

# समाचार पत्रों से चयित अंश Newspapers Clippings

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## ISRO opens year's campaign

The ISRO opened the year's space campaign by launching defence-imaging satellite Microsat-R and students' payload Kalamsat from the Satish Dhawan Space Centre in Sriharikota. This is also the 46th flight of ISRO's workhorse PSLV.

### About Microsat-R

Microsat-R, an imaging and surveillance satellite, and its payload come assembled from a handful of DRDO labs.

**Weight: 740 kg**

### About Kalamsat

Kalamsat is a payload developed by students and Chennai-based Space Kidz India for the first time. Named after late Prez Abdul Kalam, it is meant for studying communication system of nano satellites.

**Cost: Rs 12 lakh**

**Weight: 1.2 kg**

A first India's lightest-ever and 3D-printed satellite

### 'Gulab jamun'

Earlier, a smaller version of Kalamsat nicknamed 'gulab jamun' weighed just 64 grams was launched in India by NASA in 2017



<https://www.tribuneindia.com/news/nation/isro-opens-year-s-campaign/719230.html>



## In rare honour, Army chief finds a place on medal list

**411 gallantry, distinguished service awards to be given away**

In a rare gesture, the Chief of the Army Staff, General Bipin Rawat, has been awarded the Param Vishisht Seva Medal (PVSM) for distinguished service on the eve of the 70th Republic Day. Lance Naik Nazir Ahmad Wani has been posthumously awarded Ashok Chakra, India's highest peace time gallantry award. Kashmir's first Ashok Chakra winner was awarded the Sena Medal in 2007 and 2018.

The award will be presented by President Ram Nath Kovind to his wife, Mahajabeen, at the Republic Day parade. "Since his enrolment in the Army, Lance Naik Nazir Ahmad Wani epitomised qualities of a fine soldier," the citation reads. The award comes for his role in a counter-terrorist operation on November 25, 2018, against six terrorists at Hirapur village near Batgund in Kashmir.

The President approved the award of 411 gallantry and distinguished service medals. These include one Ashoka Chakra, four Kirti Chakra, 11 Shaurya Chakra, 28 PVSMs, three Uttam Yudh Seva Medals, 51 Ati Vishisht Seva Medals, 10 Yudh Seva Medals, 122 Vishisht Seva Medals, 109 Sena Medals (gallantry), seven Nao Sena Medals (gallantry), two Vayu Sena Medals (gallantry), 40 Sena Medals (devotion to duty), nine Nao Sena Medals (devotion to duty) and 14 Vayu Sena Medals (devotion to duty). The Kirti Chakras were awarded to Major Tushar Gauba and posthumously to Sowar Vijay Kumar, Constable Rajendra Kumar Nain and Constable Pradip Kumar Panda.



*Sat ,26 Jan 2019*

## **India and Pakistan prefer different kinds of war**

**India wants to fight Pakistan conventionally and Pakistan wants to jump from sub-conventional to nuclear rung directly**

In a press release on Thursday, Pakistan announced a successful “training launch” of the short range, nuclear-capable Nasr missile. A surface-to-surface missile, Nasr’s range is a mere 60 kilometres. But, it is no surprise that this launch follows so closely on the heels of Indian Army chief Bipin Rawat’s announcement on reviving the idea of integrated battle groups (IBGs) to launch a quick, conventional assault on Pakistan. IBGs are closely associated with the Indian Army’s Cold Start doctrine that came about in the aftermath of the failure of Operation Parakram (2001-02). Essentially the tussle between India and Pakistan is about fighting their favourite wars.

India is conventionally superior and wants to confine its war with Pakistan within the conventional realm. Pakistan wants to keep the conflict either in the sub-conventional realm (read terrorism) where it enjoys the monopoly in this dyad, or escalate it to the nuclear realm where it has parity with India bypassing a conventional war entirely. The Indian Army evolved the Cold Start doctrine of a limited conventional war because it realised that Pakistan’s nuclear weapons would not allow for a full-scale, conventional war. The doctrine was never endorsed by the Government of India but it provided Pakistan with an excuse to build short range, nuclear-capable missiles, like Nasr, to target Indian formations undertaking conventional strikes. India’s non-response to 26/11 showed that either the Cold Start had not been operationalised or the army wasn’t confident of pulling off such strikes in a crisis situation.

