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Aero India 2023

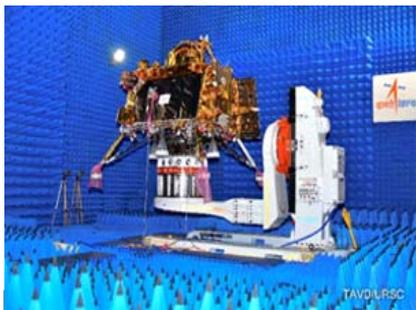
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Covering the Period from
(01 February to 28 February 2023)



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Eminent Indian Aeronautical and Aerospace Personalities in India

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Krishnaswamy Kasturirangan

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Krishnaswamy Kasturirangan (born 24 October 1940) is an Indian space scientist who headed the Indian Space Research Organisation (ISRO) from 1994 to 2003.¹ He is presently Chancellor of Central University of Rajasthan² and NIIT University.³ He is the former chancellor of Jawaharlal Nehru University and the chairman of Karnataka Knowledge Commission. He is a former member of the Rajya Sabha (2003–09) and a former member of the now defunct Planning Commission of India. He was also the director of the National Institute of Advanced Studies, Bangalore, from April 2004 to 2009. He is a recipient of the three major civilian awards from the Government of India: the Padma Shri, the Padma Bhushan and the Padma Vibhushan.

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Early life

Kasturirangan was born on 24 October 1940, at Ernakulam in the erstwhile Kingdom of Cochin, to C. M. Krishnaswamy Iyer and Visalakshi. Kasturirangan's forefathers hailed from Tamil Nadu and later settled down in different parts of Kerala; his maternal forefathers settled in Nallepalli Agraharam, in Chittur taluk, Palakkad district and his paternal forefathers settled in the town of Chalakudy, near Thrissur. Kasturirangan's maternal grandfather Sri Ananthanarayana Iyer completed his school and college education and became a sanitary inspector in Ernakulam. He was well-respected in the community for his discipline and integrity. He and his wife Narayani had four daughters and a son, the eldest of whom was Visalakshi.

Kasturirangan's paternal grandfather, Chalakudy Manikam Iyer, being mindful of the importance of education, ensured that all his sons received a sound education up to graduation. Kasturirangan's father was a graduate in chemistry from Maharaja's College, Ernakulam. He worked in a variety of administrative capacities at Tata Airlines and retired as a senior accountant officer at the Indian Airlines Corporation. Kasturirangan and his brother Ravi spent their early childhood in Ernakulam in the care of their maternal grandparents after the death of their mother. At the age of ten, after the sudden death of his grandfather, he joined his father in Bombay (now Mumbai) along with his brother.

Shortly after completing his PhD in 1969, Kasturirangan married Lakshmi. They have two sons, Rajesh and Sanjay. His wife died in 1991.

Education

Kasturirangan did his schooling at Sree Rama Varma High School. Kasturirangan graduated in science with honours from Ramnarain Ruia College,¹ Mumbai, and obtained his Master of Science degree in physics from the University of Mumbai. He received his Doctorate Degree in experimental high energy astronomy in 1971, working at the Physical Research Laboratory, Ahmedabad. He has published more than 240 papers in the areas of astronomy, space science and applications.

Key contributions

Kasturirangan served as Chairman of the Indian Space Research Organisation for 9 years, Chairman of Space Commission and Secretary to the Government of India in the Department of Space, before laying down his office on 27 August 2003. In ISRO he served as the director of ISRO Satellite Centre, overseeing the development of new generation spacecraft, the Indian National Satellite System (INSAT-2), the Indian remote sensing satellites (IRS-1A and -1B) as well as scientific satellites. He was also the project director for India's first two experimental earth observation satellites, Bhaskara-I and II.

