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# समाचार पत्रों से चयित अंश Newspapers Clippings

A Daily service to keep DRDO Fraternity abreast with DRDO  
Technologies, Defence Technologies, Defence Policies,  
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### Social Buzz Day Organised at Naval Physical and Oceanographic Laboratory

Swachhta Pakhwada an initiative envisioned by Prime Minister Narendra Modi for making Swachhta “everyone’s Business”. The Pakhwada is being observed in DRDO from December 1 to December 15 2022, as per an official press release. Naval Physical and Oceanographic Laboratory (NPOL), the only DRDO Laboratory in Kerala, is conducting diverse activities such as Taking of Swachhtha Pledge, organising a Cleanliness Drive, Review and weeding out old records, Disposal of waste from the campus, planting trees, conducting various Competitions and creating awareness among all stakeholders during the two weeks long event. As per an official press release, two activities were organised as a part of the Social Buzz Day of Swachhata Pakhwada event.



Letha M M, Scientist-‘F’ - and Nodal Officer of the “SwachhtaPakhwada – 2022” at NPOL gave an overview of the activities. A Rally from the NPOL main gate to NGO Quarters circle with the participation of around 150 employees of NPOL was conducted. The rally was flagged off by AjithaThankappan, Chairperson, Thrikkakara Municipality and Sajeena Akbar, Councilor, Thrikkakara Municipality from the main gate. The rally was guided through the BhavansVarunaVidyalaya school campus, providing awareness to the students. A separate

awareness presentation was provided to the students in the BhavansVarunaVidyalaya Assembly Hall. There were around 200 students, and various topics related to Cleanliness were presented. The rally continued to Varuna Quarters to provide awareness to the families of NPOL employees on Cleanliness, hygiene and sanitation.

Rally further proceeded to the NGO Quarters circle with various placards related to Cleanliness, giving awareness to the society, and the general public participated significantly. A bike rally was organised from NPOL gate to NAD Aluva through Seaport airport road. There was the participation of around 50 bikes along with Pilot vehicles. The bike rally was flagged off by Suresh M, Scientist- 'H' and officiating Director, NPOL and AA Ibrahimkutty, Vice-Chairperson, Thrikkakara Municipality, from NPOL Main gate in the presence of senior scientists, officers and staff of NPOL. A banner depicting the "SwachhataPakhwada" was displayed on the pilot vehicle. All participants wore a T-Shirt with the Swachhtha logo to show society the importance of Cleanliness. The bike rally reached around 3 pm at NAD Aluva, and an interaction with employees of NAD Aluva followed by a visit to the office was arranged.

<https://theprint.in/india/social-buzz-day-organised-at-naval-physical-and-oceanographic-laboratory/1262912/>

## Defence News

## Defence Strategic : National/International



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

**Ministry of Defence**

*Mon, 12 Dec 2022*

### **Defence Industrial Corridors in the Country**

To achieve Aatmanirbharta and realise the goal of 'Make in India', Government of India has established two Defence Industrial Corridors (DICs) in the country, one in Uttar Pradesh and other in Tamil Nadu. 06 (six) nodes viz. Agra, Aligarh, Chitrakoot, Jhansi, Kanpur and Lucknow have been identified for developing Uttar Pradesh Defence Industrial Corridor (UPDIC). Similarly, 05 (five) nodes viz. Chennai, Coimbatore, Hosur, Salem, and Tiruchirappalli identified for developing Tamil Nadu Defence Industrial Corridor (TNDIC). Government intends to develop defence manufacturing ecosystem having conducive conditions including supply chain for giving push to production and testing & certification to create economies of scale and facilitate development of internationally competitive enterprises in the country.

As per the information received from Government of Uttar Pradesh for UPDIC, 105 Memorandum of Understandings (MoUs) have been signed with industries etc. worth potential investments of Rs 12,139 crore. Already, Rs 2,422 crore have been invested in UPDIC. Total

1,608 Hectare of land has been acquired for development of UPDIC. Further, as per the information received from Government of Tamil Nadu for TNDIC, arrangements have been made through Memorandum of Understandings (MoUs) etc. for potential investment of Rs 11,794 crore by 53 industries. Rs 3,847 crore have already been invested in TNDIC. Total 910 Hectare of lands has been acquired for development of TNDIC.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1882702>



**Press Information Bureau  
Government of India**

**Ministry of Defence**

*Mon, 12 Dec 2022*

## **Make-in-India in Defence Sector**

The 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, there by promoting self-reliance in defence manufacturing & technology in the country. These initiatives, inter-alia, include according priority to procurement of capital items from domestic sources under Defence Acquisition Procedure (DAP) 2020; Announcement of 18 major defence platforms for industry led design & development in March 2022; Notification of four 'Positive Indigenisation Lists' of total 411 items of Services and three 'Positive Indigenisation Lists' of total 3738 items of Defence Public Sector Undertakings (DPSUs), for which there would be an embargo on the import beyond the timelines indicated against them; Simplification of Industrial licensing process with longer validity period; Liberalisation of Foreign Direct Investment (FDI) policy allowing 74% FDI under automatic route; Simplification of Make Procedure; Launch of Mission DefSpace; Launch of Innovations for Defence Excellence (iDEX) scheme involving start-ups & Micro, Small and Medium Enterprises (MSMEs); Implementation of Public Procurement (Preference to Make in India) Order 2017; Launch of an indigenisation portal namely SRIJAN to facilitate indigenisation by Indian Industry including MSMEs; Reforms in Offset policy with thrust on attracting investment and Transfer of Technology for Defence manufacturing by assigning higher multipliers; and Establishment of two Defence Industrial Corridors, one each in Uttar Pradesh and Tamil Nadu; Opening up of Defence Research & Development (R&D) for industry, start-ups and academia with 25 percent of defence R&D budget; Progressive increase in allocation of Defence Budget of military modernisation for procurement from domestic sources, etc.

With focus on indigenisation and procurement from domestic industries, all the major areas of domestic defence production ecosystem such as weapons, ammunition, fighter aircrafts, helicopters, missile systems, warships, submarines, armoured vehicles, radars, communication systems, surveillance systems, etc. have benefited from the aforesaid initiatives and also given boost to the growth of domestic industries including MSMEs & start-ups.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1882700>

*Mon, 12 Dec 2022*

## **Indian, Chinese Troops Clash in Arunachal Pradesh, Several Injured: Sources**

Amidst the ongoing more than two years of standoff between Indian Army and Chinese PLA troops, last Friday Indian soldiers were injured during a clash between Indian and Chinese troops in Arunachal Pradesh. No deaths have been reported. This is the first such incident involving the Indian soldiers and Chinese PLA troops since the Galwan Valley incident of June 15, 2020 when 20 Indian soldiers were killed and several others were injured in the violent attack by the Chinese PLA. Sources in the defence and security establishment have confirmed to Financial Express Online that a clash between the troops of the two countries had taken place on December 9, 2022 along the disputed section of the Line of Actual Control (LAC) in the hill states. Adding, “The injuries on the Chinese side were much higher than on the Indian side.”

As has been reported earlier, there have been face-offs in the area in the past too. In fact one major incident took place in October 2021 at Yangtze, 35 km northeast of Tawang. At that time the Chinese troops had attempted to get access to the top of 17,000 feet peak which was thwarted at that time and that entire area is under the cover of snow and will remain so until next March. Some of the soldiers have sustained fractured limbs during the clash and are said to be recovering at a hospital in Guwahati. Sources have said that at the time there were 600 PLA soldiers present when the clash took place.

### **The incident took place in Tawang Sector**

According to the Indian Army, there are certain areas along the LAC in the Tawang Sector in Arunachal Pradesh that are areas of differing perception. Both sides patrol areas up to their claim lines and this has been a trend since 2006.

### **So what really happened on December 9, 2022?**

The Indian Army says that there are certain areas along the LAC in the Tawang Sector, Arunachal Pradesh, where perceptions differ on the sites where both sides are patrolling up to their claim lines. This has been the trend since 2006. On Friday, PLA troops had contacted the LAC in Tawang Sector. And this was contested by Indian troops in a firm and resolute manner and this face-off led to minor injuries to the personnel from both sides, explained the Indian Army. According to the Indian Army, the troops of both sides disengaged immediately from the area and as a follow-up, Indian Commander in the area had a Flag meeting with his counterpart. In his meeting with the Chinese counterpart, the issue was discussed in accordance to the structured mechanisms which are already in place in an effort to restore peace and tranquility.

<https://www.financialexpress.com/defence/indian-chinese-troops-clash-in-arunachal-pradesh-several-injured-sources/2910519/>

## Indian, Chinese Soldiers Injured in Clash Near Arunachal Border

Indian and Chinese soldiers suffered “minor injuries” after they were engaged in a face-off along the Line of Actual Control (LAC) in Tawang sector of Arunachal Pradesh on December 9, the Army said on Monday evening. The Hindu had earlier in the day reported the clash that occurred at Yangtse. Around 20 Indian soldiers and a much higher number on the Chinese side were injured, according to multiple sources. “On December 09, 2022, People’s Liberation Army (PLA) troops contacted the LAC in Tawang sector, which was contested by own troops in a firm and resolute manner. This face-off led to minor injuries to a few personnel from both sides,” the Army said in a statement after reports of the incident. “Both sides immediately disengaged from the area.”

As a follow-up of the incident, Commanders on both sides in the areas held a Flag Meeting to discuss the issue in accordance with structured mechanisms to restore peace and tranquillity, the Army stated. It noted that in certain areas along the LAC in the Tawang sector, there are areas of differing perception, wherein both sides patrol the area up to their claim lines. This has been the trend since 2006, the Army added. This is the first incident of its kind after the June 15, 2020 incident when 20 Indian soldiers were killed and several others were injured in violent clashes with the PLA troops in Ladakh’s Galwan Valley. Stating that the clash occurred as a large PLA patrol came across into the Indian side, one Army source said “injuries on the Chinese side were much higher than on the Indian side”. At least three different units of the Indian Army were present at the time of the face-off, it has been learnt. According to another source, a few soldiers sustained fractured limbs during the skirmish and are said to be recuperating at a hospital in Guwahati. Around 600 PLA soldiers were present when the clashes took place, the source said.

This is not the first time that the area in Arunachal Pradesh has seen a face-off between the Indian and Chinese troops. Since the boundary is undefined, Indian and Chinese troops often face off while patrolling the area. In October 2021, a similar incident had taken place when some Chinese soldiers of a large patrol team were detained for a few hours by the Indian Army as they engaged in a minor face-off near Yangtse. In the last few years, the Army has significantly upgraded firepower and infrastructure along the LAC in the Tawang sector and a similar effort is under way in the rest of Arunachal Pradesh (RALP). This includes road infrastructure, bridges, tunnels, habitat and other storage facilities, aviation facilities and upgradation of communications and surveillance, especially in the Upper Dibang Valley region, as reported earlier.

As reported by The Hindu earlier, there has been a change in the pattern of PLA patrols, with large-size patrols coming now to assert their claim. Before the 2020 standoff in eastern Ladakh, Chinese bases have largely been much farther from the LAC. Majority of the transgressions in the last few years are in the western sector while there is an increasing trend of transgressions in the eastern and middle sectors, officials had stated earlier. The LAC is divided into western (Ladakh), middle (Himachal Pradesh and Uttarakhand), Sikkim, and eastern (Arunachal Pradesh) sectors. In eastern Ladakh, India and China are positioned in close proximity at multiple



locations along the undefined LAC for more than two years. While several rounds of talks at diplomatic and military levels have eased the stand-off at a few points, turning the areas into no-patrolling zones, there are others where the build-up continues.

<https://www.thehindu.com/news/national/several-army-soldiers-injured-in-clashes-with-chinese-pla-on-dec-9-first-incident-of-its-kind-after-galwan/article66254984.ece>



*Mon, 12 Dec 2022*

## **Defence Ministry Issues First Response on Tawang Clash; 'PLA Troops Contacted LAC'**

The Ministry of Defence (MoD) has issued an official statement to reports stating that a clash between the Indian Army and China's People's Liberation Army (PLA) occurred in the Tawang sector in Arunachal Pradesh. The MoD has confirmed that there was indeed a clash between the forces on December 9 which resulted in minor injuries to troops on both sides. "In certain areas along the LAC in the Tawang Sector in Arunachal Pradesh, there are areas of differing perception, wherein both sides patrol the area upto their claim lines. This has been the trend since 2006," the Defence Ministry's official statement read. "On 9th Dec 2022, PLA troops contacted the LAC in Tawang Sector of Arunachal Pradesh which was contested by Indian troops in a firm and resolute manner. This face-off led to minor injuries to a few personnel from both sides," it further read.

According to the Ministry, "both sides immediately disengaged from the area" and a flag meeting was conducted following the clash with the counterpart "to discuss the issue in accordance with structured mechanisms to restore peace and tranquility." This is the first major face-off after the Galwan valley clash, which occurred on June 15, 2020, where 20 Indian soldiers were martyred. According to sources close to the Indian Army, hundreds of PLA troops attempted to breach the Line of Actual Control (LAC) in their encroachment bid in Tawang, which was thwarted yet again by Indian forces. According to the Home Ministry, India shares a total of 3,488 km long border with China, out of which 1,126 km runs along Arunachal Pradesh.

The rest of the border areas are in Jammu and Kashmir (1,157 km), Himachal Pradesh (220 km), Uttarakhand (345 km), and Sikkim (220 km). China, however, claims a higher share of Arunachal's land area as the border is not fully demarcated owing to the lack of infrastructure. To redress the issue, the Central government is carrying out the construction of over 70 roads along the aforementioned border areas including Arunachal to facilitate the movement of troops along the Indo-China border. China, on the other hand, has also developed advanced infrastructure, part of which is the full electrified bullet train that connects Lhasa and Nyingchi along the Tibetan border close to Arunachal. The 435 km corridor was inaugurated on June 25 last year and the train having a top speed of 160 km is said to have reduced the travel time from Lhasa to Nyingchi from five hours to 3.5 hours.

<https://www.republicworld.com/india-news/general-news/defence-ministry-issues-first-response-on-tawang-clash-pla-troops-contacted-lac-articleshow.html>

## **China Stamps Fortification along Pangong Lake with New Division-Level Headquarters**

India and China announced a mutually agreed pullback from the northern bank of the PangongTso (lake) in eastern Ladakh, where the two sides had been locked in an eye-to-eye confrontation for months. Both armies moved back to create a buffer zone following the 9th round of military talks. China is now setting up what appears to be a new-division level headquarters, equipped to further support its forward deployment with troops, weapons and air defence right at the edge of the agreed pullback point, researchers at The Center for Strategic and International Studies, a Washington D.C. based think tank have reported. Satellite images independently sourced by India Today corroborate these findings and show that new structures continued showing up on the north bank as recently as last month, indicating ongoing expansion of infrastructure in the vicinity.