General Rawat has now brought the idea up front and centre. He is saying the IBGs will be war-gamed and physically tested by May. This undoubtedly enhances the credibility of the Cold Start doctrine. Playing exactly to the script, Pakistan is now flaunting Nasr. The use of Nasr carries a number of risks like early use by on-field commanders. Moreover, its use doesn’t guarantee that a large number of Indian Army personnel can be taken out. However, deterrence is often in the adversary’s mind. As long as Indian leaders continue to be deterred by Nasr, it will continue to be effective.

<https://www.hindustantimes.com/editorials/india-and-pakistan-prefer-different-kinds-of-war/story-4MLXFOGTjOv1Sne4pdeCaP.html>

## इसरो के मिशन-2019 की सफल शुरुआत, महज 30 दिन में पीएसएलवी सीरीज का नया रॉकेट बनाकर उड़ाया

अंतरिक्ष में सफलता का प्रतीक बन चुकी इसरो ने बृहस्पतिवार रात को अपने मिशन-2019 की शानदार शुरुआत की। नए साल में चंद्रयान-2 समेत कई अहम अभियानों की तैयारी में जुटे भारतीय अंतरिक्ष अनुसंधान संगठन) इसरो (ने अपने नए सैटेलाइट लांच व्हीकल पीएसएलवी-सी44 के जरिए माइक्रोसेट-आर सैटेलाइट को सफलतापूर्वक अंतरिक्ष में स्थापित कर दिया। इमेजिंग सैटेलाइट माइक्रोसेट-आर खासतौर पर सेना के लिए तैयार की गई है। इसरो के मुताबिक, पोलर रॉकेट पीएसएलवीसी-44 ने 28 घंटे लंबे काउंटडाउन के बाद रात में करीब 11.37 बजे सतीश धवन अंतरिक्ष केंद्र के पहले लांचपैड से उड़ान भरी। चार चरण ईंधन वाले पीएसएलवी-सी44 ने अपनी पहली ही उड़ान में 740 किलोग्राम वजन वाली इक्रोसेट-आर को महज 13 मिनट 30 सेकंड बाद कक्षा में स्थापित कर दिया।

पीएसएलवी-सी44 ने माइक्रोसेट-आर के साथ भेजी गई कॉलेज छात्रों की बनाई 'कलामसेट' सैटेलाइट को भी तकरीबन 90 मिनट बाद अपने चौथे चरण के ईंधन की बदौलत 450 किलोमीटर दूर स्थित और ज्यादा ऊंची कक्षा में स्थापित किया। इस मौके पर इसरो के पूर्व चेयरमैन कृष्णस्वामी कस्तूरीरंगन और एएस किरण कुमार भी मिशन कंट्रोल सेंटर में मौजूद रहे। महज 30 दिन में पीएसएलवी सीरीज का नया रॉकेट बनाकर उड़ाया इसरो ने माइक्रोसेट-आर को अंतरिक्ष में पहुंचाने वाले पीएसएलवी-सी44 का निर्माण करने में भी एक नई उपलब्धि हासिल कर ली। बृहस्पतिवार को पहली उड़ान भरने वाले इस चार चरण ईंधन वाले रॉकेट का निर्माण महज 30 दिन के अंदर किया गया, जबकि इससे पहले तैयार किए गए पीएसएलवी सीरीज के सभी रॉकेट बनाने में लंबा समय लगा था। 44 मीटर लंबे पीएसएलवी-सी44 रॉकेट पर पहली बार इसरो ने महज दो स्ट्रेप-ऑन प्रणाली (बूस्टर) लगाई थीं, जबकि आमतौर पर पीएसएलवी सीरीज के रॉकेट छह स्ट्रेप-ऑन बूस्टर के साथ उड़ान भरते रहे हैं या उन पर कोई भी बूस्टर नहीं लगाया जाता था

