



# CONTENTS

S. No.	TITLE	Page No.
<b>DRDO News</b>		<b>1-4</b>
<b>DRDO Technology News</b>		<b>1-4</b>
1.	NSTL Celebrates 54th Lab Raising Day in Visakhapatnam	<i>The Hindu</i> 1
2.	Mentees Development Programme Held at Office Premises of DRL, DRDO Tezpur	<i>The Sentinel</i> 2
3.	‘Anti-Drone Technology is the Hot Topic’ Says DRDO	<i>The New Indian Express</i> 2
4.	Why DRDO’s UAV Tapas is Critical for India?	<i>Financial Express</i> 3
<b>Defence News</b>		<b>5-10</b>
<b>Defence Strategic: National/International</b>		<b>5-10</b>
5.	Exercise MALABAR -23 Concludes	<i>Press Information Bureau</i> 5
6.	BRICS Summit: PM Modi Departs for Johannesburg, Issues Statement. Details	<i>Hindustan Times</i> 6
7.	China Threat? Taiwan Proposes Record Defence Budget ‘in the Face of Challenges’	<i>Hindustan Times</i> 7
8.	End Not Anytime Soon	<i>The Tribune</i> 8
9.	North Korea's Kim Jong Un Watches Cruise Missile Launches as US, South Korean Troops Begin Annual Drills	<i>The Economic Times</i> 9
<b>Science &amp; Technology News</b>		<b>11-12</b>
10.	‘If Factors Unfavourable, will Postpone Chandrayaan-3 Landing’: ISRO Scientist	<i>Hindustan Times</i> 11
11.	Chandrayaan-3   ISRO Releases Images of the Far Side Area of the Moon	<i>The Hindu</i> 11



*Mon, 21 Aug 2023*

## **NSTL Celebrates 54th Lab Raising Day in Visakhapatnam**

Director General (Naval Systems & Materials) Y. Sreenivas Rao has said that it is not only the Indian Navy but also the entire nation, which has a lot of hopes on the Naval Science and Technological Laboratory (NSTL), which has state-of-the-art hydrodynamic research facilities, capable of designing a submarine.

The DG (NS&M) participated as the chief guest at the 54th Lab Raising Day Celebrations (LRDC) of NSTL, here, on Monday.

Addressing the gathering, Mr. Sreenivasa Rao said with the enrichment of NSTL, Visakhapatnam could become the industry hub for the production of underwater weapons. He said that NSTL has been putting its best efforts for strengthening the nation with the state-of-the-art underwater weapons. The integral support of industries as well as academic institutions was helping NSTL in achieving its goal. He congratulated Team NSTL on completing 54 years of journey in empowering the nation.

NSTL Director Abraham Varughese explained the genesis of NSTL and its evolution to the present status as a state-of-the-art premier naval research laboratory in the country. He briefed about the status of ongoing projects, stressed on the innovative technologies to meet futuristic requirements as per 2, 5 and 10-year plans of DRDO and gave details of new technological improvements in the laboratory towards achieving the targets.

B.V.S.S. Krishna Kumar, Outstanding Scientist, was invited as a guest on the occasion.

In his welcome address, Chairman LRDC-2023 PC Praveen, Scientist-G, gave an overview of the events being organised as part of LRDC-2023.

NSTL Civil Employess Union secretary J.N. Varma spoke on the social service activities rendered by NSTL during the previous year. He appealed to the scientist community and technical cadre personnel to put more efforts to support the nation through research activities.

Scientist-G & Chairman Works Committee H.N. Das presented the annual report of Works Committee.

Players, who represented NSTL in various national sports and games activities, and officers and staff, who completed 25 years of service, were felicitated on the occasion. Best Library User Appreciations were also distributed on this occasion.

Secretary Works Committee G Nagabhushanam and president of NSTL Civil Employees Union Ch Chandrasekhar, and staff of NSTL participated in the event.

Established on 20 August 1969 with 10 staff members, NSTL has grown multi-fold with 612 personnel including 172 Scientists and has made significant contributions to defence R&D and is

recognised as one of the premiere labs of Defence Research & Development Organisation (DRDO), engaged in the development of underwater weapons and systems.