The large facility comprising multiple 40m X 30 m housing structures is supported by weapons shelters in the south and protected by trenches and weapons positions on the west. “On the south side are numerous shelters for weapons—likely artillery and anti-aircraft systems. The northern portion shows a full company of armoured personnel carriers (APCs), as well as vehicle shelters and additional weapons positions,” CSIS, China Power contributors Matthew P. Funaiolo, Brian Hart, Joseph S. Bermudez Jr., and Jennifer Jun observed. Further analysis of the available satellite imagery puts the new HQ and garrison approximately 6.5 km from the friction point of 2020 at finger four of the lake. Though the most recent high-resolution imagery was available only until October of this year, low-resolution satellite pictures from mid-November show the emergence of a new mountaintop structure of unknown nature, approx.

3 km east of the garrison. Almost 2.5 km east of this location is an under-construction site with a radome—a structure protecting radar, signal or similar antenna, that could be used for intelligence, communication or both. Further 10 km from the radome is the steepest part of the lake reduces the distance between the north and the south banks. China has been constructing a wide two-decks bridge connecting the north and south banks at this very point. As earlier reported by India Today, the upcoming bridge will be likely supported by a network of roads being constructed at a rapid speed. What appeared to be temporary Chinese military encampments during the standoff through the year 2020, have been turned into a division-level headquarters and garrison, satellite pictures provided by Maxar Technologies suggest.

While these structures are just at the edge of the agreed pullback location by the PLA, it is well within the territory claimed by India. Construction work near the radome site appeared to be still ongoing with two towers and a connecting road clearly visible in the satellite picture. A fortified large facility housing several armoured personnel carriers, troops, sheltered weapons and defence systems, improved intelligence and surveillance capabilities along with a transport network supported by new roads and a bridge over the lake make Chinese strategy and intents very clear in the region.

India earlier blamed Beijing for hampering bilateral relations asserting it will not tolerate unilateral attempts by China to change the status quo at the Line of Actual Control (LAC). “Diplomatically, we have been very clear with the Chinese – that we will not tolerate, we will not countenance unilateral attempts to change the LAC and that, so long as they continue to seek to do that and if they have built up forces, which in our minds constitute a serious concern in the border areas, then our relationship is not normal,” external affairs minister Dr S. Jaishankar told the parliament.

<https://www.indiatoday.in/india/story/china-stamps-fortification-along-pangong-lake-with-new-division-level-headquarters-2308130-2022-12-12>

# Air Force allows women to join its elite Garud commando force

**Rahul Singh**

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**NEW DELHI:** The Indian Air Force (IAF) has allowed women officers to join its special forces unit, the Garud commando force, to promote gender equality within its ranks, provided they meet the criteria for selection, officials familiar with the development said on Monday, asking not to be named.

The decision to allow women into the elite wing was taken last year, said one of the officials, although the development has come to light only now.

The Indian Navy has opened the doors of its elite special forces to women, a development that will allow them to serve as marine commandos (Marcos) provided they make the cut for selection, HT reported on Monday. While the air force and navy have allowed women to volun-



**The special forces consist of some of the toughest soldiers who undergo rigorous training.** GOI VIA WIKIMEDIA COMMONS

teer for their special forces, there will be no dilution in the selection or training standards, officials from the two services said.

The special forces of the army, navy and air force consist of some of the toughest soldiers who undergo rigorous training, are capable of mounting a swift and stealthy response in denied territories, and have thus far been a male preserve. Soldiers are not directly

assigned to special forces units, and have to volunteer for it.

The air force raised the Garud commando force in 2004. The move came three years after four terrorists, armed with Kalashnikovs and grenades, attempted to force their way into the Awantipora fighter base near Srinagar in broad daylight. They were all killed. Physiological, psychological and cultural factors were often cited to deny more military roles to women in the past. However, one of the turning points came in 2015 when the air force decided to induct them into the fighter stream.

The navy is also giving them more opportunities to serve on board warships alongside their male counterparts. The army has allowed them to fly helicopters. To be sure, tanks and combat positions in infantry are still no-go zones for women.

## टेक्नॉलजी ने लड़ाई के स्वरूप को पूरी तरह से बदल दिया है, अब सोच बदलने का समय है नौसेना की नई ताकत बन रही हैं महिलाएं



कैप्टन सचिन धीर

उत्तर-पूर्वी हिंद महासागर में कार निकोबार और ग्रेट निकोबार द्वीप के बीच स्थित है कमोर्ता द्वीप। जहां तक इसके इतिहास की बात है तो कमोर्ता में मछुआरों के करीब 1000 घर होंगे और यह एक शांत द्वीप था। कमोर्ता में 1970 के दशक की शुरुआत में भारतीय नौसेना बेस, कारदीप बना। तब से कारदीप में भारतीय नौसेना की मौजूदगी महत्वपूर्ण बनी हुई है। नई दिल्ली में भारत के दूरदर्शी सामरिक नेतृत्व ने कमोर्ता को भारत के सुदूर पूर्व तट पर स्थित विशिष्ट स्थल के रूप में देखा, जो अत्यंत महत्वपूर्ण मलक्का जलडमरूमध्य के पास है। जहां से उत्तरी अंडमान सागर और बंगाल की खाड़ी आसानी से पहुंचा जा सकता है। उस समय अमेरिका और सोवियत संघ के बीच चल रहा शीत युद्ध सबसे अधिक महत्वपूर्ण अजेंडा था और हिंद महासागरीय क्षेत्र में संभवतः चीन ने समुद्री मामले में उस समय कुछ बोलना शुरू भी नहीं किया था। कारदीप की कमिश्निंग के बाद और खासकर भारतीय नौसेना के निकोबार द्वीप समूह से ऑपरेशन शुरू करने के बाद से कमोर्ता समुद्री क्षेत्र में भारतीय नौसैनिक चेतना और नौसेना के संस्थापकों की दूरदर्शिता की आधारशिला बन गया है।

### नारी शक्ति की पहचान

जिस तरह से कमोर्ता द्वीप पर अवसर की समयपूर्व पहचान कर ली गई थी, उसी तरह से भारतीय नौसेना, तीनों सेनाओं में संभवतः वह पहली सेना थी, जिसने 'नारी शक्ति' के महत्व की पहचान कर ली।

- भारतीय नौसेना में महिलाओं की भर्ती नहीं हो सकती थी। यह नौसेना अधिनियम, 1957

के अप्रचलित और औपनिवेशिक प्रावधानों के कारण प्रतिबंधित थी।

- 1989 में पहली बार नौसेना सर्विस में महिलाओं की भर्ती की मंजूरी के लिए नेवी ने सरकार को प्रेजेंटेशन दिया।
- 1992 में परिणाम सामने आया जब सरकार ने कानून, शिक्षा और लॉजिस्टिक्स ब्रांचों में प्रायोगिक तौर पर पांच वर्ष के लिए महिलाओं की भर्ती की इजाजत दे दी।
- पांच वर्षों के बाद 1997 में नौसेना ने सरकार को बताया कि महिलाएं संतोषजनक ढंग से नौसेना के वातावरण के अनुकूल ढल गई हैं और उनका प्रदर्शन संतोषजनक रहा है। फिर महिलाओं की स्थायी भर्ती की अधिसूचना के लिए मामला उठाया गया।
- 1998 की शुरुआत में सरकार ने केवल समुद्री तैनाती को छोड़कर नौसेना की सभी शाखाओं में महिलाओं की भर्ती के संबंध में अनुमति देने के लिए अधिसूचना जारी की।

अमेरिकी नौसेना सिद्धांतकार कैप्टन वेन ह्यूज कहते हैं नौसेना के युद्ध भीषण होते हैं। अधिकतर लड़ाइयां वह फोर्स जीतती है, जो जरा सी भी मजबूत स्थिति में हो

तब से नौसेना ने अपने वर्क फोर्स में मजबूती से महिलाओं को सम्मिलित कर गर्व से सात समुद्री को पार किया है। इसके बाद 2022 में इस क्षेत्र में निर्णायक कदम उठाए गए। इस वर्ष 15 अगस्त पर 'अमृत काल' के पहले दिन प्रधानमंत्री नरेंद्र मोदी ने राष्ट्र को अपने संबोधन के दौरान देश की बेटियों को और अधिक अवसर, सुविधाएं



गणतंत्र दिवस से पहले फुल ड्रेस रिहर्सल के दौरान राजपथ पर महिला नौसैनिक (फाइल फोटो)

देने का आह्वान किया। संभवतः यह केवल एक संयोग ही है कि प्रधानमंत्री की इस घोषणा से एक सप्ताह पहले ही तीन महिला कैडेट्स की पहली बार 'स्थायी कमिशन' अफसर के तौर पर नेशनल डिफेंस एकेडमी में भर्ती की जा चुकी थी। लेकिन नौसेना यहीं नहीं रुकी। अक्टूबर 2022 में नौसेना ने महिलाओं के लिए स्पेशल फोर्स, डाइविंग और 'हाइड्रोग्राफी' सहित सभी समुद्री शाखाओं, काडरों और स्पेशलाइजेशंस में भर्ती की अधिसूचना जारी की। अब महिलाएं अग्निपथ योजना के माध्यम से नौसैनिक के रूप में भी देश की रक्षा के अभियान में शामिल हो रही हैं। अग्निवीर के पहले बैच की ट्रेनिंग शुरू हो गई है, जिसमें महिलाएं भी हैं। इस संबंध में कुछ अहम बिंदुओं पर ध्यान देने की जरूरत है।

- अमेरिकी नौसेना के दिवंगत सिद्धांतकार कैप्टन वेन ह्यूज (सेवानिवृत्त) हमें याद दिलाते हैं कि नौसेना के युद्ध भीषण और तीव्र होते हैं और अधिकतर लड़ाइयां उस फोर्स द्वारा जीती जाती हैं, जो जरा सी भी मजबूत स्थिति में हो।
- 'पर्याप्त सैन्यबल' या 'ह्यूमन कैपिटल' भी किसी फोर्स की स्थिति को मजबूत करता है।
- आज युद्ध पद्धति में आए तकनीकी बदलावों से पोत के ऑपरेशन रूम में बैठे-बैठे ही एक बटन दबाने मात्र से हजारों न सही, पर सैकड़ों मील की दूरी पर स्थित शत्रु पोतों पर मिसाइल से आक्रमण सुनिश्चित किया जा सकता है।
- नौसेना में पुरुष और महिला दोनों ही ऐसी तकनीक का उपयोग करने में दक्ष हैं। हथियार और उनका इस्तेमाल करने के तरीके बदल

चुके हैं और समय आ गया है, जब हम अपनी सोच को भी बदलें।

- मगर महिलाओं के अनियोजित गर्भ धारण जैसे उदाहरण देकर भारतीय नौसेना के शिप्स पर महिलाओं की तैनाती रोकने के प्रयास लंबे समय से हो रहे हैं।
- महिलाओं के प्रति इस पूर्वाग्रह को दूर करने की आवश्यकता है। इसीलिए नौसेना के शीर्ष-स्तर के नेतृत्व ने यह निर्णय लिया कि शिप्स पर महिलाओं को तैनात करने संबंधी विभिन्न मामलों की जांच करके उनके व्यावहारिक समाधान ढूँढे जाएं।

### नौसेना का अनुभव

नौसेना का पिछले 30 सालों का अनुभव इस बात का प्रमाण है कि महिलाओं ने अपनी सभी जिम्मेदारियां बड़े ही प्रफेशनल तरीके से और

बखूबी निभाई हैं। ध्यान रखना जरूरी है कि महिलाओं को बेहतर अवसर उपलब्ध न होने की स्थिति में नौसेना के चयन संबंधी विकल्प घटने की संभावना है। यही नहीं, राष्ट्र निर्माण में योगदान देने वाली राष्ट्र की 50 प्रतिशत जनशक्ति इससे वंचित होगी। समझना होगा कि 'विमिन ऑन शिप' आज समय की मांग है। इसे ध्यान में रखते हुए समान अवसरों का सृजन करना और एक जेंडर न्यूट्रल प्लीट के लिए पुरुषों एवं महिलाओं को न्यूट्रल एनवायरमेंट मुहैया कराना होगा। इसके साथ ही महिला वर्कफोर्स के टैलेंट को पूरी तरह से उपयोग में लाना होगा। भारतीय नौसेना ने सही दिशा में आगे बढ़ते हुए प्रभावी बढ़त हासिल करने की ओर कदम बढ़ा दिए हैं।

(लेखक नौसेना के अधिकारी हैं। लेख में व्यक्त विचार व्यक्तिगत हैं। ये भारतीय नौसेना और भारत सरकार का आधिकारिक रुख बयान नहीं करते)

*Opinion*

## A watershed moment for women in the navy

**T**he Indian Navy has allowed women to enrol in all of its wings and said women officers could volunteer for the elite marine commando forces. This is a landmark move because even if, in theory, it demolishes the notion that women are inferior fighters and cannot serve shoulder-to-shoulder with male counterparts at the toughest levels. The inclusion of women in the armed forces has been a remarkable, if laborious, journey spanning 30 years from 1992 — when the first trickle of women officers in auxiliary services began. At almost every stage, progress has come after nudges, and sometimes shoves, from the judiciary. It has taken dogged resistance and extraordinary courage from women officers to push authorities to override sometimes frivolous objections raised by superiors and peers and create physical infrastructure (washrooms, for example) to allow women to serve as equals. In this campaign, their inclusion in the special forces breaches an important psychological barrier. In allowing women officers to volunteer for a force that operates in the sea, air and land, conducts clandestine attacks against enemy warships, handles specialised diving operations, and surveillance and reconnaissance missions, the navy has sent the signal that there is no institutional bias against the entry of women soldiers.

Of course, more can be done. The special force assignment is based on volunteering, and the navy leadership must ensure that women don't battle hostile attitudes. The Indian Air Force also allowed women officers to join its special forces unit — the decision was taken last year but has come to light now — spotlighting how quickly attitudes on this critical issue are changing. It is a watershed moment.