इसरो की तरफ से बताया गया कि माइक्रोसेट-आर को करीब 274 किलोमीटर दूर स्थापित करते हुए पृथ्वी की सबसे निचली कक्षा में सैटेलाइट भेजने का कारनामा भी संगठन ने पहली बार किया। कलामसेट बनी रॉकेट के चौथे चरण वाली पहली सैटेलाइट माइक्रोसेट-आर के साथ उड़ान भरने वाली कलामसेट सैटेलाइट आपदा प्रबंधन के क्षेत्र में बेहद उपयोगी साबित होने वाली है। कुछ कॉलेज छात्रों और चेन्नई के एक संगठन स्पेस किड्स इंडिया के सदस्यों द्वारा महज 12 लाख रुपये में बनी कलामसेट के नाम भी एक रिकॉर्ड दर्ज हो गया। वह पीएसएलवी रॉकेट के ईंधन के चौथे चरण में उड़ान भरने वाली पहली भारतीय सैटेलाइट बन गई। स्पेस किड्स के सीईओ श्रीमाथी केसान ने बताया कि 6 साल से चल रही परियोजना के तहत कलामसेट का निर्माण नैनो सैटेलाइट के कम्युनिकेशन सिस्टम को समझने के लिए किया गया, लेकिन यह प्रायोगिक सैटेलाइट बहुत सारे क्षेत्रों में उपयोगी साबित होगी। बताया कि इस सैटेलाइट का निर्माण करीब 6 साल लंबी परियोजना के तहत किया गया है।

<https://www.amarujala.com/india-news/isro-pslv-c44-mission-carrying-kalamsat-and-microsatr-launched-successfully-from-sriharikota?pageId=1>

## NASA's Opportunity Rover Logs 15 Years on Mars



NASA's Opportunity rover begins its 16<sup>th</sup> year on the surface of Mars today. The rover landed in a region of the Red Planet called Meridiani Planum on Jan. 24, 2004, sending its first signal back to Earth from the surface at 9:05 p.m. PST (Jan. 25, 2004, at 12:05 a.m. EST). The golf-cart-sized rover was designed to travel 1,100 yards (1,006 meters) and operate on the Red Planet for 90 Martian days (sols). It has traveled over 28 miles (45 kilometers) and logged its 5,000th Martian day (or sol) back in February of 2018 .

"Fifteen years on the surface of Mars is testament not only to a magnificent machine of exploration but the dedicated and talented team behind it that has allowed us to expand our discovery space of the Red Planet,"

said John Callas, project manager for Opportunity at NASA's Jet Propulsion Laboratory in Pasadena, California. "However, this anniversary cannot help but be a little bittersweet as at present we don't know the rover's status. We are doing everything in our power to communicate with Opportunity, but as time goes on, the probability of a successful contact with the rover continues to diminish." Opportunity's last communication with Earth was received June 10, 2018, as a planet-wide dust storm blanketed the solar-powered rover's location on the western rim of Perseverance Valley, eventually blocking out so much sunlight that the rover could no longer charge its batteries.

Although the storm eventually abated and the skies over Perseverance cleared, the rover has not communicated with Earth since then. However, Opportunity's mission continues, in a phase where mission engineers at JPL are sending commands to as well as listening for signals from the rover. If engineers hear from the rover, they could attempt a recovery. Opportunity and its twin rover, Spirit, launched from Cape Canaveral, Florida, in 2003. Spirit landed on Mars in 2004, and its mission ended in 2011.

<https://www.nasa.gov/feature/jpl/nasas-opportunity-rover-logs-15-years-on-mars>



## Men, machines and glorious diversity

**The parade celebrated four nonagenarian INA veterans, military prowess and cultural heritage**

In a recognition of the role of the Indian National Army (INA), led by Subhas Chandra Bose, in India's history, four of its veterans featured in the parade during the 70th Republic Day celebrations on Saturday.

An all-woman contingent of the Assam Rifles made its debut. So did the Army's newly inducted K-9 Vajra and M777 howitzers in the military display. An Indian Air Force An-32 aircraft powered by biodiesel flew in the flypast. INA veterans Parmanand, Lalti Ram, Hira Singh and Bhagmal, all aged above 90, rode in open jeeps. Also for the first time was a marching contingent of the Gurkha Brigade, comprising all seven Gurkha regiments, led by Captain Abhaysheraz Singh Sandhu. President Ram Nath Kovind, the Supreme Commander of the armed forces, reviewed the display of India's military prowess and cultural diversity on Rajpath.

