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एंटी सैटेलाइट मिसाइल स्वदेशी प्रौद्योगिकी पर आधारित, भारतीय उपग्रह को निशाना बनाया : विदेश मंत्रालय

नयी दिल्ली, 27 मार्च :भाषा: भारत ने बुधवार को मिशन शक्ति के तहत अंतरिक्ष में एंटी सैटेलाइट मिसाइल से एक लाइव सैटेलाइट को मार गिराया। यह पूरी तरह से स्वदेशी प्रौद्योगिकी पर आधारित परीक्षण था जिसमें भारत के ही एक उपग्रह को निशाना बनाया गया। विदेश मंत्रालय ने अक्सर पूछे जाने वाले प्रश्नों की श्रृंखला के तहत यह जानकारी दी। मंत्रालय ने बताया कि यह रक्षा अनुसंधान एवं विकास संगठन (डीआरडीओ) का प्रौद्योगिकी मिशन था और इस मिशन में उपयोग किया गया उपग्रह निचली कक्षा में मौजूद भारत के उपग्रहों में से एक था। इसमें बताया गया, “परीक्षण पूरी तरह से सफल रहा और योजना के तहत सभी मानदंडों को पूरा किया। यह पूरी तरह से स्वदेशी प्रौद्योगिकी पर आधारित था।” इसमें स्पष्ट किया गया है कि भारत का परीक्षण किसी देश को निशाना बनाकर नहीं किया गया है। यह परीक्षण क्यों किया गया, इस सवाल के जवाब में कहा गया है कि यह परीक्षण इसलिये किया गया ताकि भारत के अपने अंतरिक्ष संबंधी परिसम्पत्तियों की सुरक्षा की क्षमता की पुष्टि की जा सके। यह सरकार की जिम्मेदारी है कि हम बाहरी अंतरिक्ष में अपने देश के हितों की रक्षा कर सकें। मंत्रालय ने यह स्पष्ट किया कि भारत का इरादा बाहरी अंतरिक्ष में हथियारों की दौड़ में शामिल होना नहीं है और उसने हमेशा इस बात का पालन किया है कि अंतरिक्ष का केवल शांतिपूर्ण उद्देश्यों के लिये ही इस्तेमाल किया जाए। इसमें कहा गया है कि भारत बाहरी अंतरिक्ष के शस्त्रीकरण के खिलाफ है और अंतरिक्ष आधारित परिसम्पत्तियों की सुरक्षा के अंतरराष्ट्रीय प्रयासों का समर्थन करता है। क्या भारत बाहरी अंतरिक्ष में हथियारों की दौड़ में प्रवेश कर रहा है, इस सवाल के जवाब में विदेश मंत्रालय ने कहा कि भारत मानता है कि बाहरी अंतरिक्ष मानवता की साझी धरोहर है और यह सभी राष्ट्रों की जिम्मेदारी है कि इसका संरक्षण किया जाए और अंतरराष्ट्रीय प्रौद्योगिकी में हुई उन्नति के लाभ को प्रोत्साहित किया जाए। मंत्रालय ने कहा कि भारत बाहरी अंतरिक्ष से जुड़ी सभी अंतरराष्ट्रीय संधियों का पक्षकार है। भारत ने इस क्षेत्र में पारदर्शिता एवं विश्वास बहाली के अनेक उपायों को लागू किया है। भारत बाहरी अंतरिक्ष में पहले हथियारों का प्रयोग नहीं करने के संयुक्त राष्ट्र महासभा के प्रस्ताव का समर्थन करता है। इसमें कहा गया है कि भारत भविष्य में बाहरी अंतरिक्ष में हथियारों की दौड़ को रोकने के लिये अंतरराष्ट्रीय कानून का मसौदा तैयार करने में भूमिका अदा करने की उम्मीद करता है। गौरतलब है कि प्रधानमंत्री नरेन्द्र मोदी ने आज ऐलान किया कि भारत ने एंटी सैटेलाइट मिसाइल से एक लाइव सैटेलाइट को मार गिराया और अपना नाम अंतरिक्ष महाशक्ति के तौर पर दर्ज कराया। वह ऐसी क्षमता हासिल करने वाला दुनिया का चौथा देश बन गया। अंतरिक्ष में 300 किमी दूर पृथ्वी की निचली कक्षा (एलईओ) में एक लाइव सैटेलाइट को मार गिराया है।

Thu, 28 Mar 2019

Shooting down live satellite, India enters strategic Space

While the test places India in a select group of countries with such strategic strength, this capability has never been used by any country against its enemy and the use of space for wars is deeply abhorred by the entire international community

By Amitabh Sinha, Johnson T A

Pune, Bangaluru: Making a surprise announcement shortly after noon Wednesday, Prime Minister Narendra Modi said India had successfully tested an anti-satellite missile, becoming a space power and only the fourth country after the US, Russia and China with the strategic capability to hit and destroy satellites.

A Ballistic Missile Defence (BMD) Interceptor developed by the Defence Research and Development Organisation (DRDO), similar to the ones that intercept and destroy incoming missiles, was fired Wednesday morning from the Dr A P J Abdul Kalam Island launch complex, off the Odisha coast and south of Balasore. It struck an Indian satellite in low earth orbit, about 300 km from the earth's surface.

