत की शक्ति दोगुनी

मीडियम रेंज की परमाणु अग्नि-पी मिसाइल का सफल परीक्षण और विकास 21 अक्टूबर को पूरा हो गया. स्ट्रेटजिकल फोर्स में शामिल होने के बाद मिसाइल 1000-2000 किमी की सीमा में प्रमुख हथियार बन जाएगी. अग्नि -5 पड़ोसी शत्रु देशों के खिलाफ भारत को पूरी सुरक्षा प्रदान करेगी. रक्षा अनुसंधान एवं विकास संगठन (डीआरडीओ) अग्नि-5 की तुलना में लंबी दूरी की मिसाइल का उत्पादन कर सकता है लेकिन इसके लिए मोदी सरकार को अपने परमाणु विकल्पों में संशोधन करना होगा और लंबी दूरी की डिलीवरी प्लेटफॉर्म को मंजूरी देनी होगी. मिसाइल विशेषज्ञों के अनुसार अग्नि-पी की डेवलपमेंट टेस्टिंग तीन परीक्षणों के साथ पूरी हो गई. इसमें सबसे पहला पहला 28 जून, 2021 को बालासोर में और दूसरा 18 दिसंबर, 2021 और तीसरा 21 अक्टूबर को किया गया था. फ्लेक्सी के साथ 10 मीटर लंबी मिसाइल नोजल और कम्पोजिट मोटर को मोबाइल लॉन्चर से दागा जा सकता है.

क्वाड को मजबूत करना चाहता है यूएस

भारत ने इस महीने अपनी बैलिस्टिक मिसाइल पनडुब्बी आईएनएस अरिहंत से बैलिस्टिक मिसाइल टेस्टिंग का ऐलान किया था. इसके साथ जापान-ऑस्ट्रेलिया रक्षा सहयोग को बढ़ाने के साथ-साथ यूएस पैसिफिक कमांडर ने सार्वजनिक बयान दिया गया कि भारत क्वाड ग्रुपिंग के भविष्य के लिए इंडो-पैसिफिक में वाशिंगटन का अपरिहार्य सहयोगी था. इंडो-पैसिफिक में अमेरिका और भारत दोनों द्वारा रणनीतिक संदेश उस समय आया जब राष्ट्रपति शी जिनपिंग तीसरी बार फिर से चुने गए. राष्ट्रपति शी जिनपिंग के पास पूरी तरह से चीनी कम्युनिस्ट पार्टी की कमान है. शी जिनपिंग और रूस प्रेसिडेंट पुतिन की नजदीकियां काफी हद तक बढ़ती जा रही हैं. रूस वहां यूक्रेन पर कब्जा जमाना चाहता है और चीन की नियत भारत के अरुणाचल और ताइवान पर है. ऐसे में ये दोस्ती खतरनाक है.

<https://www.tv9hindi.com/india/know-all-about-nuclear-capable-ballistic-missile-agni-prime-being-successfully-tested-by-the-drdo-au520-1521181.html>

Agni-P Missile Moves towards Induction after User Trials

By Shishir Gupta

With the test trials and development stage of the medium-range nuclear Agni-P missile completed after October 21 test-firing, the latest generation weapon has moved closer to induction and mass production with Strategic Forces Command ready to conduct user trial of the delivery platform. After induction into Strategic Forces Command arsenal, the missile will become the prime deterrent in the 1000-2000 km range with Agni-5 providing the full cover to India against regional adversaries. The Defence Research and Development Organization (DRDO) can produce a longer-range missile than Agni-5 provided the Modi government revises its nuclear options and gives approval to a longer-range delivery platform.

According to missile experts, the development trials of Agni-P are complete with three tests, the first one of which was conducted off Balasore on June 28, 2021, and second on December 18, 2021. The 10-meter-long missile with flexi nozzles and composite motor can be fired from mobile launchers and thus has a higher rate of survivability in the event of worst-case scenario. While for India the winter months are normally used for test-firing and trials, the Agni-P trial came a day after US surprisingly announced the surfacing of top-of-the-line nuclear ballistic missile submarine USS Virginia at an undisclosed location in Arabian Sea. This was preceded by India announcing the user firing of submarine launched ballistic missile from its own ballistic missile submarine INS Arihant this month.

This accompanied by deepening of Japan-Australia defence cooperation as well as public statement by US Pacific Commander that India was indispensable ally to Washington in the Indo-Pacific bodes well for the future of the QUAD grouping. The strategic messaging both by the US and India in the Indo-Pacific came at the time when President Xi Jinping was on his way to get reelected the third time and become China's new Chairman Mao and rival Washington as the numero uno military power in the world. That President Xi is totally in command of Chinese Communist Party was evident from the unceremonious exit of his predecessor Hu Jintao from the Saturday's closing session of the party's twice a decade orchestrated Congress. The consolidation of power by dictators President Xi and his "no limits" ally Russian President Vladimir Putin increases uncertainty in the world with Taiwan on Beijing's and Ukraine on Moscow's cross-sights.

<https://www.hindustantimes.com/india-news/agnip-missile-moves-towards-induction-after-user-trials-101666497862723-amp.html>

Armed Forces Carry Out a Series of Ground, Air Drills in Eastern Sector

The Indian armed forces have carried out a series of ground and air exercises in the Eastern Sector which included not just ground assault by the forces in high altitude areas but also the joint air insertion of Special Forces. The series of exercises had begun early this month. The Tri Shakti (33 Corps) Corps of the Army took to official twitter handle on Sunday to say, “Validation of Combat Free fall operations by Indian Army Special Forces in narrow valleys of Super High Altitude areas of Sikkim — first time, using C-130 special operations fixed wing platforms.”

