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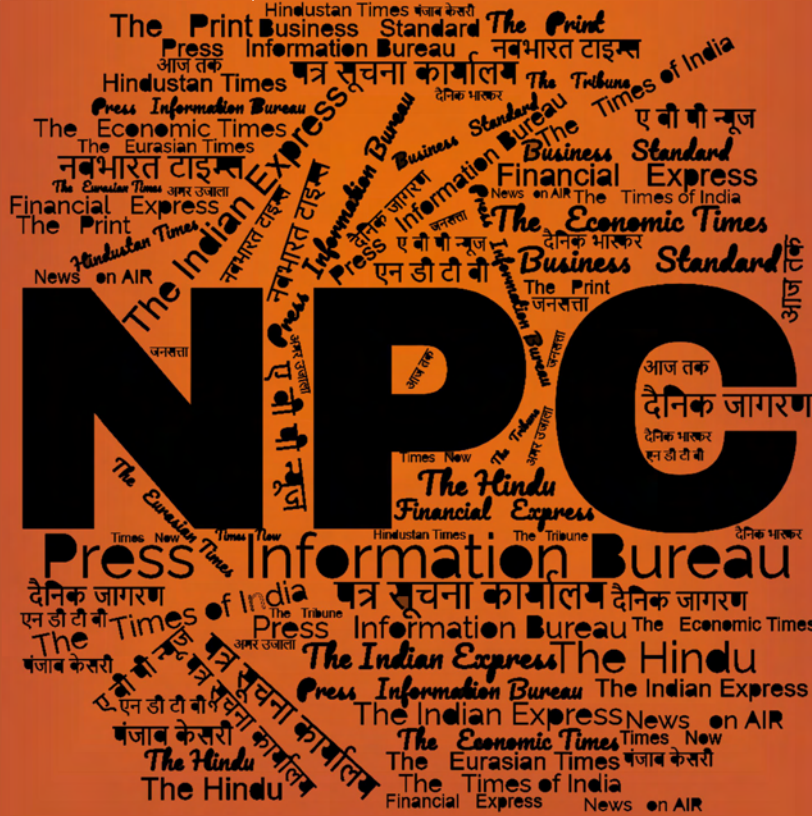
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DRDO News

DRDO Technology News

THE TIMES OF INDIA

Mon, 20 Mar 2023

CUMI Signs Tech Agreement with DRDO Research Centre Imarat Lab

Murugappa group company Carborundum Universal Limited (CUMI) has signed a licensing agreement for transfer of technology with DRDO's Research Centre Imarat (RCI) Laboratory. This is in order to manufacture ceramic radomes (GELCAST Process) technology used in missile systems.

Ceramic radome technology is considered state-of-the-art missile technology world-over. Since missiles undergo extremely high surface temperatures while traveling through the atmosphere, ceramic is considered optimal radome material. The design of ceramic radomes for defence activities requires specific expertise and stringent testing at every stage to ensure reliability and accuracy.

RCI is a premier laboratory of Dr APJ Abdul Kalam Missile Complex, DRDO, spearheading R&D in a wide range of avionics systems for diversified defence and aerospace applications.

“With our strong legacy of being in the material sciences industry for almost 70 years, CUMI is honoured to contribute to a strong and self-reliant defence sector. Our operations are completely made in India - from mineral sourcing and processing to research and testing, CUMI is completely localized with 100 % end-to-end integration in the country,” said Subbu Venkatachalam, head of marketing, CUMI. “We are grateful to the team at DRDO's Research Centre Imarat Laboratory for the opportunity and look forward to a continued association.”

CUMI's focus for the aerospace and defence industry has been on all-terrain safety and protection for man and machine. CUMI's lightweight ceramic ballistic solutions engineered with alumina, zirconia-toughened alumina and silicon carbide are customisable into various sizes and shapes for use in bulletproof vests.

CUMI's lightweight ceramic materials are used for ballistic and blast-proof protection for armoured vehicles. CUMI is one of the first companies to produce graphene for aerospace & defence applications in India and is also involved in bringing composite technology for unmanned aerial vehicles (UAVs) including CFRP tubes, panels, and customised composite structural parts for drones.

