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पत्र सूचना कार्यालय
भारत सरकार

रक्षा मंत्रालय

Thu, 02 Nov 2023

रक्षा अनुसंधान एवं विकास संगठन ने उच्च ऊर्जा और विशेष सामग्री विषय पर 18 वीं अंतर्राष्ट्रीय कार्यशाला का आयोजन किया

रक्षा अनुसंधान एवं विकास संगठन (डीआरडीओ) की पुणे स्थित उच्च ऊर्जा सामग्री अनुसंधान प्रयोगशाला (एचईएमआरएल) 2 और 3 नवंबर, 2023 को रूस के टॉम्स्क स्टेट यूनिवर्सिटी एंड फेडरल रिसर्च एंड प्रोडक्शन सेंटर के सहयोग से पुणे के डॉ. एपीजे अब्दुल कलाम डीआरडीओ गोल्डन जुबली ऑडिटोरियम, पाषाण में उच्च ऊर्जा व विशेष सामग्री विषय पर 18 वीं अंतर्राष्ट्रीय कार्यशाला का आयोजन कर रही है। रक्षा अनुसंधान एवं विकास विभाग के सचिव तथा रक्षा अनुसंधान एवं विकास संगठन के अध्यक्ष डॉ. समीर वी कामत ने इस सम्मेलन का उद्घाटन किया।

उच्च ऊर्जा सामग्री अनुसंधान प्रयोगशाला भारत में पहली बार इस अंतर्राष्ट्रीय कार्यशाला का आयोजन कर रही है, जो वैज्ञानिकों, तकनीशियनों एवं शोधकर्ताओं को ज्ञान, अनुभव तथा हाल के दिनों में हुई तकनीकी प्रगति को साझा करने के लिए एक मंच प्रदान करती है। इस कार्यशाला में भारत सहित रूस, जर्मनी, फ्रांस आदि देशों के लगभग 250 प्रतिनिधि भाग ले रहे हैं। इसके अलावा, कार्यशाला में विभिन्न रक्षा अनुसंधान एवं विकास संगठन और भारतीय अंतरिक्ष अनुसंधान संगठन की प्रयोगशालाएं, शैक्षणिक संस्थान तथा उद्योग जगत के प्रतिनिधि भी शामिल हो रहे हैं।

उच्च ऊर्जा और विशेष सामग्री विषय पर अंतर्राष्ट्रीय कार्यशाला-2023 का आयोजन उच्च ऊर्जा सामग्री तथा इससे संबद्ध प्रौद्योगिकियों में हाल के दिनों में हुए नए सुधारों पर चर्चा व विचार-विमर्श करने तथा उन्हें साझा करने के लिए किया जा रहा है। इस आयोजन का विषय 'उच्च ऊर्जा और विशेष सामग्रियों में उभरते रुझान' है। कार्यशाला को आयोजित करने का उद्देश्य उच्च ऊर्जा और विशेष सामग्रियों पर आधारित नए उत्पादों के विकास पर दुनिया भर के वैज्ञानिकों तथा शोधकर्ताओं के सहयोग को बढ़ावा देना है। इस कार्यक्रम में विचार-विमर्श एवं चर्चा के उद्देश्य से केंद्रित किये गए क्षेत्र विभिन्न अनुप्रयोगों में नई ऊर्जा सामग्रियों का संश्लेषण, लक्षण वर्णन और मूल्यांकन, सुप्त व हरित उच्च ऊर्जा तथा विशेष सामग्री, उच्च विस्फोटक बनाने की विधि एवं उपकरण, उन्नत बारूद बनाने की गतिविधियां, उच्च ऊर्जा तथा विशेष सामग्री अनुप्रयोग के लिए नैनो सामग्री, विसैन्यीकरण, अपशिष्ट प्रबंधन, उच्च ऊर्जा व विशेष सामग्री हेतु पर्यावरण अध्ययन एवं निपटान प्रौद्योगिकियां, विशेष सामग्रियों और संबद्ध तकनीकों में प्रगति आदि हैं।

उच्च ऊर्जा एवं विशेष सामग्री विषय पर अंतर्राष्ट्रीय कार्यशाला आयोजन वर्ष 2004 में शुरू किया गया था और उसके बाद इसे रूस द्वारा पोलिटेक्निको डी मिलानो, इटली; एयरबस सफरान लॉन्चर्स (एरियन ग्रुप) तथा यूनिवर्सिटी ल्योन 1, फ्रांस; जाक्सा, जापान जैसे अंतर्राष्ट्रीय सहयोगियों के साथ नियमित रूप से आयोजित किया गया।

<https://pib.gov.in/PressReleasePage.aspx?PRID=1974266>



**Press Information Bureau
Government of India**

Ministry of Defence

Thu, 02 Nov 2023

DRDO Holds XVIII International Workshop on High Energy and Special Materials

The Defence Research and Development Organisation's (DRDO) High Energy Material Research Laboratory (HEMRL), Pune is organizing the XVIII International Workshop on High Energy and Special Materials (HEMs-2023) in association with Tomsk State University & Federal Research & Production Centre, Russia on 2nd & 3rd November 2023 at Dr APJ Abdul Kalam DRDO Golden Jubilee Auditorium, Pashan, Pune. The workshop was inaugurated by Dr Samir V Kamat, Secretary Department of Defence R&D and Chairman DRDO.

HEMRL is organizing this international workshop for the first time in India, which provides a platform to the scientists, technocrats and researchers to share knowledge, experience and technological advancements made in recent past. About 250 delegates from countries like Russia, Germany, France, India etc., are attending the workshop. Various DRDO and ISRO laboratories, academic institutes and industries are participating in the workshop.

HEMs-2023 is being held to discuss, deliberate and share new developments in recent past in High Energy Materials and allied technologies. The theme of this workshop is 'Emerging Trends in High Energy and Special Materials'. The workshop is aimed at strengthening the collaboration of scientists and researchers across the globe on the development of new articles based on High energy and special materials. Focused areas for deliberations and discussions at the workshop are synthesis, characterization & evaluation of new energetic materials for various applications, insensitive & green HEMs, advanced high explosive formulations and devices, advanced pyrotechnics, nano materials for HEMs application, demilitarization, waste management, environmental studies and disposal technologies for HEMs, advances in special materials and allied technologies.

The International Workshop on HEMs was started in the year 2004 and thereafter regularly organized by Russia with International Collaborators like Politecnico di Milano, Italy; Airbus Safran Launchers (Ariane Group) and Universite Lyon 1, France; JAXA, Japan.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1974195>



Fri, 03 Nov 2023

Strengthening Processes to Ensure there are no Delays: DRDO Chief

Defence Research and Development Organisation (DRDO) chairman Sameer Kamat said on Thursday that the organisation is strengthening its processes to ensure there are no delays in the execution of 'Mission Mode' projects in the future.

