

# Testwale Current Affairs PDF

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## **1. Successful flight test of Agni-Prime missile ( April 4, 2024 )**

Agni-Prime missile successfully flight tested in Odisha.

### **An Overview of the News**

- The test was conducted jointly by the Strategic Force Command (SFC) and Defense Research and Development Organization (DRDO) from Dr APJ Abdul Kalam Island.
- The Defense Ministry said that the Agni-Prime missile met all the test objectives, demonstrating its reliable performance.

### **Introduction of Agni-P (Agni-Prime):**

- Agni-P, also known as Agni-Prime, is a medium-range ballistic missile under development by India's Defence Research and Development Organisation (DRDO).
- It is the sixth missile in the Agni series and is designed to be a two-stage, surface-to-surface, canister-launched, and road-mobile system.

### **Purpose and Deployment:**

- Agni-P is intended to be deployed within the Strategic Forces Command for operational use.
- Its development aims to enhance India's ballistic missile capabilities, particularly in the medium-range segment.

### **Key Features and Upgrades:**

- The missile incorporates significant upgrades compared to its predecessors.
- These upgrades include advancements in the composite motor casing, navigation systems, and guidance systems.

### **Maneuverable Reentry Vehicle (MaRV):**

- Agni-P is equipped with a maneuverable reentry vehicle (MaRV), enhancing its effectiveness in penetrating enemy defenses and accurately hitting targets.

### **Solid-Fueled Design:**

- Agni-P utilizes solid fuel propulsion, ensuring reliability, mobility, and ease of deployment.

### **Canister Launch Capability:**

- Its canister-launch system adds to its mobility and readiness, allowing for rapid deployment and launch from various platforms.

**Strategic Significance:**

- The development and deployment of Agni-P mark a significant advancement in India's strategic missile program.
- It strengthens India's deterrence capability and provides a credible response to evolving security challenges in the region.

**2. Adani begins Operation of the Copper Unit at Mundra ( April 1, 2024 )**

The first phase of the world's largest copper manufacturing plant in Mundra, Gujarat was launched by the Adani-led group. The company plans to invest \$1.2 billion in this phase.

**An Overview of the News****Kutch Copper Operations:**

- Kutch Copper, a subsidiary of Adani Enterprises Limited, commenced operations of its greenfield copper refinery, marking the shipment of the inaugural batch of cathode.
- Production Capacity and Expansion Plans:
  - The plant is estimated to produce 0.5 million tonnes of refined copper annually in its initial phase, with plans to expand to a capacity of 1 million tonnes by March 2029.
  - Upon completion of its second phase, Kutch Copper aims to become the world's largest single-location custom smelter with an annual production target of 1 million tonnes.

**ESG Commitment:**

- The company pledges to maintain high ESG (Environmental, Social and Governance) performance standards by leveraging advanced technology and digitalization.

**Role in India's clean energy transition:**

- Increased copper production supports India's transition to clean energy, facilitating the development of technologies for electric vehicles, solar power, wind power and batteries.

**Job Creation and Domestic Demand:**

- The expansion of copper production is expected to create 2,000 direct and 5,000 indirect employment opportunities and meet India's target of doubling copper demand by 2030.

**Diversification and Industry Demand:**

- Catering to the growing demand for copper in various industries, Kutch Copper has expanded its offering to include copper tubes for air conditioning and refrigeration.

**Reduction in Import Dependence:**

- Domestic copper production aims to reduce India's dependence on imported copper, which has increased steadily in recent years.

**Stability Practice:**

- Kutch Copper prioritizes sustainability by using technology with minimal carbon footprint, allocating green space within the plant area and implementing eco-friendly water management practices.

**Industry Scenario:**

- Vedanta Ltd is looking to reopen a plant in Tuticorin, Tamil Nadu, while Hindalco Industries Ltd currently operates the largest copper smelter in India with a capacity of 0.5 million tonnes.

**Global Production Dynamics:**

- Globally, copper production is concentrated, with Chile and Peru being the top producers, collectively accounting for 38% of global production.

**3. Indigenous Tejas Mark-1A Set to Replace MiG Series in Indian Air Force ( March 29, 2024 )**

The maiden flight test of the inaugural aircraft of the advanced iteration 'Mark 1A' of the indigenous Tejas fighter jet, produced in India, has concluded triumphantly on March 28, 2024, at the Hindustan Aeronautics Limited (HAL) facility in Bengaluru.

