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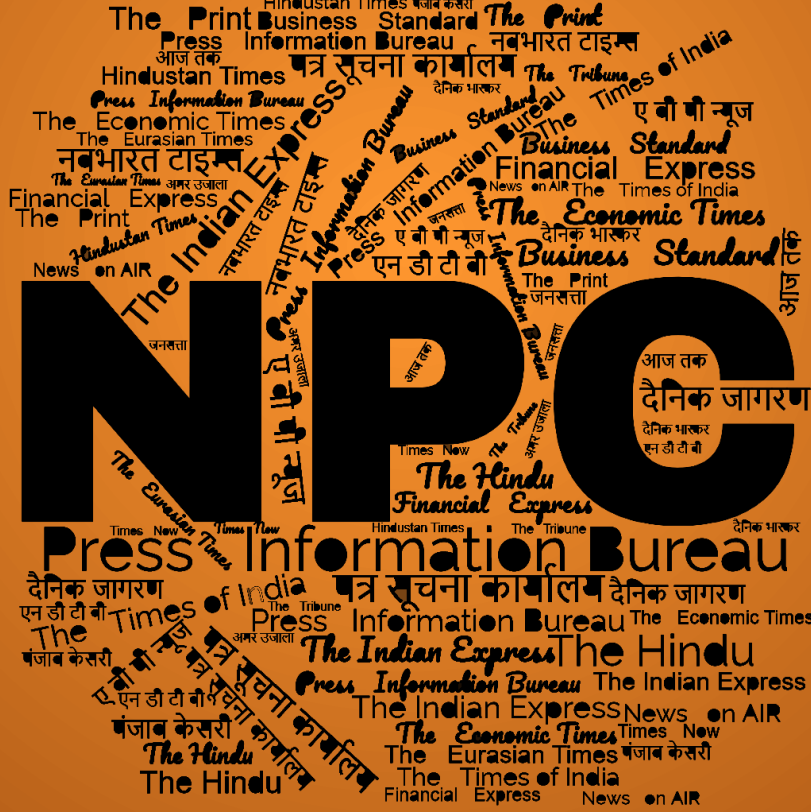
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CONTENTS

| S. No. | TITLE | Page No. |
|--------|--|--------------------------------------|
| | DRDO News | 1 |
| | DRDO Technology News | 1 |
| 1. | Indian Air Force Tests ‘Type V Heavy Drop System’ Developed at DRDO Facility | <i>The Indian Express</i> 1 |
| | Defence News | 1-11 |
| | Defence Strategic: National/International | 1-11 |
| 2. | Admiral Mohd Nazmul Hassan, Chief of the Naval Staff, Bangladesh Navy, Visit to India | <i>Press Information Bureau</i> 1 |
| 3. | IAF Takes Delivery of First C295 Transport Aircraft, 15 More from Spain in Next 2 Years | <i>The Indian Express</i> 2 |
| 4. | Anantnag Encounter: Army Colonel and Major, Deputy Superintendent of Jammu and Kashmir Police Killed in Gunfight | <i>The Times of India</i> 3 |
| 5. | Ship and Air-Launched Anti-ship Missiles are being Developed Indigenously in a Big Way: G Satheesh Reddy | <i>Financial Express</i> 4 |
| 6. | Drone Shakti: India's Ambitions to Become Global Drone Hub by 2030 Take Flight | <i>ABP News</i> 6 |
| 7. | Kim Meets Putin, Promises North Korea’s Full Support for Russia’s ‘Sacred Fight’ | <i>The Hindu</i> 8 |
| 8. | DSEI 2023: IAI Develops Anti-Tank Loitering Munition | <i>Janes</i> 10 |
| 9. | Taiwan Outlines Requirement for Enhanced Asymmetric Warfare Capability | <i>Janes</i> 10 |
| | Science & Technology News | 11-15 |
| 10. | Amazon's AWS Ties up with ISRO to Advance its AI Capabilities with Cloud Technologies | <i>Business Today</i> 11 |
| 11. | Apple iPhone 15 Pro Models have a Feature Built by ISRO: All you Need to Know | <i>The Times of India</i> 12 |
| 12. | Aditya L1 Update: ISRO Set to Raise Orbit of India's Maiden Solar Mission | <i>India Today</i> 13 |
| 13. | With 'Gaganyaan' in the Works, ISRO and NASA Aim to Send Indian Astronaut to ISS in 2024 | <i>The New Indian Express</i> 14 |

DRDO News

DRDO Technology News

The Indian EXPRESS

Wed, 13 Sep 2023

Indian Air Force Tests ‘Type V Heavy Drop System’ Developed at DRDO Facility

The Indian Air Force announced Wednesday it tested the “Type V Heavy Drop System” from a cargo aircraft. The system developed at a Defence Research and Development Organisation (DRDO) facility in Agra can be used to drop arms, ammunition, and other equipment weighing up to 20 tons to inaccessible places/battlefields using parachutes. The Type V Heavy Drop System can be used with the Boeing C-17, Lockheed Martin C-130 and other C-series aircraft, according to the Air Force. The system is made of eight main canopies, three extractor parachutes and one drogue parachute along with electrical, electronic, and mechanical systems and other latching accessories. The platform is made of a special Aluminium-based metal. The system was designed and developed at the Aerial Delivery Research and Development Establishment in Agra. The testing was jointly conducted by the establishment, Armed Forces personnel and Airbornics Defence & Space Pvt. Ltd. The system will reportedly be manufactured using “100 per cent indigenous resources” by Airbornics Defense and Space Pvt Ltd. With the test, preparations to induct the system into Indian Armed Forces’ workflow have been completed.

