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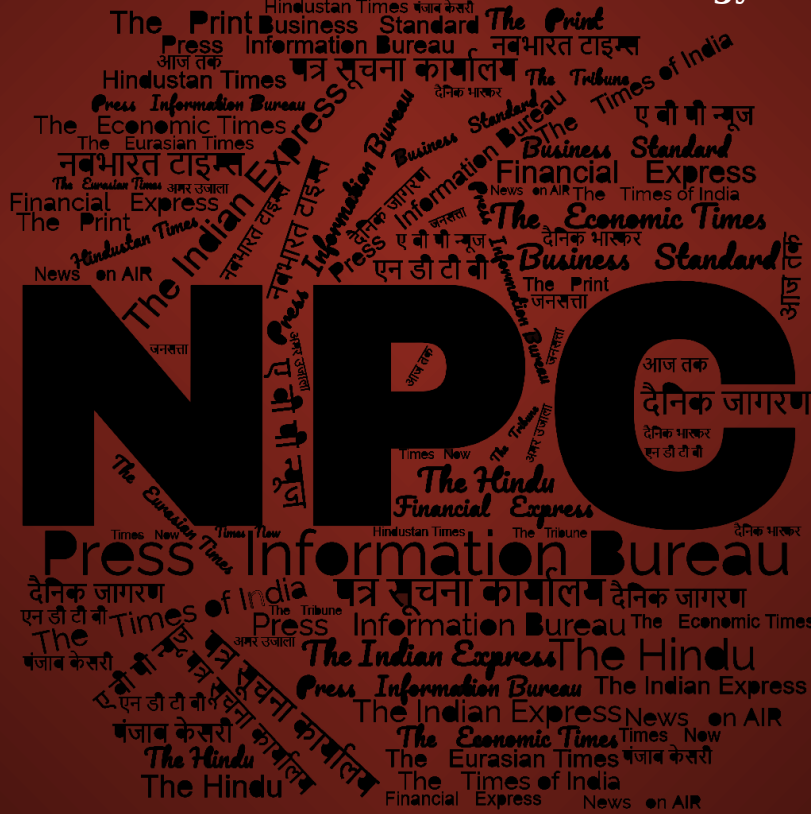
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# समाचार पत्रों से चयित अंश Newspapers Clippings

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

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# DRDO on Twitter



DRDO

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[#DRDOUpdates](#) | Celebrating International Year of Millets, DRDO hosted a Millets Festival featuring a millet exhibition and a special lecture by Dr. DD Wadikar, on 'Millets Nutritional Profile, Products & Technologies Developed by DRDO-DFRL' at DRDO Bhawan on 08th Aug 2023



A. Bharat Bhushan Babu and रक्षा मंत्री कार्यालय/ RMO India

11:29 am · 9 Aug 2023 · 9,844 Views



*Thu, 10 Aug 2023*

## **Defence Forces to Buy 2,150 High Mobility Vehicles**

The Ministry of Defence on Wednesday issued two Requests for Information (RFI) to procure High Mobility Vehicles (HMV). The plan is to buy 2,150 such vehicles initially, which can be deployed to transport payloads not less than 8,000 kg. These vehicles will get deployed on both the western (Pakistan) and northern (China) borders.

As per one of the RFIs, the plan is to procure approximately 650 high mobility vehicles 6x6 with material handling cranes (HMV 6x6 with MHC). The second RFI is for the procurement of approximately 1,500 high mobility vehicles 6x6 General Service (HMV 6x6 (GS)).

Sources informed that the plan is to gradually induct these vehicles in the units, in place of the older ones. “The requirement is such that these vehicles could negotiate the mountain roads that are narrow, with sharp turns,” informed an officer.

The material handling crane will help in loading payloads like artillery guns to the systems, said the source.

Vehicles of both the categories, says the RFI, will be used for “transportation of heavy equipment, including ammunition, on metalled roads as well as unmetalled, desert and kachcha tracks. The vehicle will be provided with 6x6 drive and will be capable of operating as a high mobility load carrier with a payload capacity of not less than 8,000 kg in cross-country terrains.”

The platform should facilitate modification for other uses, including troop carriage, carriage of containers on the flatbed, and any other specialist role, the RFI added.

They will be employed in day and night conditions for cross-country and off-road operations in “plain and desert terrains as obtained along western borders of the country, and in high altitude, mountain terrains up to 5,000 metres (16,400 feet) as obtained along the northern borders (Eastern Ladakh, Central Sector and North Sikkim).

As per the RFI, the procurement of these vehicles is under the ‘Make in India’ spirit. The RFI is meant for Indian vendors who either have the capability to manufacture on their own with 60 per cent indigenous content or can manufacture in a tie-up with some original equipment manufacturer but with more than 50 per cent indigenous content.

The last date of acceptance of the RFI response is eight weeks from the date of pre-response vendor interaction. Tensions between the Indian Army and China’s People’s Liberation Army prevail along the Line of Actual Control with increased deployment. India has been sprucing up its infrastructure and inducting equipment along the area. The Chinese side has also been improving infrastructure on its side for a long time.

