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Nirbhay cruise missile passes crucial test, but reliability still a question

The Nirbhay cruise missile, which the Defence R&D Organisation (DRDO) successfully test fired on Tuesday, is a version of America's iconic Tomahawk cruise missile, made famous by CNN videos of the 1991 Gulf War, showing Tomahawk's flying along Baghdad streets and entering target buildings through doors and windows.

Yet, despite Tuesday's success, Nirbhay remains an inconsistent performer. It has not yet demonstrated the reliability needed for launching nuclear weapons, which require a delivery platform that is both reliable and accurate.

Three of the four earlier Nirbhaya tests ended in failure, making the outcome of this test crucial for the continuation of the troubled DRDO project. Its test record contrasts unfavourably with that of the successful Indo-Russian BrahMos cruise missile, which has been in operational service since 2007 and will soon be carried by Indian Air Force Sukhoi-30MKIs.

The BrahMos has a range of 295 km (being upgraded to 600 km) and flies at supersonic speeds (Mach 3, or 3,700 km per hour). The Nirbhay's reach is longer (over 1,000 km), but it flies slower, at a subsonic speed of 865 km per hour. While that makes it vul-

nerable to enemy air defence guns and aircraft, its survivability rests on flying low – just 100 metres above the ground – making it difficult to detect with radar.

While Russian propulsion technology has powered the BrahMos missile, the Defence R&D Organisation (DRDO) continues to grapple with developing an adequate engine and pinpoint navigation systems for the Nirbhay.

So far, Pakistan leads India in subsonic cruise missile development, having tested and operationally deployed the Babur (Hatf VII) cruise missile that has a range of 700 km, significantly less than the Nirbhay's. Analysts speculate that the Babur's engine is Chinese, supplied by Beijing in violation of the Missile Technology Control Regime.

The Nirbhay can carry a payload of 300 kg, the weight of a well-designed nuclear bomb. It is 7.5 metres long, which would allow it to be carried inside a submarine. However, India has not claimed nuclear capability for the Nirbhay. In contrast, Pakistan portrays the Babur as a nuclear delivery platform.

"Perhaps India's anti-ballistic missile (ABM) defence that the DRDO is developing makes Pakistan present the Babur as a nuclear delivery platform to add credibility to

its deterrent. Besides, Pakistan has no submarine launched ballistic missiles (SLBMs) and, therefore, plays up the Babur as a vehicle for assured submarine-launched, second-strike capability," says a well-known deterrence specialist with an Indian think tank.

Second-strike refers to a country's capability for assured nuclear retaliation after absorbing the full weight of nuclear attack from an adversary.

India's assured second-strike capability is based on the 750-km range K-15 SLBMs carried by INS Arihant, the navy's first sub-surface ballistic nuclear (SSBN) submarine. Arihant-class SSBNs (the second, INS Aridhman, is nearing completion) are now being configured to carry the more capable K-4 SLBM, which has an estimated range of 3,500-4,000 km. It is doubtful whether the Nirbhay will ever form part of a SSBN's arsenal.

The Nirbhay's first test on 12 March 2013 was a failure. About 15 minutes into the test, the DRDO had to activate an on-board, "self-destruct" system after the missile deviated from its planned path and headed towards inhabited areas.

The Nirbhay's second test, on October 17, 2014, was an unalloyed success. In a 70-minute flight, the missile's inertial navigation system, assist-

ed by the GPS satellite network, took the missile accurately to 15 pre-designated "way points. After 1,050 km, the missile splashed, as planned, into the Bay of Bengal.

But two successive failures followed this, one in 2015 and the preceding test last December. Perhaps, for that reason, the defence ministry release on Tuesday stated: "The flight test achieved all the mission objectives completely from lift-off till the final splash, boosting the confidence of all scientists associated with the trial."



