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Ramjet Missile Test

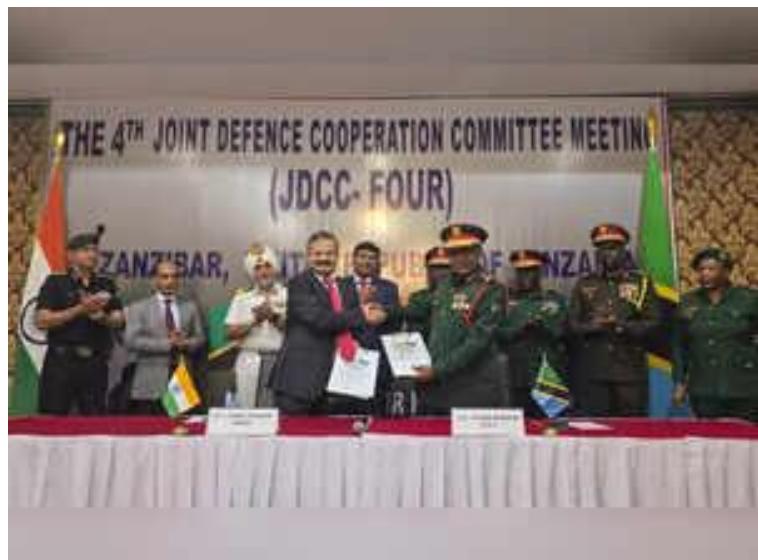
- India took a major step forward in missile propulsion technology on Tuesday, after the Defence Research and Development Organisation successfully demonstrated its Solid Fuel Ducted Ramjet system from the Odisha coast.
- The test was carried out from the Integrated Test Range at Chandipur at around 10.45 am.
- With this success, India has joined a small group of countries that possess SFDR technology, a critical capability for developing long-range air-to-air missiles with greater speed, range and manoeuvrability, a government release noted.
- **WHAT IS RAMJET TECHNOLOGY?**
- A ramjet is a type of air-breathing jet engine that uses the missile's forward speed to compress incoming air, rather than relying on complex rotating parts like conventional jet engines.
- In a Solid Fuel Ducted Ramjet, solid fuel is burned in a controlled manner as atmospheric air flows through the engine, producing sustained thrust at high speeds.
- Unlike traditional rocket motors, which burn fuel quickly and then coast, ramjet-powered missiles can maintain high speeds for much longer durations, especially in the final phase of flight.
- This makes them faster, more manoeuvrable and significantly harder for enemy aircraft to evade.
- **HOW DRDO TESTED RAMJET TECHNOLOGY?**
- During the test, the missile system was first accelerated to the required speed by a ground-based booster. Once it reached the desired Mach number, the ramjet system took over.

- According to DRDO, all key subsystems, including the nozzle-less booster, the solid fuel ducted ramjet motor, and the fuel flow controller, performed exactly as planned.
- The missile's performance was closely tracked using multiple instruments deployed along the coast of the Bay of Bengal. Data collected during the flight confirmed the success of the technology, validating both propulsion and control systems.
- Senior scientists from several DRDO laboratories, including the Defence Research & Development Laboratory, High Energy Materials Research Laboratory, Research Centre Imarat and ITR, monitored the launch.
- **WHY RAMJET TECHNOLOGY IS IMPORTANT FOR INDIA?**
- The successful SFDR test has major strategic implications. Ramjet-powered air-to-air missiles can strike targets at much longer ranges while retaining high energy during the final moments before impact.
- This gives fighter aircraft a decisive edge in beyond-visual-range combat, allowing pilots to engage enemy jets earlier and from safer distances.
- Globally, only a few countries have mastered this technology due to its engineering complexity, especially in managing stable combustion at supersonic speeds.



India, Tanzania Agree On Cooperation Between Air Forces

- India and Tanzania have discussed a broad range of areas for boosting defence collaboration, including military training and maritime security, during a key bilateral meeting.
- Both sides agreed to "initiate cooperation" between their air forces, complementing the existing cooperation between the two navies and armies, the defence ministry said.
- The fourth edition of the **Joint Defence Cooperation Committee (JDCC)** meeting between India and Tanzania was held in Zanzibar from February 2-3, it said.
- The two sides also "explored new avenues" such as counterterrorism, peacekeeping training, and capacity building in niche areas, including electronic warfare, cyber, and artificial intelligence, with a view to further strengthen bilateral defence ties, the ministry said.
- **Defence Relations**
- The India-Mozambique-Tanzania (IMT) Trilateral (TRILAT) exercise focuses on enhancing maritime cooperation and interoperability between the three navies. Following the second edition in March 2024, similar exercises often occur to bolster security in the Indian Ocean region. Other major 2025 Indian maritime engagements included the AIKEYME 2025 exercise in April.