ISRO sources said the DRDO missile knocked out a micro satellite called Microsat-R which was launched by ISRO into low earth orbit for the DRDO on January 24 this year. The satellite, sources said, would have been hurtling at a speed of more than 27,000 km per hour.

Given that satellites are critical infrastructure for any country, used as they are for navigation systems, communication, banking networks, stock markets, weather forecasting and a range of military and other civil applications, the ability to destroy enemy satellites is a potent capability that can cripple the enemy.

The entire operation, from the launch to the hit, took just three minutes, the Prime Minister told the nation in a special televised address, calling it "an unprecedented achievement".

"Some time back (this morning), our scientists have hit a live satellite 300 km away in the low earth orbit. This was a pre-determined target which has been brought down by an anti-satellite missile. The operation was completed in three minutes. Mission Shakti was a very difficult operation in which very high quality technical capability was required," Modi said.

In a tweet later, he said: "#MissionShakti is special for 2 reasons: (1) India is only the 4th country to acquire such a specialised & modern capability. (2) Entire effort is indigenous. India stands tall as a space power! It will make India stronger, even more secure and will further peace and harmony."

A DRDO statement said the BMD Interceptor was a three-stage missile with two solid rocket boosters. As is mandatory for any missile test, the authorities had issued a Notice to Airmen (NOTAM), a pre-requisite information to be provided to airline authorities around the world that India was about to conduct a test. The NOTAM did not specify the type of test being conducted, but only the flight path and the areas affected.

"Tracking data from range sensors has confirmed that the mission met all its objectives. The test has demonstrated the nation's capability to defend its assets in outer space. It is a vindication of the strength and robust nature of DRDO's programmes," the DRDO said.

While the test places India in a select group of countries with such strategic strength, this capability has never been used by any country against its enemy and the use of space for wars is deeply abhorred by the entire international community. Though the United States and the then Soviet Union both tested

anti-satellite missiles way back in the 1970s and 1980s at the height of the Cold War, they never targeted each other's assets in space.

The Outer Space Treaty of 1967, to which India is a signatory, prohibits countries from placing into orbit around the earth "any objects carrying nuclear weapons or any other kinds of weapons of mass destruction". It also prohibits the stationing of such weapons on celestial bodies, like the moon, or in outer space.

The treaty does not, however, prohibit tests like the one carried out by India Wednesday morning, something that the Ministry of External Affairs pointed to while emphasising that the test had not violated any international law.

Modi too described the test as a "defensive" move, aimed at securing the country's space infrastructure, and stressed that it did not change India's strong opposition to weaponisation of space.

"Today, we are using space and satellites for all sorts of purposes, including agriculture, defence, disaster management, communication, entertainment, weather, navigation, education, medical uses, and other things. In such a situation, the security of these satellites is extremely important," he said.

"I want to assure the international community that our newly acquired capability is not targeted at anyone. This is a defence capability of an India which is progressing at a rapid pace. India has always been opposed to weaponisation of space, and today's test does not alter that position. Today's test does not violate any international law or treaty," he said.

<https://indianexpress.com/article/india/shooting-down-live-satellite-india-enters-strategic-space-5646177/>

The Tribune

Thu, 28 Mar 2019

What is ASAT?

ASATs (Anti-Satellite Weapons) are aimed at destroying or disabling space assets, whether military or civilian, offensive or defensive, according to a document of the United Nations Institute for Disarmament Research (UNIDIR). They are generally of two types: kinetic and non-kinetic.

Kinetic ASATs: They must physically strike an object in order to destroy it. Examples of kinetic ASATs include ballistic missiles, drones that drag an object out of orbit or detonate explosives in proximity to the object, or any item launched to coincide with the passage of a target satellite. This means any space asset, even a communications satellite, could become an ASAT if it is used to physically destroy another space object.

Non-kinetic ASATs: A variety of nonphysical means can be used to disable or destroy a space object. These include frequency jamming, blinding lasers or cyberattacks. These methods can also render an object useless without causing the target to break up and fragment absent additional forces intervening. In 2018, the UNIDIR proposed three ASAT test guidelines. Under the 'No Debris' guideline, if an actor wishes to test ASAT capabilities, they should not create debris. — PTI

Rare, high-tech, and risky to test

ASAT is an anti-satellite weapon that can target enemy satellites — blinding them or disrupting communications — besides providing a technology base for intercepting ballistic missiles.

