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DRDO News

DRDO on Twitter



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[#DRDOUpdates](#) | DRDE Gwalior is organising National Conference on 'Chem-Bio Defence: Futuristic Tools and Technologies' from 16-18 Nov. The conference was inaugurated by Dr U K Singh, DG LS with wide participation of DRDO scientists, service personal, academia & industry



1:38 pm · 16 Nov 2022 · Twitter for iPhone



**Press Information Bureau
Government of India**

Ministry of Defence

Wed, 16 Nov 2022

Malabar 22 Culminates

The 26th edition of the multinational maritime exercise MALABAR 22 culminated in the seas off Japan on 15 November 2022. This edition also marked the 30th anniversary of the exercise and was hosted by the JMSDF. The Indian Navy was represented by Eastern Fleet ships Shivalik and Kamorta led by Rear Admiral Sanjay Bhalla, Flag Officer Commanding Eastern Fleet. Malabar series of exercises began in 1992 as a bilateral exercise between the navies of India and US and gained further prominence with joining of the navies of Australia and Japan. The sea phase of MALABAR 22 was conducted over a period of five days near Yokosuka and witnessed live weapon firings, surface, anti-air and anti-submarine warfare drills and tactical procedures. *Another highlight of the sea phase was the conduct of War at Sea exercise which enabled all four navies to consolidate interoperability and hone their tactical skills.*

The high-tempo exercise saw the participation of eleven surface ships including a nuclear powered aircraft carrier with its integral air elements, alongwith four long-range maritime patrol aircraft, integral helicopters and two submarines. The exercise also involved exchange of 'Sea Riders' between various participating ships. Apart from operational drills and exercises, the bilateral logistics support agreements between the participating countries were validated during this edition of exercise Malabar. The exercise helped enhance understanding of each others operational methodologies and ability to co-operate to tackle myriad maritime challenges.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1876424>

Business Standard

Wed, 16 Nov 2022

26th Edition of Malabar 22 Draws to a Close in Japan with Tactical Drills

By Ajai Shukla

The 26th edition of the multinational Exercise Malabar culminated in the seas off Japan on Friday, marking the 30th anniversary of the event hosted this year by the Japan Maritime Self Defense Force (JMSDF). Exercise Malabar began in 1992 as a bilateral exercise, featuring the maritime forces of the US and India. In 2014, the entry of the JMSDF made it a trilateral exercise. In 2020, the Royal Australian Navy (RAN) also joined Malabar, making it a quadrilateral exercise. Beijing views Malabar as an anti-China grouping, formed by a “concert of democracies”. However, public statements from the participating countries express the intention to safeguard the global commons and implement freedom of navigation, rather than joining forces against a common enemy.

The five-day-long event saw the participation of an Australian submarine, and 11 surface ships including a US Navy nuclear-powered aircraft carrier with its integral air elements, along with four long-range maritime patrol aircraft, integral helicopters and two submarines. The exercise also involved exchange of “Sea Riders” between various participating ships. The Indian Navy was represented by two warships from the Visakhapatnam-based Eastern Fleet — Indian Naval Ships (INS) Shivalik and Kamorta led by Rear Admiral Sanjay Bhalla, Flag Officer Commanding Eastern Fleet. Indian maritime commandos (MARCOS) and a P-8I Poseidon maritime reconnaissance aircraft also took part.

INS Shivalik is a multi-role frigate and is the lead vessel of Project 17, which involved building three frigates in Mazagon Dock Ltd (MDL), Mumbai. INS Kamorta is a sophisticated anti-submarine corvette and was built as part of a four-vessel Project 28 in Garden Reach Shipbuilders and Engineers (GRSE), Kolkata. The sea phase of Malabar 2022 was conducted over five days near Yokosuka, Japan. A statement from the Hawaii-based United States Indo-Pacific Command said: “This year’s at-sea exercise includes a variety of high-end tactical training events, submarine integration, anti-submarine warfare training, air defence exercises, multinational replenishment-at-sea operations, communications drills, joint warfighting planning scenarios, gunnery exercise, and maritime interdiction operations.”

“This exercise represents an outstanding opportunity for our like-minded maritime forces to work together, demonstrating our shared commitment to the region and collaborative approach toward security and stability,” said Rear Adm. Michael Donnelly, Commander Task Force 70/Carrier Strike Group Five. “Now, it is more important than ever for the forward-deployed Carrier Strike Group to work closely with other maritime forces and deter all who challenge a free and open Indo-Pacific.” US Navy forces that took part included Destroyer Squadron (DES-RON) 15 along with the aircraft carrier USS Ronald Reagan, guided-missile cruiser USS Chancellorsville, and guided-missile destroyer USS Milius.

JMSDF units that participated included Japanese Ship (JS) Hyuga, JS Shiranui, JS Takanami, JS Oumi along with a P-1 aircraft. RAN participants included His Majesty's Australian Ship (HMAS) Arunta and Stalwart and submarine HMAS Farncomb along with a Royal Australian Air Force (RAAF) P-8A maritime patrol aircraft. In addition to operational drills and exercises, the bilateral logistics support agreements between the participating countries were validated during this edition of Exercise Malabar. India and the US had signed a bilateral logistics support agreement — called Logistics Exchange Memorandum of Agreement, or LEMOA — which was an India-specific version of the LSA that the US signs with all its partner countries. The four participating navies also had the opportunity to rehearse communication drills and interoperability. India's signature of the Communications Compatibility and Security Agreement (COMCASA) agreement with the US in September 2018 has already opened the doors for the tactical communications needed for such operations.

Even outside the formal exercise structure, units of the four navies routinely operate together in the Indo-Pacific, fostering a cooperative approach toward regional security. On September 15, 2000, the US further reinforced the military architecture for confronting China in the Indo-Pacific, joining hands with the UK and Australia to create an “enhanced trilateral security partnership” named AUKUS (Australia-UK-US). Signalling that AUKUS meant business, its first announcement was that the UK and the US would provide Australia with the classified technology and wherewithal needed to build and operate up to eight nuclear-powered attack submarines. In a statement issued after the exercise terminated, the Indian Ministry of Defence said: “The exercise helped enhance understanding of each other's operational methodologies and ability to co-operate to tackle myriad maritime challenges.”

https://www.business-standard.com/article/current-affairs/26th-edition-of-malabar-22-draws-to-a-close-in-japan-with-tactical-drills-122111601596_1.html



Wed, 16 Nov 2022

Third Edition of Pan India Coastal Defence Exercise ‘Sea Vigil-22’ Commenced

The third edition of the ‘Pan-India’ Coastal Defence Exercise ‘Sea Vigil-22’ took place on November 15-16. The exercise was a build up towards the major Theatre Level Readiness Operational Exercise (TROPEX), which the Indian Navy conducts every two years. Sea Vigil and TROPEX together will cover the entire spectrum of Maritime Security challenges.