The RFI is a means to seek information from vendors to explore the suitability of products available to meet the operational requirements of the services, and to formulate SQR, maintenance philosophy, and other contractual provisions.

<https://www.newindianexpress.com/nation/2023/aug/10/defence-forces-to-buy-2150-high-mobility-vehicles-2603759.html>

# The Tribune

*Thu, 10 Aug 2023*

## **Army Looking at Specialised Vehicles for High-Altitude Areas**

The Ministry of Defence intends to procure approximately 1,500 high-mobility vehicles for Army operations at multiple locations, including in high-altitude areas of the Himalayas along the Line of Actual Control (LAC) with China.

The vehicles will be used for transportation of heavy equipment, including ammunition, and for travelling on metalled roads and kutcha tracks.

The vehicles will be employed for off-road operations in the plains and the desert terrain along the western borders of India. The Army will use these in high-altitude mountain terrain up to 16,000 feet along the northern borders -- eastern Ladakh and north Sikkim among other places.

The vehicles should be operational by day and night and in snow. Its equipment, tools and accessories should be operational in temperatures ranging from minus 15 degrees Celsius to 55 degrees Celsius.

The Army has sought that the vehicles be capable of being transported by transport aircraft - IL 76 and C 17 of the Indian Air Force and also the broad-gauge railway.

The Army is looking to have the vehicles with a capacity of carrying 8,000 kg.

The platform can be used for troop carriage, carriage of container on the flatbed, gun-towing and any other role. It is planned to be procured under the 'Make in India' and 'Atmanirbhar Bharat' programmes.

<https://www.tribuneindia.com/news/nation/army-looking-at-specialised-vehicle-for-high-altitude-533865>

# THE ECONOMIC TIMES

*Wed, 09 Aug 2023*

## **INS Visakhapatnam, INS Trikand Arrive in Dubai to Conduct Bilateral Exercise 'Zayed Talwar' with UAE Navy**

Two ships of the Indian Navy, INS Visakhapatnam and INS Trikand under the command of Rear Admiral Vineet McCarty, Flag Officer Commanding Western Fleet (FOCWF) arrived at Port Rashid in Dubai to conduct bilateral exercise 'Zayed Talwar' to enhance interoperability and synergy between the two navies. The two ships are visiting Port Rashid from August 8 to August 11

and will be commanded by Captain Ashok Rao and Captain Pramod G Thomas respectively, the Ministry of Defence said in an official statement on Wednesday.

"During the visit, the ships will undertake professional interactions with UAE Naval Force on multiple elements of maritime operations," according to the statement. They will further share best practices to enhance cooperation and strengthen ties between the two navies.

Moreover, according to the statement, this visit will boost the maritime partnership between the two navies and foster a common understanding of the security challenges in the region.

The ships have entered in Dubai with the aim of cooperative engagement and maritime cooperation with regional countries.

The Indian Navy took to Twitter and said, "India-UAE #BridgesofFriendship Indigenous guided missile destroyer #INSVisakhapatnam with FOCWF embarked & ASW stealth frigate #INSTrikand are in #Dubai as part of #IndianNavy's ops deployment towards co-operative engagement & maritime cooperation with regional countries. @IN\_WNC"

<https://twitter.com/indiannavy/status/1689238682174394368?s=20>

Earlier, on Tuesday, Indian Embassy in UAE took to its official Twitter and said the ships arrived at Port Rashid for a bilateral exercise with UAE Navy.

"Indian Embassy in UAE took to its official Twitter and said, "Two ships of the #IndianNavy - INS Visakhapatnam and INS Trikand arrived at Port Rashid, #Dubai for a bilateral exercise with #UAENavy. The exercise aims to share best practices and increase synergies between the two Navies. #IndiaUAE" the tweet said.

— indembabudhabi (@indembabudhabi)

India and the UAE established diplomatic relations in 1972 and UAE opened its Embassy in Delhi in 1972 whereas, India opened its Embassy in Abu Dhabi in 1973, according to the Ministry of External Affairs. The traditionally strong bilateral relations enjoyed by India and UAE received impetus with the visit of Prime Minister Narendra Modi to UAE on August 16-17, 2015 which marked the beginning of a new strategic partnership between the two countries.

Bilateral Defence Interaction between India and UAE has been steadily growing in accordance with other aspects of the bilateral relationship.

There have been regular high-level & functional level exchanges between the two countries. The ships of the navies of both countries have regularly made port calls to enhance bilateral defence cooperation.

<https://economictimes.indiatimes.com/news/defence/ins-visakhapatnam-ins-trikand-arrive-in-dubai-to-conduct-bilateral-exercise-zayed-talwar-with-uae-navy/articleshow/102578701.cms>

## THE ECONOMIC TIMES

Wed, 09 Aug 2023

### **BSF's 'Operation Alert' along India-Pak Border from Aug 11-17**

The Border Security Force will run Operation Alert from August 11 to August 17 along the India-Pakistan International Border to thwart infiltration and smuggling attempts in view of the Independence Day. During this, a close watch will be kept by the BSF near the India-Pakistan border. The number of security checkpoints will be increased and camel patrolling as well as foot

patrolling will be enhanced, Inspector General of Border Security Force (Rajasthan Frontier) Puneet Rastogi said.