Nirbhay sub-sonic cruise missile of Defence Research and Development Organisation takes off successfully from the Integrated Test Range at Chandipur in Odisha on Tuesday

PHOTO: PTI

India Tests Futuristic Gun Capable of Firing at Mach 6

New Delhi: India has taken a giant leap in developing futuristic weapon platforms with the Defence Research and Development Organization (DRDO) successfully developing electromagnetic railguns (EMRG). The EMRG can fire projectiles at extremely high velocities reaching up to Mach 6 or 4,600 miles per hour. These railguns launch the projectile without using explosives or propellants. Instead they use kinetic and laser energy to achieve extremely high velocities.

DRDO officials claimed that they tested a 12 mm square bore EMRG and in the next stage they will go for the 30 mm variety, according to *Sputnik News*. The railguns being developed will be able to launch a one kilogram projectile with a velocity of more than 2,000 m/s with a capacitor bank of 10 megajoules.

According to defence experts these railguns are easy to handle and can be deployed very quickly in any theatre of operation. Using such advanced and devastating weapons also boosts the morale of troops and act as force multiplier, added another expert.

However, they added that India is still perfecting the technology used in electromagnetic railguns and the armed forces are a few years away from getting these weapons. Such platforms are extremely useful for naval forces due to their ability to respond immediately with long-range, accurate and high-volume fire support.

These weapons will hit the target with extreme speed and accuracy without giving the enemy any chance to escape. In a conventional gun, the projectiles are launched based on gas expansion which follows the usage of explosives and chemicals. A conventional gun has limitation related to the launch velocity and range which can be limited to 1.5 km/s and 80 kilometres respectively.

The United States Navy is also testing railguns for attacking land-based targets and aerial threats including supersonic missiles.

PRESS TRUST OF INDIA
India's Premier News Agency

Wed, 08 Nov, 2017

(Online)

Weapon Museum at Chandipur in Odisha

Balasore (Odisha): A weapon museum, described as the first of its kind in the country, has come up in the premises of DRDO's Proof and Experimental Establishment at Chandipur and boasts of the Vijayanta Tank, which played a major role in the 1971 India-Pakistan war.

Defence Research and Development Organisation (DRDO) Chairman and Secretary Department of Defence Dr S Christopher, who was at Chandipur to witness the test fire of India's first indigenously designed and developed Long Range Sub-Sonic Cruise Missile 'Nirbhay', inaugurated the museum yesterday.

"Initially 14 types of weapons used by the Indian Air Force and Navy have been displayed for public view in the museum. More varieties of weapons will be displayed in future," PXE Director R Appavuraj said today. He described the museum as the first of its kind in the country.

The main attraction of the museum is Vijayanta Tank, which had played a major role in the 1971 India-Pakistan war. The tank has capacity to neutralise enemy bunkers and troops up to 5 km.

The other defence equipment of the artillery and naval force which are on display in the museum include WM-18 rocket launcher, 105 mm Indian field Gun, 122 mm grad BM-21 rocket launcher, 57 mm anti-tank gun and 40 mm light gun. "Such a museum was required to impart knowledge and instill a sense of pride among youths and to make the public aware of the weaponry used to protect the sovereignty and territorial integrity of the country," he said.

This museum will be appreciated by tourists as well as students visiting Chandipur sea beach, he said

A proposal for setting up the museum had been sent to the Centre sometime back and now it has become a reality after obtaining sanction from the Ministry of Defence.

PXE is a DRDO establishment where different types of artillery, shells, field guns, tanks and rockets used by the armed forces are put to test.

The unit is meant for test, evaluation and proof of various types of armaments. India's 'Pinaka' multi barrel rocket launching (MBRL) systems are also tested here.

Located near the Integrated Test Range (ITR), where test launch of all varieties of missiles are conducted, the PXE was brought under the administrative control of DRDO in October, 1958.

