

CONTENTS

S. No.	TITLE	Page No.
Defence News		1-10
Defence Strategic: National/International		1-10
1.	Indian – Kyrgyzstan Joint Special Forces Exercise Khanjar Commences in Himachal Pradesh	<i>Press Information Bureau</i> 1
2.	Indian Army Special Forces Contingent Reaches Egypt for Joint Exercise ‘Cyclone’	<i>Press Information Bureau</i> 1
3.	Dorniers in IAF's Tangail Formation to Fly Using ATF-Biofuel Mix During R-Day Flypast	<i>ANI</i> 2
4.	Indian Navy Keeps Watch as Chinese Vessel Heads towards Maldives	<i>WION</i> 3
5.	Army Needs Smartsizing to Optimise Resource Utilisation	<i>The Tribune</i> 4
6.	US, UK Launch Fresh Strikes Against Houthi Rebels in Yemen in ‘Self-defence’	<i>India Today</i> 6
7.	Royal Navy’s Sea Viper Gets £405m Upgrade	<i>Naval Technology</i> 7
8.	Taiwan Says 6 Chinese Balloons Flew through its Airspace, and Warplanes and Ships also Detected	<i>The Economic Times</i> 8
9.	US ‘Drags’ Japan into Conflict with China; Damaged US Warships to be Repaired in Japanese Shipyards	<i>The EurAsian Times</i> 9
Science & Technology News		10-12
10.	ISRO's Vikram Lander, Chandrayaan-3 Gets Pinged by Retroreflector from NASA Spacecraft	<i>Mint</i> 10
11.	Japan Says 'Possibility' Moon Lander Power can be Restored	<i>Phys.org</i> 11

Defence Strategic: National/International



Press Information Bureau
Government of India

Ministry of Defence

Mon, 22 Jan 2024

Indian – Kyrgyzstan Joint Special Forces Exercise Khanjar Commences in Himachal Pradesh

The 11th edition of India-Kyrgyzstan Joint Special Forces Exercise KHANJAR has commenced at the Special Forces Training School in Bakloh, Himachal Pradesh. The exercise is scheduled to be conducted from 22nd January to 3rd February 2024. It is an annual event conducted alternatively in both the countries. The Indian Army contingent comprising 20 personnel is being represented by troops from The Parachute Regiment (Special Forces) and the Kyrgyzstan contingent comprising 20 personnel is represented by Scorpion Brigade.

Aim of the exercise is to exchange experiences and best practices in Counter Terrorism and Special Forces Operations in Built-up Area and Mountainous Terrain under Chapter VII of United Nations Charter. The exercise will emphasise on developing Special Forces skills, advanced techniques of insertion and extraction.

The exercise will provide an opportunity for both the sides of fortify defence ties while addressing common concerns of international terrorism and extremism. The exercise will also accord opportunity to showcase capabilities of cutting edge indigenous defence equipment besides achieving shared security objectives and foster bilateral relations.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1998544>



Press Information Bureau
Government of India

Ministry of Defence

Mon, 22 Jan 2024

Indian Army Special Forces Contingent Reaches Egypt for Joint Exercise ‘Cyclone’

The Indian Army contingent comprising 25 personnel reached Egypt to take part in the 2nd edition of India-Egypt Joint Special Forces Exercise CYCLONE. The Exercise will be conducted at

Anshas, Egypt from 22nd January to 1st February 2024. The first edition of the exercise was conducted last year in India.

The Indian contingent is being represented by troops from The Parachute Regiment (Special Forces) and Egyptian contingent comprising 25 personnel is being represented by Egyptian Commando Squadron and Egyptian Airborne Platoon.

Aim of the Exercise is to acquaint both the sides with each other's operating procedures in the backdrop of Special Operations in desert/ semi desert terrain under Chapter VII of United Nations Charter. Exercise CYCLONE is designed to develop bilateral military cooperation and strengthen bond between two armies through conduct of discussions and rehearsal of tactical military drills.