1959: The US performs first anti-satellite tests; Bold Orion, designed as N-tipped missile re-purposed to attack satellites, launched from a bomber

1960s: The Soviet Union performs similar tests; tests a weapon that could be launched into orbit, approach enemy satellite and destroy it

1985: US tests ASM-135, launched from an F-15 jet, destroys US satellite; there were no tests for more than 20 years; in 2008, US uses ship-launched missile to destroy a defunct spy satellite \

2007: China enters anti-satellite arena by destroying an old weather satellite in a high, polar orbit. The test created the largest orbital debris cloud in history, with over 3,000 objects

PROBLEM OF DEBRIS

- Debris from anti-satellite tests can create problems for other satellites and spacecraft in orbit, as tiny bits of junk whiz through space many times faster than a rifle bullet
- The International Space Station, for example, regularly tweaks its orbit to avoid debris of all kinds
- China's test in 2007 is considered the most destructive
- Because the impact took place at an altitude of more than 800 km, many of the resulting scraps stayed in orbit
- The US test in 2008 did not create as much orbital debris, and because it was at a lower altitude, atmospheric drag caused much of it to fall toward Earth and burn up — Reuters

<https://www.tribuneindia.com/news/nation/what-is-asat/749403.html>

THE ECONOMIC TIMES

Thu, 28 Mar 2019

10 things you need to know about ASAT, India's new space slayer

The Anti-Satellite (ASAT) test has also raised a number of questions about its capabilities

New Delhi: Prime Minister Narendra Modi announced on Wednesday that India is now one of the few countries to take down satellites in space, after a DRDO missile tested off the Odisha coast successfully hit a low Earth orbit (LEO) satellite. The Anti-Satellite (ASAT) test has also raised a number of questions about its capabilities. Here is all you need to know about India's new space slayer.

What was the test?

On March 27, 2019 India conducted Mission Shakti, an anti-satellite missile test, from the Dr. A P J Abdul Kalam Island launch complex. This was a technological mission carried out by DRDO. The satellite used in the mission was one of India's existing satellites operating in lower orbit. The test was fully successful and achieved all parameters and it required an extremely high degree of precision and technical capability.

The significance of the test is that India has tested and successfully demonstrated its capability to interdict and intercept a satellite in outer space based on complete indigenous technology. With this test, the country joins an exclusive group of space faring nations consisting of USA, Russia, and China.

Which satellite was used?

The satellite used was an Indian satellite. Which Missile/Interceptor was used? The DRDO's Ballistic Missile Defence interceptor was used, which is part of the ongoing ballistic missile defence programme. There are other ways to demonstrate ASAT capabilities such as "fly-by tests" and jamming.

Why has India used the particular technology of Kinetic Kill?

This is a technology where India has developed capability. Space technologies are constantly evolving and India has used the technology that is appropriate to achieve the objectives set out in this mission.

Does the test create space debris?

The test was done in the lower atmosphere to ensure that there is no space debris. Whatever debris that is generated will decay and fall back onto the earth within weeks.

Why did India do the test?

India has a long standing and rapidly growing space programme. It has expanded rapidly in the last five years. The Mangalyaan Mission to Mars was successfully launched. Thereafter, the government sanctioned the Gaganyaan Mission which will take Indians to outer space.

India has also undertaken 102 spacecraft missions consisting of communication satellites, earth observation satellites, experimental satellites, navigation satellites, apart from satellites meant for scientific research and exploration, academic studies and other small satellites. India's space programme is a critical backbone of India's security, economic and social infrastructure.

The test was done to verify that India has the capability to safeguard our space assets.

Why was the test done now?

According to the government, the tests were done after the country had acquired the required degree of confidence to ensure its success, and reflects the intention of the Indian government to enhance India's national security. India has seen an accelerated space development programme since 2014.

Is India entering into an arms race in outer space?

The government has stated that it has no intention of entering into an arms race in outer space. The country has always maintained that space must be used only for peaceful purposes. The government has also stated that India is against the weaponization of Outer Space and support international efforts to reinforce the safety and security of space based assets.

India believes that Outer space is the common heritage of humankind and it is the responsibility of all space-faring nations to preserve and promote the benefits flowing from advances made in space technology and its applications for all.

India is also a party to all the major international treaties relating to Outer Space. India already implements a number of Transparency and Confidence Building Measures (TCBMs) – including registering space objects with the UN register, prelaunch notifications, measures in harmony with the UN Space Mitigation Guidelines, participation in Inter Agency Space Debris Coordination (IADC) activities with regard to space debris management, undertaking SOPA (Space Object Proximity Awareness and COLA (Collision Avoidance) Analysis and numerous international cooperation activities, including hosting the UN affiliated Centre for Space and Science Technology Education in Asia and Pacific. India has been participating in all sessions of the UN Committee on the Peaceful Uses of Outer Space.

India also supported UNGA resolution 69/32 on No First Placement of Weapons on Outer Space. Equally, India supports the substantive consideration of the issue of Prevention of an Arms Race in Outer Space (PAROS) in the Conference on Disarmament where it has been on the agenda since 1982.

What is the international law on weapons in outer space?

The principal international Treaty on space is the 1967 Outer Space Treaty. India is a signatory to this treaty, and ratified it in 1982. The Outer Space Treaty prohibits only weapons of mass destruction in outer space, not ordinary weapons.

India expects to play a role in the future in the drafting of international law on prevention of an arms race in outer space including inter alia on the prevention of the placement of weapons in outer space in its capacity as a major space faring nation with proven space technology.

India is not in violation of any international law or Treaty to which it is a Party or any national obligation.

Is the test directed against any country?

The test is not directed against any country. India's space capabilities do not threaten any country and nor are they directed against anyone.