Adani, Leonardo Team Up To Make Military Helicopters

- Seeking to target the lucrative market for military choppers, Adani Defence and Aerospace has announced a partnership with Italian manufacturer Leonardo to set up a helicopter manufacturing ecosystem in India.
- The partnership, which seeks to target a projected requirement of 1,000 helicopters for the Indian armed forces, was announced in the presence of defence secretary RK Singh and ministry of defence's director general (acquisition) A Anbarasu.
- Jeet Adani, Director at Adani Defence & Aerospace, reinforced the partnership's foundational ethos. He described it as rooted in shared expertise and purpose, encompassing manufacturing, training, and world-class maintenance support.
- This ecosystem, to be built entirely on Indian territory, aims to bolster national confidence in India's burgeoning helicopter capabilities and contribute enduringly to the country's strategic future.



'You Can't Play With Data Of Indians': Supreme Court

- The Supreme Court on Tuesday made strong critical remarks against Meta Platforms and WhatsApp LLC regarding their privacy policy and said that the Court will not allow them to exploit the personal data of Indians.
- The Court was hearing the appeals filed by Meta Platforms and WhatsApp LLC challenging the judgment of the National Company Law Appellate Tribunal (NCLAT) which had upheld the ₹213.14 crore penalty imposed by the Competition Commission of India (CCI) over WhatsApp's 2021 privacy policy.

- There was also a cross-appeal filed by the Competition Commission of India challenging the NCLAT's order to the extent it allowed Meta and WhatsApp to share users' data for advertising purposes after finding that there was no abuse of dominance by them.
- A bench comprising Chief Justice of India Surya Kant, Justice Joymalya Bagchi and Justice Vipul Pancholi heard the matters. Senior Advocate Mukul Rohatgi and Senior Advocate Akhil Sibal, appearing for Meta and WhatsApp, respectively, informed that the penalty amount has been deposited.
- CJI Surya Kant, while agreeing to admit the appeals, however, raised concerns about the privacy policy of the platform. CJI infact even started dictating an order restraining the platforms from sharing the data. Rohatgi and Sibal interjected to submit that the NCLAT has actually decided in their favour on this point. The CCI's counsel contested this claim.
- The CJI questioned the claim that WhatsApp has given a choice to the customer, since the platform is a monopoly. "What is the choice? You have complete monopoly in the market and you are saying I am giving a choice. It is either you walk out of WhatsApp policy or we will share the data." "We may hear the appeal on merits. In the meantime, we will not allow you to share even a single piece of information.
- If you can give an affidavit of your management with an undertaking, we will hear, or else we will dismiss. You were bought by Facebook, tomorrow Facebook will be bought by someone else and you will transfer the data. You cannot play with the right of privacy of this country, let a clear message go on your WhatsApp. You are making a mockery of the constitutionalism of this country," CJI Surya Kant said.
- **Background** The dispute arises from the Competition Commission of India (CCI)'s November 2024 order examining WhatsApp's 2021 privacy policy update. The regulator held that WhatsApp, which enjoys a dominant position in India's OTT messaging market, imposed a "take-it-or-leave-it" framework on users, denying them any meaningful opt-out.
- According to the CCI, WhatsApp made continued access to its messaging service conditional on users accepting expanded data sharing with other Meta Platforms group entities. This, the regulator found, amounted to an abuse of dominant position under the Competition Act, 2002. On this basis, the CCI imposed a penalty of Rs 213.14 crore on Meta Platforms and issued a series of remedial directions aimed at restoring user choice. These included prohibiting

WhatsApp from tying service access to data sharing, mandating clear opt-in and opt-out mechanisms, and requiring detailed disclosures on the nature and purpose of data sharing across Meta's platforms. Meta Platforms and WhatsApp challenged the CCI's order before the National Company Law Appellate Tribunal (NCLAT) in January 2025.

- In November 2025, NCLAT set aside the five-year restriction on advertising-related data sharing and overturned the CCI's finding that WhatsApp had unlawfully leveraged its dominance into Meta's advertising ecosystem. However, it nonetheless upheld the Rs 213.14 crore penalty imposed on Meta Platforms.



Indian Army Third Batch of Indigenous JM-1 'Kamikaze' Drones'

- Johnnette Technologies Pvt. Ltd., a prominent Indian manufacturer of unmanned systems headquartered in Noida, Uttar Pradesh, has marked a significant achievement by delivering the third batch of its indigenously developed JM-1 Loitering Munitions to the Indian Army.
- This delivery forms part of a contract secured through the Emergency Procurement (EP) procedure, underscoring the urgency and strategic importance of these systems in bolstering India's defence posture.
- The timely completion of this order represents yet another milestone in the nation's push towards self-reliance in defence manufacturing, enhancing operational readiness amid evolving security challenges.
- Cumulatively, Johnnette Technologies has now supplied over 1,000 drones of various types to the Indian Army, all actively deployed in operational roles across diverse terrains. The repeat orders and progressive induction of these systems signal the Indian Armed Forces' deepening trust in the company's

advanced technologies, which have proven mission-critical in real-world scenarios.

