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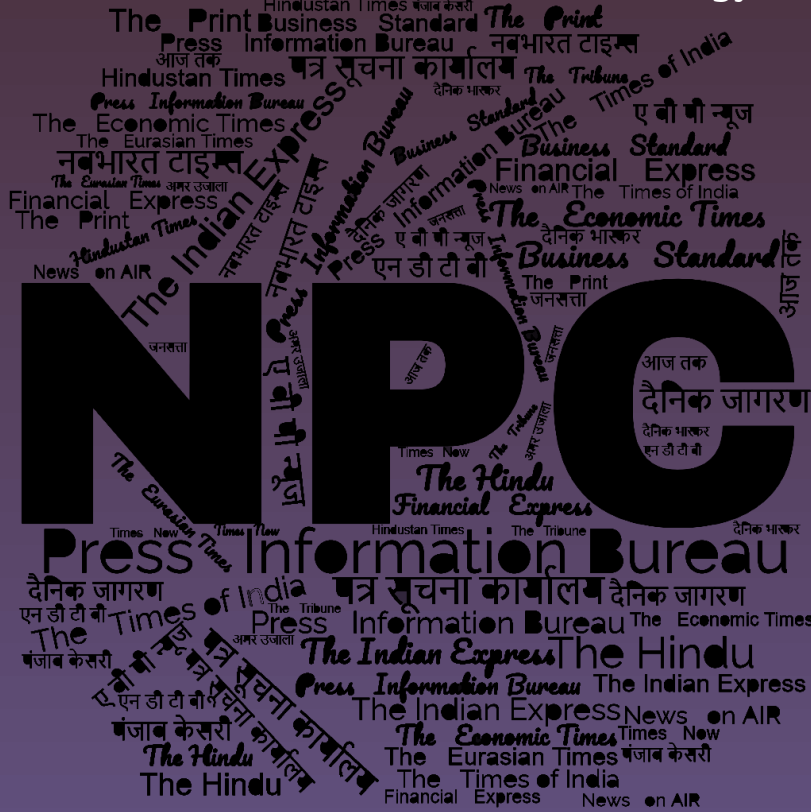
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# समाचार पत्रों से चयित अंश Newspapers Clippings

डीआरडीओ समुदाय को डीआरडीओ प्रौद्योगिकियों, रक्षा प्रौद्योगिकियों, रक्षा नीतियों, अंतर्राष्ट्रीय संबंधों और विज्ञान एवं प्रौद्योगिकी की नूतन जानकारी से अवगत कराने हेतु दैनिक सेवा

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## **DRDO's Fuel Cell-Based AIP Technology will Revolutionize India's Submarine Capabilities**

The underwater trials of indigenous fuel based Air Independent Propulsion system is expected to start next year. The trial will be conducted by the Defence Research and Development Organisation (DRDO). AIP technology significantly enhances the submerged endurance capability of submarines. Prior to this, the DRDO conducted successful shore-based prototype testing in 2021.

According to sources in the defence and security establishment, the domestically developed AIP system will be installed in three Scorpene submarines that India plans to acquire from France.

If the contract is signed by the end of this year, the first submarine equipped with AIP technology is expected to join the Indian Navy by 2030-31. By that time, the DRDO will have begun delivering AIP systems for both the new submarines and the existing Scorpene submarines in service.

In collaboration with Naval Group France, DRDO's Naval Materials Research Laboratory (NMRL) signed an agreement in January to validate the integration of indigenous AIP in the Kalvari class submarines.

An eco-friendly aspect of this AIP technology is that the by-product of the reaction is non-polluting water, which can be safely released into the oceans.

Private players like L&T and Thermax have played a significant role in supporting the development of this AIP technology. The technology for AIP has been transferred to L&T.

The successful implementation of the fuel cell-based AIP system marks a major milestone for India's naval capabilities and signifies a significant step towards eco-friendly and technologically advanced submarine operations.

The AIP system serves as a powerful force multiplier for diesel electric submarines, significantly boosting their submerged endurance by several folds. With its unique capability of generating hydrogen onboard, it outperforms other technologies in terms of performance. NMRL, with the unwavering support of Indian industry partners, has successfully developed this cutting-edge technology, which has now reached a stage of maturity ready for industrialization.

Worth mentioning is the successful testing of the land-based prototype of NMRL's AIP, paving the way for the detailed design certification of the energy module. NMRL, in collaboration with Indian industry partners, will take the lead in this endeavor. The integration of the indigenous AIP into Indian submarines by Naval Group of France will also involve the design of the impacted platforms. This cooperative effort will set the stage for the localization and industrialization of the

AIP, including hull fabrication, by the Indian industry, with future plans for onboard fitting on submarines.

The integration of the indigenous AIP system in INS Kalvari will undoubtedly reinforce the country's naval capabilities and herald a new era of self-sufficiency in defence innovation.

<https://www.financialexpress.com/business/defence-drdo-fuel-cell-based-aip-technology-will-revolutionize-indias-submarine-capabilities-3181366/>

## DRDO on Twitter



DRDO ✓

@DRDO\_India



[#DRDOUpdates](#) | For empowering [#YoungMinds](#), igniting curiosity and inculcating scientific temper among children, an exciting and very engaging [#AmritMahotsav](#) special event & science exhibition was organised at Defence Institute of Psychological Research ([#DIPR](#)), Delhi today.



