

# समाचार पत्रों से चयित अंश Newspapers Clippings

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## **Biodigesters to help treat sewage from houseboats**

*Trials by DRDO successful; lake authority to finalise tenders*

*By Ishfaq Tantry*

Srinagar: With the Defence Research and Development Organisation (DRDO) having successfully tested its prototype biodigesters on houseboats in the Dal Lake in Srinagar to reduce pollution, the authorities in Kashmir have decided to install biodigesters in the houseboats on a pilot basis.

In this regard, the Lakes and Waterways Development Authority (LAWDA), which looks after the upkeep of the Dal Lake, is in the process of finalising the tenders for procuring the biodigesters.

In addition to developing the prototypes to treat the sewage from the houseboats, the DRDO is also in the process of carrying out further research to find a solution for treating grey water and kitchen waste released from the houseboats moored in the Dal.

The pollution from the houseboats is estimated to be one-tenth of what comes from the peripheral habitation and the sewage treatment plants and needs to be tackled to save the lake.

The installation of biodigesters on houseboats to prevent and treat the human waste from the houseboats has been approved by the Committee of Experts under the chairmanship of E Sreedharan, popularly known as the 'Metro Man', which was appointed by the Jammu and Kashmir High Court to suggest measures for the restoration, maintenance and preservation of the lake.

"The Committee of Experts could rope in the DRDO in finding a solution to the problem of sewage treatment from the houseboats. It was only on the request of the committee members that the DRDO agreed to engage itself in the Dal cleaning experience which would otherwise not have been possible. The prototype of the floating biodigester was tested on the Dal at no cost to the J&K Government," read a fresh report by the Committee of Experts accessed by The Tribune.

The meeting of the Committee of Experts on January 8 decided to float the tenders for procuring 100 biodigesters as a "pilot project".

Accordingly, LAWDA was asked to finalise the installation of biodigesters for treating sewage from the houseboats within a stipulated time.

Besides, it has also been decided to set up "cluster biodigester at Gupt Ganga", which was to be finalised by the vice-chairman of LAWDA expeditiously, the report reveals.

It has also been decided that 100 biodigesters will be set up in the Telbal area as a pilot project, which is the area from where the sewage flows directly into the Dal Lake.

With the growing pollution in the Dal Lake becoming a major concern, the expert committee in October 2018 had approached the DRDO for a technological solution to prevent the discharge of human waste in the lake. Subsequently, four prototypes of the biodigester were evaluated by the DRDO in houseboats in Dal over a period of six months and the technology developed has been certified by an independent laboratory.

### **Treating grey water**

Based on the special request made by the members of Committee of Experts, the DRDO is in the process of carrying out further research to find a solution for treating grey water and kitchen waste released from the houseboats. A composite biodigester, which takes care of the sewage, grey water and kitchen waste, will be the best and most workable solution for the houseboats.

<https://www.tribuneindia.com/news/trials-by-drdo-successful-lake-authority-to-finalise-tendersbiodigesters-to-help-treat-sewage-from-houseboats-49454>

## Women deserve equal opportunities in armed forces: Lt Gen Madhuri Kanitkar

After taking over as the new deputy chief of integrated defence staff (DCIDS) (medical), Lt Gen Madhuri Kanitkar said women officers should get equal opportunities, including in combat duty, in the armed forces. In an interview to TOI's Sandip Dighe, she said women officers from the Army Medical Corps (AMC) have been performing exceptionally well in field areas as well, and they could do better in other arms and services of the defence forces.

### Excerpts:

#### On combat roles

I have confidence that women officers can perform well in all duties. In the Army Medical Corps (AMC), I feel nobody pays much heed to gender as we have been training and working together as officers for many years. I have not faced any gender discrimination during my service. All male officers and soldiers have respected me as an officer. This mindset will develop further if more women officers get into commanding roles in the services.

#### On becoming a doctor

My grandmother, Sarladevi Khot, became a doctor during the pre-independence era and worked in East Africa. Her struggle and achievements had a great influence on me. She became a widow at the age of 8 and yet her grandfather encouraged her to pursue medical studies. She became a doctor from the BJ Medical College in 1928. During her graduation, she had proposed to classmate Gopalrao Khot (my grandfather) and they got married. They served in the British colonies in East Africa for 11 years before returning. My father was an engineer with the Indian Railways and would be on tours. We spent maximum of our summer holidays with our grandparents in Pune. Her stories inspired me and my sister (Nilima Kadambi) to become doctors. She completed her MBBS from BJ Medical College. I got my degree from Armed Forces Medical College.

