

## CURRENT AFFAIRS



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## TECHNOLOGY



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Bangalore 560 075  
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### Publication Team

**Dr R Balasubramaniam  
Dr S Kishore Kumar  
Dr P Raghothama Rao  
Mrs Chandrika R Krishnan  
Mr Hemanth Kumar R  
Mr Kumaran A KM**

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### Head Quarters

**The Aeronautical Society of India  
13-B, Indraprastha Estate  
New Delhi 110 002, India  
Tel: +91 11 23370516  
Fax: +91 11 23370768**

### Chandrayaan-2: ISRO gears up for ‘most complex’ moon mission on July 15, 2019

India's second sojourn to the moon, Chandrayaan-2, would be launched on July 15, Indian Space Research Organisation announced, as it is all set for the most complex mission ever undertaken by it. Under the nearly Rs 1,000 crore mission, the landing on the moon near the South Pole would be on September 6 or 7 of 2019 on an uncharted territory, ISRO chairman Dr K Sivan said. The Lander, named after the father of the Indian space programme, Vikram Sarabhai, will touch down on a rugged lunar surface in the final descent, which, according to Dr K Sivan, would be the “most terrifying moment” of the mission. “This 15 minutes is going to be terrifying to all of us not only people from ISRO, but for entire India, because the space agency has never undertaken such type of complex flight. This 15 minutes flight is the most complex mission ISRO has ever undertaken,” he said. The landing site, at about 70 degrees south latitude, is the southernmost for any mission, not attempted before by any country, according to ISRO, as the Indian space agency eyed an ambitious feat after missing many dates. The launch would take place at 2.51 am on board the GSLV MK-III vehicle, the heaviest rocket built by ISRO, from the spaceport of Sriharikota in Andhra Pradesh. The ISRO had earlier kept the launch window for the mission from July 9 to July 16. Soft-landing on the south pole of the moon, a territory that has never been visited by any spacecraft, is considered the most challenging part of the mission. Pointing out Chandrayaan 2 is going to South Pole, a place where nobody else has gone, Dr K Sivan said the entire scientific community of the nation and the globe were eagerly waiting for the mission. According to him, there is both convenience and science involved for choosing the South Pole. “From the science point of view, the south pole is under shadow region more than North Pole, so because of this special aspect of south pole, water is expected to be more there and also more minerals are expected to be there,” he added. “Subsequently the rover will be rowing on the moon on its own propulsion at the speed of 1 cm per second and will cover 500 metres in its lifetime,” he added. “Whole country is waiting for this Chandrayaan-2 mission, yes ISRO has slipped (dates) many times, now ISRO has firmed up the date of launch, it is July 15 early morning at 2:51,” Dr K Sivan told reporters here. Chandrayaan 2 will also have the credit of being India's first interplanetary mission to be steered by two women- with Mrs M Vanitha as Project Director and Mrs Ritu Karidhal as Mission Director. Chandrayaan will carry 13 Indian payloads (8 on orbiter, 3 on lander and 2 on rover) and one passive experiment from NASA. The mission cost of Chandrayaan-2 with regard to the satellite was Rs 603 crore, he noted. The cost of GSLV MK III is Rs 375 crore.



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

## CURRENT AFFAIRS

### How ISRO is Encouraging Startups and Entrepreneurs in India

ISRO, a name that resonates with the hearts and minds of millions of Indians, is taking several steps to encourage the student and startup community in India. Apart from launching unique space missions that are adding accolades to the country, the Indian Space Research Organisation is also announcing MoUs with prestigious Indian institutions to encourage the countrymen to get more involved in the field of space science and technology. The latest announcement on the ISRO website states that the Indian Space Research Organisation has set-up the third Space Technology Incubation Centre (S-TIC) at the National Institute of Technology (NIT) Tiruchirappalli to encourage startups and entrepreneurship among student community, and also to develop an academia – industry ecosystem for space technology in India. The first two Space Technology Incubation Centres are already functioning at National Institutes of Technology (NITs) at Agartala and Jalandhar, respectively. The S-TIC at NIT-Tiruchirappalli will cover the entire southern region of our country (comprising of Andhra Pradesh, Karnataka, Kerala, Lakshadweep, Puducherry, Tamilnadu and Telangana) and take a lead role towards its objectives, says ISRO. Professor Mini Shaji Thomas, Director, NIT-Tiruchirappalli and Dr. PV Venkitakrishnan, Director, Capacity Building Programme Office, ISRO Headquarters signed and exchanged the MoU. Also, Dr K Sivan, Chairman of ISRO and Secretary of DOS inaugurated the S-TIC at NIT-Tiruchirappalli remotely from Bangalore and addressed the audience through videoconference. This announcement comes just a few days after ISRO recently announced signing of memorandum of understanding (MoU) for the seventh Space Technology Cell (STC) at the Indian Institute of Technology (IIT) Guwahati with a similar intent. ISRO continuously reiterates the enormous scope available in the emerging areas of science and technology in the research and development domain. In his address to the audience through videoconference, Dr K Sivan anticipated the extensive participation of academic institutions and encouraged them to come forward and contribute towards the continual growth of the Indian Space Programme.