*Mon, 12 Dec 2022*

## **Head to Head: India's Firepower Against China, Pakistan**

The Global Firepower Index is a ranking of all nations' military strength. Unlike counting the number of weapons a country has like SIPRI, the website gives a comprehensive ranking based on equipment, infrastructure and economic strength. The calculations used in the Global Firepower (GFP) analysis result from a complex algorithm considering fifty factors concurrently. They recommend considering the total number of military forces, the length of the coastline and other aspects of the situation.

Important considerations include the number of airports and their location within the country's heartland, where it will be difficult for the enemy to launch a surprise attack. This makes the number of airports a critical element. Consideration must also be given to the total distance covered by the railways. Everything is simple since transferring tanks and other large equipment by rail is much simpler. This makes everything quite uncomplicated. Not to discount either the state of the economy or the ability of the public to spend money. The number of individuals qualified to serve in the military and the possibility of a reserve is determined independently. In a word, the professionals at GFP considerably solve the problem, doing computations for each of the 142 countries worldwide.

Compared to possible adversaries, the United States is positioned in the first place by a significant margin. According to official data, the United States has 1957 combat aircraft, 783 attack aircraft, 5463 utility helicopters (military transport), and 910 battle-ready assault helicopters. However, regarding the number of ground forces, the United States came in second, although this did not affect the overall ranking. In America, there are a total of 6,612 tanks and 45,193 armoured vehicles of various types. Deliveries to Ukraine marginally decreased this number as Washington moved this honourable debt to Eastern European countries and allies. Analysts believe catastrophic damage to the United States military is only likely in the event of a one-time, unanswered nuclear storm that passes through vital military installations.

In second place is Russia, whose ammunition is largely based on the achievements of the Soviet military industrial complex. GFP analysts place the Russian Federation in second place in these and many other categories because of the lack of helicopter carriers in the Russian military, even though this did not influence the fleet's strength. However, if Russia ranks second in submarines, the number of minesweepers and corvettes is astounding, although the presence of a single aircraft carrier slightly skews the numbers. The Americans think the Russian Federation has more ground equipment than the United States, with up to 12,000 tanks alone. In terms of the number of aircraft, however, the failure rate is up to three times that of the United States. Russia possesses a total of 4,173 aircraft and helicopters. According to experts, Russia is actively devouring munitions; hence, the quantity may differ from that provided. Well, it is also important to note that the limited operation in Ukraine harms the Russian military's equipment. It is essential to commence manufacturing as soon as feasible because the quantity of available equipment is dwindling. The world is continually attempting to forecast how many missiles remain with Russia, but no one has good data yet.



China is in third place, but the Middle Kingdom is narrowing the gap with Russia, which may allow it to reach the second line of the list in the coming years. Examining the overall evaluation without delving into quantitative indications for tanks and other equipment will be fascinating. The Lesser the score, the stronger a country's military machine. So US: 0.0453; Russia: 0.0501; China: 0.0511. Inexplicably, India, which holds the fourth position, has an assessment of 0.0979, which indicates it is about 19 times weaker than China. Pakistan ranks ninth in the ranking, with an appraisal of 0.1572 and is logically about 16 times weaker than India.

China possesses 3285 military aircraft in total spread over its armed forces, while India has 2182 and Pakistan fields 1387. The figure includes both fixed wing and rotor aircraft. China fields 1200 fighter aircraft, and India has 564. Pakistan flies 357 fighter aircraft. In the Naval power category, China's flotilla includes 777 ships compared to 295 in the Indian fleet, and Pakistan has only 114 and is ranked 144th worldwide. China has the most military vessels worldwide, and India is ranked 8th. Ironically, Colombia, North Korea and Indonesia have more military vessels than India. Even Sri Lanka has 275 military ships. In the Tanks category, China and India rank 4th and 5th with 5250 and 4614 tanks. Pakistan ranks 11th with 2824 tanks. Regarding total security personnel, China has 2 million, and India has 1.45 million. For Pakistan, the figure is .64 million.

<https://www.financialexpress.com/defence/head-to-head-indias-firepower-against-china-pakistan/2910375/>

## FINANCIAL TIMES

*Mon, 12 Dec 2022*

### **Can India Build a Military Strong Enough to Deter China?**

Until the spring of 2020, China and India took elaborate precautions to avoid tensions along the shared northern border where they had fought a war almost six decades earlier. Soldiers along the Line of Actual Control, as India and China call the disputed border between the Indian territory of Ladakh and China's Tibet and Xinjiang provinces, would typically patrol unarmed, sometimes leaving cigarette packets or other local-language litter in the buffer zone to signal to the other side that they had been there. When patrols from the Indian Armed Forces and People's Liberation Army physically met, they would display banners warning the other side that they had encroached on their national territory, and ordering them to retreat. But in April and May 2020, Chinese troops broke this status quo when they cut off some of the Indians' traditional patrol routes in eastern Ladakh. Shouted arguments and fistfights escalated into soldiers attacking one another with clubs and stones. By the end of the clashes, 20 Indian soldiers and four Chinese soldiers were reported dead.

The clashes are still reverberating in New Delhi and analysts say future conflict between the world's two most populous countries cannot be ruled out. On Friday, the two sides had a "faceoff" on the north-eastern border resulting in minor injuries, according to a person familiar with the incident — the first since the confrontation over two years ago. The 2020 incident in the Galwan Valley acted as a wake-up call to India's military and civilian establishment about the risk of future, broader confrontation with China and its well-equipped armed forces — and the need to counter it. India also banned dozens of Chinese mobile apps, part of a drive to bolster its

defences in a rivalry Narendra Modi's government believes is being fought on the technological front too.

<https://www.ft.com/content/333aa07e-93ff-4e97-95c4-548bdccb5661>



*Mon, 12 Dec 2022*

## **Navy Chief to Visit Sri Lanka, Focus on Maritime Cooperation**

Amidst growing concerns in India over China's attempts to expand influence over Sri Lanka, Chief of the Indian Navy Admiral R Hari Kumar will begin a four-day visit to Sri Lanka starting December 13. The aim of the visit is to further strengthen overall bilateral maritime cooperation and other bilateral cooperation activities between the navies of both sides.

### **Importance of the visit**

According to the Indian Navy this visit would further enhance the bilateral defence cooperation between the two countries, especially the maritime domain.

### **Agenda in Sri Lanka**

During his three-day visit the Naval chief is the chief guest and reviewing officer for the Commissioning Parade at the Naval and Maritime Academy (NMA), Trincomalee, which is scheduled on December 15, 2022. Later he will interact with the top political as well as defence leadership of that country. He will also be visiting other defence establishments of the Sri Lanka Armed Forces. Earlier this month on Dec 3, 2022 during the annual press conference ahead of the Navy Day, the Naval Chief said in response to a question related to the visit of the Chinese spy ship to Sri Lanka that the Indian Navy was aware of the presence of Chinese ships in the region. "We keep a track of them."

### **Indian Navy & Sri Lanka**

There are regular interactions between the two navies through the medium of annual Staff Talks and also pursues several operational engagements. Also as has been reported the Indian Navy supports several capacity building measures of the Sri Lankan Navy including — indigenously constructed Offshore Patrol Vessels (OPVs); and earlier this year in August Indian Navy has deployed Dornier aircraft to Sri Lanka. Just two days ahead of a Chinese missile and satellite tracking ship 'Yuan Wang 5' docking in Sri Lanka's Hambantota port, Vice Chief of the Indian Navy Vice Admiral SN Ghormade had started his two day visit to that country to hand over a maritime surveillance aircraft. This aircraft was provided to Sri Lanka from the inventory of the Indian Navy. It has been deployed to Sri Lanka to meet its immediate security requirement.

Also, the navy is engaged in other capability enhancement projects like training of the Sri Lanka Navy personnel in India. Also navy of the island nation is a regular participant in different multilateral engagements which are hosted by the Indian Navy like the Goa Maritime Conclave, the MILAN exercise, Admiral's Cup Sailing Regatta, among other activities. It was during the

Defence Dialogue between the two countries back in 2018, that Sri Lanka to enhance its maritime surveillance capabilities had had sought the possibility of getting two Dornier Reconnaissance Aircraft from India. The aircraft that has been handed over to Sri Lanka will be flown and maintained by 15 Sri Lanka Air Force (SLAF) crew who have undergone training in India for four months. And they will be supervised by an Indian technical team attached to the SLAF.

<https://www.financialexpress.com/defence/navy-chief-to-visit-sri-lanka-focus-on-maritime-cooperation/2910589/>



*Tue, 13 Dec 2022*

## **India, Canada Mins Review Bilateral Ties**

India and Canada on Monday reviewed the entire spectrum of their bilateral ties with the focus on possible areas of cooperation between the two countries in the Indo-Pacific in the backdrop of China adopting an aggressive stance there. External Affairs Minister S Jaishankar and his Canadian counterpart Melanie Joly discussed these issues in a telephonic conversation. The telephonic conversation took place two weeks after Canada came out with a comprehensive strategy for the Indo-Pacific that aimed to promote peace, resilience and security while listing challenges emanating from China's aggressive behaviour in the region. "Good to talk to Canadian FM @melaniejoly. Spoke about enhancing our bilateral cooperation and promoting people to people ties. Also exchanged views on the Indo-Pacific and how Canada's new strategy can contribute to our relationship," Jaishankar tweeted.

Canada's Indo-Pacific strategy also listed India as a key player in the region and said Ottawa will focus on expanding economic engagement with New Delhi including through deeper trade and investment, as well as cooperating on building resilient supply chains "India's strategic importance and leadership — both across region and globally — will only increase as India, the world's biggest democracy, becomes the most populous country in the world and continues to grow its economy," the Canadian policy mentioned. "Canada will seek new opportunities to partner and engage in dialogue in areas of common interest and values, including security, and the promotion of democracy, pluralism and human rights," it said. In a tweet, Joly said, "we discussed our new Indo-Pacific Strategy and how we plan to work together to strengthen our people-to-people ties and advance our shared interests as India chairs the G20 next year."

Canada's Indo-Pacific strategy also mentioned concerns over China's growing assertive behaviour. "China has benefitted from the rules-based international order to grow and prosper, but it is now actively seeking to reinterpret these rules to gain greater advantage," it said. "China's assertive pursuit of its economic and security interests, advancement of unilateral claims, foreign interference and increasingly coercive treatment of other countries and economies have significant implications in the region, in Canada and around the world," it noted. The policy framework further said respect for the sovereignty of other states is a cornerstone of the rules-based international order and of governments' ability to work together to solve shared problems.

<https://www.dailypioneer.com/2022/india/india--canada-mins-review-bilateral-ties.html>

# अमर उजाला

सोमवार, 12 दिसंबर 2022

## जयशंकर बोले- यूक्रेन संघर्ष से बने हालात से विकास प्रभावित, उबरने में भारत की अहम भूमिका

विदेश मंत्री एस जयशंकर ने कहा कि भारत और यूएई दो ऐसे देश हैं जो बहुत सहज हैं, जो एक-दूसरे को लंबे समय से जानते हैं और जो आज इस रिश्ते का उपयोग बदलती दुनिया में करना चाहते हैं। इन संबंधों का उपयोग न केवल बदलती दुनिया में जीवित रहने के लिए, बल्कि बदलती दुनिया को आकार देने के लिए भी किया जा रहा है। भारतीय विदेश मंत्री एस जयशंकर ने एक बार फिर रूस और यूक्रेन के बीच चल रही जंग पर विराम की वकालत की है। अबू धाबी में आयोजित भारत-यूएई संबंधों पर ग्लोबल फोरम पैनल में बोलते हुए उन्होंने सोमवार को कहा कि यूक्रेन में युद्ध जैसे संघर्षों के इर्द-गिर्द दुनिया बहुत तेजी से विभाजित हो रही है। ऐसे में भारत एक सेतु की भूमिका निभा सकता है। वहीं, संयुक्त अरब अमीरात के राष्ट्रपति के राजनयिक सलाहकार डॉ अनवर मोहम्मद गर्गश ने भी यूक्रेन में संघर्ष के त्वरित अंत की अपील की है।

भारत-यूएई संबंधों पर ग्लोबल फोरम पैनल में बोलते हुए एस जयशंकर ने वर्तमान में दुनिया में हो रहे दो बड़े विभाजनों पर भी जोर दिया। उन्होंने कहा कि एक पूर्व-पश्चिम विभाजन है जो यूक्रेन के आसपास केंद्रित है और दूसरा विकास के आसपास केंद्रित उत्तर-दक्षिण का विभाजन है। रूस-यूक्रेन संघर्ष का असर इस सब पर पड़ रहा है। उन्होंने आगे कहा कि यूक्रेन का भी विकास पर प्रभाव पड़ रहा है। मेरा मानना है कि इस स्थिति को बदलने के लिए भारत जैसा देश अकेले नहीं बल्कि संयुक्त अरब अमीरात जैसे अन्य देशों के साथ मिलकर प्रभावी भूमिका निभा सकता है। उन्होंने आगे कहा कि आज पुल बनाने की जरूरत है। विदेश मंत्री एस जयशंकर ने कहा कि भारत और यूएई दो ऐसे देश हैं जो बहुत सहज हैं, जो एक-दूसरे को लंबे समय से जानते हैं और जो आज इस रिश्ते का उपयोग बदलती दुनिया में करना चाहते हैं। इन संबंधों का उपयोग न केवल बदलती दुनिया में जीवित रहने के लिए, बल्कि बदलती दुनिया को आकार देने के लिए भी किया जा रहा है।

इस दौरान संयुक्त अरब अमीरात के राष्ट्रपति के राजनयिक सलाहकार डॉ अनवर मोहम्मद गर्गश ने भी रूस-यूक्रेन संघर्ष के शीघ्र समापन पर जोर दिया। उन्होंने कहा कि दोनों देशों के बीच की जंग राजनीतिक रूप से समाप्त नहीं होगा। यह हमारे हित में है कि इस संघर्ष को समाप्त करने वाली राजनीतिक प्रक्रिया सुनिश्चित की जाए। गौरतलब है कि 24 फरवरी से यूक्रेन के खिलाफ रूस ने एक विशेष सैन्य अभियान

शुरू किया था। अमेरिका समेत अधिकतर पश्चिमी देशों ने रूस की इस कार्रवाई की ना केवल बड़े पैमाने पर आलोचना की थी बल्कि कई कड़े प्रतिबंध भी लगा दिए थे।

### न्यूयॉर्क का दौरा करेंगे विदेश मंत्री जयशंकर

इस बीच, विदेश मंत्रालय ने विदेश मंत्री डॉ. एस जयशंकर को लेकर बड़ी जानकारी दी है। मंत्रालय ने बताया कि एस जयशंकर 14 और 15 दिसंबर को संयुक्त राष्ट्र सुरक्षा परिषद की भारत की वर्तमान अध्यक्षता के दो उच्च-स्तरीय मंत्रिस्तरीय हस्ताक्षर कार्यक्रमों की अध्यक्षता करने के लिए न्यूयॉर्क का दौरा करेंगे।

<https://www.amarujala.com/world/s-jaishankar-says-india-can-play-bridging-role-in-divides-caused-by-conflicts-such-as-ukraine>

## ThePrint

Mon, 12 Dec 2022

### Ukraine Conflict Impacting Development, India can Play Bridging Role: Jaishankar

India and other countries can play a bridging role amid the divisions created between North-South over development which Ukraine impacts, External Affairs Minister S Jaishankar said. “We have two big divides today. One you could say that the kind of East-West divide centring around grain, and one is the North-South divide centring around development and Ukraine is also having an impact on the development,” Jaishankar said while addressing the India Global Forum and panel discussion on India-UAE ties in Dubai. “I do believe a country like India can play that bridging role, not alone. I think UAE for example, can in a sense and has also been doing something so like some other countries. But there is a need today to bridge,” he added.