<https://timesofindia.indiatimes.com/business/india-business/cumi-signs-tech-agreement-with-drdo-research-centre-imar-at-lab/articleshow/98820872.cms?from=mdr>

The Tribune

Mon, 20 Mar 2023

TBRL Celebrates 63rd Raising Day

Terminal Ballistic Research Laboratory (TBRL) celebrated its 63rd Raising Day at its range in Ramgarh near Chandigarh today. Dr Samir V Kamat, Secretary, Department of Defence Research and Development and Chairman, Defence Research and Development Organisation (DRDO), was the chief guest on the occasion.

Stressing on the requirement for DRDO to increase interactions with the industry and academia, he appreciated the role of scientists working in the field of test and evaluation of armaments and protective systems.

He said the test facilities at TBRL were being extended to Indian industries, research and development organisations and the academia to support the 'Make in India' effort.

Emphasising the need to develop next generation technologies, Director General (Missiles and Strategic Systems) Dr BHVS Narayana Murthy said applied research should be promoted to nurture young brains and talent in all areas.

Prof Prateek Kishore, Director, TBRL, presented a detailed plan for augmenting the laboratory's capacity and capabilities for different technology areas.

On the occasion, the Authority Holding Sealed Particulars (AHSP) of a multi-mode hand grenade (MMHG) developed by TBRL was transferred to the Army's Directorate General Quality Assurance. Over nine lakh such grenades have been manufactured by the industry after transfer of technology. — TNS

Technology transfer

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<https://www.tribuneindia.com/news/chandigarh/tbri-celebrates-63rd-raising-day-489837>

Defence News

Defence Strategic : National/International



Press Information Bureau
Government of India

Ministry of Defence

Mon, 20 Mar 2023

Export of Defence Products

Department of Defence Production (DDP) issues authorisation for export of Munitions List items covered in Category 6 of Special Chemicals, Organisms, Materials, Equipment and Technologies (SCOMET). Such exports authorisation are granted as per Standard Operating Procedure (SOP) issued by DDP. This equipment is exported to different countries all over the world. Names of countries with whom contracts have been signed and negotiations held cannot be divulged due to strategic reasons. The value of defence export during the last five years is as under:

(Rs in Crores)

	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23 (till 14.03.2023)
Value of Export	4,682	10,746	9,116	8,435	12,815	13,399

This information was given by Raksha Rajya Mantri Shri Ajay Bhatt in a written reply to Shri Vijay Pal Singh Tomar in Rajya Sabha today.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1908801>



Mon, 20 Mar 2023

Over 26,000 Defence Items Uploaded on SRIJAN Portal and Offered to Industry for Indigenisation

The government has said that defence imports have reduced from 46 per cent to 36.7 per cent since 2018-19. In a written reply to a question in the Rajya Sabha, Minister of State for Defence

Ajay Bhat said that in order to promote self reliance, the government has notified four Positive Indigenisation Lists comprising 411 major weapons platforms and systems. He informed that over 26 thousand defence items have been uploaded on SRIJAN Portal and offered to the Industry for indigenisation. Mr Bhatt added that indigenisation is a dynamic process and so far more than seven thousand items have already been indigenised, which cater to the domestic and global markets.

<https://newsonair.com/2023/03/20/over-26000-defence-items-uploaded-on-srijan-portal-and-offered-to-industry-for-indigenisation/>

R. REPUBLICWORLD.COM

Mon, 20 Mar 2023

Army Set to Induct 'Veer' Ballistic Helmets for Sikh Soldiers, Worn on Top of 'Patka'



Image: MKU Ltd (SCH 112 'Veer' Helmet for Sikh Soldiers)

The contemporary scenario of modern warfare makes the inclusion of Bullet Proof Jackets and Bullet Proof Helmets in the battle gear an important requisite for the protection of Indian soldiers. According to the Ministry of Defence, the safety of Indian troops deployed on security duties is considered paramount. Notably, the Indian Defence Ministry has made the bid to induct the latest design of 'Veer' helmets made by MKU Limited.