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

### Bengaluru firm to build moon lander for NASA 2020 mission

NASA's efforts to get astronauts to land on the moon by 2024 will now have a key contribution from India. Bengaluru-based private firm Team Indus is part of a consortium that has bagged a contract from the US space agency to design and build a lander for its next lunar mission in 2020. In a statement earlier this week, NASA said it has selected three such consortia — commercial moon-landing service providers — to deliver science and technology payloads under Commercial Lunar Payload Services (CLPS) as part of the Artemis lunar exploration programme. Among the three players is US-based Orbit Beyond, a consortium of nine firms, including Team Indus. Team Indus is the only company with lander-making credentials. Orbit Beyond, a private firm, is leading the consortium. The other seven firms in the consortium specialise in other aspects of aerospace and space technology. Confirming the development, Team Indus engineer Mr Ananth Ramesh told . "Yes, we will be building the lander. It is most likely to be built in India too." Team Indus CEO Mr Rahul Narayan was in the US to sign the contract documents. The consortium, which has proposed to fly four payloads to Mare Imbrium, a lava plain in one of the Moon's craters by September 2020, has been awarded \$97 million. "Our selection of these US commercial landing service providers represents America's return to the Moon's surface for the first time in decades, and it's a huge step forward for our Artemis lunar exploration plans," NASA administrator Mr Jim Bridenstine said in the statement. Of the three consortia, Orbit Beyond, and therefore Team Indus, have the shortest deadline with barely 15 months to go. Each commercial lander will carry NASA-provided payloads that will conduct investigations and demonstrate advanced technologies on the lunar surface, paving the way for NASA astronauts to land on the lunar surface. NASA said the learning from these missions will not only "change our view of the universe, but also prepare our human missions to the Moon and eventually Mars".

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

### Indian aerospace firm delivers 1000th electrical panel for Boeing's Apache

An Indian aviation firm has achieved dual milestone with Boeing by delivering the 2000th harness for the Osprey and the 1000th electrical panel for the Apache of the global aerospace major, the company said. Boeing India in a statement said, it "remains committed to investing in India's supplier capability and a local workforce across manufacturing

engineering services, training and skills-development, to create a world-class aerospace ecosystem in India". Rossell Techsys has been a long-standing Boeing supplier in India, since 2013, the global aviation bellwether said. The contract for AH-64 Apache components was awarded to the Indian firm in March 2017, and the V-22 Osprey components in August 2017. In January 2019, Rossell delivered the 15,000th wire harness to Boeing for the AH-64 Apache, it added. Boeing also partners with Rossell Techsys on skilling initiatives to prepare a future ready aerospace workforce. These curricula and initiatives are training workers on aerospace-relevant skills to support India's growing aerospace ecosystem, it said.

**Source:** [economictimes.indiatimes.com/](http://economictimes.indiatimes.com/)

## **ISRO invites proposals from the scientific community for sounding rocket experiments**

ISRO has been launching indigenously made sounding rockets since 1965, and in 1975, all sounding rocket activities were consolidated under the Rohini Sounding Rocket (RSR) Programme ISRO, India's premier space research organisation, has invited proposals from the national and international scientific community for innovative payloads for scientific experiments to study the middle and upper atmospheric regions. The 'Announcement of Opportunity' (AO) is for scientific payloads to be carried on the Indian Space Research Organisation's sounding rockets. The sounding rocket carries instruments and has been designed to take measurements and perform scientific experiments during its sub-orbital flight. They are generally one or two-stage solid propellant rockets and have been used in the context of taking measurements. Some of the research avenues that can be explored with sounding rockets are aerosol experiments, middle atmospheric winds, temperature and composition, meteor smoke particle detection, ionospheric electron density, irregularities and ion composition, plasma, solar and astrophysics, and so on. Along the same lines, ISRO has invited proposals with innovative ideas in the realms of atmospheric and space sciences, astronomy and astrophysics from scientists from member nations of the United Nations. Also, the payload of a sounding rocket consists of nose cone, payload cylinder, ejection and/or separation mechanism, mounting decks, avionics systems and scientific instruments. The launch station has tracking radars with real time data processing and data uplink system, says ISRO. Those interested can send the proposals to Director, Space Science Programme Office, ISRO HQ, Antariksh Bhavan, New BEL Road, Bangalore 560231, Email: [srao@ISRO.gov.in](mailto:srao@ISRO.gov.in) by 31 December 2019. For more details on the Announcement of Opportunity' do check the brochure available on the official ISRO website.