In the panel discussion, Diplomatic Advisor to UAE President, Anwar Mohammed Gargash joined Jaishankar and said that they also wanted to end the conflict in Ukraine quickly. “I think we all want to see a quick end to the conflict in Ukraine and we all also believe that this conflict will not end except political process. I think in our interest to make sure that there is a political process that ends this conflict,” Gargash said during the discussion. Since the beginning of the conflict in Ukraine, India has consistently called for an immediate cessation of hostilities and an end to the violence. India has called upon both sides to return to the path of diplomacy and dialogue and expressed its support for all diplomatic efforts to end the conflict. Earlier, in September, Indian Ambassador to Ukraine Harsh Kumar Jain on Monday handed over 7,725 kilograms of humanitarian aid to Deputy Minister of Health Oleksii Yaremenko for the people of Ukraine. The 7,725 kilograms of aid comprised essential medicines and medical equipment.

“Newly appointed Amb @IndiainUkraine Harsh Kumar Jain handed over 7,725 kg of humanitarian aid comprising of essential medicines and medical equipment to H.E Oleksii Yaremenko, Deputy Minister of Health of #Ukraine in-charge of Humanitarian Aid and EU Integration,” India in Ukraine tweeted. India sent the first tranche of humanitarian assistance to Ukraine in March. Meanwhile, in November while addressing the UN General Assembly, India said that it remains “concerned” over the situation in Ukraine even as it abstained on a draft

resolution calling for Russia to be held accountable for violations of international law by its invasion of Ukraine.

Addressing the 11th Emergency Special Session of the UNGA, Ruchira Kamboj, India's Permanent Representative to the United Nations in an explanation of India's vote said that India has called for efforts for an immediate cessation of hostilities and returning to the path of dialogue and diplomacy. India's permanent representative to the UN said that global order based on international law, the UN charter and respect for territorial integrity and sovereignty must be upheld. Ruchira Kamboj said that they need to consider whether a reparation process through a vote in the General Assembly will contribute to efforts at a resolution of the conflict.

<https://theprint.in/world/ukraine-conflict-impacting-development-india-can-play-bridging-role-jaishankar/1262533/>

# ThePrint

*Mon, 12 Dec 2022*

## **Fighting Rages in East Ukraine, West Eyes More Sanctions on Russia**

Russian forces pounded targets in eastern and southern Ukraine with missiles, drones and artillery, Ukraine's General Staff said on Monday, while millions remained without power in subzero temperatures after further strikes on key infrastructure. In a flurry of weekend diplomacy, Ukraine's President Volodymyr Zelenskiy spoke with the leaders of the United States, France and Turkey ahead of planned Group of Seven (G7) and EU meetings on Monday that could agree further sanctions on Russia. There are no peace talks and no end in sight to the deadliest conflict in Europe since World War Two, which Moscow describes as a "special military operation" and Ukraine and its allies call an unprovoked act of aggression.

Russia does not yet see a "constructive" approach from the United States on the Ukraine conflict, RIA news agency quoted Deputy Foreign Minister Sergei Vershinin as saying on Monday. The two countries have held a series of contacts in Turkey. U.S. President Joe Biden told Zelenskiy during a call on Sunday that Washington was prioritising efforts to boost Ukraine's air defences, the White House said. Zelenskiy said he had thanked Biden for the "unprecedented defence and financial" help the United States has provided. On the ground in Ukraine, the Black Sea port of Odesa on Monday resumed operations that had been suspended after Russia used Iranian-made drones on Saturday to hit two energy facilities. Power is slowly being restored to some 1.5 million people, officials said. Zelenskiy said other areas experiencing "very difficult" conditions with power supplies included the capital Kyiv and Kyiv region and four regions in western Ukraine and Dnipropetrovsk region in the centre of the country. There were no reports of fresh strikes or blackouts overnight into Monday.

### **Heavy Fighting**

In its daily update on the military situation around the country, Ukraine's General Staff said its forces had repelled Russian assaults on four settlements in the eastern Donetsk region and on eight settlements in the adjacent Luhansk region. Russia kept up its attacks on Bakhmut, which is

now largely in ruins, Avdiivka, and Lyman, and launched two missile strikes against civilian infrastructure in Kostyantynivka, all in the Donetsk region – one of four that Moscow claims to have annexed from Ukraine after “referendums” branded illegal by Kyiv. Elsewhere, Russian forces carried out more than 60 attacks from rocket salvo systems targeting the civilian infrastructure in Kherson, the southern city liberated by Ukrainian forces last month, and Ukrainian troops based there, the General Staff said.

Russia also shelled settlements along the Zaporizhzhia frontline in southern central Ukraine, it said, while Ukrainian forces hit Russian control points, munitions warehouses and other targets.

## **Sanctions**

On the diplomatic front, European Union foreign ministers were due to discuss a ninth package of sanctions on Russia over its invasion of Ukraine that would place almost 200 more individuals and entities on the EU sanctions list. However EU foreign policy chief Josep Borrell stressed there was still no agreement on the package at this stage, adding that he hoped that could come later on Monday or on Tuesday. The ministers will also discuss an additional 2 billion euros (\$2.11 billion) worth of arms deliveries to Ukraine.

Separately, Germany’s Chancellor Otto Scholz will hold an online meeting with other G7 leaders on Monday about the situation in Ukraine that Zelenskiy is also expected to address. Scholz is set to give a news conference afterwards at 1630 GMT. “We are constantly working with partners,” Zelenskiy said on Sunday after talking to Biden, France’s Emmanuel Macron and Turkey’s Tayyip Erdogan, adding that he expects some “important results” from the upcoming international meetings on Ukraine. U.S. Treasury Secretary Janet Yellen told CBS’s “60 Minutes” Washington’s support for Ukraine’s military and economy – more than \$50 billion and counting – would continue “for as long as it takes” and reiterated that ending the war was the single best thing the United States could do for the global economy. Zelenskiy said he had held “very specific” talks with Erdogan on assuring Ukraine’s grain exports.

Turkey, which acted as a mediator in peace talks in the early months of the war, also worked alongside the United Nations in a grain deal, which opened up Ukrainian ports for exports in July after a six-month de facto Russian blockade. Erdogan’s office said the Turkish leader also had a call with Russian President Vladimir Putin on Sunday, in which he had called for a quick end to the conflict. Putin said last week that Moscow’s near-total loss of trust in the West would make an eventual settlement over Ukraine much harder to reach and warned of a protracted war. Moscow shows no signs of being ready to respect Ukraine’s sovereignty and pre-war borders, saying the four regions it claims to have annexed from Ukraine in September are part of Russia “forever”. The government in Kyiv has ruled out conceding any land to Russia in return for peace.

<https://theprint.in/world/fighting-rages-in-east-ukraine-west-eyes-more-sanctions-on-russia/1261553/>

## **G7 Considers More Air Defence for Ukraine as Fighting Rages**

Russian missiles, artillery and drones hammered targets in eastern and southern Ukraine, the Ukrainian General Staff said, as global economic powers pledged to beef up Kyiv's military capabilities with a focus on air defence. The Group of Seven promised to "meet Ukraine's urgent requirements" after President Volodymyr Zelenskiy appealed for modern tanks, artillery and long-range weapons to counter Russia's devastating invasion. Zelenskiy also urged G7 leaders gathered at a virtual meeting to support his idea of convening a special Global Peace Summit dedicated to bringing peace to his country. The summit would be focused on the implementation of Kyiv's 10-point peace plan that insists on, among other things, Russia's withdrawal of all its troops from Ukraine and no territorial concessions on Kyiv's part.

British Defence Minister Ben Wallace said on Monday he would be "open minded" about supplying Ukraine with longer-range missiles to target launch sites for Russian drones that have hit infrastructure if Russia carried on targeting civilian areas. U.S. President Joe Biden told Zelenskiy on Sunday that Washington's priority was to boost Ukraine's air defences. Moscow has denied targeting civilians but the war has displaced millions and killed thousands of non-combatants. Jan Egeland, head of the Norwegian Refugee Council, said "unliveable conditions" were likely to send another wave of hundreds of thousands of Ukrainian refugees into Europe over the winter. In the latest fighting, Russian artillery hammered nearly 20 settlements around the ruined eastern city of Bakhmut, and there was "massive shelling" of the southern city Kherson which was liberated by Ukrainian forces last month, Ukrainian military and civilian officials said on Monday.

### **Energy Crisis**

Zelenskiy also appealed to G7 leaders to help Ukraine obtain an extra 2 billion cubic metres of natural gas in light of dire energy shortages as millions languish without power in subzero cold. Sergey Kovalenko, the head of YASNO, which provides electricity to Kyiv, said on his Facebook page that the limitation to power consumption in the capital remained significant. Ukraine's Black Sea port of Odesa on Monday resumed operations suspended after Russia used Iranian-made drones to hit two energy plants two days earlier. Power is slowly being restored to some 1.5 million people, grid operator Ukrenergo said.

Separately, European Union foreign ministers agreed to put 2 billion euros (\$2.1 billion) more into a fund that has been used to pay for military support for Ukraine, after it was largely depleted. More money may be added in the future. There are no peace talks and no end in sight to the conflict, the biggest in Europe since World War Two, and which Moscow describes as a "special military operation" against security threats posed by its neighbour. Ukraine and its Western allies call it an unprovoked, imperialist land grab. Russia does not yet see a "constructive" approach from the United States on the Ukraine conflict, RIA news agency quoted Deputy Foreign Minister Sergei Vershinin as saying on Monday.



## Heavy Fighting

Against a backdrop of setbacks for Russian forces, President Vladimir Putin will not hold his annual televised year-end news conference this month, an event he has used to showcase his command of issues and stamina. Ukraine has said Russian forces are suffering huge losses in brutal dug-in warfare on the eastern front, where Moscow is battling to take full control of the Donetsk and Luhansk regions, two of four territories the Kremlin claims to have annexed in votes rejected by most countries as illegal. A senior U.S. military official said Russia was burning through so much ammunition that it was using 40-year-old rounds with high failure rates. The fighting is also exacting a serious toll on Ukrainian troops.

"There are days when there are many heavily wounded: four or five amputations at once," Oleksii, a 35-year-old army doctor who declined to give his full name, told Reuters at a military hospital in eastern Ukraine. There were unverified reports on social media of an attack on a bridge behind the front lines in the Russian-occupied city of Melitopol, seen as vital to Russia's defence of territory it holds in the south, including Crimea. Vladimir Rogov, a Russian-installed official in Zaporizhzhia region, shared video on his Telegram channel of what he said was the bridge and blamed Ukrainian "terrorists" for the damage. Ivan Fedorov, the exiled mayor of Melitopol, also shared video showing damage to what appeared to be the same bridge.

<https://www.reuters.com/world/zelenskis-talks-with-other-leaders-signal-diplomatic-flurry-around-ukraine-2022-12-11/>



*Tue, 13 Dec 2022*

## Ukraine Failed to Submit Any Proof of Russia Using Iranian Drones in its Military Ops – Defense Minister

*By Tanmay Kadam*

Kyiv has failed to furnish any evidence that Russia was using Iranian drones in Ukraine, Iranian Defense Minister Mohammad-Reza Ashtiani said on Monday. In November, Iran's permanent mission to the United Nations requested a joint expert meeting with Kyiv on the issue of alleged supplies of Iranian drones to Russia to be used for strikes against Ukrainian targets. Ukraine didn't show any documents that would prove the use of Iranian drones by Russia in the conflict during the meeting of Ukrainian and Iranian experts, the minister said in a statement posted on the government's social media. Iran and Russia have long been cooperating in the military field but have never interacted on the issue of drone supply during Russia's special operation in Ukraine, Ashtiani added. Western countries have repeatedly accused Iran of supplying combat drones to Russia for the latter's special military operation in Ukraine. No concrete evidence has been presented yet, with both Moscow and Tehran denying the allegations as false.

On October 21, France, the United Kingdom and Germany asked the UN to investigate the implementation of the UN Security Council Resolution 2231 endorsing the Joint Comprehensive Plan of Action on Iran's nuclear program. The resolution, among other things, prohibits Tehran from selling certain types of items able to "contribute to the development of nuclear weapon

delivery systems” without prior approval from the UN. France, the UK and Germany believe that Iranian drones fall under this rule, but Tehran insists it is not the case. Russian Foreign Minister Sergey Lavrov said that Moscow and Tehran gave “exhaustive explanations” to the UN Security Council on the alleged use of Iranian drones in Ukraine. Russia and Iran also maintain that the possible UN investigation into the case is “illegal” as the UN has no mandate to conduct it.

### **Russia Is Burning Its Weapons Fast**

The speed at which Russia is burning its ammunition in Ukraine exceeds the ability of its defense industry to produce it. This was stated by the Director of National Intelligence of the United States, Avril Haines. At the same time, according to her, Russia uses precision-guided munitions even faster than conventional ones. Russia is using up ammunition “quite quickly,” driving the Kremlin to look at other nations for help, Haines told NBC News. “And our own sense is that they are not capable of indigenously producing what they are expending at this stage. So that is going to be a challenge.” The US recently claimed that Russia was firing a stupendous 20,000 artillery rounds a day, even as it has suffered a series of setbacks on the battlefield. Earlier, Ukraine’s Defense Minister Oleksii Reznikov said that there are four enemies of Russia’s missile arsenal while suggesting that the country is running low on missiles.