Under his leadership, the programme witnessed several major milestones including the successful launching and operationalisation of the India's prestigious launch vehicles, the Polar Satellite Launch Vehicle and the Geosynchronous Satellite Launch Vehicle (GSLV). Studies on the advanced version of the GSLV, GSLVMk-III, were also completed, including defining its full configuration. Further, he also oversaw the development and launching of THE remote sensing satellites, IRS-1C and IRS-1D, realisation of new generation INSAT communication satellites, besides ocean observation satellites IRS-P3 and -P4. He also led the initiative for India to enter the planetary exploration era by extensive studies leading to the definition of Chandrayaan-1. These efforts have put India as a pre-eminent space-faring nation among the handful of six countries that have major space programmes. As an astrophysicist, Kasturirangan's interests include research in high energy X-ray and gamma-ray astronomy, as well as optical astronomy. Defining India's most ambitious space based high-energy astronomy observatory and initiating related activities was also an important

milestone under his leadership. He has made extensive and significant contributions to studies of cosmic X-ray and gamma ray sources and effect of cosmic X-rays in the lower atmosphere.

Kasturirangan is head of a committee tasked with creating the National Education Policy 2020 for India. Later in September 2021, he was appointed as the head of a 12-member steering committee which would be responsible for developing a new National Curriculum Framework. This committee, having been given a tenure of 3 years, will be the guiding document for the development of textbooks, syllabi and teaching practices of schools across the country.

Kasturirangan also serves as a member of the board of trustees of the Raman Research Institute Trust, Bengaluru.

Honours and awards

Kasturirangan is the recipient of honorary doctorates from 27 universities.

Aero India 2023



Bengaluru stares at the sky as PM Modi inaugurates Aero India 2023

Prime Minister Narendra Modi on Monday inaugurated the 14th edition of India's largest aerospace and defence exhibition, Aero India, in Bengaluru. Chief of the Air Staff Air Chief Marshal V R Chaudhari will lead the Gurukul formation during the flypast at the inaugural ceremony of Aero India 2023 in Bengaluru. The event will include aerial displays by aircraft and helicopters along with a large exhibition and trade fair of aerospace and defence companies. As many as 809 exhibitors, including 110 foreign ones, have confirmed their participation at the show at Air Force Station Yelahanka, which is being positioned as a platform for 'Make in India for the world', defence officials said. A premier exhibition in the global aviation industry, Aero India is held biennially in a total area of around 35,000 square metres, providing an opportunity for the industry to showcase its capabilities, products and services. The

officials said, around 250 business-to-business agreements are expected to be firmed up at Aero India which is estimated to unlock investment to the tune of around Rs 75,000 crore. “New India” of 21st century will neither miss any opportunity nor will there be any shortage in its hard work, Modi said. The prime minister said India today is not only a market but also a potential defence partner for so many countries, adding the nation is moving towards becoming one of the leading exporters of military hardware globally. “Today, Aero India is not only a show, but it is also reflection of India’s self confidence and capabilities,” he said in the presence of top executives of various global defence majors and delegates from a significant number of countries. He said Aero India’ reflects India’s new strength and aspirations. Today, our successes are a proof of India’s potential, he said, noting that the indigenously developed Tejas aircraft is an example of it. A plethora of aircraft of the Indian Air Force displayed their aerial prowess in an air show at the event. The theme of Aero India is “The runway to a billion opportunities” and is aimed at projecting India’s growth and capabilities in the defence and aerospace sector. The focus of the event is to showcase indigenous equipment and technologies and forging partnerships with foreign companies, in line with ‘Make in India, Make for the World’ vision of the government, officials said. Defence Minister Rajnath Singh said Aero India will act as a catalyst in further growth of the aerospace sector in India. Singh will host a Defence Ministers’ conclave on Tuesday on the theme “Shared Prosperity through Enhanced Engagements in Defence (SPEED)”.

Source: <https://www.deccanherald.com>

‘700 exhibitors from India and abroad to present their latest technologies’

India has become a great manufacturing destination due to its business friendly environment, and cost competitiveness. With the vision and determination of our Prime Minister, India has become the fifth largest economy in the world, Rajnath Singh said. At this exhibition more than 700 exhibitors from India and abroad will present their latest technologies, demonstrating more products, he added. Such huge participation is a testimony to a new confidence of the domestic and global business community in India’s emerging business potential, the Defence Minister said.

India was the largest defence importer. Today we are exporting to 75 countries: PM Modi

India is not just a market for defence companies in the world. India is a potential defence partner today. This partnership is even with those nations that are much ahead in defence sector, nations that are looking for a dependable partner for their defence requirements, the Prime Minister said. India has rejuvenated its defense sector in the last 8-9 years. We just consider this to be just the beginning. We aim to take defense exports to \$5 billion by 2024-25. India will now move fast to join the defense producing countries, he added.

