

Daily Defence Current Affairs

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China Tests Feitian-2 Hypersonic Missile

- China has achieved a significant milestone in hypersonic technology with the successful test flight of its Feitian-2 hypersonic vehicle, conducted in north-western China.
- Developed by North-Western Poly-Technical University (NPU) in collaboration with the Shaanxi Province Aerospace and Astronautics Propulsion Research Institute, Feitian-2 represents a leap forward in Rocket-Based Combined Cycle (RBCC) engine technology.
- Unlike traditional hypersonic vehicles that rely on cryogenic fuels like liquid oxygen, Feitian-2 operates on a **mix of kerosene and hydrogen peroxide**, utilising atmospheric oxygen for part of its journey.
- The choice of a kerosene–hydrogen peroxide propellant marks a strategic shift from the use of more complex and harder-to-handle cryogenic fuels. While kerosene offers lower energy density compared to liquid hydrogen, it is far easier to store and manage, reducing the logistical burden and the need for extensive cooling systems.



Reliance Defence Ties Up With Coastal Mechanics

- Reliance Defence Limited, promoted by Reliance Infrastructure and led by Anil Ambani, has entered into a strategic partnership with US-based Coastal Mechanics Inc., a contractor authorized by the US Department of Defence, to tap into India's rapidly growing defence **maintenance, repair, and overhaul** (MRO) and upgrade market, valued at approximately **₹20,000 crore**.
- The collaboration is structured around the formation of a joint venture (JV) at the **Multi-modal International Cargo Hub and Airport** at Nagpur (MIHAN), Maharashtra.
- The targeted platforms include more than 100 Jaguar fighter aircraft, over 100 MiG-29 fighter jets, the Indian Army's fleet of Apache attack helicopters, L-70 air defence guns, and other legacy systems that require long-term sustainment and modernization.
- Coastal Mechanics, established in 1975, brings decades of experience as a key vendor to the US Department of Defence, supplying mission-critical components to the US Air Force and US Army, and supporting armament and defence obsolescence issues through Foreign Military Sales (FMS) cases.



QUAD Announces Launch of Critical Minerals Initiative

- The Foreign Ministers of the Quad nations—India, the US, Japan, and Australia—announced the launch of the Quad Critical Minerals Initiative during their 10th Foreign Ministers Meeting held in Washington, DC, on July 1, 2025.
- This flagship initiative aims to strengthen economic security and collective resilience by collaborating on securing and diversifying critical mineral supply

chains, which are essential for technology and industry across the Indo-Pacific region.

- The initiative also focuses on electronic waste (e-waste) critical minerals recovery and re-processing, and it seeks to coordinate with private sector partners to boost investments in this area.
- The Quad members expressed deep concern about the reliability of critical minerals supply chains, particularly the risks posed by dependence on any single nation, which could lead to economic coercion, price manipulation, and supply disruptions.
- The Quad will advance secure and trusted ICT infrastructure, including work on artificial intelligence, semiconductors, biotechnology, and cybersecurity.
- It will promote digital infrastructure projects and encourage regulatory harmonization to facilitate private sector collaboration, including an undersea cables forum hosted by the US and India in 2025.



India Unofficially Offering Long-Range Cruise Missiles To Greece

- Reports circulating in both Turkish and Greek media claim that India has "unofficially offered" its **Long Range Land Attack Cruise Missile (LR-LACM)** to Greece, a move perceived as a strategic counter to Turkey's support for Pakistan and its growing defence ties with Islamabad.
- These claims originated from Turkish news outlets such as TR Haber, which cited Greek defence platforms like Geo Stratigika. The reports allege that India, amid strained relations with Turkey, is seeking to bolster its partnership with **Greece—Turkey's regional rival**—by potentially transferring advanced missile technology.

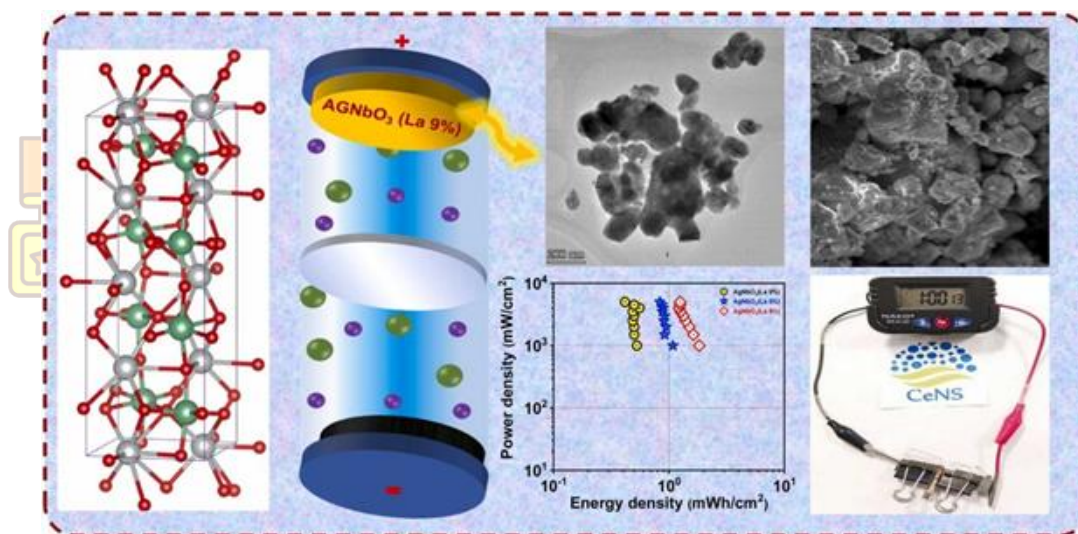
- The LR-LACM, developed by India's DRDO, boasts a range of over 1,000 km, can carry both conventional and nuclear warheads, and features advanced navigation for high-precision strikes and complex manoeuvres.



