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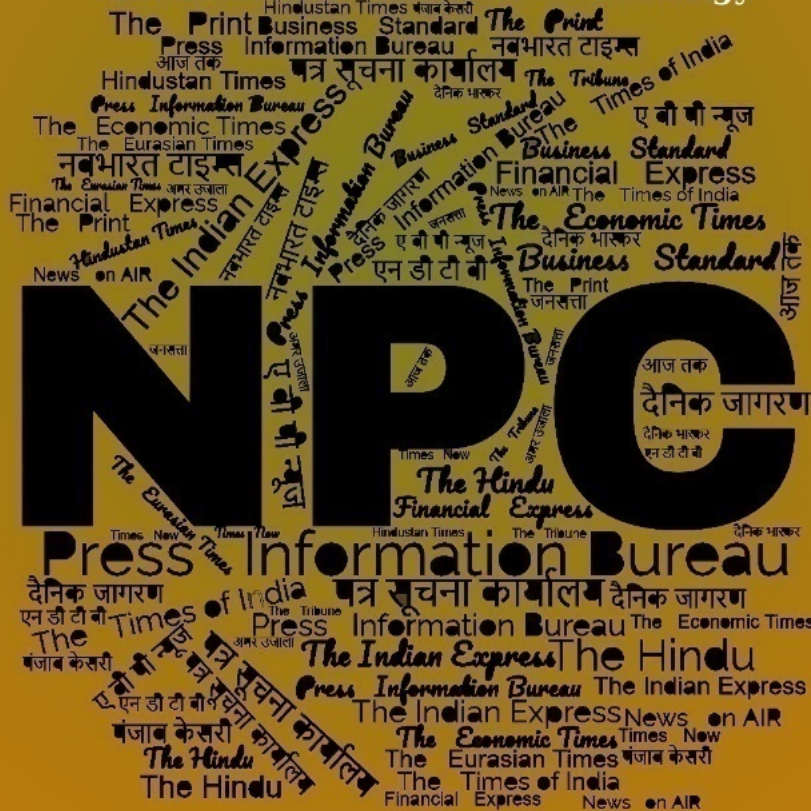
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Defence Strategic: National/International



Press Information Bureau
Government of India

Ministry of Defence

Tue, 19 Mar 2024

Ex Tiger Triumph - 24

The Opening Ceremony of the Bilateral Tri-Service Humanitarian Assistance and Disaster Relief (HADR) Amphibious Exercise between India and US, Tiger Triumph, was held onboard INS Jalashwa today 19 Mar 2024. The Exercise represents the robust strategic partnership between both countries and aims to share best practices and Standard Operating Procedures in undertaking multi-national HADR operations.

The Harbour Phase of the exercise is being conducted at Visakhapatnam from 18 to 25 Mar 24 and would include pre-sail discussions, Subject Matter Expert Exchange on professional subjects and deliberations on planning and execution procedures of various tasks.

Sports engagements are also scheduled to further enhance camaraderie between the participating armed forces personnel of both nations. The Sea phase, from 26 to 31 Mar 24, would include units of both countries setting up a joint Command and Control Centre and a Joint Relief and Medical Camp.

A Planning and Coordination Exercise would concurrently be undertaken to discuss and refine a Standard Operating Procedures (SOP) to enable rapid and smooth coordination between forces of both countries.

The participating units from the Indian Navy include a Landing Platform Dock, Landing Ship Tanks (Large) including their integral Landing Crafts and helicopters, guided missile Frigate and Long Range Maritime Reconnaissance Aircraft. The Indian Army would be represented by one infantry battalion group including mechanised forces.

The Indian Air Force would deploy medium lift aircraft, transport helicopters and a Rapid Action Medical Team (RAMT). Additionally, the Special Ops Forces from all the three services will also participate in the exercise.