**Source:** <https://www.dqindia.com/>

## **Navy plans to build 6 submarines**

The Navy issued an 'Expression of Interest' for shortlisting potential strategic partners for the construction of six P-75 (I) submarines costing nearly ₹ 45,000 crore, the Defence Ministry said on. This is the second project being undertaken under the latest Strategic Partnership (SP) Model, with the first being the procurement of 111 naval utility helicopters (NUH). This will provide a major boost to the indigenous design and construction capability of submarines in India, in addition to bringing in the latest submarine design and technologies as part of the project, the Navy said. "As a major initiative towards 'Make in India', the government immediately on taking over has issued the Expression of Interest(s) for shortlisting of potential Indian Strategic Partners (SPs) for "construction of six conventional submarines for P-75(I) project of the Indian Navy on June 20," it said. The case was approved by the Defence Acquisition Council on January 31, 2019. The Expression of Interest (EoI) for shortlisting of Indian strategic partners has been uploaded on the Defence Ministry and Navy websites.

**Source:** [The Hindu](#)

## **India Prime Minister Mr Narendra Modi, Maldivian President Mr Mohamed Solih inaugurate coastal surveillance radar system built by India**

Prime Minister Mr Narendra Modi and Maldivian President Ibrahim Mohamed Solih jointly inaugurated a Coastal Surveillance Radar System (CSRS) built by India and a composite training facility of the Maldives National Defence Force. The inauguration assumes significance as China views the Maldives as key to its Maritime in the Indian Ocean as it has already acquired Hambantota port in Sri Lanka and Djibouti in the Horn of Africa. The CSRS is the primary sensor for Integrated Coastal Surveillance System. This programme contributes in creating a network of information to

maritime domain awareness in the strategic Indian Ocean region. According to defence officials, India has an older version of these radars in Seychelles, Mauritius and Sri Lanka.

**Source: Business Line**

## **Navy finds defects in Scorpene submarine; one more year of delay**

New Delhi, June 15, 2019: Project-75, which involves building six Scorpene submarines in Mazagon Dock (MDL), Mumbai, had already been running five years late by the time the first one, INS Kalvari, was commissioned on December 14, 2017. With the navy reporting a host of problems in the second vessel, INS Khanderi, the project has now slipped by at least one more year. The navy has refused to commission the Khanderi into service until all its defects and deficiencies are fully rectified. The defence ministry has fully supported the navy's insistence that MDL and its technology partner, French warship builder Naval Group, deliver a fully seaworthy and battle-worthy vessel. "The liability of delivering a fully functional submarine is that of Naval Group. If we accept the boat with shortcomings, the liability would be on us," said a senior admiral. The most worrying problem the navy discovered during the Khanderi's sea trials was a killer defect for a submarine: Its engines and propellers were emitting an unduly high level of noise. For the navy, which is making do with just 14 conventional submarines against a requirement of 24, the INS Khanderi delay extends a dangerous operational void.

**Source: Business Standard**

## **Defence Minister reviews working of DRDO, asks it to focus on flagship programmes**

Defence Minister Mr Rajnath Singh visited the headquarters of Defence Research and Development Organisation on June 14 and reviewed its work in fulfilling requirement of the armed forces. Officials said Singh appreciated the commitment and dedication of DRDO scientists and directed them to focus on flagship programmes of national importance. The defence minister also released a publication titled 'Roadmap of DRDO', which encapsulated its target for the next ten years. "The presentation covered recent achievements, details of major ongoing projects and the roadmap of DRDO," the defence ministry said. It said Singh was apprised about the DRDO-developed cutting-edge, state-of-the-art technologies and systems accepted by the armed forces and those under development.