He said the BSF increases its vigilance ahead of Independence Day.

Although the BSF remains alert on the border throughout the year, but the border guarding force becomes more alert these days, Rastogi said, adding that jawans will be deployed in sensitive areas during the period.

<https://economictimes.indiatimes.com/news/defence/bsfs-operation-alert-along-india-pak-border-from-aug-11-17/articleshow/102580942.cms>

## ThePrint

Wed, 09 Aug 2023

### **India ‘doesn’t Want Chinese South China Sea Playbook’ Replicated — Navy Ex-chief at Taiwan Conference**

In a first, three recently-retired chiefs of the Indian armed forces are in Taipei attending a crucial defence and security dialogue seminar on Indo-Pacific organised by the Taiwan foreign ministry.

Sources in the defence and security establishment told ThePrint that the visit by the former army chief, General Manoj Naravane (retired), ex-navy chief Admiral Karambir Singh (retired) and ex-IAF chief Air Chief Marshal R.K.S. Bhadauria (retired) was private, but on invitation by the Taiwanese foreign ministry.

On Tuesday, the three attended the Ketagalan Forum — 2023 Indo-Pacific Security Dialogue.

In a video of the conference posted on YouTube, Singh can be seen saying that the present global security scenario and the importance of the Taiwan Strait situation to India and the world.

He added that Chinese “belligerence and intimidatory use of hard power” leaves India disconcerted and that “New Delhi does not want the Chinese playbook replicated elsewhere as it is in the South China Sea”.

The former navy chief further said that the world today seems self-defeating and “reminiscent of the cold war era, perhaps even more worrisome”. He added that Taiwan Strait was turning into an “epicenter” of geopolitical confrontation.

Events that happened in the past two years, a reference to the Ukraine war, have split the world into two. As the great power competition spilled over to the Indo-Pacific, developing countries in the Indo-Pacific should not be forced to choose between the “two blocs” — US and China — and affect maritime security, Singh emphasised.

The visit by the former chiefs comes at a time when India’s Chief of Defence Staff (CDS), General Anil Chauhan, has initiated a study on how India could be possibly drawn into a conflict over Taiwan and the steps that could possibly be taken as part of a larger academic exercise.

Both India and Taiwan perceive China as a threat, and seek to strengthen their strategic partnership, according to sources.

Three years have passed since the beginning of the border stalemate between Indian and Chinese forces along the Line of Actual Control (LAC). Meanwhile, the Chinese navy and air force have increased military pressure on Taiwan since 2021.

China asserts that Taiwan is a part of its territory and has put significant economic and political pressure on Taiwan to limit its diplomatic options.

The interests of both USA and China are directly at stake in Taiwan Strait. While China regards Taiwan's unification with the mainland as an unfinished agenda, the USA regards Taiwan as an example of democratic resilience against authoritarianism and a symbol of the free world.

### **'India chosen not to get embroiled in power confrontation'**

"If conflict breaks out in Taiwan Strait, it will certainly not be contained in Strait only but will have serious geopolitical and economic consequences globally, much more serious than the Ukraine Conflict," Singh is heard saying in the video.

He added that for India, any conflict would have serious "direct and second order effects related to geopolitical and economic security".

The former naval chief further suggested that nations need to exist and compete without getting sucked into this ongoing "negative spiral" of great power contestation and the "Cold War mentality" that sometimes drowns out rationality.

Referring to India's stance he said, "India has chosen not to get embroiled in this great power confrontation by focusing on its core interests and building strategic autonomy, not through 'non-alignment in past' but through 'multi-alignment', issue-based convergence and cooperation".

"The world [being] dominated by certain countries is not good for us, and the standoff at the Sino-Indian LAC, which is now in its third year running, has been an inflection point that has sharpened India's competitive skills vis-à-vis China. Chinese belligerence and intimidatory use of hard power leaves India disconcerting, India doesn't want the Chinese playbook replicated elsewhere as it is in the South China Sea," said Singh.

<https://theprint.in/defence/india-doesnt-want-chinese-south-china-sea-playbook-replicated-navy-ex-chief-at-taiwan-conference/1707706/>

# The Tribune

Thu, 10 Aug 2023

## **Beleaguered Pakistan's Nuclear Goals**

*By G Parthasarathy*

With its economy in the doldrums amid strict controls on government expenditure because of tough conditions laid down by the International Monetary Fund (IMF), there is little to cheer today in Pakistan. To add to the country's economic woes, inflationary pressures are making life difficult for the common man. A recent report from the World Bank notes: "Pakistan's economy is currently under severe stress with low foreign reserves, a depreciating currency and high inflation." Pakistan's economy is expected to grow at 0.4 per cent in the current financial year amidst rising inflation and high energy prices. Its agricultural income is expected to contract for the first time in two decades, with industrial production also set to do likewise, resulting in supply chain disruption. Pakistan is going to remain an economic basket case, heavily dependent on foreign economic assistance for the foreseeable future.