<https://indianexpress.com/article/technology/tech-news-technology/indian-air-force-type-v-heavy-drop-system-drdo-8938520/>

Defence News

**Defence Strategic:
National/International**



**Press Information Bureau
Government of India**

Ministry of Defence

Wed, 13 Sep 2023

Admiral Mohd Nazmul Hassan, Chief of the Naval Staff, Bangladesh Navy, Visit to India

Admiral M Nazmul Hassan, Chief of the Naval Staff, Bangladesh Navy, is on a five days official visit to India, from 12-16 Sep 23. During the visit he is scheduled to meet the Chief of the Defence

Staff, Chief of the Naval Staff, Defence Secretary, Foreign Secretary in addition to other high ranking GoI officials.

Adm Hassan laid Wreath and paid tribute at the National War Memorial on 13 Sep 23 followed by a meeting with Adm R Hari Kumar, Chief of the Naval Staff at the South Block where he was accorded a ceremonial Guard of Honour. Both the naval principals discussed issues related to enhancement of cooperation in the field of operations, training, Information exchange and participation in multilateral constructs.

During the bilateral interactions, cooperation issues, like Coordinated Patrol along International Maritime Boundary Line, bilateral exercise BONGOSAGAR, conduct of Naval Training and reciprocal visits of delegations are likely to be discussed.

On completion of engagements in New Delhi, Admiral M Nazmul Hassan is scheduled to visit Mumbai, where he would interact with the Flag Officer Commanding-in-Chief, Western Naval Command and also visit an indigenously constructed Indian Naval Ship.

India and Bangladesh share bonds of history, language, culture and multitudes of other commonalities. The excellent bilateral ties reflect an all-encompassing partnership based on sovereignty, equality, trust and understanding, that goes beyond strategic ties.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1957016>



Thu, 14 Sep 2023

IAF Takes Delivery of First C295 Transport Aircraft, 15 More from Spain in Next 2 Years

The Indian Air Force (IAF) on Wednesday received delivery of the first of the 56 C295 aircraft which are set to replace its ageing Avro-748 fleet.

In a statement, Airbus Defence and Space said that the C295, in transport configuration and with an indigenous electronic warfare suite, will leave the Airbus production site in Seville, Spain, for Delhi in the next few days, piloted by a joint IAF-Airbus crew.

In September 2021, India formalised the acquisition of 56 Airbus C295 aircraft to replace the legacy Avro fleet of the IAF at a cost of Rs 21,935 crore.

The first 16 C295s of the 56 aircraft on order will be assembled at the San Pablo Sur site in Seville, with the second aircraft due to be delivered in May 2024 and the next 14 rolled out at a rate of one per month until August 2025. The remaining 40 C295s of the IAF order will be manufactured and assembled – in partnership with Tata Advanced Systems Limited (TASL) – at a Final Assembly Line (FAL) in Gujarat's Vadodara.

As reported by The Indian Express earlier, the production of components of these aircraft has already started in the Main Constituent Assembly (MCA) facility in Hyderabad, from where these parts would be shipped to the Final Assembly Line in Vadodara, which is set to be operational by November next year.

The facility will be similar to the sprawling 1.2 million-sqm Airbus factory in Seville. The aircraft will be manufactured under India's first-ever 'Make in India' Aerospace programme in the private sector. For the longest time, the Hindustan Aeronautics Limited (HAL) has had a monopoly over manufacture of military aircraft in India.

The first India-made C295 will roll out of the Vadodara factory in September 2026, while the final aircraft is expected to be delivered to the IAF by August 2031.

“With 283 orders from 41 operators, the C295 is the undisputed leader in its segment and stands out for its versatility,” the statement said. The aircraft can carry up to 71 troops or 50 paratroopers, airdrop cargo, be used for medical evacuation and take off and land in short and unpaved runways.

“It was only two years ago that we signed this contract with India, the largest order in the history of the C295,” said Jean-Brice Dumont, Airbus’s Head of Military Air Systems, in a delivery ceremony held in Seville in the presence of India’s Ambassador to Spain Dinesh K Patnaik and IAF Chief Marshal Vivek Ram Chaudhari.

“Today, we are enhancing the capabilities of the Indian Air Force and modernising its transport fleet by delivering the first aircraft on schedule. This is the beginning of an exciting and long-term journey with the Indian Air Force.”

Airbus officials had earlier said that except for major components such as the engine and avionics, which have been sourced from Pratt & Whitney, Collins Aerospace, there will be a transfer of manufacturing technology to TASL by Airbus on most other components so that 95 per cent of the aircraft could be made in India within the next few years.

The airframe of the medium transport aircraft will involve more than 14,000 parts and components, and around 3,500 parts will be industrialised progressively every year by Tata, depending on the capability of the Indian supply chains to reach the stated level of indigenisation.

