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Bangalore Branch Building
New Thippasandra Post
Bangalore 560 075
Karnataka, INDIA
Telefax: +91 80 25273851
Email: editoraesi@yahoo.com

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

Tejas proves its mettle in biggest Indian war exercise Gagan Shakti 2018

The indigenously-manufactured Light Combat Aircraft (LCA) Tejas has performed well while it was put to trial by the Indian Air Force (IAF) in war-like operational conditions during Gagan Shakti, its biggest ever 14-day war exercise. “We did trials and validation of operational efficiency of LCA Tejas. We were able to generate six sorties per platform per day. In this exercise, we had deployed eight platforms,” said an IAF official who was associated with this exercise.



The exercise started on April 8 2018 and concluded on April 21 2018. On the first day, six of Tejas jets reported “snag” which were of a different kind. “But we were able to get those rectified soon,” said the official. The officials associated with the exercise expressed satisfaction regarding the performance but were also worried about the slow production rate. “We are happy with the Tejas. We are looking for fast production and also induction into the force,” they said. The Tejas LCA is a supersonic, single-seat, single-engine multirole light fighter jet that has been under development since 1983 by state-owned Hindustan Aeronautics Limited (HAL). The ninth IAF Tejas LCA completed its maiden flight in March. On July 1, 2016, the LCA Tejas was inducted into the ‘Flying Daggers’ 45 Squadron of the IAF and has been placed to replace the MiG-21 aircraft. In Gagan Shakti 2018, the IAF displayed its might and conducted the biggest ever exercise with a focus on key areas like long distance operations, aerial combat, air to surface combat, paratrooper assault and medical evacuation. In this exercise, the Air Force validated its ‘Swing Capability’ where the IAF can get ready and reach from Western to Northern sector within 48 hours. On being asked about a two-front war-like situation, the sources said, “We have tried to maximise what we have. We have to fight with what we have.” In this exercise, 1,400 officers and 14,000 men participated. There were a total of 11,000 sorties conducted within days, which otherwise are done in a month’s time. 9,000 sorties done by the fighter aircraft alone were conducted in the pan-India peacetime air operations. All qualified and medically-fit crew up to 48 years of age were made proficient and were employed during the exercise.

Source: <http://www.business-standard.com/>

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ISRO raises the bar for satellite services for citizens, defence

The Indian Space Research Organisation (ISRO) has indigenously developed a power enhancing system for a class of communication satellites, that is said to be a crucial requirement for them to significantly increase the range of communication and digital services for citizens and the country's defence forces. The ISRO Satellite Centre (ISAC) has developed what is called a 'satellite bus bar', which ensures successful power distribution in high power satellites with minimum power loss, and with good performance. The system would enable satellites to carry a much higher number of signal-enhancing transponders – which means, a wider range for services pertaining to television, wireless communication, digital services as well as dedicated surveillance and communication services for the defence and security organisations would be made available in the near future. According to ISRO, this is one of the most important requirements for the smooth and longer running of a category of high performance satellites, called High Throughput Satellites (HTS). An HTS is a satellite that can carry more number of transponders with many times the capacity of signals passing through as compared to the traditional fixed-satellite service (FSS) satellites for the same amount of allocated frequency in orbit. The satellite bus bar would enable these satellites to extend their mission life while continuing to provide the intended services for various categories of users in the country and subscribed users elsewhere. This category of satellites can carry more than 50 transponders each, wherein the power requirement per satellite is more than 10 kilowatts (kW). The highest number of transponders on a single satellite so far is 48 on board ISRO's 11th communication satellite, the 3.18-tonne GSAT-16. It was launched on December 6, 2014 on board the Ariane-5 rocket by Arianespace from French Guyana. It has a 12-year mission life and is an advanced communication satellite, inducted into the INSAT-GSAT system. Now, the indigenously developed satellite bus bar will be installed on the GSAT-19E communication satellite, with the longest-planned mission life of 15 years. The satellite – heaviest of the ISRO satellites, weighing 3.2 tonnes – is scheduled to be launched in December 2016 from Sriharikota in Andhra Pradesh, 80 Km north of Chennai, on board ISRO's geostationary satellite launch vehicle (GSLV) Mark III D1 on its maiden mission flight using a functional cryogenic engine. According to ISRO's last annual report, the GSAT-19E satellite will act as a test-bed for the indigenously developed satellite bus bar, apart from trying out experimental technologies, including those for satellite manoeuvring and stabilisation. The successful working of the GSAT-19E satellite would open the gates to enhanced satellite services over more number of transponders, for longer mission lives than what present satellites offer.

HOW IT WORKS

In a communications satellite, a transponder receives signals over a range of uplink frequencies usually from a satellite ground station, amplifies them, and then re-transmits them on a different set of downlink frequencies to receivers on the ground. It does this without changing the content of the received signals. For instance, ISRO scientists explained, a satellites beaming signals for television channels, receive signals beamed from a large ground-based satellite uplink station. It then processes it, encodes it, amplifies it and then rebroadcasts the signal over a large region on earth from its high orbit up to 30,000 km. "It is like you being on the ground and wanting to sprinkle some powder on a much larger area. The best would be to throw the packet filled with powder to someone on the upper floors, from where that person would open the packet and sprinkle it over a much larger area than what you would have been able to do while standing on the ground," an ISRO scientist explained. On reaching the ground, the signals are picked up by small satellite receivers and transmitted to the digital receivers in the customer's living room, where it is decoded and displayed on a connected television screen. While in this example the signals are for television broadcasting, transponders can similarly process signals for mobile telephony, satellite communications, digital networks, defence applications, and so on. "The development of indigenous satellite bus bar meets the requirements of ongoing programmes and ensures the adaptability for forthcoming high power spacecraft programme of ISRO," says ISRO on its website.

Source: <http://bangaloremirror.indiatimes.com>

ISRO stays optimistic for IRNSS-1I launch up next

Even as GSAT-6A stays mum, ISRO readies satellite for April 12 Even as the Indian Space Research Organisation (ISRO) is making efforts to reestablish link with the GSAT-6A satellite, the space agency has one more launch lined up for next week. The launch of the IRNSS-1I navigation satellite is scheduled from the Satish Dhawan Space Centre in Sriharikota, tentatively slotted on April 12. The IRNSS-1I Navigation Satellite has already reached the spaceport after it was transported from Bengaluru last month. Though ISRO officials have maintained that all future missions are

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on schedule despite the GSAT-6A setback, the launch of the IRNSS-1I is giving jitters to the space agency. To add to the nervousness, this will be the first time that the testing, assembling and integration have been entirely done by the private sector. The IRNSS-1I is a replacement to a satellite whose launch was a failure. The PSLV-C41, which will launch the IRNSS-1I, itself is a replacement for the IRNSS-1H which was declared a failure after the satellite separation occurred within the heat shield of the PSLV-C39 launched on August 31 last year. The committee looking into what led to failure of PSLV-C39 mission (the first involving a PSLV rocket in 24 years) concluded that inadequate pressure buildup in the bellows led to the failure of ISRO's PSLV-C39. Incidentally, the IRNSS-1H was to replace the IRNSS-1A, the first of the seven IRNSS satellites, launched in 2013. ISRO had hoped that with the launch of the IRNSS-1H the three atomic clocks of the IRNSS-1A which stopped working in 2016 would be rectified. Meanwhile more than three days after it lost contact with the GSAT-6A satellite, the space agency is still making efforts to establish the link with the satellite which snapped while the third orbit raising manoeuvre was to be fired on April 1.