China has been providing Pak with material and knowhow to expand its nuclear weapons for over three decades.



Despite concluding an agreement with the IMF and receiving bilateral assistance from countries like Saudi Arabia and the UAE, Pakistan will require strict management of its foreign exchange reserves and economic austerity to get out of the present crisis. While Pakistan's Planning Minister Ahsan Iqbal had projected a 3.5 per cent growth rate this year, experts across the world do not share his optimism. In the meantime, its 'all-weather friend' China is also averse to opening its purse strings generously to meet Pakistan's needs for internationally convertible currencies. Beijing's focus will primarily remain on its Belt and Road Initiative. Moreover, it is questionable whether Pakistan can emulate the success of Sri Lankan President Ranil Wickremesinghe, who has done exceedingly well in meeting the challenge of looming economic bankruptcy in the island nation with astute diplomatic and financial policies.

Amidst these pressing economic problems, Pakistan's 'nuclear weapon leadership' is bent on giving good news to its people, averring that it is all set to take the country into a blissful 'nuclear nirvana'. Pakistan's first 'nuclear czar' was AQ Khan, who died in October 2021. Khan had the dubious distinction of securing employment in a Dutch Company with European affiliations, which worked on research and development of nuclear technology, to produce enriched uranium, using high-speed centrifuges. He was infuriated by Pakistan's defeat in the 1971 conflict, which he often alluded to. He gave then Prime Minister Zulfikar Ali Bhutto detailed information he had obtained on uranium enrichment to produce nuclear weapons. Thereafter, he became the head of Pakistan's Uranium Enrichment Project, based in Kahuta near Islamabad. He was then able to put together the centrifuges required for uranium enrichment.

With China producing enriched uranium-based nuclear weapons, it was inevitable that Pakistan duly received the designs of nuclear weapons from Beijing. Islamabad was, thereafter, ready to assemble its nuclear weapons, which it demonstrated by testing the weapons soon after India tested its (plutonium-based) nuclear weapons in 1998. It was only a question of time before AQ Khan was eased out of office on the charges of corruption and providing nuclear weapon designs to some Islamic countries, evidently at handsome prices. Countries like the US were quite obviously not pleased with these happenings. Nevertheless, AQ Khan remains a national hero.

His successor as the head of Pakistan's Nuclear Weapons Programme was Lt Gen Khalid Kidwai, a highly regarded artillery officer who was a prisoner of war in India in the aftermath of the 1971 Bangladesh war. It was Kidwai's assumption of office that led to the enunciation of a nuclear doctrine by Pakistan after its nuclear tests in 1998. Kidwai's doctrine spelt out the circumstances under which Pakistan would resort to the use of nuclear weapons. He noted that Pakistan would be 'compelled' to use its nuclear weapons if India attacked and conquered a "major portion of Pakistani territory", or destroys a large portion of its land, or air forces. For good measure, Kidwai added that Pakistan would act identically if India tried to economically strangle Pakistan or destabilise it internally through large-scale subversion.

Kidwai is still the public face of Pakistan's nuclear ambitions and policies. Pakistan is today estimated to possess 170 nuclear weapons compared to India's 164, according to some international organisations. Pakistan also has a wide range of Chinese-supplied nuclear-capable missiles, ranging from Shaheen 1 (range 750-900 km) to Shaheen 3 (range 2,750 km). Pakistan's nuclear weapons and missiles are established as being of Chinese design. At the same time, Pakistanis recognise that a nuclear conflict would be self-destructive. India's effort has logically been based on building capacities to face 'two-front nuclear challenges'. China has, after all, been providing Pakistan with material and knowhow to expand its nuclear weapons and missile capabilities, for over three decades now. While India has nuclear capabilities to target China, it would be more than prudent for New Delhi to further strengthen the capabilities of its nuclear delivery systems. This would require the indigenous development of at least three more nuclear submarines, which will ensure

that there can be no doubt anywhere about the reach of India's nuclear weapons, and ensure the credibility of its deterrence.

Amidst this security scenario, with a politically volatile Pakistan heading for national elections by the end of this year, one can expect little or no result from any new diplomatic initiative to bring about any serious change in Pakistani thinking. While political-level talks are presently not on the cards, it would be useful to continue serious back-channel talks in which the Pakistan military is involved. The animosity between Pakistan army chief Gen Asim Munir and former PM Imran Khan goes back to the days when the latter had arbitrarily removed him from the prestigious post of the ISI chief. Imran, who was convicted and sentenced last week in the Toshakhana case, is also disliked by the Biden administration, which had a cosy relationship with former army chief Gen Bajwa who, quite evidently, had a hand in Imran's ouster. Gen Munir will certainly not treat Imran with kid gloves.