What is exercise Sea Vigil?

This National Level Coastal Defence Exercise was conceptualised in 2018 to validate various measures that have been instituted towards enhancing maritime security since ‘26/11’. It was aimed to jointly conduct operations with the Coast Guard and the police forces of coastal states spanning India's 7,516-kilometre coastline. The exercise also included India's two million square km Exclusive Economic Zone (EEZ), involving all coastal states and Union Territories,

along with other maritime stakeholders, including the fishing and coastal communities. Coastal Security being a major sub-set of Coastal Defence construct, the concept of ‘Sea Vigil’ is to activate the Coastal Security apparatus across India and assess the overarching Coastal Defence mechanism.

The exercise is being conducted by the Indian Navy in coordination with the Coast Guard and other Ministries entrusted with the task of maritime activities. The scale and conceptual expanse of the exercise is unprecedented in terms of the geographical extent, the number of stakeholders involved, the number of units participating and in terms of the objectives to be met. Assets of the Indian Navy, Coast Guard, Customs and other maritime agencies participated in Ex Sea Vigil.

Operational Dimensions

While smaller scale exercises are conducted in Coastal States regularly, including combined exercises amongst adjoining states, the exercise Sea Vigil at the national level is aimed to serve a larger purpose. It provides opportunity, at the apex level, to assess the country’s preparedness in Maritime Security and Coastal Defence.

<https://www.financialexpress.com/defence/third-edition-of-pan-india-coastal-defence-exercise-sea-vigil-22-commenced/2820577/lite/>



Wed, 16 Nov 2022

Indian Army Emphasises on Indigenised Modernisation, to Manufacture 400 Products Locally

Building upon the indigenisation drive for the Indian Army, Vice Chief of Army Staff, Lieutenant General B S Raju pointed out that the government has decided not to import 400 products and would be manufactured locally. He also acknowledged the importance of the private sector in defence manufacturing while addressing the inaugural session of a Regional Technology Node (RTN-B) of the Army Design Bureau (ADB) at ASC Centre & College, Bengaluru. According to Lieutenant General Raju, the “Indian Army is poised for modernisation in the next 10 years. When I say modernisation, I mean indigenous modernisation.” The Vice Chief of Army Staff emphasised the role of the private sector in defence manufacturing, “Indian Army has recognised the importance of the private sector in defence manufacturing. We want participation from the private sector.”

Lieutenant General Raju added that 25 percent of defence R&D budget is meant to go for local industry, “We will be transparent in our dealing. We will provide you the products and their required number to you to produce along with the deadline.” The Indian Army’s ‘Make in India’ initiative is spearheaded by the Army Design Bureau (ADB). The role of ADB is to Undertake technology scan, identify technologies for acquisition and development, facilitate R&D efforts with Industry, Academia, DRDO & DPSUs, provide inputs and enable them to understand user requirements while initiating cases of design & development with the industry, all with the aim of promoting indigenisation.

According to the statement from ADB, the mandate is all about the engagement with Industry & Academia on development of various niche technologies for utilisation by Indian Army Soldiers. The RTN-B will leverage the location of ASC Centre and College in Bengaluru to build an interface with trade, industry and academia with specific focus on IT, to coordinate advancements in technology for overall benefit of the Indian Army on behalf of ADB and HQ ARTRAC (Army Training Command). ADB is working on the key projects that aim to ensure Army's self-reliance in developing advanced capabilities. Some of the critical Projects on which ADB is working is in the area of Autonomous Surveillance and Armed Drone Swarm (High Altitude Area) and Autonomous Surveillance & Armed Drone Swarm (Desert/Plains).

<https://www.financialexpress.com/defence/indian-army-emphasises-on-indigenised-modernisation-to-manufacture-400-products-locally/2819415/lite/>



Wed, 16 Nov 2022

Indian Army Creates Habitat and Road Network at LAC, Using 3D Tech, to Counter Chinese Threat

Amidst the ongoing standoff between the Indian and Chinese forces, along the Line of Actual Control (LAC), Indian Army has given a lot of push to its capability development in the region. Post Galwan Valley 2020 incident the Indian Army has been focusing on building road networks, enhancing patrolling capabilities in the water bodies, installation of bridging systems and more. According to sources in the defence establishment in the last two years habitat for the accommodation of 22,000 troops has been created and these modern and compact relocatable habitats can be shifted in 2-7 days.

Idea behind the relocatable habitats

Post Galwan Valley violent faceoff in June 2020 the requirement for such habitat was felt. These shelters are located at high altitudes of 15,000, 16000 and 18,000 feet, said the source quoted above. Adding that the Indian army has also built around 450 technical storages. These are specially meant to house the armoured vehicles and gun systems. This is to ensure that the efficiency of these vehicles and the weaponry systems do not get impacted due to extreme temperature and terrain.

3D printing used for creating bunkers

In view of the changing scenario along the border areas, the Indian Army is now adopting 3D printing technology for permanent defence structures in eastern Ladakh.

Why 3D defence structures?

Due to harsh weather conditions it is difficult for conventional construction, and also shortage of labour and it is time consuming. Therefore this method has been adopted as it is safe and time saving as well as withstand any attack from a range of 100m by tanks. The idea behind this is to help in improving the country's defence preparedness in the extant working season, and in also the completion of ongoing projects. To beat the tough weather conditions in the Ladakh region

the Indian Army has so far set up 20 Solar Heated Insulated Ladakhi shelters (SHILA). According to the source in the defence establishment in one unit Shila Grih around 3-4 soldiers can stay. When the temperature outside is minus 20 degrees the Grih has 20 degrees temperature inside.

Sarvatra and PMS

For the first time ever in the High Altitude Areas, the Indian Army has successfully conducted trials for constructing assault bridges including the Sarvatra and PMS. This has been developed by Defence Research and Development Organisation (DRDO) and has been made by BEML. The Sarvatra Bridge is wholly indigenous, high mobility vehicle based, and is a multi-span mobile bridging system.

Patrolling capabilities in water bodies

To match the patrolling capability of the adversary, new landing crafts have been inducted in the Pangong Tso Lake. This has given a huge momentum to the patrolling capability and this will help in the induction of materials and men. It has the capacity to carry 35 troops or just one jeep and 12 troops.

Mines and Mine Warfare Equipment

The Army has recently conducted a trial and is in the Acceptance of Necessity Stage which will help enhance its capability to create obstacle systems. This will include Trawl Assembly, Mine Scattering System and Minefield Breaching System, Mechanical Minefield Marking Equipment, Mechanical Mine Layers (Self Propelled), and Self-Propelled Mine Burier. Creating alternate connectivity to Western Ladakh and the Zaskar Valley directly from the Manali axis. To be completed by 2026 this is a 298-km NHDL specification road with 65 percent progress. For providing all weather connectivity there is going to be a 4.1 km twin tube Shinkun La tunnel. This is expected to be approved by the Ministry of Defence soon.