Source: <http://bangaloremirror.indiatimes.com/>

IISc best institution, IIT-Madras best engineering college: HRD ministry ranking

The Indian Institute of Science (IISc) in Bengaluru was adjudged the overall best institution in the country by the HRD ministry's national ranking framework. Announcing the rankings at an event at the Vigyan Bhavan here, HRD minister Mr Prakash Javadekar said the Indian Institute of Technology, Madras (IIT-M) has been adjudged the best engineering college and the Indian Institute of Management-Ahmedabad (IIM-A) the best management institution. According to the national institutional ranking framework (NIRF), Delhi University's Miranda House was the best college, premier healthcare institute AIIMS the best medical college and NLSIU-Bengaluru the best law school in the country. In the university category, IISc stood first, followed by Jawaharlal Nehru University (JNU) and Banaras Hindu University (BHU). The Indian Institute of Science was established in 1909 by a visionary partnership of industrialist Mr Jamsetji Nusserwanji Tata, the Maharaja of Mysore and the Government of India, according to its official website. Since its inception, the institute has laid a balanced emphasis on the pursuit of basic knowledge in science and engineering, as well as on the application of its research findings for industrial and social benefit. In the words of its founder, J N Tata, the objectives of the institute are "to provide for advanced instruction and to conduct original investigations in all branches of knowledge as are likely to promote the material and industrial welfare of India."

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

Chennai to host DefExpo in April

For the first time, Tamil Nadu will host DefExpo 2018, an international exhibition on Defence, in April, showcasing some of the latest technologies and products manufactured by both Indian and foreign companies. It will also give an opportunity for the State to showcase its strength as one of the largest manufacturing hubs for defence production. The event, which is the largest in the defence sector in India, will attract visitors from over 80 countries, said Defence Minister Smt Nirmala Sitharaman.

Defence-industry meet

DefExpo 2018 will be held between April 11 and 14 at a temporary expo centre on East Coast Road near Mahabalipuram. The Tamil Nadu Government has allotted land for the purpose, she said while inaugurating the two-day Defence-Industry Development Meet, an initiative that brought together Indian manufacturers of defence equipment, policymakers and representatives from the armed forces to take steps to enhance defence production by domestic companies. DefExpo India Land, Naval & Internal Homeland Security Systems Exhibition is held once in two years. The last edition was held in Goa, and the one before that in Delhi.

Natural ecosystem

Tamil Nadu has several defence production plants, including a tank manufacturing unit in Avadi and ordnance factories in Avadi and Tiruchi. Coupled with L&T Katupalli Shipyard at Ennore, which manufactures ships for the Indian Navy and the Coast Guard, the State has a robust defence production ecosystem.

This can be leveraged further in sync with defence public sector undertakings in Bengaluru to create a major manufacturing corridor, she said.

Mr Ajay Kumar, Secretary, Defence Production, said Tamil Nadu is the Detroit of Asia, and the next logical extension is to become strong in defence manufacturing.

Tamil Nadu Chief Minister Mr Edappadi K Palaniswami said the State government is in the process of coming out with an aerospace and defence policy to get a 30 per cent share in the sector, and create 'high-end' employment opportunities for around one lakh persons.

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Development of the Chennai Aerospace Park in Sriperumbudur is one of the initiatives to start with. The park, set up on 250 acres in the first phase and expandable to 500 acres in the next, will house nearly 50 aerospace or defence companies to form a strong base to support large OEMs, he said.

'Make-II' procedure

Later, speaking to newsmen, Smt Sitharaman said that in a major boost to Make in India in Defence, the Defence Acquisition Council, at its meeting on January 16, cleared a simplified 'Make-II' procedure to enable greater participation of industry in manufacture of Defence equipment. This will greatly help import substitution and promote innovative solutions, she said.

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

Two Weeks After Big Jolt, ISRO To Launch Next Satellite: 10 Facts

Here are 10 facts on the planned satellite launch:

1. India needs seven operational satellites for providing fail safe satellite based navigation signals. The 1425-kg satellite was made by the Bengaluru-based Alpha Design Technologies, in collaboration with ISRO.
2. The earlier satellite IRNSS 1A faced hiccups when the atomic clocks on-board the satellite packed up one after another. Last year, on August 31, ISRO launched a replacement satellite — IRNSS 1H. This time, the rocket failed and the satellite was never injected into the orbit. This forced the space agency to launch the IRNSS 1I as an in-orbit stand-by.
3. The Indian Regional Navigation Satellite System (IRNSS) has the operational name of NavIC. The word is an acronym for "Navigation with Indian Constellation". Taken together, the system is the country's homegrown Global Positioning System or GPS.
4. The NavIC system provides accuracy of less than 20 meters in an envelope of 1500 km around the country's borders - a zone where the maximum threat perception lies. The satellite will have both civilian and military uses.
5. The need for a home-grown GPS was felt soon after the Kargil conflict, when India desperately needed the services of a satellite-based navigation system, but did not have one of its own. The American system was not available at the time.
6. Only the US and Russia currently have fully operational GPS systems. China and Europe are still in the process of deploying their full systems. A satellite-based navigation system under one's control and command is considered a deep strategic asset.
7. The launch of IRNSS 1H failed last year as the satellite was never released from the heat shield. Sources in ISRO have hinted that a "power systems failure" led to the GSAT 6 A satellite going AWOL. The satellite had cost the country Rs 270 crore.
8. A top satellite expert from ISRO confirmed to NDTV that the GSAT 6A was a heavyweight communications satellite and the relatively lightweight IRNSS 1 used a "very different power system", which gives the space agency confidence to march ahead with the launch.
9. The ISRO has received stinging criticism by the national auditor Comptroller and Auditor General for "laxity". In March, the country's top accountant said despite an expenditure of Rs 1,283 crore, the system was way behind schedule, as the ground infrastructure was not ready.
10. Scientists at ISRO have said the necessary chips that can match the NavIC system are now being made in large numbers by the private sector.

Source: <https://www.ndtv.com> ›

Focus will be on tie-ups: DRDO chief Christopher

The Defence Research and Development Organisation is celebrating its diamond jubilee celebrations. DRDO chairman Dr S. Christopher who was at the DefExpo near Chennai on, explains the organisation's plan to meet the challenges and requirements of the developing field. Excerpts:

The Defence Ministry's 'Make in India' campaign focuses a lot on indigenisation of the assets and as a State-owned organisation, do you have specific plans to consolidate your efforts towards intended results?

We have been involved in research in three ways. Doing research on our own, aiding research and joint research. Academic institutions like the Indian Institutes of Technology are experts in theory and we know how technology reflects on the ground. To meet targeted oriented research, we have revised our way of supporting these academic

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institutions. Earlier, we gave small grants to many institutions and now we are focusing on a few, but bigger grants so that the target can be achieved for the complete product.

Could you elaborate on recent collaborations with academic institutions...

The recent ones have been setting up the Centre of Propulsion Technology (CoPT) in IIT Bombay and IIT Madras. We have also joined hands with IIT Delhi and Jadavpur University. We are planning to collaborate with the Indian Institute of Science (IISc) in Bengaluru.

The DRDO had set up labs across the country to look for solutions for specific requirements for the sector. But, over the years, has DRDO felt any need for more labs to cater to research in any developing field.

The Mr P. Rama Rao Committee has recommended against the DRDO setting up more labs. But, without setting up more labs, we are expanding our horizons as and when we feel a specific field needed more focus.

The attrition rate and the missing of deadlines by the DRDO are two major issues often cited while reviewing the performance of the organisation. Your views:

The attrition rate has often been cited but that is not true. The attrition rate is only .5% and there are normal retirements. As for the performance, DRDO functions are on a par with the functions of the other research organisations in other parts of the world. Our aim and determination have always been to meet the deadlines and we have been taking every possible effort to deliver on time.

