

CONTENTS

S. No.	TITLE	Page No.
Defence News		1-17
Defence Strategic: National/International		1-17
1.	Launch of Y - 3024 (VINDHYAGIRI) on 17 August 2023	<i>Press Information Bureau</i> 1
2.	Indian Navy Participates in Bilateral Naval Maritime Partnership Exercise with UAE Navy	<i>Press Information Bureau</i> 2
3.	MoS Defence Briefed on Integration of Services at Southern Command HQ	<i>The Indian Express</i> 2
4.	Fund Worth ₹1.32-Lakh Crore Allocated for Defence Modernisation	<i>Business Line</i> 3
5.	IAF had Airlifted 68,000 Personnel to Ladakh: Defence Sources	<i>The Hindu</i> 4
6.	New Fighter Airbase, Modern Drones to Take on Chinese Aggression in Ladakh	<i>India Today</i> 5
7.	Defence Ministry Team to Check Feasibility of Constructing Airport Near China Border in Himachal	<i>Hindustan Times</i> 6
8.	Indian Army Inducts Swathi WLR Mountain Variant	<i>Janes</i> 7
9.	UP-based State-owned Def Firm Gets Orders Worth Rs 6000 Crore	<i>The Times of India</i> 8
10.	MALABAR Exercise: Enhancing Quad Nations' Defence Cooperation in Indo-Pacific	<i>DD News</i> 9
11.	10K Cops, Anti-Drone Systems in Place: Centre's Plan for Independence Day	<i>Hindustan Times</i> 10
12.	Guwahati to Host Northeast's First-ever Defence Tech Expo	<i>The Economic Times</i> 11
13.	India & China to Hold Border Talks Tomorrow Ahead of Modi-Xi Meet	<i>The Indian Express</i> 11
14.	BRICS Summit South Africa: आखिर बिर्क्स समिट पर क्यों टिकी है दुनिया की निगाहें?	नवभारत टाइम्स 13
15.	India and Italy to Soon Sign MoU in Defence Sector: Ambassador Vincenzo Luca	<i>The Economic Times</i> 14
16.	Germany to Own NATO's 2nd Largest Helicopter Fleet with 60 Chinooks	<i>India Today</i> 15
17.	Russia's Defence Minister Inspects Military Preparedness in the Arctic	<i>WION</i> 15
18.	Japan-Australia Defence Cooperation Pact to Take Effect Tomorrow	<i>ANI</i> 16
Science & Technology News		17-20
19.	ISRO Successfully Conducts Parachute Deployment Tests for Gaganyaan Mission	<i>The Economic Times</i> 17
20.	Russia's Luna 25 could Land on the Moon Days Before Chandrayaan-3: How the Two Missions Compare	<i>The Indian Express</i> 18



Press Information Bureau
Government of India

Ministry of Defence

Sun, 13 Aug 2023

Launch of Y - 3024 (VINDHYAGIRI) on 17 August 2023

The sixth Project 17A Frigate will be launched by the Hon'ble President of India

Project 17A ships have been designed in-house by Indian Navy's Warship Design Bureau

75% of orders for equipment & systems of Project 17A ships from indigenous firms

Vindhyagiri, a Project 17A Frigate, will be launched by the Hon'ble President of India Smt Droupadi Murmu, at Garden Reach Shipbuilders and Engineers Limited, Kolkata on 17 Aug 23.

Vindhyagiri, named after the mountain range in Karnataka, is the sixth ship of the Project 17A Frigates. These warships are follow-ons of the Project 17 Class Frigates (Shivalik Class), with improved stealth features, advanced weapons and sensors and platform management systems. 'Vindhyagiri', a technologically advanced Frigate, pays a befitting tribute to the distinguished service of its predecessor, the erstwhile INS Vindhyagiri, the Leander Class ASW Frigate. The old Vindhyagiri in its nearly 31 years of service from 08 Jul 81 to 11 Jun 12, had witnessed various challenging operations and multinational exercises. The newly christened Vindhyagiri stands as a symbol of India's determination to embrace its rich naval heritage while propelling itself towards a future of indigenous defence capabilities.

Under the Project 17A program, a total of four ships by M/s MDL and three ships by M/s GRSE are under construction. The project's first five ships have been launched by MDL & GRSE, between 2019-2022.

Project 17A ships have been designed in-house by Indian Navy's Warship Design Bureau, the pioneer organisation for all warship design activities. Aligning with the country's resolute commitment to 'AatmaNirbharta', a substantial 75% of the orders for equipment and systems of Project 17A ships are from indigenous firms, including Micro, Small, and Medium Enterprises (MSMEs). The launch of Vindhyagiri is an apt testament to the incredible progress our Nation has made in building a self-reliant naval force.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1948340>



**Press Information Bureau
Government of India**

Ministry of Defence

Sat, 12 Aug 2023

Indian Navy Participates in Bilateral Naval Maritime Partnership Exercise with UAE Navy

Two Indian Naval Ships INS Visakhapatnam and INS Trikand, under the command of Rear Admiral Vineet McCarty, Flag Officer Commanding Western Fleet, arrived at Port Rashid, Dubai on 08 Aug 2023 to participate in a bilateral Naval Maritime Partnership Exercise with the UAE Navy. After two days of detailed planning, the two navies conducted the bilateral Maritime Partnership Exercise today, aimed to enhance the interoperability and synergy between the two navies by cross training on tactics, techniques and procedures while developing stronger professional bonds.

During his visit, Rear Admiral McCarty met Brigadier Abdullah Farj Al Mehairbi, the Deputy Commander of UAE Naval Forces at Abu Dhabi Naval Command. They agreed on increasing the interaction between the two Navies in order to jointly tackle the common challenges of piracy, smuggling, human trafficking, enhance maritime security and undertake joint Humanitarian Assistance & Disaster Relief operations, should the need arise.

The Admiral also called on H.E. Shri Sunjay Sudhir, the Ambassador of India to the UAE and updated him on the scope and conduct of the exercise and the road map of Navy to Navy cooperation between India and UAE.

The Ambassador highlighted that the presence of these two ships for the naval exercise is an indication of our growing Defence relations with UAE guided by the Comprehensive Strategic Partnership between our countries.

INS Visakhapatnam, commanded by Captain Ashok Rao, is one of the largest operational Destroyer in Indian Navy and is a completely indigenous warship made by the Mazagaon Docks Limited. NS Trikand, commanded by Captain Pramod G Thomas, is an advance stealth frigate commissioned in 2013. The ship is a contemporary warship with state of the art technology incorporated in every facet of its design to make her stable, stealthier, fast and formidable.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1948131>



Sun, 13 Aug 2023

MoS Defence Briefed on Integration of Services at Southern Command HQ

Minister of State for Defence Ajay Bhatt on Saturday visited the Headquarters of the Southern Command of the Army and was briefed on the operational aspects and steps taken by the formation to enhance integration amongst all three services. Bhatt was received by Southern Army Commander Lieutenant General A K Singh at the Headquarters.