“Four enemies of the Russian missile arsenal: brilliant Ukrainian air defense forces; inept Russian missile forces; sanctions; time,” Reznikov said in a tweet on November 22, as he shared an illustration showing Russia’s high-precision missile arsenal as of November 18. “Let’s demilitarize the terrorist state to live in peace!” the Ukrainian defense minister continued. As per the illustration shared by Reznikov, as of November 18, Russia is left with 8,476 missiles out of its pre-war stockpile of 11,227, which includes ground-launched, sea-launched, and air-launched missiles. Notably, these 8,476 missiles also include the additional 664 missiles produced by the Russian defense industry since the war in Ukraine began in February. In October, the Chief of the Ukrainian Ministry of Defense’s Main Directorate of Intelligence told Ukrainian Pravda that just 13% of Russia’s Iskander ballistic missiles were left. “About 13% remains for Iskanders, about 43% for Kalibr-PL, Kalibr-NK missiles, and about 45% for Kh-101 and Kh-555 missiles. It is generally hazardous to fall below 30% because it already goes to NZ [intact reserve],” Budanov said.

### **Kremlin Acknowledges the Crisis**

In a rare occurrence, Kremlin also admitted in late October the problems faced by the Russian Army with the supply of equipment for its conscripted soldiers after President Vladimir Putin’s partial mobilization order, which according to Russian officials, would affect around 300,000 reservists. “Indeed, there were problems with the equipment, including some of them still exist, although the vigorous measures taken to rectify the situation are already yielding the first positive results,” said Kremlin spokesperson Dmitry Peskov.

Peskov said that Coordination Council created by President Putin on October 20 was working on addressing the situation and recalled that the President had held a meeting with the council members on October 25. “Now, we are also faced with the need to speed up resolution of the issues related to the provision of a special military operation and related to the fight against those restrictions in the economic sphere that we have encountered,” Putin said while speaking at the first meeting of the newly formed Coordination Council. In addition, the Russian government has been taking specific measures to replenish its diminishing missile stockpile.

For instance, two missile plants have revamped their operations since May significantly. First is the Novator plant that produces missiles for Iskander and Buk systems, Kalibr missiles, and several ship-based missiles. The plant is said to have received additional funds and has reportedly worked round the clock in three shifts. It is known to produce around 100-120 Kalibr units per year and several dozen cruise missiles for the Iskandersystem. Nevertheless, the factory is struggling to increase production volume, as it would require additional engineers, mechanics, and other technical workers. The second is the Votkinsk Plant which manufactures ballistic missiles for the Iskander and Yarssystem,s and the Bulava ballistic missiles for Russia's Borei-class nuclear submarines. In 2020, the plant adopted a four-day per week schedule, laying off employees of retirement age and employees of subsidiaries, but in March, it was reported that the company had opened up 500 additional vacancies. The company is said to have increased its production to around 60 missiles from about 50 a year earlier. Meanwhile, Kyiv's Western partners are not without problems either, as they face a similar situation where the war in Ukraine is eating into their inventories of weapons. Soon, this could jeopardize their readiness levels. "I think everyone is now sufficiently worried," a NATO official told Foreign Policy earlier this month, on condition of anonymity, while adding that allies had called on Western defense contractors to increase their production in light of the war. "The relevance of stockpiling is back." The official said that NATO is debating how to support members if their stockpiles reach levels below the threshold necessary to fulfill their defense obligations under the North Atlantic Treaty. As EurAsian Times reported in late October, the Ukraine war is causing severe depletion of US weapons stockpiles, with the country's defense industry struggling to fulfill Washington's commitments to Kyiv while at the same time jeopardizing US security.

Experts note that the US weapons stockpiles are reaching the minimum levels needed for war plans and training, raising concerns about the country's ability to respond if another conflict breaks out. For example, the US is running low on the HIMARS (High Mobility Artillery Rocket System). While the Biden administration has promised to supply around 40 HIMARS units to Ukraine, only half have been delivered to the war-ravaged country thus far. A senior US official said the rest would likely not be delivered for a few years. Likewise, the US sent one-third of its Javelin anti-tank missiles to Ukraine, which played an instrumental role in keeping the Russian forces from occupying Kyiv in the early weeks of the Ukraine war. However, the US government cannot easily send more Javelins to Ukraine without severely depleting its armories. It may take months or even years to ramp up production and restock the weapons significantly.

James Taiclet, the CEO of Lockheed Martin, which produces Javelin and HIMARS, said on October 18 that the company would increase production of HIMARS up to 96 units per year from 60, but it will take years to reach that number. The American defense industry, as of present, is intended for peacetime production and is unable to produce equipment at wartime rates. One of the significant factors behind this is the dwindling demand for equipment from the US Military after the end of the Cold War. In the 1960s, when the US was engaged in an arms race with the Soviet Union, the country's defense spending accounted for over 9% of its GDP, which came down significantly to around 5% in the 1990s before ultimately falling to 3% in 2020. A substantial defense budget is allocated for manpower, health care, etc.

Overall, the US and NATO countries are urging their respective defense industries to ramp up production. "We pushed to galvanize our industrial bases to fire up production for the systems to defend Ukraine, even while meeting our own security needs," US Defense Secretary Lloyd Austin told reporters on October 12, after the meeting of around 50 global defense chiefs in

Brussels. However, the defense contractors have been hesitating to play ball, as they need assurances that the demand for increased arms will not dwindle after the war in Ukraine is over. "Their fear is that the war will end and the orders will end, and they will end up with these expanded factories that don't have any orders to fill them," said Mark Cancian, who headed Pentagon's force structure and investment division until 2015. The Ukrainian military has also begun experiencing a shortage of primary weapons such as light arms and shoulder-fired missile systems like Stingers, Javelins, and the British- and Swedish-made next-generation light anti-tank weapons system, NLAW.

Furthermore, Ukraine has also reportedly run out of its Soviet-standard artillery ammunition, which forms around 60% of the country's arsenal, forcing the Ukrainian military to use more NATO-standard artillery that cannot be produced at a rate necessary to sustain the war.

<https://eurasianimes.com/ukraine-fails-to-submit-any-proof-of-russia-using-iranian-drones/>



Sat, 10 Dec 2022

## **MQ-9 Reaper Drones for Ukraine? US Air Force Keen to Dispatch 'Combat Proven' UAVs to Kyiv; Pentagon Unsure**

*By Tanmay Kadam*

The USAF has been trying to phase out the older version of its Reaper drones for years to free up its budget for acquiring more capable unmanned aerial capabilities that have now become available to the service. However, the US Congress has been declining the service's repeated requests. A month after Russia invaded Ukraine in February, the service proposed to provide its older Reaper drones to Ukrainian forces. However, there have been concerns that the sensitive technology of these drones could fall into the hands of Russians, considering some drones would almost certainly be shot down. For example, the Turkish-made Bayraktar drones, which were instrumental in destroying Russian armored columns and troops marching toward the capital Kyiv in the initial months of the war, became less effective from June onward, when the war shifted to the eastern Donbas region that was well protected by Russian air defenses. These concerns have reportedly caused a months-long stalemate between the Pentagon and the US Air Force, according to four unnamed officials familiar with the matter cited by Politico.

### **Ukrainians Frustrated**

The MQ-9 Reaper and the MQ-1C Gray Eagle used by the US Army have been on Ukraine's top priority requests. Both these drones offer long-range surveillance and strike capability, essential for Ukrainian forces, as they press on the well-defended Russian frontlines in Donbas and the left (eastern) bank of the Dnipro River in Kherson. The Ukrainians, who have been requesting long-range weaponry from Washington for months, are reportedly frustrated by Pentagon's indecision even after having pledged to use the donated drones to attack only Russian positions inside Ukraine and promising to share targeting information with the US before launching strikes.

However, the concerns are mainly about the sensitive technology inside these drones getting stolen and not as much about escalation because other controversial systems like HIMARS

Multiple Launch Rocket System (MLRS) have been approved after Ukraine pledged to use them only against targets within its borders. Nevertheless, the drones are not off the table, as the Pentagon and the manufacturer of these two drones, General Atomics, are trying to make one or both drones transferable to Ukraine. General Atomics executives have been in touch with Ukrainian officials for months, attempting to agree on technology transfers that would comply with US rules and concerns.

### **US Considering Supplying Gray Eagle Drones**

As EurAsian Times reported in November, the US is considering supplying Ukraine with a downgraded version of its cutting-edge Gray Eagle MQ-1Cs to keep the American tech secrets from falling into Russian hands. The US Army is reportedly leading the efforts to explore what modifications can be made to the Gray Eagle drones so that even if some of them are lost, there is less risk of disclosing sensitive technology, thereby possibly increasing the chances of Ukraine receiving them. While it is unclear yet what technology onboard the Gray Eagle is the most sensitive, experts suggest the technology in question is most probably related to the imaging and intelligence-gathering capabilities and sensors. The Pentagon is concerned about a Raytheon Technologies-made electro-optical/infrared ball on the Gray Eagle drone, known as the Multi-Spectral Targeting System (MSTS). This electro-optical/infrared ball provides its operators with real-time intelligence, targeting, and tracking.

### **US Legislators Urging The Biden Administration To Provide Ukraine With Drones**

Meanwhile, American lawmakers are also trying to pressure the US administration to provide Ukraine with Reaper and Gray Eagle drones. Republican Congressman Kenneth Stanton Calvert from California, who is also a ranking member of the House Appropriations defense subcommittee, and whose district is near General Atomics headquarters, said that the USAF had initially signed off on sending MQ-9s to Ukraine. However, the leadership has not “bought into” the idea. “We ought to be able to put in the MQ-9 Reaper and Gray Eagles that would help change the course of this war,” Calvert said in an interview. Calvert is also urging to start training the Ukrainian forces to operate the Reapers and Gray Eagles ahead of the Biden administration’s decision because if the decision to send the drones is made, it could take three to four months to train new users.

Apart from that, a bipartisan group of 16 senators, led by Joni Ernst, a Republican from Iowa, and Joe Manchin, a Democrat from West Virginia, urged the US Defense Secretary Lloyd Austin in a letter dated November 22 to answer a series of questions on transferring the Gray Eagle since the drone is Ukraine’s “highest priority” military transfer request. Joni publicly argued with the US Army secretary Christine Wormuth who expressed concerns about the survivability of Grey Eagles in a contested air environment at the Reagan National Defense Forum held last week in California. On the same panel, Joni dismissed those concerns and showed little apprehension over the transfer of sensitive technology. “If they’re using an S-300 to shoot down a Gray Eagle, that allows us to target that S-300. We can outfit a Gray Eagle with technology already being used in 30 other countries,” Joni said. The senator from Iowa connected the drone issue to the Biden administration’s refusal to provide Ukraine with long-range weapons that could strike deep inside Russia. “We should be pounding the bloody hell of the Russians, through the Ukrainians, so that they can’t pop their heads up and come back in five to 10 years,” Joni said.

<https://eurasianimes.com/mq-9-reaper-drones-for-ukraine-us-air-force-keen-to-dispatch/?amp>

*Mon, 12 Dec 2022*

## **China's Relentless Military Build-Up Comes Under Scrutiny**

The US Pentagon released its annual report dissecting developments within China's military, the People's Liberation Army (PLA). The report obviously struck a raw nerve, because the Chinese government responded harshly to its publication. Beijing warned that it was "strongly dissatisfied with and firmly opposed" to the American publication. Indeed, Chinese Ministry of National Defense (MND) spokesperson Senior Colonel Tan Kefei evocatively alleged that the report was "distorting China's national defence policy and military strategy, groundlessly speculating about China's military development, and grossly interfering in China's internal affairs on the Taiwan question".

The newest edition, called 2022 Report on Military and Security Developments Involving the People's Republic of China, contained some startling updates since the previous one published 13 months earlier. The most staggering is China's open-armed embrace of nuclear weapons. Currently it has an estimated 400 nuclear warheads, but the US Department of Defense (DoD) predicted it will have 1,500 warheads by 2035. Along the way, the PLA will triple its nuclear warhead stockpile in the space of just a decade. To put this in perspective, in its 2020 report the USA assessed that quantities of Chinese nuclear warheads were in the low 200s. By comparison, the USA has 3,750 nuclear warheads. A senior Pentagon official explained: "They're going from what was often characterized as a minimum set of deterrence capabilities to one that's much more sophisticated in scope and also larger in size. So they're now kind of getting into the range of the middle nuclear powers here."

President Joe Biden's administration released its National Security Strategy in October, and it warned that the USA will simultaneously face "two major nuclear powers as strategic competitors and potential adversaries", a reference to Russia and China. Hans Kristensen, Director of the Nuclear Information Project at the Federation of American Scientists, commented: "The DoD projects the Chinese stockpile could increase to 1,500 warheads in 2035. [The] basis for projection is vague and uncertain, but largely seems to assume last year's increase continues halfway through the next decade." He added: "The report says China now has about 300 intercontinental ballistic missiles (ICBM), a significant increase compared with the roughly 100 mentioned in last year's report. That seems to indicate that at least some of the new silos might be operational." Kristensen was referring to several missile silo fields deep inside China, where approximately 300 ICBM silos have been under construction. The site at Hami is listed as having 110 silos, Yumen with 119, Yulin possessing 71 and the Jilantai training field with 15 silos.

A new assertion is that these silos are capable of launching both DF-31 and DF-41 ICBMs. Kristensen also pointed out: "Despite rumors about the new DF-41 ICBM carrying ten warheads, the DoD report says the missile 'is likely intended to carry no more than three warheads', which matches our estimate from 2021." It seems that the Pentagon is now counting some, but not all, silos as "deployed launchers". Next year's ICBM total should be up, in the 400-450 range, as more silos get completed. Decker Eveleth, an American graduate research assistant who discovered the first Chinese ICBM silo field using open-source satellite imagery, concluded this

about the ICBM figure in the 2022 report: "This assessment probably depends on an aggressive interpretation of what they're going to do with the silos. Could absolutely be true, could be inflated."

Eveleth continued: "It's true that China has been expanding its capability to assemble nuclear weapons - they've built several shiny new facilities lately - and it's likely that there is a rapid expansion in warheads happening. But I'd caution that we have several historical examples of the number of warheads a state constructs having very little to do with their launchers or military capability, and focusing on warhead estimates tells you very little about a state's actual nuclear capability or posture." The US military recently claimed that the PLA Navy (PLAN) has already outfitted its six Type 094 nuclear-powered ballistic missile (SSBN) submarines with JL-3 submarine-launched ballistic missiles.

