PRALAY: SCIENCE & TECHNOLOGY

NEWS: DRDO successfully tests quasi-ballistic tactical missile Pralay as part of user evaluation trials

WHAT'S IN THE NEWS?

DRDO's **'Pralay' short-range ballistic missile** successfully completed user evaluation trials in 2024, demonstrating its operational readiness.
It is an **indigenously developed, conventional-only missile** with quasi-ballistic trajectory designed to evade missile defences and strike high-value enemy targets.
Pralay Missile – DRDO's Tactical Game-Changer
Recent Development

- The **Defence Research and Development Organisation (DRDO)** successfully conducted **user evaluation trials** of the **Pralay missile**.
- **Test location:**
    - Conducted from **Dr APJ Abdul Kalam Island**, Odisha.
- Purpose of tests:
    - To validate the missile's **minimum and maximum range** under operational settings.
    - Trials confirmed readiness for **induction into armed forces**.

Development and Origin

- **Approval Year:**
    - Sanctioned in **2015** by the Indian Government.
- **Development Base:**
    - Draws on technologies from:
        - **K-series submarine-launched ballistic missiles**
        - **Ballistic Missile Defence (BMD) programme**
- **Design and R&D Responsibility:**
    - Developed by **Research Centre Imarat (RCI)**, Hyderabad (a key DRDO lab).
    - Supported by other DRDO labs and institutions.
- **Key Industry Collaborators:**
    - **Bharat Dynamics Limited (BDL)** – for missile production.
    - **Bharat Electronics Limited (BEL)** – for onboard systems and electronics.

Technical Specifications & Capabilities

- **Type:**

- **Indigenously developed, solid-fuel, surface-to-surface** short-range ballistic missile (SRBM).

- **Range:**
  - **150 km to 500 km** (can strike both tactical and operational depth targets).
- **Payload Capacity:**
  - Can carry **500 kg to 1,000 kg** of high-explosive conventional warheads.
- **Warhead Types:**
  - Flexible design allows integration of **multiple conventional warhead types**.
- **Accuracy & Guidance:**
  - Equipped with **advanced navigation and inertial guidance systems**.
  - Uses **indigenous GPS/GLONASS/IRNSS** integration.

Strategic Design & Trajectory Features

- **Quasi-ballistic trajectory:**
  - Unlike traditional ballistic missiles, Pralay:
    - Flies at **depressed (lower) altitudes**.
    - Performs **mid-course manoeuvres** to evade interception.
- **Terminal Manoeuvrability:**
  - Capable of **high-G terminal phase movements**, making interception by Ballistic Missile Defence systems difficult.
- **Stealth in Flight Path:**
  - Flatter and faster path reduces radar detection time and **limits enemy response time**.

Targeting Objectives

- Specifically designed to **target high-value enemy assets**, such as:
  - **Radar installations**
  - **Communication centres**
  - **Command and control hubs**
  - **Forward airfields and logistics bases**

Strategic Significance

- **Induction Role:**
  - Forms part of the upcoming **Integrated Rocket Force**, under the **Strategic Forces Command (SFC)**.

- **Doctrine Compatibility:**
    - **Non-nuclear weapon** system → **not impacted by India's No First Use (NFU)** nuclear policy.
- **Deterrent Role:**
    - Enhances India's **conventional deterrence** against neighbouring threats without escalating to nuclear threshold.

Global Comparisons

Comparable International Systems:

Country	Comparable Missile
China	**Dong Feng-12 (DF-12)**
Russia	**Iskander (9K720)**
USA	**Precision Strike Missile (PrSM)**
South Korea	**Hyunmoo-2**

Difference from Traditional Ballistic Missiles

Feature	Traditional Ballistic Missile	Pralay Missile
Trajectory	High, parabolic, gravity-dominated	Depressed, low-altitude, manoeuvrable
Radar Detection	Easier to track	Harder due to low radar cross-section
Interception Time	Longer reaction window	Reduced interception opportunity
Evasion Capabilities	Limited	Enhanced via mid-air manoeuvres

Source: https://timesofindia.indiatimes.com/india/drdo-successfully-tests-indigenous-pralay-missile-range-capability-validated-why-it-matters/articleshow/122975045.cms