At the same time, the government is committed to ensuring the country's national security interests and is alert to threats from emerging technologies. The capability achieved through the Anti-Satellite missile test provides credible deterrence against threats to our growing space-based assets from long range missiles, and proliferation in the types and numbers of missiles.

While India had previously stated that it did have the requisite building blocks for an anti-satellite weapon, today's public announcement by the Prime Minister confirms India's proven weapon capability.

<https://economictimes.indiatimes.com/news/defence/10-things-you-need-to-know-about-asat-indias-new-space-slayer/articleshow/68594835.cms?from=mdr>

The Tribune

Thu, 28 Mar 2019

Enemy can go 'deaf, blind'

ASAT test provides ability to target surveillance satellites

By Ajay Banerjee

New Delhi: India's Anti-Satellite (ASAT) test conducted and declared on Wednesday now provides the ability to render an enemy country 'deaf and blind' by targeting communication, military and surveillance satellites.

In case satellites are destroyed, it would be near impossible for the enemy to fire long-range missiles and UAVs; and even its routine communication can be stalled.

The significance of Wednesday's ASAT test is that India has successfully demonstrated its capability to interdict and intercept a satellite in outer space based on complete indigenous technology. The test was done using a ground-fired ballistic missile defence system to hit at an Indian satellite. The test does not violate any existing international treaties and is not directed at any country.

The China angle

China has conducted three such tests since 2007, the latest being in February 2018. India despite being a 'missile power' and space power was reticent. The US Department of Defence, in its annual report to the Congress 'Military and Security Developments Involving the People's Republic of China 2018', says, "China is developing multiple counter-space capabilities to degrade and deny adversary use of space-based assets during a crisis or conflict."

The People's Liberation Army (PLA) is acquiring a range of technologies to improve China's counter-space capabilities. In addition to the development of directed energy weapons and satellite jammers, China is also developing direct-ascent and co-orbital kinetic kill capabilities and has probably made progress on the anti-satellite missile system it tested, the US report said.

India will be an insider now

Former DRDO chairman VK Saraswat had claimed in 2012 that India had ASAT capability. In October 2014—just five months into his tenure—Prime Minister Narendra Modi had advised top Indian military commanders about the criticality of controlling activities in space.

Addressing commanders of the three armed services, Modi had said: "Control of space may become as critical as that of land, air and sea." As full-scale wars might become rare, force would remain an instrument of deterrence and influencing behaviour, and the duration of conflicts would be shorter," Modi had said.

Time was running out for India to declare itself as an ASAT power to join the US, Russia and China. The United Nations Conference on Disarmament is discussing a new treaty banning militarisation of space. Once the treaty is done and had India not carried out the ASAT test it would

put New Delhi at a serious disadvantage, as it would then only be able to negotiate on such a new treaty as an “outsider” rather than an “insider” with ASAT capability.

Types of ASAT options

A way to demonstrate the ASAT capability without causing debris would be to do a fly-by test, where the ground-based direct ascent missile will fly by the targeted satellite without destroying it. The other option is by jamming satellites using space-based lasers. This method falls under the category of “soft-kill” methods and does not create debris.

Status of banning ASAT

The ‘Treaty on Prevention of the Placement of Weapons in Outer Space and of the Threat or Use of Force Against Outer Space Objects’ and generally referred to as ‘PPWT’ is still being discussed. China and Russia had submitted an update to their original 2008 proposal in June. The US has objected to the lack of a verification mechanism and no restrictions on the development and stockpiling of ASAT weapons on the ground. That means, a nation could develop a readily deployable space-based weapons break-out capability.

The PPWT bans the placement of weapons in outer space; it does not ban “direct-ascent” ASATs launched from the ground. India used the same ground-to-space weapon.

Beijing guarded in its reaction

Beijing: China on Wednesday reacted guardedly to India’s anti-satellite missile test and expressed hope that all countries will uphold peace and tranquillity in the outer space. The Chinese Foreign Ministry, in a written response, said: “We have noticed reports and hope that each country will uphold peace and tranquillity in outer space.” PTI

Don’t militarise outer space: Pak

Islamabad: Pakistan said on Wednesday that it was against militarisation of outer space and took a swipe at India's announcement of shooting down a live satellite with a missile. “Space is the common heritage of mankind and every nation has the responsibility to avoid actions which can lead to the militarisation of this arena,” Foreign Office spokesperson said. PTI

<https://www.tribuneindia.com/news/nation/enemy-can-go-deaf-blind/749191.html>

DRDO MISSILE HIT SATELLITE MOVING AT 10,000 KM/HOUR		
TIER	DISTANCE ABOVE EARTH	SATELLITES IT CARRIES
I	300-600 km	Spy and military satellites
II	800-1,200 km	Tracking satellites that study geo-spatial, marine life
III	20,000 km	Satellites that provide GPS signals
IV	36,000 km & above	Communication satellites

SO FAR, NO MISSILE FIRED FROM GROUND CAN TRAVEL BEYOND FIRST TWO TIERS AND NO MISSILE CAN BE FIRED FROM AN EXISTING SPACE-BASED PLATFORM)

THEWEEK

Thu, 28 Mar 2019

Anti-Satellite technology will be deterrent in event of space war: Experts

By Prashant Rangnekar

New Delhi, Mar 27 (PTI): The anti-satellite missile capability demonstrated by India on Wednesday will be a deterrent in the event of a war where space may be the theatre of action with countries seeking to down enemy satellites, experts explained.

