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IAF completes flight tests of smart anti-airfield weapon

The Indian Air Force (IAF) has successfully completed testing on a smart anti-airfield weapon (SAAW) called Glide Bomb.

The lightweight guided bomb was indigenously developed by Research Centre Imarat (RCI), Defence Research and Development Organisation (DRDO), as well as other laboratories of DRDO and IAF.

The SAAW was dropped from an IAF aircraft in the ranges at the Integrated Test Range (ITR) in Chandipur, Odisha, India.

It was guided through a precision navigation system and reached the targets that were at a distance of more than 70km. A total of three tests with different release conditions and ranges were conducted and all were successful with high accuracies, the India Ministry of Defence stated.

The SAAW will soon be inducted into the Indian Armed Forces.

The guided bomb is available in two variants, including Garuthmaa and Garuda, The Hindu Business Line reported.

The Garuthmaa is a winged version with a range of up to 100km, while Garuda is a non-winged variant with a 30km range and scalable up to 100km. It is equipped with navigation and guidance systems.

Weighing around 125kg, the SAAW is a long-range, precision-guided air-to-surface weapon that can be launched from India's all frontline fighter aircraft, including Jaguar and Sukhoi-30 MKI, according to The New Indian Express.



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DRDO conducts successful flight trial of 'NIRBHAY'

New Delhi: Defence Research and Development Organisation (DRDO) achieved yet another feat on Tuesday with the successful test flight of 'NIRBHAY', country's first indigenously designed and developed Long Range Sub-Sonic Cruise Missile which can be deployed from multiple platforms.

It was successfully test fired from the Integrated Test Range (ITR), Chandipur, Odisha. The missile has the capability to loiter and cruise at 0.7 Mach, at altitudes as low as 100 m, the defence ministry said in a statement.

The missile took-off in the programmed manner and all critical operations viz launch phase, booster deployment, engine start, wing deployment and other operational parameters demonstrated through autonomous way point navigation.

The guidance, control and navigation system of the missile is configured around the indigenously designed Ring Laser Gyroscope (RLG) and MEMS based Inertial Navigation System (INS) along with GPS system.

The missile majestically cruised for a total time duration of 50 minutes, achieving the range of 647 km. The missile was tracked with the help of ground based radars and other parameters were monitored by indigenous telemetry stations developed by DRDO.

Defence Minister Nirmala Sitharaman hailed the success of DRDO Scientists and complimented them for this inspired achievement.



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Long-range cruise missile ‘Nirbhay’ test-fired

Balasore (Odisha): India today conducted a flight test of its indigenously designed and developed long-range sub-sonic cruise missile ‘Nirbhay’, which can carry warheads of up to 300 kg from a test range at Chandipur along the Odisha coast. This was the fifth experimental test of the homegrown missile system.

Defence scientists are hopeful of a flawless trial this time. Out of four earlier trials since its maiden launch in 2013, only one was successful. The state-of-the-art sleek cruise missile took off from a specially designed launcher from launch complex-3 of the Integrated Test Range (ITR) at Chandipur, near here, at about 11.20 am, Defence Research and Development Organisation (DRDO) sources said.

All initial critical operations of the trial such as blast of the sophisticated missile were successful as it moved up in its trajectory, a DRDO scientist said soon after the launch of the missile.

The data is being retrieved from tracking systems for a detailed assessment, he said. Powered by a solid rocket motor booster developed by the Advanced Systems Laboratory (ASL), the missile has an operational range of 1,000 km. The ‘Nirbhay’ missile can travel with a turbofan or turbojet engine and is guided by a highly advanced inertial navigation system indigenously developed by the Research Centre Imarat (RCI), the DRDO sources said.

After the missile achieves its designated altitude and velocity, the booster motor is separated and the engine automatically switches on taking further propulsion, said a DRDO scientist associated with the project.

He said “mid-way in its flight, the missile’s wing opens up by the commands generated by the sophisticated on-board computer for stabilising the flight path.”

All along its trajectories from lift-off to splash down, the missile is to be tracked with the help of ground-based radars and IAF aircraft. The health parameters of the vehicle are being monitored by indigenous telemetry stations by a team of professionals from DRDO’s ITR and LRDE (Electronics and Radar Development Establishment).