The Veer helmets have been specifically designed to cater to the needs of Sikh soldiers and can work over the traditional 'Patka' worn by the Sikh soldiers. The SCH 111 and SCH 112 helmets also termed the Veer series of helmets have been designed by the MKU to provide all-round head protection to Sikh soldiers.

Furthermore, the ballistic Veer helmet is designed to be lightweight to enable usage for a longer duration. The Indian MoD stated in a press release that the modern-day soldier requires complete protection from "the newer and emerging threat of warfare".

MKU's notable contributions to the Indian forces

The government opened the domain of defence production for the private sector in May 2001 with a vision to increase indigenisation and ensure self-reliance in defence production. Various companies have since entered the domain and subsequently bolstered the nation's capabilities in modernisation as well as indigenisation of defence manufacturing. MKU Limited has made several significant contributions to the Indian Army's arsenal.

Notably, MKU became the first private defence firm in March 2022 to receive the Transfer of Technology (ToT) of the T-90 Main Battle Tank's driver night sight from the Defence Research and Development Organisation (DRDO). The step to initiate a ToT with the MKU was undertaken by the DRDO after careful consideration and was aimed to provide the Indian Army's T-90s with MKU's Netro TD-5100 Driver Night Sight.

The TD-5100 is categorised as a smart solution designed for the Indian T-90s offering enhanced operational capabilities and situational awareness. Furthermore, the Driver Night Sight can be used by other T- series tanks, BMPs, and armoured vehicles of the Indian Armed Forces.

MKU Limited signed another ToT with the DRDO and the Defence Bio-Engineering and Electro Medical Laboratory (DEBEL) on February 16, 2023, to indigenise the production of Common Aircrew Helmets and Lightweight Integrated Aircrew Helmets. The step was considered a major boost to India's "Atmanirbhar Bharat" initiative.

Notably, the use of specific protective equipment and clothing by a Fighter Pilot as well as air crew is mission oriented. MKU, DEBEL and the DRDO have decided to collaborate in the production of Integrated Aircrew Helmets considering the significance of providing light weight solutions to the Indian Armed Forces and enhance long endurance missions.

<https://www.republicworld.com/india-news/general-news/army-set-to-induct-veer-ballistic-helmets-for-sikh-soldiers-worn-on-top-of-patka-articleshow.html>



Mon, 20 Mar 2023

Power of Women in the Indian Armed Forces

In recent times, the Indian Armed Forces has seen a surge in the participation of women. In a major push to the women intake by the forces, the government has also taken significant steps to increase the percentage ratio of women officers and other ranks (ORs). Whether it's women in combat roles or the medical services in Defence, it's a significant push towards their empowerment.

Employment in Indian Armed Forces is gender neutral. There is no distinction in the deployment and working conditions of male and female soldiers in the arms and services in which they serve. The postings are as per organizational requirements and employment is as per qualifications and service qualitative requirements.

In a written reply to MPs Queen Oja and TR Baalu in Lok Sabha, MoS for Defence Ajay Bhatt shared information about the number of women serving in the Defence forces. He said, at present, women are serving in officer's cadre only in the Indian Air Force (IAF). The strength of women officers, as on March 01, 2023, in the IAF (excluding Medical and Dental branches) is 1,636. The strength of women officers in the Indian Navy, as on March 09, 2023, is 748 including Medical and Dental officers.

All wings of the Indian Armed Forces have women in combat roles. Women are allowed in combat services and supervisory roles (as officers). In the Indian Army, the grant of Permanent Commission to Women Officers (WOs), a gender-neutral career progression policy covering employment and promotional aspects was promulgated on 23.11.2021. It provides equal opportunities to women officers in the Arms/Services where they are commissioned.

The rules in this regard are gender neutral and provide them equal opportunities. Their medical fitness and medical conditions are also factored prior to their effective utilization.