<https://www.tribuneindia.com/news/comment/beleaguered-pakistans-nuclear-goals-533663>

## ARMY TECHNOLOGY

*Wed, 09 Aug 2023*

### **Quantum Interceptor Technology Showcased for Missile Defence**

Quantum computing company D-Wave announced progress in national defence solutions on 7 August, after revealing an interceptor assignment application at the Space and Missile Defence Symposium this week.

Since August 2022, D-Wave, housed at the USC-Lockheed Martin Quantum Computing Center, has worked in conjunction with aerospace and missile defence company Davidson Technologies to produce a quantum computing technology that is able to take into account missile capability in negating threats, balanced allocation of missiles to threats, and the availability of resources for threat identification and mitigation.

Global missiles and missile defence market is set to reach \$67.5bn by 2033, according to GlobalData's "The Global Missiles & Missile Defense Systems Market Forecast 2023-2033,"

The companies also showcased the use of quantum computing in the management of a phased-array radar, enabling the scheduling of time-limited resources when communicating with moving objects.

As the first commercial provider of quantum computers and the only company to construct both annealing quantum computers and gate-model quantum computers, D-Wave is at the forefront of developing and delivering quantum computing systems, software, and services.

D-Wave and Davidson have been working together since August 2022, when they signed a reseller agreement that allows Davidson to resell D-Wave's products and services, including the Leap quantum cloud service. "During times of military response, speed matters, and our artificial intelligence, powered by D-Wave's technology, provided an answer much faster than other computational options," said Major General John W. Holly (USA, Ret.), president, CEO and chairman of Davidson. "Our mission is to deliver advanced, agile technology solutions in defence of our Nation, and together with D-Wave, we're providing our government customers with critical applications in service to our country."

Dr. Alan Baratz, CEO of D-Wave, said that “By utilising emerging and advanced technologies, Davidson is able to provide its customers with unique military implementation and national defence tools.” He went on to state D-Wave and Davidson would be working together in a multi-year relationship to advance more “more robust application development”.

According to GlobalData’s ‘Thematic Intelligence: Quantum Computing’ report, the US is planning \$3 billion in federal quantum projects, with another \$1.2 billion coming from the National Quantum Initiative. President Biden signed the CHIPS and Science Act in 2022, which “authorises new investments in core quantum research programmes.” Even more money is likely to come from Pentagon “black budget” projects.

In the UK, the National Security Strategic Investment Fund (NSSIF) has spent £2.6m in R&D contracts with quantum enterprises, stimulating development in the UK quantum ecosystem, as part of its plan to provide insight and access to quantum computing.

On 2 August, MBDA, leaders of the HYDIS consortium, announced that the European Commission has backed the project framework for research on a hypersonic interceptor, through the European Defence Fund. The consortium contributes to the AQUILA concept for an endo-atmospheric hypersonic interceptor capability that can reach 100km above the surface of the Earth.

<https://www.army-technology.com/news/quantum-interceptor-technology-showcased-for-missile-defence/>

## THE ECONOMIC TIMES

Wed, 09 Aug 2023

### **Russia to Build up Forces in West to Counter NATO Threat, Says Defence Minister Shoigu**

Russia will build up forces at its western borders following Finland's accession to the U.S.-led NATO alliance, Russian Defence Minister Sergei Shoigu told the governing board of the ministry on Wednesday. In opening remarks to the Collegium of the Defence Ministry, Shoigu said NATO-member Poland had already announced plans to strengthen its military, and that he expected significant NATO forces and weaponry to be deployed in Finland, whose inclusion has almost doubled the length of Russia's land border with NATO.

"The collective West is waging a proxy war against Russia," he said, according to his ministry, pointing to its "unprecedented support" for Ukraine in supplying tens of billions of dollars' worth of weaponry to help Kyiv repel Russian forces.

Shoigu called the entry of Finland into NATO and the future entry of Sweden "a serious destabilising factor". The two Nordic states abandoned generations of neutrality that had held throughout the Cold War to seek NATO membership following Russia's invasion of Ukraine early last year.

"On Finnish territory, it is likely that additional military contingents and strike weapons of NATO will be deployed, capable of hitting critical targets in the northwest of Russia at a considerable depth," Shoigu said.

"Today, at the meeting of the Board, we will consider issues related to the creation of the Leningrad and Moscow military districts with the simultaneous strengthening of groupings of troops of the Armed Forces of the Russian Federation on our western borders."

He said Poland had announced its intention to build the most powerful army on the continent, and had become "the main instrument of the anti-Russian policy of the United States of America".

Shoigu said the number of NATO military units from outside the region stationed in eastern Europe had increased by two-and-a-half times since February last year and that they were now 30,000-strong in total.

"These threats to Russia's military security require a timely and adequate response. We will discuss the necessary measures to neutralise them at the meeting and make appropriate decisions," he said.