The Exercise will involve planning and execution of special operations in sub conventional domain and conducted in three phases. While the first phase will include Military Exhibitions and Tactical Interactions, second phase will focus on training on Improvised Explosive Device (IED), counter IED and Combat First Aid. The third and final phase will encompass Joint Tactical Exercise based on Fighting in Built-up Area and Hostage Rescue Scenarios.

The Exercise will provide an opportunity to both the contingents to strengthen their bond and share best practices. It will also act as a platform to achieve shared security objectives and foster bilateral relations between two friendly nations.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1998549>



Tue, 23 Jan 2024

Dorniers in IAF's Tangail Formation to Fly Using ATF-Biofuel Mix During R-Day Flypast

The 'Tangail' formation that will be flown during the Republic Day flypast will include the heritage aircraft Dakota flanked by two Dornier Do-228 aircraft which will be flying using a blended mixture of Aviation Turbine Fuel and Biofuel, the Indian Air Force (IAF) said on Tuesday.

The 'Tangail' formation will reenact the successful airdrop in which Indian Air Force personnel were dropped in parachutes on December 11, 1971, which marked the first airdrop of Indian security forces on hostile territory during the India-Pakistan war.

In addition to this, made-in-India weapon systems and platforms would also be among the main attractions in this year's Republic Day parade from the Indian Army including the LCH Prachand chopper, Pinaka multi-barrel rocket launchers and Nag anti-tank missiles.

The LCH Prachand is the first indigenous Multi-Role Combat Helicopter designed and manufactured by HAL. It has potent ground attack and aerial combat capability. The helicopter possesses modern stealth characteristics, robust armour protection and formidable night attack capability. Onboard advanced navigation system, guns tailored for close combat and potent air to air missiles make the LCH especially suited for the modern battlefield.

NAG has been developed by DRDO to engage highly fortified enemy tanks in day and night conditions. The missile has "Fire & Forget" "Top Attack" capabilities with passive homing guidance to defeat all MBTs equipped with composite and reactive armour.

The NAG missile carrier NAMICA is a BMP II based system with amphibious capability. The latest armoured vehicles and specialist vehicles produced by the Indian industry indigenously are also going to be showcased at the parade where French President Emmanuel Macron will be the chief guest, Army officials said.

The Quick Fighting Reaction Vehicle, Light Specialist Vehicle and the All-Terrain Vehicle would be marching on the Kartavya Path this year. The weapon systems would also include the T-90 tank, BMP-2 infantry combat vehicle, c, Drone jammers, Advanced Sarvatra bridge, Medium Range Surface to Air Missile launcher and multi-function radar, they said.

Swathi Weapon Locating Radar, is an indigenously designed WLR which is capable of locating guns, mortars and rockets firing own troops, thereby facilitating their destruction through Counter Bombardment by own firepower resources. This will enable troops to carry out their operational tasks without any interference from the enemy and also provide them safety against enemy fire.

Along with the Light Combat Helicopter, the Indian Army would also be showcasing the weaponised version of the ALH Dhruv choppers which is also known as the Rudra. The weapon systems to be showcased at the parade also include the Pinaka and the Swathi radar which have been successfully exported to foreign customers by Indian entities. Both have been developed by the DRDO.

The enhanced range version of Pinaka Rocket System can destroy targets at distances up to 45 kms. The rocket system has been developed jointly by Pune based Armament Research and Development Establishment (ARDE) and High Energy Materials Research Laboratory (HEMRL).

The Army is also going to showcase the growing role of women in defence forces as 60 of its women soldiers are going to be part of the tri-services all-women marching contingent which would include women from the Air Force and Navy too.

<https://www.aninews.in/news/national/general-news/dorniers-in-iafs-tangail-formation-to-fly-using-atf-biofuel-mix-during-r-day-flypast20240123091152/>



Mon, 22 Jan 2024

Indian Navy Keeps Watch as Chinese Vessel Heads towards Maldives

In a developing maritime situation, the Indian Navy is closely monitoring the movement of the Chinese ocean research vessel XIANG YANG HONG 03, which is reported to be heading towards Male, the capital of the Maldives. Defence sources have confirmed to WION that the Indian Navy is well aware of the presence of the vessel and has been monitoring its movement.