The two-stage missile is 6 metre long, 0.52 metre wide with a wing span of 2.7 metre. It can carry a warhead of 200 kg to 300 kg at a speed of 0.6 to 0.7 Mach. Its launch weight is about 1,500 kg, the sources said. A senior scientist hoped the missile would deliver the desired result this time. “After a thorough review some changes have been incorporated in the missile system and we hope it will deliver the desired result,” said the senior scientist. The maiden test flight of ‘Nirbhay’ held on March 12, 2013 had to be terminated midway for safety reasons due to malfunction of a component.

However, the second launch on October 17, 2014 was successful, he said. In the next trial conducted on October 16, 2015, the missile deviated from its path after covering 128 km.

The last test flight held on December 21, 2016 had to be aborted after 700 seconds of its test flight as it deviated from its designated path. All these trials were conducted from the same base at Chandipur ITR.

India Successfully Test Fires Home Grown Subsonic Cruise Missile Nirbhay

Defence Minister Nirmala Sitharaman complimented DRDO scientists for this inspired achievement.

Balasore (Odisha): India on Tuesday successfully test-fired its first indigenously designed and developed long range sub-sonic cruise missile 'Nirbhay', which has 1,000 km operational range and a capacity to carry warheads of up to 300 kg.

It was successfully test fired from the Integrated Test Range (ITR) at Chandipur along the Odisha coast. This was the fifth experimental test of the homegrown missile system. Out of the four earlier trials since its maiden launch in 2013, only one was successful.

Describing the trial a success, a defence statement said the Defence Research and Development Organisation (DRDO) achieved yet another feat, the successful test flight of 'Nirbhay' which can be deployed from multiple platforms. Today's 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, the statement said.

Defence Minister Nirmala Sitharaman complimented DRDO scientists for this inspired achievement. She was optimistic that this would take India to the select league of nations possessing this complex technology and sub-sonic cruise missile capability, it said.

Chairman of DRDO and Secretary Department of Defence (R&D) Dr S Christopher, DG (Aero) Dr C P Ramanarayanan, along with other senior DRDO scientists and user representatives from the Army witnessed the launch and congratulated the 'Nirbhay' team for making the DRDO proud.

The state-of-the-art sleek cruise missile took off from a specially designed launcher from the launch complex-3 of the Integrated Test Range (ITR) at Chandipur near Balasore. The missile has the capability to loiter and cruise at 0.7 Mach, at altitude as low as 100 m.

It took-off in a programmed manner and all critical operations like launch phase, booster deployment, engine start, wing deployment and other operational parameters demonstrated through autonomous way point navigation, the statement said.

The guidance, control and navigation system of the missile is configured around the indigenously designed Ring Laser Gyroscope (RLG) and MEMS based Inertial Navigation System (INS) along with GPS system, it said.

The missile cruised for 50 minutes, achieving the range of 647 km. It was tracked with the help of ground-based radars and other parameters were monitored by indigenous telemetry stations developed by the DRDO, the statement said.

According to a DRDO scientist associated with the project, powered by a solid rocket motor booster developed by the Advanced Systems Laboratory (ASL), the 'Nirbhay' missile has an operational range of 1,000 km. It can travel with a turbofan or turbojet engine and is guided by a highly advanced inertial navigation system indigenously developed by the Research Centre Imarat (RCI), he said.

After the missile achieves designated altitude and velocity, the booster motor is separated and the engine automatically switches on for further propulsion, the scientist said.

He said, "Mid-way in its flight, the missile's wing opens up by the commands generated by the sophisticated on-board computer for stabilising the flight path."

The health parameters of the vehicle were monitored at indigenous telemetry stations by a team of professionals from DRDO's ITR and LRDE (Electronics and Radar Development Establishment). The two-stage missile is six metre long, 0.52 metre wide with a wing span of 2.7 metre. It can carry a warhead of 200 kg to 300 kg at a speed of 0.6 to 0.7 Mach. Its launch weight is about 1,500 kg, DRDO sources said.

The maiden test flight of 'Nirbhay', on March 12, 2013, had to be terminated midway for safety reasons as a component malfunctioned. However, the second launch on October 17, 2014 was successful.

In the next trial on October 16, 2015, the missile deviated from its path after covering 128 km. The last test-flight on December 21 last year had to be aborted after 700 seconds of the missile's test flight as it deviated from its designated path. All these trials were conducted from the same base at Chandipur ITR.