#### On first posting

The lady officers of my batch were the first to be sent to field hospitals. I was first posted to a field hospital in Jodhpur. There was no proper accommodation facility, apart from a simple barrack. I was told that women cannot stay there I was told to stay at the officers' mess. But I refused. While serving there, I played basketball, hockey and other games and also did physical training with the male soldiers.

#### On second field posting

This was in the Indian Army's Northern Command and I led the medical services. This was the most challenging posting, when I learned the real-time requirements of combat medical care. We had to be always on toes to give best medical services to soldiers in the forward posts in J&K. As medical services in-charge in the Command, I had visited almost all forward posts, including Siachen Glacier, and took stock of the ground situations. The experience will help-me in a big way in the current role.

#### On priorities

Integration of tri-services medical services and providing best medical assistance to the armed forces personnel would be my first and foremost priority. Since the armed forces are creating integrated commands, we (the medical corps) also need to get prepared for catering to the required healthcare for the new formations.

<https://timesofindia.indiatimes.com/city/pune/women-deserve-equal-opportunities-in-armed-forces-lt-gen-madhuri-kanitkar/articleshow/74448445.cms>

Tue, 03 March 2020

## Indian Army inducted 364 women officers in 2019

*In a written reply to a question in the Rajya Sabha, Naik stated that the Indian Air Force inducted 51 women officers in 2019, as compared to 59 in 2018*

New Delhi: The Indian Army inducted 364 women officers in 2019, as compared to 819 in 2018, Minister of State for Defence Shripad Naik said on Monday.

In a written reply to a question in the Rajya Sabha, Naik stated that the Indian Air Force inducted 51 women officers in 2019, as compared to 59 in 2018. The Air Force figure does not include women officers in medical and dental branches, he said.

The minister said 54 women officers were inducted in the Indian Navy in 2019, as compared to 38 in the previous year.

"The number and percentage of women officers in the Indian Navy (except Medical, Dental and Military Nursing Service branch) is 527 (5.12 per cent). The corresponding figure in respect of Indian Air Forces is 1,601 (13.81 per cent)," Naik said.



<https://www.indiatoday.in/india/story/indian-army-inducted-364-women-officers-in-2019-1651775-2020-03-03>

Tue, 03 March 2020

## Here's how the Boeing AH-64 apache helicopter stacks up against India's indigenous HAL light combat helicopter

*By Prabhjote Gill*

- *During US President Donald Trump's two-day visit to India a defense deal worth \$930 million deal for six new Boeing AH64 Apache choppers was sealed.*
- *The new Apache choppers will be inducted into the Indian Army.*
- *Here's how they measure up against India's own indigenous Light Combat Helicopter being developed by HAL for the Armed Forces.*

The Boeing AH-64 Apache choppers are some of the most advanced in the world and now they will be a part of the Indian Army's fleet. A \$930 million deal was struck between India and the US during President Donald Trump's 2-day visit to the country.

The Apache helicopters will boost the Indian Army's capabilities of conducting cross-border strikes and provide air support for troops on the ground. It comes armed with an arsenal of weapons like Hellfire Missiles, 70mm rockets and a 30mm automatic cannon.

This is a first for the Army that is in dire need of an up-to-date attack helicopter after over a decade of delays with the Hindustan Aeronautics Limited's (HAL) Light Combat Helicopters (LCH).

The LCH, like the AH-64 Apache helicopter, is a multi-role combat helicopter. Derived from the existing HAL Dhruv, the LCH was supposed to have gained initial operating capability (IOC) in December 2010. Ten years down the line, the first chopper is yet to join the Indian Army's fleet.

**Here's how the two stack up against each other:**

Both the Boeing AH-64 Apache and the HAL Light Combat Helicopter (LCH) are two-seat multi-role attack helicopters.

The Apache is a meter shorter than the LCH although it has a marginally larger wing-span and slightly taller height.

Although the size difference between the two choppers isn't that large, when it comes to weight, the Apache is 3,148 kilos lighter than the LCH.

The HAL LCH is powered by 2 Shakti turboshaft engine with 1,430 horsepower each. The Boeing Apache helicopter is powered by 2 General Electric T700 GE 701C turboshaft engine capable of delivering 1,890 horsepower each.

Since the Apache choppers have stronger engines, they're also capable of delivering higher speeds. The LCH's top speed is 280 kph while the Apache can hit 295 kph.