In another high tempo joint exercise between the Indian Air Force and Indian Army, “a high altitude Combat Free Fall mission was carried out by commandos of Special Forces (Army) and Garuds (Air Force) from IAF C-130J aircraft in the Eastern sector. The Eastern Command of the Indian Air Force termed the exercise as “yet another successful operational milestone achieved by Indian Armed Forces”. This was also communicated using the official handle of IAF’s Eastern Air Command. Early this month integrated tactical Exercise SingheePrahaar at 17,500 feet in North Sikkim was carried out showcasing the prowess of the Indian Army in integrated operations in the Super High Altitude Area. The Sukna, West Bengal based Corps is mandated to defend the 220 km long Line of Actual Control along Sikkim.

An Army statement said, “Latest induction of New Generation Equipment to include Remotely Piloted Vehicles (RPVs), All Terrain Vehicles (ATVs), Quick Reaction Fire Vehicles (QRFVs), Infantry Protected Mobility Vehicles (IPMVs) and many other weapon systems and platforms have added new dimensions to the Indian Army’s existing capabilities to fight wars in High Altitude Areas.” Of the 3,488-km-long LAC, 1,346-km comes under the Eastern Sector, with 220-km along Sikkim and 1,126-km along Arunachal Pradesh.

<https://www.newindianexpress.com/nation/2022/oct/24/armed-forces-carry-out-a-series-of-ground-air-drills-in-eastern-sector-2511349.html>



Fri, 21 Oct 2022

Jindal Defence and Aerospace and Yantra India Ltd Sign MoU to Develop Defence Products

Jindal Defence and Aerospace signed a Memorandum of Understanding (MoU) on Friday with the state-owned Yantra India Ltd for engineering, development and manufacturing of defence products. The MoU is in line with the government’s push for a public-private partnership to serve the Indian armed forces. “We are entering into integrated next-generation security and

defence solutions for the nation's armed and paramilitary forces. For this, we are already in discussions with technology partners in India. We are gearing up to develop an artificially intelligent security system, first-of-its-kind in the Indian defence ecosystem. This would not only help our forces to build futuristic warfare capabilities but also help Indian MSMEs to expand their footprints in Indian defence ecosystem," said CP Agrawal, Head, Jindal Defence and Aerospace. The company has supplied material for key DRDO and ISRO projects including satellite launcher PSLV, GSLV Mk-3, Chandrayaan, Gaganyaan, KS Nuclear Submarine missile system and missile canister for almost all missile programs in the past. "Jindal Defence and Aerospace has positioned itself as the leading strategic material supplier in defence and aerospace in India, with exports across the globe, meeting stringent quality standards and specifications. It is aimed at making India self-reliant in niche critical applications comprising missiles & guns, naval, ballistic & blast-proof armour, aerospace, and other engineering applications," the company said in a press release.

The company has indigenously developed world-class armour solutions including bullet-proof morchas and podiums for the Indian defence forces comprising the Indian Army, Indian Navy, CRPF, BSF, SSB, and police forces. Jindal Stainless' defence vertical, Jindal Defence and Aerospace participated in the 12th DefExpo 2022 organized by the Ministry of Defence. The 5-day expo was inaugurated by Prime Minister, Narendra Modi along with minister of defence, Rajnath Singh; chief minister of Gujarat, Bhupendra Patel, and other senior dignitaries.

<https://www.livemint.com/news/india/jindal-defence-and-aerospace-and-yantra-india-ltd-sign-mou-to-develop-defence-products-11666347868202.html>



Fri, 21Oct 2022

Milestone for Airbus – DGAQA Approves QMS for C295MW

For the first time a foreign Original Equipment Manufacturer (OEM) Airbus Defence and Space Quality Management System (QMS) has received Quality Management System approval from Indian regulator Directorate General of Aeronautical Quality Assurance (DGAQA). The certificate of approval for the C295 MW QMS is a significant first step of a comprehensive quality assurance roadmap, which has been agreed upon between the DGAQA and Airbus for the C295 'Make in India' programme. At a ceremony in Gandhinagar on the sidelines of the ongoing DefExpo, Director General of DGAQA, Sanjay Chawla handed over the approval certificate to Kajetan von Mentzingen, Head of Quality, Airbus Defence and Space.

Kajetan von Mentzingen talking of the approval said that a milestone has been crossed for the C295 MW 'Make in India' programme and this certification demonstrates the trust and confidence that the DGAQA has placed in Airbus quality standards. This will be the foundation for successful aircraft manufacturing of C295 MW in India under the policy of the government's Aatmanirbhar Bharat call.

What is C295?

Financial Express Online reported last year in September the Ministry of Defence (MoD) and Airbus Defence & Space S. A., Spain, inked a deal to manufacture the C-295 MW in India. These aircraft are expected to replace the legacy Avro transport fleet of the Indian Air Force (IAF). The aircraft will be manufactured in partnership between Tata Advanced Systems Limited (TASL) under the contract with MoD and Airbus at a facility in India. This is the first ever deal in which the private sector company will manufacture the aircraft locally and this will help in creating India's industrial ecosystem. This ecosystem is expected to include testing, assembling, manufacturing, and qualification and once established will help in the maintenance of the lifecycle of the machines and will also help in meeting delivery timelines.