Source: <https://www.thehindu.com/>

Aero India 2023: Major exhibitors in Aero India 2023

- Airbus

- Boeing
- Dassault Aviation
- Lockheed Martin
- Israel Aerospace Industry
- BrahMos Aerospace
- Army Aviation
- HC Robotics
- SAAB
- Safran
- Rolls Royce
- Larsen and Toubro
- Bharat Forge Limited
- Hindustan Aeronautics Limited
- Bharat Electronics Limited
- Bharat Dynamics Limited
- BEML Limited

Aero India: PM Modi calls Tejas aircraft an example of India's potential

Prime Minister Narendra Modi on Monday said, "Our successes today are proof of India's potential; Tejas aircraft is example of it." He said India is not only a market but also potential defence partner for many countries. "Today, Aero India is not only a show, but also reflection of India's self confidence," he said. "Aero India' reflects India's new strength and capabilities," added Modi. India, which was for decades an importer in defence sector, is now exporting defence equipment to 75 countries. The equipment exports in the last five years have increased six-fold. India has crossed \$1.5 billion of defence equipment exports in 2021-2022. Our target is by 2024-2025, the defence exports amount will rise to up to \$5 billion.

- Prime Minister Narendra Modi

Aero India: Defence Ministers of 32 countries to attend the event

The Defence Ministers of 32 countries, Air Chiefs of 29 countries and 73 CEOs of global and Indian OEMs are expected to attend the event. Eight hundred and nine (809) defence companies, including MSMEs and start-ups, will showcase the advancement in niche technologies and the growth in the aerospace and defence sectors.

Aero India 2023: LCA-Tejas aircraft to be at centre stage of India Pavilion

A full-scale LCA-Tejas aircraft in Full Operational Capability (FOC) configuration will be at the centre stage of the India Pavilion. LCA Tejas is a single-engine, lightweight, highly agile, multi-role supersonic fighter. It is designed for 'air combat' and 'offensive air support' with 'reconnaissance' and 'anti-ship' as its secondary roles

Aero India 2023: India's military, civil ambitions to dominate Aero India show

India is scouting for billions of dollars worth of military planes, completing jetliner deals to meet civilian demand and pressing global aircraft manufacturers to produce more locally at a major air show this week. Flanked by nuclear-armed rivals China and Pakistan, India has the world's fourth-largest air force but its largely Soviet-era fleet is in desperate need of modernising. It also wants planes for aircraft carriers to balance China's growing power in the Indian Ocean. As the country prepares to host the Aero India show in Bengaluru from Monday, its airlines are expanding, with Air India expected to announce a potentially record deal to buy nearly 500 jets from Airbus SE and Boeing Co, worth more than \$100 billion at list prices. IndiGo, the country's biggest carrier and a top Airbus client, could be next, with aviation consultant CAPA India predicting it will make a blockbuster order of a similar scale as Air India's. Indian carriers may buy 1,500 to 1,700 aircraft in coming years, CAPA said, including Air India and IndiGo.

Aero India 2023: Focus on Make in India

The five-day Aero India 2023 will focus on Made-in-India defence products. Models of India's futuristic indigenous aircraft including 5th Generation Advanced Medium Combat Aircraft, LCA Mark2 and Naval Twin Engine Deck-based Fighter jet being showcased at the Indian pavilion will be showcased at this Aero India as well. All the aircraft are in different stages of development. The Made-in-India Light Combat Helicopter Prachand in Indian Army colours outside the India Pavilion at Aero India in Bengaluru will be inaugurated by Prime Minister Narendra Modi. Senior military officers will fly in the chopper at the aero show this year. The LCH was inducted into defence forces last year. BrahMos Aerospace showcasing the models of the air-launched version of BrahMos supersonic cruise missile along with BrahMos NG missile at India pavilion. Hindustan Aeronautics Limited is showcasing the supersonic trainer aircraft named HLFT-42 full-scale model at Aero India. The model aircraft with Lord Hanuman on its tail is planned to be developed and offered as a modern combat trainer aircraft.