He was briefed on various operational, training and administration activities carried out by the command in its area of responsibilities. He was made aware of various initiatives of the Command to promote Aatmanirbhar Bharat, synergy between various agencies and steps undertaken to enhance integration amongst all three services, a press statement from the Southern Command stated. Bhatt virtually inaugurated various infrastructure projects built by Military Engineering Services in Southern Command, worth over Rs 2.5 crore. The projects include a military hospital, swimming pools, an auditorium, two solar power plants and an ammunition storage facility spread over seven different locations of the Command.

During his visit, Bhatt interacted with troops of the command and complimented all ranks for their professional approach and operational readiness. He congratulated the command for its contribution in various Humanitarian Assistance and Disaster Reliefs (HADR) operations in the area of responsibility.

Bhatt also visited the Pune unit of the Defence Public Sector Undertaking Bharat Electronics Limited (BEL) and had a first-hand look at the unit's activities in the domains of laser systems, electronic fuzes and ammunition, energy storage products and combat systems. He was given a presentation on BEL's array of products and capabilities in both defence and non-defence sector.

<https://indianexpress.com/article/cities/pune/mos-defence-briefed-on-integration-of-services-at-southern-command-hq-8890040/>



Fri, 11 Aug 2023

Fund Worth ₹1.32-Lakh Crore Allocated for Defence Modernisation

The capital outlay for defence modernisation has gone up from ₹80,959.08 crore in FY20 to ₹1,32,301.27 crore in FY24, government told parliament on Friday. However, there is a minor dip of ₹540 crore from projected business estimate FY24, pegged at ₹1,32,841.04 crore, to actual allocation for the same financial year which is ₹1,32,301.27 crore, as per written answer Minister of State for Defence Ajay Bhatt gave to joint queries of two MPs Dean Kuriakose and Anumula Revanth Reddy in Lok Sabha.

To encourage indigenous industry to contribute to defence modernisation, funds for the F24 have been earmarked in the ratio of 75:25, where 75 per cent, which is ₹99,223.03 crore, is for domestic procurement and the rest 25 per cent, that is ₹33,078.24 crore, is for procurement from abroad, MoS Bhatt told parliamentarians. The allocated funds are optimally utilised towards operational activities. If required, the schemes are reprioritised to ensure that urgent and critical capabilities are acquired without any compromise to operational preparedness of the defence services, the Minister stated.

Policy initiatives

“The government has taken several policy initiatives in the past few years and brought in reform to encourage indigenous design, development and manufacture of defence equipment, thereby promoting self-reliance in defence manufacturing & technology in the country,” Bhatt informed the lower house. Some of them are; priority to procurement of capital items from domestic sources under Defence Acquisition Procedure (DAP)-2020; notification of four ‘Positive Indigenisation Lists’ of total 411 items of services and four ‘Positive Indigenisation Lists’ of total 4,666 items of

Defence Public Sector Undertakings (DPSUs), for which there would be an embargo on the import beyond the timelines indicated against them; and simplification of industrial licensing process with longer validity period.

Benefitting ex-servicemen

A substantial increase in financial aid across various schemes aimed at benefiting ex-servicemen and their families has been approved by Defence Minister Rajnath Singh. Vocational Training Grant scheme for widows of ex-servicemen has been increased from ₹20,000 to ₹50,000 which, as per the Ministry of Defence (MoD), would help help them to provide sustenance and stability.

Also, now non-pensioner ex-servicemen and their widows will receive an increased medical grant of ₹50,000 from the existing ₹30,000. “This augmentation in financial aid recognises the valuable contributions made by our non-pensioner veterans and their right to comprehensive medical support, ensuring their well-being even after they have left active service,” the Ministry of Defence stated.

This is besides the ‘serious disease grant’. This grant, the Ministry stated, for non-pensioner ex-servicemen and their widows has been enhanced from ₹1,25,000 to ₹1,50,000 which reinforced the government dedication to assist such personnel in times of critical health challenges.

Currently, the schemes are being run by Kendriya Sainik Board and funded from the Armed Forces Flag Day Fund. These revised financial assistance amounts will come into effect immediately and will be administered through streamlined processes to ensure that beneficiaries can access the increased aid without any unnecessary delays, informed the MoD.

<https://www.thehindubusinessline.com/news/fund-worth-132-lakh-crore-allocated-for-defence-modernisation/article67184569.ece>



Sun, 13 Aug 2023

IAF had Airlifted 68,000 Personnel to Ladakh: Defence Sources

As a standoff unfolded in eastern Ladakh in May 2020, with the Indian military mobilising all-out to counter the Chinese build-up of forces as well as their invasion into Indian territory, the Indian Air Force (IAF) pressed its entire transport fleet into service to carry over 68,000 troops, 330 infantry vehicles and more than 90 tanks in addition to artillery guns, according to defence sources.

“The priority was quick deployment of army and air assets to build credible force to tackle the adversary. No one had an idea when there would be a de-escalation and so we had to be deployed there and sustain the deployments. After Galwan, it was felt that there was a need to build formidable force,” a defence source said, giving an overview on the IAF’s efforts during the early phase of the standoff. “In all, over 9,000 tonnes were airlifted in the initial phase of the standoff,” the source added, saying that this also included the airlift of IAF assets, such as radars and surface-to-air guided weapon systems.

Transport fleet fully deployed

The IAF operates a range of transport aircraft: the smaller workhorses AN-32s and AVROs, the IL-76 heavy transports and IL-78 mid-air refuelling tankers from Russia, 12 C-130J Super Hercules special mission aircraft, and 11 C-17 Globemaster strategic airlift aircraft.

The build-up of fighter aircraft included the forward deployment of Rafales, SU-30MKIs and Mig-29s. IAF has airfields at Leh and Thoise in Ladakh, while work has just commenced to extend the runway at the advanced landing ground in Nyoma to be able to handle fighter jets. “We projected an offensive posture so that we are able to tackle any misadventure by the adversary,” the source said. Operational readiness platforms were maintained, which means that fighters were fully loaded and ready to take off in five to seven minutes. Combat air patrols were conducted, which means that fighters were in the air to dissuade the Chinese from any “misadventure”. SU-30MKI and Jaguar fighters were deployed for intelligence, surveillance and reconnaissance purposes, in addition to helicopters and unmanned aerial vehicles.

Coordinating with the army

The next requirement is strengthening the air defence network, which includes surface-to-air guided weapons and the radars to guide them. These were airlifted or moved by road to forward locations and maintained in peak winters, with temperatures ranging from 15 to 140 degrees celsius, and very windy conditions.

Giving an example of the challenges faced by the IAF as well its coordination with the Indian Army, the source said that the army quickly built a pontoon bridge across the Indus river, enabling quick transportation of heavy radars, which would otherwise have taken four to five days using existing tracks.

As per the existing agreements between India and China, operation of fighter aircraft and armed helicopters is restricted to a distance from the Line of Actual Control (LAC). According to the ‘Agreement on Maintenance of Peace and Tranquillity along the LAC in India-China Border Area’ of 1996, “combat aircraft (to include fighter, bomber, reconnaissance, military trainer, armed helicopter and other armed aircraft) shall not fly within 10 km of the LAC.”

