

## सुखोई से 500 किलो के गाइडेड बम का परीक्षण

जागरण संवाददाता, जयपुर : राजस्थान के रेगिस्तान में भारतीय वायुसेना ने देश में ही विकसित विशेष गाइडेड बम का लड़ाकू विमान सुखोई के जरिये सफल परीक्षण किया। डीआरडीओ (डिफेंस रिसर्च एंड डेवलपमेंट ऑर्गनाइजेशन) की तरफ से विकसित 500 किलोग्राम वजनी इस गाइडेड बम ने 30 किलोमीटर दूर अपने लक्ष्य पर एकदम सटीक प्रहार किया।

गौरतलब है कि 23 मई को वायुसेना ने डीआरडीओ के साथ मिलकर सुखोई से ब्रह्मोस मिसाइल का सफल परीक्षण किया था। सैन्य सूत्रों के अनुसार शुक्रवार को पोकरण फायरिंग रेंज में गाइडेड बम का परीक्षण किया गया। सुखोई से इस बम को पोकरण स्थित फायरिंग रेंज में पहले से निर्धारित लक्ष्य की तरफ 30 किलोमीटर पहले दागा गया। हवा में दूरी तय कर बम ने लक्ष्य पर प्रहार किया। इस मौके पर मौजूद डीआरडीओ के वैज्ञानिकों व रक्षा



लड़ाकू विमान सुखोई

विशेषज्ञों ने इसकी प्रहार क्षमता जांचने के बाद इस परीक्षण को पूरी तरह से सफल बताया। उन्होंने कहा कि यह बम अपने सभी मानकों पर एकदम खरी उतरी है। 'ब्रह्मोस' ने 270 किमी दूर साधा निशाना नई दिल्ली, प्रेटू : सेना के पूर्वी कमान ने कार निकोबार द्वीप से ब्रह्मोस सुपरसोनिक क्रूज मिसाइल का सफल परीक्षण किया।

सेना ने बताया कि यह परीक्षण 22 मई को सेना, नौसेना व वायु सेना के संयुक्त अभ्यास के दौरान किया गया। मिसाइल 270 किमी दूर स्थित लक्ष्य पर निशाना साधने में सफल रही। मिसाइल के परीक्षण के दौरान पूर्वी सेना के कमांडर लेफ्टिनेंट जेनरल एमएम नरावने भी मौजूद थे।



## Defence research body test fires guided bomb from Sukhoi Combat Jet

*The defence ministry said the guided bomb achieved the desired range and hit the target with high precision*

New Delhi: The Defence Research and Development Organisation (DRDO) on Friday successfully test fired an indigenously-developed 500 kg class guided bomb from a Sukhoi combat jet at Pokhran in Rajasthan.

The defence ministry said the guided bomb achieved the desired range and hit the target with high precision.

"The DRDO successfully flight tested a 500 kg class Inertial Guided Bomb today from Su-30 MKI Aircraft from the Pokhran test range in Rajasthan," it said.

The ministry said all the mission objectives have been met during the test firing of the bomb, adding it is capable of carrying different warheads.

The test firing of the guided bomb came two days after the Indian Air Force successfully test fired the aerial version of the supersonic BrahMos cruise missile from a Sukhoi jet at the Andaman and Nicobar Islands.

The 2.5 tonne air-to-surface missile has a range of around 300 km, and it will significantly enhance the IAF's combat capability.

The BrahMos cruise missile travels at a speed of Mach 2.8, nearly three times that of sound.

<https://www.ndtv.com/india-news/defence-research-body-test-fires-guided-bomb-from-sukhoi-combat-jet-2042708>

**TIMESNOWNEWS.COM**

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## **DRDO successfully test-fires guided bomb from Sukhoi Aircraft**

*The weapon being developed is similar to the SPICE (Smart, Precise Impact, Cost-Effective), an Israel made bomb which was used by the Indian Air Force to hit terror camps in Pakistan's Balakot on February 26*

**Pokhran:** The Defence Research and Development Organisation (DRDO) on Friday successfully tested an indigenously developed 500-kg inertially guided bomb at the Pokhran test-firing range in Rajasthan.