Indian Scientists Engineer Supercharged Green Energy Material

- In a remarkable scientific achievement, researchers from Bengaluru, in collaboration with **Aligarh Muslim University**, have developed a groundbreaking energy storage material that significantly boosts the performance of supercapacitors—devices vital for modern-day energy systems.
- At the heart of modern energy storage lies the supercapacitor—a device that can rapidly store and release large amounts of energy making them crucial for powering everything from mobile devices and electric vehicles to renewable energy systems.
- **What are Supercapacitors?**
- Supercapacitors are energy storage devices that can rapidly charge and discharge large amounts of energy. Unlike conventional batteries, they offer quicker energy transfer rates and longer lifespans.
- However, one of the limitations of supercapacitors has been their lower energy storage capacity compared to batteries. To overcome this challenge, scientists around the world have been in search of materials that can enhance energy density while maintaining speed and longevity.
- **The Breakthrough Innovation**

- A team led by Dr. Kavita Pandey at the Centre for Nano and Soft Matter Sciences, Bengaluru—an autonomous institution under the Department of Science and Technology (DST), Government of India—has made significant progress in this domain.
- The researchers concentrated on silver niobate (AgNbO_3), a lead-free and environmentally friendly compound known for its impressive electrical properties.
- To improve this material further, the team introduced lanthanum, a rare-earth element with excellent electronic characteristics, into the silver niobate nanoparticles. This process, known as lanthanum doping, had a dual effect:
- It reduced the particle size, which increased the surface area available for energy storage.
- It enhanced electrical conductivity, leading to faster charge-discharge cycles.



REVIEW QUESTIONS

1. What is the name of the hypersonic vehicle recently tested by China?
 - A. Dongfeng-17
 - B. Feitian-2
 - C. JF-22
 - D. Tianlong-3

ANSWER: B

2. Which Indian company has partnered with US-based Coastal Mechanics Inc. to enter the defence MRO and upgrade market?

- A. Tata Advanced Systems
- B. Larsen & Toubro Defence
- C. Reliance Defence Limited
- D. Mahindra Defence Systems

ANSWER: C

3. What type of engine technology does China's Feitian-2 hypersonic vehicle use?

- A. Scramjet Engine
- B. Turbojet Engine
- C. Rocket-Based Combined Cycle (RBCC) Engine
- D. Ramjet Engine

ANSWER: C

4. What is the primary objective of the Quad Critical Minerals Initiative launched in July 2025?

- A. Promoting trade between Indo-Pacific countries
- B. Securing and diversifying critical mineral supply chains
- C. Developing military technologies jointly
- D. Controlling electronic waste in Africa

ANSWER: B

5. According to reports, which country has India "unofficially offered" its LR-LACM to?

- A. Vietnam
- B. Philippines
- C. Greece
- D. Armenia

ANSWER: C

6. INS Khukri Is A Type Of

- A. Frigate
- B. Submarine
- C. Destroyer
- D. Missile Corvette

ANSWER: D

7. 'Ex Zapad' Conducted B/W India &

- A. Qatar
- B. Russia
- C. UAE
- D. Maldives

ANSWER: B

8. North-West Region Center Of ICG Is In

- A. Gandhinagar
- B. Port Blair
- C. Kolkata
- D. Chennai

ANSWER: A

9. AAI Stands For

- A. Airport Author of India
- B. Air Authority of India
- C. Airport Authority of India
- D. None of the above

ANSWER: C

10. MIM-104 Patriot Is A

- A. Air to Air missile
- B. Sniper Rifle
- C. Anti-tank Guided missile
- D. Air Defence System

ANSWER: D

11. Joint Exercises B/w The India And UK Is Called:

- A. Yama
- B. SLINEX
- C. Indra
- D. INDRADHANUSH

ANSWER: D

12. Which Of The Following Is The Capital Of Greece?

- A. Athens
- B. Prague

- C. Bogota
- D. Budapest

ANSWER: A

13. "The Third Pillar" Book Is Written By

- A. Raghuram Rajan
- B. Ruchir Sharma
- C. Saba Naqvi
- D. Vinit Goenka

ANSWER: A

14. What Is The Full Form Of SDSC?

- A. Satish Development Space Centre
- B. Scientific Development Space Centre
- C. Satish Dhawan Space Centre
- D. Static Development Space Centre

ANSWER: C

15. Which Is Not A/Are USA Defence Company?

- A. Lockheed Martin
- B. Northrop Grumman
- C. Boeing
- D. Thales

ANSWER: D

16. Name The Largest Nuclear Power Station Of India By Capacity?

- A. Tarapur
- B. Kakrapar
- C. Kaiga
- D. Kudankulam

ANSWER: D

17. Which Port Is Located In Western Coast of India?

- A. Kandla
- B. Kolkata
- C. Mangalore
- D. Visakhapatnam

ANSWER: A

18.NGARM Stands For

- A. Next-generator Anti-radiation Missiles
- B. New-generation Anti-radiation Missiles
- C. Next-generation Anti-radiation Memo
- D. None of the above

ANSWER: B

19.Which Group Or Organization Established The New Development Bank?

- A. UNO
- B. IMF
- C. BRICS
- D. WTO

ANSWER: C

20.Which Country Isn't The Signatory Of CTBT?

- A. USA
- B. UK
- C. Australia
- D. India

ANSWER: D