<https://www.thehindu.com/news/cities/Visakhapatnam/nstl-celebrates-54th-lab-raising-day-in-visakhapatnam/article67219179.ece>



**The Sentinel**  
*of this land, for its people*

*Mon, 21 Aug 2023*

## **Mentees Development Programme Held at Office Premises of DRL, DRDO Tezpur**

Defence Research Laboratory (DRL) DRDO Tezpur, in collaboration with the office of the District Commissioner, Sonitpur, organized a Mentees Development Programme at the office premises of DRL, DRDO Tezpur. The primary objective of this programme was to provide comprehensive support to the students through mentoring and counselling, aimed at strengthening their career progressions and empowering them to become valuable assets for society and the future for nation. Around 112 students from various government schools of Sonitpur district participated with enthusiasm. The programme commenced with welcome address by the senior scientist followed by a brief description about DRDO's contribution towards achieving self-reliance in defence and highlighted the organization's overall accomplishments over the past six decades.

Furthermore, he mentioned about DRDO's achievement in missile, fighter aircraft, radars, sonars, electronic warfare systems and life support technologies. He concluded his lecture by giving an overview of DRL Tezpur's role and achievements, including its core competencies in vector control, water quality amelioration, pharmaceutical technology, bio-prospecting, high altitude agriculture, and bio-waste management followed by a screening of a movie showcasing DRDO's activities.

The students participating in the programme displayed enthusiasm and curiosity, actively engaging with senior scientists from DRL to enhance their knowledge in the field of science and technology. The programme concluded with the participants visiting DRL exhibition hall providing them with a first-hand experience of the laboratory's innovations. The event successfully provided students with exposure to the world of science, technology, and defense research. The mentoring and interactions with experts, as well as the opportunity to see tangible outcomes, will serve as a source of inspiration for the students as they consider their career paths and contributions to society.

<https://www.sentinelassam.com/north-east-india-news/assam-news/mentees-development-programme-held-at-office-premises-of-drl-drdo-tezpur-663615>



**THE NEW  
INDIAN EXPRESS**

*Mon, 21 Aug 2023*

## **'Anti-Drone Technology is the Hot Topic' Says DRDO**

Defence Research and Development Organisation (DRDO) is focusing on developing the next-generation technology application and defence systems. "Anti-drone technology is the hot topic in

the Indian defence market” according to DRDO. The organisation plans on exporting them to several countries in the near future.

The Drone Detect, Deter and Destroy system (D4S) is the first indigenously developed anti-drone system that was inducted into the Indian Armed Forces.

Speaking at the Digital Innovation Alliance (DIA) -G20 event in Bengaluru on Saturday, BK Das, distinguished scientist and Director of General Electronics and Communication Systems at DRDO said, “It has the capability to detect rogue drones and instantly jam micro drones called soft kill. D4S can also use a laser to destroy the drone called a hard-kill.”

The anti-drone tech can detect and jam micro-drones at a distance of up to 3 km and can lase a target 1-1.25 km. D4S was also displayed at the Aero India 2023 in February.

Das added that India has massive potential for export and will soon make a consortium of countries to export its products. Calling DRDO “the backbone of armed forces in the country”, he said the organisation is striving to build an ecosystem for indigenously developed systems while also making them ready for exports.

### **All eyes to the radars**

Speaking about DRDO’s most exported items, Das said “Radars have become huge objects of desire for several countries and India has exported many of these systems that earlier we imported. We have requests from African countries, some from the far east and even from countries such as Brazil and South America,” he said.

Currently, India exports seven different types of radars which include, lightweight radar, surveillance radars- battlefield and 3D radars for the navy, tactical control radars and weapon locating radars.

The scientist also talked about future exports of products such as Electronic Warfare systems (EW), BrahMos- medium-range ramjet supersonic cruise missile, Tapas UAV-a Medium Altitude Long Endurance (MALE) unmanned aerial vehicle, BHARANI MK1, and several others.

Aiming to reduce the number of imports, Das said DRDO will focus on “increasing the list of 411 negative import products” by making more products in India. “Despite it being a challenge, DRDO is committed,” said Das.

<https://www.newindianexpress.com/lifestyle/tech/2023/aug/21/anti-drone-technology-is-the-hot-topic-says-drdo-2607431.html>



*Mon, 21 Aug 2023*

## **Why DRDO’s UAV Tapas is Critical for India?**

Defence Research and Development Organisation (DRDO)’s unmanned aerial vehicle (UAV) crashed in agriculture fields near a village in Karnataka’s Chitradurga on Sunday morning.