Kamat was speaking in Pune on the sidelines of the 18th edition of the 'International Workshop on High Energy and Special Materials' organised by the High Energy Material Research Laboratory, a Pune-based DRDO laboratory, in association with Russia's Tomsk State University and Federal Research and Production Centre.

During media interaction, Kamat was asked about the data tabled by the Ministry of Defence in Rajya Sabha in February that out of 55 Mission Mode projects of the organisation, 23 were delayed. "Every project has a probable date of completion. Because these are Research and Development projects, there are some technical challenges that arise, which make us go through some iterations. During testing and evaluation too, some issues come up. And so these projects get delayed. It is a continuous process. We are looking at why these projects get delayed and we are strengthening our processes to ensure that in the future it does not happen," he said.

A Mission Mode project of the DRDO refers to a focused and time-bound development undertaken to achieve specific goals and objectives in the field of defence and technology. Answering a question by Rajya Sabha MP Ashok Kumar Mittal, Minister of State for Defence Ajay Kumar Bhatt had told the Upper House in February that among steps taken to overcome such delays were: mandatory focus on pre-project activity, increased frequency of project reviews, increased involvement of services and production partners during development process, revision in delegation of financial powers for projects and procurements, introduction of development cum production partner, project monitoring with milestone-based review process and directives for project formulation and management.

During the media interaction, Kamat was asked about the high-powered committee set up by the government in August for the overhaul of the DRDO. He said, "The committee is currently visiting various DRDO laboratories. We will only know once the committee gives its report."

During his address to the delegates at the workshop, Kamat said, "We have to make sure that we do not miss the bus on advances that are happening in the field of high energy materials. Green propellants and green explosives are going to be critical as we move ahead because environmental concerns are also increasing. So in addition to performance, we have to look at green chemistries. We have to not only look at new compositions but also better processing methods. The disposal of the explosives after their life is over will also be a critical area. We will also have to accelerate the development of these high energy materials because we can't take 10 to 15 years as we were taking earlier for this. And the only way to accelerate is through collaboration."

<https://indianexpress.com/article/cities/pune/strengthening-processes-to-ensure-there-are-no-delays-drdo-chief-9011167/>

THEWEEK

Thu, 02 Nov 2023

Need to Identify Future Technology Road Map for Development of High Energy and Special Materials DRDO Chief

Defence Research and Development Organisation (DRDO) chairman Dr Samir V Kamat on Thursday said there was need to identify future technology and evolve a road map for futuristic development in high energy and special materials.

Kamat, also secretary of the Department of Defence R&D, was speaking after inaugurating the International Workshop on High Energy and Special Materials (HEMs-2023), which comprised lectures by eminent personalities from Germany, Russia, DRDO as well several firms.

Addressing the session attended by the student community, industry and other research organizations from all over the country and abroad, Kamat emphasized the need to identify future technology and to evolve the road map for futuristic development in high energy and special materials.

He asked them to deliberate for the design and realization of projects for future technologies, adding that focus must be on the need for collaborative research work with the participation of private industry, academia, foreign partners, and DRDO.

Dr Boris Pevchenko, DG, JSC, FR&PC Russia said this conference platform should be used for the exploration of cutting-edge technologies, deliberations on innovative aspects of HEMs as well as initiatives for collaborative developments.

Speaking on the sidelines of the event, Kamat, when asked about 23 of the DRDO's 55 high-priority projects getting delayed, said every project has a probable deadline for completion.

"When we take up a project, we say we are likely to complete it by so and so date. But when we start executing such R&D projects, there are chances of many technical challenges which make us go through iteration. During the test and evaluation, issues come up and that is why some projects get delayed," he pointed out.

The projects include developing anti-air field weapons, surface-to-air missiles, anti-ship missiles, long-range radars, combat vehicles, combat suits for submarines, and submarine periscopes, among others.

Minister of State for Defence Ajay Bhatt had provided the details in a written reply to a question in the Rajya Sabha earlier this year.

Kamat said they would complete the projects, adding it is an ongoing process.

They are looking into why these projects got delayed and strengthening the processes to ensure it does not happen in the future is underway, he added.

<https://www.theweek.in/wire-updates/national/2023/11/02/bes22-mh-drdo-kamat.html>



Thu, 02 Nov 2023

बनाई जा रही है NASM-MR मिसाइल, जानिए कितनी बढ़ जाएगी नौसेना की ताकत

भारतीय रक्षा अनुसंधान संगठन (DRDO) इस समय एक ऐसी मिसाइल बना रहा है, जिसकी तैनाती होने के बाद भारतीय नौसेना (Indian Navy) की ताकत कई गुना बढ़ जाएगी. साथ ही दुश्मन के जंगी जहाज किसी भी तरह की हरकत करने से पहले थोड़ा सोचेंगे. क्योंकि ये एक सब-सोनिक क्रूज मिसाइल है.

NASM-MR मतलब नेवल एंटी-शिप मिसाइल. MR का मतलब मीडियम रेंज. यानी मध्यम दूरी की मिसाइल. माना जा रहा है इस मिसाइल का वजन 750 किलोग्राम होगा. यह करीब 15 से 17 फीट लंबी होगी. इसमें बूस्टर भी शामिल होंगे. व्यास करीब 1.8 फीट होगा. इस मिसाइल पर 150 किलोग्राम वजनी वॉरहेड लगा सकते हैं.

यह रेडियो प्रॉक्सिमिटी फ्यूज पर विस्फोट करेगा. इसका रॉकेट सॉलिड प्रोपेलेंट पर चलेगा. साथ ही टर्बोफैन इसे गति प्रदान करेंगे. फिलहाल इसकी ऑपरेशन रेंज 150 से 350 किलोमीटर मानी जा रही है. यह अधिकतम 50 मीटर से 4 किलोमीटर की ऊंचाई तक जाकर हमला कर पाएगा. इसकी अधिकतम गति 988 किलोमीटर प्रतिघंटा के आसपास होगी.

टारगेट पर हमला करते वक्त यह बीच रास्ते में अपनी दिशा में बदलाव कर सकती है. इसे इनर्शियल नेविगेशन सिस्टम के आधार पर गाइड किया जाएगा. साथ ही इसमें सैटेलाइट गाइडेंस की भी सुविधा होगी. इसे लॉन्च करने के लिए युद्धपोत, HAL तेजस फाइटर जेट और भविष्य में आने वाला TEDBF फाइटर जेट उपयुक्त माना जा रहा है.

यह असल में एक हार्पून क्लास एंटी-शिप मिसाइल है. मध्यम दूरी पर दुश्मन को धूल चटाने के लिए यह मिसाइल बेहद कारगर साबित होगी. इस मिसाइल के बनने और तैनाती के बाद भारत की तटीय सुरक्षा में काफी इजाफा होगा. इतना ही नहीं भारतीय नौसेना के लिए रुद्रम मिसाइल भी बनाई गई है. जिसका इस्तेमाल हवाई हमले के तौर पर किया जा सकता है.