<http://www.thehindu.com/>

Boeing joins hands with HAL, Mahindra for 'Make in India' Super Hornet fighter jet

American aerospace manufacturer Boeing has signed a partnership with Hindustan Aeronautics Ltd (HALNSE 0.42 %) and Mahindra Defense Systems to manufacture F/A-18 Super Hornet fighter jets in India. The partnership, signed at the Defence Exposition in Chennai, will be based on the 'Make in India' model with a new production facility that may also be used for other ventures such as India's Advanced Medium Combat Aircraft programme. "Boeing is excited to team up with India's only company that manufactures combat fighters, HAL, and an Indian company that manufactures small commercial airplanes, Mahindra. Together we can deliver an affordable, combat-proven fighter platform for India, while adding growth momentum to the Indian aerospace ecosystem with manufacturing, skill development, innovation and engineering and job creation," said Pratyush Kumar, president, Boeing India. A JV company would be floated over next few months for design and production of the aircraft, but the location of the new facility wasn't revealed. The partnership comes in the backdrop of a stiff competition between global aerospace companies looking to secure a \$15 billion, or `97,950 crore, deal to sell 110 fighter jets. The jets, predominantly made in India, would be sold to the Indian Air Force under the government's 'strategic partnership' policy. The policy is designed to encourage foreign companies transfer technology and manufacturing know-how to domestic defence equipment manufacturers. According to the government's proposal for the jets, at least 85%, or 94 aircraft, have to be made in India. The plan will focus on infrastructure, personnel training, and operational tools and techniques required to produce a next-gen fighter aircraft in India, Boeing said.

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

India now proud owner of indigenous navigation satellite system

India's long cherished dream of owning an indigenous navigation satellite system, officially known as NavIC (navigation with Indian constellation), has been accomplished as 'workhorse' Polar Satellite Launch Vehicle (PSLV-C41) successfully launched IRNSS-11, eighth and the last satellite of the IRNSS constellation into the targeted Sub-Geosynchronous Transfer Orbit. Within a month from now, the space agency will start rolling out a slew of navigation applications. In a pre-dawn operation, the rocket measuring 44.4 m in height and weighing 321 tonnes lifted off from the first launch pad at 4.04 am from the Satish Dhawan Space Centre (SDSC) SHAR, Sriharikota. Within 20 minutes, IRNSS-11 was placed in the desired orbit. It is a culmination of 17 years of rigorous work by Indian space scientists. India took a firm decision on IRNSS in 1999 after the US government refused to share GPS data that would provide vital information on Pakistani troops position during Kargil war. As in the previous launches of the IRNSS satellites, PSLV-C41 has also used 'XL' version of PSLV equipped with six strap-ons, each carrying 12 tonnes of propellant. IRNSS-11 is a back-up navigation satellite for IRNSS-1A. The Rs 1,420-crore NavIC suffered setback in January last year, when three rubidium atomic clocks of IRNSS-1A put into orbit on July 1, 2013, stopped working. Each satellite has three clocks and a total of 27 clocks for the navigation satellite system were supplied by the same vendor from Europe. The clocks are important to provide precise data. Soon after the success of the mission, ISRO Chairman Dr K Sivan said, "PSLV-C41 precisely

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injected the eighth navigation satellite of India of the NavIC constellation into the targeted orbit. The entire ISRO community worked tirelessly to achieve this success. We have adopted a new technology called friction stir welding, which will improve the productivity and enhance the payload capability of the vehicle," he said and added that the participation of the industry has been enhanced this time and space agency was slowly moving towards getting the entire satellite and the launch vehicle made from the industry. ISRO Satellite Centre Director Dr Mylswamy Annadurai said the solar arrays onboard IRNSS-1I have been successfully deployed and it would take about one month for the satellite to join its siblings after necessary orbit raising manoeuvres. However, Sivan said the wait for NavIC applications was over. "Within a month from now, various NavIC application will be rolled out. I request the industry and institutions to come forward to take these (navigation) applications to the user community," he said. This holds significance in the backdrop of the Comptroller and Auditor-General's adverse report, which was recently tabled in Parliament. The report criticised delays in NavIC saying an expenditure of Rs 1,283 crore had already been incurred on it, but the system was yet to be operationalised. NavIC consists of three segments — space, ground and user. The space segment comprises seven satellites in IRNSS series, while the ground segment is responsible for maintenance and operation of NavIC constellation. The user segment comprises frequency user receivers capable of getting NavIC signals. "Though the space segment has been completed, NavIC remained non-operational due to non-completion of ground segment and user segment," the report had said. Further, ISRO officials said the crucial miniaturisation of chipsets that go into the wireless devices such as cell phones and wi-fi receivers has been achieved. Initially, the ISRO had invited industry to design and develop the chipsets. However, little interest was shown due to high investment costs. "Market did not want to take the first step. So we took it on ourselves. Our Semiconductor Laboratory in Chandigarh has developed the digital chips and for manufacturing prototypes of RF Front End hardware, we gave the order to Tower Jazz, which is a US-based firm specialising in silicon germanium technology suited for increasing bandwidth. We are planning to set up a fabrication facility with silicon germanium processing technology in the SCL," a senior scientist told. Meanwhile, as reported by Express, the ISRO indicated that the phase two of IRNSS programme was on with advanced navigation satellites. Significantly, ISRO chief said the forthcoming navigation satellites will have rubidium atomic clocks developed by Ahmedabad-based Space Applications Centre, instead of imported clocks.

Missing GSAT-6A traced

Nearly a fortnight after ISRO lost communication satellite GSAT-6A, the space agency claimed on it has successfully tracked down the spacecraft and knows exactly its location and axis. Dr Sivan told Express that after an exhaustive search involving multiple agencies across the globe, including the North American Aerospace Defence Command (NORAD), "We are able to track the satellite. The initial analysis suggests that the spacecraft is intact and rotating round the earth with a perigee (closest point to earth) of 26,000 km and apogee (farthest from earth) of 36,000 km," he said. To a query, Dr Sivan said finding the satellite does not guarantee its recovery. "For some reason, we are still unable to establish communication. Our scientists are working round-the-clock. However, it is a big positive step that we know the spacecraft is in safe mode and intact," he explained. GSAT-6A was launched on March 29 by GSLV-F08. The second orbit raising operation of the satellite has been successfully carried out on March 31 2018. After the successful long duration firings, when the satellite was on course to normal operating configuration for the third and the final firing, scheduled for April 1 2018, communication from the satellite was lost.

No fund crunch

ISRO chief has downplayed reports that the space agency was facing a fund crunch for its ongoing activities. "There is no fund crunch. We will ensure that the ongoing activities are not affected. What happened was the budgetary approval was based on previous year's performance. We have to utilise the funds allotted fully, otherwise there will be a slight reduction. We can always propose a revised budgetary estimate. Getting funds is not a problem. It has been wrongly reported that the ISRO was facing funds crunch," he clarified. The total allocation for the Department of Space for next fiscal in the Union Budget for 2018-19 is around Rs 10,783 crore (including the Rs 8,936.97 crore for various space related projects), up from Rs 9,155.52 crore allocated for 2017-18 net of recoveries and receipts.