Also, in an effort to upgrade the bridges on Darbuk-Shayok-Daulat Beg Oldie (DS-DBO) road to Class 70 specifications around 35 bridges have been planned. These will be permanent and extra-wide bailey bridges. 3D printing has moved from a niche technical and academic endeavour to a consumer one. 3D-printed components are now being developed as part of critical machinery. The first private Indian rocket, Vikram-S from Skyroot Aerospace, uses many 3D-printed components. Today, a hobbyist can procure an entry-level 3D printer for as low as USD 150.

To understand the concept behind 3D printing, let us build on what we are familiar with. A 2D print on a sheet of paper uses a nozzle to precisely spray ink at a particular location on the sheet. Now, if this is a 2D image, can we imagine a 3D image to be a stack of 2D images? A 3D printer does exactly this. A 3D file is sent to the printer, which converts this file into layers of 2D images. The 3D printing technologies are various, yet they adhere to this fundamental working: the print starts from the bottom, printing a layer, and then continues to print another layer over it. 3D printing uses various compounds that depict special behaviour. These compounds have the ability to harden upon curing with specific additives. So, a 3D printer spurts out these compounds and cures them as per the current 2D slice it prints. This hardens to take shape as per the 3D print.

Broadly, there are three types of 3D printing technologies: sintering, melting and stereo lithography. Sintering creates high-resolution prints by using metal or thermoplastic powders. These can be moulded into the desired shape upon applying heat. Melting, however, turns up the

heat and uses laser, electric arcs or electron beams to melt together materials. Stereo lithography uses compounds that cure upon specific light being incident. Photopolymerisation is used in a selective manner to cure and solidify a cross-section of a 3D print object. The above technologies are combined with specific printing processes. Some use a spool of filament, and the 3D printing nozzle heats the material while it is extruded onto the tray. Others use a vat of material with the light curing a layer at a time. 3D printing is a vast field. The cost of 3D printing can escalate depending on specific use cases. For larger prints, 3D printers can take several days. Despite the costs and efforts, it enables companies to create bespoke and complex geometries that otherwise cost exponentially more.

<https://www.financialexpress.com/defence/indian-army-creates-habitat-and-road-network-at-lac-using-3d-tech-to-counter-chinese-threat/2821950/>



From UAVs to Refuellers: How Israel is Helping India keep an Eye on LAC

By Manraj Grewal Sharma

He has accompanied Indian troops on their battle readiness exercises, sat at the table with defence ministers, addressed chief ministers of five states on the use of unmanned aerial vehicles (UAVs) to gather intelligence about Naxals, and once even joined the Andhra Pradesh police out on a mission. Ever since the Galwan incident of 2020, he has been keeping a close watch on the Sino-Indian boundary. These days, Avi Bleser, vice-president of marketing for India at Israel Aerospace Industries (IAI), says he is working closely with the Indian Army and Indian Air Force to tailor solutions for their defence needs. This includes the induction of Heron MK II, a state-of-the-art UAV that can fly at a height of 35,000 feet, cover a radius of 1000 km, see through dense clouds, work in bad weather and fly for 45 hours. It's learnt that MK IIs are being deployed in Leh.

Last year, the Indian Army had also taken on lease Heron TPs, a Medium Altitude Long Endurance (MALE) Unmanned Aerial System (UAS) for all-weather missions, from IAI. Heron TP drones are one of the two drones made in Israel that can be armed, if needed. Bleser traces his relationship with India to 1991 when he first met an Indian delegation at the Singapore air show. "I was travelling on a European passport, they invited me to South Block. It is after four years that the Ministry of Defence signed an agreement with the IAI to provide two search systems." The relationship has evolved over time – from being an importer of Israeli tech and equipment, Indian companies are now collaborating with IAI on a variety of ventures. The IAI and Hindustan Aeronautics Limited (HAL) have signed a joint venture whereby IAI will not only offer UAVs to India, but also help HAL in manufacturing them in India.

In 2018, the Adanis joined hands with Israeli company Elbit Systems to inaugurate a facility for manufacturing the Hermes 900 UAV in Hyderabad. Earlier, after Prime Minister Narendra Modi's visit to Israel in 2017, the IAI had signed an agreement with Elcom Systems and Dynamatic Technologies for the manufacture of UAVs in India. Earlier this year, HAL signed a

memorandum of understanding with IAI to convert civil passenger aircraft into a multi-mission tanker transport (MMTT) for air refuelling with cargo and transport capabilities. The MoU also covers conversion of passenger planes into freighter aircraft.

The IAI is a world leader in this field, says Noam Sharoni, director of the Boeing 767 conversions at IAI, as he shows aircraft aged 17 years and above that are given a new lease of life at the IAI headquarters in Tel Aviv. “We have converted a record 283 passenger aircraft into freighters,” he says, adding how the electric wires for the project are sourced from a Bengaluru-based company called SASMOS HET Technologies Ltd. The high-security IAI compound is manned by a staff of over 15,000 – 10,000 of whom are engineers and scientists. The gigantic, squeaky clean hangars are their labs. And the IAI tagline — Where courage meets technology — stares at you from the walls as men, many dressed in black T-shirts, attend to aircraft and UAVs, big and small. Bleser, who was part of the team that developed Scout, Israel’s first eye-in-the-sky after the 1973 Yom Kippur War, has seen technology evolve rapidly over the last 40-plus years. He recalls how it was after this war in which Israel defeated a coalition of Arab states led by Egypt and Syria but suffered heavy casualties, including 102 aircraft, that the Israeli defence ministry asked IAI to develop an “eye-in-the-sky” that could function round the clock. This led to the induction of Scout in 1979.

“Initially, Scout could track enemy movement only during the day. Our engineers installed the camera of a black-and-white TV on gyros for this unmanned vehicle. The Israel Defense Forces (IDF) were so happy with it that after 1000 flying hours, they only sought maintenance.” UAVs have come a long way since then. The dainty Heron MK II, for instance, can climb at a speed of 800 feet per minute, providing real time information to all the ground stations which can use it to decide their course of action, says Bleser. Above all, it can listen to various devices and pinpoint the target, he says. MK II can also be used for search and rescue operations. “It can carry under its wing a rubber dinghy which can be released for rescue missions.” Bleser says 70 percent of the flying hours in the defence sector are now being done by UAVs. “The world is looking for unmanned capability and solutions.”

<https://indianexpress.com/article/india/from-uavs-to-refuellers-how-israel-is-helping-india-keep-an-eye-on-lac-8272676/>



Wed, 16 Nov 2022

Baba Kalyani Credits Defence Expo for India's Biggest Private Defence Export Deal

In an exclusive interview to News9 Live the Bharat Forge Chairman says his buyer will get a truck similar to Indian Army but smaller in size.