“TAPAS UAV was undergoing an experimental flight trial today morning from ATR Challakere, Karnataka. During the flight, a technical snag was encountered and the UAV crashed in a nearby farmland. The technical reason is being investigated and there is no collateral damage,” DRDO posted on X, formerly Twitter.

The Tapas UAV is in the final stage of the developmental trials. The successful trials of TAPAS are crucial for India's quest for indigenous military drones.

So far, for the user trials, DRDO with the Indian navy has already carried out the transfer of command-and-control capabilities of the TAPAS Unmanned Aerial Vehicle (UAV).

### **Why the successful trials of TAPAS are crucial for Indian armed forces?**

#### **The development of Tapas-BH**

Tapas-BH is the answer to India's quest for ISTAR (Intelligence, Surveillance, Target Acquisition, Tracking, and Reconnaissance) requirements.

TAPAS-BH is a Medium Altitude Long Endurance (MALE) UAV with an operating altitude of 30000 ft, and an endurance of 24 hours. In the past, TAPAS has successfully completed its maiden flight in November 2016 with an endurance of several hours at various altitudes.

TAPAS incorporate the highest-grade military EO Electro-Optical (EO) and Synthetic Aperture Radar (SAR) payloads. That will improve the images dramatically for the ISTAR range of operations for the military across the terrain.

TAPAS-BH also projects a range of 250 km which can carry a variety of payloads up to a maximum of 350 kg with a wing span of 20.6 metres.

The project is being developed by Bharat Electronics Limited (BEL), a leading Indian aerospace and defence company under the Ministry of Defence (MoD) with DRDO,. The project cost which was earlier estimated as Rs 1,786 crores in 2022 has increased to 1,540.74 crores according to the revised estimates.

Notably, at a later stage, DRDO will further open the scope of collaboration with Hindustan Aeronautics (HAL) alongside the BEL.

The TAPAS BH 201 unmanned aerial vehicle (UAV) is designed and developed in response to the tri-services Intelligence, Surveillance, Target Acquisition, Tracking, and Reconnaissance (ISTAR) needs.

The development of TAPAS is also crucial for the next phase of armed drones with greater capabilities which will reduce the dependency on importing ISTAR drones.

The long-endurance capabilities of drones are vital for border surveillance amid escalating Chinese build-up across the border.

"The effort will continue in this direction that we learn from the trials and build better. That is part of any such new development in terms of technology which goes into building a prototype," said a senior DRDO official.

<https://www.financialexpress.com/business/defence-why-drdo-uav-tapas-is-critical-for-india-3217597/>



**Press Information Bureau**  
**Government of India**

**Ministry of Defence**

*Mon, 21 Aug 2023*

## **Exercise MALABAR -23 Concludes**

The 27th edition of Exercise MALABAR, concluded on the East Coast of Australia off Sydney on 21 Aug 23. The exercise saw participation of Ships, Submarines and aircraft from the Indian Navy (IN), Royal Australian Navy (RAN), Japan Maritime Self Defence Force (JMSDF) and the US Navy (USN). Exercise MALABAR 23 was conducted in two phases, which included a harbour phase from 11-15 August 2023 and a sea phase from 16-21 August 2023.

The Indian Navy was represented by indigenously built Destroyer INS Kolkata, Frigate INS Sahyadri and P8I Maritime Patrol Aircraft. Other participating units included RAN ships HMAS Choules and HMAS Brisbane, USS Raphael Peralta, JS Shiranui, along with submarines, fighter aircraft, maritime patrol aircraft and shipborne helicopters.

While the ships sailed out for the sea phase from Sydney harbour, the Air assets operated from RAAF Amberley Brisbane, where the P-8I Dets involving IN, RAAF and US P-8 crew were stationed. The sea phase of Ex Malabar witnessed complex and high intensity exercises in air, surface and undersea domains, weapon firings and cross deck helicopter operations.

The joint exercises at sea honed the war-fighting skills and enhanced interoperability between the four navies to undertake advanced maritime operations. The seamless integration of air assets also showcased the exceptional coordination and interoperability between the Indian, Australian and US maritime patrol aircraft units.