<https://economictimes.indiatimes.com/news/defence/russia-to-build-up-forces-in-west-to-counter-nato-threat-says-defence-minister-shoigu/articleshow/102576181.cms>



*Wed, 09 Aug 2023*

## **Ukraine to Receive Additional Patriot Air Defence Systems from Germany -Zelenskiy**

Germany and Ukraine have agreed on the supply of additional Patriot air defence missile systems to Kyiv, Ukrainian President Volodymyr Zelenskiy said in his evening address on Wednesday.

"Today there is good news from Germany – exactly what we agreed with (German Chancellor) Olaf Scholz. There are additional Patriot systems. Thank you very much, Olaf, it is necessary for the defence of our people against Russian terror," Zelenskiy said.

Earlier on Wednesday, Germany announced its decision to ship two more Patriot launchers to Ukraine.

"This will definitely bring us closer to creating a full-fledged air shield for Ukraine. This will help people, cities, villages," Zelenskiy said.

Ground-based air defence systems such as Raytheon's (RTX.N) Patriot are built to intercept incoming missiles.

They are, however, in short supply across NATO since many allies scaled down the number of air defence units after the Cold War.

<https://www.reuters.com/world/europe/ukraine-receive-additional-patriot-air-defence-systems-germany-zelenskiy-2023-08-09/>

# THE ECONOMIC TIMES

*Wed, 09 Aug 2023*

## **Pentagon Eyes Missile Testing Role for Australia**

Australia could be a testing ground for US hypersonic and other long-range precision weapons under the AUKUS pact, a top Pentagon official told AFP on Wednesday.

US Secretary of the Army Christine Wormuth said Australia's contribution to the three-way AUKUS agreement, which includes Britain, "doesn't always have to be dollars".

The pact was signed in late 2021 and is seen as a way of countering China's growing clout in the Asia-Pacific region.

Work under AUKUS has so far focused on supplying Australia with nuclear-powered submarines, a fleet capable of travelling stealthily over vast distances and striking foes at long range.

But the pact is increasingly focused on developing advanced capabilities such as long-range precision firing, artificial intelligence and hypersonic weapons.

Wormuth said Australia could be a proving ground for these weapons.

"One thing Australia has in spades is long distances and relatively unpopulated land," she told AFP in a telephone interview from Washington.

"A challenge for us in the United States when it comes to hypersonics or even some of our things like the precision strike missile -- which is not a hypersonic weapon but has very long ranges in some of its increments -- for us to find open spaces in the United States where we can actually test these weapons, it's a challenge.

"Australia obviously has a tremendous amount of territory where that testing is a little bit more doable -- so I think that's a unique thing, as an example, that the Australians bring to the table."

China has denounced the AUKUS pact as undermining peace in the region -- a charge that Washington, Canberra and London reject.

But critics have also asked whether it is truly cooperative, or whether the United States, because of its size and overwhelming military power, will dominate.

Wormuth said she expected the two smaller partners to pitch in and "have skin in this game -- and they do".

"The sense I got certainly from talking to senior Australian officials is they're not doing this to make us happy, they're not doing this just for fun," said the Pentagon official, who visited Australia last week for the Talisman Sabre multinational military exercise.

"They're doing this because they see it as in their own national interest in terms of being able to meet the different challenges that they see in the theatre."

### **'Prohibitively expensive'**

Facing Russia's war in Europe, threats from North Korea and a more bellicose China, the United States has sought to bolster its defence alliances and put more advanced capabilities into the hands of allies like Australia, Ukraine and Taiwan.

For much of the Cold War, it was Washington's policy to be able to fight two major wars at once.

Wormuth admitted that today, budget constraints, US public opinion and the relative strength of Russia and China make such a doctrine impossible.

"I think there is a recognition that when you look at the size of our military, when you look at the size of the defence budget that the American taxpayer is willing to pay for, we... don't plan to fight more than one major war at a time," she said.

Instead, the United States hopes its alliance and nuclear arsenal will "discourage opportunistic aggression".

"Given the sophistication of the Russian military and the Chinese military today, to try to size our military to hypothetically handle two wars at a time would be prohibitively expensive".

<https://economictimes.indiatimes.com/news/defence/pentagon-eyes-missile-testing-role-for-australia/articleshow/102576151.cms>

## **Russia's 'Deadliest Missile' – Kh-50 – Gets Operational; Can Penetrate Contested Airspace Better than any Other Missile**

*By Vijander K Thakur*

The recent reports, if true, about the operational use of the Kh-50 missile by Russia are sure to send a chill down the collective spines of the Ukrainian leadership.

The reports first appeared in the Russian language blogosphere. Later, they started to appear in traditional media. Rossiyskaya Gazeta, on August 3, citing unnamed media, wrote about the growth in production and the active use of the Kh-50.

### **What's The Big Deal?**

Russia has several capable cruise missiles, but they all have serious shortcomings in the context of the Ukraine war. They are either very heavy (Kh-101, Kh-55) or not stealthy (3M14 Kalibr, Kh-55), or both (Kh-55).

