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DRDO reveals 350km XRSAM missile details

By U Sudhakar Reddy

Hyderabad: The Defence Research and Development Organisation (DRDO) for the first time on Friday revealed the details of the XRSAM-IAF (eXtra Long Range Surface to Air Missile) to be developed by the Hyderabad-based Defence Research and Development Laboratories (DRDL).

The DRDO's website stated that XRSAM-IAF is being developed for the Indian Air Force (IAF) as part of Missiles and Strategic Systems (MSS), and added that it will play a vital role in the missile defence system of the country. DRDO said that the XRSAM air missile weapon system will also be able to engage stealth fighters and ballistic missile in the terminal stage.

"The IAF has projected a requirement to induct Long Range Surface to Air Missile System to neutralise Aircraft at Extended Ranges of 250km, Sea Skimming Anti-Ship Missiles, AWACS at ranges of 350km, stealth fighters and ballistic missile in the terminal stage. The entire system shall be designed for transportability. IAF has accepted the configuration," said DRDO on its website.

The XRSAM air missile weapon will have a range of 350km and will also come in canister-based, transportable truck-based launcher system.

The Defence Research and Development Organisation will begin trials in the next three years.

"We need something on these lines, but the missile is only part of the capability. For the ranges mentioned (250-350 km) it is unlikely that a missile will be able to carry its own sensors. A missile is not physically big enough to house the power required for such long-range. The missile will have to integrate with a ground-based long-range detection and tracking system. It may have the autonomous capability for 'terminal guidance' (last 30-40 km or so)," defence historian KS Nair told TOI.

https://timesofindia.indiatimes.com/city/hyderabad/drdo-reveals-350km-xrsam-missile-details/articleshow/73001348.cms

THE NATIONAL INTEREST

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India's Arjun tank took decades to make. Why?

What was the issue?

By Kyle Mizokami

Key point: Russian state media has reported that India is interested in the Armata as the basis of a new, localized tank

In the mid-1970s, India began development on a totally new, advanced main battle tank that would satisfy the needs of the country's Armored Corps. An impressive combination of firepower, armor protection and mobility, the tank was to be India's first indigenously produced tank—and one of the best in the world. The service date for the tank, known as Arjun, was confidently set for 1985.

Instead, the Arjun suffered a tortuously long development period spanning two centuries. The final result, introduced into the army twenty-six years later than originally planned, is a mess of a tank that not even the Indian Army wants.

The Indian Army's Armored Corps has been in existence for seventy-four years, tracing its roots to the Second World War, and has fought in every one of India's wars with neighbor and rival Pakistan. The Corps has across has sixty-three armored regiments (the equivalent of battalions), spread across eight armored and mechanized divisions and another seven armored and mechanized brigades.

The decision to produce an indigenous Indian tank was made in 1972, shortly after the Indo-Pakistani War of 1971. In 1974, the state-run Defence Research and Development Organisation (DRDO) was tasked with developing the tank. It was to be a forty-ton vehicle, armed with a 105-millimeter gun. It would be small enough to be strategically mobile, capable of being shuttled on internal lines (roads and railroads) to vital sectors along the long border with Pakistan.

DRDO decided to make the tank, called Arjun, a mostly Indian design. The Combat Vehicles Research and Development Establishment, part of DRDO, was to design the hull, armor, turret, gun and running gear. The main gun and engine would be imported. Unfortunately, India's defense-industrial base was nowhere near capable of creating such a vehicle. As if that weren't enough of an obstacle, India's world-famous bureaucracy and red-tape machine was another enemy to progress.

Today, the Arjun Mk 1 is a sixty-two-ton tank, complete with a 120-millimeter gun, advanced composite armor, a 1,400-horsepower turbocharged engine, and advanced fire control and thermal sights. Although the tank's specifications are impressive, the actual product leaves a lot to be desired.

By 2009, thirty-five years after it was originally conceived, Arjun was "ready" for production. Despite shortcomings revealed in testing, the Indian Army was forced to buy 124 Arjuns—enough to equip just two armored regiments—to keep state tank production facilities open. By mid-2015, two years after the purchase was complete, nearly 75 percent of the Arjun force was inoperable due to technical problems.

Arjun's armored protection evolved significantly over thirty-five years. The tank is fitted with Kanchan armor, a locally designed composite blend that is allegedly similar to British Chobham armor. Kanchan is rumored to be capable of shrugging off point-blank shots from the 125-millimeter

gun of Indian T-72 tanks. Arjun is so well protected that its weight ballooned from the original forty-ton specification to sixty-two tons.

This increase in protection came at a cost—decreased tactical and operational mobility. As originally specified, a forty-ton tank with a 1,400-horsepower engine would have an impressive 35-to-1 horsepower-to-weight ratio. Unfortunately, Arjun's weight ballooned from forty to sixty-two tons, with no corresponding increase in engine power. DRDO finally settled on a German-made MTU 1,400-horsepower water-cooled diesel engine, complemented with an Indian supercharger. Arjun's horsepower-to-weight ratio sank to a mediocre 22.5 to 1. The vehicle's weight also means it cannot be used in Punjab and the northern deserts of India in India's "Cold Start" offensive strategy against Pakistan.

The Arjun's development period was so long that major design decisions became completely obsolete. The 105-millimeter gun, perfectly adequate in the 1970s when stacked up against the NATO-standard 105-millimeter L7 gun (the M68 in U.S. Army service), and the 115-millimeter gun of the Soviet T-62 tank, were obsolete by the early 1990s.