MAIL TODAY

Thu, 09 Nov, 2017

IAF doubles down on air security in Capital

By Ajit K Dubey

Besides the systems to be acquired from foreign countries, the DRDO is also working on an indigenous missile defence project

Seeking to provide protection to country's vital assets and persons in the national Capital, the Indian Air Force is looking to install a two-layer air defence system which can take out enemy combat aircraft, drones or helicopters. The serving is working on the proposal in this regard which is expected to be brought to the Defence Acquisition Council — defence ministry's apex decisionmaking body on procurements — in its next few meetings, defence sources told Mail Today.

As part of the system, the Air Force is looking for a system which would also have the capability to take down enemy cruise missiles at a distance of 25 kilometers, and if that fails, then strike it down at lower level in the range of five to six kms, they said.

The new air defence system would be deployed to protect the important installations in the Capital, which will include the President's house, Parliament and other vital assets and vital points. Sources said the country has indigenous air defence systems such as the Akash missiles, but the DRDO was yet to develop a missile which can hit incoming targets at lower level heights in six to seven km range. In another deal to protect important cities and installations from attacks by the Chinese and Pakistani missiles and taking down enemy airborne early warning systems at ranges up to 400km, the air force is in the process of acquiring the deadly S-400 air defence system from Russia.

The service has completed the trials of the system and the commercial negotiations are going on between the two sides for its final price, which is expected to be in range of `37,000 crore-38,000 crore. Along with the systems to be acquired from foreign countries, the DRDO is also working on the indigenous Ballistic Missile Defence shield project, under which protection would be provided to key cities such as Delhi and Mumbai from incoming ballistic missiles.

Under the DRDO project, the plan is to take down the ballistic missiles coming in from long ranges, up to 2,000km or more at heights of 30 to 120 kilometres in the air, and the twin-layer system is in advanced stages of development. In the last few years, India has been taking significant steps to improve its air defence

capabilities as a number of new mechanisms to take on hostile aerial action have been inducted and many more new systems would be joining in the near future. India recently started inducting the long-delayed ₹20,000 crore SPYDER missile systems into the Air Force and some of the systems have already been deployed on the western frontier to thwart any misadventure from Pakistan. In recent times, the NDA government has taken several measures for strengthening the air defence as it cleared a Rs.18,000 crore proposal to buy MR-SAM missiles for the army, while the three services are buying the very short range air defence systems which can be fired from troops' shoulders.

Thu, 09 Nov, 2017

Gorkha Rifles completes 200 years, Army plans big bash to mark event

By Rajat Pandit

“Jai Maha Kali, Aayo Gorkhali! (Hail Goddess Kali, the Gorkhas are here!)“, or simply “Aayo Gorkhali Charge!“ The spine-chilling war-cry by soldiers, brandishing deadly inwardly curving khukris, is usually enough to scare the wits out of most adversaries on battlefields. From full-blown wars to the frozen frontier of Siachen, from counter-insurgency operations to the long unresolved borders with China and Pakistan, the Indian Army's Gorkha Rifles have deservedly earned their reputation as fearless large-hearted warriors, with a distinct fondness for a tot or two of “Rakshi” (dark rum) and living life for the moment.

No wonder the country's first Field Marshal Sam Bahadur Manekshaw, himself a Gorkha Rifles officer, once remarked, “If a man says he is not afraid of dying, he is either lying or is a Gorkha.“

In the backdrop of the Gorkha Rifles having completed over 200 years of soldiering in India, the 9th GR is now culminating its bicentenary celebrations with a grand reunion and function at the 3&9 Gorkha Training Centre at Varanasi on Thursday and Friday.

Army chief General Bipin Rawat, who is from the 11th GR, will be the chief guest during the celebrations. Director general of military operations, Lt Gen Anil Kumar Bhatt, himself from the 9th GR, says, “Apart from earlier battles like the ones during World Wars 1 and 2, the 9th GR has participated in all military operations after 1947 with honour and valour.“

Contrary to popular belief that the British East India Company was the first to recruit Gorkhas as soldiers, Army officers contend it was in fact Maharaja Ranjit Singh who raised a battalion of Gorkhas to serve in the Sikh Army around 1809-1814.

