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EXERCISE PRACHAND PRAHAR



The Indian Armed Forces recently conducted a multi-domain exercise, Prachand Prahar, in Arunachal Pradesh.

- It is a **tri-service integrated multi-domain warfare** exercise conducted in the high-altitude terrain of **Arunachal Pradesh**.
- It was conducted 'deep' in the high-altitude terrain of Arunachal Pradesh in the eastern sector of the 3,488-km long Line of Actual Control (LAC).
- It was carried out under the **aegis of the Eastern Army Command**.
- The exercise involved the **Army, IAF and the other combat elements** in a synergised combat drill designed to simulate future warfare.
- It commenced with the deployment of advanced surveillance resources of **all three services**, including long-range surveillance aircraft of the IAF and the maritime domain awareness aircraft of the Indian Navy, helicopters, and Unmanned Aerial Vehicles (UAVs), along with space resources and the Indian Army's elite special forces to create seamless domain awareness and detect simulated targets.
- Once identified, these targets were swiftly destroyed through the synchronised joint firepower of fighter aircrafts, long-range rocket systems, medium artillery, armed helicopters, swarm drones, loitering munitions, and kamikaze drones in an electronically contested environment.

The 'Exercise Prachand Prahar' **validated integrated planning, command and control**, as well as seamless execution of surveillance and firepower platforms across the three services, covering the entire spectrum of conflict.

- This exercise is in continuation with 'Exercise Poorvi Prahar' held in November 2024, which had focused on the integrated application of aviation assets.

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BHASKARACHARYA NATIONAL INSTITUTE FOR SPACE APPLICATIONS AND GEO-INFORMATICS (BISAG-N)



- It is an **autonomous scientific society** registered under the Societies Registration Act, 1860, **under the Ministry of Electronics & Information Technology (MeitY)**, Government of India.
- **Location:** Gandhinagar, Gujarat
- **Objective:** To undertake **technology development & management, research & development**, facilitate national and international cooperation, **capacity building**, and support technology transfer & entrepreneurship development in the **area of geospatial technology**.
- BISAG-N has **three main domain areas: satellite communication, geo-informatics and geo-spatial technology**.
- BISAG-N provides specialized services and solutions in **implementing map-based Geographic Information Systems (GIS)**.
- BISAG-N undertakes all services for the entire process of implementing an enterprise level GIS system.
 - These services include **GIS database design** and development, **map creation/uptation** and finishing, **data migration/conversion** and format translation, software development and customization, systems integration, and technical consulting.
- BISAG-N also **provides complete GIS solutions**, which bundle hardware and software with GIS systems development services.
- BISAG-N offers comprehensive GIS/Photogrammetric solutions over large geographical areas.
- These include solutions and services in the areas of mapping, cartography, imaging, photogrammetry, and utility/environment resource management. BISAG-N provides

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solutions based on Remote Sensing, using multispectral data, for specific applications like agricultural crop monitoring, watershed management, forest fire mapping, etc.

- The Institute works in close coordination with Ministries and State Government departments/agencies and has thus emerged as a National level agency to use satellite communication and Space & Geo-spatial technologies for the planning and development activities in various sectors of the Government.

INDIA'S PUSH INTO THE DEEP SEA: A STRATEGIC AND ECONOMIC IMPERATIVE

- India is steadily moving forward in its journey to explore and harness the vast potential of the deep ocean.
- A key step in this direction was the recent **wet testing of Matsya-6000**, a deep-sea submersible developed by the **National Institute of Ocean Technology (NIOT)** under the **Samudrayaan Project**.
- Capable of diving up to 6 km beneath the sea surface, Matsya-6000 is part of the broader **Deep Ocean Mission**, which aims to place India among a handful of nations with human-rated submersibles capable of operating at such extreme depths.

Importance of Deep Sea Matters for India:

- The **United Nations Convention on the Law of the Sea (UNCLOS)** gives countries exclusive rights over natural resources within their **Exclusive Economic Zone (EEZ)**, extending 200 nautical miles (about 370 km) from the coastline.
- Some key reasons why India needs to invest in this domain include:
 - **Mineral and energy resources:** The seabed holds valuable resources like polymetallic nodules, gas hydrates, oil, and other rare-earth materials that are critical for India's growing industrial and energy needs.
 - **Food and nutraceuticals:** Fisheries and marine bio-resources offer economic and nutritional benefits.