There is an offset clause too in this deal. This means that Airbus will be able to discharge its offsets obligations as it will be able to directly purchase eligible products and services from its Indian Offset partners. Out of that, 56 C295 will come in 'fly-away' condition straight from Airbus assembly line located in Seville, Spain and the balance 40 will be manufactured and assembled at the TASL facility. Once implemented the delivery of the 16 aircraft will be completed in four years. These aircraft are going to be handed over in transport configuration to IAF and are going to be equipped with an indigenous Electronic Warfare Suite. And have the capability of operating from a semi-prepared air strip. Fitted with contemporary technology these are of 5-10 tonne capacity. The other industrial partners include Bharat Dynamics (BDL) and Bharat Electronics. Several MSMEs from across the country will also be involved in the building of these aircraft in India.

https://www.financialexpress.com/defence/milestone-for-airbus-dgaqa-approves-qms-for-c295mw/2728414/lite/?utm_source=defence_landing_page&utm_medium=article_listing_widge&utm_campaign=Tags



Sat, 22 Oct 2022

New CDS – Challenges of Theatre Commands

By Lt Col Manoj K Channan, Veteran

General Anil Chauhan, PVSM, UYSM, AVSM, SM, VSM, former Eastern Army Commander, assumed office as the Chief of Defense Staff (CDS) and Chairman Chiefs of Staff Committee (COSC) on September 30, 2022. The second CDS of India has many tasks; among them, the most challenging is creating a consensus for Theatre Commands. While the significant defence services across the globe have re-structured to Theatre Commands, India is in the process. While the Theatre Commands directly impact the resources of the Indian Army and the Indian Air Force, the reluctance of the IAF to be part of the same has to be understood correctly. How this is resolved is a million-dollar question.

Resources

The IAF has an authorized strength of Forty-Two squadrons, and over the years, this has dwindled to thirty odd Squadrons. Theatre commands would mean the dissipation of critical

resources for a cohesive Air Battle to be fought in which there is complete dominance of the skies by Air Superiority.

Responsibility

The IAF is responsible for Space and Air Defence of India to include the maritime boundaries along the coast line of India. In addition, the resources are utilised for Humanitarian and Disaster Relief within the country and abroad, as has been witnessed over the last two years of bringing back Indian citizens during the Pandemic and recently from the Ukraine conflict zone.

Upgrades

Modern-day battlefield threats ensure that technology upgrades are regularly carried out, and threats are mitigated. Obsolescence of equipment and its replacement has to be factored in. The Ukraine war has disrupted the supply chain of spares and a significant equipment overhaul, thus affecting operational readiness; this is an assessment. The way forward is to make up for the deficiencies and have a balanced approach. If viewed from the perspective of land warfare, the resources of the IAF may seem adequate. However, pragmatically, the lessons drawn from the ongoing Ukraine conflict can be deduced as a campaign being fought as individual battles and thereby suffering heavy attrition.

Preliminary Steps – National Security Strategy (NSS) – India

India needs its own version of Goldwater Nichol's legislation, is there a political will to pass an act of the Parliament to meet our National Security Objectives?

In the absence of an NSS paper, India is preparing for the last war

Unlike the US and China, where NSS is a policy document promulgated to develop capability and capacity to meet future threats, in India, the political leadership has taken the path of least resistance and therefore has been relying heavily on diplomatic parleys and negotiations to tackle its belligerent Northern neighbour, China. On the other hand, Pakistan has agreed to a ceasefire across the LoC, yet terror remains an instrument to inflict damage to civilian populations and property. Hence, one of the self-assumed aims of the Indian Defence Services is to make punitive strikes in retaliation to a terror strike like Pulwama.

The Indian Air Force carried out Jabba Top strikes in the early hours of 26 February 2018; in the retaliatory strike by Pakistan Air Force on 27 February on a brigade HQ, there was no riposte by the Indian Defence Forces. The NSA, in its charter, is to prepare an NSS paper and get it approved by the Government for its implementation. However, NSS is not published; it appears the core competency in military affairs is lacking.

After the 1971 war, when a tri-service discussion analyzed the war, Gen Sam remarked, “you can win as many battles as you like at sea, or in the air, or even lose them, but eventually it is the Army that will prove to be decisive”. Great maritime thinkers like Admiral Alfred Thayer Mahan emphasized that any great land victory would never be lasting or decisive unless the sea played a part in the conflict, in which case victory at sea was an essential precondition. Without Air Superiority, it will be a disaster for the ground forces. The lack of the above is visible in the Russian campaign in Ukraine. The lack of cohesion of troops and the Ukrainian Army has caused heavy attrition to Russian assets on land, air and sea.

<https://www.financialexpress.com/defence/new-cds-challenges-of-theatre-mmands/2728959/lite/>

Crash of an Army Helicopter — All You Want to Know

On Friday, Indian Army's Aviation Advance Light Helicopter (Weapon Systems Integrated) – ALH WSI based at Likabali (Assam) crashed. The crash took place at general area Migging (South of Tuting in Arunachal Pradesh), a region which almost 35 kms from the border with China. The crash of the Indian Army helicopter at 10.43 am on Oct 21, could have been due to a mechanical or a technical failure in which five persons were killed. Prior to the crash, according to officials, Air Traffic Control (ATC) on Friday received a 'May Day call' – suggesting a mechanical or a technical failure. Joint search operations were started immediately and teams from the Indian Air Force and the Army were sent to the crash site which was in an extremely challenging terrain of hills and thick jungles. This will be the basis of the Court of Inquiry which was constituted following the accident to investigate, said the official statement from the Indian Army on Saturday (Oct 22, 2022).

Was the weather good for flying?

According to the Army statement the weather was good for flying operations and the pilots had more than – 1,800 service flying hours between them and 600 flying hours on ALH-WSI. With the recovery of the mortal remains of the fifth individual the Indian Army in its statement said that the rescue and search mission has ended.