The exercise not only reaffirmed the ability of the four navies to operate together as an integrated force but also highlighted their shared commitment to maritime security and regional stability through collaborative training and mutual understanding.

At the culmination of five days of multifarious exercises, Exercise MALABAR vividly showcased the strong cooperation, shared values and the collective ability of the four participating nations to ensure a free, open and inclusive Indo-Pacific promoting peace and security for all.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1950870>

## **BRICS Summit: PM Modi Departs for Johannesburg, Issues Statement. Details**

Prime Minister Narendra Modi on Tuesday morning departed for Johannesburg to participate in the 15th BRICS Summit. In his departure statement ahead of visiting South Africa, Modi said he is looking forward to holding bilateral meetings with some of the world leaders in Johannesburg. Modi will attend the BRICS Summit at the invitation of South African President Matamela Cyril Ramaphosa, the Prime Minister's Office said.

Modi said also he has the honour to be the first Indian prime minister to visit Greece after 40 years.

Modi said the summit will provide a useful opportunity for its members to identify future areas of cooperation and review institutional development. He added BRICS has been pursuing a strong cooperation agenda across various sectors.

"We value that BRICS has become a platform for discussing and deliberating on issues of concern for the entire Global South, including development imperatives and reform of the multilateral system," he said.

"I also look forward to holding bilateral meetings with some of the Leaders present in Johannesburg," he said.

"I am visiting the Republic of South Africa from 22-24 August 2023 at the invitation Cyril Ramaphosa, President of South Africa, to attend the 15th BRICS Summit being held in Johannesburg under the South African Chairmanship," Modi said.

"I also look forward to holding bilateral meetings with some of the Leaders present in Johannesburg," Modi added.

Modi added that from South Africa, he will travel to Athens, Greece on August 25 at the invitation of Greece Prime Minister Kyriakos Mitsotakis.

"This will be my first visit to this ancient land. I have the honour to be the first Indian Prime Minister to visit Greece after 40 years," he said.

Contacts between our two civilizations stretch back over two millennia and, in modern times, our ties have been strengthened by shared values of democracy, rule of law and pluralism, he said. Cooperation in diverse sectors such as trade and investment, defence, and cultural and people-to-people contacts have been bringing our two countries closer, he added.

He looked forward to visiting Greece and opening a new chapter in our multifaceted relationship, Modi said.

BRICS is a grouping of the world economies of Brazil, Russia, India, China, and South Africa. The summit will be held from August 22-24. This will be Modi's third visit to South Africa and the trip marks the 30th anniversary of the diplomatic relationship between India and South Africa.

This year's BRICS is under the presidency of South Africa. The theme of this year's summit is: "BRICS and Africa: Partnership for mutually accelerated growth, sustainable development and inclusive multilateralism"

This will be the first in-person BRICS Summit after three consecutive years of virtual meetings owing to the Covid-19 pandemic.

On Monday, foreign secretary Vinay Kwatra in a briefing ahead of Modi's visit to South Africa and Greece, said, "As I mentioned in my remarks, the host country South Africa has invited a large number of guest countries, besides of course the BRICS members who would be present there."

Kwatra stated that a business delegation from India is also travelling to the country to attend the Business Tracks meetings.

Providing details about the PM's trip, Kwatra said, "For the 15th BRICS Summit, a business delegation from India is also travelling to South Africa to attend the Business Tracks meetings and also the meetings of the BRICS Business Council, BRICS Women Business Alliance and the BRICS Business Forum."

"The Prime Minister's schedule in terms of bilateral meetings with those leaders who would be present in South Africa is still being developed," Kwatra said.

Russian President Vladimir Putin will join the 15th summit virtually while the Russian delegation will be led by foreign minister Sergey Lavrov. He will also participate in a special event with the theme "Brics – Africa outreach and Brics plus dialogue".

This is being organised after the summit and will include dozens of countries, mostly from the African continent, invited by South Africa.

<https://www.hindustantimes.com/india-news/brics-summit-ahead-of-johannesburg-flight-pm-modi-issues-statement-details-101692666337403.html>



*Mon, 21 Aug 2023*

## **China Threat? Taiwan Proposes Record Defence Budget ‘in the Face of Challenges’**

Taiwan's military spending will rise 3.5% year-on-year to hit a fresh record high in 2024, president Tsai Ing-wen said as the island aims to improve defences amid a growing China threat. China views democratically-governed Taiwan as its own territory and has ramped up military and political pressure over the past three years. Taipei strongly rejects the claims.