"The message goes strong and loud that if any of our satellites is harmed, we possess the capability of destroying yours (the adversary)," said Ajay Lele, senior fellow with the Institute for Defence Studies and Analyses (IDSA).

The former Air Force officer and other experts said India has possessed the anti-missile technology for several years but needed the political go-ahead to actually test it in live conditions. They said the Defence Research Development Organisation (DRDO) received the green signal to prepare for the test two years ago, which came to fruition on Wednesday.

In 2012, India conducted simulated tests, establishing the capability but the then Manmohan Singh-led UPA government had not given permission for a live test, likely over concerns that a destroyed satellite would result in debris that would damage satellites of other countries.

Daniel Porras, Space Security Fellow, United Nations Institute for Disarmament Research (UNIDIR), Geneva, said Wednesday's test destroyed a satellite at an altitude of 300 km.

"It was not a good sign for LEO (low earth orbit)... which has telecommunication and earth observation satellites and also the International Space Station", which cruises at a height of 400 km, he said.

"The test was done at 300 km, so pretty low, meaning most of the debris will slowly come down. However, lots of objects near that altitude... Not a good sign for all those LEO constellations. Also, if any debris damages other objects, India will be liable under the Liability Convention (if attribution is established)," Porras tweeted.

Former ISRO chairperson G Madhavan Nair, who was also secretary, Department of Space, from 2003 to 2009, said the DRDO had anti-missile technology, including the algorithms required for setting the trajectory to hit the moving target.

"Marrying the two technologies (of ISRO and DRDO) was required which happened over the last few years," Nair told PTI.

He said it would have taken about two years for scientists to perfect the missile launch once the go-ahead for the test was given by the government.

Prime Minister Narendra Modi on Wednesday announced that the test, named Mission Shakti, was not directed against any country and the disused Indian owned satellite was a pre-determined target.

In an address to the nation, Modi also said India has not breached any international law or treaty.

India is only the fourth country to acquire such a specialised and modern capability after the US, Russia and China. There has been no instance of a space war but the countries have demonstrated their capabilities by testing on their own satellites, like India did on Wednesday.

The UNIDIR defines ASAT (Anti-Satellite) as "any capabilities aimed at destroying or disabling space assets for any reason, whether military or civilian, offensive or defensive".

Lele of IDSA said India had already developed Intercontinental Ballistic Missiles (ICBM) technology and along with it came the know-how behind ASAT.

"Testing the Anti-Satellite missile at LEO at 300 kilometres was only to demonstrate capacity. This is also a deterrence mechanism in the event of a space war, similar to what India has developed in the nuclear domain," he said.

Lele added that a political decision was required as conducting anti-satellite missiles tests could attract international criticism over issues of adding to debris in space and accusations of militarising space.

In an era where defence forces rely on satellites for different aspects of security, including intelligence gathering, having ASAT missile capability sends a strong signal to adversaries, he said.

Rajeshwari Pillai Rajagopalan, senior fellow and head of the Nuclear and Space Initiative, Observer Researcher Foundation (ORF), said Wednesday's development reflects India's desire to not make the mistake it did in 1974 when it conducted its first nuclear test in Pokhran.

The tests were conducted four years after the Nuclear Proliferation Test (NPT) Treaty came into force in 1970. There is no similar international treaty for space.

"The successful test also acts as a deterrent in event of a space war. The technology was available, so it was high time India tested it. Political will was also needed behind taking the decision," Rajagopalan said, referring to the possibility of an international backlash.

In 2007, China destroyed its FengYun 1C weather satellite with an SC-19 missile, leaving behind space debris consisting of 3,280 pieces of trackable debris, as well as up to 32,000 pieces that are non-trackable.

The following year, during Operation Burnt Frost, the US destroyed its own satellite, USA-193, with an SM-3 interceptor creating 174 pieces of trackable debris, plus non-trackable shards.

<https://www.theweek.in/wire-updates/national/2019/03/27/del52-satellite-experts.html>

The Tribune

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Got clearance for project two years ago, says DRDO Chief

New Delhi: India's successful anti-satellite missile test on Wednesday showed that the country now possesses the capability to strike satellites in outer space with centimetre-level accuracy and precision, DRDO Chairman G Satheesh Reddy said Wednesday.

Reddy, who oversaw the top secret operation, said the government accorded clearance to the project around two years back with an aim to deter threats to the country's space assets.

In a major feat, a DRDO-developed missile destroyed a low-orbiting satellite in a critical test that catapulted India as a space power alongside the US, China and Russia.

"It is a great achievement for India as the technology used for the test has been completely developed indigenously," Reddy said.

"The test was a reflection of India's growing capability to develop critical technology and it will act as a good deterrence," he said adding India was the fourth country to go for an anti-satellite missile test after the United States, Russia and China. The Defence Research and Development Organisation (DRDO) said a Ballistic Missile Defence (BMD) Interceptor Missile successfully engaged an Indian orbiting target satellite in Low Earth Orbit (LEO) in a 'Hit to Kill' mode.