Some don't have the range (Onyx). The really good ones – destructive and unstoppable (Kinzhal and Iskander-M) – are woefully expensive and can only be used sparingly.

The problem with heavy missiles such as the Kh-101 and Kh-55 is – they needed to be hauled into the air for launch by lumbering bombers. The heat signatures from the four engines of the bombers are picked up by US SBIRS satellites as soon as the bombers start up for taxiing, giving Ukraine 1 to 2 hours of warning!

Following their launch from the bombers, the heat signature from the turbojets powering the heavy missiles is also likely tracked by US satellites, notwithstanding the LO (low observable) shaping of the missile!

The lighter but non-LO missiles are easily tracked by Ukrainian surveillance and air defense (AD) radars, as also by US/NATO AWACS. Many of them are shot down before they reach their targets.

What Russia needs most and doesn't have is a Storm Shadow/Scalp-EG-like missile with a 1500 km range. Well, the Kh-50 is just that!

### **Are Reports Of Kh-50 Use Credible?**

One reason why the reports may be credible is that it was the Ukrainian General Staff that, in mid-April 2023, first stated that Russia was reviving production of the hitherto dormant Kh-50 missile project.

The Ukrainian Air Force spokesperson Yuriy Ihnat told the media that Russia wanted to revive old projects, like plans to produce Kh-50 missiles.

“Previously, the Kh-50 project was impractical for Russia because they had a better missile – the Kh-101,” Ihnat said.

Deputy Chief of the Main Operational Directorate of the General Staff of the Armed Forces of Ukraine, Oleksii Hromov, said Russia intends to mass-produce Kh-50 cruise missiles by fall this year.

For some time, a stock of such products will be accumulated, which will then begin to be used in strikes against Ukrainian targets.

## **Kh-50 Features**

Raduga Design Bureau of Dubna developed the Kh-50 within the Kh-SD (Sredney Dalnosti, medium-range) program. Research and development work on the Kh-SD began in the early 1990s but was subsequently suspended for several years.

According to Janes, the Kh-50 is about six meters long and weighs around 1,600 kg. It's powered by an OMKB izdeliye 37-04 (or TRDD-50B) turbofan engine.

The missile is estimated to have a range of over 1,500 km, a cruise speed of 700 kph, with a max speed of 950 kph. (Faster cruise would result in a shorter range.)

The missile is estimated to feature a warhead weighing 450 kb.

The missile's airframe features a flattened cross-section and faceted sides. The shape combines the requirements of low radar cross-section and the most efficient use of the heavy bomber's weapon bay capacity when loaded on a six-round rotating launcher.

In several ways, the Kh-50 comes through as a miniaturized Kh-101. Like the Kh-101, the Kh-50 represents the state of the art in cruise missile technology. Both missiles feature:

- LO shaping
- Composite airframe for radar signature reduction
- INS navigation with SATNAV / TERCOM (Terrain Comparison) fixing
- Optical / IR target recognition

The Kh-50's electro-optical digital correlating system for navigating and target recognition, called "Otblesk," is roughly analogous to US DSMAC.

The Kh-50 is about 1.5 meters shorter than the Kh-101 and about 800 kg lighter. Both the missiles have a 400-450 kg warhead.

Because of its smaller size, the Kh-50 carries less fuel and consequently has a shorter range. The estimated range for the Kh-101 is 5500 km and for the Kh-55, just 1500 km.

## **Kh-50 Missile Advantages**

Being smaller, the Kh-50 likely has a lower radar signature.

Additionally, it is honed for low-altitude flight and features a defensive suite comprising EW and flare heat traps. Not only can the missile evade radar detection, but it can also protect itself from air defense and air-to-air missiles equipped with RF and IIR seekers.

The Kh-50 can penetrate heavily contested airspace better than any other Russian cruise missile.

To negate the superiority of Russian fighters, the West has generously transferred its best AD systems to Ukraine. The Kh-50 is honed to fly through NASAMS, IRIS-T, and Patriot systems defended airspace unscathed.

In the context of Ukraine, the shorter 1,500 km range of the Kh-50 missile is a blessing, not a handicap. Besides making the missile stealthier, it makes it cheaper and more cost-effective.

The smaller size and higher speed of the Tu-22M3 will complicate missile launch detection and likely allow the launch platform to come close to the battlefield, reducing flight and warning time.

## **Conclusion**

No one has seen the Kh-50, and no one has been briefed on the features of the Kh-50 missiles.

Like the blind men in the fable – The Five Blind Men of Hindustan – we could say the Kh-50 is a miniaturized Kh-101 or a souped-up Storm Shadow. We would be partly right either way.

Whichever way you look at the missile, its operational introduction into the special military operation in Ukraine will likely give Russia a serious advantage, as did the Ka-52 helicopter, Lancet Kamikaze drone, and FAB-500M62 glide bomb.