The overall proposed defence budget which will need parliamentary approval, is T\$606.8 billion (\$19 billion)- 2.5% of the island's GDP. This marks the seventh consecutive year in which Taiwan has increased its military spending but the rate of growth will be far slower than the 14% rise seen this year.

The budget will include a "special budget" for unspecified extra spending, president Tsai Ing-wen said.

"Taiwan must continue to strengthen its self-defence capabilities, demonstrate its determination for self-defence, ensure its national security and interests, and seek more international support," she said. This comes as Tsai has overseen a military modernisation programme to make Taiwan better able to face China. The island has upgraded its fleet of F-16 fighter jets and is also developing its own submarines. The first prototype indigenous submarine of Taiwan was expected to be unveiled next month. The spending increase is far less than the 7.2% rise China has proposed for its defence spending this year. Taiwan's 3.5% rise is roughly in line with government predictions for overall GDP growth next year which is at 1.36%- its slowest pace in eight years.

"In the face of the challenges of slowing global economic growth and rapid changes in the international political and economic situation, I would like to ask the executive team to carefully plan based on sound finances, and be sure to properly allocate resources," Tsai said.

<https://www.hindustantimes.com/world-news/taiwan-china-conflict-china-threat-taiwan-proposes-record-defence-budget-in-the-face-of-challenges-101692615927069.html>

# The Tribune

Mon, 21 Aug 2023

## End Not Anytime Soon

*By Gp Capt Murli Menon (Retd)*

Russian President Vladimir Putin's 'special military operation' will be 18 months old on August 24, with little indication of an end anytime soon. US President Joe Biden has sanctioned the transfer of 80-odd F-16s from Denmark and the Netherlands to beef up Ukraine's air power, which has been dealt a severe blow by the Russians in recent days.

While the US is fighting shy of a direct involvement in the conflict, Biden said in Poland recently that "Ukraine will never be a victory for Russia", indicating his resolve to bankroll the war effort indefinitely. In America's eyes, even a prolonged stalemate would be a defeat for Russia. Analysts think that for Ukraine to win, it needs to regain all territories lost to Russia, including Crimea.

With the Ukrainian counter-offensive making a painful progress, the Russian military, battered and demoralised as it is, has put up a resilient show against western weapons and war tactics. The US backing and weaponry, however, are unlikely to render early results; some experts say that it could take a couple of years to tilt the balance in Ukraine's favour. Meanwhile, Russia appears to be willing to sacrifice any number of its young men for its war cause.

The US presidential election next year is bound to have a profound impact on the US and the West's inclination to indefinitely support Ukraine. Republican presidential contender Donald Trump has made it clear that he will end support for Ukraine, should he get elected. With some European leaders having a similar mindset, a 'forever war' would definitely favour Russia and not Ukraine. Recent Saudi efforts to rally 40 nations, including China and the USA, in support of Ukrainian President Volodymyr Zelenskyy's 10-point peace plan are aimed at bringing about full Russian withdrawal from the Ukraine territory, the return of abducted children and justice for war crimes.

Diplomatic options to terminate the war or achieve an armistice are thus unlikely to bear fruit, considering that Russia under Putin has never chosen to end a conflict at the negotiating table.

Meanwhile, Ukrainian aspirations to join the NATO cannot fructify unless the war ends, as laid down by the current US administration. Protection to the Ukrainian territory under the NATO treaty's Article 5 would be similar to what happened in Korea and Germany after World War II. Thus, any plausible democratic Ukrainian accession into NATO and its ratification by parliaments of NATO members would serve to frustrate Russia's efforts to prolong the war indefinitely. Joining NATO while pursuing unification within its 1991 borders is a call for Ukraine to take to consolidate the gains, if any, as a NATO member. That would also preclude any scope for a future Russian offensive on Ukrainian territory.

Now, what could be India's stand while this uncertain European saga plays out? Clearly, a diplomatic one, considering the goodwill garnered over the years with both warring parties.

Ukraine has categorically stated that it would welcome any ‘bigger and greater’ Indian role in ending the war, as stated by Ukrainian Deputy Foreign Minister Emine Dzhaparova during her April visit to India.