**Source: Economic Times**

## TECHNOLOGY

### **Jaldost, the airboat for flood rescue, weeding**

The National Aerospace Laboratories (NAL) launched Jaldost at the Halasuru Lake in central Bengaluru, which can be used for flood relief as well as for weeding in waterbodies. Jaldost is an airboat which uses air propulsion and thrust vectoring technology for navigation in shallow waters. The boat was launched as part of NAL's diamond jubilee celebrations. Speaking at the launch, Mr. Jitendra Jadhav, Director of NAL, said the improvised airboat can clear weeds in a 15 sq m area in a span of 10 minutes. "The airboat is constructed using technology used in low-cost aircraft. The propulsion system is above the water," he said. Since there are no moving parts below the water surface, there is no risk of entanglement with objects under water which are not easily identifiable. This makes Jaldost ideal for life-saving and rescue during floods, he said. According to NAL, Jaldost could be fitted with an add-on attachment for weeding. The system uses hydraulic power from the engine to cut weeds and are fitted with equipment to scoop them up. A stainless steel cutter is installed with a width of eight feet on the leading edge of the collection scoop. The airboat had an operational empty weight of 650 kg and floated even in water a few inches deep.

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

### **New thrust to making indigenous aircraft engines**

Veterans from the country's premier military and civil aeronautical development agencies have come together to give a new thrust and a roadmap to making Indian engines for future Indian aircraft. At present, four or five powerful and

expensive foreign engine brands keep the country's aircraft flying. But India should shake off this dependence and fly its own engines. The future requirement of all aircraft programmes could total several thousand engines, costing an estimated 1 3.52 lakh crore in the coming years, a former Defence Research and Development Organisation (DRDO) official said at the first gathering of the group, the Society for Advancement of Aircraft Propulsions (SAAP). Dr K. Tamilmani, former Director-General (Aero R&D) of DRDO, said, "The country should form a national body to focus on aero engine development. It could be similar to dedicated agencies created for realising the LCA fighter and missiles." Public agencies and labs such as Hindustan Aeronautics Ltd., National Aerospace Labs, and DRDO each have their own activities to develop engines for small and pilot-less planes, trainer aircraft and helicopters. That these efforts could be woven together to get better results was a common view at the gathering.

**Source: The Hindu**

## BUSINESS

### **India entitled to US waiver for Russia's S-400 missile system deal: Sources**

Terrorism, H1B visas, trade and the situation arising out of US sanctions on buying oil from Iran, will be among a host of issues on the table when External Affairs Minister Mr S Jaishankar holds talks with his American counterpart Mr Mike Pompeo. The US Secretary of State's visit starting is the first high-level visit from any country following the Lok Sabha polls. The two leaders will hold talks on their first meeting after Mr Jaishankar assumed office last month. Mr Pompeo's visit comes ahead of a meeting between US President Donald Trump and Prime Minister Narendra Modi on the sidelines of the G20 Summit, which will be held in Osaka, Japan from June 28-29. During his visit, Mr Pompeo will also have a working lunch with Mr Jaishankar and call on Prime Minister Mr Narendra Modi.

**Source: The Hindustan Times**

### **BrahMos JV value now stands at Rs 40,000 crore**

The BrahMos venture between India and Russia to build supersonic cruise missiles was started with an initial investment of Rs 1,300 crore and the business has now grown to the tune of Rs 40,000 crore, a top official of the company. BrahMos Aerospace CEO and Managing Director Mr Sudhir Mishra said like the supersonic missiles project, there should have been joint ventures between India and Russia in more sectors. He said the joint venture was formed at a time when Russia was undergoing financial turmoil and India should have "encashed" it by having more collaborations. Formed in 1998, BrahMos is a joint venture between India's Defence Research and Development Organisation and Russia's NPO Mashinostroyeniya. The supersonic cruise missiles can be fitted on all the three platforms — land, air and ships and submarines.

**Source: Economic Times**

### **FY 2018-19: HAL Registers 7.8% Rise in Turnover, 14.8% in PAT**

HAL (standalone) achieved an all-time high turnover of Rs. 19,705 crores, registering a growth of 7.8% for FY 2018-19 over the turnover of Rs 18,284 crores in the corresponding previous year. The audited results of the Company were approved by HAL's Board of Directors at its meeting held here today. HAL's Profit After Tax (PAT) for the FY 2018-19 stood at Rs. 2,282 crores, an increase of 14.8% over Rs. 1,987 crores in the corresponding previous year. An interim dividend of Rs. 662 crores has already been paid by HAL for the year 2018-19. The Order Book Position of the Company as on March 31, 2019 was at Rs. 58,000 crores. HAL expects fresh orders for Light Combat Aircraft and Light Combat Helicopters in the current financial year.

**Source: <https://hal-india.co.in/>**

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Website: [www.aerjournalindia.com](http://www.aerjournalindia.com)

Email: [editoraesi@yahoo.com](mailto:editoraesi@yahoo.com)

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