<https://www.eurasiantimes.com/russias-deadliest-missile-kh-50-gets-operational-can-penetrate/>

## Science & Technology News



Thu, 10 Aug 2023

### **Ahead of Chandrayaan-3 Lander's Soft Landing ISRO Assesses Current Situation Around the Moon**

In the run-up to the Chandrayaan-3's lander's soft landing on the moon's surface on August 23, the Indian Space Research Organisation (ISRO) has carried out an assessment of the current space situation around the moon.

The space agency which released the document on August 9 stated that the moon and Mars are the most explored and also comparatively more crowded planetary bodies at present.

It added that India's Chandrayaan-3 is the latest entry into lunar orbit and more intensified activities around the moon are foreseen in the next few years due to the renewed interest in lunar exploration, heralded by Artemis missions for return to the moon and preparations for colonisation of Mars.

“While the previous missions were essentially aimed at scientific explorations, upcoming ventures will likely involve multiple actors of diverse interests, including those primarily driven by resource utilisation for commercial purposes. A better understanding of the environment is needed to formulate reasonable mitigation practices to avoid close-approach threats in planetary orbits,” ISRO said.

#### **Current situation around the moon**

ISRO said that as of July 2023, there are six active lunar orbiters.

It said that two of the five probes of NASA's THEMIS mission have been re-purposed under ARTEMIS as ARTEMIS P1 and ARTEMIS P2 and both operate in eccentric orbits of low inclination.

The assessment stated that NASA's Lunar Reconnaissance Orbiter (LRO) orbits the moon in a nearly polar, slightly elliptical orbit. The Chandrayaan-2, the second lunar mission of ISRO and Korea Pathfinder Lunar Orbiter (KPLRO) also operate in polar orbits of 100 km altitude.

Besides, NASA's Capstone operates in a 9:2 resonant southern L2 NRHO, its perilune passes over the lunar north pole at 1500-1600 km altitude, while the apolune is over the South pole at a distance of nearly 70,000 km. The Japanese spacecraft Ouna which was placed in lunar orbit as part of Kaguya/SELENE mission in 2009 and Chandrayaan-1 launched in 2008 are the two defunct spacecraft, ISRO said. It said that all the other orbiters have been either moved out of the moon-bound orbital regime or have landed/impacted the lunar surface, either deliberately or due to failure



to land softly. For example, the Chang'e 4 mission's data relay satellite Queqiao, launched by China in May 2018, was later moved to a halo orbit near the Earth-Moon L2 point.

“Currently, the only operating rover is China's Yutu-2 rover released by Chang'e 4, which operates on the far side. From the available media sources, it is expected that Luna-25 of Russia with a lander and rover will be in a lunar orbit of 100 km by August 16, 2023, and will be landing on the south pole of the moon by August 21-23, 2023,” ISRO added.

### **Role of India and way forward**

ISRO said that India has pro-actively taken up many initiatives in collaboration with International Organisations like the Inter-Agency Space Debris Coordination Committee (IADC), which include studies related to the future evolution of space object environment in the cislunar and lunar region to bring out specific guidelines and best practices for space operations to be sustainable in these regions.

<https://www.thehindu.com/sci-tech/science/ahead-of-chandrayaan-3-landers-soft-landing-isro-assesses-current-situation-around-the-moon/article67178984.ece>



*Wed, 09 Aug 2023*

## **Japanese Delegation in Talks with ISRO for Using Data from Lunar and Solar Missions**

Indian Space Research Organisation (ISRO) Chairman S. Somanath met Dr. Saku Tsuneka, Director General, National Astronomical Observatory of Japan, on August 8. They discussed space science cooperation between India and Japan.

According to ISRO, India-Japan space science cooperation at national level, space agency level (ISRO & JAXA), and institute-level were discussed with specific reference to the joint LUPEX (Lunar Polar Exploration) mission.

The Indo-Japanese LUPEX mission was envisaged to explore the 'dark side of the moon', or in scientific terms, the side that is perpetually facing away from Earth.

The main objective of the mission is to confirm the presence of water in the polar regions of the moon. The mission is expected to be launched in the next couple of years. The launch vehicle for the mission will be a Japanese rocket, the lander system will be developed by ISRO and the rover by Japan Aerospace Exploration Agency (JAXA). Its landing point will be the south pole of the moon. During the meeting with Dr. Tsuneka, who is also Vice-Chair of Japan's Cabinet Committee on National Space Policy, potential cooperation opportunities in utilisation of data from Aditya L1 and Chandrayaan-3 missions, development of smaller lander for lunar exploration; and joint activities under QUAD Space working group were also discussed.

ISRO is planning to launch the Aditya-L1 mission in August-end, or early September. Aditya-L1 is the first Indian space mission to observe the Sun and the solar corona.

The Chandrayaan-3 moon mission, which was launched on July 14, has been successfully inserted into lunar orbit. The lander is expected to touch down on the lunar surface on August 23.

<https://www.thehindu.com/sci-tech/science/japanese-delegation-in-talks-with-isro-for-using-data-from-lunar-and-solar-missions/article67175270.ece>