According to a social media post by @detresfa_ on X (formerly Twitter), the XIANG YANG HONG 03 is "heading to Male, Maldives" and has a history of conducting ocean surveys, with documented instances in 2019 and 2020. The vessel has been observed in key strategic locations such as the Indian Ocean Region (IOR), the Bay of Bengal, and the Arabian Sea. Chinese research vessels, often perceived as spy ships, have been making regular forays into the Indian Ocean, heightening concerns about China's increasing maritime presence.

XIANG YANG HONG 03 the Chinese ocean research vessel heading to Male, Maldives is no stranger to the region, having conducted ocean surveys in 2019 & 2020, the vessel has been

observed in the IOR, Bay of Bengal & Arabian Sea raising fresh concerns in #India
<https://t.co/WsiMOzjYkZ> pic.twitter.com/8iDzCSuVEg

— Damien Symon (@detresfa_) January 22, 2024

This anticipated visit of the Chinese research vessel to the Maldives coincides with the efforts of the new Maldivian government, led by President Mohamed Muizzu, to strengthen ties with China. President Muizzu recently visited China, where he signed new agreements and expanded engagements with Beijing.

Earlier on Monday, Sun Haiyan, the Vice Minister of the International Department of the Chinese Communist Party, paid a courtesy call on the Maldives President. The President's office released a statement indicating that the Chinese official expressed interest in enhancing strategic bilateral relations and providing training possibilities for Maldivians across different sectors.

As relations with China strengthened, ties with India deteriorated during Muizzu's tenure. Three government ministers faced suspension this month for making derogatory remarks against PM Modi and India. The President, who came to power on an anti-India plank, has been calling for the withdrawal of Indian military personnel engaged in maintaining platforms for humanitarian purposes in the country.

<https://www.wionews.com/india-news/indian-navy-keeps-watch-as-chinese-vessel-heads-towards-maldives-682564>

The Tribune

Tue, 23 Jan 2024

Army Needs Smartsizing to Optimise Resource Utilisation

Lt Gen Pradeep Bali (retd)

Rightsizing the Army has been an ongoing exercise for quite some time now, with the main focus being on reducing the manpower in support elements. The introduction of the Agnipath recruitment scheme is also an endeavour in cost-cutting. Army Chief Gen Manoj Pande recently spoke about optimising strength by achieving a reduction of one lakh troops over the next three years. Apparently, downsizing and rightsizing have become synonymous. That may well be in the fitness of things, but what needs deliberation are the ground realities and operational commitments on the one hand and options for downsizing on the other. Smartsizing our security forces may achieve an optimal balance.

The major portion of our land borders remains active and, at times, turbulent. With two inimical neighbours, India has a troubled history both along the Line of Actual Control (LAC) with China and the Line of Control (LoC) with Pakistan. In recent years, tensions have escalated at the LAC, marked by bloody clashes and standoffs between the Indian Army and the People's Liberation Army of China. This has necessitated an increased deployment of formations in the hostile high-altitude terrain of eastern Ladakh. Unintended disclosures of operational happenings by the Army have made public the tense and violent shades of this 'no war, no peace' situation with our largest and most powerful neighbour. In the case of Pakistan, volatile incidents in J&K necessitate a multi-tier deployment to prevent or minimise infiltration by terrorists from across the LoC.

These issues, which impinge upon our national security and territorial integrity, are land-centric and have to be dealt with by infantry combat soldiers. The nature of the terrain and the type of conflict dictate a manpower-intensive employment. While it makes sense to replace animal

transport units with alternative means and technology for logistic support, there can be no dilution in operational requirements in terms of force strength.

The challenges that the Army faces on the borders and internally are of a very different dimension from what other services encounter. A warship may hunt down pirates or hijackers who scoot well before its arrival or may shoot down an aggressive drone, but a soldier on the borders is facing enemy troops who are there to stay and fight. Terrorists (fidayeen) involved in fierce encounters are fanatics who are ready to kill or die. In such an environment, technology can only do as much. The real strength of the land forces lies in their numbers. Constant vigil and an ability to respond in force require boots on the ground. There is no substitute.