The US Task Force would comprise of a US Navy Landing Platform Dock including its integral Landing Craft Air Cushions and helicopters, a Destroyer, maritime reconnaissance and medium lift aircraft, and also, US Marines.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2015581>



**Press Information Bureau
Government of India**

Ministry of Defence

Tue, 19 Mar 2024

Memorandum of Understanding between Indian Navy and IIT Kharagpur

**Indian Navy & IIT Kharagpur joins forces to drive
innovation through research partnership**

Indian Navy and Indian Institute of Technology Kharagpur, signed a Memorandum of Understanding (MoU) today at Naval Headquarters, New Delhi, symbolising their commitment to promote technology development, innovative solutions and joint R&D. Rear Admiral K Srinivas, Asst. Chief of Materiel (Dockyard & Refit) at Naval Headquarters and Prof. (Ms) Rintu Banerjee, Dean (R&D) of IIT Kharagpur signed in presence of Prof. Virendra Kumar Tiwari, Director of IIT Kharagpur.

The strategic collaboration focuses on joint research and development initiatives involving teams from Indian Navy and IIT Kharagpur. The MoU will be co-ordinated by INS Shivaji, Lonavala.

This alignment signifies a move towards a symbolic relationship between the Academia and the Military, fostering an environment conducive to innovation and knowledge exchange.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2015575>



**Press Information Bureau
Government of India**

Ministry of Defence

Tue, 19 Mar 2024

Activation of Emergency Landing Facility on National Highway 16

Indian Army contingent departed for Seychelles today to participate in the Tenth edition of Joint Military Exercise “LAMITIYE-2024” between the Indian Army and Seychelles Defence Forces (SDF). The Joint Exercise will be conducted at Seychelles from 18-27 March 2024. ‘LAMITIYE’ meaning ‘Friendship’ in the Creole language is a biennial training event and has been conducted in

Seychelles since 2001. 45 personnel each from the GORKHA RIFLES of the Indian Army and Seychelles Defence Forces (SDF) will participate in the exercise.

The aim of the Exercise is to enhance interoperability in Sub-conventional Operations in Semi-Urban environment under Chapter VII of the United Nations Charter on Peace Keeping Operations. The Exercise will enhance cooperation and interoperability between both the sides during Peace Keeping Operations. The exercise will also build and promote bilateral military relations in addition to exchanging skills, experiences and good practices between both armies

Both sides will jointly train, plan and execute a series of well-developed tactical drills for neutralization of likely threats that may be encountered in Semi-Urban environment, while exploiting and showcasing new-generation equipment and technology. The 10 days long Joint Exercise will include Field Training Exercise, combat discussions, lectures & demonstrations, which culminates with two days of Validation Exercise.

The exercise will contribute immensely in developing mutual understanding and magnify jointness between the troops of both the Armies. The Exercise will also foster collaborative partnership and help in sharing best practices between the two sides.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2015459>



Wed, 20 Mar 2024

Why India's Defence Deals with the Global South Matter

In recent years, India has been making significant strides towards establishing itself as a major player in the global arms trade. This strategic shift involves identifying markets and forging partnerships, particularly in the Global South.

Military exporter

India's ambition to become a military exporter is not without its challenges. One crucial step in this journey is identifying potential markets for its defence products. Recent reports indicate that New Delhi is eyeing opportunities in regions like Africa and the Caribbean. The impending defence deal with Ethiopia, focussing on military training and acquisitions, underscores India's growing presence in the African defence market.

Similarly, India's engagement with Guyana, offering a line of credit worth \$23 million for the procurement of military aircraft, demonstrates its commitment to expanding its defence exports in the Caribbean region. The choice of the HAL 228 Dornier aircraft, tailored for short takeoffs and landings, aligns with Guyana's specific requirements for patrol and logistical missions.

These developments highlight a clear trend: countries in the Global South are increasingly turning to India for their defence needs. The Philippines' procurement of India's BrahMos missiles, valued

at \$375 million, and ongoing negotiations with other nations for the Tejas fighter jet reinforce this pattern.

Numbers talk

The numbers substantiate India's aspirations. From approximately Rs4,600 crore in defence exports in 2017-18, the figure has surged to nearly Rs15,000 crore—a remarkable increase of 226 per cent. With a target of reaching Rs50,000 crore in exports by 2028-29, India aims to position itself as a leading defence supplier on the global stage.

So, why do countries in the Global South prefer India's defence offerings? Firstly, India's status as a fellow Global South nation fosters a sense of solidarity and trust, devoid of colonial legacies. Moreover, Indian defence products offer a cost-effective alternative to Western counterparts, addressing the budgetary constraints faced by many developing nations.