The chief guest was South African President Matamela Cyril Ramaphosa. The K-9 Vajra tracked self-propelled artillery gun from South Korea and the M777 ultra-light howitzer from the U.S. are the Army's new artillery inductions after three decades. The parade also featured the T-90 Bhishma main battle tank, infantry combat vehicle BMP-II, surface mine clearing system, transportable satellite terminal and Akash surface-to-air missile (SAM) system. The Defence Research and Development Organisation (DRDO) displayed the medium-range SAM and an Arjun armoured recovery and repair vehicle. The Navy contingent of 144 sailors was led by Lt. Cdr. Ambika Sudhakarn and the Navy tableau was titled "Indian Navy combat ready force for national security". The IAF contingent comprising 144 air warriors led by Flight Lieutenant Shrikant Sharma was followed by a tableau titled "Indian Air Force encouraging indigenisation" showcasing several scaled-down models of indigenous weapon systems.

### **Amar Jawan Jyoti**

The parade began with Prime Minister Narendra Modi paying homage to the fallen soldiers by laying a wreath at the Amar Jawan Jyoti

(AJJ) at India Gate. This may be the last Republic Day parade where wreath laying is done at the India Gate as the National War Memorial, which honours the sacrifice of soldiers post-Independence, is scheduled to be inaugurated in a few months.

### **HAL-made Rudra**

The parade concluded with a flypast, which saw several fighter and transport aircraft and helicopters fly in formation. Among them were three An-32 medium transport aircraft in a 'Vic' formation, the lead one powered by a 10% blend of biodiesel with aviation turbine fuel.



*Sun, 27 Jan 2019*

## **Up close and clear: Nasa probe transmits image of deep**

A space snowman visited by Nasa on New Year's Day is pitted all over and has a bright "collar" between its two fused spheres. These are the newest details to emerge about Ultima Thule, the most distant object ever explored by humanity. A close-up picture taken by Nasa's New Horizons spacecraft right before closest approach on January 1, and released Thursday, shows lots of little pits on Ultima Thule — located in the so-called Kuiper Belt. They are less than a 0.7 kilometre across. There's also a much bigger, circular depression on the smaller lobe, considered the snowman's head. Scientists don't know if these are impact craters or sinkholes. Categorized as a contact binary, the approximately 32-kilometre-long, reddish Ultima Thule has both light and dark patterns.

The brightest spot is where the two lobes connect. Scientists say the varied shading may help explain how the ancient object was formed, as the solar system was emerging 4.5 billion years ago. Lead scientist Alan Stern of Southwest Research Institute promises even better pictures during the next month. It will take almost two years for New Horizons to transmit all the data from the flyby, 6.4 billion kilometres away. "The new image, taken during the historic flyby is the clearest view yet of this remarkable, ancient object in the far reaches of the solar system," Nasa said in a statement. At such a vast distance, it takes more than six hours for radio signals to travel one way. New Horizons is already more than 30.5 million kilometres beyond Ultima

Thule. Launched in 2006, the spacecraft became the first visitor to the dwarf planet Pluto in 2015. Ultima Thule was its second target. A third destination even deeper inside Kuiper Belt on the frozen fringes of our solar system — could be possible in the 2020s.



Sun, 27 Jan 2019

## Earth's oldest rock found on Moon: Study



Scientists say they have discovered what may be the Earth's oldest rock in a lunar sample returned from the Moon by the Apollo 14 astronauts. An international team associated with Center for Lunar Science and Exploration (CLSE) in the US found evidence that the rock was launched from Earth by a large impacting asteroid or comet. This impact jettisoned material through Earth's primitive atmosphere, into space, where it collided with the surface of the Moon -- which was three times closer to Earth than it is now -- about four billion years ago, researchers said.