Although, the LCH has an edge over the Apache in another area — range. It's capable of surveilling targets up to 700 kilometres away while flying 6,500 meters in the air. The Apache only has a range of 480 kilometres and can reach a ceiling of 6,400 meters.

What makes the Apache more deadly than the LCH are its weapons capabilities. It comes with a 30mm chain gun versus the 20mm M621 cannon on HAL's chopper.

The Apache is also equipped with 16 AGM-114 'Hellfire' Anti-Tank Guided Missiles (ATGMs) in addition to four Hydra-70 19-shot Folding-Fin Aerial Rocket (FFAR) rocket pods, and four auxiliary fuel tanks.

The Apache's two AIM-92 Stinger short-ranged air-to-air missiles help the chopper protect itself from other aircraft.

The Boeing helicopter's also come equipped with a longbow radar which allows it to hover at a safe distance, targeting from beyond the horizon and past obstacles. This plays a big role in survival when fighting a terror threat on the ground.

The LCH is also equipped with air-to-air missiles, anti-tank missiles, anti-radiation missiles, and rocket pods — but the indigenously developed tech is yet to prove its mettle in battle.

The Apache, on the other hand, is already in active service with the US Army and 12 other countries. Boeing has delivered over 2,200 of its attack choppers to different militaries around the world.

<https://www.businessinsider.in/defense/news/boeing-ah-64-apache-versus-hal-light-combat-helicopter/articleshow/74450121.cms>

## Territorial Army set for overhaul as voluntary force gets its first Director General

*Lt Gen D.P. Pandey takes over as the first director general as plans are afoot to engage the Territorial Army in better operational and intelligence roles*

*By Snehash Alex Philip*

New Delhi: The nearly 40,000-strong Territorial Army (TA) is set to undergo major changes as the Indian military plans to recalibrate it for better operational and intelligence roles, especially in the Andaman Islands to keep an eye out for possible Chinese intrusion in the region.

The TA — a voluntary force that is the second line of defence after the Indian Army — Monday got its first Director General, Lt Gen. D.P. Pandey. He had earlier led the Army's information warfare wing and has also commanded the Kilo Force, which takes care of anti-terror operations in Kupwara, Baramulla and Srinagar areas of Kashmir.

The TA was until now headed by an ADG rank officer, a major general, even though the DG position was vacant for quite some time. With the creation of the Chief of Defence Staff (CDS) and Department of Military Affairs headed by Gen Bipin Rawat, the TA now comes under him rather than the Army Chief.

“There is a re-focus on the TA on how it can be better used for military roles and also to be the proper eyes and ears of the forces in far-flung areas,” a top military official told ThePrint.

The plans come in the wake of CDS Gen. Bipin Rawat stating in a recent interaction with the media that reducing the cost of running the military could be helped through “TAisation”, a reference to giving the force more responsibilities.

“The TA is being operationally deployed more over the past few years and hence it is time to ensure that it is exploited fully,” another senior officer told ThePrint.

### **Increased TA role in the Andamans**

Sources said that efforts are on to increase the TA strength in the Andamans by adding extra companies to the existing two TA battalions.

The creation of new battalions will be costlier as compared to adding extra companies. Sources said that one of the main concerns in the Andaman Islands is the possibility of Chinese intrusion.

“We have a large number of islands that cannot be monitored and hence the fear is that there could be some sort of intrusion into the islands or economic zone or someone could get an easy passage,” an officer explained.

“The TA recruits come from these very areas. When they are not embodied, they work as taxi drivers, fishermen among others,” the officer said. “So even when they are not actively with the TA, they can easily become the eyes and ears of the military.

“Some can be given a group of islands and their job will be to take their boats to these islands to make sure no unusual activity is taking place,” the officer added.

### **Who qualifies to be in TA**

The TA's present role is to relieve the regular Army from static duties and to assist the civil administration in dealing with natural calamities and maintenance of essential services when normal life is disturbed or when the security of the country is under threat.

They are also supposed to provide units for the Army as and when required.

While any Indian male citizen between the age of 18 to 42 years and having a Graduate Degree, is eligible for TA, they have to be gainfully employed in Central Government/Union Territory /State Government /Semi Government/ Private Sector or self-employed.

The English had raised the Territorial Army in 1920 through the Indian Territorial Act of 1920 and it comprised of two wings — ‘The Auxiliary Force’ for Europeans and Anglo-Indians, and ‘The Indian Territorial Force’ for Indian volunteers.

