THE FINANCIAL EXPRESS

Sat, 22 June 2019

On fast track: Deadly new hypersonic missiles to give India strategic edge

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By Ajey Lele

After a long struggle it appears that India's Hypersonic Missile programme is taking some shape. On 12 Jun 2019, the Defence Research and Development Organisation (DRDO) launched a Hypersonic Technology Development Vehicle (HSTDV). There is no official information available about exactly what this test did achieve. It's very difficult to quantify precisely what this test did achieve and what it did not. As per DRDO, the missile was successfully launched and various radars, telemetry stations and electro-optical tracking sensors tracked the vehicle through its course. Now, detailed analysis of collected data would be done by the scientists. However, no detailed data assessment requiring more than eight days' time is required to announce details about the status of the carrier and demonstrator vehicle's performance.

Hence, it could be safe to argue that this test has been a partial success. Not much official details as such are available in respect of DRDO's HSTDV programme. Hypersonic missiles are next generation missiles and no operational missiles are yet available with any country in the world. Also, this technology is extremely complicated and hence it is understandable that DRDO, at this point in time, is not ready to share much of the details.

The US, Russia and China have made much of investments towards hypersonic weapon technologies. India probably entered in the field of hypersonic around 2004 and its programme is much smaller in scale. India has received some assistance from countries like Russia and Israel. A country like UK has allowed India to use some of their test facilities. Apart from DRDO, a private sector agency called BrahMos Aerospace (India's joint venture with Moscow is known to be developing the BrahMos-II, a hypersonic cruise missile. This missile is expected to get ready by 2023. In the memory of India's missile man and ex-President late Dr Abdul Kalam, now missile is known as BrahMos-II(K).

Hypersonic missiles are missiles which travel at speeds in excess of five times greater than the speed of sound (minimum speed should be more than Mach 5, or 3,800 miles an hour). At present, there are two types of hypersonic systems called boost glide and scramjets. India has interest in the scramjets.

Hypersonic boost glide is boosted by ballistic missiles to a particular level and then they glide towards the target, while scramjets use a conventional rocket to accelerate the missile fast enough that the scramjet can take over and then the target is approached. In a scramjet engine (air/oxygen taken from atmosphere is mixed with fuel and ignited) the airflow remains supersonic.

During recent test by DRDO, the cruise vehicle was mounted on an Agni-I solid rocket motor to take it to the required altitude. DRDO and BrahMos Aerospace are possibly developing missiles which

can carry a warhead of around one tone to a distance of around 500 to 750 km. These missiles are expected to travel with a maximum speed in the range of 6 to 7.5 Mach.

Russia claims that they have already developed a missile in the range of 8 to 9 Mach. China has carried out minimum six successful tests of their hypersonic missiles while the US programme covers a wide range of hypersonic missiles. Their scientific community is confident of developing scramjets capable of speeds of up to Mach 24. Recently, they have developed an engine made entirely by 3D printer for their hypersonic programme.

The 20th century witnessed much of debate on technologies which can increase the speed of the weaponry. But, now the era of hypersonic weapons could be said to have actually arrived. These weapons which could be both conventional or nuclear-tipped, are supposed to overpower the missile defence architectures (THAAD or S-400 systems). These missiles are getting described as 'game-changing weapons' or 'stealth' missiles. At present, there are more questions than answers with regard to how effectively this technology could be put to use. However, these are early days it also needs to be remembered that these missiles are likely to be destabilizing weapons and could create an Arms Race amongst the major powers. This is the right time to carry out a detailed global debate on the efficacy and employability of this weapon system.

(The author is Senior Fellow with the Institute of Defense Studies and Analyses – IDSA. Views expressed are personal.)

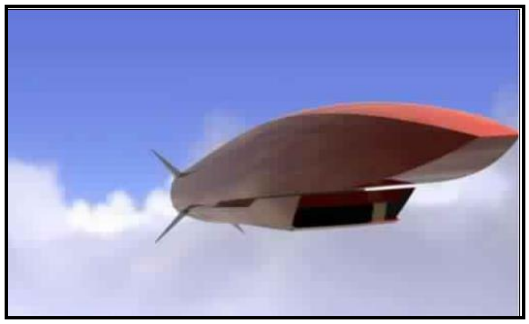
https://www.financialexpress.com/defence/on-fast-track-deadly-new-hypersonic-missiles-to-give-india-strategic-edge/1614543/

DefenceNews

Sat, 22 June 2019

Why India's hypersonic missile could trigger a nuclear war

India's test of a hypersonic missile signifies more than the advance of Indian weapons technology. It also is one step closer to triggering a nuclear war with Pakistan.



Ironically, the first launch of the Hypersonic Technology Demonstrator Vehicle, or HSTDV, was a failure. The HSTDV, which is shaped almost like a sailing ship, is supposed to be a testbed for developing future hypersonic weapons such as cruise missiles. It is launched atop an Agni 1, an Indian ballistic missile.

"The vehicle was test launched using the Agni 1 missile platform that was to take it up to a predetermined altitude where scramjet technology—the ability to fly at speeds in excess of Mach 6 while using atmospheric oxygen as oxidizer—had to be validated with separation of the platform and a short flight at high altitude," according to India's Economic Times.

"Sources said that while the missile on which the platform was mounted successfully took off from the range, the test could not be completed to demonstrate the vehicle at hypersonic speed as the Agni 1 did not reach the desired altitude for the test. Scientists are looking at the technical reasons behind this and are studying all available data."

While that doesn't necessarily mean the HSTDV has a problem, it's not good news for India's strategic nuclear deterrent. "The Agni 1 is a nuclear-capable missile that is in service with the strategic

forces and has been successfully tested several times in the past," noted the Economic Times. "Its failure to reach the desired altitude is a reason for concern and is being studied."

Yet unproven or not, the existence of an Indian hypersonic project is an ominous step for India's cold war with its neighbor Pakistan. Hypersonic missiles—defined as rockets with a velocity of at least Mach 5, though Russia and America are developing Mach 20 weapons—are dangerous because of their speed. Though the weapons have yet to be tested in combat, the U.S. military is concerned that Russian and Chinese hypersonic weapons may travel so fast that they can't be intercepted. At the tactical level, this means that aircraft carriers and air bases could be destroyed by a salvo of missiles.

But on the strategic level, hypersonic weapons are truly frightening. A hypersonic missile can deliver a nuclear warhead more quickly than a ballistic missile. Or, a hypersonic missile armed with a conventional warhead might be able to destroy an opponent's nuclear missiles in a first strike, but without the attacker having to resort to nuclear weapons.

Whether or not such a strike would be successful, or whether anyone would be confident enough to risk a nuclear exchange by using hypersonics, isn't the point. Unlike the United States versus Russia and China, whose homelands are separated by thousands of miles of ocean, the distance between New Delhi and Islamabad is just over 400 miles. A Mach 5 or 10 weapon missile launched from India or Pakistan could hit its target in minutes (Russia's Avangard hypersonic glider reportedly has a speed of Mach 20, with the United States working on a weapon equally as fast).

Knowing that India has hypersonic weapons could make Pakistan feel trapped in a "use them or lose them" mindset regarding its nuclear weapons.

http://www.defencenews.in/article/Why-India%e2%80%99s-Hypersonic-Missile-Could-Trigger-A-Nuclear-War-585404