In the end, the Arjun ended up with a 120-millimeter rifled barrel gun, capable of firing High Explosive, Armor-Piercing Discarding Sabot rounds, High Explosive Anti-Tank rounds and, perhaps not unusually for a former British colony, High Explosive, Squash Head rounds. DRDO conducted test firings of the Israeli-made LAHAT long-range antitank missile, which offered a high probability of kill against armored vehicles out to six thousand meters, but the round was dropped in 2014. DRDO claims it will develop an indigenous equivalent.

How did Arjun, which took decades to develop, end up being such a disappointment? The tank took so long to develop that technologies not even invented when Arjun was first proposed had to be added to the tank. GPS navigation, laser warning receivers, non-explosive-reactive armor and other innovations were merely research papers in 1974, but by the early 2000s were must-have inventions that added to the tank's complexity, weight and cost.

The inability of DRDO to put its foot down and admit that it could not build the tank on time and on schedule doomed the tank. India's state of the military art was such that a new tank would out of necessity face a prolonged development time. The more the tank project dragged on, the more the tank needed to be redesigned to incorporate new technologies. The tank was trapped for decades in a development death spiral, and the end product is correspondingly mediocre.

DRDO is busy at work designing Arjun Mk II, which will allegedly contain many improvements over the original Mk I. The Indian Army for its part is adamant it wants no part of the Mk II until prototypes perform satisfactorily, and would much rather buy an overseas tank. The army, for now, prefers the Russian T-90 tank and may express interest in the brand new T-14 Armata tank. Russian state media has reported that India is interested in the Armata as the basis of a new, localized tank. Whether that's true remains to be seen.

https://nationalinterest.org/blog/buzz/indias-arjun-tank-took-decades-make-why-108606

Sat, 28 Dec 2019

Dreams hang fire: India's ambitious fifth-gen fighter aircraft faces delay over funding shortage

By Rishikesh Kumar

New Delhi: Earlier this year, the head of the IAF announced the abandonment of a joint project with Russia to produce India' own fifth generation fighter aircraft. India is spending less on research; a paltry 1/12 on R&D what was spent by its arch-rival China this year.

The Indian Defence Ministry has admitted before a parliamentary panel that a shortage of funding has been severely harming country's crucial military projects, including Advanced Medium Combat Aircraft (AMCA).

The ministry added that the DRDO – the state-funded agency responsible for military research and development – needs additional funds to take up new projects in futuristic areas, and high-cost projects.

"The quantum of funds for projects is INR 35,000 million ($491 million approx.) (excluding strategic schemes), which would be consumed to meet the already committed project expenses," the defence ministry admitted.

The projects that will be impacted due to a shortage of funds include Advanced Medium Combat Aircraft (AMCA), Airborne Warning & Control System, the Ghatak combat drone, and the next-gen main battle tank.

Even the availability of funds for the research on military projects continues to decline, as pay and allowances and other non-salary revenue expenditures essentially keeps growing every year. "The amount left for R&D activities is far less," the ministry stated, expressing concern.

Goals for 2025... Pursued at a Snail's Pace

Indian Air Force (IAF) Chief Air Marshal Rakesh Bhadauria has been throwing his weight behind India's domestically produced Advanced Medium Combat Aircraft (AMCA) project, which began in 2009.

In 2018, the government sanctioned $60 million for a detailed design phase, and DRDO aimed to fly the first prototype of the Advanced Medium Combat Aircraft (AMCA) before 2025.

"As for AMCA, it certainly seems to be back [on the agenda], but AMCA will take much longer to develop than is being currently projected," said Amit Cowshish, former financial advisor to the Indian finance ministry.

Expressing apprehension about the slow progress of several projects, the IAF chief, on 16 December, said: "Right now, amid this 'Make in India' and indigenisation (programme), a lot of lip service is being done. Our intentions are very good but practically, the work is going on extremely slowly."

The IAF chief mentioned that the service branch with1,35,000 personnel, would require at least 300 jets, including the AMCA, over the next 16-18 years.

It's Time to Cut to the Chase

Earlier this year, China's state-run media Global Times reported that China has already started work on developing a sixth-generation fighter jet and aimed to make it a reality as early as 2035.

China already has a fifth-generation fighter – the J-20 stealth fighter, which is reportedly a top-of-the-line stealth aircraft, operated by the People's Liberation Army Air Force since last year.

The reason for such swift development lies in spending massively on military research by China.

Indicating the reasons for trailing far behind China in development of defence projects, the ministry noted that comparison to defence funding in countries such as the US, Russia, and China, India's research and development spending is very limited.

According to data published by the Indian defence ministry, China has been spending around $35 billion annually, while India spends only $2.5 billion on defence research. China's spending on defence research is almost equal to India's entire defence budget.

https://sputniknews.com/military/201912271077882395-dreams-hang-fire-indias-ambitious-fifth-gen-fighter-aircraft-faces-delay-over-funding-shortage/

Telangana Today

Sat, 28 Dec 2019

Award for DRDO Scientist

Hyderabad: Dr N Kishore Nath, Scientist-G, Project Director from Advanced Systems Laboratory (ASL), DRDO, Hyderabad, was conferred Mechanical Engineering Design Award by the National Design and Research Forum, Institution of Engineers India, for his pioneering contribution towards Design Development, Production and Deployment of Long-range AGNI-4 system.

This system can be launched from anywhere with two vehicles — Road Mobile Launcher (RML) and Integrated Mobile Systems (IMS), a press release said.

Governor Dr Tamilisai Soundararajan presented the award to Dr Kishore Nath during the 34th Indian Engineering Congress held at HICC, Novotel, on Friday.

https://telanganatoday.com/award-for-drdo-scientist