Nine launches in next eight months

Listing out the space mission for 2018, Dr Sivan said the agency would launch 5.7-tonne GSAT-11, a high throughput satellite using Ariane rocket followed by GSAT 29 launch using GSLV Mk III rocket. There are also launch missions

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for remote sensing satellites and NavIC satellite onboard PSLV. The Chandrayaan-2/moon mission is planned by the year-end

RLV programme progressing steadily

Another ambitious programme Reusable Launch Vehicle (RLV) is progressing steadily. Mr S Somanath, Director, Vikram Sarabhai Space Centre, said the next phase will be to test ground landing. “In the previous RLV mission, we made simulated landing on the sea. Now, we will land on the wheels. It will be a helicopter drop test. The next step will be to take it to an orbit, put in the orbit and do some useful tests and make a ground landing. The first step will be realised in the near future and the next one will be carried out after getting approval from the government. It is in engineering phase,” Somanath said.

Source: <http://www.newindianexpress.com/>

Air Force tests its in news with 1,110 aircraft during ongoing military exercise ‘Gaganshakti’

The Indian Air Force is trying out a variety of new tactics and operational strategies during its ongoing exercise, Gaganshakti, in which over 1,100 aircraft are taking part. The exercise began on April 8 and will conclude on April 22. The Air Force and the Army’s Parachute Brigade undertook a battalion-level airborne assault operation in the desert sector. “This assault included paradrop of 560 paratroopers, combat vehicles and GPS-guided cargo platforms. The landing force was dropped behind the simulated enemy lines to soften up the likely resistance to our own armoured offensive,” the IAF spokesperson said. Six C-130J transport aircraft and seven An-32 transport aircraft launched from multiple IAF bases for the operation. AWACS (airborne warning and control system) provided aerial surveillance and a fleet of Su-30 air-superiority fighters gave protection.

Real-time operation

Gaganshakti covers real-time coordination, deployment and employment of air power in a short and intense battle scenario, and joint operations with other services, the IAF said. “Concepts of accelerated operations, network-centric operations, long-range missions with concentrated weapon releases across all air-to-ground ranges in India, inter-valley troop transfer, flexible use of airspace, joint maritime air operations with the Navy, joint operations with the Army, simulated combat search and rescue for effective extraction of downed aircrew behind enemy lines, special operations with Garuds, mass casualty evacuation from highway and ALG (advance landing ground) operations, to name a few, would be tested,” an Air Force press statement said. For the first time in IAF history, the indigenously made light combat aircraft has been deployed to test its efficacy and integration in the operational matrix of the IAF.

Mass evacuations

Apart from wartime drills, the IAF is carrying out exercises to test its ability to carry out mass casualty evacuation in the northern sector. The press statement said that in a simulation earlier this week, 88 “casualties” were airlifted from Leh to Chandigarh. A C-17 Globemaster aircraft was converted for this role by fixing support structures for stretchers in the main cabin. “An indigenously developed patient transfer unit (PTU), capable of providing in-flight critical care to patients, was demonstrated during the exercise,” the IAF said. After landing in Chandigarh, a green corridor was made available, in liaison with Chandigarh civil authorities, to transfer the “patients” swiftly to the Command Hospital in Chandimandir, the Air Force said. For the first time, the IAF formalised the concept of a forward surgical centre (FSC). It is set up in a remote forward location to enhance the medical capabilities of a forward base away from a service hospital, thus providing medical facility to IAF and Army personnel in remote areas. Naliya is the first Air Force Station where such a centre has been operationalised, using men and material of the IAF, the statement added. The IAF conducted maritime air operations on the western seaboard, to validate its capabilities over the extended area of interest in the Indian Ocean region. “In the long-range strike concept validation, the Su-30s, airborne from a base on the eastern coast, engaged multiple targets, in the western seaboard, at distances beyond 2,500 km and landed in a southern base, thus covering a total distance of 4,000 km in a single mission,” the IAF statement said. During this operation, the IL-78 flight refuelling aircraft provided mid-air refuelling to the Su-30 fighters.

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

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Tata Boeing Aerospace to begin supply of Apache fuselage by June

Tata Boeing Aerospace (TBAL) is expected to begin commercial supply of the fuselage for the AH-64 Apache combat helicopters from its newly- opened facility in Hyderabad by June. "The joint venture is up and functional. We are going through our first fuselage production right now. It is going through testing as we speak. We are on schedule to deliver the first fuselage by June this year," Boeing India President, Mr Pratyush Kumar told. Based in Hyderabad, TBAL is a joint venture between the US aerospace giant Boeing Corporation and Tata Advanced Systems Limited (TASL) of the Tata Group. Mr Kumar said eventually the plant, inaugurated last month, will become Boeing's standalone fuselage manufacturing unit for all AH-64 Apache military choppers that are in service around the world. TBAL, Boeing's first equity joint venture in India, is the result of a 2015 partnership agreement with TASL. Over 2,300 Apache helicopters have been operated by customers around the world since the aircraft entered production. The US Army Apache fleet alone has accumulated more than 4.3 million flight hours, including more than 1.2 million in combat, as of January 2018. The helicopter has been fielded or selected for acquisition by the armed forces of 16 countries, including India. Global supplier India finalised an order with Boeing for 22 AH-64E Apache helicopters in September 2015, deliveries for which are scheduled to begin in 2019. "Tata is a significant player in the global aerospace market focussed on leveraging opportunities in global markets and reducing India's reliance on imports in Defence-related requirements, 60 per cent of which, is met through imports," Mr Banmali Agrawala, President, Infrastructure, Defence and Aerospace, Tata Sons, said during the inauguration of the plant. "With the streamlining of the export regulation process under the Strategy for Defence Exports (SDE) and with established capabilities and demonstrated deliveries, we are poised to emerge as a supplier of choice for global OEMs," he added. Spread over 14,000-square metres and employing 350 highly skilled workers, the facility will be the sole global producer of fuselages for AH-64 Apache helicopter delivered by Boeing to its global customers, including the US Army. The facility will also produce secondary structures and vertical spar boxes of this multi-role combat helicopter.

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

DGCA to keep an eye on air charter firms flying politicians

With the Directorate General of Civil Aviation (DGCA) cracking the whip on air charter firms flouting safety norms, the companies busy flying politicians for poll campaign would now report to the aviation regulator on operational issues once every week. DGCA, which has deployed crack teams of its officers and engineers to carry out surprise checks, has kept the non-scheduled air operators on tenterhooks and warned of stringent action if they violate the laid-down aviation safety norms when they fly politicians across the country. The regulator had earlier grounded an aircraft of Reliance Industries Ltd. (RIL) and issued notices to several private companies including the Jindal group, Larsen and Toubro Ltd. (L&T), SRC Aviation and Poonawallah Aviation. It also ordered dismissal of a pilot of RIL. Official sources said the non-scheduled operators have been asked to report to DGCA on issues like whether any objections have been raised by the Election Commission about their flight or the passengers they flew or those relating to their operations. The operational issues include those like flight duty time limitations of their crew members, whether they experienced any problems regarding their flight, the airport or the helipad and other operational issues. All these operators have been asked to nominate an official for managing election flying, who would be accountable for ensuring compliance of all instructions issued by DGCA, Election Commission, Bureau of Civil Aviation Security and Airports Authority of India, "before commencing election flying", the sources said. The regulator has directed pilots and crew of aircraft or helicopters flying VIPs for poll campaigning to ensure that no unauthorised cash, narcotics or arms are carried in flights they would operate. A week has passed since the DGCA effected the Air Safety Circular on operation of small aircraft and helicopters and their adherence to safety guidelines detailing the do's and don'ts for the charter operators. A special cell has also been set up within DGCA to monitor the flights of all these charter operators on a regular basis. The regulator has also put the onus of aircraft safety on the owner and operator, with the sources saying that the analysis of earlier accidents or incidents associated with small aircraft or helicopter and the past experience of election flying has revealed that "instructions were violated time and again and safety was jeopardised." Election flying is a highly demanding exercise in terms of skill levels and professionalism, the sources said, adding that long flying hours, large number of take-offs and landings, weather changes, lack of proper rest, hurriedly prepared helipads, crowd control and congested airspace pose serious challenges to air travel during polls. Besides, frequent changes in itinerary, time management, highly stressed security arrangement, surcharged crowds, difficult and disturbed areas and lack of adequate communications also posed substantial risk, they said.