Moreover, the induction of technology may not lead to a reduction in manpower; on the contrary, high-technology equipment needs highly skilled manpower for operating and maintenance purposes. Downsizing the Army had earlier targeted technical support arms and technical services. However, as it transforms into a more technology-intensive organisation, this may not be viable. Similarly, the advent of unified theatre commands will lead to the optimum utilisation of resources but not necessarily a decrease in manpower. What the Army of the future needs is not downsizing across the board but smartsizing. This would entail a relook at the current commitments away from the borders and a review of some of the logistic systems.

Today, there is a slew of Central Armed Police Forces (CAPFs), which have expanded in size, with more raisings on the anvil. A few of these CAPFs are categorised as border-guarding forces, such as the BSF, ITBP and SSB, while others are employed for various security duties internally. The CAPFs are manned by the same human resource that populates our Army. They are adequately resourced and have seen the induction of a good deal of modern weaponry and technical equipment. It should be well within their capability to take on internal security tasks, including counter-insurgency, in their entirety. This would free the military manpower for their primary role. What seems to be lacking in these forces by way of training can be provided by the Army with its first-rate training establishments. There is also ample scope for the lateral induction of trained personnel at various ranks from the Army into these organisations.

The tendency to employ the Army for any contingency or calamity also needs to be curbed. Organisations like the National Disaster Response Force have been created and resourced for such tasks. Not having the Army as a first responder does not imply its non-use in emergencies, which may be restricted to exceptional situations. This would alleviate the burden on an overstretched Army, where the operational tours of duty and peace-station tenures of combat units are becoming unfavourably skewed.

A key area that needs to be addressed for achieving meaningful smartsizing of the Army is non-core logistics. This would cover most parts other than munitions and all warlike material. Supplies such as fuel (excluding those required for specialist systems), rations and the repair and maintenance of non-specialist vehicles and equipment can all be outsourced. All this would require the implementation of proper procedures and safeguards. There are various models of such outsourcing available in the armies of developed countries, where non-military logistic organisations have been employed in support of large-scale overseas deployment. One example of this is the Kellogg Brown and Root, also known as KBR Engineering & Construction, a unit of Halliburton Company, which provides military support services — a function earlier performed by US military personnel.

Corporatisation of ordnance factories has the danger of becoming a perpetual work in progress. Some of the most sought-after weapon systems in the world, from small arms to field guns, are made in the private sector. India need not be any different. The resultant savings will be much more significant than by any force reduction. For giving an impetus, an organisation on the lines of the South Korean Agency for Defence Development (ADD) would be appropriate. The ADD primarily

helps South Korean private defence industrialists streamline research and development, acquire foreign military technologies and directly engage in product development.

Smartsizing of the Army, indeed the entire defence sector, is a pressing requirement. It will be in sync with operational and economic realities and can ensure optimisation of the combat potential of the forces.

<https://www.tribuneindia.com/news/comment/army-needs-smartsizing-to-optimise-resource-utilisation-583813>



Tue, 23 Jan 2024

US, UK Launch Fresh Strikes Against Houthi Rebels in Yemen in ‘Self-defence’

US and British forces carried out a fresh round of strikes on Monday in Yemen, targeting a Houthi underground storage site as well as missile and surveillance capabilities used by the Iran-aligned group against Red Sea shipping, the Pentagon said.

The Houthis, who control the most populous parts of Yemen, have said their attacks are in solidarity with Palestinians as Israel strikes Gaza.

The Houthi attacks have disrupted global shipping and stoked fears of global inflation. They have also deepened concern that fallout from the Israel-Hamas war could destabilize the Middle East.

In the latest response, US and British forces carried out strikes at eight different locations in Yemen, with support from Australia, Bahrain, Canada and the Netherlands, according to a joint statement signed by the six countries.

A senior US military official, speaking on condition of anonymity, said roughly 25 to 30 munitions were fired, including from warplanes launched from a US aircraft carrier.

So far, eight rounds of strikes over the past month have failed to stop Houthi attacks against shipping.