<https://indianexpress.com/article/india/iaf-chief-first-c-295-aircraft-ceremony-spanish-city-of-seville-8938742/>

THE TIMES OF INDIA

Wed, 13 Sep 2023

Anantnag Encounter: Army Colonel and Major, Deputy Superintendent of Jammu and Kashmir Police Killed in Gunfight

An Army colonel, a major and a deputy superintendent of Jammu and Kashmir police were killed in a gunfight with terrorists in Kokernag area of Kashmir's Anantnag district, officials said on Wednesday.

Senior army and police officers, GoC 15 Corps Lt General Rajiv Ghai and including DGP Dilbag Singh have rushed to the spot to assess the situation. A search operation is being carried out in the area.

The operation against the terrorists had begun on Tuesday evening in Gadole area but was called off during the night. This morning, the hunt for the terrorists resumed after information started trickling in that they were spotted at a hideout, the officials said.

Colonel Manpreet Singh, Commanding Officer of 19 Rashtriya Rifles; Major Ashish Dhonack, and Deputy Superintendent Humayun Bhat were critically injured in the gunfight with terrorists that ensued in the Garol area of Anantnag district in the morning hours of Wednesday. The Army colonel, leading his team from the front, attacked the terrorists. However, the terrorists fired upon him and he was critically injured, said officials.

Dhonack and Bhat also received bullet injuries, the officials said. The three later died in hospital during treatment.

Bhat, father of a two-month-old daughter and son of retired Inspector General of Jammu and Kashmir Police Ghulam Hasan Bhat, died due to heavy blood loss.

The banned Resistance Front, believed to be a shadow group of Pakistan-based Lashker-e-Taiba, has claimed responsibility for the attack.

Officials believe that it is the same set of terrorists who had carried out the attack on army personnel on August 4 killing three jawans in the higher reaches of the Halan forest area of Kulgam district.

Meanwhile, two terrorists were killed by security forces during an encounter that began in the Narla area of Jammu and Kashmir's Rajouri on Tuesday.

Security forces have recovered a large quantity of warlike stores, including medicines, with Pakistan markings during a search amid the encounter that continued on Wednesday evening according to officials.

<https://timesofindia.indiatimes.com/india/army-colonel-and-major-deputy-superintendent-of-jk-police-killed-in-anantnag-gunfight-officials/articleshow/103639988.cms>



Wed, 13 Sep 2023

Ship and Air-Launched Anti-ship Missiles are being Developed Indigenously in a Big Way: G Satheesh Reddy

G Satheesh Reddy, Former Scientific Adviser to Defence Minister & Secretary DD R&D speaks with Manish Kumar Jha on leading India's indigenous development of defence systems and technologies. He also highlights the development of advanced materials, Anti-ship missiles, MALE drone technology, and the LCA-NP5 for the Indian navy.

You were instrumental in putting thrust into advanced material technology, core technologies and engine technology—which are termed as some of the most complex and advanced technologies. How far we have succeeded?

In recent times, many new materials and related technologies have been developed in the country. The Material laboratory DMRL along with DAE, ISRO, CSIR and Industries like Midhani, IREL, and NALCO have worked together in developing many advanced materials indigenously.

Today, the complete composite materials, ceramics and single crystal blades for helicopters are manufactured by the industry. Many National Committees have worked and generated policy papers laying the road map for self-reliance in Materials. Synergistically all the organisations and Academia are working to develop advanced materials, models and manufacturing technologies.

India succeeded in developing varieties of hi-calibre surface-to-surface missiles, surface-to-air missiles, air-to-air missiles, and anti-tank missiles. What will be next, especially in the rapidly advancing technologies and warfare too?

Now, ship-launched and air-launched anti-ship missiles are being developed indigenously in a big way. Recently ship launched short-range SAM has been flight tested successfully. Thanks to the

Indian Navy (IN) for allotment of a ship, and committing themselves to indigenization, the ship was modified, integrated with the radar, and vertical launch system and tested the missile in a record short time.

Also, a variety of air-launched missiles, with multiple ranges including ARMs are in an advanced stage of development. Even Drone-based precision-guided systems are being developed.

One of the biggest initiatives that started under your leadership where DRDO itself gave 150 Development-cum-Production Partnerships (DCPPs) contracts. Will DRDO continue to work on these models?

DCPP is being implemented in a big way for all systems and has become a successful model to involve industry abinitio during the development phase for all development projects. The industry is being seen as an equal partner in all advanced weapon system development. This model reduces the time cycle from development to production, with the concurrent involvement of industry in development. Simultaneously TOT happens and the industry will have a better appreciation of technology. The first prototype itself comes from Industry. Also, with the knowledge gained, the industry will be able to develop the next versions of the system. The model helps the industry to come up as world-class.

Despite many successes, why India could not develop a military-grade UAV in the MALE or HALE category?

A medium-altitude long-endurance (MALE) UAV is very much in the advanced stages of development. Completed critical milestone trajectories and endurance flights, meeting the top essential parameters. Many technologies and subsystems required have been developed, making the Indigenous Content very high.

The recent success of the LCA –NP5 prototype opened a new frontier for DRDO. How did we manage to turn around in the shortest time?

It is the hard work of ADA and DRDO scientists along with HAL Engineers, Industry and the Indian Navy that made it possible. It is a capability developed indigenously which will pave the way for advanced naval fighter aircraft development in the country.