More about the Helicopter

The ALH (WSI), 'Rudra' Mark IV, designed and developed by state-owned Hindustan Aeronautics Limited (HAL), is considered to be the potent attack helicopter for niche roles in the Army and Air Force. This helicopter is multi-role 5.8 ton class and it is the armed version of the ALH 'Dhruv'. In view of the standoff between the Indian and Chinese forces along the Line of Actual Control (LAC) in eastern Ladakh, Rudra helicopter has been deployed by the Indian Army's Aviation Wing in the region in an effort to add more teeth to its tactical missions. With this accident, the growing number of crashes involving military helicopters and aircraft is back in focus. This is the third big crash in which lives of the military personnel have been lost. Last year in August, ALH-WSI crashed into Ranjit Sagar reservoir located near Pathankot. The crash which took place in August two pilots of the Indian Army were killed.

In 2019, October, ALH 'Dhruv' had crashed and in that helicopter the then chief of the northern command, Lt Gen Ranbir Singh and other senior officers, had crash landed in Jammu & Kashmir's Poonch sector. Earlier this month there was an accident involving a Cheetah Helicopter, when a lieutenant colonel from the Indian Army's aviation wing was killed and his co-pilot sustained severe injuries. The helicopter had crashed in a forward area in the North East Tawang area. There are around 180 Cheetah, Chetak and Cheetal helicopters being operated by the Indian Army and the Indian Air Force has around 120 Cheetah and Chetak helicopters in its fleet.

<https://www.financialexpress.com/defence/crash-of-an-army-helicopter-all-you-want-to-know/2729176/lite/>

Indian Private Firm Beats 8-Yr Chinese Monopoly, Supplies Ammunition to Nepalese Army

Breaking an 8-year-old Chinese monopoly in Nepal, an Indian private company has supplied 2 million of the 5.56x45mm rounds for the Nepalese army's assault rifles under a government-to-government contract route, ThePrint has learnt. Sources in the defence and security establishment said that Bengaluru-based SSS Defence won the contract on quality beating heavy bidding by the Chinese. While the Nepalese Army used to import ammunition from India, they had stopped doing so after it replaced the Indian-made INSAS rifles with the Korean and American supplied M4s, M16s and other NATO rifles. Following a deadly encounter with Maoists in 2005 in which 43 Nepalese soldiers were killed, its spokesman called the rifle substandard and claimed that the operation would have been more efficient had they got better weapons.

Indian and Nepalese Army share a long history and there are about 35,000 Nepali Gurkhas serving in the Indian Army while there are over 1.3 lakh lakh veterans back in the Himalayan Kingdom who continue to draw full pension from India for their military service. Estimates suggest that salaries and pensions of Nepalese Gurkhas in the Indian Army alone totals more than the annual budget of the Himalayan Kingdom's Army budget.

The contract and its significance

Talking about the ammunition contract, sources said that the delivery is ongoing and will be completed by the beginning of next year. The ammunition is being manufactured by the SSS Defence at its factory in Andhra Pradesh. The company has a joint venture for production of ammunition in India with Brazilian firm CBC Defense, the world's second largest producer of military ammunition. CBC has been a supplier to the Indian armed forces and has a contract going on for small caliber supplies to the Indian Army as well. Explaining the significance of the Nepealse contract, sources said that in the last eight years the Army there had not bought a single Indian weapon system or ammunition.

"The Nepalese Army had written to us asking for bids by our firms. Bids were also sought from the Chinese. The Nepalese Army undertook its own evaluation process and selected SSS Defence. The contract for the same was government to government," a source said. Sources said that the contract is yet another example of India's growing defence industry and the export potential for Indian systems.

India's defence exports

India is looking at its highest-ever defence exports this fiscal with sales touching Rs 8,000 crore in the first six months. India's defence exports had touched a record Rs 13,000 crore in the 2021-2022 fiscal, which was nearly eight times of what it was in 2014. In 2020, the Narendra Modi government had set a target of Rs 35,000 crore (\$5 billion) export in aerospace, and defence goods and services by 2025. This was part of the planned turnover of Rs 1.75 lakh crore (\$ 25 billion) in defence manufacturing by 2025 that the government is aiming to achieve. Incidentally,

in October last year, SSS Defence had defeated Israeli firm Fab Defense, also known as Zahal, to bag a contract to upgrade a limited number of Kalashnikov rifles with a unit of the Indian Special Forces. The company is the first Indian company to come up with a range of upgrade kits for AK47s and Draganov marksman rifles in use with the Army and a range of self-designed and manufactured small arms including carbines and snipers.

<https://theprint.in/defence/indian-private-firm-beats-8-yr-chinese-monopoly-supplies-ammunition-to-nepalese-army/1180039/>



Sun, 23 Oct 2022

Adani Defence and Aerospace, Israel Weapon Industries Unveil India's First AI-based Futuristic Firing System

Humanoid robots armed with lethal weapons or unmanned tanks and submarines may have seemed like a realm of pure science fiction, just a few years ago. But now with advances in artificial intelligence (AI), arms control is a challenging but very promising application. India is prioritising AI as a key component of its national security strategy given US & China's significant advancements in AI-based research. India is well promoting its AI-based innovation and building infrastructure that is AI-ready in order to secure its strategic and national security interests. The country's defence establishment is now working towards harnessing the expertise of the information technology industry and are advancing also in the field of small arms that have always been limited to mechanical or technical improvements.

There haven't been any game-changing improvements in technology of small arms in the last few years. But taking a cue from countries like the US and China that are focusing on AI and MI (machine learning) to develop lethal autonomous weapons systems (LAWS), Adani Defence and Aerospace, along with its partner Israel Weapon Industries (IWI), have unveiled India's first AI based firing system 'ARBEL', the next-generation small arms solution at the DefExpo 2022 being held at Gandhinagar.