<https://www.aajtak.in/science/story/drdo-is-developing-nasm-mr-cruise-missile-for-indian-navy-know-everything-about-it-cds-1811257-2023-11-02>



Thu, 02 Nov 2023

DRDO Reveals Updated Abhyas Target System

Aeronautical Development Establishment (ADE) – an agency under the state-owned Defence Research and Development Organisation (DRDO) – revealed an updated configuration of the Abhyas High-speed Expendable Aerial Target (HEAT) at the eighth Aerospace & Defence Manufacturing Show (ADMS) 2023 held in Bangalore on 26 and 27 October.

The original configuration of Abhyas was launched in 2013 and featured twin underslung boosters. However, the new configuration features a single underslung booster with an improvised rocket motor, an elongated length (2.44 m), and a new wingspan. The dimensions of the latter were not disclosed.

“The Abhyas, which was initially launched using two boosters producing 800 kgF, is now leveraging a single booster producing 400 kgF. The modification was done to reduce the initial g-factor,” an ADE official said.

According to ADE, the new Abhyas configuration provides greater efficiency compared with the original configuration in terms of thrust, endurance, and control with changes in propulsion and its integrated ADE electronics suite.

ADE claimed that in its new configuration, the 75 kg Abhyas has a 30 minute endurance, a 2 g turning radius, and a speed of Mach 0.5 (approximately 333.4 kt). It is configured with programmed weapon release, altitude hold, and heading hold functions (to maintain a constant attitude in the presence of disturbance without the need for external pilot input).

An Abhyas fitted with an automatic miss-distance indicator has also been tested using an open-loop launch integrated with a reaction control system and a potentiometer, the ADE official said. Tests are also planned for November using a closed loop.

<https://www.janes.com/defence-news/news-detail/drdo-reveals-updated-abhyas-target-system>



Thu, 02 Nov 2023

DRDO Progresses Weaponised Archer UAV

India's Aeronautical Development Establishment (ADE) – an agency under the state-owned Defence Research and Development Organisation (DRDO) – has disclosed new details about the development and testing of its new Short-Range Unmanned Aerial Vehicle-Weaponised (SRUAV-W) – also known as 'Archer'. An ADE official told Janes at the eighth Aerospace and Defence Manufacturing Show (ADMS), which was held in Bangalore from 26 to 27 October, that the SRUAV-W/Archer is based on the ADE's Rustom-1 tactical UAV. "We are working through the flight test phase of Archer. We are confident that we'll be able to complete the initial weaponised flight test phase by June 2024," the official said.

Initial development of the Rustom-1 started in 2009 for the intelligence, surveillance, and reconnaissance (ISR) role. Under the Archer project, the UAV has been remodified to carry out armed missions. The modification is understood to have started in mid-2022.

In a series of tests by ADE, Archer has constantly achieved an altitude of 20,000 ft. The system was designed to fly at a ceiling of 22,000 ft, the official said. The lower ceiling reflects the ADE's ongoing tests to support the Archer system's integration of payloads including anti-tank guided missiles and anti-personnel missiles. The official did not disclose the engine manufacturer, but it is understood by Janes to have been imported from France. Driven by a three-bladed pusher propeller, Archer is propelled by a 16 hp piston engine.

<https://www.janes.com/defence-news/news-detail/drdo-progresses-weaponised-archer-uav>

THE TIMES OF INDIA

Fri, 03 Nov 2023

NSTL Takes Part in Swachhata Drive

Naval Science and Technological Laboratory (NSTL), the premier naval research laboratory of Defence Research & Development Organisation (DRDO) in Visakhapatnam has participated in the prestigious 'special campaign for disposal of pending matters (SCDPM 3.0),' an initiative envisioned by Prime Minister Narendra Modi for making Swachhata everyone's business.

NSTL has organised numerous activities at its campus in Visakhapatnam with voluntary participation of all of its employees.

<https://timesofindia.indiatimes.com/city/visakhapatnam/nstl-takes-part-in-swachhata-drive/articleshow/104929965.cms>



Press Information Bureau
Government of India

Ministry of Defence

Thu, 02 Nov 2023

Raksha Mantri Shri Rajnath Singh Inaugurates ‘India Manufacturing Show’ in Bengaluru

“Small-scale industries are backbone of India’s economy”

“With active industry participation, India will soon become ‘Aatmanirbhar’ & a global manufacturing hub”

Raksha Mantri Shri Rajnath Singh inaugurated the three-day ‘India Manufacturing Show’ in Bengaluru, Karnataka on November 02, 2023. The show has been jointly organised by Laghu Udyog Bharti & IMS Foundation and supported by Department of Defence Production, Ministry of Defence. The central theme of the event is ‘Make in India, Make for the World’.

Addressing the industry captains & young entrepreneurs present at the inaugural function, the Raksha Mantri described the small-scale industries as the backbone of India’s economy that contribute immensely to the development of the nation. “Small industries are the motor of the Indian economy. The faster the motor runs, the quicker the vehicle of the economy moves,” he said, also crediting the small industries for maintaining stability in the economy.

Shri Rajnath Singh highlighted the important contribution of these industries to the socio-economic development of the country. “Compared to investment made, small industries create more employment opportunities than large industries. They also ensure a more even dispersion of wealth in society. Many MSMEs are doing well in exports and are becoming a part of the global supply chain of the world’s biggest companies. Heavy industries, too, play a big role in the nation’s development, but the country cannot fully progress by ignoring small industries,” he said.

The Raksha Mantri remembered the time when India was called ‘golden bird’ and a big reason was that there were many small industries in villages and towns, which provided employment to the people. “In ancient times, there were no large-scale industries in India; they were only small industries. Textile, iron and shipbuilding were the three industries for which India was known all over the world. They showcased our industrial capability,” he said.

Shri Rajnath Singh also underlined the ability of small industries to adapt to the changes more easily than large industries. “It is the adaptability of small industries which increases the possibilities of innovation. Many times, small industries bring more innovation than large industries in terms of new products, services and business models,” he said.

The Raksha Mantri recalled Father of the Nation Mahatma Gandhi's philosophy on economy, wherein he encouraged to focus on small industries rather than heavy industries. This is due to stronger connections of small industries with local communities. Even though their production scale is small, they are better tuned to local needs, he said.

Shri Rajnath Singh added that big industries, which have a turnover of thousands of crores, were once small industries, which reflects their importance. He termed the small-scale industries as the youth of industrial development; which possesses more energy, innovation and the ability to create something new. He emphasised that drawing focus towards small industries does not mean undermining the importance of heavy industries. He termed the relationship between the two as symbiotic, with both depending on each other for their profitability. Referring to the opinion of a section of people who believe that private industries operate on selfish motives, the Raksha Mantri said, "There is a need to understand the concept of economy; the fine line between selfish motive and profit motive. The profits of private industries reach crores of families in India, due to which the economy of this country is running. If private industries do not work on a profit motive, they will not be able to contribute to the economy. 'Profit is not selfish, Profit is legitimate benefit'".