"The interceptor missile was a three-stage missile with two solid rocket boosters. Tracking data from range sensors has confirmed that the mission met all its objectives," it said.

The test was conducted, under 'Mission Shakti' operation, from the Dr APJ Abdul Kalam Island in Odisha.

The DRDO Chairman said the test has demonstrated India's capability to defend its assets in outer space and is a reflection of the country's growing capability to develop critical technology. "The shooting down of a satellite with a missile reflected that we have matured to develop technology which could achieve accuracy in terms of centimetres" said Reddy, adding clearance for the project was given over two years back.

The DRDO said the test has once again proven the capability of indigenous weapon systems. India is yet to have a comprehensive national security doctrine. However, a joint operational doctrine for the Army, the Navy and the Air Force, released in April 2017 had proposed to set up a 'Defence Space Agency' to deal with issues relating to outer space.

Meanwhile, the Ministry of External Affairs said the test was not directed against any country and that India has no intention of entering into an arms race in outer space.

“The test is not directed against any country. India’s space capabilities do not threaten any country and nor are they directed against anyone,” the MEA said in a 10-point explainer on the anti-satellite missile test. — PTI

‘In 2007, we had expertise, but no will’

Hyderabad: Former ISRO chairman G Madhavan Nair said on Wednesday that India had the anti-satellite missile capability more than a decade ago but there was no political will at the time to demonstrate it. He said when China shot down an ageing weather satellite by launching a missile in 2007, India had the technology to undertake a similar mission. Asked if India could have demonstrated the anti-satellite missile capability in 2007 itself, Nair said “certainly”, but it could not be done due to absence of “political decision”.

‘Technology used completely indigenous’

The project was implemented in the fastest way possible and it showed the DRDO’s capability in doing such programmes. The technology used has been completely developed indigenously. —G Sathesh Reddy, DRDO Chairman

<https://www.tribuneindia.com/news/nation/got-clearance-for-project-two-years-ago-says-drdo-chief/749399.html>



Thu, 28 Mar 2019

India had capacity to build anti-sat missiles for long: DRDO Ex-Chief

Despite the existence of capacity to build anti-satellite missiles for over a decade, the missiles were finally built on account of policy decisions of the Narendra Modi government in the last couple of years, a former director of DRDO told The Indian Express

By Johnson TA

The DRDO’s launch of an anti-satellite missile on Wednesday to destroy a micro-satellite launched by the ISRO earlier this year is a deterrent against attacks on India’s space assets but does not change the country’s traditional stance of using space only for peaceful purposes, according to two former officials of the Defence Research Development Organization (DRDO) associated with the missile programme.

The anti-satellite missile launch has put India in the league of the US, China and Russia — countries with ASAT missiles — and also transformed it from a country that opposed these missiles in 2007, and a country that acknowledged these capabilities in 2010, to a demonstrator.

Despite the existence of capacity to build anti-satellite missiles for over a decade, the missiles were finally built on account of policy decisions of the Narendra Modi government in the last couple of years, a former director of DRDO told The Indian Express.

“The programme was approved recently by this government but the capability has been there for a good time. The work of converting the capability into an interceptor was not carried out (earlier); this has been carried out very successfully now,” Dr Avinash Chander, DRDO chief from 2013 to 2015, said.

Since 2010, the DRDO has had the capacity to make an anti-satellite missile but the programme was not taken forward until recently, Chander said. “The programme picked up speed about a year ago. We earlier had all the elements — that means we could reach the distance in space and we had the

capability to hit, which was demonstrated in the anti-ballistic missile. But to put them together needed work,” he said.

Explained: The ABC of ASAT

According to former DRDO scientist and vice-chancellor of Defence Institute of Advanced Technology, Dr Prahlada Rama Rao, a missile expert, ground work for the development of an anti-satellite missile was laid back in the 1990s, when Dr A P J Abdul Kalam was at the DRDO. “It was Dr Kalam’s vision to have systems to protect space assets. When the air defence missile programme was upgraded to a high altitude of 200 km it was easy to upgrade to satellites but focus was on air defence and it was not possible to fulfil his vision,” he said.

“It is good to have the capability because someone should not knock off your satellites,” he said.

Chander said there was no existing DRDO programme during the UPA regime to develop the ASAT missile. “Just because you have all the elements did not mean we could hit a satellite. It required more development to convert because satellite speeds are much higher and now that has been achieved. It is a good effort. All components were available and we needed to put them together,” he said.

The former DRDO chief said technology used in anti-ballistic missiles and long-range rockets which propel the missile into space are the essential components of the ASAT missile.

Chander said: “The PM stated that India is committed to peaceful use of space, and India has constantly — in all forums — projected this stance. At the same time, India is also committed to protecting its interest in space and Indian capability in space is put under strong deterrence. The tests today have been a demonstration of that capability.”

The move to test the anti-satellite missile does not involve militarisation of space, Rama Rao argued. “The understanding among nations is that you must not keep missiles in space. This is not happening since these missiles are launched from the ground,” he said. “Space is still being used only for peaceful purposes like surveillance, mapping and communication.”