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

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ISRO recalls mega GSAT-11 from Kourou for re-tests

Just over a fortnight after flying GSAT-11 out to Kourou for launch, the Indian Space Research Organisation has recalled the heaviest communication satellite it has built. The reason is said to be for conducting additional technical checks in Bengaluru, where it was built. The 5,700-kg high-throughput or Internet broadband satellite had reached French Guiana in South America on March 30 and was slated for launch on May 26 (IST), according to its launch agency Arianespace.

ISRO's spokesman and officials were not reachable for comment.

The European space transporter that it has postponed the Ariane 5 launch numbered VA 243 that was initially planned for May 26, 2018 in the wee IST hours "[d]ue to additional technical checks with ISRO's GSAT-11 satellite, to be conducted from the ISRO Satellite Centre (ISAC) at Bangalore." GSAT-11 is aimed at providing multiple spot beam coverage in Ka and Ku bands over the Indian region and nearby islands. Its 12 gbps service is expected to be far more superior to older Indian communication satellites.

Technical checks

The satellite and its foreign launch, estimated at Rs. 1,117 crore, was formally approved by the Union Cabinet in March 2016. Mr Mathieu Weiss, space counsellor in the French embassy in Bengaluru and MD of the India liaison office of French space agency CNES (which is associated with the Ariane rocket design,) said, "These things happen in the space sector. We fully understand that the customer has to make thorough technical checks. The spacecraft being an exceptional satellite, one has to be super cautious in launching it. We will do everything to accommodate ISRO in a forthcoming launch." Arianespace had matched and paired GSAT-11 to be flown along with Azerspace-2/Intelsat-38. While GSAT-11 will have to be tested, cleared in the city and flown back to Kourou at least a month before it is launched, its new launch date is not known yet.

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

TECHNOLOGY

NASA invests in technology for space exploration missions

NASA is investing in several next-generation technology concepts that will help the US space agency use them for future space exploration missions. This includes meteoroid impact detection, space telescope swarms and small orbital debris mapping technologies, NASA said in a statement. It has selected 25 early-stage proposals that have the potential to transform future human and robotic exploration missions, introduce new exploration capabilities and significantly improve current approaches to building and operating aerospace systems. These proposals have been selected under the Phase I of the "The NASA Innovative Advanced Concepts (NIAC) Program", which nurtures visionary ideas that could transform future NASA missions with the creation of breakthroughs while engaging the country's innovators and entrepreneurs as partners in the journey. "The concepts can then be evaluated for potential inclusion into our early stage technology portfolio," said Mr Jim Reuter, acting Associate Administrator of NASA's Space Technology Mission Directorate. Phase I awards are valued at approximately \$125,000, over nine months, to support initial definition and analysis of their concepts. If these basic feasibility studies are successful, awardees can apply for Phase II awards.

Source: <http://www.business-standard.com/>

NASA set to build quiet supersonic planes

For the first time in decades, NASA is set to develop an 'experimental plane' designed to fly faster than the speed of sound without producing the noise typical of supersonic flights. The X-plane's mission is to provide crucial data that could enable commercial supersonic passenger air travel over land. NASA has awarded a \$247.5 million contract to US-based Lockheed Martin Aeronautics Company to build the X-plane and deliver it to the agency by the end of 2021. "It is super exciting to be back designing and flying X-planes at this scale," said Mr Jaiwon Shin, NASA's associate administrator for aeronautics. "Our long tradition of solving the technical barriers of supersonic flight to benefit everyone continues," said Mr Shin. The X-plane's configuration will be based on a preliminary design developed by Lockheed Martin under a contract awarded in 2016. The proposed aircraft will be 94 feet long with a wingspan of 29.5 feet and have a fully-fuelled takeoff weight of 32,300 pounds. The design research speed of the X-plane at a cruising altitude of

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55,000 feet is 1,512 kilometres per hour. Its top speed will be 1,593 kilometres per hour. A single pilot will be in the cockpit, which will be based on the design of the rear cockpit seat of the T-38 training jet famously used for years by NASA's astronauts to stay proficient in high-performance aircraft. The key to success for this mission - known as the Low-Boom Flight Demonstrator - will be to demonstrate the ability to fly supersonic, yet generate sonic booms so quiet, people on the ground will hardly notice them, if they hear them at all. Current regulations, which are based on aircraft speed, ban supersonic flight over land. With the low-boom flights, NASA intends to gather data on how effective the quiet supersonic technology is in terms of public acceptance by flying over a handful of US cities, which have yet to be selected. The complete set of community response data is targeted for delivery in 2025 to the Federal Aviation Administration (FAA) and the International Civil Aviation Organization (ICAO) from which they can develop and adopt new rules based on perceived sound levels to allow commercial supersonic flight over land. The X-plane's uniquely-shaped hull design generates supersonic shockwaves in the way that it makes a quiet sonic boom. Recent studies have investigated methods to improve the aerodynamic efficiency of supersonic aircraft wings, and sought to better understand sonic boom propagation through the atmosphere. "We've reached this important milestone only because of the work NASA has led with its many partners from other government agencies, the aerospace industry and forward-thinking academic institutions everywhere," said Mr Peter Coen, NASA's Commercial Supersonic Technology project manager. Mr Jim Less is one of the two primary NASA pilots who will fly the X-plane after Lockheed Martin/s pilots have completed initial test flights to make sure the design is safe to fly. "This is probably going to be a once-in-a-lifetime opportunity for me. We're all pretty excited," Mr Jim Less said.

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

TeamIndus get another chance at moon mission

TeamIndus, which captured the attention of the country with their ambitious plan to land a rover on the Moon to win the Google Lunar XPRIZE, will be able to continue with their mission even though the internet giant will no longer be a sponsor of the prize. However, the XPRIZE foundation on said that it was now looking to relaunch the competition by finding a new sponsor.

"Effective today, the Lunar XPRIZE will operate as a non-cash competition. Over the next few months, XPRIZE will define new parameters for companies to compete in the prize," a statement from the foundation said. According to Mr Peter H Diamandis, founder and executive chairman, "While that competition is now over, there are at least five teams with launch contracts that hope to land on the lunar surface in the next two years. Because of this tremendous progress, and near-term potential, XPRIZE is now looking for our next visionary title sponsor who wants to put their logo on these teams and on the lunar surface." The decision to go ahead with the competition in a new avatar without a cash prize was welcomed by teams as well. "The Google Lunar XPRIZE served as an excellent early catalyst to get new people, partners and money involved," said Rahul Narayan, CEO and founder of TeamIndus. "With the renewed interest in beyond Earth-orbit exploration by multiple large government space agencies, a new Lunar XPRIZE will be a perfectly timed platform with the chances of multiple successful launches being much higher than before," he said in a statement.