The rock was subsequently mixed with other lunar surface materials into one sample, according to the study published in the journal *Earth and Planetary Science Letters*. The team developed techniques for locating impactor fragments in the lunar regolith, which prompted CLSE Principal Investigator David A Kring to challenge them to locate a piece of Earth on the Moon. The researchers found a two-gramme fragment of rock composed of quartz, feldspar, and zircon, all commonly found on Earth and highly unusual on the Moon. Chemical analysis of the rock fragment shows it crystallised in a terrestrial-like oxidised system, at terrestrial temperatures, rather than in the reducing and higher temperature conditions characteristic of the Moon. "It is an extraordinary find that helps paint a better picture of early Earth and the bombardment that modified our planet during the dawn of life," said Kring, a Universities Space Research Association (USRA) scientist at the Lunar and Planetary Institute (LPI).

It is possible that the sample is not of terrestrial origin, but instead crystallised on the Moon, however, that would require conditions never before inferred from lunar samples, researchers said. It would require the sample to have formed at tremendous depths, in the lunar mantle, where very different rock compositions are anticipated, they said. The simplest interpretation is that the sample came from Earth, according to researchers. The rock crystallised about 20 kilometres beneath Earth's surface 4.0 to 4.1 billion years ago. It was then excavated by one or more large impact events and launched into lunar space. Previous work by the team showed that impacting asteroids at that time were producing craters thousands of kilometres in diameter on Earth, sufficiently large to bring material from those depths to the surface, researchers said. Once the sample reached the lunar surface, it was affected by several other impact events, one of which partially melted it 3.9 billion years ago, and which probably buried it beneath the surface. The sample is, therefore, a relic of an intense period of bombardment that shaped the solar system during the first billion years. After that period, the Moon was affected by smaller and less frequent impact events.

<https://www.timesnownews.com/technology-science/article/earths-oldest-rock-found-on-moon-study/354130>

Sun, 27 Jan 2019

## Saudi Arabia Appears to Be Testing Ballistic Missiles

A military base deep inside Saudi Arabia appears to be testing and possibly manufacturing ballistic missiles, experts and satellite images suggest, evidence of the type of weapons program it has long criticized its archrival Iran for possessing. Further raising the stakes for any such program are comments by Saudi Arabia's powerful Crown Prince Mohammed bin Salman, who said last year the kingdom wouldn't hesitate to develop nuclear weapons if Iran does. Ballistic missiles can carry nuclear warheads to targets thousands of kilometers (miles) away. Officials in Riyadh and the Saudi Embassy in Washington did not respond to requests for comment. >> Two years In, Gulf states disappointed in Trump on everything from Iran to peace | Analysis ■ Trump's 'Arab NATO' push against Iran comes to a head, and he's the biggest obstacle Having such a program could further strain relations with the U.S., the kingdom's longtime security partner, at a time when ties already are being tested by the killing of Washington Post columnist Jamal Khashoggi and the Saudi-led war in Yemen. Jeffrey Lewis, a missile expert at the Middlebury Institute of International Studies in Monterey, California, said heavy investment in missiles often correlates with an interest in nuclear weapons.

"I would be a little worried that we're underestimating the Saudis' ambitions here," said Lewis, who has studied the satellite images. The images, first reported by The Washington Post, focus on a military base near the town of al-Dawadmi, some 230 kilometers (145 miles) west of Riyadh, the Saudi capital. Jane's Defence Weekly first identified the base in 2013, suggesting its two launch pads appear oriented to target Israel and Iran with ballistic missiles the kingdom previously bought from China. The November satellite images show what appear to be structures big enough to build and fuel ballistic missiles. An apparent rocket-engine test stand can be seen in a corner of the base — the type on which a rocket is positioned on its side and test-fired in place. Such testing is key for countries attempting to manufacture working missiles, experts say. Michael Elleman, the senior fellow for missile defense at the International Institute for Strategic Studies in Washington, also reviewed the satellite photos and said they appear to show a ballistic missile program. The question remains where Saudi Arabia gained the technical know-how to build such a facility. Lewis said the Saudi stand closely resembles a design used by China, though it is smaller.