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India test fires homegrown cruise missile Nirbhay off Odisha coast

By Hemant Kumar Rout

Bhubaneswar: India on Tuesday test-fired homegrown surface-to-surface subsonic cruise missile Nirbhay from a defence base off Odisha coast. This was the fifth test of the weapon system. The nuclear-capable missile blasted off from a mobile launcher positioned in the launching complex-III of the Integrated Test Range (ITR) at Chandipur-on-sea at about 11.25 am leaving behind a chain of thick smokes.

DRDO scientists and all technical staffs involved in the mission cheered up and celebrated as the missile went up vertically before taking a dive and travelling on the pre-designated trajectory.

The cruise missile, powered by a solid rocket motor booster developed by the Advanced Systems Laboratory (ASL) took off from a mobile launcher specifically designed for Nirbhay by the Vehicles Research and Development Establishment (VRDE), both being DRDO laboratories.

As it achieved designated altitude and velocity, the booster motor got separated, the turbofan engine automatically switched on taking over the further propulsion and the wings opened up by the commands generated by the onboard computer (OBC) stabilising the flight.

Guided by a highly advanced inertial navigation system indigenously developed by Research Centre Imarat (RCI), Nirbhay used turbojet engine for the first time. Earlier the weapon was tested with a turbofan engine.

Throughout its path, the missile was tracked by ground-based radars while its health parameters were monitored by indigenous telemetry stations. An aircraft also tracked the missile all along its flight.

Sources said the initial delay was due to the late arrival of chase aircraft. Once the aircraft was positioned, the launch took place. However, the results of the mission could not be immediately known as data captured during the firing were being analysed.

The 1,000-kilometer class cruise missile with the capability to strike deep into the enemy territory has been designed and developed by the DRDO at its Aeronautical Development Establishment (ADE) based in Bengaluru. The two-stage missile has a length of six meters, 0.52 m in diameter, wingspan 2.7 m and a launch weight of about 1,500 kgs.

Since it is a low-altitude missile system, it possesses the capability to duck enemy radars and reach targets with high accuracy. DRDO Chief S Christopher was present at the test range during the mission.

DRDO successfully test-fires India's first indigenous sub-sonic cruise missile Nirbhay

DRDO has another achievement in their bag after they successfully test-fired Nirbhay which is India's first indigenously designed and developed long range sub-sonic cruise missile.

By Manjeet Singh Negi

Defence Research and Development Organisation (DRDO) achieved yet another feat today with the successful test flight of Nirbhay - India's first indigenously designed and developed long range sub-sonic cruise missile which can be deployed from multiple platforms.

It was successfully test-fired from the Integrated Test Range (ITR), Chandipur, Odisha. The missile has the capability to cruise at the speed of 0.7 Mach and loiter at altitudes as low as 100 m.

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.

The missile took-off in the programmed manner and all critical operations viz launch phase, booster deployment, engine start, wing deployment and other operational parameters demonstrated through autonomous way point navigation.

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The missile majestically cruised for a total time duration of 50 minutes, achieving the range of 647 km. The missile was tracked with the help of ground-based radars and other parameters were monitored by indigenous telemetry stations developed by DRDO.

Defence Minister Nirmala Sitharaman, hailed the success of DRDO Scientists and complimented them for this inspired achievement.

She was optimistic that this successful trial would take India to the select League of Nations for possessing this complex technology and sub-sonic cruise missile capability.

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India test-fires DRDO's nuclear-capable Nirbhay missile from Chandipur launchpad in Odisha

Three of the previous four trials of the missile were unsuccessful.

India on Tuesday test-fired the homegrown, long-range, subsonic cruise missile – Nirbhay – from Chandipur near Balasore in Odisha, PTI reported. This was the fifth trial of the missile since 2013, and three of the previous four trials were unsuccessful. The missile took off successfully from a specially designed

launcher at about 11.20 am, unidentified officials of the Defence Research and Development Organisation were quoted as saying by PTI. The initial operations of the trial after the take-off were successful, a DRDO scientist said.

The previous test of Nirbhay, in December last year, had failed, as the missile began to deviate towards one side minutes after it took off from the launchpad at the Integrated Test Range in Chandipur. DRDO officials had called it an “utter failure”.

Nirbhay’s debut test in March 2013 had failed within 20 minutes of its launch. While the second test in October 2014 was a big success, the third one in October 2015 was also a failure. The long-range, subsonic cruise missile is capable of carrying conventional and nuclear warheads. Designed and developed by the DRDO, it has a range of more than 1,000 km and weighs about 1,500 kg. It can carry a warhead weighing 300 kg.