At present, the TA has departmental units like the Railway, IOC and ONGC. Non-Departmental TA units of the Infantry Battalion (TA) include the Home and Hearth Battalions, Ecological Battalion (TA) affiliated to various Infantry Regiments, and the Engineer Regiment (TA) for maintenance of the fencing at the Line of Control.

The TA soldiers are usually embodied for two months in a year during which they undergo training unless otherwise needed for other purposes and duration.

The TA units were actively involved in 1962, 1965 and 1971 operations.

<https://theprint.in/defence/territorial-army-set-for-overhaul-as-voluntary-force-gets-its-first-director-general/374017/>



*Tue, 03 March 2020*

## **India’s Black Cats get a brand new address**

### ***Home Minister inaugurates Special Composite Group complex of NSG***

Union Minister of Home Affairs, Amit Shah attended the inaugural function of 29 Special Composite Group complex of National Security Guard (NSG) in Rajarhat, West Bengal. The minister praised the bravery of the elite forces and addressed the commandoes. He also received a memento from NSG, DG, Anup Kumar Singh during the inauguration.

#### **Activities throughout the day**

Home Minister Amit Shah planted a sapling at the National Security Guard (NSG) Campus. NSG commandos conducted mock drills celebrating the inauguration of the new complex at Rajarhat in Kolkata. Shah had an opportunity to serve lunch and interact with our brave NSG commandos.

#### **About NSG**

NSG or National Security Guard is Federal Contingency World Class Zero Error Force to deal with anti-terrorist activities. It is an elite unit under the Ministry of Home Affairs which was formed back in 1984 following Operation Blue Star.

Its core operational capability is provided by the Special Action Group (SAG) which is drawn from the Indian Army. NSG personnel are sometimes referred to as ‘The Black Cats’.

#### **The Black cats’ bravado**

The Home Minister exuded confidence that the Centre will meet the expectations of its security organisations and added that “wars are won by the bravery and not equipment.” Talking about the expansion of the NSG, the Union Home Minister said, “The nation decided to expand the network of NSG after the Mumbai attacks. NSG has finely proven its presence in the entire country gradually. After today’s inauguration, the coordination will only get better.”

<https://www.defenceaviationpost.com/2020/03/indias-black-cats-get-a-brand-new-address/>

Tue, 03 March 2020

## Sultans on wings: The symbolism of weapon names in India and Pakistan

*Religion and history are central to how both sides name some of their key platforms and equipment*

*By Krzysztof Iwanek*

In January 2020, India twice fired off a missile a submarine underwater, testing its capabilities before starting the weapon's production. The missile's successful test paves the way for its use, important because of its ability to carry nuclear warheads. But the projectile also stands out in a completely different way. It bears a simple, neutral name: K-4. Just a letter and a number. This, by the standards of India and Pakistan, is rather uncommon.

Religion and history are central to the India-Pakistan conflict and are expressed within it on a number of levels. The conflict is even inscribed on many of each country's weapons. Unlike the K-4, various weapon names carry concrete meanings. Some were consciously borrowed from select languages and styles. A few are even more straightforward in their meaning, carrying the names of historical personae.

The best-known and most clear examples are the names of some Pakistani missiles. Several of these were named after Muslim rulers (most of them Turkic) who invaded India at various points in history. Ghaznavi (Hatf-III) is named after Mahmud of Ghazni, Ghauri-I and Ghauri-II (Hatf-V and Hatf-VA) after Muhammad Gori, Babur (Hatf-VII) after the founder of the Mughal dynasty in India. One of Babur's successors generations later was Aurangzeb, known for his piety, military skill and cruelty – thus one of the Pakistani frigates bears his title (Alamgir). Last on the missiles list is Abdali (Hatf-II), named after Ahmad Shah Abdali, the founder of the Durrani dynasty in Afghanistan who attacked and pillaged parts of India eight times in the 18th century.

One person missing here is Muhammad bin Qasim, an Arab commander who conquered the region of Sindh in the 8th century, historically the first Indian territory to be taken over by a Muslim force. But he is not entirely left out – one of Pakistan's most important ports, located in Sindh itself, is named after him (it is not a navy facility, however).

The symbolism of these choices is rather clear: The Pakistan government refers to how the establishment of the country was linked to the historical growth of Islam in South Asia (a growth that partially happened in a violent way). Islamabad is also outspoken in showing that its missiles are primarily aimed at India, having been named after leaders who once invaded it.