9:21 pm · 22 Jul 2023 · 24.2K Views

# Defence Strategic: National/International



**Press Information Bureau  
Government of India**

**Ministry of Defence**

*Sat, 22 Jul 2023*

## **Visit Of ADM R Hari Kumar, Chief of the Naval Staff, to Vietnam**

Admiral R Hari Kumar, Chief of the Naval Staff, on an official visit to Vietnam will preside the Decommissioning followed by Handing Over Ceremony of Indian Naval Ship Kirpan to Vietnam People's Navy (VPN), scheduled on 22 July 2023 at Cam Ranh, Vietnam.

The transfer of an indigenously built in-service missile corvette, INS Kirpan, from the Indian Navy to the Vietnam People's Navy reflects India's commitment to assist its like-minded partners in enhancing their capacity and capability, and is in consonance with the Government of India's policies of 'Act East' and 'Security and Growth for all in the Region (SAGAR)'. This is the maiden occasion of gifting a fully operational corvette by India to any Friendly Foreign Country.

INS Kirpan, an indigenously built Khukri-class Missile Corvette is being handed over to VPN in accordance with Hon'ble Raksha Mantri's announcement of gifting an in-service missile corvette to Vietnam on 19 Jun 2023. Towards executing the same, INS Kirpan departed on her final journey under Indian Tricolour from India to Vietnam on 28 Jun 23 and reached Cam Ranh, Vietnam on 08 Jul 2023.

Adm R Hari Kumar would also be visiting Vietnam People's Navy's Headquarters at Hai Phong for bilateral interaction with Vice Admiral Tran Thanh Nghiem, CINC, Vietnam People's Navy and would be calling on the Minister of National Defence, Vietnam.

The visit of the CNS signifies a high level of bilateral defence engagements between IN and VPN, as well as India's recognition of 'ASEAN Centrality' to the region.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1941641>



**Press Information Bureau  
Government of India**

**Ministry of Defence**

*Fri, 21 Jul 2023*

## **Value of Defence Production**

The value of defence production has crossed the figure of Rs one lakh crore for the first time ever during financial year 2022-23. Government has taken several policy initiatives in the past few years

and brought in reforms to encourage indigenous design, development and manufacture of defence equipment by Indian Industry including MSMEs and start-ups, thereby promoting ease of doing business in defence manufacturing & technology in the country. Government promotes participation of MSMEs/start-ups for development of defence technology under various schemes like Innovations for Defence Excellence (iDEX), Technology Development Fund (TDF), Make procedure under Defence Acquisition Procedure (DAP) 2020. The DAP 2020 provides special provisions to encourage MSMEs and Start-ups. Moreover, Public Procurement Policy for MSEs Order, 2012 has been implemented at DPSUs under which the price preference is given to MSME bidders under certain conditions. Further, DPSUs and services have uploaded more than 30,000 defence items on 'Srijan portal for indigenisation' and offered them to Industry including MSMEs to become partners in indigenisation process.

Further, Innovations for Defence Excellence (iDEX) was launched in April, 2018 to foster innovation and technology development in Defence and Aerospace by engaging Industries including MSMEs/start-ups. iDEX provides grants/funding and other support to carry out R&D activities for futuristic technologies. The industries including the MSMEs and start-ups have given an enthusiastic response to iDEX for defence innovation works including design, development and manufacturing of Defence equipment. iDEX has given boost to defence industrial manufacturing ecosystem by promoting formation of Start-ups by individual innovators, and supporting sustenance to existing Start-ups/MSMEs. This has also led to the generation of employment opportunities.

Moreover, to bring MSMEs into the defence supply chain and thereby boost the self-reliance in defence sector in the country and also to contribute towards defence exports, Ministry of Defence has made a scheme of promotion of MSMEs in defence. Under this scheme, workshops/seminars are organised in collaboration with Industry Associations and other stakeholders from different parts of the country.

This information was given by Raksha Rajya Mantri Shri Ajay Bhatt in a written reply to Shri Prataprao Jadhav and others in Lok Sabha today.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1941371>



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

**Ministry of Defence**

*Fri, 21 Jul 2023*

## **Air Force Day Parade and Flypast to be Held at Prayagraj**

### **Flypast Organised at Bhopal also**

The Indian Air Force will be celebrating its 91st anniversary on 08 October 2023. Keeping with the new tradition of hosting the Air Force Day celebrations in different parts of the country, this year's Air Force Day parade and Air Display will be held in Prayagraj, Uttar Pradesh.

The ceremonial parade would be conducted at Air Force Station Bamrauli and the Air Display would be conducted over the Sangam area, in the vicinity of the Ordnance Depot Fort in Prayagraj. The scenic surroundings would add to the appeal of the stream of aircraft flying-by in close formation.