However, at the height of the standoff in eastern Ladakh, there have been several air violations with Chinese fighters coming close to the LAC.

<https://www.thehindu.com/news/national/iaf-airlifted-over-9000-tonnes-during-initial-phase-of-standoff-in-eastern-ladakh/article67190582.ece>



Sun, 13 Aug 2023

New Fighter Airbase, Modern Drones to Take on Chinese Aggression in Ladakh

A new airbase at over 13,000 feet that can operate fighter aircraft, new radars, and upgraded drones for enhancing surveillance in Ladakh are part of the plan to ramp up offensive capabilities against an aggressive China, officials in the security establishment told India Today.

While there have been no clashes like the 2020 one, heightened deployments from both sides continue in the area.

3rd airbase for fighter operations

Sources in the security establishment said work has started at Nyoma airbase, less than 50 km from the Line of Actual Control (LAC). Defence Minister Rajnath Singh is expected to visit Nyoma soon to review the work and set the ball rolling, officials privy to the developments said.

The Nyoma airbase will be the third such facility in Ladakh to support fighter aircraft operations, with Leh and Thoise already having this capability.

The Indian Air Force has maintained an offensive posture in Ladakh since the military tussle with China started in 2020. The Chinese side ramped up facilities near the LAC bordering Ladakh and there have also been instances when Chinese fighter jets flew extremely close to India's defences.

Amid the tensions in Ladakh, the Chinese side has also significantly improved its air force facilities in areas bordering India, constructing new airbases and expanding existing ones.

Upgraded Israeli Heron UAVs

Sources said that the Indian Air Force will also be getting the upgraded Heron Mk 2 drones for more effective surveillance.

“We have enhanced our surveillance capabilities and are looking at furthering it by deploying the latest technology that will allow us to catch Chinese activities even deeper,” said an official in the security establishment.

Sources said the Indian Air Force has recently procured four new Heron Mk2 drones that are the upgraded versions of the existing fleet and are being deployed in Ladakh.

Tanks, artillery guns, enhanced troop deployment continues

During the peak of the military tussle in 2020, following the Galwan incident in which 20 Indian soldiers were killed while confronting the Chinese side, Indian deployment in Ladakh was increased. The heightened deployment still continues as a complete de-escalation or de-induction has not happened yet.

The Indian Air Force had to swing into action pressing its transport fleet, deploying over 68,000 troops to forward locations and airlifting 90 tanks, 330 Infantry Combat Vehicles, the Russian BMPs, several artillery guns, a total load exceeding 9000 tonnes, sources said. Airlift of assets like critical radars and surface-to-air guided weapon systems was also done. New additions to these assets are currently being made, officials said.

Meanwhile, the 19th round of Corps Commander level talks to discuss de-escalation in Eastern Ladakh is scheduled for August 14.

<https://www.indiatoday.in/india/story/new-fighter-airbase-modern-drones-to-take-on-chinese-aggression-in-ladakh-2420213-2023-08-13>



Sat, 12 Aug 2023

Defence Ministry Team to Check Feasibility of Constructing Airport Near China Border in Himachal

In response to China's escalating infrastructure development along the border, the Union defense ministry has constituted a three-member expert team to investigate the feasibility of constructing an airport in Rangrik, a village located in the remote Spiti valley of Lahual and Spiti district.

Although the team was scheduled to visit Rangrik, inclement weather, including heavy rains and floods, has forced them to reschedule their trip. They are now expected to visit the site later this month, confirmed chief secretary Prabodh Saxena.

The move comes as the state shares a 240 km porous border with China, with key stretches spanning 80 km between Chumar in Lahaul-Spiti and 160 km from Daroti to Mumri Dogri in the Kinnaur district.

Highlighting the strategic importance of an airstrip at Rangrik, chief minister Sukhvinder Singh Sukhu recently met with Union defence minister Rajnath Singh in New Delhi. He urged for the construction of an airstrip at this location, a mere 50 km aerial distance from the China-occupied Tibet international border.

Emphasising its potential to bolster tourism in border areas, Sukhu deemed the proposed airstrip as a vital asset for the region. He said that as the Spiti valley is reliant on the National Highway 505 as its sole access route, the need for alternative connectivity is paramount.

The state government has been advocating for this for years. The army conducted surveys in villages of Tashi Gang, Gyete and Faldar at altitudes between 4,200 and 4,400 meters above sea level.

Currently, the highest airport in India is the Kashok Bakula Rimpoche Airport in Leh, situated at 3245 meters above sea level. Primarily serving military and civilian flights, the army has been interested in establishing an airfield in Himachal in close proximity to the Chinese border to facilitate its operations.

Despite various surveys and feasibility studies, progress on the Rangrik airstrip plan has been sluggish. Indian Air Force and the Airport Authority of India (AAI) conducted surveys for this project.

The border between China and India features nine passes, with Baryog La and Lapcha La Pass located in the Lahaul and Spiti districts. The remaining seven, Shipki La, Rani Tso La, Keo Barang La, Khimkula, Yamrang La, and Ghungrangla Pass, straddle the Kinnaur district, Uttarakhand and the Tibetan Autonomous Region.

China's construction of a one-kilometre road up to Yamrangla opposite the Ghungrangla Pass has raised concerns.

After the Galwan Valley clash, director general of police Sanjay Kundu assembled a panel of five Indian police service officers. Covering 36 villages near the border in Kinnaur and Lahaul Spiti, the panel presented 12 key recommendations to improve infrastructure.

<https://www.hindustantimes.com/cities/chandigarh-news/union-defense-ministry-forms-expert-team-to-investigate-feasibility-of-airport-in-border-village-amid-china-tensions-101691781721182.html>



Fri, 11 Aug 2023

Indian Army Inducts Swathi WLR Mountain Variant

The Indian Army has announced the induction of six units of a mountain variant of the Swathi Weapon Locating Radar (WLR) to enhance battlefield surveillance.

The WLR, also known as the Swathi Mark II, was delivered to the Indian Army by state-owned Bharat Electronics Limited (BEL) in early August.

A BEL spokesperson told Janes on 9 August that the company received an order for the six Swathi Mark II units in December 2021, and that all were delivered by March 2023. "We are expecting more orders for the Swathi Mark II from the Indian Army," the spokesperson said.

The Swathi WLR – developed by the Defence Research and Development Organisation (DRDO) – is a mobile 3D electronically scanned phased-array radar that can automatically locate artillery, mortars, and rocket launchers of hostile troops and enable their destruction by facilitating counter bombardment.

According to Janes C4ISR & Mission Systems: Land, each Swathi WLR unit is integrated into two vehicles – a radar vehicle that accommodates electronics and an antenna shelter; and a power source-cum-built-in test equipment (BITE) vehicle, which contains two diesel generator sets and a radar target simulator.