Shri Rajnath Singh voiced the importance the Government attaches to the small-scale industries and listed out a number of decisions taken to ensure their welfare. These include MUDRA scheme, launched in 2015, under which a provision was made to provide collateral-free loans to MSMEs. The government also provided additional credit worth crores of rupees for MSMEs during the COVID-19 pandemic.

The Raksha Mantri also enumerated the unprecedented steps taken for MSMEs in the defence sector. "We are the first government which imposed restrictions on itself for the import of weapons. We released five positive indigenisation lists, under which 509 equipment have been identified, the manufacturing of which will now take place in India. In addition, four positive indigenisation lists for Defence Public Sector Undertakings (DPSUs) were also promulgated, under which 4,666 items were identified, that will be manufactured within the country. To ensure adequate demand assurance for our domestic industries, we reserved 75% of the defence capital acquisition budget, which amounts to approximately Rs one lakh crore, for purchases from local companies. These steps will strengthen our MSMEs and make them 'Aatmanirbhar'," he said.

Shri Rajnath Singh also referred to the Innovations for Defence Excellence (iDEX) initiative, which was launched to invite new ideas in defence manufacturing through start-ups and innovators. He added that iDEX Prime was launched to support projects, requiring support beyond Rs 1.5 crore up to Rs 10 crore, to help the start-ups in the defence sector.

The Raksha Mantri termed Laghu Udyog Bharti as a bridge between the government and the industry. "As an institution, Laghu Udyog Bharti should make the government aware of the problems of small industries. We will find solutions as soon as possible. It has another important role. The government and society have some expectations from industries. As an industry association, it should work in line with those expectations. As much responsibility as the industry has towards its balance sheet and profit & loss statements, it also has the same responsibility towards the nation. You should ensure that you provide top-quality and cost-effective products. You should take care of the interests of all the stakeholders. Keeping the environment in mind, the use of clean technologies must be promoted," he said.

Shri Rajnath Singh appreciated the fact that small industries of the country are progressing well through Laghu Udyog Bharti. He exuded confidence that India will become self-reliant and a global manufacturing hub in the times to come, if the industries continue to move forward with hard work and dedication. Members of Parliament Dr Sudhanshu Trivedi & Shri Tejasvi Surya, Chairman & Managing Director, Bharat Forge Limited Shri Baba Kalyani and Executive Vice President & Head, L&T Defence Shri Arun Ramchandani were among those present on the

occasion. The sixth edition of 'India Manufacturing Show' will provide a platform to the exhibitors to showcase their technologies, equipment and R&D in different sectors, such as aerospace & defence engineering, automation, robotics & drones to the participants. The aim is to bring together best minds, best technologies and best practices while providing business and knowledge sharing opportunities for its participants.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1974126>



Thu, 02 Nov 2023

Government Reserved 75% of Defence Capital Acquisition Budget for Purchases from Local Companies: Defence Minister Rajnath Singh

The government has reserved 75% of the defence capital acquisition budget, which amounts to approximately ₹1 lakh crore, for purchases from local companies, Defence Minister Rajnath Singh said on November 2.

The move is to ensure adequate demand assurance for the domestic industries, he said at the 'India Manufacturing Show-2023' in Bengaluru, as he listed the steps taken for MSMEs in the defence sector.

"We are the first government which imposed restrictions on itself for the import of weapons. We released five positive indigenisation lists, under which 509 equipment have been identified, the manufacturing of which will now take place in India," Mr. Singh said.

In addition, the Minister said four positive indigenisation lists for Defence Public Sector Undertakings (DPSUs) were also promulgated, under which 4,666 items were identified, that will be manufactured within the country.

"These steps will strengthen our MSMEs and make them 'Aatmanirbhar'," he said. Mr. Singh also referred to the Innovations for Defence Excellence (iDEX) initiative, which was launched to invite new ideas in defence manufacturing through start-ups and innovators.

He added that iDEX Prime was launched to support projects, requiring support beyond ₹1.5 crore up to ₹10 crore, to help the start-ups in the defence sector.

<https://www.thehindu.com/news/national/government-reserved-75-of-defence-capital-acquisition-budget-for-purchases-from-local-companies-defence-minister-rajnath-singh/article67488938.ece>

Outlook

Thu, 02 Nov 2023

Defence Minister Rajnath Singh Urges Indian Army to Prepare for the Unexpected after Israel's Hamas Attack

In a recent development, India's Defence Minister, Rajnath Singh, has issued a stern directive to Indian Army commanders, urging them to "expect the unexpected" in light of the October 7th incident involving Hamas in Israel. As part of the response to this event, India's national security

planners have been closely analyzing the terror strike and the Israeli Defense Forces' ground offensive in the Gaza Strip, as reported by Hindustan Times.

The Indian Army has taken decisive action to bolster its capabilities in the face of potential asymmetric threats. This includes significant emergency purchases, totaling several thousand crores, in two phases. These purchases encompass a range of defense systems, including anti-drone technology, logistics Unmanned Aerial Vehicles (UAVs), loiter ammunition, and ground sensors. These acquisitions are aligned with the "Aatmanirbhar Bharat" (Self-Reliant India) initiative, aimed at safeguarding Indian borders and countering potential asymmetric strikes.

The recent Hamas terror strike in Gaza, coupled with rocket attacks on Israeli cities, has been a topic of critical discussion during the Army Commanders' Conference. Key stakeholders, including the armed forces, intelligence agencies, and the Ministry of External Affairs, have been closely studying the ramifications of this outbreak of conflict and its potential impact on the Middle East region.

Concurrently, the Indian Navy has conducted thorough audits of vessels along the western coast to ensure they are adequately radio-tagged and has taken punitive measures against those lacking proper documentation. This proactive approach stems from concerns related to past incidents, such as the 26/11 Mumbai terror attack, and aims to safeguard India's 7,500-kilometer coastline, ensuring that such incidents are not repeated.

It's worth noting that this move comes in light of the previous targeting of the Chabad House at Nariman Point by Pakistan-based Lashkar-e-Toiba (LeT) jihadists, leading to the brutal massacre of six individuals. Despite the passage of fifteen years, no individuals affiliated with the LeT or the ISI have been brought to justice by Pakistan.

The broader assessment indicates that the Israeli-Hamas conflict may only conclude when the cadre of the Sunni Salafi group in Gaza is significantly weakened, and its leadership is neutralized on the strip. However, there remains a growing concern that Iran may be drawn into the conflict if Shia Hezbollah initiates a northern front against Tel Aviv. Such an escalation could have far-reaching consequences, potentially impacting the entire Middle East region.