Chinese military support to the kingdom would not come as a surprise. The Chinese have increasingly sold armed drones to Saudi Arabia and other Mideast nations, even as the U.S. blocks sales of its own to allies over proliferation concerns. Beijing also sold Riyadh variants of its Dongfeng ballistic missiles, the only ones the kingdom was previously believed to have in its arsenal. Asked by The Associated Press on Friday about the base, China's Defense Ministry declined immediately to comment. "I have never heard of such a thing as China helping Saudi Arabia to build a missile base," Chinese Foreign Ministry spokeswoman Hua Chunying said. Neither Saudi Arabia nor China are members of the Missile Technology Control Regime, a 30-year-old agreement aimed at limiting the proliferation of rockets capable of carrying weapons of mass destruction, such as nuclear bombs. Saudi Arabia, along with Israel and the United States, have long criticized Iran's ballistic missile program, viewing it as a regional threat. Iran, whose nuclear program for now remains limited by its 2015 deal with world powers, insists its atomic program is peaceful. But Western powers have long feared it was pursuing nuclear weapons in the guise of a civilian program, allegations denied by Tehran. Iran has relied on its ballistic missiles as its own air force is largely made up of pre-1979 fighter jets.

Saudi Arabia, on the other hand, has a fleet of modern F-15s, Typhoons and Tornados which raises the question of why the Saudis would choose to develop the missiles. Elleman, the defense expert, said that while Saudi pilots are skilled, the kingdom still needs American help with logistics. "Today, they rely heavily on direct American support. There is no absolute guarantee that U.S. forces and supporting functions will aid a Saudi attack on Iranian targets," Elleman told the AP. "Ballistic missiles are a reasonable hedge against those

concerns." Saudi Arabia, meanwhile, has been targeted by ballistic missiles fired from neighboring Yemen by the Houthi rebels, some of which have reached Riyadh. Researchers,

Western nations and U.N. experts say Iran supplied those missiles to the rebels, something Tehran and the rebels deny. Saudi Arabia is pursuing its own nuclear program, and Prince Mohammed, the 33-year-old son of King Salman who is next in line for the throne, said it would race for an atomic weapon if Iran were to develop one. "Saudi Arabia does not want to acquire any nuclear bomb, but without a doubt if Iran developed a nuclear bomb, we will follow suit as soon as possible," Prince Mohammed told CBS' "60 Minutes" in an interview aired last March. A Saudi program would only complicate efforts by the U.S. and its Western allies to limit Iran's ballistic missile program, said STRATFOR, the Austin, Texas-based private intelligence firm. STRATFOR said that "should Saudi Arabia move into a test-launch phase, the United States will be pressured to take action with sanctions," as it has done with Iran. Congress has grown increasingly critical of Saudi Arabia since the Oct. 2 assassination of Khashoggi at the Saudi Consulate in Istanbul, allegedly carried out by members of Prince Mohammed's entourage. The kingdom's yearslong war in Yemen also has angered lawmakers. If the Saudis produce "medium-range systems inherently capable of carrying nuclear weapons, the response will be much more robust, though likely out of public view," Elleman said. "Congress, on the other hand, may lash out, as this will be seen as another affront to the U.S. and regional stability."

## THE ASIAN AGE

Sun, 27 Jan 2019

### Psychologists find that adults take girls' pain less seriously

by [Yale University](#)

Gender stereotypes can hurt children quite literally. When asked to assess how much pain a child is experiencing based on the observation of identical reactions to a finger-stick, American adults believe boys to be in more pain than girls, according to a new Yale study in the *Journal of Pediatric Psychology*. The researchers attribute this downgrading of the pain of girls and/or upgrading of the pain of boys to culturally ingrained, and scientifically unproven, myths like "boys are more stoic" or "girls are more emotive." A diverse sample of American adults watched the same video of a 5-year-old receiving a finger-stick at a pre-Kindergarten doctor's visit, and afterwards were asked to rate how much pain they thought the child was actually experiencing.