What India offers

Unlike Western defence procurement strategies, which often prioritise exorbitant spending, India's approach resonates with the fiscal realities of Global South countries. For instance, the staggering costs associated with the American F-35 jet—amounting to \$1.7 trillion for a fleet—underscore the unfeasibility of such expenditures for many nations.

For India, the benefits extend beyond financial gains. Increased defence exports translate into revenue, investments and job creation bolstering the domestic defence industry. Furthermore, forging defence partnerships cultivates strategic ties, as exemplified by India's longstanding relationship with Russia, rooted in defence collaboration.

Challenges for India

However, India faces formidable competition, particularly from China, which has made significant inroads into the African defence market through lucrative loan deals covering defence procurement. With 27 deals worth \$3.5 billion, China's assertive presence poses a formidable challenge to India's ambitions.

Navigating this competitive landscape demands resilience and strategic acumen. While the West and China vie for dominance, India must leverage its strengths, such as its diverse defence portfolio and diplomatic prowess, to carve out a niche in the global arms trade.

In essence, India's quest to become a key player in the defence export arena represents a pivotal shift in its foreign policy and economic strategy. By fostering partnerships and capitalizing on emerging opportunities in the Global South, India aims to not only bolster its defence industry but also shape regional and global security dynamics. As New Delhi braces for this uphill battle, one thing remains certain: the pursuit of strategic influence in the arms trade will define India's trajectory in the 21st century geopolitical landscape.

<https://www.firstpost.com/opinion/vantage-why-indias-defence-deals-with-the-global-south-matter-13750785.html>

Tue, 19 Mar 2024

Battling Pirates: Indian Navy's Indigenous UAVs Transform Maritime Security

Recently, the Indian Navy conducted an operation against Somalian pirates in the Arabian Sea and rescued 17 hostages. Pirates had taken the crew of the MV Rouen hostage on December 14 last year. Seven citizens of the Malta-flagged ship were from Bulgaria. The ship was hijacked by about 35 pirates.

And, it was the indigenously developed Spotter Drone which was deployed to monitor the situation at sea where the pirates had also fired at the drone, highlighting the dangers faced during such missions.

These Spotter Drones are now integral to Indian warships, provide real-time intelligence crucial for maritime operations.

What is the importance of Maritime Spotter Drone?

In an earlier interaction with Financial Express Online, Captain Nikunj Parashar, Co-founder and Managing Director of Sagar Defence Engineering talked about the significance of the Maritime Spotter Drone. "This real-time communication was pivotal, providing mission control with immediate insights into the status of the crew module and facilitating rapid decision-making by playing an essential role in guiding recovery vessels to the precise location of the module.

This not only expedited the recovery process but also enhanced the overall safety and efficiency of the mission. These autonomous systems proved to be instrumental in streamlining the recovery operation, aiming to make human spaceflight missions safer and more efficient in the future," he explained.

Sixty of these drones have been acquired from Sagar Defence, proving vital in trials where they executed spotting maneuvers at 20 knots and successfully landed on the INS Vikrant, India's indigenous aircraft carrier. And will boost ISR, protecting seafarers and in aiding interception operations.

What happened on board MV Ruen?

Somalian pirates had converted the MV Ruen into a 'pirate ship'. As soon as this pirate ship once again launched into the sea with the intention of plundering and hijacking the ship, the Indian Navy became alert. Taking extremely alert and immediate action, the Indian Navy launched an operation against pirates 2600 kilometers away from the Indian coast. In this operation of the Indian Navy, C-17 aircraft of the Air Force airdropped MARCOS (Marine Commandos).

Somalian pirates initially tried to fire on naval warships and drones. Apart from this, an attempt was made to make a 'human-shield' for the crew members. But the Somalian pirates, shocked by

Marcos' operation, finally had to surrender. The Navy also released videos of the surrender in which all the pirates are seen sitting on the ship in a semi-nude state.

According to the information, for the first time a large number of pirates have been brought back to India and are in custody here. In earlier incidents, under international laws, the Indian Navy had given the pirates a warning and left them. But this time, the Navy's patience has run out and, in an effort to send a strong message to the Somalian pirates, the pirates are being brought back to India so that they can be prosecuted as per Indian law.