Aero India 2023 highlights

- Mesmerising aerial display left the audience spellbound at the inaugural session of the Aero India-2023 here on Monday. The metal birds soared high and performed breathtaking aerobatics and mid-air maneuvering as the five-day aerospace and defence show took off at the Air Force Station Yelahanka.
- There were displays by the Hindustan Aeronautics Limited made Light Combat Aircraft Tejas, Light Combat Helicopters, Light Utility Helicopters and Sukhoi-30, and Dhruv Advanced Light Helicopters, among others. The inaugural show featured various formations such as 'Tiranga', 'Dhwaj', and 'Bhim'.
- A key highlight of the inaugural session of Asia's biggest aero show was the Chief of the Air Staff, Air Chief Marshal V R Chaudhari leading the Gurukul formation in the Tejas aircraft. The Surya Kiran batch of the IAF stole the show with their scintillating performance.
- According to one of the pilots who participated in the show on Monday, the nine pilots formed the "diamond display".
- This is my fourth Aero India performance ever since 'Hawk' was inducted," the IAF pilot said. The 14th edition of the biennial show themed 'The Runway to Billion Opportunities' was inaugurated by Prime Minister Narendra Modi.

Source: <https://economictimes.indiatimes.com/>

Aero India witnesses 266 partnerships having potential to unlock business worth around Rs 80,000 crore

As many as 266 partnerships including 201 MoUs, 53 major announcements and nine product launches were firmed up at the Aero India that could unlock business potentials worth around Rs 80,000 crore. The MoUs included one between Hindustan Aeronautics Limited and Safran Helicopter Engines of France for work share for formation of joint venture for design, development, manufacture and life time support of helicopter engines. The agreements and the MoUs were formally signed at an event titled “Bandhan” ceremony that was attended by Defence Minister Rajnath Singh, top leaders of Indian defence industries and senior military officials. “The Bandhan ceremony also witnessed the forging of 266 partnerships including 201 MoUs, 53 major announcements, nine product launches and three Transfers of Technology (ToT), worth around Rs 80,000 crore,” the defence ministry said in a statement. The Bharat Electronics Ltd and Aeronautical Development Agency also inked an MoU for the Advanced Medium Combat Aircraft (AMCA). The product launches at Aero India included the vertically launched short range surface-to-air missile (Bharat Dynamics Limited). It is a next-generation, ship-based, all-weather, air defence weapon which can be used by the Navy as a quick reaction defence against supersonic sea skimming targets such as aircraft and Unmanned Aerial Vehicles. The missile has a smokeless propulsion system with all-weather capability. It has a highly agile configuration with state-of-the-art electronic counter-measures features. Another significant product launch was of the semi-active laser seeker based anti-tank guided missile developed by Bharat Dynamics Limited. The missile weighs 23 kgs with the launch tube, and can be used in different kinds of terrains to incapacitate moving and stationary targets such as tanks and infantry combat vehicles. The 14th edition of Aero India at the Yelahanka Air Force station complex on the outskirts of Bengaluru was inaugurated by Prime Minister Narendra Modi on Monday and it saw participation of over 700 defence firms and representatives of around 100 countries. The defence minister said that Aero India showcased to the world the ‘New Defence Sector’ of ‘New India’, which has not only grown in the last few years, but is now fully ready to walk alongside the defence sectors of leading countries. He expressed satisfaction that the event paved the way to strengthen the Indian defence industry, terming it as the beginning of a new era of ‘aatmanirbharta’. The minister exuded confidence that the sector will move forward strongly on the path of progress with new energy and determination. The MoUs and technology transfer agreements signed during Aero India will facilitate a new beginning for defence manufacturing in India, Singh said.