While all participants watched an identical video of an identical child exhibiting identical pain-display behaviors, the group who knew the child as "Samuel" said he was in more pain than the group who knew her as "Samantha." This new research backs up studies done on gender stereotyping and biased clinical assessment of pain in adult patient populations but is only the second of its kind to take these questions to the pediatric level. "We really hope that these findings will lead to further investigation into the potential role of biases in pain assessment and health care more generally," said Joshua Monrad '20, second author on the study. "If the phenomena that we observed in our studies generalize to other contexts, it would have important implications for diagnosis and treatment. Any biases in judgments about pain would be hugely important because they can exacerbate inequitable health care provision."

## India puts into orbit satellite ‘Microsat R’ for DRDO and ‘Kalamsat’



India on Thursday night opened the year’s space campaign by putting into orbit defence imaging satellite “Microsat R” for the Defence Research and Development Organisation (DRDO) and students-built nano-satellite “Kalamsat” in a copy book style. The notable aspects of this space mission are flying of a new variant of Polar Satellite Launch Vehicle (PSLV), switching off and on of the fourth stage engine couple of times, and use of fourth stage as an orbital platform carrying Kalamsat. After the successful launch, ISRO Chairman K. Sivan said: “The mission is a grand success.

The PSLV rocket precisely injected the Microsat R in its designated orbit.” Sivan said, this PSLV rocket is not an another PSLV rocket as lot of innovation have been incorporated in it like the use of aluminium tank in the fourth stage and using it as an orbital platform for the five member student team and Space Kidz India built nano-satellite Kalamsat. He said, the Indian space agency is ready to help all Indian students to conduct space experiments while ISRO would do the research for the benefit of the nation. At 11.37 p.m, the 44.4-metre tall rocket blasted off from the first launch pad here. With the fierce orange flame at its tail lighting up the night skies, the rocket slowly gained speed and went up and up enthraling the people at the rocketport, with the rocket’s engine noise like a rolling thunder adding to the thrill. More thrilling aspect came in when rocket’s fourth-stage/ engine was cut/switched off in just over 13 minutes after the lift-off. A minute later the DRDO’s imaging satellite Microsat R was ejected at an altitude of about 277 km. Speaking to IANS earlier, Sivan said the Microsat R is a 700kg satellite for DRDO. “There is increased demand for satellites from strategic sectors. About six-seven satellites are planned to be built,” a senior official told IANS earlier.

The GSAT-7 and GSAT-7A are the two dedicated military communication satellites, while all other earth observation and communication satellites launched earlier were of dual use — civilian and defence. The PSLV is a four-stage engine expendable rocket with alternating solid and liquid fuel. In its normal configuration, the rocket would have six strap-on motors hugging its first stage. But the 44.4-metre tall rocket that lifted off on Thursday had two strap-on motors and its configuration is designated as PSLV-DL. At about 100 minutes after the lift-off, the rocket’s fourth stage was switched on again for few seconds before it was again cut off. Finally, at about 103 minutes after the rocket left the earth, the fourth stage began its role as an orbital platform carrying Kalamsat at an altitude of 450 km. Kalamsat is a payload developed by students and Chennai-based Space Kidz India and the first to use the rocket’s fourth stage as an orbital platform. According to Srimathy Kesan, Founder CEO of Space Kidz India, Kalamsat is a 10cm cube, 1.2 kg communication satellite with a life span of two months. The satellite cost is about Rs 12 lakh.

<https://www.therahnuma.com/india-puts-into-orbit-satellite-microsat-r-for-drdo-and-kalamsat/>

## DRDO Makes Country Proud By Successfully Testing Anti-Radiation Missile Ahead Of R-Day



In a great success, the Defence Research and Development Organisation (DRDO) on Thursday conducted the maiden test of New Generation Anti-Radiation Missile (NGARM) from a fighter plane.

The indigenously developed air-to-surface missile was successfully launched from the Sukhoi-30 MKI, the main fighter jet of the Indian Air Force off Odisha coast and the missile is capable of destroying the enemy radars, tracking system and communication facilities. The NGARM has a strike range of over 100 kms. "The missile test-fired on

January 18 performed as expected. Its seeker, structural integrity, navigation and control system were validated along with the aerodynamic capabilities," a scientist associated with the mission was quoted by The New Indian Express. This missile is first of its kind in India and can be launched from a range of altitudes. It can pick up signals or radiations emitted by the radars or other tracking devices from a certain and then it can destroy them. The scientist said that the radars, tracking devices and other facilities of communication of enemies are the first targets during the war and the missile's sensor located on the tip picks up the radio frequencies and then it destroys those facilities.