The Air Force Day Celebrations will actually commence more than a week before this with an Air Display near Bhojtal Lake at Bhopal Madhya Pradesh on 30 September 2023. IAF is looking forward to greeting and enthralling the local populace with its exciting range of aerobatic performances, both at Prayagraj and Bhopal. The previous edition of the Air Force Day Parade was held at Chandigarh, with the flypast being conducted over the Sukhna Lake there.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1941374>

# THE ECONOMIC TIMES

*Fri, 21 Jul 2023*

## **Inter-services Organisations Bill be Passed Enacted without any Amendments: Parliamentary Panel on Defence**

A parliamentary panel on defence has recommended that the Inter-Services Organisations (Command, Control and Discipline) Bill, 2023, be passed and enacted as a statute, without any amendments. The 39th Report (Seventeenth Lok Sabha) on the bill was presented to Lok Sabha on Friday and also laid in Rajya Sabha.

The Inter-Services Organisation (Command, Control and Discipline) Bill, 2023, was introduced in Lok Sabha on March 15 and was referred to the Standing Committee on Defence by the Speaker on April 24 for examination and report.

"In summation, the committee, while agreeing with the provisions of the bill, in no uncertain words recommend that the bill without any amendments be passed, enacted as a statute and the committee's observations/recommendation be considered," the panel said in its report.

The committee understands that currently, personnel of the Army, the Navy and the Air Force are governed in accordance with the provisions contained in their specific governing or regulatory Service Acts -- the Army Act, 1950, the Navy Act, 1957, and the Air Force Act, 1950, it said.

"At the time of enactment of these respective Acts, most of the service organisations were largely comprised of personnel from a single service i.e. either Army, Navy or Air Force. However, now there are numerous inter-services organisations such as Andaman and Nicobar Command, Strategic Forces Command, Defence Space Agency etc. and joint training establishments like National Defence Academy and National Defence College, where personnel of the armed forces and other forces serve together," it added.

The committee in its report said that it also understand that currently, the commander-in-chief or officer-in-command of the inter-services organisations is "not empowered to exercise disciplinary/administrative powers over the personnel belonging to other services".

Only officers of the respective services are empowered to exercise disciplinary powers over the service personnel under their respective Service Acts, the report said.

"Accordingly, the officers serving in these organisations need to be reverted to their respective parent service units for exercising any disciplinary or administrative action," it said.

In view of the above, the Ministry of Defence has proposed to enact a new legislation that is the inter-services organisations (Command, Control & Discipline) Bill, 2023, the panel said. "The Bill seeks to empower the commander-in-chief and officer-in-command of inter-services organisations with all disciplinary and administrative powers in respect of personnel serving in or attached to such organisations/establishments," it said.

The members of the committee have been mandated to present their report to Parliament by the last day of the first week of the ensuing Monsoon session. The session began on July 20 and is scheduled to end on August 11.

The committee found that "as per the Objects and Reasons of the Bill, the proposed bill will essentially be an enabling legislation, which will empower the heads of the inter-services organisations to exercise effective command, control and discipline on all personnel of regular Air Force, Army and Navy and to persons of other forces as notified by the central government, who are serving in or attached to an inter-services organisation, without amending the respective Acts".

Service personnel when serving in or attached to an inter-services organisation will "continue to be governed by their respective Service Acts", it added.

The examination of the committee is based on the background brief provided by the Ministry of Defence, oral examination of the representatives of the ministry held on May 29 and post evidence replies sought by the committee, the panel said in its report.

<https://economictimes.indiatimes.com/news/defence/inter-services-organisations-bill-be-passed-enacted-without-any-amendments-parliamentary-panel-on-defence/articleshow/102015393.cms>

## THE ECONOMIC TIMES

*Fri, 21 Jul 2023*

### **IAF Chief Emphasises Need for Joint Warfighting Capabilities to Tackle Future Challenges**

IAF Chief VR Chaudhari on Friday addressed officers of the 47th Higher Air Command Course (HACC) at the College of Air Warfare here and highlighted the need for joint warfighting capabilities to face future challenges. The CAS (Chief of the Air Staff), in his speech, covered diverse global and national issues.

Chaudhari emphasised the need for joint warfighting capabilities to face tomorrow's challenges. He advised the future commanders to stay abreast of developments around the world, a defence release said.

The visit of the Air Chief Marshal served as a useful forum for all participants for educative interaction, and gaining a fresh insight into issues of geopolitical, and military significance, it said.

<https://economictimes.indiatimes.com/news/defence/iaf-chief-emphasises-need-for-joint-warfighting-capabilities-to-tackle-future-challenges/articleshow/102021527.cms>

## THE TIMES OF INDIA

*Mon, 24 Jul 2023*

### **Indian Navy Steaming Ahead with Autonomous Unmanned Vessels**

From autonomous unmanned vessels to new-generation combat management systems, software-defined radios and advanced data links, the Navy is now going full steam ahead in harnessing



cyber, artificial intelligence, big data analytics and other cutting-edge technologies for futuristic warfare.

The Navy, for instance, will test its first ocean-going autonomous boat with ISR (intelligence, surveillance and reconnaissance) and other capabilities between Mumbai and Goa around November.