<https://www.outlookindia.com/national/defence-minister-rajnath-singh-urges-indian-army-to-prepare-for-the-unexpected-after-israel-s-hamas-attack-news-328278>



Thu, 02 Nov 2023

Jaishankar Arrives in Italy, Holds Meeting with Defence Minister Guido Crosetto

External Affairs Minister S Jaishankar on Thursday arrived in Italy from Portugal in the second leg of his four-day visit to two key European countries and held a meeting with Italian Defence Minister Guido Crosetto.

Taking to X, Jaishankar said that he focused on taking forward the renewed defence and security partnership between India and Italy and that he appreciated the latter's suggestions for defence industry cooperation.

Jaishankar began his visit to Rome with a Senate interaction on the deepening partnership between the two sides.

"Began the Italy visit with a Senate interaction on our deepening partnership. Thank Sen. Giulio Terzi & Sen. Roberto Menia for co-chairing. Appreciated the warm sentiments for India across party lines," he said in another post on X.

Jaishankar will also meet his counterpart Antonio Tajani. He will also address the Joint Session of the Senate's External Affairs and Defence Commission, and EU Affairs Commission and the India-Italy Parliamentary Friendship Group, and meet the members of the Indian community.

The relationship between the two countries was elevated to 'Strategic Partnership' during Italian Prime Minister Giorgia Meloni's visit to New Delhi in March.

Jaishankar's Portugal visit

On the last day of his Portugal visit, the external affairs minister highlighted the need for direct air connectivity between India and Portugal to expand bilateral exchanges, and addressed the Indian diaspora there. During his address in the presence of his Portuguese counterpart Joao Gomes Cravinho, Jaishankar said that he highlighted the contribution of Portugal towards closer ties between India and the European Union (EU) and also shared the transformation underway in India.

"Highlighted Portugal's contribution in promoting closer India-EU ties. The Porto 2021 Summit is a milestone. Recognised the relevance of the Migration and Mobility Partnership in a Global workplace," he said.

On Tuesday, Jaishankar discussed "contemporary challenges" and the further development of bilateral ties with Prime Minister Antonio Costa.

"We see a lot of new energy and activities across several sectors. Trade and investment is clearly a strong driving force. Indian companies like Indian IT companies, especially, have made their mark in Portugal," Jaishankar said as part of the joint press statement with Portugal's foreign minister on Tuesday.

<https://www.indiatvnews.com/news/world/jaishankar-arrives-in-italy-holds-meeting-with-defence-minister-guido-crosetto-2023-11-02-900876>



Thu, 02 Nov 2023

Blinken, Austin to Visit Delhi on Nov 10 for 2+2 Dialogue

US Secretary of State Antony J Blinken and secretary of defence Lloyd Austin will travel to New Delhi on November 10 to participate in the annual India-US 2+2 dialogue with their counterparts, external affairs minister S Jaishankar and defence minister Rajnath Singh, the State Department and Pentagon have announced.

The agenda of the talks will cover the entire gamut of the strategic relationship, with a focus on defence co-production. The top national security leaders will also talk about the Israel-Hamas war, with the US appreciating India's position and saying that both countries have a common position against terror, ensuring humanitarian access to Gaza, preserving stability in the region, containing the conflict from spreading, and advancing a two-state solution. The talks will also cover Russia's war in Ukraine and China, where both sides will share notes on their respective engagements with Beijing, officials have said.

The American cabinet members will also call on PM Narendra Modi during their visit. The visit and the dialogue are seen as a sign that despite differences between Delhi and Washington DC over

Canada's allegations linking agents of the government of India to the killing of a man designated as a terrorist by India, who happened to be a naturalised Canadian citizen, the broader India-US bilateral relationship is on track.

Announcing the visit on Wednesday, Matthew Miller, the State Department spokesperson, said that the American delegation will discuss "both bilateral and global concerns and developments in the Indo-Pacific". The Pentagon, on Thursday, said that Austin's focus in his engagement with Singh will be "expanding defense industrial cooperation, enhancing interoperability, and advancing innovation through the India-US Defense Acceleration Ecosystem (INDUS-X)".

Speaking to reporters on Thursday, Donald Lu, the US assistant secretary of state for South and Central Asian, said, "The 2+2 dialogue was created in 2018. It allows our two countries to have high level discussions about strategic and defence issues...One of the many discussion points will be our cooperation with India to keep the Indo-Pacific free, open, prosperous and secure."

Lu said that the leaders will also discuss both the conflict between Israel and Hamas and Russia's invasion of Ukraine.

"On Israel-Hamas, the Indian government was direct in its condemnation of the Hamas terrorist attack. It has also joined the chorus of nations including the US that have called for sustained humanitarian access to Gaza. With India, we share the goals of preventing this conflict from spreading, preserving stability in the Middle East and advancing a two-state solution," Lu said.

He added that a key part of the 2+2 dialogue in recent years had been defence co-production. "Our intention is to encourage more collaboration to produce world class defence equipment to meet both Indian defence needs and contribute to greater global security." Lu said that the leaders will also discuss democracy, human rights, clean energy, counter-terrorism, space, artificial intelligence and semiconductor manufacturing.

Asked about Canada's allegations, Lu said that US had publicly and privately urged India to cooperate with Canada on the investigation into the allegations made by PM Justin Trudeau. "We have been in constant contact with our Canadian partners and we are hopeful that Canada's investigation will proceed and perpetrators will be brought to justice."

Asked if China would be the subject of discussion in Delhi, especially in the wake of Chinese foreign minister Wang Yi's visit to Washington DC last week, Lu said, "Absolutely. Cooperation in the Indo-Pacific...is very much formally on the agenda. We will be interested to hear how India's discussions with China are going related to border issues and I am sure our Indian counterparts will be very interested to hear about Wang Yi's visit to the US and the announced meeting between President Biden and President Xi (Jinping) at the APEC summit." The US and Chinese presidents will meet on the sidelines of the APEC summit in San Francisco in mid-November, as HT had first reported in September.

The last 2+2 dialogue was held in April 2022 in Washington DC. While there has been a delay in holding this year's dialogue due to scheduling issues, the top leaders of both countries have had a series of high-level engagements. Blinken has visited India twice this year for G20 events, including accompanying Biden during the Leaders' Summit in September. Austin visited India in the run-up to the Modi's state visit to Washington DC in June when the two countries finalised the defence industrial cooperation road map. And Jaishankar visited DC both in June with the PM and then in September.

Blinken will arrive in Delhi after visiting Israel, Jordan, Japan and South Korea while Austin will head to South Korea and Indonesia after his engagements in Delhi.

<https://www.hindustantimes.com/india-news/blinken-austin-to-visit-delhi-on-nov-10-for-2-2-dialogue-101698942065435.html>

Thu, 02 Nov 2023

Putin Revokes Russian Ratification of Global Nuclear Test Ban Treaty

President Vladimir Putin on Thursday signed a law withdrawing Russia's ratification of the global treaty banning nuclear weapons tests, a step condemned by the organisation which promotes adherence to the landmark arms control pact.