<https://www.indiatimes.com/news/india/drdo-makes-country-proud-by-successfully-testing-anti-radiation-missile-ahead-of-r-day-361038.html>

## Indigenous sensors will change defence applications: DRDO

Indigenous development of sensors would play a great role and revolutionise applications like unmanned aerial vehicles (UAVs) for commercial and defence applications, scientist and chairman of Defence Research Development Organisation (DRDO) G Satheesh Reddy said Sunday. Reddy, also the chairman of Aeronautical Society of India, said there was a huge transformation in the areas of unmanned systems and associated technologies. "UAVs are going to play a major role in both defence and

civilian sectors. So, there is an urgent need for industries to gear up and work in these areas," a press release from the Aeronautical Society of India quoted him as saying. Reddy highlighted the contributions of DRDO to design and development of modern UAVs and said a contest 'Drone Olympics' would be organised by Ministry of Defence during the forthcoming Aero India event.

He was speaking at a national conference on 'Unmanned Aircraft Systems: Opportunities and Challenges' organised by the Society which also held its AGM (annual general meeting) here. NITI Aayog member V K Saraswat, delivering a talk on the topic 'Artificial Intelligence(AI) in Aerospace 4.0,' said, "AI is one of the disruptive technologies, which is going to impact efficiency, productivity, speed and innovation in the emerging industries." He said Aerospace 4.0 would include all features of AI in the next 15 years to cut cost and cycle-time of design, optimisation, simulation, prototyping, manufacturing, supply chain, maintenance and product updates. Programme director, Agni-3, VV Rao said aerospace sensor technology would play a vital role in the futuristic unmanned systems. He said the scenario was changing fast with the emergence of nano technologies and miniature embedded systems. He added that unmanned systems would revolutionise agriculture, medical, space, defence and environment management. Former chairman of ISRO AS Kiran Kumar and nearly 500 scientists, engineers, industrialists and professionals from the aerospace sector participated in the conference.

[https://www.business-standard.com/article/pti-stories/indigenous-sensors-will-change-defence-applications-drdo-119012700444\\_1.html](https://www.business-standard.com/article/pti-stories/indigenous-sensors-will-change-defence-applications-drdo-119012700444_1.html)



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## **Army Training Command may be moved from Shimla to Ambala**

The Indian Army is exploring the possibility of moving the Army Training Command (Artrac) to Ambala as part of an overarching plan to restructure the force, two army officials said on condition of anonymity on Sunday. Ambala is the base of Headquarters 2 Corps, a strike formation. The names of other towns such as Meerut, Secunderabad, Bengaluru and Gaya have also been doing the rounds as the possible new location of Artrac, which is currently based in Shimla. The army is yet to officially announce where Artrac will be moved. It needs to be moved out of Shimla to a new location that has better infrastructure, as the command's role will increase after the restructuring .

The restructuring of the army headquarters will see the role of the Director General of Military Training being given to Artrac. This will require additional infrastructure that is not available in Shimla, said one of the officials cited above. The headquarters of Punjab, Haryana and Himachal Pradesh Sub Area could be moved from Ambala to Shimla, he added. The biggest exercise in independent India's history to restructure the army is based on four comprehensive studies led by the army's topmost generals, and it seeks to change the direction of the 1.2 million-strong force and transform it into a deadlier fighting machine prepared for future wars. Raised at Mhow in Madhya Pradesh in October 1991, the command was shifted to Shimla in March 1993. "When Artrac was moved to Shimla, it was initially felt it should be moved to a better location where communications are better as officers had to travel to training establishments around the country," said former army vice chief Lieutenant General Vijay Oberoi (retd), who commanded Artrac during 1997-99. "But now, Artrac is well established and I don't think there's a need to relocate it after nearly three decades in Shimla," he added. The command is responsible for drafting and disseminating concepts and doctrines related to strategy, operational art, tactics, logistics, training and human resource development.