Source: <http://www.newindianexpress.com/>

'DGCA nod for seaplane flights'

Single-engine aircraft operations feasible with caveats, rules in 45 days: Mr Choubey. A DGCA committee has observed that single-engine seaplanes can be used to operate commercial services feasibly subject to certain conditions, a senior government official said. The Directorate General of Civil Aviation was now preparing rules for permitting the service and the norms would be ready in 45 days, Mr R.N. Choubey, Secretary, Ministry of Civil Aviation. "We had constituted a committee within the DGCA with respect to feasibility of utilising seaplanes for scheduled commercial services and the committee has given a positive response, which means that a single-engine twin-pilot service would be possible but there would be certain requirements (that need to be met)," Mr. Choubey said at the annual session of the Confederation of Indian Industry. An operator of such a service would have to ensure that the seaplane's route included an airport located at a distance within the aircraft's gliding range so that in case of an engine failure the plane could glide to safety, Mr. Choubey said. Low-cost carrier SpiceJet had last year announced plans to purchase more than 100 amphibian planes at an estimated cost of \$400 million and entered into an agreement with Japan's Setouchi Holdings to explore the opportunity of bringing seaplane services back to India.

ATF under GST

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Commenting on the aviation industry's demand to bring Aviation Turbine Fuel (ATF) under the ambit of the Goods and Services Tax (GST), Mr. Choubey said, "We are still pushing [for it]." Currently, ATF or jet fuel is outside the purview of GST and is taxed at varying rates by each State. Mr. Choubey said several States like Andhra Pradesh, Telangana, West Bengal and Maharashtra had cut VAT on ATF, adding he hoped the GST council would agree to include ATF under GST.

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

Cyient teams up with BlueBird for drones

Cyient Solutions & Systems Pvt Ltd and Israel-based BlueBird Aero Systems have entered into a joint venture to offer field-proven UAV systems to Indian defence, paramilitary, security, and police forces. In the joint venture, announced at DefExpo 2018, Cyient will have a 51 per cent and the rest 49 per cent to be held by BlueBird. The joint venture company will indigenise, manufacture, assemble, integrate, and test advanced UAV systems at its production facilities in Hyderabad by leveraging BlueBird's technology and manufacturing know-how. Cyient supported by BlueBird will also provide comprehensive after-market services, including spares, repairs, maintenance, and support to end users across India, Mr Krishna Bodanapu, Chief Executive Officer & Managing Director, Cyient, was quoted in a company press release. The joint venture's portfolio includes the SpyLite, ThunderB, and MicroB systems that offer UAS technology designed to fulfill covert, real-time intelligence, and tactical mapping-on-demand missions across open areas or crowded urban environments. Cyient Solutions & Systems recently conducted field trials in India, the release said.

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

ISRO successfully launches navigation satellite IRNSS-1I to replace faulty IRNSS-1A

The successful launch of PSLV-C41 rocket carrying India's eighth navigation satellite IRNSS-1I from Sriharikota at 4.04ambrought smile back on the faces of scientists of Indian Space Reserach Organisation (ISRO) amid tough time when the space agency is struggling to restore the snapped link with its recently launched communication satellite Gsat-6A. The textbook launch of PSLV-C41 took place in four stages and the total time taken for the rocket to put the satellite into the intended orbit was 19 minutes. Navigation satellite IRNSS-1I has been launched to replace India's first navigation satellite IRNSS-1A, whose three Rubidium atomic clocks had stopped working two years ago. The malfunctioning of the Europe-imported atomic clocks in IRNSS-1A made it difficult to measure precise locational data from the satellite. When the time signal is missing, getting true positional accuracy becomes a problem. Therefore, ISRO felt a need to replace faulty satellite IRNSS-1A. IRNSS-1I weighing 1,425kg and with a life span of 10 years has become the eighth satellite to join the constellation of navigation satellites called NavIC (Navigation with Indian Constellation) or popularly known as IRNSS or 'desi' GPS. Congratulating space scientists for the successful mission, ISRO chairman Dr K Sivan, in a press briefing soon after the launch, said, "PSLV-C41 precisely injected the eighth navigation satellite of India of the NaviC constellation into the targeted orbit. This is the second successful launch we achieved in just 14 days after the successful GSLV launch (on March 29). The entire ISRO community worked tirelessly to achieve this success." Explaining a new feature in the launch vehicle, Dr Sivan said, "We have adopted a new technology called friction stir welding which will improve the productivity and enhance the payload capability of the vehicle." In the satellite area, the participation of industry has been enhanced this time. And we are slowly moving towards getting the entire satellite and the launch vehicle made from the industry." Bengaluru-headquartered Alpha Design Technologies played an active role in the integration of IRNSS-1I satellite. On popularising the indigenous navigation system, the ISRO chairman said, "NavIC will provide innovative applications to the entire community in the position-based services, especially for the unserved and the underserved. We have created an app which will be released soon. Likewise, a lot of applications are on the anvil. I request the industry and institutions to come forward to take these (navigation) applications to the user community." Like its predecessors, IRNSS-1I carries two types of payloads: Navigation and Ranging. The navigation payload of IRNSS-1I transmits signals for the determination of position, velocity and time and operated in the L5-band and S-band. The atomic clocks are part of the navigation payload of the satellite, while the ranging payload consists of a C-band transponder, which facilitates accurate determination of the range of the satellite and it also carries Corner Cube Retroreflectors for Laser ranging. Serving both military and civilian needs, NavIC satellites will broadcast highly-accurate timing signals that a receiver can use to triangulate its location. NavIC is designed to provide accurate position information service to users in India as well as the region extending up to 1,500 km from its boundary. Last year, ISRO tried to launch the replacement satellite IRNSS-1H on August 31 but the satellite got stuck in the heat shield (cone-shaped topmost part) of the rocket as the controlled explosion meant to open the hatch and release the satellite in space could not happen due to a malfunction

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in a rocket component. The IRNSS-1H satellite still stuck in the heat shield has now been declared space debris. The country's seven-satellite indigenous navigation system is a smaller version of the American GPS, which with about 31 satellites has global reach. Though the navigation system is very much operational, it is not as popular as the American GPS because the receiver and mobile chipset needed to access the navigation system have not been commercialised. The seven satellites launched earlier are IRNSS-1A (launched in 2013), IRNSS-1B (April 2014), IRNSS-1C (October 2014), IRNSS-1D (March 2015), IRNSS-1E (January 2016), IRNSS-1F (March 2016) and IRNSS-1G (April 2016). Mr Tapan Misra, director of Ahmedabad-based Space Applications Centre, had earlier told TOI, "Though NavIC doesn't have global reach, it is more accurate than the American GPS. NavIC provides standard positioning service to all users with a position accuracy of 5 metre. The GPS, on the other hand, has a position accuracy of 20-30 metre." The less the distance more is the accuracy of the navigation device in finding the real location. For many years now, India had been dependent on the GPS, a project that the US began in 1973. However, when the US denied GPS information during the Kargil war in 1999, the nation felt an urgent need for an indigenous navigation system. NavIC has helped India enter the club of select countries, which have their own positioning systems. Besides America's GPS, Russia has its GLONASS and European Union, its Galileo. China is also in the process of building Beidou Navigation Satellite System.

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

IRNSS-1I reaches space home, joins NavIC satellite constellation

The fourth and the final orbit raising operation of April 12-launched IRNSS-1I satellite was successfully carried out at 9.05 pm. With the completion of the series of four orbit-raising operations, the satellite is now close to its space home at 55 degree East longitude in the planned geosynchronous orbit, with an inclination of 29 degree to the equator, at an altitude of about 36,000 Km. A geosynchronous orbit is when the satellite is in an almost stationary position with relation to a point on earth. The IRNSS-1I is the eighth satellite in the constellation, with seven others already in space, which are part of the navigation with Indian Constellation (NavIC) system — originally called Indian Regional Navigation Satellite System, or IRNSS. This system will provide Indian land-based users indigenous positioning and navigation services. The third orbit-raising operation of IRNSS-1I was carried out to achieve a perigee (closest distance to earth) height of 31,426 Km and apogee (farthest distance from earth) height of 35,739 Km, while the second orbit-raising manoeuvre of IRNSS-1I was carried out. The Indian Space Research Organisation's (ISRO) master control facility (MCF) at Hassan performed the first orbitraising operation morning. The 1,425 Kg IRNSS-1I was launched at 4.04 am on April 12 on board PSLV-C41 from ISRO's first launch pad at Satish Dhawan Space Centre, Sriharikota. It was the 43rd flight of ISRO's workhorse launcher Polar Satellite Launch Vehicle. The IRNSS- 1I now joins seven other satellites of the IRNSS constellation — IRNSS-1A, 1B, 1C, 1D, 1E, 1F and 1G — which is already in place over India.