The LCA Navy offers hands-free ski jump take-off and landing modes and is carrier-compatible for combat missions with Air-to-Air weapons. Indigenously developed AESA radar on LCA is also a game changer. LCA Navy NP5 incorporates all improvements identified during the exploitation of NP1 and NP2 is a production-ready aircraft. LCA- NP5 joining the naval platforms will help to accelerate flight testing activities which will provide designers vital inputs towards the design and development of TEDBF.

India is in the midst of developing a fifth-generation Advanced Medium Combat Aircraft (AMCA), Twin Engine Deck-Based Fighter (TEDBF), Tejas Mk2 and a jet engine. Do you think DRDO has been laden with too many missions of national importance? Is it possible to do so?

When a country needs and demands the development of certain advanced systems like stealth fighter aircraft, and LCA Mk – II, then have to be met at all costs. Especially in the current global scenario, dependency on any foreign source is not in the interest of the Nation. Experiences with imports and perineal dependence on spare parts show Atmanirbharata in defence is essential.

As a premier govt department responsible for defence R&D in the country, DRDO has to take up these challenges in mission mode and put its best foot forward with clear strategies and planning with the involvement of industry partners during the development phase itself can help to meet the tasks in hand. SPV models may be invoked to share the roles and responsibilities and develop efficiently and quickly.

With a total allocation of Rs 23,264 crore in 2023-24, DRDO is severely hard-pressed for a sufficient budget for a plethora of advanced military projects underway. How do you look at the budgetary constraint?

DRDO has been getting the required budgetary support based on the needs of the day. In the last 9 years, the budget of DRDO has been enhanced by more than double. Based on the projects taken up and projected funding requirements, Govt has been allocating the required budget.

What is often debated is the lack of R&D and meagre budget—which is prevalent among the Indian private industries. What could be the incentive for them to create an environment of higher spending?

Govt has put an embargo on imports and committed to indigenisation and atmanirbharata in defence. PM has set an export target of 5 billion USD, which is possible only with the augmentation of R&D in the industry.

The government's commitment to bulk orders on Indian industries is a great incentive for private industry to invest in defence R&D. Govt has allotted 25% of the defence R&D budget to Industries and Academia. Schemes like IDEX and TDF are supporting Startups and MSMEs in a big way. This is the best time for the industry to show positive steps towards enhanced spending in defence R & D.

<https://www.financialexpress.com/business/defence-ship-and-air-launched-anti-ship-missiles-are-being-developed-indigenously-in-a-big-way-g-satheesh-reddy-3242118/>



Wed, 13 Sep 2023

Drone Shakti: India's Ambitions to Become Global Drone Hub by 2030 Take Flight

By Ranjit Kumar

India may have missed the bus of indigenous fifth generation warfare platforms like multirole stealth fighters, subsurface sea platforms, unmanned combat drones etc, but Indian drone developers hope to catch the 5G drone bus and make the country a drone hub by 2030. They hope to soon ride the train of fifth generation flying birds like warfare systems, euphemistically called drones. Though the Indian Defence Research and Development Organisation (DRDO) promises to deliver some advanced combat and surveillance drones soon, Indian armed forces still remain critically dependent on foreign supplies.

After an initial delay, the Indian security establishment has taken a few significant steps over the last few years, as a result of which Indian drone developers seem to be working on a war footing. A significant development on the front is that the government is encouraging the private sector, even start-ups, which have their own ingenious ways of working free from any bureaucratic culture. This is proven by the fact that most of the high-end drone technology and products have come from Indian private startups, who will now showcase their autonomous flying wonders during Drone Shakti-2023 on September 25-26 at the Hindon IAF airbase. The organisers have claimed that India is likely to be a global drone hub by 2030.

These entrepreneurs working on drone technology have immense potential to equip the armed forces with latest generation autonomous flying tiny weapon systems. To encourage these entrepreneurs, the Indian Air Force and the Ministry of Defence have taken several initiatives like organising the Meher Baba Swarm Drone competition that sought to tap the home-bred talent. Drone entrepreneurs are also being encouraged by a non-governmental group named the Drone Federation of India, with which the IAF has partnered to co-host the Bharat Drone Shakti where the Indian drone industry will give live aerial demonstrations. Over 75 drone startups and corporates are expected to participate in the grand show. Bharat Drone Shakti-23 promises to showcase the prowess of the fast emerging Indian drone industry in full capacity.

Drone Race Is Revolutionising Military Warfare

The story began two years ago, when the international strategic community was stunned to see a live demonstration of 75 under-trial drones in full public glare during the annual Army Day parade on January 15, 2021.

A race of sorts for acquiring indigenous drones has begun among nations, with the US having taken a big lead already on this front. Countries like Turkey, Iran have also joined this race, and those like China and Russia are adding new dimensions, working on anti-drone technology by empowering the tiny flying machines with electronic warfare systems to disable the connectivity of flying drones from their ground controls or sending area signals to disable their internal command systems. India's DRDO also claims to have achieved progress in this technology, but is not certain when the armed forces would have such anti-drone systems added to their arsenal.

The technocrat entrepreneurs are changing the dynamics of war, revolutionising military warfare by bringing new genres of weapon systems that were hitherto unthinkable. The technology of swarm drones, for example, has opened vast possibilities, and can make many of the current generation weapon systems redundant.