The Swathi WLR also has a Mark I variant suited for operations in plains. The only difference between the two variants is their weight. The Mark I variant is integrated into two 8×8 wheeled Tatra trucks that weigh around 30 and 28 tons, while the Mark II variant is integrated into two 6×6 wheeled Tatra trucks that weigh around 18 tons each.

<https://www.janes.com/defence-news/news-detail/indian-army-inducts-swathi-wlr-mountain-variant>

THE TIMES OF INDIA

Mon, 14 Aug 2023

UP-based State-owned Def Firm Gets Orders Worth Rs 6000 Crore

Advanced Weapons and Equipment India Limited (AWEIL), a state-owned company manufacturing defence products in Kanpur's Armapur, has received an order to manufacture defence products worth Rs 6000 crore. These include an order for 300 'Sarang' cannons from the Indian Army and orders worth Rs 450 crore received from European countries, its CMD said.

AWEIL, which comprises eight factories of the erstwhile Ordnance Factory Board (OFB) and primarily manufactures small arms and artillery guns for the use of the Indian armed forces, foreign militaries and domestic civilian use, was established in 2021 as part of the restructuring and corporatisation of the OFB into seven different PSUs.

Chief managing director (CMD) Rajesh Choudhary said, "When there was no corporate culture in the defence sector, we had orders for defence products worth Rs 4,500 crore. But when the system changed and we started working after getting corporatised, we got orders worth Rs 6,000 crore. About 35% more orders have been received in the last two years."

Choudhary said that there is a possibility of getting orders worth Rs 2500 crore in the next six months.

The CMD said that the firepower of Dhanush cannon made in Kanpur has now been expanded. "Earlier, it was made of 155mm/45 calibre. Now, we have developed a prototype of 155mm/52 calibre. All its tests are done, and it will soon be brought out," he said.

Choudhary said, "On August 18, we will launch Prabal, a very beautiful lightweight revolver. As revolvers are manufactured in limited numbers, it will be provided only to those who had pre-booked it. Its price has been kept lower than the previous ready revolvers."

The CMD said that they were now using modern techniques like artificial intelligence, drone technology and machine learning to better their products. "For this, experts from Small Arms Factory and IIT-Kanpur have started working together," he said.

A two-day exhibition on defence products was also organized by the Ordnance Factory at Armapur Grounds. Small Arms Factory general manager Rajiv Sharm and exhibition coordinator Arun Kastwar and others were present on this occasion.

<https://timesofindia.indiatimes.com/city/kanpur/up-based-state-owned-def-firm-gets-orders-worth-rs-6000-crore/articleshow/102705558.cms>



Sat, 12 Aug 2023

MALABAR Exercise: Enhancing Quad Nations' Defence Cooperation in Indo-Pacific

India, Japan, the USA, and Australia have commenced their first 'Malabar Naval Exercise' off Australia. The exercise started on August 11 and will continue until August 22. It will witness the participation of the Quad navies (India, Australia, Japan, USA) in the mega-international event.

The Indian Navy shared visuals of the exercise on Friday (August 11) and said, "India, USA, Japan, and Australia multilateral naval exercise will witness high-intensity operations in all three domains of warfare." India's indigenous frontline warships INS Sahyadri and INS Kolkata are participating in the exercise along with ships and aircraft from the US Navy (USN), the Japan Maritime Self Defence Force (JMSDF), and the Royal Australian Navy (RAN).

Details of the exercise

Malabar 2023 is scheduled to be conducted in two phases. The Harbour Phase involves wide-ranging activities such as cross-deck visits, professional exchanges, sports fixtures, and several interactions for the planning and conduct of the Sea Phase. The Sea Phase will include various complex and high intensity exercises in all three domains of warfare, encompassing anti-surface, anti-air, and anti-submarine exercises, including live weapon firing drills.

Shifting geopolitical dynamics and evolving security challenges

The exercise provides an opportunity for the Indian Navy to enhance and demonstrate interoperability and also gain from the best practices in maritime security operations from its partner nations.

India has been increasingly proactive in bolstering its naval capabilities and forging strategic partnerships to ensure stability and security in the region. One of the key steps in this direction is the Malabar Exercise, a multinational naval drill that underscores India's commitment to safeguard the Indo-Pacific while cooperating closely with QUAD nations.

During a press conference on the exercise, Vice Admiral Karl Thomas, Commander of the U.S. Navy's Seventh Fleet, said, "The deterrence that our four nations provide as we operate together as a Quad is a foundation for all the other nations operating in this region."

<https://ddnews.gov.in/international/malabar-exercise-enhancing-quad-nations-defence-cooperation-indo-pacific>

10K Cops, Anti-Drone Systems in Place: Centre's Plan for Independence Day

Over 10,000 police personnel are set to be deployed across the city on Independence Day on Tuesday to ensure that the national capital is secure, and people commute without any inconvenience, officers aware of the arrangements said on Sunday, adding that thousands of other officials will also remain on alert during the celebrations.

Deputy commissioner of police (public relations officer) Suman Nalwa said, “Delhi Police is proud to be in charge of security of the Independence Day function. Adequate arrangements have been put in place to ensure seamless celebrations across the city”.

According to a senior police officer, the 10,000 officers who are deployed across the city for Independence Day include those at the main venue for the day — the Red Fort — and along Prime Minister Narendra Modi’s route for the event. “Deployed teams include anti-sabotage check, access control and anti-terror squad,” the officer added, declining to be named.

The officer said that artificial Intelligence (AI)-based facial recognition system is also in place to keep a check on terror elements.

Nalwa said heavy vehicles will not be allowed to enter the Capital from Sunday midnight. “Deployment has been done to keep a check at the borders and gather intelligence. Traffic restrictions have been made wherever necessary and traffic advisory is being issued regularly to update the citizens,” she said.

DCP (north) Sagar Singh Kalsi, under whose jurisdiction the Red Fort is located, said, “For the last two months, a stringent verification drive was conducted at hotels, guest houses, paying guest accommodations and lodges. Over 100 vehicles were checked every day at each picket across the city to check for suspicious objects and individuals. Meetings were also held with residents’ welfare associations (RWAs) and market welfare associations (MWAs) to inform them about being the ‘eyes and ears’ of Delhi and alert if they spot anything suspicious.”

Another officer aware of the arrangements said that CCTV cameras have been installed at strategic places and anti-drone systems, including those by Defence Research and Development Organisation (DRDO) and National Security Guards (NSG), have been installed.

Meanwhile, the Delhi Traffic Police also shared an advisory. It said that roads will be closed for public in the area around Red Fort from 4am to 11am on Tuesday. Besides, Netaji Subhash Marg, Lothian Road, SP Mukherjee Marg, Chandni Chowk Road, Nishad Raj Marg, Esplanade Road and its Link Road, Ring Road from Rajghat to ISBT, and Outer Ring Road from ISBT to IP Flyover will be closed during the same time as well.

Moreover, the Delhi Transport Corporation (DTC) buses will not move on between Kashmere Gate and the Ring Road starting Sunday midnight till 11am on August 15, officers said.