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- **Oceanographic and climate data:** Deep ocean exploration can support climate modelling, weather forecasting, and environmental research.
- **Digital economy infrastructure:** Over **95% of global internet traffic** passes through **undersea fiber-optic cables**. Ensuring these cables are secure, well-maintained, and possibly expanded with Indian participation is crucial to the digital economy.
- **National security:** Deep sea is increasingly a space of **strategic competition**. China, for example, recently unveiled a **cable-cutting device** capable of damaging critical undersea infrastructure. India must prepare with **domain awareness, monitoring systems, and countermeasures**.

Challenges of Deep Sea Technology:

- Developing deep sea capability is no small feat. The average depth in India's EEZ is around **3,741 metres**, nearly four-and-a-half times the height of the Burj Khalifa.
- The **pressure at such depths** exceeds **380 atmospheres**, requiring specially designed submersibles and materials.
- Some key technological challenges include:
 - **Communication underwater:** Unlike air, sound in water is affected by **temperature, pressure, and salinity**, making communication difficult. Very Low Frequency (VLF) and Extremely Low Frequency (ELF) sound systems are essential but expensive to develop.
 - **Pressure resistance:** The deeper the dive, the more robust the vessel needs to be. The **OceanGate Titan submersible tragedy in 2023** is a sobering reminder of what can go wrong without rigorous safety and engineering standards.
 - **Cost and expertise:** Building these technologies demands **large financial investments, specialised research**, and a **highly skilled workforce**—areas where countries like **China, the US, Japan, and France** have made significant progress.



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NORTH ATLANTIC TREATY ORGANISATION (NATO)

Aspect	Details
Founded	1949 , with the signing of the North Atlantic Treaty (Washington Treaty) to counter Soviet expansion in post-World War II Europe.
Headquarters	Brussels, Belgium
Nature	Military & political alliance of 32 countries from Europe & North America .
Core Principle	Collective Defense (Article 5): An attack on one NATO country is considered an attack on all. Invoked only once after the 9/11 attacks (2001).
Founding Members (12)	Belgium, Canada, Denmark, France, Iceland, Italy, Luxembourg, Netherlands, Norway, Portugal, UK, USA.
Latest Expansion	Sweden joined NATO in 2024.
Ukraine's NATO Bid	Applied in 2022 , received security assurances at Vilnius Summit (2023) .
Non-NATO EU Members	Austria, Cyprus, Ireland, and Malta.

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FREE MOVEMENT REGIME



- In February 2024, Union Home Minister Amit Shah announced that the Free Movement Regime (FMR) along the India-Myanmar border would be scrapped.

- The decision was reportedly influenced by former Manipur CM N. Biren Singh, who blamed **unregulated cross-border movement** for fueling **ethnic conflict in Manipur**.
- The **FMR was introduced in 1968** and initially allowed movement up to **40 km**, later **reduced to 16 km in 2004**, with additional **regulations enforced in 2016**.

About Free Movement Regime (FMR)

- The **FMR is a bilateral arrangement** between **India and Myanmar** that permits **unrestricted movement within 16 km** on either side of the **1,643 km Indo-Myanmar border (IMB)**.
- **Eligibility:** Any member of the **hill tribes** (whether an **Indian or Myanmar citizen**) can cross the border **with a border pass valid for one year** and **stay for up to two weeks per visit**.
- **Objective:**
 - To maintain **historical, cultural, and social ties** between the trans-border communities.
 - To **boost local trade** and facilitate **familial visits**.
 - To serve as a **unique case of cross-border cooperation** under **India's Act East Policy**.
- **Implementation:**
 - Introduced formally in **2018**, although movement existed **informally for centuries**.
 - Inspired by **India's Act East Policy**, which aims to **strengthen ties** with Southeast Asian nations.

