Anti Tank Missiles [UPSC Science & Tech]

Indian Army has successfully conducted summer user trials of NAG, 3rd Generation Anti-Tank Guided Missile (ATGM). This topic is related to the Defence and Security topics of General Studies paper 3.

Defence is an important and dynamic segment in the UPSC Syllabus. Since DRDO plays a major part in the country's defence mechanism, it is a very significant topic for IAS aspirants. The Commission has asked several questions related to missile launches, its types, etc. To tackle such factual questions in the UPSC Prelims, it is essential to know several facts and figures related to the topic.

What are Anti Tank Missiles?

Anti-Tank missiles (ATMs) are guided missiles designed primarily to destroy or damage heavily armoured vehicles and tanks. They're guided missiles that use various guiding algorithms like wire-guided missiles, laser guide guided missiles, etc. and having various parameters which are discussed in the table below:

Parameters of Anti-Tank Missiles	
Size	ATMs come in various sizes: • Small ATMs that can be carried by a single person and shoulder-launched. • Medium-sized ones which need a team of soldiers to carry and launch. • Large ATMs can be mounted on Aircraft or Main Battle Tanks and can be launched from large distances.
Technology	Initially, ATMs would need to be launched close to the targeted armoured vehicle due to their lack of penetration firepower. With the latest technology, they can be fired from a significant distance and still do damage to light and medium armoured vehicles.
Warhead	Different ATMs use different warheads depending upon the size and armour of the target. One of those warheads is known as the High Explosive Anti Tank (HEAT) Warhead. HEAT warhead has a metal spike that goes through the metal armour.
Guidance System	**1st Generation:** Guided by manual commands and the missile is steered to the target.
	2nd Generation: Semi-automatic commanded missiles. The operator would need to keep the sight fixed on the target until impact.
	3rd Generation: This type of guided missile relies on an electro-optical imager (IIR) seeker, a laser or a W-band radar seeker in the nose of the missile. These are 'fire-and-forget' missiles where the operator can retreat right after firing as there is no more guidance required.

Anti-Tank Missiles in India

The Defence Research and Development Organisation (DRDO) developed the DRDO Anti-Tank Missile (DRDO ATM) which was a 1st Generation missile using Wire Guided guidance technology. Anti-tank missiles in India are discussed in the table below:

Name	Developer	Details

DRDO ATM	Defence Research and Development Organisation (DRDO)	1st Gen Speed: 300 ft/s (91 m/s) Range: upto 1.6 km Warhead: 106mm HEAT Warhead
AMOGHA	Bharat Dynamics Ltd (BDL)	2nd Gen Range: upto 2.8 km Various versions of AMOGHA are developed by BDL: 1. AMOGHA 2- Land Version 2. AMOGHA 3- Improved version; 3rd Gen
NAG	Bharat Dynamics Ltd (BDL); Uses the IGMDP developed by DRDO.	3rd Gen Fire & Forget Tech Range: 500m - 20km Various versions of NAG: Land version Air Version HeLiNa- Helicopter Launched NAG NAMICA - NAG missile Carrier
JASMINE	VEM Technologies Pvt Ltd	Still in development 3rd Gen
Spike ATGMs	Rafael Advanced Defence Systems of Israel	