Source: <https://www.deccanherald.com/>

Curtains fall on Aero India 2023

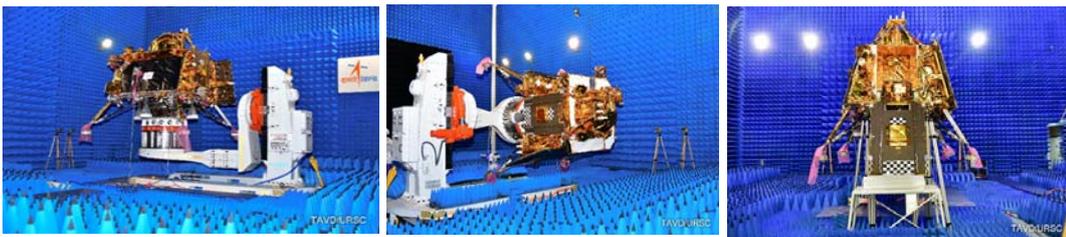
Curtains came down on the five-day Aero India-2023, which also marked the big push to Prime Minister Narendra Modi’s ambitious call for ‘Self Reliant India’ and ‘Make in India’ in the aviation sector. The biennial event which completed its 14th edition in Bengaluru witnessed the largest participation of the contingent from the United States of America for the first time ever in Aero India. Besides, Rafale jets and Sukhoi aircrafts put up an impressive show during the event. However, the most notable was the presence of F-35, B-1B Lancers, the F-16 and F-18 which too participated in the show. Sorties by vintage aircrafts, aerobatics by Surya Kiran team of the IAF, which flew the Hawk aircrafts and Sarang (meaning peacock in Sanskrit) display team of the IAF using the HAL developed Dhruv helicopters left the audience spellbound. The five-day event saw a number of seminars such as Manthan and Bandhan where deliberations were held on a range of subjects including India’s self-reliance programme, indigenous development of futuristic aerospace technology, India’s space initiatives, advancement in maritime surveillance system, investment opportunities in Karnataka. There was a huge turnout at the exhibitions and displays by various companies during the show. The Hindustan Aeronautics Limited, Indian Space Research Organisation, Bharat Electronics Limited, Defence Research and Development Organisation were among those who put up their stalls.

Source: <https://www.deccanherald.com>

CURRENT AFFAIRS

Chandrayaan-3 undergoes EMI/EMC test successfully

Chandrayaan-3 lander successfully underwent EMI/EMC test during at U R Rao Satellite Centre, Bengaluru. EMI-EMC (Electro - Magnetic Interference/ Electro - Magnetic Compatibility) test is conducted for satellite missions to ensure the functionality of the satellite subsystems in the space environment and their compatibility with the expected electromagnetic levels. This test is a major milestone in the realization of the satellites. Chandrayaan-3 interplanetary mission has three major modules: the Propulsion module, Lander module, and Rover. The mission's complexity calls for establishing radio-frequency (RF) communication links between the modules. During the Chandrayaan-3 lander EMI/EC test, Launcher compatibility, Antenna Polarization of all RF systems, Standalone auto compatibility tests for orbital and powered descent mission phases, and Lander & Rover compatibility tests for post landing mission phase were ensured. The performance of the systems was satisfactory.



Source: <https://www.isro.gov.in/>

Group of lunar meteorites suggest a new scenario for the origin of lunar basalts

Moon's dark regions, visible to the naked eye, known as the 'mare', are remnants of a violent history of the Solar System. There are no records of these violent events on our dynamic Earth. Moon, having changed very little in the last billions of years, provides us a window to ponder over the past. The large mare regions on the near side of the Moon that we always see from Earth, mainly consists of basalts which are volcanic rocks. These regions hold the key to how the Moon cooled and evolved and what were the sources of heat that melted and crystallized the material to the present day rocks. The Apollo, Luna, and Chang'E-5 missions have brought to Earth an extensive collection of mare basalts. Apollo mare basalts date back to the age of 3.8–3.3 Ga (Ga = one Billion years) and were collected from a region unusually rich in potassium (K), rare Earth elements (REE), and phosphorous (P) (together called as KREEP), known as Procellarum KREEP Terrane (PKT). These are rich in radioactive elements that provided the heat to melt rocks resulting in KREEP rich basalts. Are there alternate ways for melting on the Moon? A team of scientists from Physical Research Laboratory (PRL), Ahmedabad, India, USA and Japan have found a unique group of ancient lunar basaltic meteorites with very low abundance of KREEP. This suggests that these meteorites must have come from a region different from PKT (Figure 1). The samples studied in this work are: (i) Lunar meteorite Asuka-881757 found in 1988 at Antarctica, collected by National Institute of Polar Research, Japan, (ii) Lunar meteorite Kalahari 009 found in

1999 at Kalahari Desert in South Africa, (iii) Samples collected by Russian Luna-24 mission (location shown on the map).