A second category among Pakistani weapon names are those taken from the history of Islam, but not necessarily that of its South Asian chapter. The already-mentioned name of a missile series, Hatf, is taken from Arabic, it means "vengeance" and was an appellation for Muhammad's lance. Another Pakistani frigate, Zulfiquar, is named after Muhammad's sabre. Two Pakistani tank codenames, Al-Khalid and Al-Zarrar, as well as that of the armored personnel carrier Talha, immortalize Arabic commanders who served under Muhammad.

A third and final category of names – those bearing an ideological meaning – would be those that do not refer to a historical person or object, and yet the choice of the language of origin is telling. Most of these come from Arabic – and less often Persian – in the case of Pakistan, and Sanskrit in the case of India. Thus, one of Pakistan's missiles is titled Nasr ("victory" in Arabic), another one Ababeel ("sparrow" in Arabic), yet another Shaheen ("falcon" in Persian), while one of the frigates is Shamsher ("sword" in Persian).



Thus is not just a matter of semantic nuance. The choice is not simply of language, but an ideologically loaded style. The insistence on pure Arabic and Persian words is a wider process in Pakistan – and christening weapon systems is but a small instance of this – and one that is a part of the ongoing Islamisation of the country’s identity.

#### ADVERTISEMENT

Compared to the above, Indian military names are not as aggressive ideologically. None that I am aware of carry the memory of a Hindu monarch that would be known for fighting Muslim rulers. The symbolism would be have been complementary had New Delhi named its missiles after those kings that fought the relevant Islamic conquerors (the ones whose names appear on Pakistani missiles). But that is not the case. India’s sole aircraft carrier, *Vikramaditya*, was christened after a king, but a one that lived long before Islam was even born.

One can also barely find the names of Hindu gods within the Indian army. *Agni*, as one generation of missiles is called, means “fire,” though this could also be taken as the name of the ancient god of fire. Another missile name, *Trishul*, means “trident” though it could be understood as *Shiva*’s weapon as well. *Varuna*, an old god of heaven and waters – and a nearly forgotten one now in terms of cult practices – appears in the name of a square rig sail training vessel. *Shamno Varunah* – “Let *Varuna* be auspicious to us” – is also the motto of the Indian Navy. Some of India’s tanks – *Arjun* and *Bhishm* – carry the names of characters from the epics (in this case, the *Mahabharata*), honored but not treated as deities.

A large number of Indian army names are taken from India’s ancient language, Sanskrit, however. Some of these codenames were taken from a very pure style. The name *Prithvi* means “earth” and was given to a surface-to-surface missile, while another one, *Akash*, means “sky.” The *Arihant* submarine – the one on which the boringly-named *K-4* is to be used – means the “slayer of enemies” in Sanskrit. Apart from their military usage, such words are much more frequent in higher forms of literature or historical sources than in common speech.

Meanwhile, many of the Indian Navy’s ships are simply named after geographic places (such as cities or rivers). Moreover, despite the dominance of Sanskrit-origin words, two ships — *Bahadur* and *Buland* — carry Persian words as their names. This is one of the few cases in which the same names could arguably have been used on the other side of the border.

Weapons are part of the struggle in South Asia, not only for their military intention but in their naming too — though much more noticeable on the Pakistani side. Let us hope that this identify struggle remains in the realm of a verbal battle.

<https://thediplomat.com/2020/03/sultans-on-wings-the-symbolism-of-weapon-names-in-india-and-pakistan/>



*Tue, 03 March 2020*

## **Pakistan could have technical edge on Indian Air Force despite Rafale jet deployment: IAF Veteran**

*India will launch its first state of the art earth observation satellite Geo Imaging Satellite (GISAT-1) to be placed in geostationary orbit on March 5, said the Indian Space Agency*

*By Rishikesh kumar*

New Delhi: On Friday, Indian Air Force (IAF) Chief RKS Bhadauria said the 36 Rafale jets were not the whole solution to the IAF's needs. India signed a \$7.8 billion contract with French Dassault Aviation to buy the aircraft in 2019.

Sitting beside Indian Defence Minister Rajnath Singh, Air Force Chief Rakesh Kumar Bhadauria issued a strong warning to the political leadership of India, claiming that the Rafale fighter jet is insufficient to meet the country's defence needs.

IAF veteran Vijainder K Thakur told Sputnik that Rafale is definitely the best aircraft in the IAF's inventory now. However, a determined adversary like the Pakistan Air Force could turn the tables on the IAF by deploying longer-ranged Chinese PL-15 missiles on an updated version of the JF-17 jet.

“The technical advantage gained by the IAF through the acquisition of the Rafale would be transient because it would be based largely on the weapon systems and sensors of the Rafale,” Thakur said.