“Vehicles that do not have parking labels for Independence Day celebrations may avoid C-Hexagon, India Gate, Copernicus Marg, Mandi House, Sikandra Road, W Point, A point Tilak Marg, Mathura Road, BSZ Marg, Netaji Subhash Marg, JL Nehru Marg, Ring Road between

Nizamuddin Khatta and ISBT Kashmere Gate, and Outer Ring Road from Nizamuddin Khatta to ISBT Kashmere Gate via Salimgarh bypass," the advisory said.

<https://www.hindustantimes.com/cities/delhi-news/10k-cops-anti-drone-systems-in-place-for-independence-day-in-delhi-101691949444815.html>

THE ECONOMIC TIMES

Sat, 12 Aug 2023

Guwahati to Host Northeast's First-ever Defence Tech Expo

A defence technology exhibition, showcasing latest weapons, vehicles and other equipment, will be held for the first time in the Northeast, with Assam's largest city Guwahati gearing up to host the event in October. A meeting to review the preparations was held between the state government and top Army officials here on Friday, Assam Industries and Commerce Minister Bimal Borah said.

"Held a meeting along with GoC-in-C, Eastern Command Lt. Commander R Kalita to review the proposed defence expo Defence East Tech 2023 scheduled to be held for the first time in the North East on the 10th & 11th of October 2023 at Maniram Dewan Trade Center, Guwahati," Borah wrote on X, previously known as Twitter.

He said this will be the first-ever defence technology exhibition showcasing cutting-edge weapons, vehicles and tech solutions ranging from assault rifles to military drones.

The expo will witness the participation of over 200 indigenous manufacturers, startups and MSMEs.

"This programme aligns with Hon'ble PM Adarniya Shri @narendramodi Ji's #AatmaNirbhar Campaign realising the vision of a 'Self-Reliant India' and aims to promote and strengthen India's domestic industries, especially in critical sectors like defence," Borah said.

The expo is also expected to have a ripple effect by furthering the industrial development of the sector in the state and provide an opportunity to bring in investment and create jobs, the minister added.

<https://economictimes.indiatimes.com/news/defence/guwahati-to-host-northeasts-first-ever-defence-tech-expo/articleshow/102674132.cms>



Sun, 13 Aug 2023

India & China to Hold Border Talks Tomorrow Ahead of Modi-Xi Meet

With about a week to go before Prime Minister Narendra Modi will be face-to-face with Chinese President Xi Jinping in South Africa for the BRICS leaders' summit, India and China will hold their 19th round of military talks Monday as part of continuing efforts to ease the standoff along the Line of Actual Control in eastern Ladakh which is in its fourth year now, officials said Saturday.

The Indian delegation will be led by 14 Corps Commander Lt Gen Rashim Bali. The last round of talks was held on April 23 ahead of the Shanghai Cooperation Organisation (SCO) Defence Ministers' meeting. Legacy friction points along the LAC in eastern Ladakh and ways to overcome the trust deficit between the two militaries were discussed.

Officials told The Indian Express that confidence-building measures, ensuring adherence to border protocols, sharing of patrol information to avoid clashes between troops and ensuring adequate communication between the ground troops —along the LAC and at buffer zones — would be discussed.

The fact that the talks are being held after almost four months — and weeks after Indian and Chinese Foreign Ministers and National Security Advisors have had meetings — signals a sense of urgency.

Chinese President Xi is also scheduled to visit India for the G20 summit on September 9 and 10 this year. This also provides a window of opportunity to move forward on the border standoff.

Indeed, in 2017, when Indian and Chinese troops were in a border standoff at Doklam, the two sides had broken the two-and-half-month-old deadlock days before Modi and Xi were scheduled to meet for the BRICS summit in Xiamen (China).

External Affairs Minister S Jaishankar and NSA Ajit Doval have already met Chinese Foreign minister Wang Yi, who replaced Qin Gang last month.

Wang has negotiated past standoffs with India — from Chumar to Doklam, and has been the key interlocutor for India-China diplomatic ministerial level talks on the border standoff this time since 2020 as well.

New Delhi had upped the ante in July when Doval told Wang that the situation along the LAC since 2020 had “eroded strategic trust and the public and political basis of the relationship”.

But in the last week of July, seven months after Modi met Xi at the G20 summit in Bali last November in their first in-person meeting in public view since the standoff began in May 2020, India had confirmed, for the first time, that the two leaders had spoken about the “need to stabilize the bilateral relations”.

In November, while there was no substantive readout on their conversation, Indian officials had said the “Prime Minister and President Xi Jinping, who were both attending the G20 dinner hosted by the Indonesian President, exchanged courtesies at the conclusion of the dinner”.

After Doval met top Wang in South Africa on the sidelines of the BRICS NSAs' meeting in July, the Chinese Foreign ministry mentioned the “important consensus” between Xi and Modi at the Bali summit.

Since Bali, ministers and officials from both sides have met several times but there has been no resolution in sight to the standoff that began in May 2020.

Following extensive diplomatic and military discussions, the two sides have managed to complete disengagement in some areas but 50,000-60,000 troops remain deployed on both sides of the India-China border.

In September last year, both sides pulled back troops to disengage from Patrolling Point-15 in the Gogra-Hot Springs area of Eastern Ladakh, marking a step forward. Friction points such as Galwan Valley, north and south banks of Pangong Tso and the Gogra-Hot Springs area, have seen some resolution with the creation of buffer zones.

<https://indianexpress.com/article/india/india-china-to-hold-border-talks-tomorrow-ahead-of-modi-xi-meet-8889949/>

नवभारत टाइम्स

Mon, 14 Aug 2023

BRICS Summit South Africa: आखिर ब्रिक्स समिट पर क्यों टिकी हैं दुनिया की निगाहें?

अल्पयू सिंह

अब से कुछ दिन बाद दक्षिण अफ्रीका के जोहानिसबर्ग में ब्रिक्स समिट होने वाली है। इस बार समिट को लेकर डिप्लोमेसी की दुनिया में खासी गहमागहमी है। यूक्रेन के बाद दुनिया का वर्ल्ड ऑर्डर तेजी के साथ बदल रहा है। इस नए बदलाव के बीच ब्रिक्स सरीखे प्लैटफॉर्म का बढ़ता कद कुछ वक्त से शिद्धत से महसूस किया जा रहा है। अंतरराष्ट्रीय मामलों के जानकार मानते हैं कि आने वाले समय में ब्रिक्स एक अहम डिप्लोमैटिक और इकनॉमिक ब्लॉक बनने वाला है। इस बात में सच्चाई भी लगती है क्योंकि अगर ऐसा नहीं होता फिलहाल पांच देशों के इस समूह को जॉइन करने के लिए दुनिया के 40 से ज्यादा देश रुचि न दिखाते। उनमें से 22 देशों ने सदस्यता के लिए अप्लाई भी कर दिया है। अर्जेंटीना, सऊदी अरब, UAE और ईरान उन देशों में से हैं, जो ग्रुप में एंट्री चाहते हैं।