ISRO relieved

According to a top ISRO official, the completion of IRNSS-1I's orbit- raising manoeuvres has come as a relief to the space scientists of the country's premier space agency, especially after it lost the communication link with its most sophisticated communication satellite, GSAT-6A, on March 31 morning after the satellite was launched on March 29. The scientists at MCF Hassan, in Karnataka, lost communication link just after completing the second orbitraising manoeuvre and were preparing for the third and final orbit- raising operations on April 1.

Source: <http://www.newindianexpress.com>

ISRO sets the ball rolling for Mars Mission-2

A second Indian Mars orbiting mission plan has just been set in motion. Nearly three years after it launched a world record making MOM (Mars Orbiter Mission) the Indian Space Research Organisation has invited Indian planetary scientists from the academia and research bodies to suggest which aspects of Mars should now be studied, along with the instruments they can provide for MOM-2. Although a second Martian venture has been in the air, the latest 'Announcement of opportunity' or AO is the first formal whiff of it. The scientists have been asked to make their proposals by September 6. Short window An official privy to the developments said the exact date and details of MOM2 would depend on the proposals that would come in. He estimated that "We should ideally have the total picture of the mission by the end of this year or at least before the 2017 Budget." Payloads and experiments would be the focus of the second mission. MOM is famous for being the first mission by any country to reach Mars in the very first attempt. Russia, the US and Europe have failed in their debuts. Space agencies get the best opportunity to send a spacecraft to Mars once in 26 months based on the relative positions of Earth and Mars, which constantly move

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around Sun. Considering that India and the US both sent their respective Mars missions days apart in November 2013, the next two opportunities were around January 2016 (considered not very conducive) and around March 2018. Why a second Martian mission? Scientists believe that the atmosphere, land and minerals on Mars, which has similarities with Earth, may answer questions on how planets evolved, whether there is life elsewhere in the solar system and perhaps suggest the future of Earth itself. Questions remain Dr U.R.Rao, cosmologist, former ISRO Chairman and chairman of ADCOS (Advisory Committee for Space Science) that shapes Indian planetary pursuits, said Mars needs a closer look than what MOM has done. "We still do not know many things about Mars. Methane study [that MOM carries] still is important, and also a study of the Martian dust and its ionosphere." MOM, Dr. Rao said, was a "great engineering feat" that taught India how to reach the red planet and has sent down good pictures of Mars across millions of kilometres. The MOM-2 spacecraft should ideally have an orbit of 200 km x 2,000 km. It should take better experiments with sharper instruments along and use the bigger GSLV rocket to propel it. Last time, ISRO used the light-lift PSLV.

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

Tata, Lockheed Martin set up metal-to-metal bonding facility for aerospace sector

Tata Lockheed Martin Aerostructures Ltd (TLMAL), a joint venture between Tata Advanced Systems Ltd (TASL) and Lockheed Martin (NYSE: LMT), today inaugurated a metal-to-metal bonding facility for aerospace sector at Adibatla near Hyderabad. The new 4,700 square-meter metal-to-metal bonding facility adds a new cutting-edge capability to the Indian aerospace industry and enables TASL to use this technology across manufacturing programmes for complex aerostructures and increased indigenisation. More than 80 skilled employees will work in this facility, which can be expanded to support future work. TLMAL is also increasing the indigenisation of C-130 manufacturing by transitioning the production of approximately 2,000 previously imported empennage parts to Tata Sikorsky Aerospace Ltd (TSAL), another Tata-Lockheed Martin joint venture located here. These parts were previously manufactured by suppliers located outside of India. With 500 people, TLMAL currently produces 24 C-130 empennages annually. To date, 85 TLMAL-built empennages have been installed on C-130Js delivered by Lockheed Martin to its global customers, including the Indian Air Force. More than 400 C-130Js have been delivered to operators in 18 nations around the world. "Given the C-130J's worldwide presence, it is fitting that one of its core components is the result of a strong global partnership that we have with India, Tata and TLMAL," said Mr George Shultz, Vice-President and General Manager of Air Mobility and Maritime Missions at Lockheed Martin. "TLMAL team continues to exceed expectations in terms of quality of work and in meeting delivery commitments. Today, we celebrate the success of TLMAL, its growth in terms of capabilities, and its impact here in Hyderabad, in India and around the world." "We are delighted to expand the scope of our partnership with Lockheed Martin, a testament of TASL's increasing capabilities in complex aerostructure manufacturing. It is a matter of pride that aerostructure components manufactured at our Indian facility are an integral part of the world's most successful and advanced tactical airlifter, which is also being used by the Indian Air Force. TASL continuously strives to strengthen the manufacturing capabilities of the country by bringing cutting-edge technologies, and building capability and capacity to make India more self-reliant," said Mr Sukaran Singh, MD & CEO, Tata Advanced Systems Ltd.

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

BUSINESS

GMR Group to set up aerospace, defence manufacturing hub at Hosur

GMR Group, India's leading infrastructure company, will set up an 'Aerospace and Defence Manufacturing Hub' at its Special Investment Region at Hosur in Krishnagiri district of Tamil Nadu, to encourage indigenous production of defence equipment in the country. India stands amongst the top five defence spenders in the world. However, due to an underdeveloped defence manufacturing sector, India was one of the largest importers of defence equipment in the world—approximately 60 per cent of requirements were met through imports. Indigenization of defence production was a key priority for the government, a company release said. Under the 'Make in India' initiative, the government has recently announced setting up of a Defence Industrial Production Corridor (DIPC) in Tamil Nadu. The corridor would connect Hosur and Chennai with Kattupalli port, Chennai, Tiruchi, Coimbatore and Hosur as its key nodes and aims to provide impetus to the defence production industry in the country and in the region, in particular. The proposed defence manufacturing hub at Hosur was a step in making this vision a reality. The project was a Joint Venture (JV) between GMR Group and the Tamil Nadu Industrial Development Corporation

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(TIDCO). Under the project, about 600 acres of prime industrial land has been made ready for immediate occupation. The proposed hub was an ideal location for defence related manufacturing. Major Defence Public Sector Undertakings (DPSUs) like Hindustan Aeronautics Limited (HAL), Bharat Electronics Limited (BEL), Bharat Earth Movers Limited (BEML) and Defence Research and Development Organization (DRDO) were located only in the 5060 km radius. The hub also benefits from the established industrial ecosystem in Hosur, 700-plus MSMEs engaged in precision engineering in the region. Proximity to Bangalore ensures ready access to skilled manpower, the release said. Speaking on setting up of the manufacturing hub, Mr. BVN Rao, Business Chairman-Transportation and Urban Infrastructure, GMR Group said “this defence manufacturing hub can potentially be a game changer for the region.” “We will be providing all the necessary infrastructure facilities to attract global majors to set up their manufacturing facilities here and set an International benchmark”, he added.