The move, though expected, is evidence of the deep chill between the United States and Russia, whose ties are at their lowest level since the 1962 Cuban missile crisis over the war in Ukraine and what Moscow casts as Washington's attempts to stymie the emergence of a new multipolar world order.

Washington expressed deep concern about Russia's decision and it was a step in the wrong direction.

"Russia's action will only serve to set back confidence in the international arms control regime," U.S. Secretary of State Antony Blinken said in a statement.

Moscow says its deratification of the Comprehensive Nuclear Test Ban Treaty (CTBT) is merely designed to bring Russia into line with the United States, which signed but never ratified the treaty. Russia will not resume nuclear testing unless Washington does, say Russian diplomats.

Nor, they say, will the move change the nuclear posture of Russia, which has the world's largest nuclear arsenal, or the way it shares information about its nuclear activities as Moscow will remain a treaty signatory.

But some Western arms control experts are concerned that Russia may be inching towards a nuclear test to intimidate and evoke fear amid the Ukraine war.

Putin said on Oct. 5 that he was not ready to say whether or not Russia should resume nuclear testing after calls from some Russian security experts and lawmakers to test a nuclear bomb as a warning to the West.

Such a move, if it did happen, could usher in a new era of big power nuclear testing.

Robert Floyd, head of the Comprehensive Nuclear-Test-Ban-Treaty Organization, whose job is to promote recognition of the treaty and build up its verification regime to ensure no nuclear tests go undetected, condemned Russia's step.

'DEEPLY REGRETTABLE'

"Today's decision by the Russian Federation to revoke its ratification of the Comprehensive Nuclear-Test-Ban Treaty is very disappointing and deeply regrettable," Floyd, who had tried to lobby senior Russian officials to get them to change their mind, said on X, formerly known as Twitter.

The treaty established a global network of observation posts that can detect the sound, shockwaves or radioactive fallout from a nuclear explosion.

Post-Soviet Russia has not carried out a nuclear test. The Soviet Union last tested in 1990 and the United States in 1992. No country except North Korea has conducted a test involving a nuclear explosion this century.

Andrey Baklitskiy, senior researcher at the United Nations Institute for Disarmament Research, has said Russia's deratification of the CTBT is part of a "slippery slope" towards resuming testing.

It is part of a disturbing trend in recent years that has seen arms control pacts scrapped or suspended, he said last month on X.

"We don't know what steps will follow and when, but we know where this road ends. And we don't want to go there," he said.

Putin's approval of the de-ratification law was posted on a government website which said the decision took immediate effect. Russia's parliament has already approved the step.

<https://www.reuters.com/world/europe/putin-revokes-russias-ratification-nuclear-test-ban-treaty-2023-11-02/>

Science & Technology News



Press Information Bureau
Government of India

Ministry of Science & Technology

Thu, 02 Nov 2023

Union Minister Dr Jitendra Singh Calls upon Scientific Organisations and Research Institutions Across the Country to Chalk out a Roadmap for a Nationwide Public Outreach Campaign to Create Awareness in Science, Technology, Innovation Enabling Provisions Introduced by the Modi Government for StartUps and Potential Entrepreneurs

After the Chandrayaan-3 landing on the Moon, there is a massive public interest generated in India's Space exploration projects and the momentum needs to be sustained: Dr Jitendra Singh

"Innovative learning will contribute to make India a \$5 trillion economy goal and fulfil the vision of Prime Minister Shri Narendra Modi's Aatmanirbhar Bharat": Dr Jitendra Singh

Union S&T Minister chaired a meeting of all Science Secretaries to review preparations for the 9th India International Science Festival – 2024

Union Minister Dr Jitendra Singh has called upon scientific organisations and research institutions across the country to chalk out a roadmap for a nationwide public outreach campaign to create awareness in science, technology, innovation enabling provisions introduced by the Modi government for StartUps and potential entrepreneurs

The Union Minister said, after the Chandrayaan-3 landing on the Moon, there is a massive public interest generated in India's Space exploration projects and the momentum needs to be sustained.

"This campaign will not only raise public awareness about our pioneering achievements by DST, CSIR, DBT, ISRO, DRDO & other scientific Departments during the more than nine years of the

Government led by PM Modi, but also inspire and motivate the youth to contribute and be a part of this exciting journey,” he said.

The Union Minister of State (Independent Charge) Science & Technology; MoS PMO, Personnel, Public Grievances, Pensions, Atomic Energy and Space, was chairing a meeting of all Science Secretaries in New Delhi. The meeting was attended by Principal Scientific Adviser (PSA) to the Government of India, Professor Ajay Kumar Sood; Secretary, DST, Prof. Abhay Karandikar; Secretary, CSIR, Dr (Mrs) N. Kalaiselvi; Secretary, DBT, Dr Rajesh S. Gokhale; Secretary, Department of Space and Chairman, ISRO, Shri. S. Somanath; Chairman, Atomic Energy Commission and Secretary, Department of Atomic Energy, Dr Ajit Kumar Mohanty, besides senior officers.

Lauding the ‘One Week One Lab’ student connect programme of CSIR-NIScPR conducted between Jan.1, 2023- Sep 24, 2023 by 37 CSIR Laboratories/Institutions during which their doors were thrown open to the students and public, Dr. Jitendra Singh called for grooming innovation aptitude in school children.

“Innovative learning will contribute to make India a \$5 trillion economy goal and fulfil the vision of Prime Minister Shri Narendra Modi’s Aatmanirbhar Bharat,” he said.

The S&T Minister said the INSPIRE scheme is helping create a scientific temper as every year there is an increasing number of aspiring students competing for the awards. The first-ever Mentorship Programme for Young Innovators was launched in November 2021 to mark the 75th Year of India’s Independence, he said.

The INSPIRE Awards – MANAK is a flagship programme of the Government of India and is jointly implemented by Department of Science and Technology (DST), Government of India and the National Innovation Foundation (NIF) - India. INSPIRE Scheme caters to students in the age group 10-32 years with several components. So far, more than 1.3 lakh Higher secondary students have been offered INSPIRE scholarships to pursue a career in Natural and Basic Sciences.

Dr Jitendra Singh said that the DST supports a variety of infrastructure related schemes like FIST, PURSE, SAIF, etc. towards augmenting/ facilitating the R&D equipment for research activities at various Universities/ Institutes and other Academic organizations as well as promote industry-academia linkages.

Dr Jitendra Singh said that PM Modi’s vision is to step up the efforts in various fields to make the country ‘the most advanced laboratory for modern science’ in the ‘Amrit Kaal’-the next 25 years leading to a Viksit Bharat.