Developed by the Navy's Weapons and Electronic Systems Engineering Establishment (WESEE) and Bharat Electronics (BEL), the maiden sea trial of the 15-meter long boat, capable of navigating through maritime traffic, will take place after the monsoons, sources told TOI.

This is in keeping with the "Integrated Unmanned Roadmap" prepared by the Navy for induction of autonomous aerial, surface and underwater platforms of various sizes and types over the next 10 years.

Countries like the US and China have for long been experimenting with a wide array of long-endurance unmanned surface and underwater vessels -- which are much cheaper than manned warships and submarines -- that can revolutionise warfare like hypersonic or directed-energy weapons.

The Indian Navy will also begin testing an indigenous new-generation combat management system (CMS), which serves as the "nerve centre" on board a warship as it integrates all sensors like radars, sonar and electronic warfare systems with weapons like missiles, rockets, torpedoes and guns as well as "talks" to other platforms through data links, from August onwards.

All warships that get commissioned from 2024 to 2029 will be equipped with this new CMS developed by WESEE, which enables enhanced user-interface and faster reaction-time with inbuilt decision-support tools.

"The CMS 24-29 can do faster threat assessment with inbuilt-AI algorithms and gives the warship's captain suggestions on which particular weapon should be used in a particular situation. It can also talk to the existing CMS on board warships," the source said.

The collaboration between WESEE and production agency BEL has also seen the development of three variants of software-defined radios (SDRs) with top-level encryption, which are now progressively replacing older VHF radio sets with limited bandwidth on board all warships, submarines and aircraft.

While the SDR-NC (naval communications) has already been deployed on all warships, the installation of SDR-Tactical is currently underway. "Trials of the SDR-FA (fighter aircraft) will be completed within a year. The Navy is the first service to develop and deploy such indigenous SDRs, which are multimedia capable and can send data over much longer ranges," the source said.

WESEE is also developing the new-generation Data Link-II system, the earlier version of which is deployed on all warships, submarines, aircraft and shore establishments across the Navy to bolster network-centric operations.

"This ambitious project aims to incorporate upgraded features such as integrated platform time synchronization, a modular and scalable open architecture equipped with a multi-domain gateway, enhanced throughout with hot redundancy, and fault tolerance," the source said.

<https://timesofindia.indiatimes.com/india/indian-navy-steaming-ahead-with-autonomous-unmanned-vessels/articleshow/102064482.cms>

## **Bengaluru-based Firm to Supply 400 Software-Defined Radios for Army Tanks**

Bengaluru-based Alpha Design Technologies Limited (ADTL) has signed an order to supply 400 indigenously made Software-Defined Radios (SDRs) to be fitted on the tanks operated by the Indian Army in forward areas. “Indian Army has taken a giant step in ordering 400 armoured fighting vehicle (AFV) SDRs for their tank fleet. We have already signed the contract and manufacturing is in process. We have also offered our manpack SDRs for meeting requirements of Indian soldiers and they’ve already been evaluated by the Army recently,” Col (retd) HS Shankar, CMD, ADTL, told TOI. The SDRs, as per the contract under Army’s emergency procurement, are for all tank platforms. Earlier, the firm, which is backed by Adani Group, had manufactured and supplied 5,000 Combat Net Radios (CNRs) — an older version of communication equipment — for tanks. “Defence forces world over are changing over their tactical communication systems and equipment from conventional analog or semi-digital fixed frequency (data for different versions in separate bands of frequencies) to single all-in-one radios based on software algorithms for working over complete bands of frequencies, including satellite communication bands. The current trend is to go for SDR which works on embedded software-oriented high-end algorithms-based waveforms equipped with additional features such as large hopping rate, encryption in anti-jamming voice, data, video, IP and mobile ad-hoc network, etc,” Shankar said.

Pointing out that Indian industries such as Bharat Electronics Limited (BEL), ADTL and DRDO have been working on such technologies for many years, Shankar said while the Navy has procured SDRs from DRDO/BEL, ADTL has been working to meet the needs of the Army and Indian Air Force (IAF) for more than a decade. With an eye on the future, ADTL recently achieved interoperability of its SDR with that of another firm being used by IAF. Although it has no orders yet from the IAF, the technology, ADTL says, demonstrates an edge when it comes to working with radios having legacy technologies in use and can be a game changer for the global market also.

With development of interoperability features, ADTL is also working together with Elbit-Israel to tap the export potential for such systems. “As a technology-driven R&D and production firm, we’ve put in considerable effort through our more than 30 young software and firmware teams of experts. We recently achieved a breakthrough and offered our equipment to the Army and IAF to meet tactical communication systems needs.” Shankar explained.

<https://timesofindia.indiatimes.com/city/bengaluru/bengaluru-based-firm-to-supply-400-software-defined-radios-for-army-tanks/articleshow/102065997.cms>

## **IAF Asks French Firm Dassault to Integrate Indian Weapons on Rafale Fighter Jets**

In a step that could be a big success for 'Make in India' in defence and also open the global market for desi weapons, the Indian Air Force has asked French firm, Dassault Aviation, to integrate indigenous weapons like 'Astra air' to air missile on the Rafale combat aircraft.