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DEBRIGARH WILDLIFE SANCTUARY



- **Location:** It is situated in the Bargarh district of **Odisha** near the **Hirakud dam** (Mahanadi River).
- It finds a special mention because of noted **freedom fighter Veer Surendra Sai**.
 - During **his rebellion against the British**, his base at **‘Barapathara’** was located **within the sanctuary**.
- It was declared a wildlife sanctuary in 1985.
- **Vegetation:** Dry deciduous mixed forests.
- **Flora:** Major trees found here are **Sal, Asana, Bija, Aanla**, Dhaura etc.
- **Fauna:** A huge variety of wild animals reside in the dense forest of the sanctuary, such as **Tiger, Sloth Bear, Leopard, Hyena**, Spotted Deer, Antelopes, Sambar, Gaur, Nilgai, **Bison**, Langur Monkeys etc.

INDIAN BISON:



- Indian Bisons are **one of the largest extant bovines**. It is one of the **largest species among the wild cattle**, reaching a shoulder height of up to 220 cm.
- **Habitat:** They are found on the **forested hills and grassy areas** of **south to southeast Asia**.
- **Distribution:**
 - There are about 13,000 to 30,000 gaurs in the world with approximately **85% of the population present in India**. It is also found in **Burma and Thailand**.
 - The **Western Ghats** in southern India constitute one of the most extensive extant strongholds of gaur, in particular in the Wayanad – Nagarhole – Mudumalai – Bandipur complex.

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- The gaur is the State Animal of Goa and Bihar.

Conservation:

- IUCN: Vulnerable
- CITES: Appendix I
- The Wild Life Protection Act, 1972: Schedule I

US COMMISSION ON INTERNATIONAL RELIGIOUS FREEDOM (USCIRF)



- It is a S. federal government commission created by the International Religious Freedom Act of 1998.

- **Functions:** USCIRF reviews the facts and circumstances of violations of religious freedom internationally and makes policy recommendations to the President, the Secretary of State, and Congress.
- USCIRF's nine commissioners are appointed by either the President or Congressional leaders of each political party.
- Their work is supported by a professional, nonpartisan staff.
- USCIRF issues an **annual report** that assesses the US government's implementation of IRFA, highlights "Countries of Particular Concern" engaging in severe religious freedom violations, documents the conditions of religious freedom in many countries, and provides policy recommendations.
- It uses international standards to monitor religious freedom violations globally.
- Article 18 of the Universal Declaration of Human Rights affirms that:
 - "Everyone has the right to freedom of thought, conscience, and religion; this right includes freedom to change his religion or belief, and freedom, either alone or in community with others and in public or private, to manifest his religion or belief in teaching, practice, worship, and observance."

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GAIA SPACE TELESCOPE



- Originally named **Global Astrometric Interferometer for Astrophysics (GAIA)**, later simplified to **Gaia**.
- Launched in **2013** by the **European Space Agency (ESA)**, it aimed to create the **most precise 3D map of the Milky Way** through **astrometry** (measuring positions and movements of celestial bodies).
- **Position:** Placed at **Lagrange Point 2 (L2)**, **5 million km from Earth** (behind Earth when viewed from the Sun), ensuring an **unobstructed cosmic view**.

Scientific Instruments:

- **Twin Telescopes:** Captured light from different directions.
- **Digital Camera:** Nearly **1 billion pixels**, the **largest ever flown in space**.
- **Three Key Instruments:**
 - **Astrometer:** Measures **precise locations** of celestial bodies.
 - **Photometer:** Determines **brightness and temperature** of stars.
 - **Spectrometer:** Identifies **chemical composition** and **motion** of objects.

Key Discoveries of Gaia

- **Mapping the Milky Way in 3D:** The First precise 3D map of the Milky Way galaxy also helped understand the shape of the galaxy, including:
 - The central bar and spiral arms.
 - A warped, wobbly disc, likely caused by past collisions with smaller galaxies.
 - Ripples in the galaxy from these collisions may have led to the formation of new stars, including the Sun.
- **Discovery of New Black Holes:** A new class of black holes that are invisible and can only be detected by their gravitational effects.
 - Discovered **one of the closest black holes to Earth**.
- **Tracking asteroids and space threats:** Gaia identified over **1,50,000 asteroids**, tracking their **orbits and potential threats to Earth**.