US officials say the strikes have degraded the Houthis' ability to carry out complex attacks. But they have declined to offer any specific figures as to the number of missiles, radar, drones or other military capabilities destroyed so far.

"We are having the intended effect," the US military official told Pentagon reporters.

British Defence Minister Grant Shapps said in a statement that the latest strikes were carried out in self-defence.

"This action will deal another blow to their limited stockpiles and ability to threaten global trade," Shapps said.

President Joe Biden said last week that air strikes would continue even as he acknowledged they may not be halting the Houthi attacks.

Last week, the Houthis launched two anti-ship ballistic missiles at a US-owned tanker ship that hit the water near the vessel but caused no injuries or damage.

Biden's emerging strategy on Yemen aims to weaken the Houthi militants but stops well short of trying to defeat the group or directly address Iran, the Houthis' main sponsor, experts say.

The strategy - a blend of limited military strikes and sanctions - appears aimed at preventing a wider Middle East conflict even as Washington seeks to punish the Houthis for their attacks on Red Sea shipping.

Container vessels have been pausing or diverting from the Red Sea that leads to the Suez Canal, the fastest freight route from Asia to Europe. Many ships have been forced to take the longer route via the Cape of Good Hope instead.

<https://www.indiatoday.in/world/story/yemen-houthi-rebel-targets-fresh-airstrikes-missiles-us-british-forces-red-sea-shipping-trade-crisis-2492311-2024-01-23>

Naval
Technology

Mon, 22 Jan 2024

Royal Navy's Sea Viper Gets £405m Upgrade

The Royal Navy is set to raise its naval air defence capabilities with a £405m upgrade to the Sea Viper missile system.

This enhancement, comprising three contracts awarded to MBDA, reinforces the Sea Viper as a naval air defence system for the Royal Navy. Two contracts – Sea Viper Evolution – will equip Type 45 destroyers to defend the Carrier Strike Group against anti-ship ballistic missiles (ASBMs).

This involves upgrading the existing Aster 30 missiles with Block 1 warheads and new guidance software to counter emerging threats while maintaining anti-air warfare capabilities.

The UK joins forces with France and Italy through MBDA, entering the Aster 30 Block 1 programme to bolster defences against ASBMs. The collaboration extends beyond national borders, fostering cooperation and interoperability in maritime security.

Simultaneously, Sea Viper's Air Defense system, recently credited with thwarting multiple hostile drone attacks in the Red Sea, will undergo an upgrade. The missile system, important for protecting the UK's Carrier Strike Group, will receive updated missiles with a new warhead and software, enabling it to counter ballistic missile threats.

Following recent Houthi attacks on commercial vessels in the Red Sea, the Royal Navy destroyer Type 45 Destroyer HMS Diamond joined Operation Prosperity Guardian, a multinational coalition with US and French warships. This international task force aims to secure freedom of navigation and address the surge in Houthi attacks targeting global shipping.

This development reinforces Sea Viper's position as the Navy's weapon of choice in countering evolving threats, as demonstrated in recent actions against hostile drones in the Red Sea.

Defence Secretary Grant Shapps highlights the importance of adapting to global security challenges, underlining Sea Viper's role in safeguarding allies and partners.

The Royal Navy's Sea Viper missile system, integrated into Type 45 destroyers, has proven its capabilities through successful tests by HMS Diamond, Defender, Daring, and Dragon.

The enhancements to the Type 45 destroyers, expected to achieve full operational capability by Autumn 2032, mark a milestone in naval defence in an ever-changing geopolitical landscape.

In 2017, MBDA secured a £175m contract from the UK Ministry of Defence to provide extended in-service support for the British Royal Navy's Type 45 destroyers' Sea Viper weapon system.

<https://www.naval-technology.com/news/royal-navys-sea-viper-gets-405m-upgrade/?cf-view>

THE ECONOMIC TIMES

Mon, 22 Jan 2024

Taiwan Says 6 Chinese Balloons Flew through its Airspace, and Warplanes and Ships also Detected

Taiwan said on Monday that six Chinese balloons either flew over the island or through airspace just north of it, while Chinese warplanes and navy ships were also detected in the area. The dispatch of such balloons, which generally disappear into the Pacific to the east, appears to be on the rise, though their purpose has not been publicly announced.