Source: <http://www.newindianexpress.com/>

Mahindra Defence inks pacts with Japanese, Israeli firms for UAVs and seaplanes

The Mahindra Group announced two partnerships for its foray into new areas in the Defence business – one with Israeli company Aeronautics for naval shipborne UAVs (unmanned aerial vehicles) and the other with Japan-based ShinMaywa Industries Ltd for naval seaplanes. Aeronautics and Mahindra plans to supply UAV system that can be launched and recovered from Indian warships. “It’s our first foray into UAVs (popularly called as drones). Aeronautics is a leading manufacturer of UAVs and its products are sold in nearly 55 countries,” Mr SP Shukla, Group President, Aerospace & Defence Sector, Mahindra Group and Chairman, Mahindra Defence, told . “It’s our first venture in India. We were looking for this kind of partnership and discussed with many other companies. But we found an ideal partner in Mahindra,” said Mr Amos Mathan, CEO, Aeronautics. Together, they will be bid for the projects that are expected to come from the Indian Navy. “The partnership covers all aspects of ‘Make in India’ programme that includes transfer of technology, indigenisation and assembly of products in India,” he said. But other things such as investment, assembly unit, structure of the partnership will be decided after the tenders floated by the Navy. Explaining USPs of the UAVs, Mr Shukla said Israeli firm’s products offered the most-advanced technologies and UAVs can land even in a small ship. “It has sensors and cameras which are absolutely cutting edge and they light in weight,” he added. Seaplane partnership Mahindra Group and ShinMaywa Industries Ltd of Japan have decided to join together to supply US-2 amphibian aircraft (seaplane) for the Indian Navy. US-2, manufactured by ShinMaywa Industries, is a modern heavy amphibious aircraft. It has the state of art equipment, lake landing capability, long endurance and extended radius of operations with large payload capacity. It can operate in very rough sea operations. India and Japan are now discussing the methodology of procurement of Amphibian Aircraft US-2 requirements of the Indian Navy. “Our understanding covers an exclusive partnership between the two organisations. Depending on the size which Navy chooses to buy, we will be in a position to indigenise at different levels. Larger the number, more indigenisation can be done. MRO and pilot training have to be done in India notwithstanding the number of planes. We already have pilot training for two major OEMs in India. Navy will have to decide its requirements. But we are ready to serve the country with our products which are ideally suited for their requirements,” said Mr Shukla.

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

Tata Sons to merge aerospace and defence business under one entity

Tata Sons said it is in the process of consolidating its various businesses across aerospace and defence sectors under a single entity Tata Aerospace & Defence (Tata A&D). The necessary statutory and regulatory approvals are in the process of being obtained in this regard, the company said in a release. Tata A&D proposes to bring together over 6,000 employees, and have production facilities in Telangana, Karnataka, Jharkhand, and Maharashtra, it added. “The formation of Tata A&D, a single unified entity, will allow us to better target emerging opportunities in aerospace and defence, and engage holistically with customers both in India and globally,” Tata Sons chairman Mr N Chandrasekaran was quoted as saying in the release. Subsequent to the consolidation, Tata A&D will draw synergies from entities across the group, including Tata Motors’ defence division, TAL Manufacturing Solutions Limited (subsidiary of Tata Motors), Tata Power’s strategic engineering division, Tata Advanced Materials Limited, and Tata Advanced Systems Limited, the release said. Tata A&D proposes to leverage its full range of expertise, experience, and capabilities from across the group related to land mobility solutions, aerospace, weapon systems, sensors and command, control, communication, computers and intelligence (C4I). The company said that the combined entity will also be deeply invested in the development of indigenous platforms uniquely suited for the Indian defence forces, which is central to

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new entity's long-term strategy. According to the release, several companies proposed to be forming part of Tata A&D already have strong, established partnerships with leading aerospace and defence firms and are part of the global supply chain, and in some instances, they are also a global single source provider. Mr Banmali Agrawala, president for infrastructure, defence and aerospace at Tata Sons said Tata A&D when formed, will be better equipped to execute larger and more complex projects and be more globally competitive as part of the global supply chain. "We have moved beyond providing individual products to develop integrated offerings across land mobility, airborne platforms and systems, as well as weapons systems and C4I," he added.

Source: <http://www.business-standard.com/>

Honeywell eyes more tie-ups with India in aerospace systems

US software-industrial conglomerate Honeywell is working on finalising a couple of collaborations with Indian companies for the local production of defence technologies. The company, which has been working with defence PSU Hindustan Aeronautics Ltd (HAL) for more than four decades, is looking at new partnerships on the lines of its tie-up with Tata Power's Strategic Engineering Division for domestic inertial land navigation systems. The decision to look for more partnerships comes in the wake of growing demand for its technology in new aircraft platforms for the Indian defence. "We are looking at a few collaborative efforts. Presently, we are working with a couple of partners, about whom you will hear very soon," Mr Neelu Khatri, President-Aerospace, Honeywell International (I) Pvt Ltd told .

High-priority market

She said that for Honeywell, India is a very high priority market and the company would enter into local partnerships whenever the need arose. "We saw there was a big need for making inertial navigation system and hence we partnered with Tata. The 'made in India' Akash missile had Honeywell's inertial navigation system," she added. Honeywell, a popular aero-engine maker, will continue to invest heavily in India over the next 4-5 years as the company is gearing up to tap the next wave of opportunity in the Indian defence sector. "We are very happy with the current policies of 'Make in India'. We took some steps at a good time and now we can leverage the relationships and the footprint that we have created," said Mr Khatri. Almost all global businesses of Honeywell have presence in India and the company employs more than 16,000 people; and it has three technology centres and seven manufacturing facilities. Its aerospace engineers' strength alone is about 3,500. The company's domestic sales and exports exceed 17,000 crore per year. Honeywell supplied its engines for HAL's recent HTT-40 aircraft programme. The testing phase is on with Honeywell's engines in the aircraft. Its TPE331 engine is manufactured in India.

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

State-Run HAL Wants to Compete for \$15 Billion Air Force Order

Hindustan Aeronautics Ltd. is boosting production capacity to manufacture locally-developed light combat aircraft, even as it strikes a strategic tie-up with American major Boeing Co. to bid to make F/A-18 fighter jets in India. Although the public sector aircraft maker has fallen behind on deliveries of the first group of 40 'Tejas' planes ordered in 2013, it's awaiting a fresh order from Prime Minister Narendra Modi's government to manufacture 83 extra aircraft. "The government believes the Tejas is required for the air force," Hindustan Aeronautics chairman and Managing Director Mr T. Suvarna Raju said in an interview in Chennai on April 13. Since January 2015, HAL has delivered just eight Tejas aircraft to the Air Force. Still, Mr Raju said the jets have passed all tests to prepare them for a two-front threat from China and Pakistan. "All the eight aircraft were flown three sorties each during the ongoing nationwide air warfare exercises," Mr Raju said. The Modi government approved an 13.81 billion rupee (\$210 million) plan on March 15, 2017 to ramp up production of the Tejas jets at HAL from the existing capacity for eight aircraft a year to 16 aircraft. At present, it's able to produce just six Tejas aircraft a year. On April 12, HAL signed up with Boeing and Mahindra Defence Systems Ltd. to jointly offer the F/A-18 to both the Indian Air Force and the Navy. American Lockheed Martin Corp. and Swedish Saab AB are also competing for the \$15-billion Air Force tender for 110 jets. The Navy initiated its own 57-jet procurement process in January 2017. The additional 83 Tejas aircraft would fetch an order worth 500 billion rupees to add the company's 690 billion rupee order book. HAL is also awaiting orders from the Indian armed forces for 73 of its Dhruv helicopters, and 200 Kamov OAO helicopters, to be produced jointly with Russia.

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