Apart from that Indian Army, Indian Air force and Indian Navy are taking various initiatives to encourage women to join the forces. Some major steps taken by Defence forces to provide equal opportunities to women are follows:

Women in Indian Army

The Indian Army is encouraging women to join the force by adopting enabling policies for their inclusion. The Indian Army has taken many initiatives for that; some recent major initiatives underway are:

– Grant of Permanent Commission (PC) to Women Serving Personnel

Permanent Commission is being granted to women officers (WOs) in 11 arms & services (in addition to Army Medical Corps, Army Dental Corps and Military Nursing Service) viz., Army Service Corps (ASC), Army Ordnance Corps (AOC), Army Education Corps (AEC), Judge Advocate General Branch (JAG Br), Corps of Engineers (ENGRS), Corps of Signals (SIGS),

Corps of Electronics and Mechanical Engineers (EME), Intelligence Corps (Int Corps), Army Air Defence (AAD), Army Aviation, Remount and Veterinary Corps (RVC)

– Women in National Defence Academy (NDA)

The Armed Forces have opened entry for women candidates in NDA with 19 cadets, including 10 for the Indian Army, joining the academy every six months. The first batch of women cadets has started training in the NDA with effect from July 2022, and the second batch has commenced training with effect from January 2023.

-Women in Army Aviation

Since 2021, the Indian Army has also opened avenues for women officers to serve as pilots in the Corps of Army Aviation.

– Women Officers in Remount and Veterinary Corps (RVC)

On March 1, 2023, the government approved women officers for the RVC, and four of the RVC's twenty officers will be women.

– Colonel (Select Grade)

Women officers are also being considered for Colonel (select grade) ranks and are being given command appointments. Certain waivers have also been given to WOs to rule out any impediment in career progression of those who could not undergo mandatory career courses during the transition period.

Junior Commissioned Officers (JCOs)/Other Ranks (OR)

Provision for enrolment of women as Other Ranks in Corps of Military Police in the Indian Army has been introduced in 2019. Under the scheme, 1700 women are targeted to be inducted in a phased manner (approximately 100 per year). The induction of women in the services has commenced from 2020. The first batch of 100 women in other ranks passed out in the first week of May 2021, after completion of 61 weeks of training. Another 100 women soldiers have been inducted through the Agnipath Scheme. 100 vacancies each have been catered for in Agnipath scheme for the recruiting years 2022–23 and 2023–24.

Women in Indian Air Force

In the Indian Air Force, women officers are empowered to hold key appointments including commanding officers in combat units of various field units. Women officers are inducted in all branches and streams of the Indian Air Force. Gender neutral approach is facilitating the employment of women officers of Indian Air Force in all combat roles without any restrictions. They are flying fighter aircraft and operating from the length and breadth of the country in all branches of the IAF with pride.

Opportunities for a career in the IAF are widely publicized through print/electronic media and special publicity drives. An opening has also been provided through NCC Special Entry for flying SSC (Women) from July 2017 onwards.

'DISHA' cell at Air HQ conducts various induction publicity programmes across the country related to the induction/ career of Officer Cadre in the IAF. Women candidates are encouraged during such publicity drives to join the IAF as a preferred career option. Conduct of motivational talks by women officers gives female students an opportunity to interact with them and clear

their apprehensions. The scope of choosing IAF as a career is covered in terms of prospects, facilities, work profile, benefits etc. during these sessions.

Women in Indian Navy

In the Indian Navy, the officers are given opportunities for spouse co-location, resettlement posting, and compassionate grounds posting in a gender-neutral manner. Women are granted Maternity Leave and Child Care Leave, etc. in addition to other leaves applicable to their male counterparts.

The Indian Navy ensures gender neutrality in almost all aspects. The steps taken by IN to give equal opportunities to women akin to their male counterparts and to accommodate more women into the Indian Navy are as follows:

– Permanent Commission to Women Officers

SSC women officers in the Indian Navy are eligible for consideration towards grant of Permanent Commission. As on date, 59 women officers (excluding Medical and Dental officers) have been granted PC.

-Women Officers Onboard Ships

Women officers are being appointed onboard warships. Currently, 33 women officers are deployed on afloat billets.

-Naval Air Operations (NAO) Officers on Helicopters

Women NAO officers have been appointed as specialist NAO officers to ship borne helicopters.

-Overseas Assignments

Women NAO officers have been deputed overseas to Maldives, as part of Dornier aircrew for a period of one year w.e.f. September 2020 onwards. In addition, women officers are also deputed abroad for shorter durations as part of Mobile Training Teams and other foreign cooperation engagements.