Such is the overwhelming response to the upcoming drone show at the Hindon IAF base that over 5,000 have registered, and they include representatives from central and state governments, public and private sector corporates, the armed forces, paramilitary forces and representatives from friendly countries. This shows the extent of human resources waiting to be tapped for equipping the armed forces with new generation weapons.

The event will showcase applications like survey drones, agriculture drones, fire suppression drones, tactical surveillance drones, heavy lift logistics drones, loitering munitions drones, drone swarms, counter drone solutions etc.

America's AFADS And India's Indrajaal

To understand the real world of drones, it would be relevant to discuss developments in the USA. Zachary Kallenborn, a US-based expert on drone technology, contends that US forces are likely to get a type of swarm that would be called 'armed, fully autonomous drone swarm' or 'AFADS', which once unleashed will locate, identify and attack targets without human intervention. In fact, the US Army is also working on a Cluster UAS Smart Munition for missile deployment. The cluster swarm project is developing a missile warhead to dispense a swarm of small drones that fan out to locate and destroy vehicles with "explosively formed penetrators". The Cluster swarm involves drones that carry 180 pound payload and a range of 70 km.

In fact, American companies are working on a lethal swarm drone, which can be termed equivalent to weapons of mass destruction. The Indian drone developers, meanwhile, are focussing on defensive drones called 'Indrajaal'. A Hyderabad-based technology research and development organisation, Grene Robotics, has developed India's first indigenous drone defence dome, Indrajaal, which can protect 1,000 to 2,000 square kilometre of area by assessing and acting on

aerial threats like unmanned aerial vehicles, loitering munitions and low radar cross section targets. Indrajal would be helpful in providing the defence bases the protection needed by them.

The Indrajal has a real time awareness of the situation and has an integrated all current weapons suite. It has a synergistic combination of around 10 technologies and a 24/7 persistent autonomous tracking system powered by artificial intelligence, cybersecurity and robotics. These enable the drones to identify, assess and evolve autonomously in real time. Indrajal can provide seamless connectivity and can do that better than any 300 point defence anti-UAV system.

The indigenous development of the Indrajal area defence system with local talent provides hope for other drone developers that India has enough knowledge base and talent to develop state-of-the-art, competitive drones that can equal or even better the best of the world. Significantly, last year's Union Budget had also announced a Bharat Shakti initiative to promote and facilitate domestic manufacturing of drones for civil and military use. Finance Minister Nirmala Sitharaman had said in her budget speech that the government would promote startups to facilitate Drone Shakti and start relevant courses for developing human resources.

<https://news.abplive.com/india-at-2047/drone-shakti-india-ambitions-to-become-global-drone-hub-by-2030-hindon-iaf-base-opinion-1629465>



Wed, 13 Sep 2023

Kim Meets Putin, Promises North Korea's Full Support for Russia's 'Sacred Fight'

North Korean leader Kim Jong Un told Russian President Vladimir Putin on Wednesday that his country offers its "full and unconditional support" for Russia's "sacred fight" to defend its security interests, in an apparent reference to the war in Ukraine, and said Pyongyang will always stand with Moscow on the "anti-imperialist" front.

Mr. Kim also called North Korea's relations with Russia "the first priority."

The leaders met at a remote Siberian rocket launch facility for a summit that underscores how their interests are aligning in the face of their countries' separate, intensifying confrontations with the United States.

Putin in his opening remarks welcomed Mr. Kim to Russia and said he was glad to see him. Mr. Putin listed economic cooperation, humanitarian issues and the "situation in the region" among the agenda items for their talks.

The two men began their meeting with a tour of a Soyuz-2 space rocket launch facility, at which North Korean leader Kim Jong-un peppered a Russian space official with questions about the rockets. The meeting with Russian President Vladimir Putin came hours after North Korea fired two ballistic missiles toward the sea, extending a highly provocative run in North Korean weapons testing since the start of 2022, as Mr. Kim used the distraction caused by Mr. Putin's war on Ukraine to accelerate his weapons development.

South Korea's Joint Chiefs of Staff didn't immediately say how far the North Korean missiles flew. Japan's Coast Guard, citing Tokyo's Defence Ministry, said the missiles have likely already landed but still urged vessels to watch for falling objects.

The decision to meet at Vostochny Cosmodrome, Russia's most important domestic satellite launch facility, suggests that Mr. Kim is seeking Russian technical assistance for his efforts to develop military reconnaissance satellites, which he has described as crucial in enhancing the threat of his nuclear-capable missiles. In recent months, North Korea has repeatedly failed to put its first military spy satellite into orbit.

Official photos showed that Mr. Kim was accompanied by Pak Thae Song, chairman of North Korea's space science and technology committee, and navy Adm. Kim Myong Sik, who are linked with North Korean efforts to acquire spy satellites and nuclear-capable ballistic missile submarines, according to South Korea's Unification Ministry.

Asked whether Russia will help North Korea build satellites, Mr. Putin was quoted by Russian state media as saying "that's why we have come here. The DPRK leader shows keen interest in rocket technology. They're trying to develop space, too," using the abbreviation for North Korea's formal name, the Democratic People's Republic of Korea. Asked about military cooperation, Mr. Putin said "we will talk about all issues without a rush. There is time."