“Maharaja Ranjit Singh was impressed by the bravery of these bighearted little men from the hills. All soldiers serving in the Indian Army are still called ‘Lahorey’ or ‘Lahure’ in Nepal or those who serve in Lahore, which was the capital of Ranjit Singh's empire,“ said a Colonel.

The British followed suit, raising the “Nusseree“ Gorkha battalion at Subathu (Himachal Pradesh) in 1815 that later became the 1st GR. The first battalion of the 9th GR, in turn, was raised by the British in 1817 as the ‘Fatehgarh Levy’. There are about 32,000 Nepalese Gorkhas currently serving in the Indian Army's seven GRs or regiments (1st, 3rd, 4th, 5th, 8th, 9th and 11th), each of which has five to six battalions (around 800 soldiers each).

The 2nd, 6th, 7th and 10th regiments, in turn, went to the British Army after Independence in 1947, which have now been amalgamated into only one Gorkha regiment. “Almost 90% of our soldiers earlier used to hail from Nepal. Now, around 65% come from Nepal, with the rest coming from Darjeeling, Dehradun, Dharamshala and other places,“ said an officer.

Though the Indian Army has a strength of almost 12 lakh, with 23 equally illustrious infantry regiments, the Gorkhas stand apart with their distinctively-tilted hats, khukris and never-saydie spirit. “They are wonderful troops who will follow you to the end of earth if they respect you,” said another officer.

THE ECONOMIC TIMES

Thu, 09 Nov, 2017

Indian Army Builds Defence against Outdated Tech

By Surabhi Agarwal & Shaurya Karanbir Gurung

In a move that could unlock defence contracts of more than Rs. 25,000 crore, the government is in the process of amending its defence procurement manual, which will enable the armed forces to procure the latest tech in a speedy manner. The move to amend defence procurement manual (DPM) by adding a separate chapter on tech products -a long standing demand of the industry -will significantly speed up the process of the defence forces procuring and implementing the latest technology , people aware of the development said. At present, defence procurement takes years, sometimes up to a decade, they said.

The ministry of defence (MoD) has already drafted the chapter on IT to be included in DPM post consultations with the three defence forces, according to multiple sources.

Tech companies and experts have hailed the move as a big step forward that will make the country's army , navy and air force digitally savvy .

Independent aerospace, space and defence consultant Ratan Shrivastava said the proposed amendment will be mutually beneficial for the industry and the forces. It will help standardise IT requirements for the armed forces, while domestic and foreign companies can help enable tactical and logistic automation of the forces in a given timeframe, he said.

An executive at a top IT firm said defence forces will need an outlay of at least `25,000-30,000 crore if India has to come on a par with the IT roadmap they have set for themselves. “The overall IT roadmap of the defence is maybe 10 years behind,” said the executive who is aware of the development. “The fact that clearly the next war is going to be won on the basis of information where technology plays a key role will give a fillip to focus on IT programmes.”

The opportunity in defence for IT is “massive“ with `4,500-5,000 crore of immediate projects which are long pending, the person said. The proposal is being spearheaded by the integrated defence staff of the ministry of defence, which held consultations with industry bodies such as Nasscom last month, sources said. The ministry did not respond to queries sent by ET as of press time on Wednesday . A ministry official said the proposal is at a nascent stage and the IT chapter is in a draft format, and is being examined. Amending the procurement manual will enable the defence forces to have not only common procurement but also a visibility into the current and future inventory, with a fast-track system to procure the latest tech.

THE TIMES OF INDIA

Thu, 09 Nov, 2017

Eye on China, India urges world for stability in Indian Ocean region

In a message unlikely to go unnoticed in Beijing, India has called for nations involved in maritime disputes to exercise self-restraint and not do anything which could affect peace and stability in the Indian Ocean region. China has continued to build artificial islands in South China Sea (SCS) to validate its claim

over 90% of the sea waters and is currently testing a new dredging vessel, described by the media in south-east Asia as a magic island-maker.