The Rafale is used by many countries including India, France, Egypt, Qatar and many others along with Greece, Croatia, UAE and Indonesia, have placed orders for these planes.

“The IAF has asked the original equipment manufacturer Dassault Aviation to integrate Indian-made weapons like the Smart Anti Airfield Weapon (SAAW) and the Astra air-to-air missile with the Rafale which has been in service with the IAF since 2020,” defence officials told ANI.

Along with these DRDO-developed missiles and bombs, the IAF also has plans of integrating multiple indigenously designed weapons by private sector firms including long-range glide bombs with the aircraft in the near future, they said.

Industry sources said that in view of the capability and the pricing of the Indian weapon systems, there could be a big market for them once they are integrated into the Rafale.

The Indian weapon systems are already integrated into the Su-30 MKI combat aircraft along with the indigenous LCA Tejas. India operates 36 Rafale fighter jets and has already expressed intent to buy 26 Rafale marine aircraft which are to be used by its Navy.

The Indian Air Force top brass have been pushing for indigenous solutions for their war-fighting requirements to be self-reliant, especially in times of conflict.

A lot of weapon systems acquired by the force during the ongoing standoff with China have also been put on the indigenisation path. The Astra air-to-air missiles are capable of striking targets up to the 100 Km range but very soon this will be extended to 160 KMs in the Astra Mark 2 while the further upgraded version would be one with a strike range of 300 Kms. The SAAW can also hit targets at 100 Km plus range and its advanced versions are also being developed. "The private sector companies have also developed missiles and bombs which can hit targets from long ranges and can be equipped on the Rafale," the officials said.

<https://economictimes.indiatimes.com/news/defence/iaf-asks-french-firm-dassault-to-integrate-indian-weapons-on-rafale-fighter-jets/articleshow/102054150.cms>



*Sat, 22 Jul 2023*

## **UK Defence Committee Visits Mumbai to Understand Geopolitical Situation in Indo-Pacific, Indian Ocean Regions**

Members of the Defence Select Committee of the United Kingdom House of Commons visited Mumbai to better understand the current situation in the Indo-Pacific and Indian Ocean Region and assess how the UK could contribute towards ensuring security in the region, the Navy said.

The delegation, led by Tobias Ellwood, MP, a former British Army Officer and currently the chairman of the committee, visited the city from July 19 to 21, the navy said in a statement.

The delegation interacted with Vice Admiral Sanjay Bhalla, Chief of Staff, Headquarters Western Naval Command and senior officers of the Command. "The British delegation was in India to better understand the current situation in the Indo-Pacific and Indian Ocean Region (IOR) and assess how UK could contribute towards ensuring security in the region," it said. The interaction covered subjects of shared interests and the endeavours of both countries in bolstering security in the region. Ensuing discussions touched upon avenues to enhance defence cooperation between the two maritime nations, the navy said.

The delegation also visited the latest indigenous destroyer INS Mormugao. Over the decades, cooperation between India and the UK has enhanced in various defence-related fields. The recent edition of Indian and Royal Navy bilateral exercise Konkan-23, held in March 2023, highlights continual efforts of both the countries to strengthen maritime security and uphold rules-based order in the region, the navy said.

The current visit by the Defence Select Committee furthers the growing cooperation between the two maritime nations for enhanced interoperability in various domains. With common interests in the IOR and mutual goal of peace and stability in the region, both countries are committed to work together, it added.

<https://www.deccanherald.com/national/uk-defence-committee-visits-mumbai-to-understand-geopolitical-situation-in-indo-pacific-indian-ocean-regions-1239571.html>



*Mon, 24 Jul 2023*

## **Ukraine Eyes Country's Accession to NATO Next Year**

Ukraine is eyeing next year for the country's accession to North Atlantic Treaty Organization (NATO), Defence Minister Oleskii Reznikov said, CNN reported.

Talking about the next year's NATO Summit in Washington, Reznikov said, "Who knows, maybe it will be a very important day for Ukraine," adding "It is just my forecast."

During the interview, Reznikov acknowledged that Ukraine will only be able to join the alliance once the war is over, referencing Article 5 and saying "We have no options to have a unanimous vote" while the conflict is ongoing.

When asked if he thought the war would be over by next summer he quickly answered, "Yes. We will win this war."

Reznikov downplayed the Biden administration's refusal to commit to Ukraine getting admitted immediately after the war's end.

"I think it's not necessary," he said. Ukraine will have a streamlined admission process and in the meantime will continue to work on the necessary reforms, Reznikov added. The defence minister emphasized that the benefits of admitting Ukraine to the alliance have only grown given its fight against Russia, as per CNN.

The United States and other NATO countries have said it is impossible to admit Ukraine now because of the ongoing war. Early this month, US President Joe Biden said that he doesn't think Ukraine is ready for NATO membership and added that NATO is a process that takes some time to meet all qualifications, from democratization to a whole range of other issues.

"I don't think it (Ukraine) is ready for membership in NATO," the US President said in an interview when asked about Ukraine's NATO membership, reported CNN.