Mr. Putin welcomed Mr. Kim's limousine, brought from Pyongyang in the North Korean leader's special armored train, at the entrance to the launch facility with a handshake that lasted around 40 seconds. Putin said he was "very glad to see" Mr. Kim. Mr. Kim's translator thanked Mr. Putin for the warm welcome, "despite being busy." The two leaders will sit down for talks after the tour of the cosmodrome, Russian state media reported.

For Mr. Putin, the meeting with Kim is an opportunity to refill ammunition stores that the 18-month-old war has drained. North Korea may have tens of millions of aging artillery shells and rockets based on Soviet designs that could give a huge boost to the Russian army in Ukraine, analysts say.

Mr. Kim also brought Jo Chun Ryong, a ruling party official in charge of munitions policies who joined him on recent tours of factories producing artillery shells and missile, according to South Korea. Mr. Kim said his decision to visit Russia four years after his previous visit showed how Pyongyang is "prioritising the strategic importance" of its relations with Moscow, North Korea's official news agency said Wednesday. Mr. Kim is expected to seek economic aid as well as military technology. Deputy Foreign Minister Andrei Rudenko said Russia may discuss humanitarian aid with the North Korean delegation, according to Russian news agencies.

An arms deal would violate international sanctions that Russia supported in the past.

Lim Soo-suk, South Korea's Foreign Ministry spokesperson, said Seoul was maintaining communication with Moscow while closely monitoring Kim's visit.

"No U.N. member state should violate Security Council sanctions against North Korea by engaging in an illegal trade of arms, and must certainly not engage in military cooperation with North Korea that undermines the peace and stability of the international community," Mr. Lim said at a briefing.

The United States has accused North Korea of providing Russia with arms, including selling artillery shells to the Russian mercenary group Wagner. Both Russian and North Korean officials denied such claims.

Speculation about their military cooperation grew after Shoigu, the Russian defense minister, visited North Korea in July. Mr. Kim subsequently toured his weapons factories, which experts said had the dual goal of encouraging the modernization of North Korean weaponry and examining artillery and other supplies that could be exported to Russia.

<https://www.thehindu.com/news/international/putin-welcomes-kim-jong-un-with-tour-of-rocket-launch-center/article67302115.ece>

DSEI 2023: IAI Develops Anti-Tank Loitering Munition

Israel Aerospace Industries (IAI) has added to its range of loitering munitions with the introduction of an anti-tank version of its Rotem system.

Unveiled at DSEI 2023 in London, the company's Rotem Alpha draws on the work undertaken in the development of the smaller Rotem, which itself leverages technology from IAI's Green Dragon system.

While the earlier Rotem is equipped with a warhead that utilises hand grenade technology, Uri Shenfeld, chief marketing officer of IAI's MBT Missiles Division, told Janes that the Rotem Alpha employs a 2.5 kg warhead from the company's Laser Homing Attack (LAHAT) missile.

Shenfeld said that this can be either the combined blast-fragmentation/anti-tank type, or the dedicated anti-tank version, the former of which can achieve 450 mm of armour penetration and the latter 800 mm, he added. While the LAHAT missile is fitted with a semi-active laser seeker, Shenfeld was unable to say if this capability could be added to the Rotem Alpha or not.

The Rotem Alpha has a quadcopter configuration and features a gimballed day/night electro-optical payload. While it has a mission endurance of 60 minutes and an operating range of 40 km via line-of-sight communications, Shenfeld explained that the air vehicle can employ a 'perch mode' whereby it lands and conducts overwatch, waiting for a target for up to 24 hours and maintaining a video feed to the operator. If a target is not engaged, the munition can be recovered for later use.

<https://www.janes.com/defence-news/news-detail/dsei-2023-iai-develops-anti-tank-loitering-munition>

Taiwan Outlines Requirement for Enhanced Asymmetric Warfare Capability

Taiwan's National Defense Report 2023 has highlighted how the country is trying to learn lessons from the Ukraine-Russia war in ramping up its own multidomain and asymmetric military capabilities in preparing for any conflict with China.

The biennial policy paper – published by the Ministry of National Defense (MND) in Taipei on 12 September – also confirms short-term investment in funding for military capabilities that will enhance the sea and air combat resilience of the Republic of China (RoC) Armed Forces.

“[China] is progressively enhancing its capabilities to invade Taiwan,” the report said. “Facing this situation, the RoC Armed Forces have to absorb the lessons learned from the example of asymmetric warfare as shown in the Russia-Ukraine war, exploit geographic advantages in the form of island defence, seek suitable force buildup initiatives, and maintain combat readiness.”

Taiwan's strategy to maintain combat readiness will be to achieve a “multidomain deterrence” in asymmetric operations, it said. The report defined asymmetric warfare as the ability to “attack or exploit enemy weaknesses and disrupt enemy centers of gravity, instead of taking on its strengths”.

“Based on the concept of Taiwan defence operations and lessons learned from the Russo-Ukraine war, the [RoC] Armed Forces will ensure command, control, surveillance, and reconnaissance functions and fighting capabilities with enhanced mobility, dispersion, concealment, redundant, and decentralised commands during the course of operations,” the report said.