**An Overview of the News**

- The first aircraft of this series, designated as LA5033, completed an 18-minute flight.
- Notably, the Tejas Mark 1A, the predecessor of this advanced version, has already been incorporated into the Indian Air Force's fleet, enhancing its operational capabilities.
- With continued advancements and successful testing, the Tejas Mark 1A advanced variant is poised to further bolster India's defense capabilities, reinforcing its commitment to self-reliance and indigenous manufacturing in the defense sector.
- The Tejas Mark-1A is set to replace iconic models like the MiG-21, MiG-23, and MiG-27, symbolizing a shift towards modern, domestically produced fighter aircraft.
- Over 65% of the equipment for the Tejas Mark-1A is manufactured domestically.
- The decision to station the Tejas Mark-1A at the Nal airbase in Bikaner, Rajasthan, near the Pakistan border, underscores its role in bolstering India's defense posture in sensitive regions.

**What enhancements does the improved version of Tejas offer?**

- New technologies include Active Electronically Scanned Array (AESA) radar and Advanced Beyond-Visual Range (BVR) Missile systems.

- Enhanced defensive capabilities for self-protection.
- Added mid-air refueling capability to increase operational range.
- Upgraded radar warning receiver system for quick threat detection.
- Features digital map generator, smart multi-function display, and advanced radio altimeter for improved navigation and communication.

## **History of Tejas**

- The Tejas project began in 1983 under the Light Combat Aircraft Project, with the aircraft's maiden flight taking place on January 4, 2001. It was officially named 'Tejas' by former Prime Minister Atal Bihari Vajpayee in 2003.
- The success of the Tejas project can be attributed to the visionary leadership of scientists like Dr. Kota Harinarayana and his dedicated team, whose relentless efforts and expertise culminated in the creation of an indigenous fighter aircraft.
- Variants of the Tejas tailored for naval operations were initiated in 2007, showcasing the adaptability and versatility of the Tejas platform to meet varied defense requirements, including naval aircraft carrier operations.

## **4. New Isopod Species Discovered in Kollam Named after ISRO ( March 27, 2024 )**

Scientists have identified a new species of deep-sea isopod, *Brucethoa Isro*, in the deep sea off the Kerala coast, which has been named after the Indian Space Research Organization (ISRO).

### **An Overview of the News**

- This small crustacean, belonging to the genus *Brucethoa*, thrives on eating fish and was specifically located within the gill cavity of the spinyjaw greeneye.
- Notably, it is the second documented species within its genus found in India and has been named *Brucethoa Isro* to honor ISRO's significant space explorations.

### **Features of *Brucethoa Isro*:**

- Females of this species are generally larger than males, measuring 19 mm in length and 6 mm in width, about half the size of the males.

### **About Isopods:**

- Isopods make up a fascinating group of invertebrates within the crustacean family, which includes well-known marine creatures like crabs and shrimp.
- They display remarkable adaptability to diverse habitats ranging from arid deserts to deep sea trenches, demonstrating their global distribution and ecological importance.

### **General characteristics of Isopods:**

- Isopods share common traits despite their diverse forms, including two pairs of antennae, compound eyes, and four sets of jaws.
- Their body is divided into seven parts, each with a pair of walking legs, a short abdominal segment consisting of six fused segments called "plions".

**Habitat and Behavior of Isopods:**

- Many Isopods live in marine environments, others are found in coastal and shelf waters, where they navigate on the sea floor or live among aquatic vegetation.
- While most isopods are free-living, some marine species exhibit parasitic behavior, relying on other animals for sustenance.

**About Kollam:**

- Located in Kerala, Kollam has the famous Ashtamudi Lake, which offers beautiful boating opportunities for tourists.
- The city's principal waterway, the Kollam Canal, connects it to the country's extensive water transport network, while several islands lie on the picturesque lake.
- Kollam has tranquil beaches and lush forests, making it a hub for eco-tourism projects like Shenduruni, Thenmala, and Palaruvi.

**5. Professor Jayant Murthy honored with Asteroid name ( March 27, 2024 )**

The International Astronomical Union (IAU) recognized Indian scientist Professor Jayant Murthy by naming an asteroid after him.

**An Overview of the News****Asteroid (215884) Jayantamurthy**

- Originally known as 2005 EX296, this asteroid orbits the Sun between Mars and Jupiter every 3.3 years.
- Its new name, (215884) Jayanta Murthy, will always carry forward the rich legacy of the Indian scientist.

**Career and Contribution of Jayant Murthy**

- Professor Murthy served as the Acting Director of the Indian Institute of Astrophysics (IIA) and currently holds the rank of Honorary Professor.
- His scholarly achievements in the interstellar medium, ultraviolet astronomy, and space missions have greatly advanced our understanding of the universe.