-Entry of Women into NDA

Entry of women candidates into NDA has been permitted from 2022 wherein women officers are being inducted as PC officers. Three vacancies per batch have been allocated at NDA for women candidates of Navy and the first batch has joined in July 2022.

-Women in all Branches/Cadres/Specialisations

Entry of women in all Branches/ Cadres/ Specialisations (except Submarine specialization) is targeted to commence w.e.f. June 2023.

-Women as Agniveers

As part of the Agnipath Scheme, women have been enrolled as Agniveers commencing from the first batch itself. They are subjected to the same training curriculum, professional courses and retention criteria as compared to their male counterparts.

<https://newsonair.com/2023/03/20/power-of-women-in-the-indian-armed-forces/>

Mon, 20 Mar 2023

India and Japan to Deepen Defence Ties

India and Japan are set to deepen bilateral cooperation in defence and security, trade and investment, and high technologies, Indo-Pacific among other issues. During the wide ranging talks the two leaders Prime Minister Narendra Modi and Japanese Prime Minister Fumio Kishida discussed expansion of India-Japan strategic partnership for a peaceful, stable and prosperous post-Covid world.

Briefing the media at the end of the bilateral talks between Prime Minister Narendra Modi with his Japanese counterpart Fumio Kishida, foreign secretary Vinay Kwatra said that the key topics of discussion included domain of defence and security, skill development, Indo-Pacific, regional issues of significance and more.

Responding to a question put forth by Financial Express Online, the foreign secretary said that the two leaders did speak about the successful 2+2 Ministerial (Defence and Foreign ministers) meeting which took place last year. And when it came to different segments of cooperation in the field of defence, Prime Minister Modi put on the table that one of the areas of very strong cooperation between the two countries could be co-innovation, co-design and co-creation.

According to him these words are not branding words, but are strong policy underpinning on the Indian side of 'Atmanirbharta' in defence and this could be in partnership with other countries and in this case it could be Japan.

Was any specific platform discussed?

No, said the foreign secretary. According to him Technology as a wider spectrum was discussed including how technology could be used in larger fields of research, development and creation. PM Modi also told his counterpart that in the field of defence when it comes to Foreign Direct Investment (FDI) and private sector investments – both fields are open and encouraged the Japanese companies to harness the advantages and opportunities that are available in the defence sector.

This year two members of the QUAD are hosting two major events this year – India is holding the G20 presidency and Japan is hosting the G7 summit later in May.

On Monday the emerging threats in the Indo-Pacific due to Chinese aggression also featured during the talks.

Defence & Security Cooperation

This is one sector which has emerged as the most important pillars of the special strategic and global partnership and which plays a major role in ensuring peace and stability in the Indo-Pacific Region.

Both countries are keen to deepen their relations in defence and security in an effort to counter Chinese bullying tactics.

Last December in the wake of Chinese aggression and the ongoing Russia and Ukraine war Japan announced that it has doubled its defence budget and had said that it wants to further enhance its military cooperation with other countries including India and conduct more joint military exercises.

Last year during the QUAD Leaders summit in Tokyo, PM Kishida had said that Japan will help in training 800 maritime security personnel and will also provide at least US\$ 2 billion to other countries to buy patrol boats and as part of Free and Open Indo-Pacific (FOIP) strategy to build more infrastructures.

India & Japan Military Cooperation

Defence companies are now looking to jointly work with the Indian defence companies to co-develop, co-create as well as innovate.

Recently, Japan-based Kawasaki Heavy Industries (KHI)'s C-2 Transport Aircraft has been fielded for India's requirement for the Medium Transport Aircraft by the Indian Air Force. This aircraft is already in service with Japan Air Self-Defense Force (JASDF) since 2017.

First ever Air Force drill

The first ever air exercise 'Veer Guardian' was conducted earlier this year and the purpose of this was to further deepen interoperability between the two QUAD members as well as strengthen the defence ties.