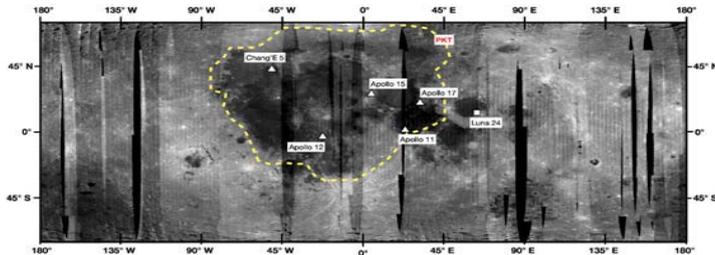


Figure 1. Surface map of the Moon from Chandrayaan-1 mission data, showing two distinct regions. The confined yellow dashed line region marks the Procellarum KREEP Terrane (PKT) at the nearside. Most of the returned lunar mare basalts, which are from the PKT of the Moon, were formed due to mantle melting by radioactive heating. The samples studied in this research are KREEP-free basalts, originated away from the PKT and the meteorites from the unknown locations (away from PKT) on the surface of the Moon. These samples were not formed through the radioactive heating mechanism. The calculations show that these basalts must be a result of low-pressure melting in the Moon, similar to those in other terrestrial bodies, such as Earth and Mars. Further they show that these basalts originated from a cool, shallow, and compositionally distinct part of the lunar interior (Figure 2).

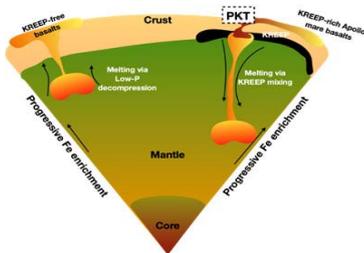


Figure 2. A cartoon diagram depicting difference in formation mechanisms of KREEP-free basalts away from the PKT and KREEP-rich basalts from the PKT. While PKT basalts are formed by mixing of radioactive heating at a great depth, the studied lunar meteorites and samples were formed by low pressure (shallow) decompression melting. This study gives global perspective on the thermal evolution of the Moon in comparison to the regional Procellarum KREEP Terrane.

This finding suggests that the Moon's interior melted in the form of basalt magmatism from as early as 4.3–3.9 Ga globally to a more localized scenario in the PKT region later (3.8–3.0 Ga). Fundamentally these new results challenge currently proposed scenarios for the generation of basalts and propose an additional new regime that might be more common on the Moon globally.

Reference:

Mr. Srivastava, Y., Basu Sarbadhikari, A., Day, Mr. J.M.D., Yamaguchi, A., and Mr. Takenouchi, A. (2022), A changing thermal regime revealed from shallow to deep basalt source melting in the Moon, *Nature Communications*, 13, 7594. <https://doi.org/10.1038/s41467-022-35260-y>

Source: <https://www.isro.gov.in/lunarbasalts.html>

Commencement of Recovery trials for the Gaganyaan Mission

ISRO, along with Indian Navy carried out initial recovery trials of Crew Module in the Water Survival Test Facility (WSTF) of the Indian Navy, at Kochi. The trials were part of the preparation for crew module recovery operations for the Gaganyaan mission that will be carried out in Indian waters with the participation of Indian Government agencies, the overall recovery operations being led by Indian Navy. A Crew Module Recovery Model (CMRM) that simulates the mass, center of gravity, outer dimensions, and externals of the actual Crew Module at touchdown was used for the trials. The sequence of operations required for the recovery of the Crew Module were carried out as part of the trials. As the safe recovery of the crew is the final step to be accomplished for any successful human spaceflight, it is of paramount importance and it has to be carried out with the minimum lapse of time. Hence the recovery procedures for various scenarios need to be extensively practiced by carrying out a large number of trials. The Standard Operating Procedures (SoP) for recovery of Crew and Crew Module need to be finalized. The recovery trials will be initially carried out in a closed pool followed by trials in a harbor and in the open sea. The operations carried out on February 7, 2023, form the initial recovery trials of Crew Module in a closed pool. Different phases of recovery trials starting with the recovery of the Crew Module to the flight crew training are planned at WSTF. WSTF is a state-of-the-art facility of the Indian Navy that provides realistic training of aircrew for escape from a ditched aircraft under varied simulated conditions and crash scenarios. WSTF simulates different sea state conditions, environmental conditions, and day/night conditions. These trials assist in validating the SoP, and training recovery teams as well as the flight crew. They provide valuable inputs for the utilization of recovery accessories. The feedback from the recovery team/trainers helps improve the recovery operations SoP, design various recovery accessories, and finalize the training plan.