Kristensen commented on the report's findings: "Big news is that China appears to have begun SSBN patrols at sea with warheads onboard. The report is ambivalent: "is conducting continuous at-sea deterrence patrols" or "likely began near-continuous at-sea deterrence patrols..." Still, the claim that SSBNs can target the continental US seems a stretch." The number of intermediate-range ballistic missiles (i.e. the DF-26) is now 250. The DF-26 is seen as the most likely Chinese missile to carry a lower-yield nuclear weapon for use against campaign and tactical targets, such as aircraft carriers. Interestingly, numbers in the medium-range ballistic missile category are up too, presumably due to rapid inventory expansion of the DF-17 that carries a hypersonic warhead. The DF-17 seems to be replacing some short-range ballistic missiles even, with the latter group dropping from 250 to 200.

This reduction should not be construed as a drop in capability, however. The PLA Ground Force has accurate rockets like the PHL-16 that can reach hundreds of kilometers and be rapidly fired en masse. Furthermore, retired missiles can probably still be hauled out as reserves in any conflict. The report mentioned the mysterious 27 July 2021 fractional orbital test of a Chinese ICBM with hypersonic glide vehicle. The warhead reportedly "came close" to hitting its target after flying 40,000km around the globe in 100 or so minutes. In its response to the Pentagon's 2022 report, Beijing complained that the USA is guilty of nuclear proliferation thanks to the AUKUS alliance. However, while Australia hopes to acquire nuclear-powered submarines, these are definitely not armed with nuclear weapons.

Nonetheless, China continues to toss around the erroneous canard that future Australian submarines will "carry enough highly enriched uranium to make 60-80 nuclear warheads, which essentially constitutes an act of nuclear proliferation". This is quite preposterous, and is simply China trying to deflect attention away from its own nuclear program. China's nuclear policy comes directly from paramount leader Xi Jinping, and he has stamped his authority upon the country's nuclear weapons force structure. As Professor Andrew Erickson, Professor of Strategy and Research Director at the US Naval War College, commented: "Despite having over 400 nuclear warheads already, and expanding at a rate that would reach 1,500 by 2035, Beijing refuses to acknowledge its build-up, let alone engage in arms control discussions. We are seeing the dangerous results of Xi's decade-and-counting in command: demanding unconditional deference at home and, increasingly, abroad."

Another important area of modernization highlighted in the DoD report is the PLA's targeting and long-range precision strike capabilities. This can be witnessed in a single data point - in 2021, China launched more ballistic missiles (outside of conflict zones) than the rest of the world

combined. Indeed, it fired some 135 missiles in either tests or demonstrations of capability. Another indicator is that China, since 2018, has nearly doubled its in-orbit intelligence, surveillance and reconnaissance satellites to more than 260, up 60 on the year before. Only the USA has more such satellites in orbit. The MND spokesman noted that Beijing's "military development aims to safeguard its sovereignty, security and development interests, and will never seek hegemony or expansion no matter how far it develops". Yet, expansion is very much on the PLA's wish list. The Pentagon assessed: "The PRC has likely considered Cambodia, Myanmar, Thailand, Singapore, Indonesia, Pakistan, Sri Lanka, United Arab Emirates, Kenya, Equatorial Guinea, Seychelles, Tanzania, Angola and Tajikistan, among other places, as locations for PLA military logistics facilities."

Erickson added: "Around the world, the report documents widespread efforts to develop overseas access and basing for the PLA. Notably, it assesses that Beijing has established its first Indo-Pacific overseas base in Ream, Cambodia; and has courted Solomon Islands and Vanuatu, in addition to Namibia (where China's Strategic Support Force already operates a tracking, telemetry and command ground station to support space missions)." Furthermore, the PLA is most interested in military access along sea lines of communication from China to the Strait of Hormuz, Africa and the Pacific Islands. Taiwan, as always, is a sore point with Beijing. Last year, and even more pointedly this year, there was an increase in activity in the Taiwan Strait and intrusions into Taiwan's air defense identification zone (ADIZ), as well as island seizure exercises. Erickson elaborated: "Facing the Taiwan Strait, the report describes a worrisome panoply of mounting capabilities and increasingly focused training. Last year, the PLA conducted frequent amphibious training, with more than 120 instances in a three-month period."

Tan of China's MND insisted that his country "is committed to a path of peaceful development and a national defense policy that is defensive in nature, and remains a builder of world peace, a contributor to global development and a defender of international order". Furthermore, he continued, "Taiwan is China's Taiwan. Resolving the Taiwan question is a matter for the Chinese, a matter that must be resolved by the Chinese. We are committed to maintaining peace and stability across the Taiwan Strait, but we will never promise to renounce the use of force, and we reserve the option of taking all measures necessary." Of course, this is a direct contradiction to Tan's claim that China's policy is "defensive in nature, and remains a builder of world peace". Tan also boasted that the PLA has "the confidence and capability to defeat any external interference and separatist attempts for 'Taiwan independence' and achieve the complete reunification of the motherland". China's declared defense budget is already 17 times larger than Taiwan's.

After the report's release, a Pentagon official assured: "I don't see any kind of imminent indications of an invasion. We're definitely very focused on this level of more intimidating and coercive behavior, and watching closely to see how things unfold." Another snippet from the report is that the number of vessels in the PLAN dropped by 15 to 340, primarily because 22 Type 056 corvettes were transferred to the China Coast Guard. This transfer has also affected future estimates of vessel numbers, now at 400 by 2025 and 440 by 2030. There seems to be a temporary pause in building additional large amphibious assault ships like Type 071s and Type 075s. This is being alleviated by making wider use of civilian roll-on/roll-off ferries, however. Incidentally, the 2022 report said just 23% of China's natural gas imports transited the South China Sea, a marked drop from 61% in the preceding report.



No explanation was given, but it suggests far greater overland gas deliveries to China are occurring. One opinion piece on the MND's website alleged that the USA "cooked up this lie-strewn report based on hearsay and wild imagination without mentioning where the data came from". This is a typical mud-slinging approach by China. Nonetheless, the well-researched 2022 Report on Military and Security Developments Involving the People's Republic of China is a timely reminder that the PLA is growing in might and, unfortunately, in bellicosity. The Pentagon thus called out the PLA for "a sharp increase in unsafe and unprofessional behavior in the Indo-Pacific region". These actions in the air and on the sea target the US and its allies, and the Pentagon warned that China is "risking a major incident or accident in the region".

<https://www.aninews.in/news/world/asia/chinas-relentless-military-build-up-comes-under-scrutiny20221212213441/>



*Mon, 12 Dec 2022*

## **US Identifies China's DF-17 Hypersonic Missile as 'Biggest Threat' that could Strike Critical Military Bases**

*By Sakshi Tiwari*

According to the recent Pentagon report on China's Military Power, China's Dong Feng-17 (DF-17) hypersonic glide vehicle (HGV)-powered medium-range ballistic missile (MRBM) is intended to attack foreign military installations and fleets in the Western Pacific. The report released on November 29 described China as the "most consequential and systemic challenge to our national security and a free and open international system." It stated in no ambiguous terms that PLA's missile force was transforming, thanks to the DF-17 hypersonic missile. "The DF-17 passed several tests successfully and is deployed operationally. While the DF-17 is primarily a conventional platform, it may be equipped with nuclear warheads," the Pentagon said. Citing a claim by a Chinese military expert, the Pentagon added that the "primary purpose of the DF-17" is striking bases and fleets in the Western Pacific.

The system, deployed in 2020, may replace some outdated short-range ballistic missile (SRBM) systems, the DoD continued, citing Chinese media. This aligns with Chinese analysts' assertions that the missile could strike US Pacific bases with its high speed and camouflage. According to previous reports, the DF-17 can penetrate regional US missile defenses. It may go from China to US military stations in Yokosuka, Japan, and South Korea within a maximum range of 2,500 kilometers (1,550 miles). The hypersonic missile made headlines when it debuted in October 2019 at a military parade marking the 70th anniversary of Communist Party rule in China. Later, in 2021, the PLA conducted its first known hypersonic test involving the DF-17 Glide vehicle in the spring of 2021, which rattled the United States.

"The DF-17 passed several tests successfully and is deployed operationally. While the DF-17 is primarily a conventional platform, it may be equipped with nuclear warheads," stated the Pentagon's 2021 China report. According to reports, the DF-17 could deliver both conventional and nuclear payloads, further endangering US territories and bases in the Pacific in case of a conflict. The US has earlier acknowledged China's growing missile capability. For instance, the

Pentagon has shifted attention to strengthening Guam's missile defense to shield it from China's long-range missile DF-26, which has the range to strike the critical Andersen Air Base. It is pertinent to note that it could be extremely hard or nearly impossible to defend against a missile flying at hypersonic speeds within the Pacific. The commanders in the region would have little to no time to follow an incoming hypersonic attack and attempt to intercept or fire a counterattack. Even though US Patriot and THAAD batteries protect the region, they are not equipped to defend against an incoming hypersonic projectile that travels at five times the speed of sound and follows unpredictable trajectories. The US is working on hypersonic defense, but the project is still in the works.

### **China's DF-17 Hypersonic Missile**

The DF-17 is a medium-range ballistic missile mounted on a DF-ZF hypersonic glide vehicle. The missile can be launched from a mobile transport-erector launcher and has a range of up to 2,500 kilometers. The DF-17 can be fired from a regular rocket booster as an HGV system. After rising to almost exo-atmospheric altitudes, the missile separates and uses a hypersonic glide vehicle to find its target. Due to its high speed, low trajectory, and mid-flight flexibility, the HGV can successfully penetrate sophisticated opponent defenses in circumstances where more conventional systems would likely fail.

Earlier, a report in the Global Times said that "US air defense systems including THAAD, SM-3 and Patriot missiles deployed in South Korea, Japan, the island of Taiwan and on US warships will not work against the DF-17." Earlier this year, China released a video of what appeared to be a DF-17 missile launch for the first time just before the Chinese People's Liberation Army's (PLA) 95th founding anniversary, as reported in detail by EurAsian Times.

Chinese military analyst Song Zhongping made another disclosure in addition to the DF-17 hypersonic missiles' already well-known formidable capabilities. He mentioned aircraft carriers as targets that the DF-17 might also be able to attack while traveling slowly. There hasn't been much information regarding a DF-17's capacity to attack carriers precisely. In addition, even though the DF-17 is a ground-launched missile, some reports indicate that an air-launched variant might be developed for use by the Xian H-6N bomber, the most recent model of the H-6 family of bombers. With a range of 10,000–11,000 kilometers equipped with the DF-17, the H-6N can reach the most critical enemy installations over the entire Indo-Pacific. Meanwhile, China has bashed the Pentagon's report. However, the concerns in the United States about Chinese hypersonic missiles may not be misplaced as it lacks operational hypersonic missiles to act as a deterrent.

<https://eurasianimes.com/us-identifies-chinas-df-17-hypersonic-missile-as-biggest-threat/>

## **US Successfully Tests Hypersonic Air-to-Ground Missile Prototype from B-52H Stratofortress – Air Force**

*By Sputnik*

The United States has successfully tested a hypersonic air-to-ground missile prototype off the coast in California, reaching more than five times the speed of sound, the US Air Force said on Monday. “A B-52H Stratofortress successfully released the first All-Up-Round AGM-183A Air-launched Rapid Response Weapon off the Southern California coast, Dec. 9,” the US Air Force said in a press release. “Following the ARRW’s separation from the aircraft, it reached hypersonic speeds greater than five times the speed of sound, completed its flight path, and detonated in the terminal area.” While previous weapon tests focused on checking the booster performance, the current test was the first launch of a complete prototype operational missile. Earlier, EurAsian Times had reported that the US Air Force had validated the loading functions for its first air-launched hypersonic missile from the B-52H aircraft at the Barksdale Air Force Base. The US Air Force’s said the Air-Launched Rapid Response Weapon, or ARRW, could be deployed by 2023. The Lockheed Martin AGM-183A ARRW is a long-range hypersonic missile developed for the USAir Force. The weapon will boost the USAF’s strike capability at stand-off ranges, allowing it to attack heavily defended targets. The ARRW travels at five times the speed of sound, allowing the USAF to strike critical enemy targets at lightning speed and defy any missile defense system. “It demonstrates the far-reaching capabilities of the B-52, and now it projects its combat capabilities even further with the ARRW system,” said Master Sgt. Caleb Nolen, Air Force Global Strike B-52 armament systems manager.

The USAF noted that the development of hypersonic weapons was sped up due to the National Defense Authorization Act section 804 Rapid Prototyping, which is part of the Rapid Fielding program. The program promotes rapid weapon development in specified instances. Meanwhile, the Japanese Defense Ministry plans to create two units within the ground self-defense force to control ballistic missiles with a hypersonic glide vehicle, Japanese news agency Kyodo reported on Saturday, citing sources. According to the report, the units are expected to be established and deployed on the islands of Kyushu and Hokkaido by 2026. This coincides with the deadlines that the Japanese authorities have outlined for deploying modernized “type 12 anti-ship missiles”, the range of which will be more than 1,000 kilometers (621 miles) instead of the current 100 kilometers. Japanese media reported earlier that the government was studying the development of guided missiles with a range of up to 3,000 kilometers and their subsequent phased deployment in various parts of the country, including Hokkaido. In addition, the media reported that Japan and the United States were considering the possibility of conducting a joint study of technologies for intercepting ballistic missiles with a hypersonic gliding warhead. In particular, the Japanese Defense Ministry plans to begin designing an engine for long-range missiles with the ability to turn it in the event of a change in the trajectory of an enemy missile.

<https://eurasianimes.com/us-successfully-tests-hypersonic-air-to-ground-missile-prototype-from-b-52h-stratofortress-air-force/>

## **Drone Dogfighting: US, China ‘Accelerate’ Work on UAVs That Can Defend Stealth Jets & Wreak Havoc on Enemy Air Force**

*By Sakshi Tiwari*

The concept of manned-unmanned teaming between fighter jets piloted by humans and remotely-piloted autonomous aircraft has gained traction in the United States and China. As the two adversaries prepare for a future conflict, work on the manned-unmanned teaming is proceeding in full swing. Over the years, unmanned aerial systems (UAS) have developed from relatively simple surveillance and reconnaissance platforms to complex and more autonomous system-of-systems. Unmanned systems equipped with artificial intelligence are now cooperating with manned platforms for future operations in what is known as manned-unmanned teaming. China is already working on the twin-seat version of its most advanced fighter jet, the J-20, which could be paired with drones to boost its firepower.