Speaking at the inaugural session of second IORA Meeting of Experts for Maritime Safety & Security , foreign secretary S Jaishankar said India encouraged resolution of territorial and maritime disputes through peaceful means in accordance with universally recognised principles.

“We have always stood for exercising self-restraint in the conduct of activities that could complicate or escalate disputes affecting peace and stability ,” said Jaishankar, adding that India's own record in this regard was well known.

Recognising this growing importance of maritime trade in an increasingly globalised world, Jaishankar reiterated India's position that it supports freedom of navigation and over-flight, and unimpeded commerce, based on the principles of international law, particularly UNCLOS “that serves as a constitution for the oceans”.

Beijing has also sought to transform its navy into a blue water force by acquiring capabilities which allow it to project power across oceans.

According to the foreign secretary , PM Narendra Modi's strategic vision for the region had four key elements. First, to safeguard India's mainland and islands, defend its interests, ensure a safe secure and stable Indian Ocean, and make available our capabilities to others. Second, to deepen economic and security cooperation with India's maritime neighbours and strengthen their capacities.

Third, envisage collective action and cooperation to advance peace and security and respond to emergencies and, fourth, to seek a more integrated and cooperative future for the region that enhances sustainable development.

Delhi's OBOR stand wavering: Beijing

China said on Wednesday that India's stand on its multi-billion dollar One Belt One Road Initiative (OBOR) is wavering, and the China-Pakistan Economic Corridor, a part of the project, does not involve any territorial dispute as claimed by New Delhi. China has been reiterating that the \$50 billion CPEC, which traverses through the Pakistan-Occupied Kashmir is a connectivity project and will not affect its stand that the Kashmir issue should be resolved between India and Pakistan through talks.

Reacting to a question on Russian ambassador to India Nikolay Kudashev's comments that India and China should resolve differences over the project, Chinese foreign ministry spokesperson Hua Chunying said since this question is being asked repeatedly by the Indian media, “it shows India is quite wavering“ over OBOR. Hua also said that the CPEC does not involve any territorial dispute. PTI



Thu, 09 Nov, 2017

Amid strained Indo-Pak ties, Rangers in Delhi for dialogue

Aid to Fidayeen, Civilian Deaths to Be On Agenda

Amid escalated tensions between India and Pakistan over, a high-level delegation of Pakistan Rangers arrived in New Delhi on Wednesday to hold talks with the BSF.

Sources said that BSF will raise with Pakistani officials deaths and injuries of civilians being caused by Pak troops in ceasefire violations apart from Pak army Rangers assistance in infiltration of trained fidayeen attackers.

The 19-member Pakistani delegation is led by the director general of the Rangers (Sindh) Major General Muhammad Saeed while the Indian side will be headed by Border Security Force chief K K Sharma.

The Pakistani delegation, also comprising officials from their interior (home) ministry and anti-narcotics force, is expected to return on November 10. The last time the two sides met was in July last year when the BSF delegation led by DG Sharma travelled to Lahore for the bi-annual talks.

Sources said the latest round of talks have been delayed by a few months as both the sides had strained ties.

The BSF too, in the recent past, had claimed to have killed a number of Rangers as part of its retaliation to the ceasefire violations along the India-Pakistan International Border.

Sources said the Indian side will put across these issues during the talks apart from interception and neutralisation of a number of infiltration attempts along the IB from the Pakistani side over the last year.

Issues of smuggling of drugs, especially along the international border in Punjab, arms and detection of underground tunnels will also be discussed between the two sides. The Pakistani delegation may also call on home minister Rajnath Singh during the visit.

The last time the Rangers came to India for the DG-level talks was in September 2015, a time when ceasefire violations by Pakistan were on a high.

India's 3,323-km-long border with Pakistan runs through four states -Jammu and Kashmir (1,225 km which includes 740 km of line of control), Rajasthan (1,037 km), Punjab (553 km) and Gujarat (508 km).