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## **Exclusive: India's home-grown cruise missile Nirbhay likely to be tested today from Odisha**

Bhubaneswar: The Defence Research and Development Organisation (DRDO) is all set to go for a fresh trial of the home-grown cruise missile Nirbhay from a defence base off Odisha coast on Tuesday.

The indigenously developed surface-to-surface sub-sonic missile, which is compared with America's Tomahawk missile, is likely to be test-fired from the launching complex-III of the Integrated Test Range (ITR) at Chandipur-on-sea.

A few scientists involved with the project have, however, expressed concern as the missile is being pushed for trials despite shortcomings in it.

"The snags in the flight control and navigation software have not been sorted out. Strangely, the authorities are pinning illogical hopes on its success. Our fingers are crossed," said a source. DRDO authorities could not be contacted for comment.

Prior to the last year's trial, The New Indian Express had carried a story highlighting the shortcomings in the missile system. The missile performed exactly as it was apprehended and the mission was aborted after 700 seconds.

The fuel tank used in the missile system had not cleared the Environmental Stress Screening (ESS) tests thus making it vulnerable during flight. Safety of the system, quality of subsystems and reliability of the build components were also compromised during the trial.

Developed by Advanced Systems Laboratory (ASL) of DRDO, the missile is yet to perform as expected. It has undergone three tests in the last three years.

While during the first test in 2013 the guidance component, known as gyro, in the navigation system of the missile had malfunctioned for which the missile veered off the path, during the second test in 2014 it could not manoeuvre at the desired low height.

The cruise missile having a strike range of around 750 km to 1,000 km is expected to supplement the Indo-Russian joint venture supersonic cruise missile BrahMos, which can carry warheads up to 290 km.

The two-stage Nirbhay missile has a length of six meters, the diameter of 0.52 m, wing span 2.7 m and a launch weight of about 1,500 kgs. Bengaluru-based Aeronautical Development Establishment (ADE) has designed the missile.



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### **Milestone in the Making**

*If Agni V passes final test, India will soar high*

The stage has been set for the final testing of Agni V missile, and it will undoubtedly be a milestone for missile scientists of the country. With the completion of the final test, either by the end of this December or in January 2017, India will join the super-exclusive club of nations with high-range inter-continental ballistic missiles (ICBM). Those that currently possess such missiles — with a range of over 5,000 kilometres to 5,500 kilometres — include America, Russia, the UK and China. The ICBM is reported to be a game-changer in the

nuclear kitty of India. Sources say that unlike the other missiles, Agni V and its earlier version Agni IV, are meant as deterrence against Chinese designs. Other short-range missiles, like Dhanush, Prithvi, Agni I, Agni II and Agni III, had been seen as geared towards Pakistan.

As per reports available, once the final test is carried out, it will be followed by a series of user trials by the tri-Services Strategic Forces Command, which was constituted in 2003 to manage the nuclear arsenal. Thereafter, these sophisticated missiles would be formally inducted for use by the Armed Forces. The Agni missile has come a long way, starting from the induction of its first version in the year 1989. It is a solid-fuelled ICBM, developed by the Defence Research Development Organisation, under the Integrated Guided Missile Development Programme. However, from its initial stage, covering a fire-power of 700 kilometres, it has been upgraded to 2,000km, then 3,000km and at the fourth stage, it reached 3,500km. And now the ICBM has come with a super-range of 5,500km and more. This shows how research and development of the missile has gradually succeeded in removing many technical snags to come to global standards. But, when we compare the capabilities of the Agni V version with such other missiles of the biggies in this league, our striking range still remains lower than the rest. According to sources, in the super-exclusive club of ICBMs, Russia's 'R-36' has the maximum range of 16,000km, China's 'DF-41'-15,000km, the US's 'Minuteman'-13,000km, and the UK's 'Trident'-12,000 km. In that case, India needs to go a long way and, experts say that the country has the will, resources and the vision to achieve it.

The missiles are prized assets of our forces. Though globally, our missiles have a low striking capability, yet we are way ahead of Pakistan's most advanced missiles like 'Shaeen' and 'Ghauri' series, which were suspected to be developed with the covert support of technologies from China and North Korea. The already inducted Shaeen-II and Ghauri-II have striking ranges of 2,500km and 1,800km respectively. Though there is little possibility of a nuclear conflagration in Asia — and India certainly doesn't want it — there is no scope for complacency. Given the cross-border realities and those in the regional in general, India must relentlessly pursue its missile technology programme.