विस्तार को लेकर गंभीर मंथन

ये ज्यादा पुरानी बात नहीं है जब ब्रिक्स को पश्चिम देशों के चश्मे से एक ऐसे समूह की तरह देखा जाता था, जो G20 के बरक्स वर्ल्ड ऑर्डर के गैप को सांकेतिक रूप से भरने के लिए सामने आया था। हाल के वर्षों में दुनिया के जियो-पॉलिटिकल हालात तेजी से बदले हैं। ग्लोबल साउथ के देशों की धमक अंतरराष्ट्रीय पॉलिटिक्स में तेजी से बढ़ी है। ऐसे में ब्रिक्स का विस्तार एक ऐसा मसला है, जो इस बार समिट के अजेंडे की लिस्ट में शायद पहले नंबर पर हो।

इस मसले पर भारत का एकदम साफ रुख है। भारत ने कई बार कहा है कि समूह के विस्तार को लेकर उसे ऐतराज नहीं है। हाल ही में एक प्रेस कॉन्फ्रेंस में MEA के प्रवक्ता अरिंदम बागची ने बताया भी था कि नए सदस्यों की एंट्री को लेकर क्राइटेरिया जैसे मसलों पर सदस्य देशों के बीच मंथन चल रहा है और भारत इस विस्तार को सकारात्मक तरीके से देखता है। हालांकि सच ये भी है कि इसे लेकर भारत की कुछ अपनी चिंताएं हैं। यूक्रेन युद्ध के बाद बदले हालात में रूस और चीन अब एकसमान हैसियत रखने वाले देश नहीं हैं।

पश्चिम विरोधी प्लैटफॉर्म न बन जाए

पश्चिम में अलग थलग पड़ने के बाद रूस का दबदबा चीन के सामने फीका पड़ा है। ऐसे में ब्रिक्स के एक ध्रुवीय या चीनी प्रभुत्व के तले होने की आशंका से इनकार नहीं किया जा सकता। दूसरी ओर, दुनिया की डिप्लोमैसी में भारत अगर एक अहम मुकाम पर है तो इसके पीछे वजह एक गुटनिरपेक्षता वाली डिप्लोमैटिक दूरी भी है। ऐसे में भारत नहीं चाहेगा कि इस मंच का इस्तेमाल पश्चिम विरोधी प्लैटफॉर्म की तरह किया जाए।

साफ है कि नए सदस्यों की एंट्री ऐसा मसला है जिसे लेकर सदस्य देशों के बीच खासा विमर्श देखने को मिल सकता है। इस बात को रूस भी महसूस करता है। शुक्रवार को ही भारत में रूसी डिप्लोमैट रोमन बाबुशकिन ने कहा भी कि कि मौजूदा जियो पॉलिटिकल हालात में ब्रिक्स किसी के भी विरोध में नहीं खड़ा है।

साझा करंसी कैसे आएंगे साथ?

‘डी-डॉलरीकरण’ का भी मुद्दा है। ग्रुप के भीतर आपस में ब्रिक्स करंसी के जरिए कारोबार की भी चर्चा चल रही है। माना जा रहा है कि इस मसले पर भारत अपने स्टैंड पर अकेला है। जुलाई में विदेश मंत्री एस. जयशंकर ने साफ कह दिया था कि ब्रिक्स की नई करंसी को लेकर कोई योजना नहीं है और भारत का फोकस रुपये को मजबूत करने पर है। हालांकि, जिस वक्त जयशंकर ये कह रहे थे, उसी दौरान केन्या में रूसी दूतावास के एक बयान ने करंसी को लेकर ग्रुप की गंभीरता की भी झलक दे दी।

एंभेसी के आधिकारिक बयान में कहा गया कि ब्रिक्स देश जो करंसी शुरू करने वाले हैं वह 'गोल्ड बैकड' होगी। फिलहाल इस मसले पर ब्रिक्स देश किस नतीजे पर पहुंचते हैं, इसे लेकर इंतजार करना होगा। ये देखने वाली बात होगी कि क्या इस समिट में नई करंसी शुरू करने का ऐलान होता है और अगर ऐसा होता है तो ये करंसी किस फॉर्मेट में होगी। उसके बाद सदस्य देशों की अपनी करंसी की भूमिका कैसी होगी? अगर ब्रिक्स देश इसे लेकर किसी नतीजे पर पहुंच जाते हैं, तो ये कदम ना सिर्फ वर्ल्ड जियो पॉलिटिकल ऑर्डर बल्कि इकनॉमिक ऑर्डर को बदलने में मील का पत्थर साबित हो सकता है।

<https://navbharattimes.indiatimes.com/india/brics-summit-2023-south-africa-why-the-whole-world-is-looking-it/articleshow/102714963.cms>

THE ECONOMIC TIMES

Fri, 11 Aug 2023

India and Italy to Soon Sign MoU in Defence Sector: Ambassador Vincenzo Luca

Italy's Ambassador to India Vincenzo De Luca has said the two countries would soon sign a bilateral pact in the defence sector to ramp up their military ties and maintained that Rome was working hard to contribute to the 'Make in India' programme.

In a move to enhance navy-to-navy cooperation between the two countries, Italian Navy's warship ITS Morosini is on a port visit to Mumbai from August 10 to 13. Italian Navy officials will also meet the top brass of the Mumbai-headquartered Western Naval Command during this period.

"We are working very hard to contribute to the programme of self-reliance, Make in India," Luca said on Thursday at a press conference here.

He said that there are some specific technologies where Italy can add value to the Make in India programme, namely torpedo, helicopter, radar, electronic warfare and shipyard. Make in India is the Narendra Modi government's flagship programme that aspires to facilitate investment, foster innovation, enhance skill development and build best-in-class manufacturing infrastructure.

"We will very soon sign a bilateral MoU in the defence sector," added the Italian envoy.

He said an MoU (memorandum of understanding) in the defence sector already exists between the two sides, but it will be renewed which will further industrial collaboration after the two countries elevated their ties to strategic partnership earlier this year.

ITS Morosini, which is in Mumbai, had earlier visited Singapore, Indonesia, the Philippines, Japan, South Korea and Bangladesh.

It will head to Oman after India. "In the framework of the current Italian Navy's five-month naval diplomacy campaign throughout the Indo-Pacific area, this visit aims at demonstrating Italy's commitment towards the region and at strengthening bilateral cooperation and mutual understanding between navies and showing the excellence of Italian naval and defence industry," the Italian embassy said in a statement. Commissioned in October 2022, ITS Morosini is one of the latest warships in the Italian Navy fleet and it can reach the speed of 32 knots and has a very powerful propulsion system. The ship, which can accommodate two helicopters, also has a naval cockpit which is one of its kind, said the statement.