A week after it obtained a path-breaking export order for its defence product Bharat Forge Chairman and Managing Director Baba Kalyani has given credit for this achievement to the Defence Expo held in Ahmedabad in October 2022. In an exclusive interview to News9 Live Kalyani said his deal with a west Asian country is one of the results the Defence Expo has delivered. Kalyani Strategic Systems Limited, a subsidiary of Bharat Forge, had announced on

November 9 that they have obtained a contract to supply its product, a 155 mm artillery gun platform to a country. The export order worth of \$155.5 million will be executed over a three year period. A release issued by Bharat Forge said that the export was to a "non-conflict zone".

"A country in West Asia has selected us to supply them," Kalyani told News9 Live at Bharat Forge's gun factory in Pune. "I can't give you the details of defence contract because all defence contracts have a secrecy clause. All I can say is that it is a complete platform. It's a 155 mm gun mounted on a truck, like we are building for Indian Army. This is a similar vehicle but in a smaller size," he said. Though Kalyani has not named the country, it is widely speculated that Armenia, a land-locked country with volatile neighbours like Turkey and Georgia, has finalised a contract with Bharat Forge for the defence product. The order is significant as it will be Armenia's first non-Soviet origin, 155 mm artillery gun capable of firing NATO-standard shells. A gun normally has 5,000 components.

Kalyani acknowledged that it is the first time that a private Indian company in defence sector has bagged a large export contract. "The product is fully designed by us and manufactured by us. So it is a credit to our engineers, our technicians. What they have been able to do," Kalyani said. The Padma Bhushan awardee mentioned Defence Expo as one of the major enablers for the achievement. "For the first time we had a Defence Expo that was meant for only Indian companies, to showcase products that they made themselves. So, in this Defence Expo, a huge number of foreign delegates came and visited us. They saw our products and they were tremendously interested in doing this. So this (the export order) is one of the results of all this," he said.

Kalyani said defence products like the gun mounted truck are not just metal. "It has tremendous amount of electronics, electronics control, digital system and an artificial intelligence system. So when are you looking at defence products you learn to master those technologies also," he said. Kalyani predicted that India's Rs 35,000 crore defence export target would be achieved by 2025. "Our aim is to become one of the largest artillery houses in the world. We will develop technology to a very high level. We are hoping that by 2030 we will be recognised as the best artillery houses in the world developing multiple types of artillery platforms, small, big, mounted on trucks and light-weight, which can be para-dropped in the mountains. So we will do many, many kinds of different things artillery." Kalyani said creating defence products would help India get a global top spot. "I see this is a renaissance of technology happening in India. All the things that we missed in last 20, 30, 40 years, like we missed the electronics revolution, it is all coming back. We are going into the electronic revolution through creating defence products," Kalyani concluded.

<https://www.news9live.com/india/baba-kalyani-credits-defence-expo-for-indias-biggest-private-defence-export-deal-208327>

Wed, 16 Nov 2022

India's G20 Presidency will be Inclusive, Action-Oriented: PM Modi

India's G20 presidency will be "inclusive, ambitious, decisive, and action-oriented", said Prime Minister Narendra Modi, who accepted the ceremonial gavel from Indonesian President Joko Widodo at a handover event during the conclusion of the G20 summit in Bali on Wednesday. Mr. Modi, who also held meetings separately with the leaders of Australia, France, Germany, Italy, Singapore and the U.K., thanked Mr. Widodo at the event, and said that the world was looking to India's leadership of the forum of the largest economies with "hope".

"India is taking charge of the G20 at a time when the world is simultaneously grappling with geopolitical tensions, economic slowdown, rising food and energy prices, and the long-term ill-effects of the pandemic," Mr. Modi said during the closing ceremony. He said that India would give priority to "women-led development" in its G20 agenda, which would be driven by the recently unveiled theme of "One Earth, One Family, One Future". India is expected to showcase its geographical and cultural diversity during the year, and will hold approximately 200 G20 meetings at different locations across the country.

<https://www.thehindu.com/news/international/indias-g-20-presidency-will-be-inclusive-action-oriented-says-pm-modi-as-bali-summit-ends/article66143955.ece>

The Tribune

Wed, 16 Nov 2022

PM Modi, Macron Discuss Defence, Security

In meetings on the margins of the G20 summit in Bali, Prime Minister Narendra Modi on Wednesday discussed stepped up defence and security cooperation with leaders of France, Germany, Australia and the UK. With French President Emmanuel Macron, PM Modi reviewed ongoing collaboration in defence, civil nuclear, trade and investment over a working lunch. They also welcomed the deepening of cooperation in new areas of economic engagement, said the MEA. These subjects were not on the agenda in his meetings with leaders of Singapore and Italy where the accent was more on trade and investment. Recent global and regional developments were on the table in all the six bilaterals. The PM also touched on migration, people to people ties in many of his meetings.

On Tuesday, the PM Narendra Modi had met Presidents of the US and Indonesia, while a meeting with Canadian PM Justin Trudeau could not be scheduled. In his meeting with Australian PM Anthony Albanese, discussions touched on trade, the Indo-Pacific and clean energy in addition to defence and security. Besides, institutional partnership in education, especially in higher education, vocational education, training and capacity building was

discussed in detail, said the MEA. With the newly elected PM of Italy Giorgia Meloni, PM Modi discussed trade and investment, counter-terrorism, and people to people ties.

The PM met his Singapore counterpart Lee Hsien Loong and talked of further expanding trade and investment linkages particularly in Fintech, renewable energy, skill development, health and pharmaceutical sectors. Singapore is the country coordinator for India in ASEAN. Meeting for the third time this year, PM Modi and German Chancellor Olaf Scholz agreed to deepen trade and investment ties and further increase cooperation in defence and security, migration and mobility and infrastructure. Germany is the country coordinator for India in the G7.

<https://www.tribuneindia.com/news/world/pm-modi-macron-discuss-defence-security-451786>

Outlook

Wed, 16 Nov 2022

Should India Worry about China's Offer to Provide SLC-18 Radar to Pakistan?

By Siddhant Hira

Chinese state-owned China Electronics Technology Group (CETC) displayed the new SLC-18 radar system at the Zhuhai Air Show, which took place from November 8 to 13. The radar system's capability to detect and track satellites in low-earth orbit (LEO) and China's willingness to export it to its allies can be a cause of concern for the Indian defence establishment. The SLC-18 radar system is potentially the world's first active electronic scanned array (AESA) radar that can operate at such a large scale. It is an impressive addition to China's arsenal as it has next-generation tracking technology and large phased arrays with fully digital controls. Unlike previous long-range low-frequency systems, the SLC-18 can expand and retract its tracking ne

This capability is a vital step in any future low-orbit counter-measure engagements. In such a case, it would be a major technological advancement as it would not only be a tracking tool but also a targeting system. If Pakistan ends up purchasing it, the threat to the Indian security apparatus will be multi-faceted. India will have to grapple with issues of satellite- and missile-tracking, as well as interception of secure communications.

