



Enhanced Version of Pinaka Mk-1 Missile

Why in News

Recently, an enhanced version of the Pinaka Mark (Mk)-1 missile was **successfully flight-tested** from the Integrated Test Range in Chandipur, off the coast of Odisha.



Key Points

- **Background:** The enhanced version of the Pinaka Mk-1 system was taken up to achieve longer-range performance compared to the earlier design with lesser length.
- **Development:** The design and development has been **carried out by Pune-based DRDO (Defence Research and Development Organisation) laboratories** - Armament Research and Development Establishment (ARDE) and High Energy Materials Research Laboratory (HEMRL).
- **Significance:**
 - The Enhanced Pinaka Mk-1 will eventually **replace the Pinaka Mk-1 missiles**, which are currently used by regiments of the Indian Army along India's frontiers with China and Pakistan.
 - While the **Mark-1** has a range of **38 km**, the **enhanced version** of Mark-1 has a **range of 45 km** and some key additional features.
 - The latest test is in **continuation of a number of missile trials conducted by the DRDO in the last two months.**
 - The test comes **months after the Ministry of Defence (MoD) announced** that its acquisition wing signed contracts with three Indian private companies for supply of six regiments of Pinaka Rocket System, to be deployed along borders with Pakistan and China.

- The MoD had said that the **induction would be completed by 2024**. These six Pinaka Regiments would comprise 114 Launchers with Automated Gun Aiming and Positioning System (AGAPS), 45 command posts and 330 vehicles.

Pinaka Missile

- **Development:** The development of the Pinaka multi-barrel rocket systems was **started by the DRDO in the late 1980s**, as an **alternative to the Multi Barrel Rocket Launcher systems of Russian make** called the 'Grad', which are still used by some regiments.
 - After successful tests of Pinaka Mark-1 in the late 1990, it was **first used successfully** in the battlefield during the [1999 Kargil War](#). Subsequently, multiple regiments of the system came up over the 2000s.
- **Features:**
 - The Pinaka, a **multi-barrel rocket-launcher (MBRL) system** named after Shiva's bow, can fire a salvo of 12 rockets over a period of 44 seconds.
 - One battery of Pinaka system **consists of six launch vehicles**, accompanied by loader systems, radar and links with network-based systems and a command post. One battery **can neutralise an area of 1 km by 1 km**.
 - As a key tactic of long-range artillery battle, the launchers have to 'shoot and scoot' to ensure they themselves do not become the targets, especially being detectable due to its back blast.
- **Multiple Variants:** DRDO has also developed and successfully tested the [Mk-II](#) and **guided variants of the Pinaka**, which has a range of around 60 km, while the Guided Pinaka system has a range of 75 km and has integrated navigation, control and guidance system to improve the end accuracy and enhance the range.
 - The navigation system of Guided Pinaka missile is also **aided by the [Indian Regional Navigation Satellite System \(IRNSS\)](#)**.

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