Soldier lethality and survivability are increased by ARBEL, a weapon-embedded Intelligent Fire Control System (IFCS) based on motion sensors. It contains a rechargeable (field-level changeable) battery, control unit, motion and trigger sensors, and microprocessor. The system doesn't need a particular optical component to work and can be mounted on and combined with a variety of assault rifles and machine guns, including the TAVOR, ACE, and NAGEV. The user can choose the upper receiver and optic combination that best suits the mission at hand. It offers a range of capabilities, including rapid, accurate, and lethal fire, increased hit probability and lethality in stressful combat situations and from less-than-ideal shooting positions, quick strikes on the enemy, proven effectiveness in all terrains of conflict, and environmental adaptability.

AI-driven warfare is becoming more prevalent throughout the world. Due to the potential for AI to fundamentally alter the nature of the current state of international security, India is also undertaking the necessary preparations for its military forces. Additionally, Ashish Rajvanshi, CEO of Adani Defence & Aerospace, said that ARBEL is the next-generation small weapons

solution for enhancing the dismounted operator's lethality and survivability by correctly engaging targets in a condensed window of opportunity while under stress and exhaustion. Simply put, the AI system reads and records the target, position, and recoil of the weapon as the user fires the first round. When the subsequent rounds are fired at the same target, this information is then utilised. The method gives the user total flexibility in addition to being prepared for fight. In other words, the user has the option to deactivate it during a battle. The weapon will also function correctly even if the ARBEL battery runs out.

It doesn't require much training, and the weapon doesn't need to be reconfigured. With zero adaption time, it aids in the creation of fully customised weapon profiles. Considering the evolving dynamics and today's modern warfare, it is necessary to ensure that our soldiers possess such leading technologies to safeguard the nation. Through this platform, Adani Defence & Aerospace continues to demonstrate its dedication to developing cutting-edge technology that will assist defend the country and safeguard our troops.

<https://www.india.com/news/india/adani-defence-and-aerospace-israel-weapon-industries-unveil-indias-first-ai-based-futuristic-firing-system-5702398/>



Fri, 21Oct 2022

Russia's Newest Rubezh-M Anti-Ship Missile System Commences Operation

By Anthony Bell

Russia's military successfully uses the newest Rubezh-M mobile coastal defense missile (MCDM) system during the special military operation in Ukraine, launching the weapon's missiles from Crimea. This complex is an export-oriented development, which was created for coastal countries with limited budgets that have small capabilities for the acquisition of expensive Western-made MCDM systems. The Rubezh-M is now being successfully evaluated in the environment of the Ukrainian theatre of operations.

The Rubezh-ME is built on the base of the KAMAZ-6560 6×6 all-terrain truck, which carries a four-cell launch unit for Kh-35UE ('AS-20 Kayak') anti-ship missiles (ASMs) developed by the Tactical Missiles Corporation, a beyond-the-horizon radar detecting surface targets, and a fire-control system. "The system is relatively compact and requires no external target designation system to open fire," said the Taifun's representative. Owing to the high level of hardware integration, almost all subsystems required for operation are mounted on a single vehicle. The Rubezh-ME's combat vehicle (CV) weighs some 26 tonnes and produces a road speed of 75 km/h and a cruise range of up to 1,000 km. The CV is controlled by a two-strong crew.

The Kh-35UE ASM weighs 670 kg, including a 145 kg warhead, and is capable of engaging a surface target at a distance between 7 km and 260 km. The missile produces a subsonic speed of M=0.8-0.85, flying at an altitude of 10-15 m and descending to 4 m prior to the contacts with a target. The Kh-35UE is fitted with an inertial navigation system with correction by satellite signal and turns on an active-passive radar seeker in the terminal stage. The CV can be supplied

with either the Mineral-ME1 active radar or the Mineral-ME2 passive radar. The Mineral-ME can simultaneously detect up to 200 targets. Each vehicle can launch a salvo of four ASMs against four different targets. A Rubezh-ME battery can comprise up to eight CVs having a total of 32 ready-use Kh-35UEs.

The Rubezh-ME features sufficient firepower, mobility, high combat survivability, and prominent jamming resistance. It can be used as a basic layer of a country's coastal defense network. The system's hardware allows an operator to form a variable configuration of weapons and technical systems being used and a tactically flexible structure of fire control based on a current operational environment. The Rubezh-ME can be supplied as a single combat vehicle or as a part of a battery or a division. The Rubezh-ME is of high interest for, first of all, those countries with vast maritime economic areas and islands, which require reliable protection against possible attacks of hostile surface combatants.

The Rubezh-ME is capable of maintaining control over straits and territorial waters, protecting naval bases and other in-shore facilities, coastline (in areas of possible landings) and maritime routes, maintaining maritime supremacy at the distance of the system's range of fire, and engaging both surface and land targets. The aforementioned capabilities of the system have been successfully proven during the operation in Ukraine.

<https://www.financialexpress.com/defence/russias-newest-rubezh-m-anti-ship-missile-system-commences-operation/2728422/lite/>

THE ECONOMIC TIMES

Sat, 22 Oct 2022

Japan, Australia Ink Security Pact with Eye on China

Australia and Japan agreed to share sensitive intelligence and deepen defence cooperation Saturday, signing a security pact to counter China's military rise. Prime ministers Fumio Kishida and Anthony Albanese inked the accord in the Western Australian city of Perth, revamping a dusty 15-year-old accord drafted when terrorism and weapons proliferation were the overriding concerns. Under the deal, the countries' defence forces will train together in Northern Australia, and "expand and strengthen cooperation across defence, intelligence sharing" and a raft of other areas, Australian officials said.