<https://economictimes.indiatimes.com/news/defence/india-and-italy-to-soon-sign-mou-in-defence-sector-ambassador-vincenzo-luca/articleshow/102630716.cms>

Fri, 11 Aug 2023

Germany to Own NATO's 2nd Largest Helicopter Fleet with 60 Chinooks

Germany will own NATO's second largest helicopter fleet with the 60 Chinooks it announced it was buying last month, German Air Force Chief Ingo Gerhartz was quoted as saying on Friday.

Last month, Reuters reported Germany would buy 60 Chinook helicopters from Boeing BA.N in a package that will cost up to 8 billion euros (\$8.7 billion), including necessary infrastructure for the aircraft.

"We will be the second largest helicopter nation in NATO after the U.S.," Gerhartz was quoted as saying by RND media network.

Almost 50 Chinook helicopters would be stationed at the Holzdorf/Schoenewalde site in eastern Germany, where 1,000 additional soldiers will be also stationed, Gerhartz added.

"The Schoenewalde site will play a unique key role for the Air Force, the entire Bundeswehr and Germany's security," he said.

<https://www.indiatoday.in/world/story/germany-to-own-nato-second-largest-helicopter-fleet-60-chinooks-holzdorf-schoenewalde-base-2419362-2023-08-11>



Sat, 12 Aug 2023

Russia's Defence Minister Inspects Military Preparedness in the Arctic

Russian Defence Ministry said on Saturday (August 12) that Defence Minister Sergei Shoigu inspected Russian troop and military preparedness in the Arctic "to defend specially important installations" in this strategic zone.

The statement from the ministry said that Shoigu was accompanied by Alexey Likhachev, who is the head of state nuclear company Rosatom. Shoigu visited Novaya Zemlya which is in Russia's extreme north.

The defence minister also inspected a testing site for nuclear weapons used during the Soviet era, where "advanced tests for military weapons and equipment" were taking place, the defence ministry said, without giving details.

Ukraine has launched its highly anticipated push in June after stockpiling Western weapons. However, it has struggled to make any major gains in the face of stiff Russian resistance.

Russia invaded Ukraine on February 24 last year. It had already strengthened its military presence in the Arctic before the commencement of what it calls 'special military operation' in Ukraine.

Russia has rehabilitated Soviet-era bases and deployed weapons and anti-aerial S-400 systems in the region, which has vast reserves of hydrocarbons and can serve as a major maritime route between Europe and Asia due to global warming and melting glaciers.

Two countries in this region - Finland and Sweden - grown close to the western military alliance NATO. Russia views such developments as threat to its security.

Finland joined the alliance in April and Sweden is expected to be formally admitted in the coming months.

Russia meanwhile said on Saturday that it shot down 20 unmanned drone sent by Ukraine near the Crimean peninsula. According to information released by the Russian defence ministry on Telegram, 14 drones were shot down by Russian air defence systems. Six more drones were shot down using electronic warfare.

There were no casualties or damage, said the ministry.

Governor of Kaluga region, about 150 kilometres southwest of Moscow said that a drone was also intercepted in the region.

On Friday officials in Moscow said that they had destroyed a drone that was targetting the Russian capital. The attack was latest in series of attacks on Moscow in recent days.

In July, Ukrainian drone strikes on Crimea blew up an ammunition depot and damaged the bridge across the Kerch Strait linking the peninsula to Russia's mainland.

Crimea was annexed by Russia in 2014.

In Ukraine, Russian attacks on Saturday killed a policeman and injured 12 other people in the southern Zaporizhzhia region.

A man was also killed in the Kharkiv region, according to local authorities.

<https://www.wionews.com/world/russias-defence-minister-inspects-military-preparedness-in-the-arctic-624854>



Sat, 12 Aug 2023

Japan-Australia Defence Cooperation Pact to Take Effect Tomorrow

In an effort to counter China's expanding influence in the Indo-Pacific, the Japanese government announced that a pact with Australia that will enable joint exercises and improve security cooperation will go into force on Sunday, the Japan Times reported.

Similar to Tokyo's current Status of Forces Agreement with the United States, the Japan-Australia Reciprocal Access Agreement will make it easier for Australian Defence Force and Japanese Self-Defense Force personnel to deploy more quickly.

The deal, signed in January 2022 as Japan's first RAA, will also ease restrictions on the transportation of weapons and supplies for joint exercises and disaster relief operations, The Japan Times reported.

The move came after the Japanese parliament in April approved legislation for the pact, along with one with Britain, to complete its domestic approval processes.

Through the security agreements, Japan aims to boost security ties with the United States and other like-minded countries to enhance deterrence against Beijing, which has become more militarily assertive in the Indo-Pacific region, The Japan Times reported.

Agreeing to start talks on the RAA in 2014, Japan and Australia reached a broad agreement in November 2020. However, Japan's adherence to the death penalty system delayed finalization, as Canberra, having abolished capital punishment, urges other countries to do the same.

An appendix to the accord allows Australia the discretion to refuse the transfer of its soldiers accused of crimes in Japan, thereby preventing potential death sentences, The Japan Times reported.

Japan and Britain concluded an RAA in January this year, but London has yet to finish its domestic procedures for its implementation.

<https://www.aninews.in/news/world/asia/japan-australia-defence-cooperation-pact-to-take-effect-tomorrow20230812132321/>

Science & Technology News

THE ECONOMIC TIMES

Sat, 12 Aug 2023

ISRO Successfully Conducts Parachute Deployment Tests for Gaganyaan Mission

ISRO has successfully conducted a series of tests on drogue parachutes, which would play a pivotal role in stabilising the crew module and reducing its velocity to a safe level during re-entry in the planned Gaganyaan human space flight mission.

The Gaganyaan mission hopes to safely transport astronauts to Space and back. Drogue parachutes are deployed to decrease speed and stabilise rapidly moving objects. ISRO's Thiruvananthapuram-based Vikram Sarabhai Space Centre (VSSC) successfully conducted a series of Drogue Parachute Deployment Tests at the Rail Track Rocket Sled (RTRS) facility of the Terminal Ballistics Research Laboratory in Chandigarh during August 8-10, the national space agency said in a statement here on Friday.

The tests were conducted in collaboration with Aerial Delivery Research and Development Establishment (ADRDE)/DRDO. The drogue parachutes, packed within pyro-based devices known as mortars, are cleverly designed to eject the parachutes into the air upon command.

These conical ribbon-type parachutes, boasting a diameter of 5.8 metres, employ a single-stage reefing mechanism, ingeniously minimising canopy area and mitigating opening shock, ensuring a smooth and controlled descent, the ISRO (Indian Space Research Organisation) explained.

During the three comprehensive tests conducted at the RTRS facility, a range of real-world scenarios were simulated to rigorously evaluate the performance and reliability of the drogue parachutes. The first test simulated the maximum reefed load, marking a groundbreaking introduction of reefing in a mortar-deployed parachute within India.

The second test emulated the maximum dis-reefed load, while the third test showcased the deployment of the drogue parachute under conditions mirroring the maximum angle of attack experienced by the crew module during its mission. "These successful RTRS tests serve as a critical qualification milestone for the drogue parachutes, confirming their readiness for integration into the upcoming Test Vehicle-D1 mission," the statement said.