Meanwhile, on Saturday, Ukrainian President Volodymyr Zelenskyy said that he held a phone conversation with NATO Secretary General Jen Stoltenberg on "unblocking" the Black Sea grain corridor.

This phone call came on the heels of Russia calling off the crucial deal to ensure the safe passage of ships.

“Had a phone conversation with NATO Secretary General @jensstoltenberg. We discussed the implementation of the agreements reached during the Vilnius summit and further actions regarding the integration of Ukraine into @NATO,” tweeted Zelenskyy.

His tweet continued, “We shared assessments of the current situation in the Black Sea and the risks it poses for global food security. We also identified with Mr Stoltenberg the priority and future steps necessary for unblocking and sustainable operation of the Black Sea grain corridor.”

This came after Russia announced it was suspending its participation in a UN-brokered deal that allowed the export of Ukrainian grain.

<https://www.aninews.in/news/world/others/ukraine-eyes-countrys-accession-to-nato-next-year20230724041326/>

## THE ECONOMIC TIMES

Sun, 23 Jul 2023

### **Russia and China End Military Exercises in Sea of Japan**

Russia and China have ended their joint naval exercises in the Sea of Japan, the Russian defence ministry announced Sunday, as the two allies seek to deepen their military ties.

The two massive countries, which share a common desire to counter what they see as American hegemony, have grown closer in the military sphere since Russia launched its Ukraine offensive last year, a move China has not condemned.

The Russian defence ministry previously said the main goal of the latest exercises, which began on Thursday, was to "strengthen naval cooperation" between the two countries and "maintain stability and peace in the Asia-Pacific region".

"The joint Russian-Chinese naval exercises... have ended in the Sea of Japan," the Russian military confirmed in a statement Sunday.

"Some twenty combat exercises were carried out... including joint artillery fire on maritime, coastal and air targets", the army said.

The Russian navy was represented by two anti-submarine ships, two corvettes as well as auxiliary ships, according to the Russian defence ministry.

Last weekend Beijing said it was sending five warships, including a guided-missile destroyer.

Navy aircraft were also involved. To strengthen their coordination, China and Russia have organised several exercises between their armies in recent months.

In March, during a visit to Moscow by Chinese President Xi Jinping, he and Russian counterpart Vladimir Putin signed a declaration expressing their willingness to conduct "regular joint patrols" to "deepen mutual trust".

Last month China and Russia carried out a joint air patrol over the Seas of Japan and East China, which prompted South Korea to deploy fighter jets as a precaution.

That was the sixth such China-Russia patrol in the area since 2019.

<https://economictimes.indiatimes.com/news/defence/russia-and-china-end-military-exercises-in-sea-of-japan/articleshow/102059555.cms>

## **Any Nuclear Attack will Result in the End of the North Korean Regime, Warns South Korea**

South Korea has warned North Korea that any nuclear attack from the latter's side would mean an "end" of the Kim Jong Un-led regime, Yonhap News Agency reported on Friday.

Seoul's warning has come after Pyongyang had said the deployment of a US nuclear-capable submarine and other strategic assets here could meet the conditions for its use of nuclear arms.

Seoul's defence ministry renewed the warning after Pyongyang's Defence Minister Kang Sun-nam issued a sharp-tongued statement the previous day, criticizing the arrival of the USS Kentucky, an 18,750-ton Ohio-class nuclear ballistic missile submarine (SSBN), in South Korea and the inaugural meeting of the South Korea-US Nuclear Consultative Group (NCG) this week, Yonhap news agency reported.

"In the event of any North Korean nuclear attack against the South Korea-US alliance, it will face an immediate, overwhelming and decisive response from the alliance, and (we) strongly warn again that through this, (the attack) will result in the end of the North Korean regime," Yonhap news agency quoted the Seoul ministry as saying.

The USS Kentucky arrived in the southeastern port city of Busan on Tuesday. Its arrival coincided with the first NCG session aimed at strengthening the credibility of the extended deterrence commitment by the US to use the full range of its military capabilities, including nuclear, to defend its ally.

The ministry defended the NCG gathering and the SSBN's deployment as a "rightful" defensive measure against North Korea's "continued nuclear and missile threats", dismissing the North's claim that they posed a nuclear threat to the recalcitrant country, Yonhap news agency.

It also said Pyongyang's nuclear program and missile provocations are "clear" violations of UN Security Council resolutions and "illicit activities," noting the country is the "only" one that repeats threats of a nuclear attack against the South Korea-US alliance.

"North Korea will never gain any concessions from the South Korea-US alliance through its nuclear development and threats, and (we) urge it to recognize its isolation and destitution will only deepen, and to come out swiftly to the path of denuclearization," the ministry stated.

The first US SSBN's visit to the South since 1981 came after the US pledged to enhance the "regular visibility" of its high-profile military assets, including the strategic submarine, in the Washington Declaration that Presidents Yoon Suk Yeol and Joe Biden issued during their summit in April, Yonhap news agency reported.

Tensions have heightened as Pyongyang has continued its 'sabre-rattling', such as its launches of an intercontinental ballistic missile on July 12 and two short-range ballistic missiles on Wednesday.