Japan does not have a foreign spy agency equivalent to America's CIA, Britain's MI6 or Russia's FSB. Australia's ASIO is a fraction of the size of those organisations. But according to expert Bryce Wakefield, Australia and Japan have formidable signals and geospatial capabilities -- electronic eavesdropping tools and hightech satellites that provide invaluable intelligence on adversaries. Wakefield, director of the Australian Institute of International Affairs, said the agreement is another signal that Japan is becoming more active in the security arena.

"It is a significant agreement in that Japan hasn't overtly worked with partners outside the United States on security," he said. "It may actually end up being a template for cooperation with other countries, for example, the United Kingdom." Some even see the accord as another step toward Japan joining the powerful Five Eyes intelligence-sharing alliance between Australia, Britain,

Canada, New Zealand and the United States. It is "an epoch-making event that Japan can share SIGINT with a foreign nation except for the United States", Ken Kotani, an expert in the history of Japanese intelligence at Nihon University, told AFP. "This will strengthen the framework of the Quad (Australia, India, Japan and the United States) and is the first step for Japan to join the Five Eyes," he added. - 'Leaked like a sieve' - Such a suggestion would have been unthinkable a few decades ago, but events in Japan's neighbourhood have forced a rethink of the country's pacifist policies established in the wake of World War II. In recent years North Korea has repeatedly lobbed missiles over and around Japan, while China has built the world's largest navy, revamped the globe's biggest standing army, and amassed a nuclear and ballistic arsenal right on Japan's doorstep.

But hurdles remain for Tokyo's closer security cooperation with allies. Japan's intelligence sharing with allies has been hampered by longstanding concerns about Tokyo's ability to handle sensitive confidential material and transmit it securely. "To put it bluntly Japan has traditionally leaked like a sieve," said Brad Williams, author of a book on Japanese intelligence policy and a professor at the City University of Hong Kong. Laws have been introduced to more severely punish intelligence leaks, but for now, Australia will likely be forced to scrub any intelligence it passes to Japan for information gleaned from the Five Eyes network. - Earths, wind and fire - Prime ministers Kishida and Albanese also vowed more cooperation on critical minerals, the environment and energy. Japan is a major buyer of Australian gas and has made a series of big bets on hydrogen energy produced in Australia as it tries to ease a lack of domestic energy production and dependence on fossil fuels. "Japan imports 40 percent of its LNG from Australia. So it's very important for Japan to have a stable relationship with Australia, from the aspect of energy," a Japanese official said ahead of the meeting.

A memorandum of understanding on critical minerals will see Japan tap Australia's supply of rare earths, which are crucial in producing everything from wind turbines to electric vehicles. China currently dominates world production of critical minerals, leading some to worry that supplies could be cut for political reasons.

<https://economictimes.indiatimes.com/news/defence/japan-australia-ink-security-pact-with-eye-on-china/articleshow/95027070.cms?from=mdr>

Science & Technology News

The Tribune

Sun, 23 Oct 2022

'Historic Mission': ISRO's Heaviest Rocket LVM3-M2 Successfully Places 36 Satellites into Orbit

Indian Space Research Organisations' heaviest rocket LVM3-M2 on its maiden commercial mission on Sunday successfully placed 36 broadband communication satellites of a UK-based

customer into the intended orbits, the space agency said, describing the mission as 'historic'. OneWeb Ltd is the UK-based customer of NewSpace India Ltd (NSIL), ISRO's commercial arm, and a global communication network powered from space, enabling internet connectivity for governments and businesses. Bharti Enterprises is one of the major investors in OneWeb. London-based satellite communications company Network Access Associated Limited (OneWeb) said its partnership with ISRO and the space agency's commercial arm NSIL demonstrated its commitment to provide connectivity across the length and breadth of India by 2023.

With Sunday's success, ISRO put behind the anomaly experienced in its August 7 Small Satellite Launch Vehicle (SSLV) mission, that had then made the satellites unusable due to orbital issues. Early on Sunday, a beaming ISRO Chairman S Somanath announced Deepavali had started early for the scientists at the space agency. "LVM3 M2/OneWeb India-1 mission is completed successfully. All the 36 satellites have been placed into intended orbits. @NSIL_India @OneWeb," ISRO said in a tweet, minutes after Somanath announced that 16 satellites have been placed in the desired orbits while the rest would take some more time. All the 36 satellites were injected into the orbits around 75 minutes after the rocket blasted off from the Sriharikota spaceport at 12.07 am.

Addressing the gathering at the Mission Control Centre, Somanath said the festival celebrations started at Satish Dhawan Space Centre as LVM3 and its very first commercial mission have accomplished the orbit very accurately. "Now the rocket has entered into the orbit, 16 satellites out of the 36 satellites have been already injected. I wanted to tell you that this is a slow process of separating the satellites. The data of the separation of the remaining 20 satellites will come little later and mission operations of observing this separation is continuing", he said earlier. ISRO later confirmed the desired objective of the mission has been met. Former ISRO chiefs K Sivan and A S Kiran Kumar and Bharti Enterprises founder-chairman Sunil Mittal among others witnessed the launch from the Mission Control Centre.

Terming the mission as 'historic', Somanath, also the Secretary, Department of Space credited Prime Minister Narendra Modi's support for the mission's success. "Congratulations to the entire launch vehicle team for grabbing the opportunity and making it ready today for the historic mission. I also want to thank the OneWeb team for having confidence in us to host the LVM3...we are very hopeful that the next mission of LVM3 will do the same to place the remaining 36 satellites it has been contracted by NSIL", he said. NSIL Chairman and Managing Director D Radhakrishnan, complementing the ISRO team for a 'commendable' mission of LVM3 said, "the three major stakeholders to this particular mission the NSIL, ISRO and OneWeb India, have shown the entire world how to contract and execute the mission in less than 3-4 months."