“As Yang Wei, the aircraft’s chief designer has already said, the purpose of building such a twin-seat J-20 is not to treat it simply as a trainer. Its major role then will almost certainly be coordinating with drones.” This would mean that drones would become active combatants in future wars. In a video released in January of last year to commemorate ten years since the J-20’s debut flight, China’s air force featured a computer-generated image of the twin-seat variant of the aircraft. In October, the twin-seat J-20S prototype was unveiled. The idea that the second seat of this fighter could be used to control ‘wingman’ drones has been around for a long time. A twin-seat J-20 can carry out coordinated reconnaissance, coordinated strike, and coordinated command missions when coupled with drones, a technically manned-unmanned teaming process.

The swarm of drones, each of which can carry between four to ten precision-guided missiles, can increase the firepower of the fighter even if the aircraft has just four to six ground-strike weapons. It further notes that a J-20 outfitted with a swarm of drones could carry out early-warning missions and combat reconnaissance. China has been meticulously working on drone swarm technology. In May this year, researchers at Zhejiang University in China developed the necessary technology for a drone swarm to fly autonomously through uncontrolled environments. One of the leading drone manufacturers in the world, China already possesses an intelligent swarming attack technology, using nearly ten unmanned helicopter drones. It has also unveiled a drone carrier vessel ‘Zhu Hai Yun’ that will act as a mothership for a swarm of drones attack, especially in the Indo-Pacific.

Loyal Wingman drones have emerged as the most sought-after aircraft teaming concept actively pursued by western countries like the United States and Australia, among others. China is no exception. These affordable platforms would be used as adjunct aircraft to the main fighter jet in a near-peer conflict fought in a highly contested airspace. In September last year, China unveiled a long-range FH-97 loyal wingman drone concept that could carry different weapons and has

swarm and electronic warfare capabilities. The idea was touted as similar to the US-made Kratos (KTOS.O) XQ-58A Valkyrie in mission and appearance.

The United States remains deeply invested in its manned-unmanned teaming concept on a war footing, perhaps, with equal if not more enthusiasm than the Chinese.

### **American Manned-Unmanned Teaming Coming Soon**

The US Air Force (USAF) has emphasized developing and transforming its systems and capabilities to better position itself for a potential battle with China. Using unmanned aerial systems alongside manned aircraft appears to be at the heart of the USAF's counter-Chinese strategy. The possibility of an armed confrontation between the two bitter rivals, the US and China, becomes even more significant as Beijing has vowed to reunite Taiwan with the Chinese mainland with force, if necessary. In contrast, the US President has promised to oppose any armed Chinese invasion of Taiwan tooth and nail, using its military if required. To prepare for a future conflict with China, the USAF is already pursuing the highly-classified Collaborative Combat Aircraft program (CCA). It contends that drone technology will likely be crucial in the Indo-Pacific region to pressure Chinese air defenses, as recently observed by EurAsian Times.

In a recent news conference, Gen. Kenneth Wilsbach, head of the Pacific Air Forces (PACAF), said, "I would say it's in the very beginning stages because, in all candor, we're just starting to see the initial actual technology start to reach the field." General Wilsbach has previously claimed that Beijing possesses powerful anti-access/area-denial capabilities, particularly in eastern China and the South China Sea. He proposed a potential solution to the issue of a fleet of reasonably priced, "attributable" unmanned systems. These drones could be employed in massive conflicts to challenge opposing air defense units. Future drones might also be used as sensors, jammers, "weapons trucks," or even simple decoys to deflect hostile fire away from more robust platforms. It is possible to develop autonomous, AI-capable systems collaborating and operating in swarms. Earlier, Wilsbach called manned-unmanned teaming "the future's wave."

Frank Kendall, the secretary of the USAF, announced earlier this month that the service could launch a competition for the sixth-generation drone fighter as early as fiscal 2024. He spoke in Arlington, Virginia, at the Defense News Conference 2022. According to Kendall, as it designs an acquisition plan for the Collaborative Combat Aircraft project, the Air Force is currently in "early negotiations" with industry stakeholders. The Next Generation Air Dominance (NGAD) family of systems, which is a part of the service's CCA program, would field one or more types of unmanned aircraft. To be prepared for future wars, the United States Air Force (USAF) has positioned autonomous systems powered by artificial intelligence as auxiliary aircraft. On the strength of that concept, Skunk Works, a division of Lockheed Martin, recently unveiled its "Project Carrera."

According to the Advanced Projects Group of Lockheed Martin's Skunk Works, a highly human-centric, adaptive autonomy framework is being planned. The distributed manned-unmanned teaming framework serves as the foundation for the concept. Various tiers of uncrewed aircraft will be able to operate with varying degrees of autonomy and cooperate with their crewed counterparts thanks to different artificial intelligence-driven software-based control systems. Initial flight testing of these ideas will start soon at Skunk Works, and the first tests will hook up its Speed Racer drone with the stealthy F-35 Joint Strike Fighter variants. While China could be preparing to enhance the J-20's firepower using armed drones, the United States is simultaneously preparing for a Chinese challenge by building on the concept of manned-

unmanned teaming. It wouldn't, thus, be an exaggeration to say that any future war between the two would see drones fighting against one another in extraordinary advance aerial warfare.

<https://eurasianimes.com/drone-dogfighting-us-china-accelerate-work-on-uavs-that-can-fight/>



*Tue, 13 Dec 2022*

## **US ‘Punctures’ Pakistan’s Attempts to Black Market its Nuclear Weapons Tech; Calls it One of World’s ‘Most Dangerous’ Nations: OPED**

The history of Pakistan’s nuclear program is the history of Pakistan. Fascinated with the new nuclear science, the young nation’s leaders launched a nuclear energy program in 1956 and consciously intertwined nuclear developments into the broader narrative of Pakistani nationalism. Then, propelled by the 1965 and 1971 India-Pakistan Wars and, more urgently, by India’s first nuclear weapon test in 1974, senior Pakistani officials tapped into the country’s pool of young nuclear scientists and engineers and molded them into a motivated cadre committed to building the ‘ultimate weapon.’ The tenacity of this group and the central place of its mission in Pakistan’s national identity allowed the program to outlast the perennial political crises of the next 20 years, culminating in the test of a nuclear device in 1998”, wrote the Amazon while introducing the 552-page book *Eating Grass: The Making of the Pakistani Bomb* authored by Feroz Khan and published in 2013. Pakistan tested its first nuclear weapon in 1998, officially becoming the world’s 7th state to test a nuclear weapon. The exact yields of the weapons in the country’s current arsenal are unknown. However, general estimates are between 5-12 kilotons (kt) for most weapons, with some longer-range ballistic missiles possibly reaching 40 kt.

### **Fear of pakistan’s nuclear arsenal falling into the wrong hands**

Pakistan is believed to have a stockpile of approximately 160 warheads, making it the 6th largest nuclear arsenal. Pakistan is actively developing nuclear weapons, and experts project that it may have the 5th largest arsenal by 2025 with 220-250 warheads. “Ever since May 1998, when Pakistan first began testing nuclear, claiming its national security demanded it, American presidents have been haunted by the fear that Pakistan’s stockpile of nukes would fall into the wrong hands. That fear now includes the possibility that jihadis in Pakistan, freshly inspired by the Taliban victory in Afghanistan, might try to seize power at home,” Marvin Kalb, a nonresident senior fellow with the Foreign Policy program at Brookings, wrote last year. “The top US general Mark Miley had warned that a rapid withdrawal of forces from Afghanistan would pose an increased risk to the security of Pakistan’s nuclear arsenal,” wrote *The Wire* on October 15. *The News* of February 20, 2004, quoting the police, said that Iran and Libya received black market nuclear materials from Pakistani scientist Abdul Qadeer Khan, citing the deals’ middleman – Buhari Syed Abu Tahir, the alleged chief financier of an international nuclear trafficking network run by Khan. He told Malaysian police that the scientist asked him to send two containers of used centrifuge parts from Pakistan to Iran in 1994 or 1995. “Payment for the two containers of centrifuge units, amounting to about \$3 million,” was paid by an unnamed

Iranian, the report said. Tahir also said Libya received enriched uranium from Pakistan in 2001, according to police. The chief financier told investigators that Khan also said a “certain number” of centrifuges — sophisticated machines that can be used to enrich uranium for weapons and other purposes — were flown to Libya direct from Pakistan in 2001-02. President Bush had named one Tahir the “chief financial officer and money launderer” of the network run by Khan. The deep mystery surrounding the acquisition of nuclear technology by Qadeer Khan during his stay and study in Europe and the transactions about the sale of nuclear components has not been unraveled. According to knowledgeable sources, Pakistan has secretly upgraded and extended its nuclear arsenal. However, responsible Pakistani leaders, while chanting their patent rhetoric against India, have been heard saying that they have manufactured small nuclear bombs for the destruction of specific and limited targets.

On several occasions, American leadership voiced its concern about the unsatisfactory security arrangement of Pakistani nuclear weapons. These concerns multiplied when some powerful terrorist organizations in Pakistan vowed to carry fire and brimstone to Indian Kashmir if India did not come to terms with Kashmir. It is believed that the American agencies worked hard to elicit a commitment from Pakistani authorities, especially the army, that nuclear weapons would not be allowed to go into the hands of the terrorists. This notwithstanding, Americans have generally felt skeptical about Pakistan securing its nuclear stockpiles against the pilferage attempts of terrorist groups based in Pakistan. Recently, President Biden has again expressed his concerns about the safety and security of Pakistan’s nuclear weaponry. It was a repetition of his earlier allegations, and the Pakistani parliament reacted by passing a unanimous resolution condemning the American President’s remarks as distortion.

### **US Blacklists Pakistani Companies**

India’s Zee News on December 9 reported that the United States had blacklisted half a dozen Pakistani companies for supporting Islamabad’s “unsafeguarded nuclear activities.” The companies have been put on the American export control list by the Bureau of industry and security (BIS), which comes under the US department of commerce which restricts access for these companies to commodities, software, and technologies. The US statement said, “many of these companies have been added to the list as they have been “found to supply or attempt to supply items...to Pakistan’s unsafeguarded nuclear activities and ballistic missile program”. The Pakistani companies listed are Dynamic Engineering Corporation, EnerQuip Private Ltd, Rainbow Solutions, Universal Drilling Engineers, NAR Technologies General Trading LLC, and Trojans. The last two companies have bases in UAE as well. Most of these companies are based in the Pakistani capital Islamabad, with some having addresses in Karachi and Lahore.

The statement explained that three Pakistan-based companies have been contributing to nuclear and missile proliferation-related activities that are “contrary to the national security and foreign policy interests of the United States.” Two UAE-based companies, EnerQuip Limited and Zain Enterprises FZE, have also been backlisted for supporting Islamabad’s nuclear activities. The development comes even as the US and India have publicly expressed concerns over Pakistan’s nuclear activities. Earlier this year, US President Biden termed Pakistan “one of the most dangerous nations in the world” as it has “nuclear weapons without any cohesion.” India has also recently expressed concerns after a Russian senator, Igor Morozov, alleged that Ukraine had sought Pakistani help for developing nuclear weapons. In November, Ministry of External Affairs spokesperson Arindam Bagchi said that “we have expressed our concerns about the proliferation of nuclear technology from Pakistan in the past,” explaining, “if there is any kind of

such nexus or proliferation, it is a cause of worry, not just for India, but for the international community.”

### **India’s Concerns**

In the past, India has also pointed out Pakistan’s nuclear nexus with North Korea, with support given by Pakistani nuclear scientist AQ Khan. The US’ concern about Pakistan’s nuclear capability is that as a country faced with an acute economic and financial crunch, Islamabad could sell its nuclear secrets to a prospective buyer like Iran or Libya. Secondly, to carry forward its anti-India agenda, Pakistan will not hesitate to provide smaller nuclear bombs to its terrorist outfits whose activities in the Indian part of Kashmir are hopelessly failing. In the final analysis, the blackmailing of about half a dozen private companies for supporting Pakistan’s nuclear proliferation activity means the US must take serious note of the entire issue. Pakistan’s nuclear establishment needs to be put under the close and regular supervision of a committee appointed by the IAEA. Pakistan’s entry into the nuclear club should be kept in indefinite abeyance. Perhaps more restrictions could be contemplated depending on valid proof in hand about how the nuclear arsenal of Pakistan is insecure in given conditions.

<https://eurasianimes.com/us-punctures-pakistans-attempts-to-black-market-its-nukes/>

## Science & Technology News

 **The Indian EXPRESS**

*Mon, 12 Dec 2022*

### **What ISRO is Doing to Boost the Use of NavIC, India’s Version of GPS**

To promote the use of ‘NAVigation with the Indian Constellation’ (NavIC), the Indian version of GPS, the Indian Space Research Organisation (ISRO) will introduce the L1 frequency in all its future satellites, Jitendra Singh, Union Minister of State for the Department of Space, said in Parliament recently. What is the L1 frequency, and how will it help the use of NavIC? How accurate is NavIC when compared with GPS? We explain.

#### **What exactly is ISRO doing**

Singh in a written reply in Parliament on Wednesday said, “The next satellites, starting from NVS-01 onwards, will have an L1 band for civilian navigational use.” The seven satellites in the NavIC constellation so far use two frequencies for providing positioning data — the L5 and S bands. The new satellites NVS-01 onwards, meant to replace these satellites, will also have L1 frequency. The L1 is the oldest and most established GPS signals, which even the less sophisticated, civilian-use devices such as smartwatches are capable of receiving. Thus, with this band, the use of NavIC in civilian-use gadgets can go up.

#### **And what is NavIC?**

NavIC is India’s homegrown alternative to GPS. Developed by ISRO, the navigation satellite system was first approved in 2006 at a cost of \$174 million, but became operational only by 2018. At present, it consists of eight satellites, covering the whole of India and up to 1,500 km from its



boundaries. The government has said NavIC is as accurate as GPS. Singh, in his reply to Parliament, reiterated that the “performance of NavIC system is on par with the other positioning systems”.

### **Where is NavIC being used right now?**

As reported by The Indian Express, NavIC is mainly being used in public vehicle tracking, to provide emergency warning alerts to fishermen venturing into the deep sea, and for tracking data related to natural disasters. The government is also pushing for its increased use in smartphones. In fact, in September, Reuters had reported that the government urging tech giants to make smartphones compatible with NavIC had “worried the likes of Samsung, Xiaomi and Apple, who fear elevated costs and disruptions as the move requires hardware changes.” According to the report, the government wanted that smartphones support NavIC as well as GPS by January 2023, which phone makers had said was a very stiff deadline to meet.