The IAF's excessive focus on platforms rather than sensors and weapon systems was evident during the Kargil conflict with Pakistan two decades ago. “The IAF fulfilled the expectations only after it made emergency purchases of Laser-Guided Bombs and targeting pods,” Thakur said.

### **Powered Up JF-17**

The Pakistan Air Force's single engine multirole fighter, the JF-17 manufactured by the Chengdu Aircraft Corporation, is due for a major upgrade, similar to the advanced technologies seen on the J-20 stealth fighter, the Chinese newspaper Global Times reported earlier this year.

It is confirmed by the Chinese outlet that the upgraded JF-17 fighter jet will have “an infrared search and track system and a radar cross section reducing ‘pseudo-stealthy’ airframe”.

The JF-17 fighter jet has been also equipping with PL-15 Beyond Visual Range air-to-air missile that has posed serious concern among the US Air Force due to the long range of its missiles.

Herbert J. Carlisle, the then head of the US Air Force's combat command, was quoted by Flight Global as saying that outmatching the Chinese PL-15 air-to-air missile in particular is an “exceedingly high priority”.

“The PL-15 and the range of that missile, we've got to be able to out-stick that missile,” US Air Force's Command chief had said in 2015.

### **Lessons From Balakot Strike and Options for India**

On February 27 2019, a day after the IAF struck an alleged terror training camp at Balakot, the PAF surprised the IAF with its longer range AMRAAM and better supporting sensor capability.

“IAF allowed itself to be outgunned by focusing on platform acquisitions, rather than weapon system and sensor upgrades. With sufficient military foresight, the IAF could have armed its Su-

30MKI with longer range air-to-air missiles acquired from Russia rather than continuing to rely on the lesser ranged missile ordered years ago from Ukraine,” IAF veteran Thakur asserted.

The Indian Air Force ordered a large batch of Russian air-to-air missiles such as R-27, R-73 very shortly after Balakot strike.

Emphasising the importance of indigenous Astra air-to-air missile, Indian Air Force Chief Bhadauria said at a seminar in New Delhi on Friday that when the missile goes on to the Su-30 and MiG-29, that the power of parity and better performance will spread across the air force.

The Indian Air Force will start taking delivery of the Rafale jets in May 2020.

*(The views and opinions expressed in the article do not necessarily reflect those of Sputnik.)*

<https://sputniknews.com/analysis/202003021078443837-pakistan-could-have-technical-edge-on-indian-air-force-despite-rafale-jet-deployment-iaf-veteran/>



Tue, 03 March 2020

## India to have its first sky eye in geostationary orbit GISAT-1 on March 5

***India will launch its first state of the art earth observation satellite Geo Imaging Satellite (GISAT-1) to be placed in geostationary orbit on March 5, said the Indian Space Agency***

India will launch its first state of the art earth observation satellite Geo Imaging Satellite (GISAT-1) to be placed in geostationary orbit on March 5, said the Indian Space Agency.

The satellite will provide real time image of large area of region of interest at frequent intervals. The GISAT-1 will also enable quick monitoring of natural disasters, episodic events and any short term events.

According to Indian Space Research Organisation (ISRO), the GISAT-1 will also provide spectral signatures for agriculture, forestry, mineralogy, disaster warning, cloud properties, snow, glaciers and oceanography.

The satellite will have payload imaging sensors of six band multi-spectral visible and near infra-red with 42 metres resolution; 158 bands hyper-spectral visible and near infra-red with 318 metres resolution and 256 bands hyper-spectral short wave infra-red with 191 metres resolution.

Weighing 2,268 kg, the GISAT-1 will be carried by the three stage geosynchronous satellite launch vehicle (GSLV-F10).

The rocket is expected to lift off at 5.43 p.m. on March 5 from the second launch pad at India's rocket port at Sriharikota in Andhra Pradesh.

About 18 minutes into the flight the GSLV rocket will first place GISAT-1 in a Geosynchronous Transfer Orbit (GTO). From GTO, the satellite will be taken up further firing its on-board motors to geostationary orbit.

A satellite in geostationary orbit (about 36,000 km above earth) has an orbital period equal to earth's rotational period.

A four metre diameter Ogive shaped payload fairing (heat shield) is being flown for the first time in this GSLV flight. This is the fourteenth flight of the GSLV.

<https://www.hindustantimes.com/tech/india-to-have-its-first-sky-eye-in-geostationary-orbit-gisat-1-on-march-5/story-CSLqK8Hxg3HI0feHlyVM2M.html>