According to OneWeb, it will bring secured solutions not only to enterprises but also to towns, villages, municipalities and schools, including the hardest-to-reach areas across the length and breadth of the country. "OneWeb's commitment to enhance connectivity in India is backed by Bharti Global, its largest investor," the company said in a statement. "This launch by ISRO and NSIL is one of the biggest commercial orders by India's premier space organisation, and the first using the LVM3 rocket," OneWeb noted. OneWeb's satellites separated successfully from the rocket and were dispensed in nine phases over a period of one hour and 15 minutes, with signal acquisition on all 36 satellites confirmed.

This is OneWeb's 14th launch, bringing the constellation to 462 satellites. This launch represents more than 70 per cent of its planned 648 low earth orbit (LEO) satellite fleet that it said will deliver high-speed, low-latency connectivity worldwide. With only four more launches to go, the company said it remains on track to activate global coverage in 2023, while its connectivity solutions are already live in certain regions of the globe. Mittal said today's launch is a significant milestone for OneWeb. "This new phase of our launch programme from India brings us a step closer to not only enhancing our global coverage but also delivering connectivity in India and South Asia, particularly to the communities who need it most," he said.

"Today, my dream of having an Indian element in the OneWeb constellation has been realised. This launch with ISRO and NSIL opens up the space sector in India with the possibility of billions of dollars flowing into the country," he added.

Earlier, at the end of a 24-hour countdown, the 43.5 metre tall rocket soared majestically in the prefixed time on Sunday from the second launch pad at the Satish Dhawan Space Centre at Sriharikota. The vehicle is also dubbed as one of the heaviest for its ability to carry satellites up to 8,000 kg. Sunday's mission marks several key milestones as the LVM3-M2 mission is the maiden dedicated commercial mission for the launch vehicle. It carried the heaviest payloads with 36 satellites of OneWeb, becoming the first Indian rocket with a payload of 5,796 kg. Mission Director Thaddeus Baskar said, "the mission was a demand given to this team by ISRO Chairman to execute the mission in a very short time of less than three months."

"Once the requirement was defined the entire team ISRO rose to the occasion, worked with full vigour. During the entire schedule, there was no room for sleep and everything has to be done right at the first time itself", he said. Meanwhile, Prime Minister Narendra Modi lauded ISRO and other stakeholders for the success.

"Congratulations @NSIL_India @INSPACeIND @ISRO on the successful launch of our heaviest launch vehicle LVM3 with 36 OneWeb satellites meant for global connectivity. LVM3 exemplifies Atmanirbharta & enhances India's competitive edge in the global commercial launch service market," he said. The launch is also first for LVM3-M2 to place the satellites in the Low Earth Orbit (LEO-up to 1,200 km above the Earth) unlike Geosynchronous Transfer Orbit (GTO). ISRO scientists had renamed the launch vehicle as LVM3-M2 from GSLV-Mk III as the newest rocket is capable of launching 4,000 kilograms class of satellites into GTO and 8,000 kg of payloads into LEO.

The LVM3-M2 mission would give a fillip to the space agency with the new launch vehicle set to place satellites into the low earth orbit, along with ISRO's trusted workhorse Polar Satellite Launch Vehicle (PSLV). The rocket is a three-stage launch vehicle consisting of two solid propellant S200 strap-ons on its sides and core stage comprising L110 liquid stage and C25 cryogenic stage.

<https://www.tribuneindia.com/news/nation/historic-mission-isros-heaviest-rocket-lvm3-m2-successfully-places-36-satellites-into-orbit-444016>

All about LVM3: ISRO's History-Making Rocket that Placed 36 Satellites in Orbit

The Launch Vehicle Mark 3 (LVM3) is ISRO's newest medium-heavy lift launch vehicle, the heaviest rocket currently in use by the space agency. Formerly called the Geosynchronous Satellite Launch Vehicle Mark III (GSLV Mk III), the rocket is designed to mainly launch satellites into geostationary orbit at 35,000km. On Sunday, in its first commercial mission, the LVM3 launched 36 satellites belonging to OneWeb's constellation in five staggered phases into their designated orbits. The launch was facilitated through ISRO's commercial arm, NewSpace India Limited (NSIL), and came about after Russia denied launch services because of Western sanctions. At 6 tons, this was the heaviest payload carried by an Indian launch vehicle. At 0142 hrs IST, ISRO announced that the mission was a success.



With the successful complex insertion sequence, after years of test flights and hiccups and a national lunar mission in its pocket, India's largest and heaviest rocket is now in the market to ferry international customer satellites into space. The development for the GSLV Mk III began in the early 2000s, along with the development of the cryogenic upper stage, which ISRO has been trying to develop to reduce reliance on the currently-used Russian design. The failure of the upper stage to ignite in consecutive flights in the GSLV MkII led to the first test flight of GSLV MkIII being delayed. The rocket's first experimental flight (also known as developmental or test flight) was initially scheduled for the early 2010s, but was pushed to make time for the Mars Orbiter Mission which launched in 2013.