The Defence Ministry noted the balloon sightings on a list of Chinese People's Liberation Army activity in the waters and airspace around Taiwan. One passed near the southern city of Pingtung, while the others flew just north of the port of Keelung, where Taiwan has an important naval base.

It remains unclear whether the balloons have an explicit military function, but they appear to be part of a campaign of harassment against the self-governed island, which China claims as its own territory and has vowed to reclaim by force if necessary.

In the US early last year, President Joe Biden vowed sharper rules to track, monitor and potentially shoot down unknown aerial objects after a three-week drama sparked by the discovery of a suspected Chinese spy balloon transiting much of the United States.

The US labelled the balloon a military craft and shot it down with a missile. It recovered what it said was sophisticated surveillance equipment. China responded angrily, saying it was only a weather balloon that had blown off course and called its downing a major overreaction.

Those are sometimes referred to as China's "gray area tactics" that cause consternation among its foes without sparking a direct confrontation. China has long blurred the lines between military and civilian functions, including in the South China Sea, where it operates a huge maritime militia - ostensibly civilian fishing boats that act under government orders to assert Beijing's territorial claims.

China's campaign of intimidation against Taiwan includes the regular deployment of Chinese warships and planes in waters and airspace around the island, often crossing the middle line of the 160-kilometre-wide Taiwan Strait that divides them. The two split following the seizure of power by Mao Zedong's Communists on the Chinese mainland.

Between Sunday and early Monday morning, four Chinese warplanes and four navy ships were detected around Taiwan, the Defence Ministry said. Taiwan's military monitored the situation with combat aircraft, navy vessels and land-based missile systems, the ministry said.

In the leadup to Taiwan's presidential and legislative elections January 13, China had been stepping up such activities, along with its rhetorical threats, though Beijing's threats are generally seen as backfiring.

The independence-leaning Democratic Progressive Party won a third straight term in the presidency, this time under current Vice President Lai Ching-te, or William Lai. The pro-unification Nationalist Party won just one more seat in the legislature than the DPP.

Both saw some votes siphoned away by the party of former Taipei Mayor Ko Wen-je, who appealed especially to young people fed up with politics as they are.

<https://economictimes.indiatimes.com/news/defence/taiwan-says-6-chinese-balloons-flew-through-its-air-space-and-warplanes-and-ships-also-detected/articleshow/107044467.cms>



Mon, 22 Jan 2024

US ‘Drags’ Japan into Conflict with China; Damaged US Warships to be Repaired in Japanese Shipyards

The United States and Japan are exploring an agreement involving Japanese shipyards conducting regular overhauls and maintenance on US Navy warships.

This initiative aims to ensure the continuous readiness of American naval vessels in the Indo-Pacific region, bolstering their preparedness for any potential conflicts in the region.

In alignment with these endeavors, the United States and Japan have recently unveiled a crucial initiative known as the Ship Repair Council Japan. The establishment of this working group, announced by US Ambassador to Japan Rahm Emanuel on January 19, signals a strategic partnership aimed at enhancing the operational readiness of US naval vessels and countering China’s military expansion.

The Ship Repair Council Japan brings together key stakeholders, including representatives from the US Navy, the Japan Maritime Self-Defense Force, and private companies from both nations.

The primary objective is to facilitate maintenance and repairs for US naval vessels at private Japanese shipyards, a move designed to optimize resources and reduce downtime.

Ambassador Emanuel, speaking about the initiative, highlighted the importance of keeping US Navy ships in the region. The collaboration aims to strengthen the US-Japan Alliance and joint deterrence efforts by enabling crucial repairs in Japan.

Currently, US warships stationed in Japan undergo basic maintenance at US bases, but extensive repairs and overhauls necessitate a return to the United States. The Ship Repair Council Japan is expected to significantly cut down on costs and downtime associated with the repair process.

