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## Enhanced Version of Pinaka Mk-1 Missile

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### Why in News

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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

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- **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).**

**Source: PIB**