<https://www.financialexpress.com/defence/india-and-japan-to-deepen-defence-ties/3016728/>



Mon, 20 Mar 2023

India, Maldives Hold 4th Defence Cooperation Dialogue in Male, Agree on Enhanced Drills

The fourth Defense Cooperation Dialogue between India and the Maldives took place in Male. It agreed to make current drills more complex, while reviewing the full range of bilateral defence engagements. Defence Secretary Girdhir Aramane and his Maldivian colleague, Chiefs of Defence Force, Maldives National Forces Defense General Abdulla Shamaal, served as co-chairs of the discussion.

The DCD is the most highly organised form of interaction between the two nations. The importance accorded to the talks between the two nations emphasised its significance in charting the future path of relations between both Armed forces. Both parties voiced satisfaction at the growing engagements as the ongoing bilateral defence cooperation activities were reviewed during the conversation.

Highlights of Defence Cooperation Dialogue

The discussion addressed ongoing bilateral drills. The military forces of India and the Maldives are still looking for ways to cooperate on a variety of fronts.

Giridhar Aramane expressed his gratitude to Major General Abdulla Shamaal and his team for their productive conversation. He said that based on the consensus made by the 4th DCD, India looks forward to continued engagement. The defence secretary also met with Ms Mariya Ahmed Didi, the Maldives' minister of defence, and Mr Abdulla Shahid, the country's minister of state for foreign affairs, during his tour.

Both parties voiced satisfaction at the growing engagements as they reviewed ongoing bilateral defence collaboration activities during their interaction. In terms of strategy, the relationship between India and the Maldives is crucial to fending off Chinese threats in the South China Sea and the Indian Ocean area. China is implementing the "String of Pearls" theory, which refers to a plan involving the establishment of a network of ports and military and commercial bases across numerous nations.

China has used this tactic to safeguard its economic interests. A significant portion of its trade travels through the Indian Ocean and numerous choke points, including the Straits of Hormuz, Malacca, and Lombok. India's maritime security is in peril because of the string of pearls theory. To counter the Chinese threat in the Indo-Pacific, India has also formed powerful alliances like QUAD and ASEAN, and frequently engages in bilateral exercises with superpowers like the US, UK, and France.

In 2022, the third India-Maldives defence dialogue was held. India was represented by defence secretary Dr Ajay Kumar. Maldives was represented by Major General Abdulla Shamaal, Chief of defence forces, Maldives National defence force. They had discussed capacity building to tackle transnational crimes and boost the security of both the nations.

<https://www.republicworld.com/india-news/general-news/india-maldives-hold-4th-defence-cooperation-dialogue-in-male-agree-on-enhanced-drills-articleshow.html>

THE ECONOMIC TIMES

Tue, 21 Mar 2023

Pakistan to Transfer Tanks to Ukraine in Return for Aid from West

Pakistan is planning to transfer 44 T-80UD main battle tanks (MBTs) to Ukraine, stepping up defence supplies to the country in exchange for financial assistance from Western countries, according to people aware of the matter.

The West has assured Pakistan of financial assistance in lieu of supply of MBTs to Ukraine, which has been seeking to fortify its defence against invading Russian forces, they said.

The development comes at a time when traditional allies of Pakistan are not keen to offer interest-free loans to the country when it is facing a severe crisis, said people in the know.

Pakistan is reportedly considering sending MBTs as it has been regularly supplying arms, ammunition and artillery in collaboration with the West. Earlier, tanks were sent to Ukraine by its European allies.

The Pakistani armed forces have a total of 2,467 MBTs. The T-80UD is an improved version of the Soviet-made T-80 tanks. Ukraine and Pakistan share close military and industrial ties. Pakistan had purchased more than 320 Ukrainian T-80UD tanks in service with a fully formed ecosystem for their upkeep, ammunition and spare parts. Between 1991 and 2020, Ukraine concluded arms contracts worth nearly \$1.6 billion with Pakistan.

Pakistan has reportedly clinched a deal with Ukraine for the repair of its T-80UD fleet at a cost of \$85.6 million. In 2021, Pakistan and Ukraine agreed to optimise military ties, particularly in defence production, training, counterterrorism activities and intelligence domains.

