

# Nirbhay Missile

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## Manifest Pedagogy

An aspirant has to make a chart of ballistic missiles and cruise missiles with their ranges. Also, one has to underline the nuclear capability of the missiles. Questions from missiles has come in Prelims regularly.

## In news

DRDO successfully test fired the underdevelopment long-range subsonic cruise missile Nirbhay

## Placing it in the syllabus

Awareness in the field of space, indigenization of technology and developing new technology.

## Static dimension

About the Nirbhay Missile

## Current dimension

Recent test and its key highlights

## Content

### About Nirbhay missile

- It was developed by the Aeronautical Development Establishment (ADE), Bengaluru in. ADE is a lab under DRDO.
- The first test was conducted in 2013.
- It is India's first Long Range Subsonic Cruise Missile (nuclear capable) to be designed and developed

indigenously.

- It has mixed missile and aeronautical technologies that enable it to take off as a missile vertically and to cruise horizontally like an aircraft.
- It is a two-stage missile. In its first stage, it tilts horizontally. In the second stage, it will cruise horizontally like an aircraft with a turbo-jet engine at a subsonic speed of 0.7 Mach.
- The missile **can be launched from multiple platforms** and is capable of **carrying conventional and nuclear warheads**.
- It is a terrain-hugging missile that continues to encircle its target area for several minutes and then hits the bull's eye' on an opportune time. It's **hard to detect by the radars** of the enemy.
- Nirbhay has a **range of 800-1000 km** and can fly very low to the ground to avoid detection by enemy radar called **terrain hugging capability**.
- The missile is **guided by an inertial navigation system** developed by Research Center Imarat (RCI) and a **radio altimeter** for the height determination.
- The missile has a guidance, control and navigation system based on a **Ring Laser Gyroscope (RLG)**.
- It also has the **GPS system, an inertial navigation system (INS)** based on MEMS.
- The missile is similar in appearance to the U.S. Tomahawk and the Russian Club SS-N-27 with its cylindrical fuselage.

### **Key highlights the recent test**

- It is the **sixth development flight trial** with an **objective to prove the repeatability of boost phase, cruise phase using waypoint navigation at very low altitudes**.
- It was test fired from the Integrated Test Range Chandipur.

- Nirbhay is capable of cruising at 0.7 Mach at an altitude as low as 100m
- After introducing, Nirbhay, similar to U.S. Tomahawk cruise missile, **will give Indian armed forces a long-range standoff capability to strike targets on land.**
- According to DRD, the **entire flight was fully tracked by a chain of electro-optical tracking systems**, radars and ground telemetry systems deployed all along the sea coast.
- The last successful trial of 'Nirbhay' cruise missile was conducted in November 2017.