<https://www.janes.com/defence-news/news-detail/taiwan-outlines-requirement-for-enhanced-asymmetric-warfare-capability>

Science & Technology News



Wed, 13 Sep 2023

Amazon's AWS Ties up with ISRO to Advance its AI Capabilities with Cloud Technologies

Cloud behemoth Amazon Web Services (AWS) has signed a strategic Memorandum of Understanding with the Indian Space Research Organization (ISRO) and Indian National Space Promotion and Authorization Centre (IN-SPACe) to support space-tech innovations through cloud computing, the company announced on Wednesday.

Shalini Kapoor, Director and Chief Technologist, Public Sector, AWS India and South Asia, said, “Cloud computing-led innovations enable the space industry to make better decisions, faster – pushing the boundaries of possibilities, and AWS is committed to help startups identify use cases and accelerate solution development, and build a strong talent pool in India with expertise in cloud and space. We look forward to helping customers in India build space-tech solutions to make life on Earth better.”

As per the company, this collaboration will give space start-ups, research institutes and students access to cutting edge cloud technologies that accelerate the development of new solutions in the space sector.

“We are at a pivotal time in India’s space journey as the Indian government focuses on broadening and strengthening the country’s capabilities in the aerospace and satellite industry,” Kapoor from AWS added.

Sudheer Kumar N, Director of Capacity Building and Public Outreach at ISRO added to this and said, “Advancing innovation in the space sector is a top priority for our nation as geospatial solutions have the power to deliver high quality services for the good governance for citizens and add value to the stakeholders.”

AWS noted in its release that cloud computing would enable the speedy management of large volumes of raw space data, besides running AI, ML and analytics workloads to achieve meaningful outcomes in a highly cost-effective manner.

Furthermore, ISRO, IN-SPACe and AWS will work collaboratively to nurture and grow the startup community in the space-tech sector, they noted in their joint statement. AWS will provide eligible space startups tools, resources, and expert technical support at no cost through the AWS Activate program to build innovative solutions and commercialise them faster. Startups will also benefit from access to AWS and its global experience of building aerospace and satellite solutions through the AWS Space Accelerator program.

Vinod Kumar, Director, Promotion Directorate, IN-SPACe, highlighted this and said, “After the Chandrayaan-3 moon landing and Aditya L-1 mission, it is time we leverage the limitless potential of space technology and cloud computing to propel India's space sector to new heights. IN-SPACe has continuously been striving to empower and facilitate the private space sector.”

<https://www.businesstoday.in/latest/corporate/story/amazons-aws-ties-up-with-isro-to-advance-its-ai-capabilities-with-cloud-technologies-398243-2023-09-13>

THE TIMES OF INDIA

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Apple iPhone 15 Pro Models have a Feature Built by ISRO: All you Need to Know

The new iPhones are here, and they have an ‘ISRO connection,’ that you might not know of. Apple has added support for India’s homegrown GPS alternative, NavIC, to the new iPhone 15 Pro models.

Apple has included NavIC support for the first time in any of its iPhone models. However, NavIC is not supported by the standard iPhone 15 and iPhone 15 Plus models.

What is NavIC? NavIC, short for "Navigation with Indian Constellation," is India's response to GPS. Developed by the Indian Space Research Organisation (ISRO), NavIC works through a group of seven satellites that guarantee precise location tracking with an accuracy of better than 20 metres.

NavIC is seen as a more accurate alternative to foreign systems, including the widely used US Global Positioning System (GPS). NavIC has been operational since 2018.

China, the European Union, Japan, and Russia have developed their own global or regional navigation systems to compete with GPS.

NavIC is a system that provides accurate positioning and timing information throughout India and the surrounding region. NavIC uses over half a dozen satellites to extend its coverage to the entire landmass of India.

The system's applications are widespread and include transportation (terrestrial, aerial, and marine), location-based services, personal mobility, resource monitoring, surveying and geodesy, scientific research, time dissemination and synchronisation, as well as safety-of-life alert dissemination, according to the Indian Space Research Organization (ISRO). However, it is unclear which features will be included in the deployment.

Previously, iPhones relied on global navigation systems such as GPS, GLONASS, and Galileo. The addition of NavIC should improve location-tracking capabilities in India.

Last year, Reuters reported that the Indian government has urged major smartphone manufacturers such as Samsung, Xiaomi, and Apple to make their smartphones compatible with NavIC within the

next few months. Nevertheless, the government and space officials are pushing for its wider use and have mandated that new phones sold from January 2023 be equipped with NavIC and GPS.

What other smartphones support NavIC

The official specs pages confirm that NavIC is supported by the global models of iPhone 15 Pro and iPhone 15 Pro Max. Other smartphones that support ISRO's GPS alternative, NavIC, are Xiaomi's Mi 11X and 11T Pro, OnePlus Nord 2T, and Realme 9 Pro.

<https://timesofindia.indiatimes.com/gadgets-news/apple-iphone-15-pro-models-have-a-feature-built-by-isro-all-you-need-to-know/articleshow/103633966.cms>



Wed, 13 Sep 2023

Aditya L1 Update: ISRO Set to Raise Orbit of India's Maiden Solar Mission

India's ambitious Aditya-L1 mission is set to undergo its fourth orbit-raising maneuver as it continues its journey outside the planet.