<https://economictimes.indiatimes.com/news/defence/any-nuclear-attack-will-result-in-the-end-of-the-north-korean-regime-warns-south-korea/articleshow/102027533.cms>

### **ISRO, Indian Navy Advance to Phase 2 of Gaganyaan Crew Module Recovery Trials**

The Indian Space Research Organisation (ISRO) and the Indian Navy have entered the second phase of the Gaganyaan mission's crew module recovery trial operations. Harbour trials were carried out on Thursday at the Naval Dockyard, Visakhapatnam, using a Crew Module Mockup (CMRM) to simulate mass and shape conditions accurately.

"The trials were conducted at the Eastern Naval Command in Visakhapatnam, using a mass and shape simulated Crew Module Mockup (CMRM). This mockup was a crucial component in the testing process, ensuring that the recovery procedures accurately simulated conditions," the Indian space agency said in a statement. Gaganyaan is India's ambitious project aimed at demonstrating human spaceflight capability. The mission plans to launch a three-member crew into a 400km orbit for a three-day mission and safely bring them back to Earth, landing in the Indian sea waters.

During the recent trials, various recovery stages were simulated, including the attachment of the recovery buoy, towing, handling, and lifting of the crew module onto the ship deck. These procedures followed the recovery sequence, showcasing the teams' preparedness, ISRO said.

The statement released by ISRO also added that the fine-tuning of Standard Operating Procedures (SOPs) based on experiences from phase-1 trials at the Water Survival Training Facility (WSTF) in Kochi was undertaken to ensure a seamless and safe recovery process

Earlier on Wednesday, ISRO successfully conducted the Gaganyaan Service Module Propulsion System (SMPS) test at IPRC, Mahendragiri. This involved five liquid apogee motor (LAM) engines and sixteen reaction control system (RCS) thrusters, providing thrust for various orbital manoeuvres and abort scenarios during the ascent phase. There are three missions under Gaganyaan before the manned mission happens. The first mission will be unmanned, the second one would carry a robot on board and, finally, there will be the manned mission. The mission is expected to begin at the end of 2024. After the successful launch of the Chandrayaan-3 mission, all eyes are set on the soft landing attempt scheduled for August 23. The third lunar exploration will provide valuable input also for the Gaganyaan mission.

[https://www.hindustantimes.com/technology/gaganyaan-mission-latest-updates-isro-indian-navy-crew-module-recovery-trail-commenced-chandrayaan-3-news-101690041306964.html](https://www.hindustantimes.com/technology/gaganyaan-mission-latest-updates-isro-indian-navy-crew-module-recovery-trial-commenced-chandrayaan-3-news-101690041306964.html)

## **THE TIMES OF INDIA**

### **ISRO Helps Test Skyroot's Raman-II Engine**

ISRO on Saturday said that on July 21, it demonstrated its commitment to fostering the space ecosystem in India by enabling a successful rocket-engine test conducted by startup Skyroot, at the Isro Propulsion Complex (IPRC) Mahendragiri.

The test, enabled by the Indian National Space Promotion and Authorisation Centre (IN-SPACe), took place in the Liquid Thruster Test Facility (LTTF) in IPRC.

"The test involved Skyroot's Raman-II engine, which was designed to generate 820 Newton (Sea Level) and 1,460 Newton (Vacuum) thrust, with a nominal chamber pressure of 8.5 bar absolute," Isro said.

The 10-second test achieved the expected performance in terms of start transient, steady state, and shut-off. Skyroot intends to integrate the Raman-II engine into the fourth stage of its launch vehicle, Vikram-I.

Raman-II, a regeneratively cooled engine, manufactured through additive manufacturing techniques, utilises Mono Methyl Hydrazine and Nitrogen Tetroxide as propellants. "The test facility systems demonstrated normal performance during the test, meeting the engine inlet conditions at T0. The instrumentation systems also performed as expected, further ensuring the accuracy and reliability of the test results," Isro said.

The space agency said this facilitation underscores its commitment to nurture private players, start-ups, and non-government entities (NGEs) in developing the country's space eco-system.

"Going forward, a series of additional tests are planned to further validate and refine the Raman-II engine's capabilities," Isro added.

<https://timesofindia.indiatimes.com/home/science/isro-helps-test-skyroots-raman-ii-engine/articleshow/102043298.cms>



*Sun, 23 Jul 2023*

## **A Sweaty Robot may Help Humans Understand Impact of Soaring Heat**

What happens to the body when a human gets heatstroke? How can we protect ourselves in a warming planet? To answer these burning questions, Arizona researchers have deployed a robot that can breathe, shiver and sweat.

The southwestern state's capital Phoenix is currently enduring its longest heat wave in history: on Friday, the mercury exceeded 110 degrees Fahrenheit (43 degrees Celsius) for the 22nd day in a row, an ominous demonstration of what's to come in a world impacted by climate change.

For humans, such heat represents a potentially lethal threat, one that is still not fully understood. But for ANDI -- a one-of-a-kind humanoid robot at Arizona State University -- it's a lovely day out.

"He's the world's first outdoor thermal mannequin that we can routinely take outside and ... measure how much heat he is receiving from the environment," mechanical engineering professor Konrad Rykaczewski told AFP.