Threat of Tracking

There are several advantages to using the SLC-18 radar. "The radar utilises a cutting-edge, all-solid-state active phased array system and operates in a lower frequency band. It offers exceptional advantages such as multi-target capability and an extensive search range," Girish Linganna, an aerospace and defence analyst, tells Outlook Business. The radar's ability to function in all weather conditions also makes it an all-around threat. Linganna adds that "The SLC-18 radar can track a constellation of satellites at a time and also gives data on drones, aircrafts and missiles." Hence, it has been considered a counter to Elon Musk's Starlink constellation of satellites which has kept communications in war-torn Ukraine up and running despite Russia destroying cellular phone and internet networks.

Yet another threat that has emerged against satellites and missiles is directed energy weapons (DEWs). If a DEW is integrated with the radar system, it could be tasked to neutralise a satellite or a missile. If Pakistan were to operate this radar, it would have a more convenient technique to track Indian satellites. The radar's range is likely to cover most of India. And in all likelihood, China will receive all the data collected by Pakistan, thereby eliminating their reliance on costly and labour-intensive missile-tracking ships that are used to monitor traffic around Indian military assets.

<https://www.outlookindia.com/business/should-india-worry-about-china-s-offer-to-provide-slc-18-radar-to-pakistan--news-237887>

नवभारत टाइम्स

बुधवार, 16 नवंबर 2022

पोलैंड में किसने दागी S-300 मिसाइलें?

अभी यूक्रेन और रूस का संघर्ष थमा नहीं था। उसको रोकने के लिए 9 महीने से औपचारिक और अनौपचारिक सभी बैठकें नाकाम रही थीं। लेकिन, अब एक उम्मीद-सी लग रही थी कि शायद यह संघर्ष थम जाए, पर अचानक यूक्रेन से सटे पोलैंड के एक गांव में 2 मिसाइलें गिरीं। इन मिसाइलों के गिरने से वहां के दो लोगों की मौत हो गई। इस हमले के बाद अमेरिका समेत पूरी दुनिया में हलचल मच गई। हलचल इसलिए मची है, क्योंकि ये मिसाइलें उत्तरी अटलांटिक संधि संगठन (नैटो) के सदस्य देश पर गिरी हैं। यूक्रेन और पोलैंड ने रूस पर मिसाइल गिराने का आरोप लगाया है।

यूक्रेन के राष्ट्रपति व्लादिमिर जेलेन्स्की का कहना था कि नाटो देशों को अब इसका जवाब देना चाहिए। ये हमला रूस ने किया है। मगर जांच में सामने आ रहा है कि पोलैंड में गिरी मिसाइल यूक्रेनी सेना की थी। जिसे उसकी ओर से रूसी हमले के जवाब में दागा गया था। ऐसे में सवाल उठता है कि क्या यूक्रेनी राष्ट्रपति झूठ बोलकर नाटो की मदद लेना चाहते हैं, ताकि उनके साथ नाटो आकर रूस से जंग करे?

हालांकि, अमेरिकी राष्ट्रपति जो बाइडन ने शुरुआत में कहा था कि ये संभव है कि ये मिसाइल रूस से नहीं आई हो। रूस ने भी इस मामले में किसी भी तरह की ज़िम्मेदारी लेने से इनकार करते हुए इस पर कड़ी प्रतिक्रिया दी थी। दुनियाभर में इन मिसाइलों के गिरने से खलबली मची है, क्योंकि आशंका जताई जा रही है कि ये मिसाइलें एस-300 मिसाइल डिफेंस सिस्टम से दागी गई थीं। और ये मिसाइल सिस्टम रूस और यूक्रेन, दोनों के पास है। पोलैंड रूस के दक्षिण पश्चिम दिशा में स्थित है। यह यूक्रेन से उत्तर पश्चिम दिशा में है। यूक्रेन रूस के दक्षिण में है। ऐसे में अगर रूस यूक्रेन पर मिसाइल दागता है तो यह पोलैंड की ओर तभी जा सकती है जब इसमें तकनीकी खामी हो। ऐसा ही यूक्रेन की ओर से रूस पर दागी गई मिसाइल के साथ भी हो सकता है।

युद्ध के इतिहास की बात करें तो पोलैंड ही वो देश है जहां 1 सितंबर 1939 को हिटलर की सेनाएं घुसी थी और उसी दिन से यूरोप में सेकेंड वर्ल्ड वार की शुरुआत हो गई थी। इस लिहाज से इस घटना का बड़ा महत्व है। अब एक अहम सवाल है कि पोलैंड पर मिसाइल गिरने के बाद क्या इस युद्ध का दायरा बढ़ जाएगा? एस-300 मिसाइल की बात करें तो यह काफी अहम और ताकतवार मिसाइलों में गिनी जाती है। एस-400 मिसाइल आने के बाद भी इसकी अहमियत कम नहीं हुई है। रूस की इस मिसाइल का इस्तेमाल दुनिया के कुछ दूसरे देश भी करते हैं। इस मिसाइल डिफेंस सिस्टम के तीन बेस वर्जन हैं, इनमें S-300V, S300P और S-300F हैं। इन सभी वर्जन को रूस ने बेहतर तरीके से अपग्रेड किया है। इनके अलग-अलग वर्जन ईरान, चीन, वेनेजुएला समेत दूसरे कई देशों में हैं। रूस ने सीरिया में एस-400 मिसाइल डिफेंस सिस्टम के साथ एस-300 को भी तैनात किया हुआ है।

एस-400 अब भारत के पास भी है। भारत को मिले S-400 Missile Defense System की ही बात करें तो इस मिसाइल की रेंज 40 किमी से 400 किमी तक है। ये एक एंटी बैलेस्टिक मिसाइल है। जमीन से जमीन पर मार करने वाली ये मिसाइल दुनिया की शक्तिशाली मिसाइलों में से एक है। इसमें लगा अत्याधुनिक राडार सिस्टम अपनी तरफ आने वाले वाले 100 टारगेट को इंटरसेप्ट कर सकता है। इसके अलावा इसके एक सिस्टम में करीब 72 लान्चर होते हैं। इसका अर्थ है कि ये एक ही साथ अलग-अलग जगहों या टारगेट पर सटीक निशाना साध सकती है।

<https://navbharattimes.indiatimes.com/navbharatgold/breaking-news-in-hindi/who-fired-s-300-missiles-in-poland-russia-ukraine-war-update/story/95561145.cms>



Wed, 16 Nov 2022

Poland Says Missile that Hit it Likely from Ukraine Air Defence

Poland said on Wednesday there is “absolutely no indication” that a missile which came down in Polish farmland, killing two people, was an intentional attack on the NATO country, and that neighbour Ukraine likely launched the Soviet-era projectile as it fended off a Russian air assault that savaged its power grid. “Ukraine’s defence was launching their missiles in various directions and it is highly probable that one of these missiles unfortunately fell on Polish territory,” said Polish President Andrzej Duda. “There is nothing, absolutely nothing to suggest that it was an intentional attack on Poland.” NATO Secretary-General Jens Stoltenberg, at a meeting of the military alliance in Brussels, agreed with the assessment.