According to Rao, the anti-satellite missile programme picked up speed around 2011 at DRDO. “A separate facility was created and dedicated man power was allocated. It was a secretive, high alert program and there was demand to deliver faster,” he said.

India’s official position on anti-satellite missile programmes has been ambivalent in the past.

When a Chinese kinetic kill missile smashed its Fengyun satellite in space in January 2007 to demonstrate the country’s anti-satellite capabilities in the guise of destroying an aging satellite, India was one of the countries that protested.

<https://indianexpress.com/article/india/india-had-capacity-to-build-anti-sat-missiles-for-long-drdo-ex-chief-5646244/>

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A big leap, but India still miles behind China

Having set up a dedicated Strategic Support Force four years ago to handle space and cyberspace operations, China is moving towards a space station with military applications in the near future. India, in sharp contrast, has not even approved a full-fledged Aerospace Command that the armed forces have been demanding for almost a decade now

New Delhi: India’s first-ever anti-satellite missile test on Wednesday was in direct response to rapid advances made in the military space arena by China, which has had “counter-space” capabilities as a thrust area and tested its own A-Sat weapon against a “low-earth orbit (LEO)” weather satellite in January 2007.

While improving upon its already extensive space-based intelligence and reconnaissance abilities, the People's Liberation Army also has several projects underway for strong counter-space capabilities ranging from "direct-ascent kinetic kill missiles" to directed-energy laser weapons and satellite jammers to destroy or degrade an adversary's space assets during a conflict.

Having set up a dedicated Strategic Support Force four years ago to handle space and cyberspace operations, China is moving towards a space station with military applications in the near future.

India, in sharp contrast, has not even approved a full-fledged Aerospace Command that the armed forces have been demanding for almost a decade now. The PM Narendra Modi government only recently agreed to set up a small tri-Service Defence Space Agency.

"This has to change now. India cannot keep on missing the bus. We should have the capability to counter China and its rapidly expanding A-Sat capabilities, multiple military satellites, launch-on-demand nano-satellites and the like. Space and cyberspace, after all, are now the fourth and fifth dimensions of modern warfare after the traditional domains of land, air and sea," an official said. Effective A-Sat weapons can "blind and deafen" an adversary's military forces by taking out satellites vital for surveillance, missile early-warning, precision-targeting and other such purposes.

There are an estimated 320 military satellites orbiting the Earth with the US leading the pack with over 140 followed by Russia (80) and China (35). India has only two dedicated military satellites in the shape of the naval GSAT-7 and the IAF's GSAT-7A, though it also uses "dual-use" remote sensing ones for military purposes.

Despite having an enviable civilian space programme, India has been hesitant about militarising the final frontier.

In 2010, the defence ministry had come out with a 15-year 'Technology Perspective and Capability Roadmap' that dwelt on the need to develop A-Sat weapons "for electronic or physical destruction of satellites in both LEO (2,000km above earth's surface) and GEO-synchronous orbits".

But these parts were quietly deleted in subsequent roadmaps. Similarly, though the "building blocks" for development of A-Sat capabilities were present in spin-offs from the Agni-V missile and ballistic missile plans, the option to test a satellite-killing missile was never exercised till Wednesday.

<https://timesofindia.indiatimes.com/india/a-big-leap-but-india-still-miles-behind-china/articleshow/68606312.cms>



Thu, 28 Mar 2019

China, Pakistan caution against arms race in space

China and Pakistan responded to India's test of an Anti Satellite (ASAT) missile weapon on Wednesday by calling for measures to prevent any arms race in outer space

New Delhi: China and Pakistan responded to India's test of an Anti Satellite (ASAT) missile weapon on Wednesday by calling for measures to prevent any arms race in outer space.

Prime Minister Narendra Modi announced that India had successfully tested an ASAT missile to shoot down a Low Earth Orbit Indian satellite, located 300 km in outer space, making India the fourth country after the United States, Russia and China to have done so.

"Today, India has become the fourth country to acquire this status as a space power. There can be no bigger moment of pride for every Indian than this," he said. "India has no intention to threaten anyone. This is an effort to secure a fast growing India," he said, adding that defending and securing valuable space assets is equally important.

In a brief response, China's foreign ministry said: "We are aware of relevant reports and we hope that all countries will earnestly safeguard lasting peace and tranquillity in outer space."

Pakistan's Foreign Office spokesman Mohammad Faisal said "every nation has the responsibility to avoid actions which can lead to the militarisation of this arena".

The Pakistani spokesman also took a dig at the Indian government's announcement of the development of an anti-satellite weapon by saying: "Boasting of such capabilities is reminiscent of Don Quixote's tilting against windmills."

A 10-point FAQ sheet circulated by the Ministry of External Affairs clarified that India is a signatory to the principal international treaty on space, the 1967 Outer Space Treaty among others, which "prohibits only weapons of mass destruction in outer space, not ordinary weapons."

"India believes that Outer space is the common heritage of humankind and it is the responsibility of all space-faring nations to preserve and promote the benefits flowing from advances made in space technology and its applications for all," the MEA said.