Meanwhile, having avoided any direct condemnation of Russia as an aggressor and having abstained several times from voting on UN resolutions, India has shown its inclination to contribute to peace efforts. India’s stand is clearly motivated by its dependence on Russia for 60 per cent of its defence hardware and the purchase of low-priced Russian oil, both strategically vital national considerations.

The Indian ambivalence in taking a pro-West stand amid its need to balance ties with an old ally has played out as a ‘diplomatic coup’. New Delhi has managed to keep its ties with Russia intact while deepening its links with the West through its Quad membership and G20 presidency. India has also been firm on not calling the Ukraine conflict a ‘war’ in its G20 communiqués.

Be that as it may, western observers have tended to put much stock in the US supply of F-16s to Ukraine. While apprehensions were initially expressed about how it would take years to familiarise Ukrainian pilots — with their limited English proficiency — with western fighter platforms, US professionals have been training them on F-16 simulators. Ukraine is bound to encourage the entry of ‘volunteer’ F-16 pilots from the world over to cut down time frames for operationalising them on the new aircraft. This could alleviate the Ukrainian problem of finding an adequate number of Russian-origin fighters for the Ukrainian air force. The proclaimed aggressive professionalism of the Ukrainian fighter pilots is bound to contribute to their transition to operating F-16s.

Considering that the UK has been the other key backer of the Ukrainian war effort militarily, it is surprising why the Eurofighter Typhoon is not on offer. Possibly, on account (as, indeed, was the case with the US) of the UK wishing to neither up the ante against Putin nor make him cross the nuclear Rubicon. Also, it’s a fact that a comparatively limited number of any advanced fighter platforms would have to compete against the substantive Russian Comprehensive National Power to achieve favourable outcomes in the ongoing conflagration. The multiple war fronts in eastern Ukraine, Crimea and the Black Sea region would pose even bigger challenges for both adversaries to achieve their war objectives conclusively.

The advent of drone warfare only adds to the convoluted mix of tactical options. Though some countries, such as Pakistan, peddling heavy 155-mm shells to Ukraine shows an opportunistic trend implicit in a global conflict, India as a neutral entity needs to be careful about its licensed hardware, such as the indigenous BrahMos, finding its way into the battle zone, more so because of Russia’s desperation for accurate long-range missileery.

<https://www.tribuneindia.com/news/comment/end-not-anytime-soon-537006>

## THE ECONOMIC TIMES

Mon, 21 Aug 2023

### **North Korea's Kim Jong Un Watches Cruise Missile Launches as US, South Korean Troops Begin Annual Drills**

North Korean leader Kim Jong Un oversaw a test of strategic cruise missiles, state news agency KCNA said on Monday, as South Korea and the United States kicked off annual military drills that Pyongyang sees as a rehearsal for war.

Kim visited a navy fleet stationed on the east coast to oversee the test aboard a warship, KCNA said, without specifying the date of his trip.

The launch aimed to verify the "combat function of the ship and the feature of its missile system", while improving sailors' capability to carry out an "attack mission in actual war", KCNA said, adding that the ship's missile hit its target. Kim said the ship would maintain "high mobility and mighty striking power and constant preparedness for combat to cope with sudden situations," KCNA said.

South Korea's defence ministry said it had detected signs of the launch, but that the KCNA claims were "exaggerated" and "different from the facts", but did not elaborate.

The latest missile test came as South Korea and the United States began the Ulchi Freedom Shield summer exercises on Monday, designed to enhance their joint responses to North Korea's nuclear and missile threats.

Pyeongyang has denounced the allies' military drills as a rehearsal for nuclear war.

South Korea's military has said this year's exercises will be held on the "largest scale ever", involving tens of thousands of troops from both sides, as well as some member states of the U.N. Command.

President Yoon Suk Yeol said the drills would feature several contingency scenarios, such as cyber, terror and drone attacks, and a disinformation campaign by the North.

"True peace is preserved only by overwhelming force, not by one-sided begging or goodwill," Yoon told a meeting of the National Security Council.

"North Korea talks about preemptive nuclear strikes and preparations for an offensive war, but we will immediately and overwhelmingly retaliate for any provocations."

South Korean lawmakers have said the North could test-fire an intercontinental ballistic missile or take other military action to protest the allies' drills or last week's summit of South Korea, the United States and Japan.