The fourth Earth Bound Maneuvre will be conducted on September 15 around 02:00 am IST.

This crucial step will propel the spacecraft closer to its ultimate destination - Lagrange point 1 (L1). The Aditya-L1 mission, a first-of-its-kind for India, aims to study the Sun and its impact on Earth's environment.

The spacecraft will be placed in a halo orbit around the L1 point of the Sun-Earth system, approximately 1.5 million km from Earth. This unique vantage point allows for continuous observation of the Sun without any eclipses or obstructions.

The upcoming fourth orbit-raising maneuver plays a pivotal role in the mission. By skillfully utilising Earth's gravitational force, Isro engineers aim to raise the spacecraft's perigee, the point in its orbit closest to Earth.

This maneuver follows the successful completion of the third orbit-raising operation conducted on September 10.

The L1 point, discovered by mathematician Joseph Louis Lagrange, is considered the most significant of the Lagrangian points for solar observations.

A satellite placed in the halo orbit around the L1 point can continuously view the Sun, providing valuable data on solar activities and their effect on space weather in real-time.

The Aditya-L1 mission carries seven payloads designed to study and observe different layers of the Sun using electromagnetic, particle, and magnetic field detectors. These instruments will provide crucial information to understand the physics of the solar corona, its heating mechanism, and the dynamics of space weather.

<https://www.indiatoday.in/science/story/aditya-l1-update-isro-set-to-raise-orbit-of-indias-maiden-solar-mission-2435051-2023-09-13>

With 'Gaganyaan' in the Works, ISRO and NASA Aim to Send Indian Astronaut to ISS in 2024

With the successful launch of the Chandrayaan-3 moon mission and solar probe mission Aditya-L1, the Indian Space Research Organisation (ISRO) has set its sights on a human spaceflight programme —sending an Indian astronaut to the International Space Station (ISS) by next year.

This was revealed during the recently concluded bilateral meeting between US President Joe Biden and Narendra Modi on Sept 8, where both sides announced their plan to develop a strategic framework for human space flight by year-end as New Delhi aims to send an Indian astronaut to the ISS in 2024.

In a joint statement released after the bilateral talks, President Biden congratulated Prime Minister Modi and the scientists and engineers of the Indian Space Research Organisation (ISRO) on Chandrayaan-3's historic landing at the south polar region of the Moon, as well as the successful launch of India's first solar mission, Aditya L1.

"Determined to deepen our partnership in outer space exploration, ISRO and NASA have commenced discussions on modalities, capacity building, and training for mounting a joint effort to the International Space Station in 2024, and are continuing efforts to finalise a strategic framework for human space flight cooperation by the end of 2023," the joint statement read.

"India and the United States also intend to increase coordination on planetary defence to protect planet Earth and space assets from the impact of asteroids and near-Earth objects, including US support for India's participation in asteroid detection and tracking via the Minor Planet Center," the statement said.

During PM Narendra Modi's US state visit in June, the leaders announced that NASA would provide advanced training to Indian astronauts at Johnson Space Centre in Houston, Texas, with the goal of mounting a joint effort to the ISS. The leaders had celebrated the delivery of the NASA-ISRO Synthetic Aperture Radar (NISAR) satellite to ISRO's UR Rao Satellite Centre in Bengaluru and looked forward to NISAR's 2024 launch from India.

Meanwhile, the ISRO is working toward the 'Gaganyaan Mission' which will launch a crew of three members to an orbit of 400 km for a three-day mission and bring them back safely to earth by landing in Indian seawater. It has been scheduled for late 2024 or early 2025.

The space agency is currently conducting various tests including Air Drop Test, Pad Abort Test and Test Vehicle flights as well as the safety and reliability of all systems for safe ejection and transport during manned missions. The current Launch Vehicle Mark-III (LVM-3) will be modified to become a Human-Rated Launch Vehicle (HRLV), capable of carrying a crew module and astronauts to space.

So far, ISRO has completed Cryo Stage (C25) engine qualification tests, static tests of the Crew Escape System and the integrated main parachute airdrop test. among several other milestones. The test vehicle for the characterization of the Crew Escape System is also made ready at Satish Dhawan Space Centre (SDSC-SHAR). The space agency is also expected to begin testing using the L-40 engine in October.

Keeping human safety paramount, various new technologies comprising engineering systems and human-centric systems are being developed and realised by the ISRO, which initially began working on a human space mission around 2006-07.

In 2007, the space agency conducted the Space Capsule Recovery Experiment (SRE) and achieved success with its thermal shield experiment, which is important for undertaking crewed missions.

In 2009, the govt sanctioned funding but due to an inadequate flow of funds, the human mission was halted. The project was renewed around 2017 with the proposal to demonstrate its human space travel capability by 2021-22. However, the onset of the COVID-19 pandemic had delayed the project.

Notably, former Indian Air Force pilot Rakesh Sharma is the only Indian national to have travelled in space to date. He flew aboard the Soyuz T-11 in April 1984.

Later, two astronauts of Indian origin — Sunita Williams and Raja Chari — have been to the ISS but both were American citizens at the time of their flight.

<https://www.newindianexpress.com/nation/2023/sep/13/with-gaganyaan-in-the-works-isro-and-nasa-aim-to-send-indian-astronaut-to-iss-in-2024-2614461.html>