### **Advantages of NavIC**

To put it briefly, the government says that India should not rely on positioning systems run by other governments, which are at the risk of suspension for civilians in times of crises. Also, NavIC, since it is homegrown, will be more accurate than other systems. In fact, as reported by The Indian Express, with a fully operational constellation and ground stations outside of India — ISRO plans to set up ground stations in Japan and France to better triangulate the entire area under NavIC coverage — the system is likely to become more accurate than GPS. The satellites placed directly over India also ensure better availability of signals in varied geographical regions compared to GPS, which India receives at an angle, making it difficult to access in dense forests or valleys. Apart from the US-owned GPS, the other prominent navigation systems are Galileo from the European Union, Russia-owned GLONASS and China’s Beidou. QZSS, operated by Japan, is another regional navigation system covering Asia-Oceania region.

<https://indianexpress.com/article/explained/explained-sci-tech/what-isro-is-doing-to-boost-the-use-of-navic-indias-version-of-gps-8320539/>

## **THE ECONOMIC TIMES**

*Tue, 13 Dec 2022*

### **Union Ministry, ISRO Develop a Project-Monitoring Mobile Application**

The Ministry of Development of North-Eastern Region (MoDoNER) has in collaboration with North Eastern Space Application Centre (NESAC) under the department of space has developed a project-monitoring mobile application. The physical progress of the projects supported by MoDoNER is monitored in three modes viz mobile apps, satellite images and drone images, according to a statement from the Ministry of Development of North-East Region. Till November 2022, out of 588 identified projects, 562 projects at 1,664 different locations across North-Eastern Region (NER) have been geo-tagged through satellite images and mobile app. As many as 145 projects costing Rs 3,392.99 crore have been sanctioned as on December 7, 2022, in various sectors under North East Special Infrastructure Development Scheme (NESIDS).

Further, North East Cane and Bamboo Development Council (NECBDC) has been sanctioned 14 projects worth Rs.90.86 crore in Bamboo Sector during the financial years 2015-16 to 2021-22. Under NESIDS, Arunachal Pradesh had been sanctioned 29 projects with much as Rs 623 crore as approved cost; Assam had been given 33 projects with Rs 880.82 crore as approved cost, Manipur

with 18 projects and Rs 341.32 crore as approved cost, Meghalaya had been sanctioned 12 projects with as much as Rs 340 crore as approved cost and Mizoram had been sanctioned with 17 projects with Rs 345.38 crore as approved cost. Nagaland had been sanctioned 17 projects with Rs 333.62 crore as approved cost and Sikkim had been given eight projects with Rs 214 as approved cost and Tripura had been given 11 projects with Rs 312.97 crore as approved cost.

<https://telecom.economictimes.indiatimes.com/amp/news/union-ministry-isro-develop-a-project-monitoring-mobile-application/96186030>



*Mon, 12 Dec 2022*

## **IIT Roorkee Organises Startup Expo 2022 to Celebrate its 175th Foundation Day**

The Indian Institute of Technology (IIT) Roorkee organized 'Startup Expo 2022' recently on the occasion of its 175th foundation day. During the Startup Expo, 50 startups showcased their products and technologies in emerging fields of AI-ML, drone technology, robotics, health sciences, agriculture, environmental, energy sector and e-commerce. The event was conceptualized with a defence-centric theme. The objective was to serve as a medium of interaction between the founders and various stakeholders, thus promoting a thriving entrepreneurial culture. IIT Roorkee students, faculty, startups, and more than 100 industry representatives participated in the event. Stalls of commemorative stamps and coins issued on the occasion of 175 years were also a major attraction among the visitors at Startup Expo.

The event was inaugurated by Dr Kailash Kumar Pathak, Director, DFTM DRDO; Colonel Virbhadra Singh Rawat, Defence Coordinator Government of Uttarakhand and Shambhu Sharma, Head of Operations, OPTEL, in the presence of other dignitaries. In the event, the Best Startup award was given to four startups from various domains. The winners were Indigenous Energy Private Limited, Cypher, Ballice Smart Devices, and Super Good Nano Private Limited. Some of the key startups that participated in the Startup Expo 2022 include RavenEye Geospatial Tech Limited, DTown Robotics Private Limited, Indi Energy, Perovskite Innovations Private Limited and Powerzest Energy Solutions Private Limited. Another session was to pitch ideas for launching new startups. Three such ideas were pitched by Jagdish Neduri, Chaudhary Mohammad Tariq and Gajanan Gitte and successfully drew the attention of jury members. Pahul Singh Sawhney and Kunal Shah pitched the two most promising ideas and provided pre-incubation support at the Tinkering Lab of IIT Roorkee. A panel discussion was held on high-tech and deep-tech technologies to strengthen the nation's startup ecosystem, focusing on taking Indian technologies to the global level to meet its commitment to Atmanirbhar Bharat.

Dr B V Mohan Reddy, Chairman, Board of Governors, who is a first-generation entrepreneur, motivated all the founders of startups present during the startup expo by sharing his journey in building a Billion-Dollar enterprise. He emphasized the need for scaling startups once they have robust products or services. Speaking to the media, he said that various policies at IIT Roorkee are facilitating faculty members to be non-executive directors in these startups and contribute their knowledge and wisdom. Professor K K Pant, Director of IIT Roorkee, welcomed guests and wished them a happy 175th anniversary of the institute. He recalled the events from 1847-2022 that have resulted in new age IIT Roorkee.

He stressed that start-ups must work for the Make-in-India initiative and deliver products and services that match and exceed global quality standards. “We will encourage young students and faculty members to be a part of our Start-up ecosystem, and we will always strive for innovation and keep the nation's values on top.” Dr Kailash Kumar Pathak, Director, DFTM, DRDO, said this startup expo is a positive step towards improved prospects and avenues to address the nation's critical and futuristic defence technology requirements. We should enhance our operational capabilities to strengthen the manufacturing sector for achieving Aatmanirbharta in Defence.

<https://www.ndtv.com/education/iit-roorkee-organises-startup-expo-2022-celebrate-its-175th-foundation-day>

## *Nasa capsule blazes safely back from moon*



The Orion Capsule (centre) on the well deck of the USS Portland off the coast of Baja California, Mexico, on Sunday. AP

**WASHINGTON:** Orion capsule made a blisteringly fast return from the moon on Sunday, parachuting into the Pacific off Mexico to conclude a test flight that should clear the way for astronauts on the next lunar flyby.

The incoming capsule hit the atmosphere at Mach 32, or 32 times the speed of sound, and endured re-entry temperatures of 2,760 degrees Celsius before splashing down west of Baja California near Guadalupe Island.

A Navy ship quickly moved in to recover the spacecraft and its silent occupants — three test dummies rigged with vibration sensors and radiation monitors.

Nasa hailed the descent and splashdown as close to perfect, as congratulations poured in from Washington..

The space agency needed a successful splashdown to stay on track for the next Orion flight around the moon, targeted for 2024 with four astronauts who will be revealed early next year.

That would be followed by a two-person lunar landing as early as 2025 and, ultimately, a sustainable moon base. The long-term plan would be to launch a Mars expedition by the late 2030s.

Astronauts last landed on the moon 50 years ago. AP

## Breakthrough in Nuclear Fusion Energy Creation

Scientists in California have made a breakthrough in nuclear fusion technology, producing more energy than consumed in a reaction for the first time. The achievement was made at the US Department of Energy's Lawrence Livermore National Laboratory near San Francisco, according to a person familiar with the research, who requested anonymity to discuss results that have not yet been disclosed fully in public. Lasers were used to bombard hydrogen isotopes held in a superheated plasma state in order to fuse them into helium, releasing a neutron and carbon-free clean energy in the process. Scientists have been experimenting with the technology for decades but getting the process to produce more energy than it consumes has been elusive. The Department of Energy didn't immediately respond to a request for comment.

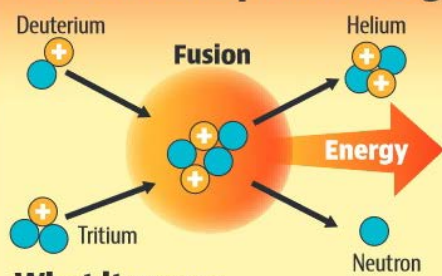
The reaction produced about 2.5 megajoules of energy compared to the 2.1 megajoules used to power the lasers, according to the Financial Times, which earlier reported the results. While the results represent a breakthrough, it's still a long way to go to creating viable technology, let alone delivering enough clean energy to help wean the world off fossil fuels and limit climate change. Nuclear fission technology, which splits atoms and creates highly radioactive waste, has been commercial for decades and still produces only 10% of the world's power, far less than coal and gas. Fusion's potential market share will also be challenged by solar and wind power, both of which are cheaper and have mature supply chains.

Their main drawback intermittent generation is being addressed by a rapidly growing battery storage industry. Still, if fusion can be scaled up, it offers the promise of around-the-clock clean power with less risk and hazardous waste than fission. Investment into fusion startups like Commonwealth Fusion Systems and Helion Energy jumped to \$2.3 billion in 2021 and will likely total more than \$1 billion this year, according to BloombergNEF. The Energy Department previously said Secretary Jennifer Granholm planned to announce Tuesday a "major scientific breakthrough" at the national laboratory accomplished by researchers with the department's National Nuclear Security Administration.

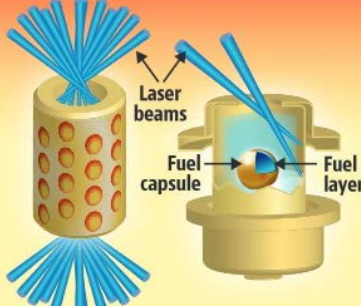
<https://economictimes.indiatimes.com/news/science/breakthrough-in-nuclear-fusion-energy-creation/articleshow/96185238.cms>

## N-fusion: The clean energy the world needs, but may not get anytime soon

### Fusion: concept and design



**What it means**  
In a fusion reaction, nuclei of hydrogen isotopes deuterium and tritium are made to fuse and form a helium nucleus, with some of the mass of the hydrogen released as energy.



**How it's done**  
The US national Ignition facility directs 192 laser beams into a gold cylinder, called a hohlraum, inside which a tiny capsule contains deuterium and tritium atoms.

Source: Lawrence Livermore National Laboratory, US

### Kabir Firaque

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**NEW DELHI:** In the quest for perfecting the science of nuclear fusion in practice (the theory is well understood), the energy produced has never matched the energy that has gone into the effort. Until now, going by media reports.

There is much excitement around the US energy department's expected announcement of a "major scientific breakthrough" on Tuesday, which follows reports, first by the Financial Times, that the California-based Lawrence Livermore National Laboratory has achieved a "net energy gain" from a fusion reactor.

While an energy output higher than the input would be a breakthrough in scientific terms, the question that begs an answer is how far we still are from using fusion-induced energy as the solution to the world's energy problems. Reports about fusion breakthroughs have not always lived up to the hype. The best-known instance is that of claims by two chemists in 1989 about having achieved "cold fusion", or fusion achieved at room temperature (see box). The experiments at LLNL involve "hot fusion", with reactions at extremely high temperatures. In 2013, BBC reported that LLNL had achieved a

“nuclear fusion milestone”. A report in *Science* explained why it was not really a breakthrough. While the energy yield did exceed the energy absorbed in a key step of the process, it was still a fraction of the total energy used in the overall experiment.

### How fusion works

Nuclear fusion involves forming a heavier substance from the atoms of two lighter ones, whose nuclei are merged. In the process, some of the initial mass is transformed

into energy. In the 1920s, British astronomer Arthur Eddington hypothesised that this is what happens within the Sun, resulting in the release of immense amount of energy. In the 1930s, German-American scientist Hans Bethe determined that in the Sun, the reaction involves fusing four hydrogen atoms into a helium atom — work that earned him the Nobel Prize for Physics in 1967.

In contrast, nuclear fission, the process that drives all nuclear energy plants, involves breaking

the bonds between subatomic particles, leading to the release of energy. Nuclear fission needs an immense amount of control to prevent explosive reactions. The substances it requires, such as uranium, are not as widely available as hydrogen for fusion.

Fusion, however, is difficult to achieve. While science has advanced enough to produce temperatures in millions of degrees, maintaining that temperature is difficult, because no container can hold anything that hot. One solution is to use a magnetic field to contain the plasma (the state of



## PICK OF THE DAY

matter when the atoms have been stripped of their electrons), an area where research is still going on. The other challenge is producing enough energy so that the energy spent is worth the effort.

### What happens at LLNL

While hydrogen is abundantly available, it is not easy to bring it to fusion. Fusion experiments have, therefore, focused on fusing hydrogen isotopes, or different forms of the same element: their atoms have the same number of protons but a different number of neutrons. Hydrogen’s nucleus contains a proton and no neutrons. The LLNL reactor uses two isotopes of hydrogen, deuterium

(one neutron) and tritium (two neutrons), whose fusion leads to the formation of helium atoms and the release of energy. LLNL directs 192 laser beams on a hohlraum, a gold cylinder inside which a tiny capsule contains atoms of deuterium and tritium.

### Energy in and out

The latest LLNL experiment, according to reports, produced 2.5 megajoules of energy against an input of 2.1MJ to fire the lasers. Such numbers, if confirmed, would be a laboratory-scale achievement.

LLNL has periodically provided updates on the progress made achieved with successive experi-

ments. In August 2021, it achieved an energy output of 1.35MJ. Its press release did not mention how much energy it used for this; New Energy Times put it at 1.9MJ, which means the experiment produced about 70% of the energy it used. If the US does announce what is being reported, it would mean that fusion with net energy gain is achievable. Where that will lead to is a question that may take a long time to answer.

### **Cold fusion controversy**

In 1989, Martin Fleischmann and Stanley Pons, two chemists at the University of Utah, claimed that they had achieved nuclear fusion

at room temperature. The phrase “cold fusion” derives from their claim. The two described a device they had made, in which electrolysis broke down heavy water (water in which the hydrogen atoms are replaced with deuterium). The deuterium released collected on a palladium pole, where their nuclei fused and released energy, they claimed.

The claim was met with scepticism. Several other teams tried the experiment, but they did not achieve the same result. While it is often cited as an example of failed science, commentators note that fraud was never established, either on the part of Fleischmann and Pons, or that of those who dismissed their claims.