- Central to this success is the JM-1 Loitering Munition, a precision-guided system that has already demonstrated its combat prowess during Operation Sindoar. In that high-stakes operation, the JM-1 executed precision strike missions with remarkable accuracy and reliability, thriving in high-threat environments and directly contributing to mission outcomes.



REVIEW QUESTIONS

- India recently tested the Solid Fuel Ducted Ramjet (SFDR) system. What is its primary advantage over conventional rocket propulsion?
 - It relies on nuclear fuel for sustained thrust
 - It provides continuous propulsion at high speeds for longer durations
 - It operates only at subsonic speeds
 - It eliminates the need for atmospheric oxygen

ANSWER: B

- The SFDR ramjet test conducted by DRDO was carried out from which location?
 - Pokhran Test Range, Rajasthan
 - Abdul Kalam Island, Odisha
 - Integrated Test Range, Chandipur
 - Sriharikota Launch Complex

ANSWER: C

3. Why are ramjet-powered air-to-air missiles considered superior in beyond-visual-range combat?

- A. They are cheaper to manufacture
- B. They carry larger warheads
- C. They retain high energy during the terminal phase of flight
- D. They can be launched without radar support

ANSWER: C

4. India and Tanzania recently agreed to initiate cooperation between which defence components?

- A. Naval special forces
- B. Air forces
- C. Missile development agencies
- D. Border security forces

ANSWER: B

5. The ₹213.14 crore penalty on Meta Platforms was imposed by which authority?

- A. Supreme Court of India
- B. National Company Law Appellate Tribunal
- C. Ministry of Electronics and IT
- D. Competition Commission of India

ANSWER: D

6. International Maritime Organisation (IMO) Hq Is At

- A. London, United Kingdom
- B. Vienna, Austria
- C. Paris, France
- D. Geneva, Switzerland

ANSWER: A

7. Chairman Of The Appointments Committee of the Cabinet (ACC) Is

- A. PM
- B. NSA
- C. CDS
- D. Home Minister

ANSWER: A

8. CBI Hq Is In

- A. New Delhi
- B. Mumbai
- C. Hyderabad
- D. Chennai

ANSWER: A

9. __ Is The Largest Defense Contractors in the World.

- A. Lockheed Martin
- B. Boeing
- C. Raytheon Technologies
- D. None of the above

ANSWER: A

10. "If you win, you need not have to explain...If you lose, you should not be there to explain!" Said By__

- A. Winston Churchill
- B. Adolf Hitler
- C. Subhas Chandra Bose
- D. Bhagat Singh

ANSWER: B

11. Air Marshal Rank Of IAF Is Equivalent To Which Rank Of Indian Army?

- A. Brigadier
- B. Lt. Gen
- C. Captain
- D. Major General

ANSWER: B

12. Current Secretary-General Of NATO Is__.

- A. Jens Stoltenberg
- B. Admiral Rob Bauer
- C. General Tod D. Wolters
- D. None of the above

ANSWER: A

13. "It Is Our Duty To Pay For Our Liberty With Our Own Blood." Said By__

- A. Pandit Nehru

- B. Mahatma Gandhi
- C. Subhas Chandra Bose
- D. Bhagat Singh

ANSWER: C

14. 'The Communist Manifesto' Book Written By__.

- A. Karl Marx and Friedrich Engels
- B. Alexis
- C. Thomas Paine
- D. Niccolo Machiavelli

ANSWER: A

15. OPEC Hq Is In

- A. Budapest, Hungary
- B. New York, USA
- C. Luanda, Angola
- D. Vienna, Austria

ANSWER: D

16. IPCC Was Created By

- A. WMO & UNEP
- B. IMO & UNESCO
- C. IMF & WTO
- D. UNO & UNFCCC

ANSWER: A

17. Madagascar Is In

- A. Pacific Ocean
- B. Indian Ocean
- C. Black Sea
- D. Arctic Ocean

ANSWER: B

18. Which Is Not The Member Of SAARC?

- A. Bangladesh
- B. Myanmar
- C. India
- D. Pakistan

ANSWER: B

19. With reference to MILAN Exercise, consider the following statements:

1. It is a multilateral Naval Exercise conducted by the members of Shanghai Cooperation Organization (SCO).
2. MILAN 2024 conducted in the East China Sea.

Which of the statements given above is/are correct?

ANSWER: D

20. Mitra Shakti Ex Conducts B/W

- A. India & Indonesia
- B. India & UK
- C. India & Sri Lanka
- D. India & Thailand

ANSWER: C