Over the past two years, North Korea has been testing what it calls "strategic cruise missiles," which some analysts have said could be tipped with nuclear warheads. While modernising and bolstering its naval power, North Korea showcased a new, nuclear-capable underwater attack drone in March.

Choi Il, a former navy officer who runs a think tank focusing on naval power, said the missiles can fly more than 1,000 km (621 miles) and hit land-based targets, and the new ship appears to be a corvette-class vessel, designed to minimise radar detection.

Aboard the ship, Kim vowed to reinforce the navy with improved combat efficiency and modern means of surface and underwater offensive and defensive capabilities, KCNA said.

"We would put spurs to the modernisation of naval weapons and equipment, including the building of powerful warships and the development of shipboard and underwater weapon systems," it quoted the leader as saying.

<https://economictimes.indiatimes.com/news/defence/north-koreas-kim-watches-cruise-missile-launches-as-us-south-korean-troops-begin-annual-drills/articleshow/102884160.cms>

Tue, 22 Aug 2023

### **‘If Factors Unfavourable, will Postpone Chandrayaan-3 Landing’: ISRO Scientist**

Ahead of Chandrayaan-3’s soft-landing on the lunar surface, scheduled for August 23, a senior Indian Space Research Organisation (ISRO) scientist said on Monday that the national space agency will go ahead with the landing only if conditions on the day are favourable; otherwise, a fresh attempt will be made on August 27, he noted.

“Two hours before Chandrayaan-3 lands on the Moon, we will take a decision on whether or not it will be appropriate to land it at that time based on the health of the lander module and the conditions on the Moon. In case, if any factor appears to be not favourable, then we will land the module on the Moon on August 27,” Nilesh M Desai, Director, Space Applications Centre, ISRO, told news agency ANI.

Desai, however, expressed confidence that Vikram, the mission’s lander module, will reach the lunar surface as per the original schedule.

According to ISRO, Vikram’s landing will be attempted a little after 6pm on August 23 (Wednesday); if successful, India will enter an elite list, becoming only the fourth country to achieve a soft-landing on the Moon, joining the United States, Russia, and China. However, the recent failure of Russia’s Luna-25 mission means that India has an opportunity to become the first country to achieve a soft-landing on the Moon’s south pole, Chandrayaan-3’s intended destination.

Chandrayaan-3 took off from ISRO’s Satish Dhawan Space Centre (SDCC) in Andhra Pradesh’s Sriharikota on July 14.

<https://www.hindustantimes.com/india-news/indian-space-research-organisation-chandrayaan-3-landing-live-updates-moon-lunar-surface-101692628697303.html>

Mon, 21 Aug 2023

### **Chandrayaan-3 | ISRO Releases Images of the Far Side Area of the Moon**

Ahead of the scheduled landing of the Chandrayaan-3 Lander on the moon surface on August 23, the Indian Space Research Organisation (ISRO) on Monday released images of the far side of the lunar surface.

The far side is also known as the dark side area of the moon as it is always hidden from the earth. The images were captured on August 19 by the Lander Hazard Detection and Avoidance Camera (LHDAC) which is onboard the Lander.



*Figure 1: Lunar far side area as imaged from the Lander Hazard Detection and Avoidance Camera (LHDAC) on board Chandrayaan-3 on August 19, 2023*

“Here are the images of Lunar far side area captured by the Lander Hazard Detection and Avoidance Camera (LHDAC). This camera that assists in locating a safe landing area — without boulders or deep trenches — during the descent is developed by ISRO at SAC,” ISRO posted on social media platform X. Russia’s first lunar mission in decades, Luna-25, which crashed on the moon surface on August 20 had also sent images of the far side of the moon. ISRO has already released three videos of the moon captured by its third moon mission Chandrayaan-3. One of them was taken by the Lander Position Detection Camera (LPDC) on August 15, 2023. There was another one taken by the Lander Imager (LI) Camera-1 just after the separation of the Lander Module from the Propulsion Module on August 17. Similarly, on August 6, it shared its first video of the moon as viewed by Chandrayaan-3 during Lunar Orbit Insertion on August 5.

<https://www.thehindu.com/sci-tech/science/chandrayaan-3-isro-releases-images-of-the-far-side-area-of-the-moon/article67218518.ece>