“An investigation into this incident is ongoing and we need to await its outcome. But we have no indication that this was the result of a deliberate attack,” Stoltenberg told reporters. The preliminary findings came after U.S. President Joe Biden and other Western backers of Ukraine had thrown their weight behind the investigation and amid repeated assertions from Russia that

it didn't fire the missile. Mr. Biden said it was “unlikely” that Russia fired the missile but added: “I'm going to make sure we find out exactly what happened.” The missile came down on Tuesday near Poland's border with Ukraine. Three US officials said preliminary assessments suggested it was fired by Ukrainian forces at an incoming Russian one. The officials spoke on condition of anonymity because they weren't authorised to discuss the matter publicly.

That assessment and Mr. Biden's comments at the Group of 20 summit in Indonesia contradicted information earlier on Tuesday from a senior U.S. intelligence official who told The Associated Press that Russian missiles crossed into Poland. Former Soviet-bloc country Ukraine maintains stocks of Soviet- and Russian-made weaponry, including air-defense missiles, and has also seized many more Russian weapons while beating back the Kremlin's invasion forces. Ukrainian air defences worked furiously against the Russian assault on Tuesday on power generation and transmission facilities, including in Ukraine's western region that borders Poland. Ukraine's military said 77 of the more than 90 missiles fired were brought down, along with 11 drones.

The Kremlin on Wednesday denounced Poland's and other countries' initial reaction to the missile incident and, in rare praise for a US leader, hailed the response of the US. “We have witnessed another hysterical, frenzied, Russophobic reaction that was not based on any real data,” Kremlin spokesman Dmitry Peskov told reporters on Wednesday. He added that “immediately, all experts realized that it could not have been a missile linked to the Russian armed forces”, and pointed to a “restrained, much more professional reaction” of the US and its president, Joe Biden. In Brussels, NATO countries were coming together on Wednesday for emergency talks. There was no immediate proof that Tuesday's blast was a deliberate, hostile attack on NATO member Poland that could trigger the alliance's provisions for a collective military response.

Russia denied any involvement. But Ukraine was under countrywide Russian bombardment on Tuesday by barrages of cruise missiles and exploding drones, which clouded the picture of what exactly happened in Poland and why. In Europe, NATO members Germany and the UK were among those stressing the need for a full investigation. German Chancellor Olaf Scholz warned against jumping to conclusions “in such a serious matter”. Still, Scholz and others also laid overall but not specific blame on Russian President Vladimir Putin's invasion of Ukraine. “This wouldn't have happened without the Russian war against Ukraine, without the missiles that are now being fired at Ukrainian infrastructure intensively and on a large scale,” Scholz said.

UK Prime Minister Rishi Sunak echoed that assessment, saying: “This is the cruel and unrelenting reality of Putin's war.” Ukrainian President Volodymyr Zelenskyy called it “a very significant escalation”. On the other end of the spectrum, China was among those calling for calm and restraint. Former Soviet-bloc country Ukraine maintains stocks of Soviet- and Russian-made weaponry, including air-defence missiles, and has also seized many more Russian weapons while beating back the Kremlin's invasion forces. Damage from the aerial assault in Ukraine was extensive and swaths of the country were plunged into darkness. Zelenskyy said about 10 million people lost power but tweeted overnight that 8 million were subsequently reconnected, with repair crews laboring through the night.

Previous Russian strikes had already destroyed an estimated 40 per cent of the country's energy infrastructure. NATO Secretary-General Jens Stoltenberg called the meeting in Brussels of the alliance's envoys. The UN Security Council also planned to meet on Wednesday for a

previously scheduled briefing on the situation in Ukraine. If Russia had deliberately targeted Poland, it would risk drawing NATO into the conflict. Polish media reported that the strike took place in an area where grain was drying in Przewodow, a village near the border with Ukraine.

Russia's Defence Ministry denied being behind "any strikes on targets near the Ukrainian-Polish border" and said in a statement that photos of purported damage "have nothing to do" with Russian weapons. The Russian bombardment also affected neighbouring Moldova. It reported massive power outages after the strikes in Ukraine disconnected a power line to the small nation. The assault killed at least one person in a residential building in Ukraine's capital, Kyiv. It followed days of euphoria in Ukraine sparked by one of its biggest military successes — the retaking last week of the southern city of Kherson.

With its battlefield losses mounting, Russia has increasingly resorted to targeting Ukraine's power grid, seemingly hoping to turn the approach of winter into a weapon by leaving people in the cold and dark.

<https://www.thehindu.com/news/international/poland-nato-say-missile-landing-wasnt-russian-attack/article66144544.ece>

THE ECONOMIC TIMES

Wed, 16 Nov 2022

NATO Holds Emergency Talks after Missile Lands in Poland

Ambassadors from the 30 NATO nations gathered in Brussels Wednesday for emergency talks after Poland said that a Russian-made missile fell on its territory, killing two people, and U.S. President Joe Biden and his allies promised support for the investigation into the incident. The blast came as Russia launched widespread aerial strikes across Ukraine and immediately raised concern and confusion about whether Russia might be broadening the war it launched against Ukraine in February, potentially dragging NATO into the conflict. But three U.S. officials said preliminary assessments suggest the missile was fired by Ukrainian forces at an incoming Russian projectile, and Biden said it was "unlikely" that it was fired from Russia. NATO chief spokeswoman Oana Lungescu described the blast as a "tragic incident."

Poland said late Tuesday that it was considering calling for emergency consultations under Article 4 of NATO's founding treaty, which provides for such talks if one of the 30 allies considers that its territory might be under threat. But Wednesday's meeting did not appear to be Article 4 consultations. With key questions remaining unanswered, a firm statement of support for Ukraine and for the Polish investigation would appear the most likely outcome from Wednesday morning's meeting, echoing a joint statement overnight from NATO and G7 leaders. "We offer our full support for and assistance with Poland's ongoing investigation. We agree to remain in close touch to determine appropriate next steps as the investigation proceeds," the leaders said, on the sidelines of G20 talks in Indonesia.

"We reaffirm our steadfast support for Ukraine and the Ukrainian people in the face of ongoing Russian aggression, as well as our continued readiness to hold Russia accountable for its brazen

attacks on Ukrainian communities," they said. Since President Vladimir Putin ordered Russian troops into Ukraine, NATO has sought to avoid being dragged into a wider war. The world's biggest security alliance has declined to send troops into Ukraine and has refused Kyiv's requests to police a no-fly zone over its cities, which might require allies to shoot down Russian fighter jets or target air defense systems in Russian territory. While some of NATO's member countries are providing weapons and other support, NATO as an organization does not. The military alliance has focused on building up its forces in member countries near Russia and Ukraine's borders to dissuade Putin from targeting them next.