Emanuel expressed optimism about the swift implementation of the initiative and revealed plans for the first event to take place next month. He underscored the importance of establishing a more permanent arrangement, moving beyond occasional repairs to make it an integral part of the ongoing process.

This collaboration builds on previous repair activities conducted by the US Navy in Japan and the Philippines, signaling a commitment to making ship repairs a consistent and vital component of regional naval operations. Furthermore, the Ship Repair Council Japan represents a proactive step in ensuring the preparedness of US naval forces and contributing to the stability and security of the Indo-Pacific region.

China's Naval Might Grows

Rear Admiral Tom Emanuel, addressing reporters at the Yokosuka naval base near Tokyo, highlighted China's extensive monitoring of maritime activities and the subsequent evaluation of a nation's deterrence capabilities based on ship movements.

The US Navy, long unchallenged in Asian waters, now faces a formidable Chinese navy surpassing American warship production.

The Pentagon's annual report, released in October, disclosed that China has grown its fleet to over 370 ships and submarines, up from 340 in 2023, solidifying its status as the world's largest navy by numerical strength. To address the strain on US shipyards grappling with maintenance backlogs of up to 4,000 days, Emanuel proposed the use of Japanese dry docks.

This move would allow American shipyards to focus on expanding the US fleet, emphasizing the need for strategic partnerships to counter the evolving maritime landscape.

Japan, a key US ally, hosts the largest overseas concentration of American military power. The Yokosuka naval base accommodates the only forward-deployed carrier strike group, operating as part of the Seventh Fleet, which commands up to 70 ships and submarines.

Mitsubishi Heavy Industries, a major player in Japan's defense sector, operates commercial dockyards in Yokohama and has previously conducted maintenance work on US Navy ships.

In addition to Japan, the US has explored collaboration with India, aiming to utilize Indian shipyards to repair and maintain US Maritime Sealift Command ships.

This initiative, born out of a summit in April 2022, seeks to enhance defense cooperation with India, strategically positioned at the opposite end of the Indo-Pacific.

The US envisions New Delhi becoming a crucial military ally and an alternative to China for manufacturing and technology development.

However, the prospect of outsourcing repair work overseas and potentially engaging foreign shipbuilders raises concerns among US businesses and lawmakers representing domestic shipyards and their employees.

<https://www.eurasiantimes.com/us-turns-to-japanese-shipyards-to-ensure-naval/>

Science & Technology News

mint

Tue, 23 Jan 2024

ISRO's Vikram Lander, Chandrayaan-3 Gets Pinged by Retroreflector from NASA Spacecraft

NASA's spacecraft, a laser instrument onboard orbiting the Moon has successfully pinged the Vikram lander of India's Chandrayaan-3 mission, the US space agency said, on January 24.

"We've showed that we can locate our retroreflector on the surface from the Moon's orbit," said Xiaoli Sun, who led the team at NASA's Goddard Space Flight Center, that developed the

retroreflector on Vikram as part of a partnership between NASA and Indian Space Research Organization (ISRO), as reported by PTI.

"The next step is to improve the technique so that it can become routine for missions that want to use these retroreflectors in the future," Sun said in a NASA statement, the report added.

NASA announced that a laser beam was emitted and bounced back and forth between the Lunar Reconnaissance Orbiter (LRO) and a device on the Vikram lander, roughly the size of an Oreo. This breakthrough paves the way for a novel method of accurately pinpointing targets on the lunar surface. The lander was at a distance of 100 kilometers from LRO, close to Manzinus crater in the Moon's south pole region, when LRO transmitted laser pulses toward it on December 12 last year.

Upon detecting reflected light from a small NASA retroreflector on Vikram, the orbiter confirmed the success of NASA's technique. The conventional method of sending laser pulses towards an object and gauging the time taken for the light to return is frequently employed for tracking Earth-orbiting satellites from the ground.

Scientists emphasized that employing this technique in reverse, where laser pulses are transmitted from a mobile spacecraft to a stationary one for determining its exact location, holds numerous applications on the Moon. Measuring a mere 2 inches or 5 centimeters in width, NASA's compact yet robust retroreflector, known as a Laser Retroreflector Array, incorporates eight quartz-corner-cube prisms arranged within a dome-shaped aluminum frame.