ANDI is "a very realistic way to experimentally measure how a human person responds to extreme climate" without putting people themselves at risk, Rykaczewski says.

At first glance, ANDI -- which stands for Advanced Newton Dynamic Instrument -- resembles a simple crash-test dummy.

But its epoxy/carbon fiber skin conceals a treasure trove of technology, such as a network of connected sensors that assess heat diffused through the body.



ANDI also has an internal cooling system and pores allowing it to breathe and sweat. There are 35 independent thermal zones and, like humans, the robot -- which cost more than half a million dollars to build -- sweats more from its back.

Until now, only a dozen or so mannequins of this type existed, and none of them could venture outdoors. They were mainly used by sports equipment manufacturers to test their technical clothing in thermal chambers.

### **Hyperthermia, a 21st century condition**

Researchers hope the robot will provide a better understanding of hyperthermia -- that is, when a body overheats, a condition that is threatening a growing proportion of the world's population as a result of global warming.

For obvious ethical reasons, "nobody measures core temperature increase while somebody's getting heatstroke," says Rykaczewski. But the effects of heat on the human body are still not fully comprehended. ANDI gives researchers a chance to understand.

Accompanied by MaRTy (Mean Radiant Temperature), a mobile weather station that measures the heat reflected by the buildings around it, the robot is taking its first steps outside in Phoenix -- an ideal laboratory in which to prepare for tomorrow's climate.

"How do we change what we wear? How do we change our behavioral patterns, and adjust them to temperatures that are of this order of magnitude?" says Rykaczewski.

Andi is also infinitely reprogrammable. The research team can make "digital twins of the mannequin to look at different segments of the population," explains Jennifer Vanos, a climatologist involved in the project.

For example, the older you get, the less you sweat. Young people will need different protection from athletes or people in poor health. With ANDI, scientists can simulate the thermoregulatory mechanisms specific to each individual.

### **Phoenix, test lab for the future**

They can also test the robot in a variety of situations. For example, Phoenix is dry -- what about humid heat? How does the human body cope in hot winds?

Their research will be useful for designing heat-resistant clothing, rethinking urban planning and protecting the most vulnerable.

In Phoenix, which opens dozens of cooling centers for the homeless every summer, their findings could guide the actions of social workers.

"How long should a person stay in a cooling center to cool off, so that their core temperature goes down to a level that's safe again? We can answer that question with Andi," says Vanos.

The team also dreams of developing low-cost sensors to be used on building sites to adjust working hours according to the heat actually felt on site and the health of the workers -- rather than based on general weather conditions.

That could be a "step towards better safety than just these blank recommendations per city, per state, per country," Rykaczewski says.

Such specific, tailored solutions could have global impacts, redrawing entire cities.

"If the future of Paris looks like Phoenix now, we can learn a lot about how do we design buildings," says Rykaczewski.

<https://tech.hindustantimes.com/tech/news/a-sweaty-robot-may-help-humans-understand-impact-of-soaring-heat-71690016352335.html>

## OpenAI, Google, others Pledge to Watermark AI Content for Safety, Says White House

Top AI companies including OpenAI, Alphabet and Meta Platforms have made voluntary commitments to the White House to implement measures such as watermarking AI-generated content to help make the technology safer, the Biden administration said on Friday.

The companies — which also include Anthropic, Inflection, Amazon.com and OpenAI partner Microsoft — pledged to thoroughly test systems before releasing them and share information about how to reduce risks and invest in cybersecurity.

The move is seen as a win for the Biden administration's effort to regulate the technology which has experienced a boom in investment and consumer popularity.

Since generative AI, which uses data to create new content like ChatGPT's human-sounding prose, became wildly popular this year, lawmakers around the world began considering how to mitigate the dangers of the emerging technology to national security and the economy.

U.S. Senate Majority Chuck Schumer, who has called for "comprehensive legislation" to advance and ensure safeguards on artificial intelligence, praised the commitments on Friday and said he would continue working to build and expand on those.

The Biden administration said it would work to establish an international framework to govern the development and use of AI, according to the White House.

Congress is considering a bill that would require political ads to disclose whether AI was used to create imagery or other content.

President Joe Biden, who is hosting executives from the seven companies at the White House on Friday, is also working on developing an executive order and bipartisan legislation on AI technology.

As part of the effort, the seven companies committed to developing a system to "watermark" all forms of content, from text, images, audios, to videos generated by AI so that users will know when the technology has been used.

This watermark, embedded in the content in a technical manner, presumably will make it easier for users to spot deep-fake images or audios that may, for example, show violence that has not occurred, create a better scam or distort a photo of a politician to put the person in an unflattering light. It is unclear how the watermark will be evident in the sharing of the information.

The companies also pledged to focus on protecting users' privacy as AI develops and on ensuring that the technology is free of bias and not used to discriminate against vulnerable groups. Other commitments include developing AI solutions to scientific problems like medical research and mitigating climate change.

<https://www.thehindu.com/sci-tech/technology/openai-google-others-pledge-to-watermark-ai-content-for-safety-says-white-house/article67106245.ece>

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