The bomb hit its target with high precision, government officials said. "The bomb was fired by a Su-30MKI combat aircraft from a 30-km range and hit its target with high precision," they said.

Guided bombs are meant to precisely hit a designated target to minimize collateral damage.

The weapon being developed is similar to the SPICE (Smart, Precise Impact, Cost-Effective), an Israel made bomb which was used by the Indian Air Force to hit terror camps in Pakistan's Balakot on February 26.

DRDO is also reportedly developing two such glide bombs named--Garuthmaa and Garuda.

Garuthmaa is the winged version with a range of 100 km while Garuda is the non-winged version with a range of 30 km.

DRDO is also developing a Smart Anti Airfield Weapon (SAAW) which can be used to damage enemy airfields during war.

<https://www.timesnownews.com/india/article/drdo-successfully-test-fires-guided-bomb-from-sukhoi-aircraft/424871>

## IAF certifies 'green fuel', may help save 100mn litres a year

*The IAF's workhorse AN-32s, operating from Mechuka to supply Indian Army posts on the Sino-Indian border*

*By Ajai Shukla*

New Delhi: During the Republic Day Parade on January 26, the Indian Air Force (IAF) made a bold statement of its intent to go green by including an AN-32 transport aircraft, powered partly by biofuel, in the flypast over New Delhi.

On Friday, the door was opened to powering the broader IAF fleet with a blend of biofuel and normal aviation turbine fuel (ATF), when the Centre for Military Aviation Certification (CEMILAC) cleared the blending of 10 per cent biofuel across the entire fleet of over 100 AN-32 aircraft.

Each year, the IAF consumes about 100 crore litres of ATF to power its varied fleet. If 10 per cent biofuel use is extended across the fleet, 10 crore litres of ATF would be saved each year.

The IAF's push for biofuel use originates from Prime Minister Narendra Modi's call, in August 2017, for the country to save \$1.7 billion a year on imported hydrocarbon fuel, by blending it with biofuel and ethanol.

Over the last year, the IAF has undertaken a series of evaluation tests and trials with green aviation fuel, culminating in official certification today.

Indigenous bio-jet fuel was produced as far back as 2013 by a laboratory established in Dehradun by the Centre for Scientific and Industrial Research in partnership with the Indian Institute of Petroleum. However, the fuel it developed, which is distilled from the *Jatropha* tree, could not be tested or certified for commercial use on aircraft since there are no test facilities in the civil aviation sector.

Eventually CEMILAC, which is a Defence R&D Organisation laboratory, has evaluated and tested the fuel to international standards.

"This is a huge step in promoting the 'Make in India' mission as this bio-fuel would be produced from Tree Borne Oils (TBOs) sourced from tribal areas and farmers, augmenting their income substantially", said the IAF on Friday.

On February 11, the government of Punjab had extended this initiative to manufacturing biofuels from rice husk – which is currently burnt in late autumn every year, severely polluting Delhi. Chief Minister Amarinder Singh presided over a ceremony in Chandigarh, also attended by US envoy to India Ken Juster, in which an Indian firm, Virgo Corporation inaugurated a project to produce biofuels from rice husk, using technology obtained from US firm, Honeywell.

While only fuel made from *Jatropha* has currently been certified, there is potential to source biofuels from 150 million tonnes of surplus bio-mass feedstock across India, including from non-edible plants like Castor *Pongamia*, Neem, Mahua, Sal and Kokum. Converting edible crops to fuel remains controversial.

To extend biofuel use to civilian airliners, the IAF has recommended setting up an inter-ministerial Bio-Jet Fuel Board, and allocation of Rs 1,000 crore to set up three production plants of 5,000 litres per day, each using a different feedstock.

## India's sequential missile tests

*By Dr Zafar Nawaz Jaspal*

India's sequential missiles tests mark that the newly elected government will be obliged to increase defense spending to restore the 'punctured' reputation of the Indian armed forces and pursue the regional strategic objectives with military might. It will continue investing in the missile program of the country. India recently did following missile tests, which reveals its growing military ambitions in the region and also validates Prime Minister Narendra Modi's 'muscular policy.'

Last week, the Indian Navy conducted successfully a live firing test of a medium-range surface-to-air missile (MRSAM) using the cooperative engagement capability (CEC) sensor netting system, which allows the real-time sharing of sensor data on incoming air targets among warships.