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DRDO’s DIHAR Main Attraction at Top Global Human Physiology Conference

Catering to the well-being of Indian soldiers deployed in high-altitude areas with extreme weather conditions, a research station has been set up by India’s premier research organisation – the Defence Research and Development Organisation (DRDO) – last year at an altitude of 17,660 feet at Chang La in Jammu and Kashmir.

This DRDO research station, which is the world’s highest terrestrial research and development (R&D) centre, was established by the Defence Institute of High Altitude Research (DIHAR), Leh, a constituent establishment of DRDO.

Leading experts turned up when DIHAR was talked about at a recent international conference on human physiology – “FIPSPHYSIICON 2017” that was organised by Defence Institute of Physiology and Allied Science (DIPAS) of DRDO and was inaugurated at Vallabh bhai Patel Chest Institute, University of Delhi. DIPAS is the only physiology research centre in the country.

Speaking at the event, chairman DRDO and Department of Defence Research and Development secretary Dr S Christopher urged the entire scientific community to utilise the facilities of this research station.

Dr Christopher also highlighted the importance of Yoga and other approaches to improve human capabilities in difficult environmental conditions and terrains.

The centre is sitting in the cold desert of Ladakh, where the temperature goes as low as -40 degrees Celsius during extreme winter months, coupled with reduced atmospheric pressure and humidity besides high wind velocity and ultra violet radiation.

The station can accommodate up to 10 scientists along with a support staff of 10, and has fully-equipped state-of-the-art laboratories. Solar power is the primary source of energy with back-up support by diesel generators.

It is concentrating on R&D work in frontal areas of food and agriculture and bio-medical sciences for the well-being of soldiers deployed in high-altitude cold desert.

Activities of this centre include human physiological work, long-term conservation of plant genetic resources, designing, testing, validation and demonstration of mobile and portable greenhouses, soil-less

micro-farming technologies for fresh food in remote landlocked posts, besides conservation and propagation of endangered extreme altitude medicinal plants and others.

Besides undertaking life sciences activities it may provide unique opportunity to other labs and establishments of DRDO for testing and evaluation of electronics and communication devices, testing of materials for high altitude applications, batteries, fuel cells, unmanned aerial vehicle's micro engines among others.

On his part, DIPAS Director and convener of the conference Dr Bhuvnesh Kumar deliberated the importance of the theme, "Integrating Physiological and Biomedical Science Approaches to Improve Performance, Health and Safety" and various topics of the conference in speeches, keynote addresses, plenary sessions – 16 sessions, 118 lectures and 140 posters – by the 300 delegates from India, the US, the UK, Kyrgyz Republic and Malaysia.

Physiologists Society of India (PSI) president Professor Amar K Chandra highlighted the necessity of the formation of the Federation of Indian Physiological Societies (FIPS) by combining PSI, Society for Animal Physiologists of India, Association of Physiologists and Pharmacologists of India, Indian Society for Comparative Animal Physiology and its role in facilitating the scientific interaction between physiologists in India and their international counterparts.

Distinguished scientist and DRDO life sciences director general and FIPS president Dr Shashi Bala Singh in her address focused on optimisation of physical performance with interdisciplinary approaches. She also cited the unique mechanism of human body system by emphasising on different important aspects like sophisticated neural processing and energy requirements of human brain. She highlighted the collaborative approaches not only within the physiological sciences but also in a broader spectrum involving physical sciences and engineering.



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IIT Goa students may soon intern with CSIR, DRDO

Panaji: The Indian Institute of Technology (IIT), Goa, has started the process of initiating interactions of its students with national establishments like the Council of Scientific & Industrial Research (CSIR) and Defense Research and Development Organisation (DRDO).

The institute is also readying itself to host interns from other institutes under IIT Goa faculty members.

"It is a step towards addressing the often heard criticism that, over the years, students going through the IIT system have not played a significant role in advancing the country's science and technology sector. The idea behind this initiative is to make students aware of the developments in science and technology going on in the country early on in their student days and connect them with the different establishments such as BARC, ISRO, IGCAR, DRDO, CSIR Labs, etc," IIT Goa director Barada Kant Mishra told TOI.

IIT Goa's internship cell has been recently activated with this objective in mind.

A portal is also being readied for external students to seek internship with IIT Goa faculty members. "Interested students will have to upload their CV and statement of purpose and indicate their area of interest and who they would like to intern with. These applications will be organized systematically and given to the faculty members concerned who can select the interns," said Mishra.