Notably, earlier this year, the RTRS tests of Pilot and Apex cover separation parachutes were also conducted, further accentuating the progress of the Gaganyaan mission's parachute system development. The intricate parachute sequence for the Gaganyaan crew module's deceleration system encompasses a total of 10 parachutes.

The sequence commences with the deployment of two apex cover separation parachutes, followed by the stabilisation achieved through the deployment of two drogue parachutes.

Upon release of the drogue parachutes, the mission transitions into the extraction phase, with three pilot chutes individually extracting three main parachutes, a pivotal step in reducing the Crew Module's speed to safe levels for a secure landing, the statement said.

<https://economictimes.indiatimes.com/news/science/isro-successfully-conducts-parachute-deployment-tests-for-gaganyaan-mission/articleshow/102651287.cms>



Mon, 14 Aug 2023

Russia's Luna 25 could Land on the Moon Days Before Chandrayaan-3: How the Two Missions Compare

Russia's mission to the moon, Luna 25, is generating interest in India too. This is because the Russian lander is likely to touch down close to the lunar South Pole a couple of days before India, taking away the title of the first country to soft-land close to the South Pole.

The Russian mission was launched on August 10. It is likely to enter the moon's orbit by August 16 and attempt the soft landing by August 21 or 22. India's mission to the moon cannot land before August 23, when it will be lunar dawn at the landing site.

Why is Russia reaching the moon earlier than India?

Although Luna-25 was launched earlier this week aboard its Soyuz rocket — almost a month after the launch of Chandrayaan-3 on July 14 — it will cover the 3.84-lakh-km journey within days. This is because the Russian mission was able to follow a more direct trajectory towards the moon, owing to its lighter payload and more fuel storage. The lift-off mass for Luna 25 is just 1,750 kg as compared with the 3,900 kg of Chandrayaan-3. Chandrayaan's Lander-Rover alone weighs 1,752 kg, with the propulsion module weighing another 2,148 kg.

To make up for the lower fuel reserve available on the LVM3 vehicle that launched India's mission, a more circuitous route was taken. After being launched around the Earth, the orbit of the spacecraft was increased in a series of manoeuvres to help it gain velocity. The spacecraft was then slingshot towards the moon, reaching the lunar orbit nearly 22 days after it was launched. Over the next few days, Chandrayaan-3 will reduce its orbit and velocity around to the moon in preparation for the soft landing likely to be attempted on August 23.

Another reason Luna-25 can land a couple of days before India is because lunar dawn at its landing site will happen earlier. One lunar day is equal to 14 Earth days. With the payloads being powered

by solar panels, landing at the beginning of a lunar day ensures that the experiments get the full 14 earth days.

How do the missions differ?

Apart from being lighter than the Indian mission, Luna-25 does not carry a rover. Chandrayaan-3 has a rover capable of moving around 500 metres. The Russian lander has eight payloads mainly to study the soil composition, dust particles in the polar exosphere, and most importantly, detect surface water.

The Indian mission also has scientific instruments to study the lunar soil as well as water-ice. The location near the southern pole was chosen because of the presence of craters that remain in permanent shadow, increasing the likelihood of finding water-ice.

The lander will carry four experiments on-board. The Radio Anatomy of Moon Bound Hypersensitive ionosphere and Atmosphere (RAMBHA) has a Langmuir probe used to study properties of electrons and ions such as temperature and density. It will study these properties near the surface of the moon and how they change over time.

The Chandra's Surface Thermo physical Experiment (ChaSTE) will study the thermal properties of the lunar surface near the polar region. The Instrument for Lunar Seismic Activity (ILSA) will measure the lunar quakes near the landing site and study the composition of the moon's crust and mantle.

The LASER Retroreflector Array (LRA) is a passive experiment sent by NASA on-board the mission. LRAs are optical instruments that act as a target for lasers and can be used for very precise tracking by spacecrafts in the lunar orbit. As per the US space agency, such markers can also be used for precision autonomous navigation and landing of future missions.

There are two scientific experiments on the rover. The LASER Induced Breakdown Spectroscope (LIBS) will determine the chemical and mineral composition of the lunar surface. The Alpha Particle X-ray Spectrometer (APXS) will determine the composition of elements such as Magnesium, Aluminium, Silicon, Potassium, Calcium, Titanium, and Iron in the lunar soil and rocks.

The main difference, however, is that the India mission is built to last only one lunar day or 14 earth days. This is because it does not have a heating mechanism to keep the electronics safe from the extreme cold temperatures during the lunar night.

The Russian mission, on the other hand, will work for a year, meaning it has heating mechanism as well as a power source other than just solar panels.

Is India also in the race to land humans on moon?

It was the discovery of water molecules by India's Chandrayaan-1 mission in 2008 that has propelled another race to the moon. The United States and China now have plans to take humans to moon again; a first after the cold war era. To date, only 12 men aboard US' Apollo Missions have set foot on the lunar surface.

Although India with its limited resources has been able to catch up with countries with more advanced and older space agencies, there is still a long way to go before humans can be sent to the moon.

“When it comes to sending humans to moon, the US and China are in the lead. The two countries — and even Russia during the cold war — have already succeeded not only in landing but also carrying out sample return missions. India is yet to announce a sample return mission, although planning for a fourth mission to moon with Japan as a partner is underway,” said Ajay Lele, senior fellow at Manohar Parrikar Institute for Defence Studies and Analyses.

He said India is at par with countries such as Japan and Israel that are also attempting moon missions now.

Israel's Beresheet failed to land softly on the moon just a few months before Chandrayaan-2 in 2019. Since then, two more landers from Japan and UAE couldn't reach the lunar surface as the spacecraft carrying both failed in 2022.

At least four more lunar missions are in the offing this year from United States, China, and Japan.

Lele said India needs to first achieve human spaceflight before sending astronauts to the moon. He added, "With Isro carrying out more scientific missions, there is a need for the space agency to develop heavier launch vehicles. Currently, our heaviest launch vehicle has the capability of carrying only 4 tonnes of satellites to the geostationary Transfer Orbit."

In comparison, SpaceX' Falcon 9 can carry over 26 tonnes.

Many have speculated whether Russia's launch was targeted for the same time as India's mission, but Lele dismissed this. He said India and Russia have been long-time collaborators, especially when it comes to space activities.

In fact, Russia was initially supposed to design the lander-rover for India's Chandrayaan-2 mission. However, it withdrew after the failure of its Fobos Grunt mission to one of Mars' moons. This then prompted India to develop the lander-rover independently. This is the reason there is a gap of 11 years between the Chandrayaan-1 and Chandrayaan-2 missions.

Also, the predecessors of the LVM3 that launched Chandrayaan-3 were based on cryogenic engines sold to India by Russia. India later developed the technology on its own as Russia did not transfer the technology.

<https://indianexpress.com/article/explained/explained-sci-tech/russias-luna-25-chandrayaan-3-how-the-two-missions-compare-8890955/>