According to Navy spokesperson, Commander Vivek Madhwal, apart from the warship INS Kolkata, INS Subhadra warship, Sea Guardian drone and P-8I surveillance aircraft were also deployed in this maritime operation. In this operation that lasted for about 40 hours, the Indian Navy not only caught 35 Somalian pirates, but also safely rescued 17 people held hostage by them.

And, nine Bulgarian citizens are also included among the released hostages. This is the reason why everyone from the Bulgarian President to the Foreign Minister has wholeheartedly thanked Prime Minister Narendra Modi and Foreign Minister S Jaishankar.

The PM wrote in response to the Bulgarian President's X account that "India is fully committed to freedom of navigation in the Indian Ocean and fighting terrorism, including piracy." Foreign Minister Jaishankar replied to his Bulgarian counterpart that "this is what friends are for."

In the last few months, the Indian Navy has prevented attacks on several merchant ships in the Western Indian Ocean. Also, in the month of January, in a major operation in the Arabian Sea, the Marine Commandos (MARCOS) of the Indian Navy freed a Liberian merchant ship from the capture of Somalian pirates and rescued all 21 crew members safely. Of the 21 crew members on board the rescued Liberian ship MV Leela Norfolk, 15 were Indian nationals. At that time too, the help of MQ-9 Predator drone, helicopter, P8I aircraft and INS Chennai warship was also taken along with MARCOS in the mission in the North Arabian Sea.

About Spotter Drones

These drones offer unique capabilities, allowing for take-off and landing while ships are in motion. The Spotter drone deal, signed in 2021, includes 30 units, with an additional 60 ordered in 2023. Designed exclusively for the Indian Navy, these drones enhance surveillance, enabling pre-emptive threat detection and real-time information sharing.

Moreover, smaller UAVs launched from carriers expand surveillance range and facilitate communication between vessels, amplifying naval capabilities in coordination with satellites like Rukmani.

Innovations like mid-sea command transfer and passenger-carrying drones, like 'Varuna', mark significant advancements. Manufactured by Sagar Defence Engineering, Varuna is designed to operate from moving warships, offering versatility and efficiency in various missions.

Looking ahead, collaborations between Larsen and Toubro and startups signal a promising future, with plans for submarine-launched UAVs and advancements in anti-submarine warfare and ISR capabilities.

Despite past challenges and failed attempts, the Indian Navy remains committed to enhancing maritime security through indigenous UAV technology, ensuring robust defence and surveillance capabilities in the maritime domain.

<https://www.financialexpress.com/business/defence-battling-pirates-indian-navys-indigenous-uavs-transform-maritime-security-3430398/>

Business Standard

Tue, 19 Mar 2024

MV Ruen Op: Indian Navy protected 3,440 ships, 25,000 seafarers in 16 years

With Prime Minister (PM) Narendra Modi stating on Tuesday that India is committed to protecting freedom of navigation and combating piracy in the Indian Ocean region (IOR), Ministry of Defence (MoD) data shared in the Lok Sabha has revealed that the Indian Navy has safely escorted 3,440 ships and over 25,000 seafarers sailing through the Gulf of Aden and around the east coast of Africa since 2008.

On February 2, Minister of State (MoS) for Defence and Tourism Ajay Bhatt told the Lok Sabha that the Indian Navy has been proactively engaging with other navies and maritime forces, both from the region and outside of it, to ensure maritime security.

The minister also revealed that since 2008, the Indian Navy has deployed units in the Gulf of Aden and east coast of Africa for anti-piracy patrols, adding that a total of 3,440 ships and over 25,000 seafarers have been safely escorted since then.

The MoS Defence informed the Lok Sabha that the Navy is ensuring increased presence of its ships and aerial surveillance by maritime patrol or remotely piloted aircraft in the central Arabian Sea and off the east coast of Somalia in a bid to restore maritime security in the region.

According to the MoD, information is also being exchanged with national and international maritime security agencies for early and coordinated response. The Navy is also coordinating with the Directorate General (DG) of Shipping for inputs on any Indian crew onboard merchant vessels plying in the Arabian Sea, Gulf of Aden or the adjoining region.

The Indian Navy is also "interrogating" fishing vessels and dhows operating in the region.

Seven hijackings in three years

Back in February, the MoD had told the Lok Sabha that seven incidents of vessels being hijacked on the high seas by pirates had been reported during the past three years.