Renowned for its simplicity and durability, the device requires neither power nor maintenance, boasting a lifespan spanning decades. Its design enables the retroreflector to effectively reflect incoming light from any direction back to its source, as highlighted by NASA.

Retroreflectors, like this one, find applications in various scientific and exploratory endeavors and have been utilized on the Moon since the Apollo era.

By redirecting light back to Earth, these suitcase-sized retroreflectors have disclosed that the Moon is gradually distancing itself from our planet at a pace of 3.8 centimeters per year, according to information provided by the US space agency.

In response to this development, ISRO stated that the Laser Retroreflector Array (LRA) on the Chandrayaan-3 lander has commenced functioning as a fiducial point—a precisely located marker for reference—on the Moon.

"NASA's Lunar Reconnaissance Orbiter (LRO) achieved a laser range measurement using the LRA by successfully detecting signals reflected by it on December 12, 2023. The ranging utilized the Lunar Orbiter Laser Altimeter (LOLA) on the LRO. The observation occurred during lunar night time, with the LRO ascending to the east of Chandrayaan-3," the Indian space agency added.

<https://www.livemint.com/science/isros-vikram-lander-chandrayaan-3-gets-pinged-by-retroreflector-from-nasa-spacecraft-11705975417454.html>



Mon, 22 Jan 2024

Japan Says 'Possibility' Moon Lander Power can be Restored

Japan switched off its moon lander almost three hours after a historic touchdown to allow for a possible recovery of the craft when the sun hits its solar panels, the space agency said Monday.

With its unmanned Smart Lander for Investigating Moon (SLIM) mission—dubbed "Moon Sniper" for the craft's precision landing capabilities—Japan became the fifth country to achieve a soft lunar landing.

But after the touchdown at 20 minutes past midnight on Saturday (1520 GMT Friday), the Japan Aerospace Exploration Agency (JAXA) could not confirm that the lightweight craft's solar batteries were generating power.

Before turning the lander off remotely, mission control was able to receive technical and image data from its descent, and from the lunar surface.

"We're relieved and beginning to get excited after confirming a lot of data has been obtained," JAXA said Monday in a statement, adding that "according to the telemetry data, SLIM's solar cells are facing west".

"If sunlight hits the moon from the west in the future, we believe there's a possibility of power generation, and we're currently preparing for restoration," it said.

SLIM is one of several new lunar missions launched by governments and private firms, 50 years after the first human moon landing.

Crash landings and communication failures are rife, and only four other countries have made it to the moon: the United States, the Soviet Union, China and most recently India.

JAXA said it had disconnected SLIM's battery just before 3:00 am (1800 GMT Friday) when it had 12 percent power remaining, "in order to avoid a situation where the restart (of the lander) would be hampered".

Probes detached

The agency is now carrying out a detailed analysis of the data, to help determine whether the craft achieved the goal of arriving within 100 meters (330 feet) of its intended landing spot.

The mission was aiming for a crater where the moon's mantle, the usually deep inner layer beneath its crust, is believed to be exposed on the surface.

By analyzing the rocks there, JAXA had hoped to shed light on the mystery of the moon's possible water resources—key to building bases there one day as possible stopovers on the way to Mars.

Two probes detached successfully, one with a transmitter and another designed to trundle around the lunar surface beaming images to Earth.

This shape-shifting mini-rover, slightly bigger than a tennis ball, was co-developed by the firm behind the Transformer toys.

JAXA said on Monday it was preparing to make further announcements this week on the results of the mission, and the status of the SLIM craft.

Although not everything went to plan, "we may be able to produce plenty of results and we're happy that the landing succeeded", it said.

Previous Japanese lunar missions have failed twice—one public and one private.

In 2022, the country unsuccessfully sent a lunar probe named Omotenashi as part of the United States's Artemis 1 mission.

In April, Japanese startup ispace tried in vain to become the first private company to land on the moon, losing communication with its craft after what it described as a "hard landing".

<https://phys.org/news/2024-01-japan-possibility-moon-lander-power.html>