<https://www.hindustantimes.com/world-news/china-pakistan-caution-against-arms-race-in-space/story-h0rzUmJkbfUKvtL6UtiDAO.html>

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Pangs of large-scale weapons imports

India needs strategies for a drastic reduction in imports. Political will is dwarfed by blanket imports. An immediate step would be to have a 'weapons import policy' for selective and purposive import of weapons. Probably, there lies some hope for India slipping down further in the list of weapons importing countries

By Bhartendu Kumar Singh

The recent SIPRI data on 'Trends in international arms transfers: 2018' sounds music to Indians since India does not carry the official tag of the 'world's largest arms importer' anymore. The dubious distinction is now with Saudi Arabia that has a 12 per cent share of global arms imports against India's 9.5 per cent during 2014-18. However, India's downward slide is not a reason for celebration since structural factors catapulting India to the numero uno position for a long time remain in situ and do not get adequate consideration in our defence modernisation debates.

SIPRI's own reasons for India's slippage to the second position hint towards transitional status of import figures. While India has ordered a large number of weapons imports, many of them are delayed. Significant import proposals are also at various stages of consideration. India is also perceived as the Big Emerging Market (BEM) in the international arms bazaar.

Concurrently, Saudi Arabia's emergence at the number one spot is due to the volatile situation in West Asia, propelling its import figures by three times during 2014-18 compared to 2009-13. Overall, arms flow to West Asia increased by 87 per cent from 2009-13 to 2014-18 when there was an actual decrease to all other regions — Africa, the Americas, Asia and Oceania, and Europe. However, this is likely to be a momentary phase and once inter-state relations improve in West Asia, Saudi Arabia's figures may fall. There is, therefore, a high probability of India re-emerging as the largest weapons importer in the near future.

The issue is not India remaining the largest or the second largest arms importer, but the perpetual high figures of weapons imports. These figures actually defy India's aspirations as a rising great power. The international arms bazaar is 'regimented' and dominated by established great powers doubling as weapons suppliers. The five largest exporters during 2014-18 were the US, Russia, France, Germany and China, accounting for 75 per cent of the arms market. The US is increasing its hegemonic lead from 29 per cent during 2010-13 to 36 per cent during 2014-18. India is one great power candidate defying established trends and stuck in the 'imports conundrum'. Further, if weapons

export is taken as another benchmark for measuring the great power ranking, India, with less than 0.2 per cent share of global market, does not figure amongst first 25 countries' list.

India's high dependence on weapons imports leads to many concerns.

First, it is slow in diversifying supplier base and still dependent upon Russia for 58 per cent of its weapons requirement. Russia has often exploited this dependency through monopolisation of rates in big ticket contracts (such as Gorshkov) and the supply of spare parts. It has also not reciprocated proportionate political and diplomatic gestures.

Second, many established weapons imports objectives do not seem to have been achieved in the Indian context. For example, technological imperatives, like technology transfer, have not taken place in the right spirit or proportion, were delayed or were not put to use for industrial proliferation in time (like Dhanush, the Indian version of Bofors). Similarly, industrial imperatives, like offsets, have been non-starters so far despite long existence.

Third, western scholars like Stephen P Cohen have alleged India to be 'arming (itself) without aiming' in implementing the defence modernisation process, but enough has not been done to dispel this and reduce 'imports'. Instead, they have been legitimised as 'rational myths' towards India's emergence as a military power.

Fourth, increasing cost of imported weapons pinch the modernisation process through lesser number of weapons purchased than otherwise required, budgetary constraints and resultant inter-services rivalry for the procurement pie.

Enough literature has emerged in recent times singing paeans of India's emergence as a military power and its rising military power projection capabilities. Defence experts have written about India's building of power projection platforms like aircraft carrier, nuclear submarines, long-range combat aircraft with mid-air refueling capacities and ICBMs with 5000 km range — all with the collective aim of influencing events far from home. Unfortunately, such discourses do not study and, indeed, ignore the predominant role of imports and marginalisation of the domestic military industrial complex (MIC). Also, the MIC lobby in India is weak and unable to convince the armed forces whose preference for imports dwarfs the autonomous and independent development of the domestic MIC.

There is a philosophical problem as well. Global arms trade is quite complex and under a 'veil of secrecy'. Andrew Feinstein has alleged in his narrative (*The Shadow World: Inside the Global Arms Trade*, 2012), that 'arms trade accounts for 40 per cent of corruption in all world trade. The combination of sheer magnitude of contexts, very small number of people making purchasing decisions and cloak of national security lends itself to bribery and corruption with huge financial implications that are neither cost-effective nor in the best interest of their countries'. Additionally, arms trade only creates what C Wright Mills calls as 'military metaphysic' or a 'permanent war economy' and provides a false and temporary sense of security. We ought to avoid global traits affecting many African, Asian and Latin American countries.

India needs sound strategies for a drastic reduction in imports. Political will, duly manifested in the 'make in India' movement and supplementary policy statements like defence industrial corridors, is dwarfed by blanket imports. An immediate step would be to have a 'weapons import policy' for selective and purposive import of weapons. Probably, there lies some hope for India slipping down further in the list of weapons importing countries.

<https://www.tribuneindia.com/news/comment/pangs-of-large-scale-weapons-imports/749436.html>