Working towards this vision, the Government has committed to invest heavily on building research infrastructure in the country. Under FIST Program, DST has supported 3,074 Departments and PG Colleges at a total budget of about Rs. 3,131 crores for Scientific Infrastructure Building in various STEM Departments.

Dr Jitendra Singh pointed out that flexible infrastructure grants are being provided to universities nationwide to keep up the vigour of conducting highly challenging R&D activities with an investment of Rs 950 Crores till date.

The Promotion of University Research and Scientific Excellence (PURSE) with a nationwide reach supports the universities’ research ecosystem by making high-end research equipment available to our academicians/scientists, enabling our universities to compete with global standards. A new scheme, SUPREME, has also been launched to provide financial support for repair/ upgradation/ maintenance/ retrofitting or acquiring additional attachments to increase functional capabilities of existing Analytical Instrumentation Facilities (AIFs).

Dr Jitendra Singh said that under PM Modi, the Government is taking a number of steps to promote scientific temper among the masses, particularly youngsters, by strengthening scientific research and innovation efforts in the country. He said, this is a pan-India Scheme that envisages Star College in every district of the country supported by the Department of Biotechnology.

A total of 278 undergraduate colleges across the country comprising more than 1.5 lakh students are supported under the DBT Star College Scheme. This includes 55 colleges from rural areas and 15 colleges in Aspirational districts.

Dr Jitendra Singh said, under the leadership of Prime Minister Shri Narendra Modi, India is now steering the world in innovative technologies. We are on course to our target of reducing Greenhouse gases emission, and achieve Net Zero by 2070.

India is today one of the leading users of non-conventional energy including electric automobiles, wind & solar energy and the world's first Hydrogen powered bus has been made in India, said the Minister. "The world is looking up to us for leads," he said.

Sharing some of the key achievements of India in S & T like India's massive jump in its ranking of Global Innovation Index (GII) from 81st in the year 2015 to 40th in 2022 among 132 economies of the world, 3rd rank in terms of number of StartUps, Unicorns, scientific publications and PhDs awarded, the Minister said that India has in recent years made some unprecedented progress in S& T. "During the Covid pandemic, India not only saved its own population but also helped the world by providing vaccines and we also delivered the world's first DNA vaccine," he said.

The Minister mentioned that in the recent past, the Government of India has launched several flagship initiatives such as the National Mission on Interdisciplinary Cyber Physical Systems (ICPS); Quantum Computing and Communication; National Mission on Supercomputing, Electric Mobility, Green Hydrogen etc.

Dr Jitendra Singh said, our Chandrayaan Mission was the first to discover evidence of water on the Moon and the Aditya-L1 solar mission is led by a woman Director. PM Modi has provided an enabling milieu to India's endeavours in Space research, and S&T. PM Modi has emerged the tallest leader in the world after the G20 Summit.

"Today the world is ready to be led by India. The declaration of International Yoga Day and International Year of Millets by the UN is proof of our rising stature. Now is the time for all of us Indians to rise to the occasion and seize the opportunity," he said.

Referring to PM Modi's monthly radio address 'Mann Ki Baat', in May 2022, Dr Jitendra Singh said India's Startup ecosystem is not limited to just big cities, but about 50% of Startups hail from Tier-2 and Tier-3 cities.

"Today there are over 3,000 Agritech Startups and are very successful in areas like Aroma Mission and Lavender cultivation, quite a few of them do not have high qualifications, but are very innovative. In 2014, there were just 4 Startups in the Space sector, now there are over 150 Space StartUps, some of the pioneering ones now worth hundreds of crore rupees," he said.

A lot of this has been possible because of groundbreaking reforms brought by Prime Minister Modi, including StartUp policy, National Education Policy (NEP) 2020, Space sector and Drone deregulations, new geospatial policy, National Research Foundation etc, he said.

Dr Jitendra Singh said, PM Modi also brought in the new National Education Policy (NEP-2020) which supplements Start-Up ecosystem with the promise to open new career and entrepreneurship opportunities for students and youth in India.

Referring to the last more than 9 years of Government led by PM Modi, Dr Jitendra Singh pointed out that apart from formal jobs, lakhs of opportunities and avenues were created outside the government sector for the youth of the country, be it Start-ups, Mudra Scheme, PM SVANidhi.

During the meeting, the Union Minister reviewed preparations for the 9th India International Science Festival (IISF) – 2024 to be held at the NCR Biotech Science Cluster, Faridabad from January 17-20, 2024.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1974077>



Fri, 03 Nov 2023

Gaganyaan Mission: After Success of Crew Module Abort Test, ISRO Eyes Uprighting System in 2024

The Indian Space Research Organisation (ISRO) will be experimenting with a crew module uprighting system that will ensure that a crew module making a splashdown in the sea after a space mission stays upright and does not get inverted in the water.

A basic crew module used in the TV-D1 mission on October 21 this year did not contain such a system, resulting in the module floating in an upside-down position when recovered by naval divers in the Bay of Bengal. The TV-D1 mission was part of preparations for ISRO's first human spaceflight Gaganyaan mission scheduled around 2024-25.

A crew module uprighting system will be among multiple systems that will be tested in a second test mission (TV-D2) for the crew module on the new test vehicle scheduled for next year before a full-fledged unmanned test flight into space for the crew module on the LVM3 rocket that is going to be part of the Gaganyaan mission, according to the TV-D1 mission director S Sivakumar.

The first test of the crew module and crew escape system in the TV D1 mission, where an abort sequence in the launch phase of a human mission was simulated, has been deemed a complete success after receiving all the data from the systems tested in the mission, Sivakumar said.

“All three elements of the mission are new. The test vehicle is new, the crew escape system is new and the crew module is new. Developing each of the systems was one of the challenges. The mission planning and mission design is very, very important here,” the scientist said. “We have got data from all the three systems and everything is nominal,” he added.

One of the biggest outcomes in the TV-D1 mission was the success of the tricky component of the deployment at a desired angle of the drogue chutes (which bring the crew module from a height of 17 km at a speed of 150 metres per second to a height of 2.5 km from the surface of the sea at a speed of 63 m/sec) after the release of crew module from the crew escape system in this mission, the 58-year-old mission director said. “The drogue chute deployment at the desired angle was a really tricky problem,” he added.

“Our mission profile was that we took the crew escape system to a particular Mach number (1.2 times the speed of sound) using the newly developed test vehicle and from there the crew escape system took the crew module to a particular altitude and flight path angle. When the crew module comes out, we have to monitor its orientation and at the appropriate angle we have to deploy the apex cover and drogue parachutes. This was the mission design challenge,” Sivakumar said.

The mission was about understanding how to put the crew module in the appropriate position and orientation since the crew module in the TV-D1 flight did not have its own control system unlike the final crew module which will have its own onboard control system, he said.