Merchant vessel (MV) Ruen was hijacked by Somali pirates on December 14 near the Yemeni island of Socotra, with the Indian Navy freeing the ship from the pirates' clutches on Saturday, March 16.

The other recent hijacking incident involved MV Lila Norfolk (January 4-5, 2024), which had a crew of 21, including 15 Indian nationals. Fishing vessel IMAN (January 28, 2024) and fishing vessel AI Naeemi (January 29, 2024), which did not have any Indian crew onboard, were also hijacked.

PM Modi highlights India's commitment to combating piracy

After Bulgarian President Rumen Radev thanked him for the Indian Navy's rescue of his country's ship and crew, PM Modi asserted on Tuesday that India is committed to protecting freedom of navigation and combating piracy and terrorism in the IOR.

"My sincere gratitude to PM Narendra Modi for the brave action of India Navy rescuing the hijacked Bulgarian ship 'Ruen' and its crew, including seven Bulgarian citizens," President Radev posted on microblogging platform X.

In his reply, PM Modi said he appreciates the message. "We are happy that seven Bulgarian nationals are safe and will be returning home soon. India is committed to protecting freedom of navigation and combating piracy and terrorism in the Indian Ocean region," Modi added.

Bulgarian Foreign Minister Mariya Gabriel also expressed her country's gratitude to the Indian Navy for the successful operation. Responding to Gabriel's post on X, External Affairs Minister S Jaishankar said, "That's what friends are for."

Daring MV Ruen rescue

In a projection of the country's growing maritime power, the Indian Navy on Saturday executed a dramatic mid-sea operation, ending the three-month hijacking of bulk carrier MV Ruen.

The operation saw the deployment of the INS Kolkata frontline warship, patrol vessel INS Subhadra, long-endurance Sea Guardian drones, P-8I surveillance aircraft, and elite MARCOS commandos airdropped from an Indian Air Force (IAF) C-17 transport plane.

In an operation that lasted nearly 40 hours, the Navy seized the former Maltese-flagged vessel, rescued 17 hostages, and captured 35 armed pirates.

The rescue took place around 2,600 kilometres from the Indian coast, with experts reportedly saying that it was the first such successful takeover of a cargo ship from Somali pirates in nearly seven years.

With the operation coming amid rising concerns over the safety of critical sea lanes, the Navy on Sunday said that it is resolved to "reinforce" peace and stability in the Indian Ocean and stop the resurgence of piracy.

A brief video of the anti-piracy mission, which was part of Operation Sankalp, showed that the pirates had tried to use the hostages as human shields.

Almost five years of Operation Sankalp

On June 19, 2019, the Indian Navy commenced Operation Sankalp, a maritime security mission, in the Gulf Region. The operation's primary aim is to ensure the safe passage of Indian-flagged vessels sailing through the Strait of Hormuz.

The operation was launched after the security situation in the Gulf Region had deteriorated due to attacks on merchant ships in the Gulf of Oman in June 2019.

The MoD, Ministry of External Affairs, Ministry of Shipping, Ministry of Petroleum and Natural Gas, and the DG of Shipping have been working in coordination to execute Operation Sankalp.

Mission continues

The Indian Navy has reportedly deployed over 10 warships to secure strategic waterways following increasing attacks on cargo vessels in the Red Sea by the Iran-backed Houthi militants.

The Navy has said it remains steadfast in performing its role as the 'first responder' in the IOR.

https://www.business-standard.com/external-affairs-defence-security/news/mv-ruen-op-indian-navy-protected-3-440-ships-25-000-seafarers-in-16-years-124031900707_1.html

THE ECONOMIC TIMES

Tue, 19 Mar 2024

Army begins joint training of over 1,100 probationary officers of J-K Police

The Army has commenced a joint training for over 1,100 probationary police officers to enhance operational coordination between the Indian Army and the Jammu and Kashmir Police, officials said on Tuesday. The training for the officers, including probationary deputy superintendents of police (DSP) and sub-inspectors (SI), is being held at White Knight Corps Battle School in the Bhalra area of Doda district, they said.

"In a significant move towards enhancing security and fostering peace in the region of Jammu and Kashmir, the Army, in collaboration with the police, has undertaken joint training activities aimed at increasing synergy, interoperability, and understanding the strengths, ethos and culture of each other," a Jammu-based defence spokesperson said.