Figure-1 CMRM floating trials with sea state simulation



Figure-2 CMRM with Buoy & Up-righting Floats



Figure-3 CMRM with Buoy & Up-righting Floats under different sea state condition

Source: <https://www.isro.gov.in/lunarbasalts.html>

Successful test of Throttleable Vikas Engine for 67% Thrust level

Vikas engine has been the workhorse engine for the launch vehicles of ISRO. The engine with a nominal thrust of 80t is powering the second stages of PSLV & GSLV, liquid strap-ons of GSLV and the core liquid stage of LVM3. Liquid engines that support throttling of the engine thrust facilitate booster stage recovery in launch vehicles. In order to enable booster stage recovery in future launch vehicle configurations, the first Throttling demonstration hot test of the Vikas engine was successfully accomplished on January 30, 2023 for a targeted 67% thrust level throttling for a duration of 43 s. Throttling of the engine was achieved by a closed loop thrust regulation system and the engine had been successfully throttled from the chamber pressure of 58.5 bar in steps of 50 bar, 45 bar & 40 bar, with dwelling at each pressure level for 7 s. In addition, the Vikas engine was also throttled down to 45% for the last 3 s before the engine shut down. The results of the first hot test of Throttleable Vikas Engine indicate stable combustion and subsystem performed in accordance with the prediction. The overall performance of engine sub-systems, control systems & test facility systems were as expected.



Source: <https://www.isro.gov.in>

PM Modi unveils India's biggest helicopter manufacturing facility in Tumakuru

Prime Minister Narendra Modi on Monday inaugurated the Hindustan Aeronautics Limited's helicopter factory — the country's largest chopper manufacturing facility — in Tumakuru district of Karnataka. Bengaluru-headquartered HAL plans to produce more than 1,000 helicopters in the range of 3-15 tonne with a total business of more than Rs 4 lakh crore over a period of 20 years at this facility in Gubbi taluk, officials said. The factory, spread across 615 acres for which the Prime Minister laid the foundation stone in 2016, would initially manufacture Light Utility Helicopters (LUH). It will enable India to meet its entire requirement of helicopters import and giving much-needed fillip to the Prime Minister's vision of 'Aatmanirbhar Bharat' in helicopter design, development, and manufacture, they said. Defence Minister Rajnath Singh, Karnataka Chief Minister Mr Basavaraj Bommai and senior officials of Ministry of Defence were among those present on the occasion. "It is a dedicated new greenfield helicopter factory which will enhance India's capacity and ecosystem to build helicopters," Mr Singh said. Assembly polls in Karnataka are due by May. PM Modi unveiled the LUH, which has been flight tested. The LUH is an indigenously designed and developed three-tonne class, single-engine multipurpose utility helicopter. Initially, the factory will produce around 30 helicopters per year and can be enhanced to 60 and then 90 every year in a phased manner, according to the Defence Ministry. The factory will be augmented to produce other helicopters such as Light Combat Helicopters (LCHs) and Indian Multirole Helicopters (IMRHs). It will also be used for maintenance, repair and overhaul of LCH, LUH, Civil Advanced Light Helicopter (ALH) and IMRH in the future. Potential exports of civil LUH will also be catered to from this factory, which is being equipped with state-of-the-art Industry 4.0 standard tools and techniques for its operations, officials said. The proximity of the factory, with the existing HAL facilities in Bengaluru, will boost the aerospace manufacturing ecosystem in the region and support skill and infrastructure development such as schools, colleges and residential areas, it was noted. The factory is fully operational after the establishment of facilities like heli-runway, flight hangar, final assembly hangar, structure assembly hangar, air traffic control and various supporting service facilities, officials said.

