



Agni-P Missile

For Prelims: Agni-P Missile, BrahMos supersonic cruise missile (air version), Vertical Launch Short Range Surface to Air Missile (VL-SRSAM), Nag, Akash, Defence Research and Development Organisation (DRDO), IGMDP.

For Mains: Missile Technology of India in comparison of other countries and related examples, Evolution of missile technology in India.

Why in News

Recently, the [Defence Research and Development Organisation \(DRDO\)](#) successfully test-fired the new generation nuclear-capable ballistic missile '**Agni Prime**'.

- This is the second test of the missile, the [first test took place in June 2021](#).
- The Agni-P missile aims to **further strengthen India's credible deterrence capabilities**.

Key Points

▪ About:

- Agni-P is a **two-stage canisterised solid propellant missile** with dual redundant navigation and guidance system.
- It has been termed as a **new generation advanced variant of Agni class of missiles** with improved parameters, including manoeuvring and accuracy.
 - **Canisterisation of missiles reduces the time required** to launch the missile while improving the storage and ease of handling.
- The surface-to-surface ballistic missile has a **range of 1,000 to 2,000 km**.

▪ Agni Class of Missiles:

- Agni class of missiles are the **mainstay of India's nuclear launch capability**, which also includes the [Prithvi short-range ballistic missiles](#), submarine launched ballistic missiles and fighter aircraft.
 - **Agni-V, an Inter-Continental Ballistic Missile (ICBM)** with a range of over 5,000 km, had been tested several times and validated for induction.
- The **Agni-P and Agni-5 ballistic missiles** trace their origins back to the [Integrated Guided Missile Development Programme \(IGMDP\)](#), which was spearheaded by former DRDO chief and ex-Indian president Dr APJ Abdul Kalam in the early 1980s.

▪ Other Ranges of Agni Missiles:

- **Agni I:** Range of 700-800 km.
- **Agni II:** Range more than 2000 km.
- **Agni III:** Range of more than 2,500 Km

- **Agni IV:** Range is more than 3,500 km and can fire from a road mobile launcher.
- **Agni-V:** The **longest of the Agni series**, an Inter-Continental Ballistic Missile (ICBM) with a range of over 5,000 km.
- **Recently Tested Missile:**
 - [BrahMos supersonic cruise missile \(air version\)](#)
 - [Vertical Launch Short Range Surface to Air Missile \(VL-SRSAM\)](#)

IGMDP (Integrated Guided Missile Development Program)

- It was **conceived by Dr. A.P.J. Abdul Kalam** to enable India attain self-sufficiency in the field of missile technology. It was approved by the **Government of India in 1983 and completed in March 2012.**
- The 5 missiles (P-A-T-N-A) developed under this program are:
 - **Prithvi:** Short range surface to surface ballistic missile.
 - **Agni:** Ballistic missiles with different ranges, i.e. Agni (1,2,3,4,5)
 - **Trishul:** Short range low level surface to air missile.
 - **Nag:** 3rd generation anti-tank missile.
 - **Akash:** Medium range surface to air missile.

History of Missile Technology in India

▪ About:

- Before Independence, several kingdoms in India were using **rockets as part of their warfare technologies.**
 - [Mysore ruler Hyder Ali](#) started inducting iron-cased rockets in his army in the mid-18th century.
- At the time of Independence, **India did not have any indigenous missile capabilities.**
- The government created the **Special Weapon Development Team in 1958.**
 - This was later expanded and called the **Defence Research and Development Laboratory (DRDL)**, which moved from Delhi to Hyderabad by 1962.
- In 1972, Project Devil, for the development of a **medium range Surface-to-Surface Missile** was initiated.
- By 1982, **DRDL was working on several missile technologies** under the Integrated Guided Missiles Development Programme (IGMDP).

▪ Kind of Missiles India Have:

- **Surface-Launched Systems:**
 - **Anti-Tank Guided Missile:**
 - [Nag](#)
 - **Surface-to-Air Missile:**
 - [Akash](#)
 - **Medium-Range Sam:**
 - Production of MRSAM systems for the Navy is complete, and it is placing its order
 - **Short-Range Sam:**
 - For the Navy, the first flight tests have been successfully conducted.

- **Several Air-Launched Systems:**

- **Air-To-Air:**

- [Astra](#)

- **Air-to-Ground:**

- [Rudram](#)
- [BrahMos](#)

- **Most Important India's Missile:**

- **Agni (range around 5,000):**

- It is India's only contender for an Inter-Continental Ballistic Missile (ICBM), which is available with only a few countries.

- **Prithvi:**

- It is a short-range surface-to-surface missile with a 350 km range and has strategic uses.
 - India also tested a anti-satellite system in April 2019.
 - A modified anti-ballistic missile named **Prithvi Defence Vehicle Mk 2** was used to hit a low-orbit satellite.
 - It put India only behind the US, Russia and China in this capability.

- **Hypersonic Technology:**

- India is just behind the US, Russia and China.
- DRDO successfully tested a **Hypersonic Technology Demonstrated Vehicle (HSTDV)** in September 2020, and demonstrated its hypersonic air-breathing scramjet technology.

- **Missile technology of India in Comparison to (Pakistan and China):**

- **India:**

- Under the Integrated Guided Missile Development Programme (IGMP) first came Prithvi, then Agni.
- BrahMos, at 2.5-3 times the speed of sound, was among the fastest in the world when developed.
- India is working on **Agni VI and Agni VII**, which should have a much longer range.

- **China and Pakistan:**

- While China is ahead of India, a "lot of things about China are psychological".
- China has given Pakistan the technology, "but getting a technology and really using it, and thereafter evolving and adopting a policy is totally different".
- India does not call BrahMos nuclear, it can be used.
- India's only nuclear missiles are **Prithvi and Agni**, but beyond those, tactical nuclear weapons can be fired from some [Indian Air Force](#) fighter jets or from Army guns, which have a low range, around 50 km.

[Source: TH](#)