After Russia invaded Ukraine in February, Bulgaria, the Czech Republic, Estonia, Latvia, Lithuania, Poland, Romania and Slovakia triggered urgent Article 4 consultations. These are launched when "the territorial integrity, political independence or security of any of the (NATO) parties is threatened." In the unlikely event that Poland considered itself to be under attack, the government in Warsaw together with its allies could, only after those consultations and other meetings, activate Article 5 of the Washington Treaty. This collective defense clause requires every member of the 30-nation military alliance to come to the assistance of any ally under attack.

Article 5 has only ever been used once; by the United States in the wake of the 9/11 attacks. It was the rallying call that saw NATO and its international partners deploy to Afghanistan for almost two decades in a security operation aimed at keeping the Taliban out of power. Activating it in the case of nuclear-armed Russia would only be a last resort.

<https://economictimes.indiatimes.com/news/defence/nato-holds-emergency-talks-after-missile-lands-in-poland/articleshow/95554784.cms>

THE ECONOMIC TIMES

Thu, 17 Nov 2022

North Korea Fires Ballistic Missile toward Sea

North Korea launched a ballistic missile toward its eastern waters on Thursday, South Korea's military said, hours after the North threatened to launch "fiercer" military responses to the U.S. bolstering its security commitment to its allies South Korea and Japan. South Korea's Joint Chiefs of Staff said in a brief statement that it detected the launch from North Korea but gave no further details like how far the weapon flew and where it landed. Earlier Thursday, North Korean Foreign Minister Choe Son Hue warned that a recent U.S.-South Korea-Japan summit accord on the North would leave tensions on the Korean Peninsula "more unpredictable.

Choe's statement was North Korea's first official response to President Joe Biden's trilateral summit with his South Korean and Japanese counterparts in Cambodia on Sunday. In their joint statement, the three leaders strongly condemned North Korea's recent missile tests and agreed to work together to strengthen deterrence, while Biden reaffirmed the U.S. commitment to defend South Korea and Japan with a full range of capabilities, including its nuclear arms.

Choe said the U.S.-South Korea-Japan summit will bring the situation on the Korean Peninsula to "a more unpredictable phase." "The keener the U.S. is on the 'bolstered offer of extended

deterrence' to its allies and the more they intensify provocative and bluffing military activities on the Korean Peninsula and in the region, the fiercer (North Korea's) military counteraction will be, in direct proportion to it," Choe said. "It will pose a more serious, realistic and inevitable threat to the U.S. and its vassal forces." Choe didn't say what steps North Korea could take but said that "The U.S. will be well aware that it is gambling for which it will certainly regret."

North Korea has steadfastly maintained its recent weapons testing activities are legitimate military counteractions to what it calls military drills between U.S. and South Korean forces, which it views as a practice to launch attacks on the North. There have been concerns that North Korea might conduct its first nuclear test in five years as its next major step toward bolstering its military capability against the United States and its allies.

<https://economictimes.indiatimes.com/news/defence/seoul-north-korea-fires-ballistic-missile-toward-sea/articleshow/95568270.cms>

Science & Technology News



गुरुवार, 17 नवंबर 2022

अब 18 नवंबर को उड़ान भरेगा भारत का पहला निजी रॉकेट 'VIKRAM-S', अंतरिक्ष नियामक ने दी मंजूरी

भारत के अंतरिक्ष नियामक ने निजी क्षेत्र के पहले रॉकेट विक्रम-एस के प्रक्षेपण को मंजूरी दे दी है। विक्रम-एस स्काईरूट एरोस्पेस द्वारा विकसित सब-ऑर्बिटल यान है। अंतरिक्ष नियामक भारतीय राष्ट्रीय अंतरिक्ष संवर्धन और प्राधिकरण केंद्र (इन-स्पेस) ने कहा, 'इन-स्पेस ने एक निजी भारतीय अंतरिक्ष स्टार्ट-अप स्काईरूट एरोस्पेस के प्रक्षेपण की अनुमति दे दी है। यह इसरो के सतीश धवन केन्द्र से 18 नवंबर, 2022 को दिन में 11 से 12 बजे के बीच सब-ऑर्बिटल यान विक्रम-एस को लांच करेगा।' प्रधानमंत्री कार्यालय में राज्यमंत्री जितेन्द्र सिंह निजी क्षेत्र द्वारा विकसित पहले रॉकेट का प्रक्षेपण देखने के लिए श्रीहरीकोटा में मौजूद रहेंगे।

13 नवंबर को टला था लंच

हैदराबाद स्थित अंतरिक्ष स्टार्टअप स्काईरूट एयरोस्पेस ने रविवार को बड़ी घोषणा की थी। उसने कहा था कि खराब मौसम की वजह से देश के पहले निजी तौर पर विकसित रॉकेट विक्रम-एस का उप-कक्षीय प्रक्षेपण 18 नवंबर तक स्थगित हो गया है। स्काईरूट एयरोस्पेस के प्रवक्ता ने कहा, "खराब मौसम के

पूर्वानुमान के कारण, हमें श्रीहरिकोटा से हमारे विक्रम-एस रॉकेट प्रक्षेपण के लिए 15-19 नवंबर तक एक नई विंडो दी गई है, जिसकी सबसे संभावित तारीख 18 नवंबर को सुबह 11:30 बजे है।”

प्रक्षेपण के लिए 15 तारीख तय थी

प्रक्षेपण के लिए पहले 15 नवंबर की तारीख निर्धारित की गई थी. स्काईरूट एयरोस्पेस का पहला मिशन ‘प्रारम्भ’ दो भारतीयों और एक विदेशी ग्राहकों के अंतरिक्ष उपकरण (पेलोड) को ले जाएगा. यह श्रीहरिकोटा में भारतीय अंतरिक्ष अनुसंधान संगठन (इसरो) के प्रक्षेपण स्थल से प्रक्षेपण को तैयार है. इस मिशन को स्काईरूट के लिए एक महत्वपूर्ण मील का पत्थर माना जाता है, क्योंकि यह उन 80 प्रतिशत तकनीकों को मान्यता दिलाने में मदद करेगा, जिनका उपयोग विक्रम-1 कक्षीय वाहन में किया जाएगा. उसे अगले साल प्रक्षेपित करने की योजना है.