Source: <https://www.deccanherald.com>

TECHNOLOGY

Handing over of Simulated Crew Module Structure Assembly for Test Vehicle Mission

Today, VSSC/ISRO received Simulated Crew Module (SCM) Structure Assembly for the Gaganyaan project. This is an unpressurised Crew module where the interfaces of major systems like parachute systems and pyros are simulated. Also the shape and outside mold line is simulated as per the Crewed mission configuration. For the Crewed mission, the Crew Module is a pressurized capsule and accommodates the astronauts during the Gaganyaan mission. This first indigenous simulated Crew module is developed by VSSC and realized by Manjira Machine Builders Pvt Ltd., Hyderabad. This module will be used for various missions like test Vehicle mission where the crew escape system will be validated along with validation of various subsystems of Crew Module. Dr. S. Unnikrishnan Nair, Director, VSSC received the module from Shri Ch. V.N. Sai Prakash, Managing Director of Manjira Machine Builders in a ceremony

held at Manjira Machine Builders Pvt Ltd Campus at Hyderabad. Shri S Somanath, Chairman, ISRO/Secretary, Department of Space, and Dr. R Umamaheswaran, Director, HSFC graced the occasion through virtual presence.



Source: <https://www.isro.gov.in/>

BUSINESS

HAL will provide MRO support for Turbo-prop Engines which power the MQ-9B Remotely Piloted Aircraft manufactured by GA-ASI

Hindustan Aeronautics Limited (HAL) and General Atomics Aeronautical Systems Incorporated (GA-ASI) have jointly announced that turbo-propeller engines which power the state-of-art MQ-9B Guardian High Altitude Long Endurance (HALE) Remotely Piloted Aircraft System (RPAS) will be supported by the HAL Engine Division at Bengaluru for the Indian market. “HAL has been manufacturing and providing MRO support for TPE 331-5 engines for the last 40 years. We are also establishing facilities for manufacturing TPE 331-12B engines for HTT-40 project. The engine used on the MQ-9B RPAS belongs to the same family of engines with upgraded configuration to adapt to the RPAS technology. I am glad, that HAL Engine Division, Bangalore would be providing MRO support to the engine for MQ-9B RPAS, one of the most sophisticated equipment in the world” said Mr. C.B. Ananthkrishnan, Chairman and Managing Director, HAL. “GA-ASI is proud to collaborate with HAL on this prestigious project”, said Dr. Vivek Lall, Chief Executive, General Atomics Global Corporation. “HAL is the foremost Indian public sector Aerospace and Defence agency, and its vast experience in the domain of aero-engine technology makes it our natural partner in India.” Though the turboprop engine fitted onboard the MQ-9B HALE RPAS looks similar to other commercial engines in its category, it is unique in its configuration and operation, requiring special training and equipment to maintain, repair and overhaul. The Expression of Interest was exchanged between Dr. Vivek Lall, Chief Executive, General Atomics Global Corporation & Mr. B.Krishna Kumar, Executive Director (Engines & IMG) in the presence of Mr. Mihir Kanti Mishra, CEO (Bangalore Complex), GA-ASI and HAL eagerly look forward to formulate a comprehensive engine MRO program for upcoming HALE RPAS projects. This joint collaboration echoes India’s clarion call for ‘Atmanirbharta’ or ‘Self-Reliance’, while underscoring the deep industrial connection between US and Indian Aerospace Companies.

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HAL and Argentinian Air Force Sign Contract

HAL signed a contract with Argentinian Air Force (AAF) for supply of spares and engine repair of legacy two tonne class helicopters. The contract was signed by Brigadier General Xavier Issac, Chief of Air Force, AAF and Mr C B Ananthakrishnan, CMD, HAL. Brigadier General Xavier Issac said the contract for support service is a stepping stone for the future engagements and defence co-operation between India and Argentina. Mr Ananthakrishnan said this contract will further pave the way for giving new impetus for Defence exports in the Latin American region. HAL has been supporting the Indian Defence Services and will extend all the support to the AAF too.

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