**Participation in NASA's New Horizons Mission**

- Professor Murthy played a key role in NASA's New Horizons science team and contributed to the observation of ultraviolet background radiation in the outer reaches of the Solar System.
- The New Horizons mission's historic flyby of Pluto in 2015 provided unprecedented insights into the dwarf planet and its satellites.

### **Rare Honor and Legacy**

- Annapurni Subramaniam, the current director of the IIA, considers the asteroid naming "a very rare honor", linking Professor Murthy with respected predecessors in astronomical research.
- (215884) The naming of Jayanti Murthy symbolizes the outstanding contributions of Professor Murthy and serves as an inspiration for future scientists.

## **6. Gaia Telescope Unveils Ancient Star Streams: Shiva and Shakti ( March 26, 2024 )**

The Gaia telescope, led by Khyati Malhan, reveals two ancient star streams: Shiva and Shakti.

### **An Overview of the News**

- These streams were formed over 12 billion years ago and exhibit unique classes and compositions.
- The discovery, made by the European Space Agency's Gaia telescope, enhances our understanding of the galaxy's origins.
- Khyati Malhan is from the Max Planck Institute for Astronomy (MPIA) in Germany.

### **Features and Structure:**

- Unique Orbits and Chemical Structures: Gaia identifies two distinct structures, Shakti and Shiva, with distinct orbitals and chemical structures.
- Mass and age: Each cluster contains about 10 million suns, ranging in age from 12 to 13 billion years, displaying similar orbits and compositions.

### **Galactic position and origin:**

- Location and formation: Located toward the galaxy's core, these streams originated as separate fragments that merged into one galaxy early in its history, shedding light on the galaxy's formation.
- Galactic archaeology: Discovery of Gaia reveals the oldest stars in the Galaxy, which predate the formation of the galactic disk, suggesting a complex origin involving filaments of gas and dust.

### **Symbolism and Naming:**

- Divine Inspiration: Named after the Hindu divine couple, Shiva and Shakti symbolize the creation of the universe, reflecting the distinctive characteristics of stellar streams.
- Orbital differences: Shakti stars exhibit orbits slightly more distant from the galactic center, featuring more circular paths than Shiva.

**Importance and future prospects:**

- Understanding early galaxies: This discovery provides insight into the early evolution of the Milky Way, indicating its origin from long filaments of gas and dust that gave rise to stars and galaxies.
- Future Insights: Upcoming Gaia data releases may deepen our understanding of these ancient components, aiding research on star clusters, galaxies, and exoplanets beyond the Milky Way.

**About Gaia Space Telescope:**

- Mission and operations: Launched in December 2013, Gaia, operated by the European Space Agency, surveys the sky to create a detailed 3D map of the Milky Way.
- Objectives and Contributions: In addition to mapping the Milky Way, Gaia data informs studies on a variety of astronomical phenomena, including star clusters, galaxies, and exoplanets, furthering our understanding of the dynamics of the universe.

**7. Aviation Week Laureates Award for Chandrayaan-3 ( March 26, 2024 )**

ISRO's Chandrayaan-3 mission received the prestigious Aviation Week Laureates Award.

**An Overview of the News**

- Sripriya Ranganathan, Deputy Ambassador at the Indian Embassy in the US, accepted the award on behalf of ISRO.
- The award recognizes aerospace excellence, celebrating innovation and exploration.

**Aviation Week Laureates Award:**

- Highly regarded accolade in the aviation and aerospace industry.
- Celebrates extraordinary achievements encompassing exploration, innovation and vision.
- Over 400 industry professionals and influencers participated, acknowledging the unprecedented achievements.
- ISRO's successful Chandrayaan-3 mission exemplifies the tradition of honoring outstanding contributions to aerospace exploration.

**About Chandrayaan-3 Mission:**

- Launch and craft details: Launched from Sriharikota on July 14, 2023, using a GSLV-Mark III (LVM-3) heavy-lift rocket. It consists of a lander named Vikram and a rover named Pragyan excluding an orbiter.
- Mission objectives: to perform safe landing, rover exploration and conduct in-situ scientific experiments.
- Budget: Estimated Rs 615 crore.
- Lander and Rover Specifications: Vikram, 2 meters long and weighing more than 1,700 kg, carries a 26 kg lunar rover named Pragyan for spectrometer analysis.
- Landing and deployment: Scheduled for August 23, 2023 on the Moon.
- Operational Period: Designed to operate for up to one lunar day, equivalent to 14 Earth days.