“At 17 km altitude – when the crew module is coming out – in a real crew module, we would have a control system that is controlling the attitude such that the parachute deployment angle is controlled. Here, it is coming out in unfavorable orientation and must be deployed before the crew module starts tumbling or getting locked in an unfavorable orientation. So, we have to monitor the exact orientation and angle because only at a favourable angle can we deploy the drogue parachute. This is the real crux of the problem. The second crucial part is that we have never tested the parachute behaviour at such a high altitude,” Sivakumar pointed out.

“We don’t have the data either of our own or from literature. The drogue chutes which is the first set of parachutes deployed to reduce the descending velocity of the crew module...have been tested so far only up to an altitude of 15 km,” he said.

“At a higher altitude, the air density is very low and we had to see if the chutes would really deploy or collapse. We were trying to look at this aspect because we do not have this data,” he added.

Since an aircraft or a chopper cannot be taken to a height of 17 km altitude in the sky to conduct the parachute deployment experiment and massive balloons would be needed to test the deployment for a system weighing 4.5 tonnes, the newly designed Test Vehicle was used. “A new rocket was made,” Sivakumar said.

“We have tried to generate some fundamental data. All the parachutes and crew escape system are newly designed for the Gaganyaan programme,” said Sivakumar, who has a Master’s degree from IIT Mumbai and has been with ISRO for 38 years after joining initially with a diploma in engineering.

While the TV-D1 mission used a basic capsule that is similar in weight and mass properties to the final crew module for the Gaganyaan mission, a second demonstration flight next year will involve a crew module closer to the final one.

“We will be simulating the crew seats, control and floatation system etc close to the final version. In the present experiment, these things were not simulated. In this mission, only an equivalent mass and inertia is used. These will all be part of the test vehicle D2 flight next year,” Sivakumar said.

The crew module uprighting system

One of the elements that will be tested in the crew module for the D2 mission is a crew module uprighting system that will keep the crew module upright after splashdown in the sea, unlike the TV-D1 splashdown which got inverted after landing upright.

“The two stable positions are upright and upside down. Now, to avoid the upside-down situation in the real crew module, there will be an uprighting system that will be like gaseous balloons – something like the airbags in cars that deploy on impact – which will inflate at the time of touchdown,” Sivakumar said.

“If the crew module is trying to topple, the balloon system will bring it back to the upright position. In this particular crew module, we have not put that and that is why it has gone down to the inverted position after splashdown. We wanted to see if it could remain stable and we found that when there is a lateral wind and disturbance due to sea waves it goes to an unstable point and that is why it was near an upside-down position,” he said.

“This was anticipated and was not a surprise as we did not include the system in this mission,” the TV-D1 mission director said. The crew module will also have redundancy systems in place to compensate for the failure of the primary crew module uprighting system, he said.

“The recovery aids like the beacons had to work well underwater and the sea water dye should get ejected to mark the region of the landing. These are the other parameters that have to be considered,” he said. However, in TV D1 the module landed upright and then it toppled presumably due to disturbance from sea conditions.

Even if the crew module was in the water in an upside-down position, the communication systems was not affected since antennas are on the sidewall and “they were radiating”, Sivakumar said.

According to a recent paper on a crew module uprighting system being developed for the Orion crew module to be used on National Aeronautics and Space Administration’s (NASA) Artemis 1 mission to the moon, 47 per cent of all landings during the Apollo, Skylab, and Apollo-Soyuz programmes were in an inverted orientation “with the nose of the crew module submerged – creating a risk to crew egress”.

“Inverted or sideways stable configurations for the CM [crew module] would result in submergence of the hatch doors and communications antennae and an undesirable crew orientation. The CMUS [crew module uprighting system] provides the CM with additional buoyancy to reorient itself into the upright configuration post-splashdown and maintain this orientation for at least 24 hours,” says the paper on ‘Dynamic Characterization of the Crew Module Uprighting System for NASA’s Orion Crew Module’ authored by NASA scientist Ivan Rodrigues Bertaska and others.

“We are targeting the next test vehicle mission sometime in the first quarter of next year. The crew module made with the control systems and simulate the crew seat systems and suspension systems, the uprighting system etc. Also in the crew escape system we will use both low and high altitude escape motors unlike in D1 where we have used only the high altitude escape motors. All these elements will be tested in the TV-D2 mission,” Sivakumar said.

The Gaganyaan project plans to demonstrate human spaceflight capability by launching a crew (of around three members) to an orbit of 400 km in space on a three-day mission. The mission aims to bring the human crew back to earth safely by landing in Indian sea waters.

<https://indianexpress.com/article/technology/science/gaganyaan-mission-after-success-of-crew-module-abort-test-isro-eyes-uprighting-system-in-2024-9010271/>



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NASA’s Lucy Spacecraft Swoops Past First of 10 Asteroids on its Way to Jupiter

Nasa's Lucy spacecraft has successfully encountered the first of ten asteroids on its ambitious journey to Jupiter.

The encounter took place on Wednesday, with the spacecraft swooping past the small asteroid Dinkinesh, located approximately 48 crore kilometers away in the main asteroid belt beyond Mars.

The spacecraft zoomed by at a staggering speed of 16,000 kmph, coming within 434 kilometers of Dinkinesh. This encounter served as a dry run for the spacecraft, testing its instruments in preparation for the larger and more enticing asteroids that lie ahead on its journey.

Dinkinesh, measuring just half a mile across, is likely the smallest of the space rocks on Lucy's tour.

Lucy's primary targets are the Trojans, clusters of unexplored asteroids near Jupiter. These celestial bodies are considered time capsules from the dawn of the solar system. The spacecraft is set to swing past eight Trojans, believed to be up to 10 to 100 times larger than Dinkinesh. The final two asteroids are expected to be encountered in 2033.

Launched two years ago on a mission costing nearly \$1 billion, Lucy is named after the 3.2 million-year-old skeletal remains of a human ancestor discovered in Ethiopia in the 1970s. The spacecraft's next target is an asteroid named after Donald Johanson, one of the discoverers of the fossil Lucy.

Despite one of the two solar wings on the spacecraft remaining loose, flight controllers have deemed it stable enough for the entire mission. They have ceased attempts to latch it down.

This flyby marks what Nasa is calling "Asteroid Autumn". In September, Nasa returned its first samples of rubble from an asteroid. Then, in October, it launched a spacecraft to a rare, metal-rich asteroid named Psyche. Unlike these missions, Lucy will not stop at any asteroids or collect any samples.

It is expected to take at least a week for the spacecraft to send back all its pictures and data from the flyby.

Until now, Dinkinesh has only been an unresolved smudge in the best telescopes, according to Hal Levison, the lead scientist at the Southwest Research Institute. This encounter with Lucy marks a significant step forward in our exploration and understanding of these ancient celestial bodies.

<https://www.indiatoday.in/science/story/nasas-lucy-spacecraft-swoops-past-first-of-10-asteroids-on-its-way-to-jupiter-2457056-2023-11-02>

