7. Short news

LACHIT BORPHUKAN

PM Modi and Home Minister Amit Shah honoured Lachit Borphukan on Lachit Diwas. Lachit Diwas is celebrated annually on 24th November to commemorate the birth anniversary of Lachit Borphukan. Lachit Borphukan was born on 24th November 1622 in Charaideo, Assam. Lachit Borphukan is revered in Assam as the commander who defeated the Mughal forces (led by Raja Ram Singh) in the Battle of Saraighat (1671).

Military Leadership - Served as the commander of the Ahom armies during the Battle of Saraighat fought on the Brahmaputra River in Guwahati. Known for exceptional strategic skills and effective guerrilla warfare tactics, enabling smaller Ahom forces to outperform a much larger Mughal army.

Position in the Ahom Administration - Appointed as one of the five Borphukans by King Charadhwaj Singha. Borphukans held combined administrative, judicial, and military authority in the Ahom kingdom. They effectively acted as viceroys for the Ahom King in the western part of the kingdom.

Final Years - He passed away in 1672, a year after the victory at Saraighat, due to a prolonged illness.

Ahom Kingdom - The Ahom kingdom was established by Sukaphaa, a Shan prince from the Mong Mao region (Myanmar), who entered present-day Assam in 1228 CE. The kingdom ruled large parts of present-day Assam for nearly 600 years (13th–19th century).

Political and Social Structure - It was a prosperous, multi-ethnic kingdom centred on the fertile Brahmaputra valley, sustained by extensive rice cultivation. Known for strong administrative systems and resistance to external invasions.

Conflicts with the Mughals - Fought multiple clashes with the Mughal Empire between 1615–1682, from Jahangir to Aurangzeb. The Battle of Saraighat remains the most defining victory against Mughal expansion in the Northeast.

URANIUM (U-238) CONTAMINATION

A new study has detected uranium (U-238) in breastmilk samples across Bihar, raising concerns about infant exposure despite levels remaining below global safety thresholds.

Key Findings on Uranium Contamination - A study of 40 lactating mothers across Bihar detected uranium in 100% of breastmilk samples, with highest individual values in Katihar and highest district average in Khagaria. All breastmilk samples contained uranium; 70% of infants showed Hazard Quotient (HQ) > 1, indicating potential non-carcinogenic risk. Despite measurable presence, researchers note that most uranium absorbed by mothers is excreted in urine, not concentrated in breastmilk. Experts emphasise that breastfeeding should continue, unless clinically contraindicated, given its overriding nutritional and immunological benefits.

Uranium contamination - Uranium contamination refers to the presence of excess uranium in soil, groundwater, surface water, or food sources, usually due to natural geological processes or human activities. It becomes a public health and environmental concern when uranium levels exceed safe limits. WHO prescribes a provisional limit of 30 µg/L for uranium in drinking water; some countries adopt stricter norms such as 10 µg/L (Germany). Measured breastmilk concentrations in the study ranged 0–5.25 µg/L, below WHO's water guideline.

Sources Of Contamination - Uranium occurs naturally in granite and rock formations and reaches groundwater through weathering. Anthropogenic sources include mining, coal combustion, nuclear

industry emissions, and phosphate fertilizers. India reports contamination in 151 districts across 18 States, with 1.7% of Bihar's groundwater affected.

Health Impact of Uranium Exposure - Infants face higher vulnerability due to limited detoxification capacity. Potential impacts include kidney development impairment, neurodevelopmental delay, and cognitive deficits such as reduced IQ with prolonged exposure.

VIKRAM-I ORBITAL ROCKET

Recently PM Narendra Modi inaugurated Skyroot's new Infinity Campus and unveiled the Vikram-I orbital rocket marking a milestone for India's private space sector.

Vikram-I Orbital Rocket - Vikram-I is Skyroot Aerospace's first orbital-class launch vehicle, designed to place small satellites into low-Earth orbit (LEO) efficiently and rapidly.

A Low Earth Orbit (LEO) is a near-Earth orbit ranging roughly from 160 km to 1,000 km altitude, where most satellites including the International Space Station (ISS) are placed.

LEO is preferred due to lower launch energy requirements and optimal conditions for Earth observation.

Developed By - Skyroot Aerospace, Hyderabad. Private body founded by IIT alumni and former ISRO scientists.

Key Features

Multi-Stage Lightweight Design - All-carbon-fibre body enabling high strength-to-weight performance. Multi-stage solid-fuel configuration for simpler, robust and low-maintenance operations

Capability - Can place ~300 kg payloads into LEO and is capable of deploying multiple satellites in a single mission

Rapid Launch Readiness - Solid propulsion enables quick assembly and launch within 24 hours. Requires minimal launch infrastructure, suitable for flexible launch locations

Significance

Boost to India's Private Space Ecosystem - Strengthens India's emerging small-satellite launch market. Demonstrates success of space sector reforms enabling private manufacturing and innovation

Industrial Expansion - Supported by Skyroot's new 200,000 sq ft Infinity Campus, capable of producing one orbital rocket per month

Strategic Value - Enhances indigenous access to space, reducing dependence on foreign launchers and supporting commercial, scientific, and defence payloads

Orbital and Suborbital Rockets

Orbital Rocket - It places a payload into Earth's orbit, requiring very high velocity (≈7.8 km/s) so the object continuously circles the planet. PSLV (Polar Satellite Launch Vehicle) is ISRO's most reliable orbital rocket,

Sub-Orbital Rocket - A sub-orbital rocket reaches space but does not achieve orbital velocity, causing it to return to Earth without completing an orbit. RH-200 (Rohini Sounding Rocket) of ISRO.

Purpose - Orbital rockets are used for satellite deployment and long-duration missions, while sub-orbital rockets are mainly used for technology testing, microgravity experiments, or short spaceflights.