## **8. DeepMind co-founder Mustafa Suleyman to lead Microsoft's AI division ( March 23, 2024 )**

Google's DeepMind co-founder Mustafa Suleyman has been appointed to head Microsoft's AI division.

### **An Overview of the News**

- Suleyman will report directly to Microsoft CEO Satya Nadella.
- **Responsibilities Include Overseeing:**
  - Integration of AI Copilot into Windows.
  - Incorporating interactive elements into Microsoft's Bing search engine.
  - Consolidating all consumer AI projects under a single leadership.

### **Key Points on the Background of Mustafa Suleyman**

- Mustafa Suleyman comes from a background where his father was a Syrian-born taxi driver and his mother was an English nurse.
- He was brought up in the London Borough of Islington.
- Suleyman studied philosophy and theology at the University of Oxford but discontinued during his second year.
- He founded Muslim Youth Helpline, a charitable organization in the UK.
- At the young age of 22, he provided advisory services on human rights policy to former London Mayor Ken Livingstone.

### **Mustafa Suleyman's Journey from DeepMind to Inflection AI and Microsoft:**



- Co-founded DeepMind in 2010, taking on the role of head of Applied AI, with an emphasis on ethical AI use.
- Left Google in 2022 to found Inflexion AI.
- Inflexion AI achieved success with the creation of the popular AI chatbot Pi and secured \$1.3 billion in funding.
- Key figure Karen Simonyan, co-founder and chief scientist of Inflexion AI, will move to Microsoft as chief scientist for Microsoft AI.

## **9. India's first battery storage gigafactory to begin operations in Jammu and Kashmir ( March 22, 2024 )**

GoodEnough Energy announced plans to begin operations at India's inaugural battery energy storage gigafactory in Jammu and Kashmir by October 2024.

### **An Overview of the News**

- The facility aims to help industries cut carbon emissions by more than 5 million tonnes annually, in line with India's net zero emissions target by 2070.
- GoodEnough has invested 1.5 billion rupees (\$18.07 million) in a factory with 7 GWH capacity, with plans to invest another 3 billion rupees by 2027 to expand capacity to 20 GWH.
- These expansion plans were revealed by GoodEnough founder Akash Kaushik.

### **Importance of renewable energy:**

- Battery energy storage projects are key to India's objective of expanding renewable energy capacity to 500 GW by 2030 from the current 178 GW.

### **Government Incentives:**

- The Indian government is offering \$452 million in incentives to companies under a program aimed at promoting battery storage projects.

### **Role of battery storage systems:**

- Battery storage systems facilitate the storage of energy from renewable sources, ensuring reliable and continuous energy supply.

### **Implications of Gigafactory establishment:**

- The establishment of India's first battery storage gigafactory marks a significant progress towards achieving the country's renewable energy targets and reducing carbon emissions.
- The operations in Jammu and Kashmir are set to boost the renewable energy sector in India.

**10. xAI releases Grok-1, AI chatbot as open source ( March 21, 2024 )**

Grok-1 is an AI chatbot developed by xAI, a company founded by Elon Musk.

**An Overview of the News**

- xAI announced that Grok has been made open source, fulfilling a promise made by Musk.
- GROC-1, the base model, is a 314 billion parameter mixture-of-experts model trained from scratch.
- xAI released the base model weights and network architecture of Grok-1 on GitHub, promoting transparency and collaboration in AI development.
- Elon Musk aims to set an example by open-sourcing Grok.
- Open-sourcing Grok has a significant impact on the AI industry, encouraging knowledge sharing and fostering innovation.
- "Grok" was named for Robert A. Named after a word from Heinlein's science fiction novel "Stranger in a Strange Land", meaning to understand something deeply.
- Elon Musk, in addition to founding XAI, is known for his roles as CEO of Tesla and SpaceX and his influence in the tech industry.

**About Elon Reeve Musk**

- Elon Reeve Musk, born on June 28, 1971, is a prominent businessman and investor.
- He holds various leadership positions in several high-profile companies:
  - Founder, chairman, CEO, and CTO of SpaceX.
  - Angel investor, CEO, product architect, and former chairman of Tesla, Inc.
  - Owner, executive chairman, and CTO of X Corp.
  - Founder of the Boring Company and xAI.
  - Co-founder of Neuralink and OpenAI.
  - President of the Musk Foundation.
- Musk is recognized as one of the wealthiest individuals globally, with an estimated net worth of US\$190 billion as of March 2024 according to Bloomberg Billionaires Index, and \$195 billion according to Forbes.
- His wealth primarily stems from his ownership stakes in Tesla and SpaceX.