<https://hindi.news18.com/news/nation/now-indias-first-private-rocket-vikram-s-will-fly-on-november-18-space-regulator-approved-4909765.html>



Wed, 16 Nov 2022

ISRO to Make History with Maiden Private Rocket Launch: Jitendra Singh

Indian Space Research Organization (ISRO) will make history on Friday when it launches first-ever private rocket, said Union Minister of state for Science and Technology Jitendra Singh on Wednesday. Singh will be present at Sriharikota, Andhra Pradesh to witness the maiden private launch of Vikram-suborbital (VKS) rocket. In a statement issued to the media ahead of the launch the minister said that this will be a major milestone in the journey of ISRO, after Prime Minister Narendra Modi had unlocked the space sector in India two years ago for private participation. Singh added that the non-government entity/startup, Skyroot Aerospace Pvt Ltd (SAPL) has developed the VKS rocket. “It is a single stage spin stabilized solid propellant rocket with mass of approx. 550 kilograms. The rocket goes to the max altitude of 101 kilometers and splashes into the sea and the overall duration of launch is 300 seconds only.”

He said that Skyroot was the first startup to sign a Memorandum of Understanding with ISRO for launching its rockets. “Apart from being the nation’s first private launch, it will also be the maiden mission of Skyroot Aerospace, named ‘Prarambh’. It will carry a total of three payloads in space, including one from the foreign customers.” The Minister said, it will provide a level playing field for cost-efficient satellite launch services by disrupting the entry barriers and will also help the start-ups to make spaceflights affordable and reliable.

Singh added that space reforms have unleashed innovative potentials of startups. “Within a short span of time, from a couple of space start-ups three -four years back, we now have 102 start-ups working in cutting-edge areas of space debris management, nano-satellite, launch vehicle, ground systems, research etc.” “With the integration of R&D, Academia and Industry with equal stake, it is safe to say that a Space Revolution led by ISRO along with the Private Sector and

Start-ups is on the horizon," he said. The minister added that PM Modi has enabled India to earn universal recognition for India's science, technology, innovation capabilities and our startups are much sought after. "The whole world is looking at India as an inspirational place, as it is helping budding countries in capacity building and satellite building including nanosatellites."

<https://www.livemint.com/news/india/isro-to-make-history-with-maiden-private-rocket-launch-jitendra-singh/amp-11668609125105.html>



Wed, 16 Nov 2022

India and Finland Comes together to Cooperate in Science, Technology and Innovation

India and Finland agreed to carry mutual cooperation in areas such as Digital Partnership in Future ICT, Future Mobile Technologies and Digital Education, on Monday (14 November). They will seek enhanced bilateral cooperation between the two countries in the field of Science, Technology and Innovation (STI). The decision was taken in the meeting between Union Minister of Science and Technology Dr Jitendra Singh and Finland Minister of Education and Culture, Petri Honkonen at North Block, New Delhi. Finland Minister Petri Honkonen was accompanied by a high level delegation which later held a separate meeting with the Indian delegation in the presence of the two Ministers.

Agreement of Mutual cooperation

India and Finland agreed to carry mutual cooperation between the two countries to a new level in a number of areas of bilateral as well as global interests. The two nations decided to enhance cooperation in areas such as Digital Partnership in Future ICT, Future Mobile Technologies and Digital Education. The two countries also emphasised on having institutionalised joint working groups on areas of mutual interest. The bilateral STI collaboration between the two countries is an attempt to stimulate innovative R&D projects that address a specific need or challenge; demonstrate high industrial relevance and commercial potential; and aim to deliver benefit to all participants, and more broadly, to both nations, said Union Minister Dr. Jitendra Singh.

Dr Jitendra Singh also recalled that following the signing of the Joint declaration during the visit of Mika Lintilä, Minister of Economic Affairs, Finland on 18th April 2022, both sides have initiated collaboration in Quantum Technologies. Indian side has already identified four premier institutes viz IISER, Pune, IIT Madras, TIFR Mumbai and C-DAC Pune to work with Finnish institutions on joint development of Quantum Computer. Dr. Jitendra Singh expressed satisfaction that experts from both sides are working out detailed plan for establishment of the Indo-Finnish Virtual Network Centre on Quantum Computing and targeting to develop 20 qubits superconducting based Quantum Computer in 1st phase and further scale it up to 54 qubits in second phase.

Dr Jitendra Singh conveyed to the Finland Minister Petri Honkonen that India is keen to develop research collaborations with Finnish R&D institutions and technology collaboration with Finnish Industry especially focusing on the application of Quantum Computing in areas such as: Sustainable Energy Technologies (generation, conversion, storage and conservation),

Environment and Clean Technologies, Bio-based Economy, Bio Banks and Bio based materials for different applications of water and Marine Technologies, Food & Agri Technologies, Affordable Healthcare (including Pharmaceuticals and Biomedical Instrumentation) and Technologies for Advanced Manufacturing Integration of AI and Machine Learning in all domains.

India and Finland Relations

Finland established diplomatic relations with India in 1949, after the country had gained independence in 1947. The year 2022 marked 73 years of diplomatic relations between the two countries. India and Finland have strong bonding in Science, Technology and Innovation. Within the framework of S&T agreement, the Department of Science and Technology, Department of Biotechnology, Government of India and the Ministry of Economic Affairs and Employment of Finland together with Business Finland and Academy of Finland have been successfully collaborating for over a decade.

<https://newsonair.com/2022/11/15/india-and-finland-comes-together-to-cooperate-in-science-technology-and-innovation/>



बुधवार, 16 नवंबर 2022

NASA का आर्टेमिस मिशन 1, तीन डमी परीक्षणों के बाद मून रॉकेट लॉन्च

नासा (NASA) चंद्रमा (Moon) पर आर्टेमिस 1 मिशन (Artemis 1 Mission) का काउंटडाउन शुरू होने से पहले इसे 10 मिनट के होल्ड पर कर दिया गया था। अब से ही देर में मिशन के एसएलएस रॉकेट (SLS Rocket) और ओरियन अंतरिक्ष यान (Orion spacecraft) को फ्लोरिडा में कैनेडी स्पेस सेंटर में लॉन्चपैड 39 बी से लॉन्च किया जाएगा। ये तीसरा मौका है जब नासा ने चांद पर आर्टेमिस 1 मिशन को लॉन्च करने को हरी झंडी दी है। पहले यह मिशन 14 नवंबर को लॉन्च किया जाना था, लेकिन अब 16 नवंबर के लिए निर्धारित कर दिया गया है।

नासा 50 साल बाद अपने मून मिशन आर्टेमिस-1 की मदद से इंसानों को चांद पर एक बार फिर भेजने की तैयारी कर रहा है। यह एक मानवरहित मिशन होगा, जिसमें नासा के मेगारॉकेट के जरिए ओरियन क्रू कैप्सूल को चांद तक भेजा जाएगा। आप लॉन्च को नासा की वेबसाइट, आधिकारिक ऐप या नीचे दिए गए यूट्यूब लिंक के माध्यम से देख सकते हैं। सेंजी के मुताबिक, नासा अब चांद पर एक स्थाई बेस बनाना चाहती है, ताकि अंतरिक्ष यात्री लंबे समय तक वहां रुक सकें।

<https://www.jansatta.com/international/nasas-artemis-mission-1-will-reach-the-moon-know-live-updates-of-moon-rocket-launching/2492499/>