Director General of Police (DGP) R R Swain said, "In furtherance of our commitment to connect with people and improve security, our freshly inducted 1,042 SIs and 62 DSPs (Probationers) have commenced training at the White Knight Battle School at Bhalra under the aegis of Northern Command".

This batch includes 128 females -- 19 DSPs and 109 SIs, the spokesperson said. Swain thanked the Northern Command for their support and wished the trainees the best. "This is yet another step towards improving operational synergy between the army and the police," the DGP said.

<https://economictimes.indiatimes.com/news/defence/army-begins-joint-training-of-over-1100-probationary-officers-of-j-k-police/articleshow/108622948.cms>

THE TIMES OF INDIA

Tue, 19 Mar 2024

Nisar only in 2nd half of 2024; Trishna gets nod

The \$1.5 billion Nasa-Isro Synthetic Aperture Radar (Nisar) satellite launch, which was expected to happen in March is unlikely before the end of May. “GSLV for Nisar will be built by March-April but the satellite is still undergoing tests and we are looking at some delay. It (launch) could happen in the second half of this year,” Somanath told TOI in an exclusive interview. Nisar, a dual radar satellite, with both Isro and Nasa building one radar each, is to launch on India's GSLV.

According to Nasa's Jet Propulsion Lab (JPL), the lead agency from the US, “Nisar is the first satellite mission to collect radar data in two microwave bandwidth regions, called the L-band and the S-band, to measure changes of our planet's surface, including movements as small as centimetre.

The satellite, after initial integration in the US, has been at the UR Rao Satellite Centre (URSC) in Bengaluru. Once launched Nisaar will measure Earth's changing ecosystems, dynamic surfaces, and ice masses providing information about biomass, natural hazards, sea level rise, and groundwater, and will support a host of other applications.

It will observe Earth's land and ice-covered surfaces globally with 12-day regularity on ascending and descending passes, sampling Earth on average every six days for a baseline 3-year mission. Meanwhile, another joint mission Isro is taking up — with the French agency — has got the space commission's nod. The project is called Trishna — Thermal infraRed Imaging Satellite for High-resolution Natural resource Assessment. “Trishna has been on cards for a long time but it wasn't approved by the government.

We've now got the approval, the last space commission cleared it. The project teams have been formed. The French side's approach is to build the payload through another agency, work on that is progressing, and so is work on our side,” Somanath said. According to French space agency CNES (National Centre for Space Studies), Trishna will acquire imagery of Earth's surface in the thermal infrared with a resolution and revisit frequency never seen before.

“Trishna is designed to observe Earth's surface in the thermal infrared domain. Temperature is an indicator of the energy budget of land surfaces — croplands, pastures, forests, urban areas, snow and ice — and yields a wealth of information such as plant water stress and evapotranspiration,” CNES' description of Trishna, reads. Today, temperature measurements from space can only be obtained monthly at a resolution of about 100 metres, and daily global measurements are only available at a resolution of one kilometre, CNES says, adding that Trishna's aims to reach a resolution of 57 metres with a revisit interval of three days.

“This will enable scientists to understand local evolution of biological (water stress, transpiration), physical (evaporation, sublimation, plumes) and climatic (global observation over time) phenomena in relation to water cycle. Trishna will be a precious aid to inform policy decisions for farming, water resource management and land planning,” it added. Trishna’s thermal infrared instrument, developed by CNES, will be supplemented by an optical sensor supplied by Isro.

<https://timesofindia.indiatimes.com/india/nisar-only-in-2nd-half-of-2024-trishna-gets-nod/articleshow/108620945.cms>



Tue, 19 Mar 2024

ISRO gets Aviation Week Laureates Award for historic Chandrayaan-3 mission

The Indian Space Research Organisation (ISRO) has been honoured with the prestigious Aviation Week Laureates Award for its achievements with the historic Chandrayaan-3 mission. The award was received on behalf of Isro by Sripriya Ranganathan, Deputy Ambassador at the Indian Embassy in the US. The Aviation Week Laureates Award is renowned for recognising extraordinary accomplishments within the aerospace industry, and this year, it celebrated ISRO's groundbreaking mission, Chandrayaan-3.