The static fire tests for the rocket and its boosters were conducted in 2010, 2011, and 2015. The human-rated variant of the rocket, which is being developed for the Gaganyaan programme, also underwent static fire tests this year. The cryogenic upper stage was also tested successfully in 2017. The maiden suborbital test flight of the GSLV Mk III was on 18 December 2014 as a test

flight with a dummy upper stage. It carried the Crew Module Atmospheric Re-entry Experiment (CARE), a part of the Gaganyaan mission. The first orbital test flight occurred on 5 June 2017, carrying the GSAT-19 and placing it successfully in a 170km orbit. The second orbital test flight on 14 November 2018 placed the GSAT-29 into a geostationary orbit.

The first operational flight of the launch vehicle was on 22 July 2019, with Chandrayaan 2. The 4 tonne payload of this mission was, at the time, the heaviest payload carried by ISRO to orbit. This Sunday's successful mission carried a payload of 5,796kg — now ISRO's heaviest till date.

ISRO's rockets

While the LVM3 was named the GSLV Mk III, it features a suite of improved systems and components over the GSLV Mk II. As a result, the rocket is considered to be in a league of its own, apart from the trusty Polar Satellite Launch Vehicle (PSLV) and the GSLV. The LVM3 is capable of lifting much heavier satellites than the GSLV Mk II with a bigger cryogenic upper stage and a larger first stage. Both GSLV Mk II and LVM3 are three-stage vehicles, while the PSLV, which launches to low earth polar orbits, is a four-stage vehicle. The GSLV Mk-II can place up to 2,500kg in geosynchronous orbits and up to 5,000kg to low earth orbit. By comparison, the LVM3 can lift 4,000kg to GTO and up to 8,000 kg to LEO.

Currently, SpaceX's non-human rated Falcon Heavy, a super-heavy lift vehicle, is the heaviest rocket that is operational, only surpassed by the retired Saturn V, which launched Apollo astronauts to the moon. The LVM3 also has the human-rated variant which will be used for Gaganyaan missions. The next launch for the rocket is planned for February 2023, yet again launching 36 of OneWeb's satellites, while June of next year will tentatively see the launch vehicle pushing Chandrayaan-3 to a trans-lunar orbit.

<https://theprint.in/india/all-about-lvm3-isros-history-making-rocket-that-placed-36-satellites-in-orbit/1179563/>



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Particle Physics Pushing Cancer Treatment Boundaries

Researchers at Europe's science lab CERN, who regularly use particle physics to challenge our understanding of the universe, are also applying their craft to upend the limits to cancer treatment. The physicists here are working with giant particle accelerators in search of ways to expand the reach of cancer radiation therapy, and take on hard-to-reach tumours that would otherwise have been fatal.

In one CERN lab, called CLEAR, facility coordinator Roberto Corsini stands next to a large, linear particle accelerator consisting of a 40-metre metal beam with tubes packed in aluminium foil at one end, and a vast array of measurement instruments and protruding colourful wires and cables. The research here, he told AFP during a recent visit, is aimed at creating very high energy beams of electrons—the negatively charged particles in the nucleus of an atom—that eventually could help to combat cancerous cells more effectively.

They are researching a "technology to accelerate electrons to the energies that are needed to treat deep-seated tumours, which is above 100 million electron volts" (MeV), Corsini explained. The idea is to use these very high energy electrons (VHEE) in combination with a new and promising treatment method called FLASH.

Reducing 'collateral damage'

This method entails delivering the radiation dose in a few hundred milliseconds, instead of minutes as is the current approach. This has been shown to have the same destructive effect on the targeted tumour, but causes far less damage to the surrounding healthy tissue.

With traditional radiation therapy, "you do create some collateral damage," said Benjamin Fisch, a CERN knowledge transfer officer. The effect of the brief but intense FLASH treatment, he told reporters, is to "reduce the toxicity to healthy tissue while still properly damaging cancer cells." FLASH was first used on patients in 2018, based on currently available medical linear accelerators, linacs, that provide low-energy electron beams of around 6-10 MeV.

At such low energy though, the beams cannot penetrate deeply, meaning the highly-effective treatment has so far only been used on superficial tumours, found with skin cancer. But the CERN physicists are now collaborating with the Lausanne University Hospital (CHUV) to build a machine for FLASH delivery that can accelerate electrons to 100 to 200 MeV, making it possible to use the method for much more hard-to-reach tumours.

'Game-changer'

Deep-lying cancer tumours that can't be rooted out using surgery, chemotherapy or traditional radiation therapy are often today considered a death sentence. "It is the ones which we don't cure at the moment which will be the targets," Professor Jean Bourhis, head of CHUV's radiology department, told AFP. "For those particular cancers, which may be one third of the cancer cases, it could be a game-changer." Professor Jean Bourhis says the programme, which will target deep-lying cases, could be a "game-changer."

There are particular hopes that the FLASH method, with its far less harmful impact on surrounding tissue, could make it possible to go after tumours lodged in the brain or near other vital organs. Bourhis said it might not relegate deaths from stubborn cancer tumours to the history books, "but at least there will be a new opportunity for more cures, if it works."

'Compact'

One challenge is making the powerful accelerator compact enough to fit inside a hospital. At CERN, a large gallery has been dedicated to housing the CLEAR accelerator, which requires 20 metres to push the electrons up to the required energy level—and another 20 metres to condition, measure and deliver the beam. But Corsini insisted that CERN had the know-how to "accelerate in a much more compact space".

The prototype being designed with CHUV will aim to do the same job with a machine that is 10 metres overall. This "compact" solution, Corsini said, "reduces the cost, reduces power consumption and variability, and you can easily put it into a hospital without having to build a whole building." Construction of the prototype is scheduled to begin next February, and patient clinical trials could begin in 2025, Bourhis said, "if everything goes smoothly".

<https://phys.org/news/2022-10-particle-physics-cancer-treatment-boundaries.html>

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