"India has successfully tested the Anti-Satellite (ASAT) Missile. Indeed, the ASAT missile test was a significant technological achievement of the DRDO which contribute constructively in India's Ballistic Missile Defence (BMD) programme."

On 17 May 2017, the Indian Ministry of Defence stated, "The firing was undertaken on the western seaboard [of India] by Indian naval ships Kochi and Chennai wherein the missiles of both ships were controlled by one ship to intercept different aerial targets at extended ranges." Israel Aerospace Industries (IAI), and India's Defence Research and Development Organization (DRDO) jointly manufactured the MRSAM.

According to the Indian Ministry of Defence, the MRSAM would improve the combat effectiveness of the Indian Navy. It would provide "an operational edge over potential adversaries." It is a debatable proclamation because both China and Pakistan have been systematically advancing their military capabilities.

Last month, DRDO conducted the sixth flight test of the nuclear-capable Nirbhay a subsonic long-range (1000 kilometre), solid-fuel cruise missile from the Integrated Test Range on Abdul Kalam Island off the coast of Odisha. The missile can be armed with a 200-300-kilogram warhead.

It was reported that DRDO has been working on an extended-range air-launched variant of the BrahMos supersonic cruise missile, with an estimated strike range of around 800 kilometres. The operational realization of both Nirbhay and advanced version of BrahMos would not be adequate shortly.

Previously, a few Nirbhay tests were not successful. India tested the anti-satellite (ASAT) missile on 27 March 2019, to demonstrate its prowess to destroy satellites in orbit. By testing ASAT missile, New Delhi joined the small group of countries with weapons to carry the war into space.

"The interceptor employed a Kinetic Kill Vehicle to strike and shatter the target satellite. The test proves India's counter-space capability and also contributes to its efforts in developing BMD capabilities."

Previously, only three States — the US, Russia and China — have ASAT missiles in their inventory. Prime Minister Narendra Modi tweeted, "In the journey of every nation there are moments that bring utmost pride and have a historic impact on generations to come.

One such moment is today. India has successfully tested the Anti-Satellite (ASAT) Missile." Indeed, the ASAT missile test was a significant technological achievement of the DRDO which contribute constructively in India's Ballistic Missile Defence (BMD) programme.

India developed ASAT capability through its BMD programme, which is a flagship project of the DRDO. India's BMD programme is aimed at producing two-tiered missile defensive systems that comprise the Prithvi Air Defence (PAD) system and Advanced Air Defence (AAD).

The PAD provides long-range high-altitude ballistic missile interception during an incoming missile's midcourse phase, and the AAD offers short-range, low-altitude defense against missiles in the terminal phase of their trajectory. The Prithvi Delivery Vehicle Mark-II (PDV MK-II) struck and destroyed 1,630-pound (740-kilogram) Microsat-R satellite orbiting at an altitude of 270 kilometres (170 miles).

"The tests were conducted to boost the morale of the Indian armed forces and also assure the public that the Modi Government was vigilant of national security."

India launched this satellite in January 2019. The interceptor employed a Kinetic Kill Vehicle to strike and shatter the target satellite. The test proves India's counter-space capability and also contributes to its efforts in developing BMD capabilities. Indeed, ASAT missile test exacerbates arms race in the outer space and have a destabilizing impact on the South Asian strategic environment.

The MRSAM, Nirbhay and ASAT missiles provide a great striking advantage to the Indian armed forces. Satish Dua, former chief of integrated defense staff of the Indian army, pointed out: "India has to be fully equipped for war — whether it is subsurface, surface, air or space warfare." The new missiles tests underscore that country has been fully equipping for war. However, these developments are a portent of the lethal arms race between the global and regional strategic competitors of India.

To conclude, the timing of the MRSAM, Nirbhay, and ASAT missiles tests was very critical. The missiles were fired during the polling in India. Indeed, the tests were conducted to boost the morale of the Indian armed forces and also assure the public that the Modi Government was vigilant of national security and continuously advancing its striking capability.

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<https://www.globalvillagespace.com/indias-sequential-missile-tests-dr-zafar-nawaz-jaspal/>