This mission, which cost a modest \$75 million, achieved a historic milestone by making a successful landing at the lunar South Pole. But the accolades do not stop there. Chandrayaan-3 didn't just land; it confirmed the presence of water in the region, a discovery that has profound implications for future lunar exploration and the possibility of sustaining life on the Moon.

Additionally, the mission detected sulfur nearby, adding another layer to our understanding of the Moon's composition and resources. The mission's lander, Vikram, equipped with the Chandra's Surface Thermophysical Experiment (ChaSTE), provided valuable data on the lunar surface temperature, reaching a depth of 10 centimeters below the surface. Additionally, the Pragyan rover conducted in-situ experiments, further contributing to the wealth of knowledge about the Moon.

The successful landing of Chandrayaan-3 at the lunar South Pole, a feat not many nations have accomplished, placed India among the leading countries in space exploration. Moreover, the confirmation of water presence opens new avenues for research and potential habitation strategies for future missions, both by India and the global space community.

The recognition by Aviation Week demonstrates the international appreciation and respect for Isro's contributions to space exploration.

<https://www.indiatoday.in/science/chandrayaan-3/story/isro-gets-aviation-week-laureates-award-for-historic-chandrayaan-3-mission-2516883-2024-03-19>

How scientists are trying to de-ice Euclid's vision from a million miles away

Euclid, tasked with unveiling the dark Universe's secrets, has encountered a hurdle: microscopic layers of water ice are clouding its view. This challenge, stemming from the spacecraft's exposure to the harsh cold of space, demands unprecedented precision for its mission's success.

Mirror, mirror, chilled in space

Efforts are now underway across Europe to implement a novel de-icing procedure designed to restore Euclid's clarity and maintain its optical systems for the duration of its orbital life.

Similar to how drivers remove ice from their car windshields in winter, the European Space Agency's (ESA) scientists are embarking on a unique mission to "de-ice" the Euclid observatory's telescope mirrors, situated over a million miles from Earth. These ice layers, though only as thick as a strand of DNA, have led to "a small but progressive decrease" in starlight detection, as noted by ESA in a recent announcement.

Addressing the fog: Euclid's diminishing sight

As Euclid embarked on its celestial journey, experts noted a slight yet progressive dimming in the stars' light captured by the visible instrument (VIS). Mischa Schirmer, a pivotal figure behind the new de-icing strategy, observed, "Some stars in the Universe vary in their luminosity, but the majority are stable for many millions of years. So, when our instruments detected a faint, gradual decline in photons coming in, we knew it wasn't them – it was us." This realization sparked a meticulous investigation into the unwanted accumulation of water, leading to the development of a targeted response.

The mission's current phase involves carefully heating areas of the spacecraft deemed low-risk, where water release poses minimal risk to other instruments. "De-icing should restore and preserve Euclid's ability to collect light from these ancient galaxies, but it's the first time we're doing this procedure," admitted Euclid scientist Reiko Nakajima, underlining the pioneering nature of this operation.

Crafting the countermeasure: A strategic approach to de-icing

The collaborative efforts spearheaded by Euclid's dedicated teams across Europe, including insights from the ESA's ESTEC and coordination by Ralf Kohley, culminate in a sophisticated plan to combat the ice. The strategy involves cautious heating of specific spacecraft components to avoid compromising Euclid's delicate optical alignment. "Switching on the heaters in the payload module therefore needs to be done with extreme care," explains Andreas Rudolph, highlighting the mission's unique thermal-optical stability demands.

Future-proofing Euclid: The long-term de-icing strategy

Acknowledging that water will continue to seep into Euclid's systems, the mission teams have devised a sustainable approach to periodically remove ice without disrupting the mission's critical timeline. Reiko Nakajima emphasizes the importance of this procedure for Euclid's primary mission: to map the Universe and probe the mysteries of gravitational lensing. The teams stand ready to pinpoint and address the ice's location, aiming to ensure Euclid's enduring capacity to observe distant galaxies and contribute to our cosmic understanding.

<https://timesofindia.indiatimes.com/home/science/breaking-the-ice-how-scientists-are-trying-to-de-ice-euclids-vision-from-a-million-miles-away/articleshow/108623701.cms>