Defence shipments from Karachi to Ukraine are being routed via ports in Poland and Germany. Some of the shipments were based on a memorandum of understanding between Pakistan and the UK's defence ministry. ET recently reported that the UK's defence ministry had signed a pact with Pakistan Ordnance Factories, following which an ammunition consignment of 162 containers, was shipped from the Karachi port to Ukraine via Germany in February.

A US flag ship was also used to export arms from Pakistan to Ukraine, ET reported last week. Last year, the UK used Pakistan as an air bridge to supply arms to Ukraine via Romania. Nur Khan Air Base in Rawalpindi was part of the air bridge reportedly used by the UK for military aircraft flights to Avram Iancu Cluj International Airport in Romania via a British air base in the Mediterranean to transfer arms to Ukraine.

<https://economictimes.indiatimes.com/news/international/world-news/pakistan-to-transfer-tanks-to-ukraine-in-return-for-aid-from-west/articleshow/98830396.cms>

Business Standard

Mon, 20 Mar 2023

N Korea Launches Latest Missile Simulated Nuclear Counterattack on S Korea

North Korea said Monday it simulated a nuclear attack on South Korea with a ballistic missile launch over the weekend that was its fifth missile demonstration this month to protest the largest joint military exercises in years between the US and South Korea.

The North's leader Kim Jong Un instructed his military to hold more drills to sharpen the war readiness of his nuclear forces in the face of aggression by his enemies, state media reported.

The South Korean and Japanese militaries detected the short-range missile being launched Sunday into waters off the North's eastern coast less than an hour before the US flew long-range B-1B bombers for training with South Korean warplanes. The North characterizes the US-South Korea exercises as a rehearsal to invade, though the allies insist they are defensive in nature. Some experts say the North uses the exercises as a pretext to advance its weapons programmes.

Pyongyang's official Korean Central News Agency said the missile, which flew about 800 kilometers (500 miles), was tipped with a mock nuclear warhead. It described the test as successful, saying that the device detonated as intended 800 meters (yards) above water at a spot

that simulated an unspecified major enemy target, supposedly reaffirming the reliability of the weapon's nuclear explosion control devices and warhead detonators.

The report said the launch was the final step of a two-day drill that also involved nuclear command and control exercises and training military units to switch more quickly into nuclear counterattack posture, properly handle nuclear weapons systems and execute attack plans.

The exercise was also a stronger warning to the United States and South Korea, who are undisguised in their explicit attempt to unleash a war against the North, KCNA said.

Photos published by state media showed Kim walking through a forest with his daughter and senior military officials and a missile the North described as a tactical nuclear weapon system soaring from the woods spewing flames and smoke.

Saying that his enemies are getting ever more pronounced in their moves for aggression, Kim laid out unspecified strategic tasks for further developing his nuclear forces and improving their war readiness, KCNA said. This indicated that the North could up the ante in its weapons demonstrations in coming weeks or months.

Jeon Ha Gyu, spokesperson of South Korea's Defense Ministry, said it's clear North Korea with its ramped-up testing activity is making considerable progress in nuclear weapons technology but did not provide a specific assessment about the North's claim about the successful warhead detonation.

North Korean photos indicated the latest launch was of a solid-fuel missile apparently modeled after Russia's Iskander mobile ballistic system that the North has been testing since 2019. The missiles are built to travel at low altitudes and be maneuverable in flight, which theoretically improve their chances of evading South Korean missile defenses.

North Korea likely has dozens of nuclear warheads, but there are differing assessments on how far the North has advanced in miniaturizing and engineering those weapons so that they could fit on the newer weapons it tested in recent years.

While the North after six nuclear tests may be able to place simple nuclear warheads on some of its older systems, like Scuds or Rodong missiles, it will likely require further technology upgrades and nuclear tests to build warheads that can be installed on its newer tactical systems, according to Lee Choon Geun, an honorary research fellow at South Korea's Science and Technology Policy Institute.

Sunday's short-range launch was the North's fifth missile event this month and the third since the U.S. and South Korean militaries began joint exercises on March 13. The allies' drills, which are to continue through Thursday, include computer simulations and their biggest springtime field exercise since 2018.

The North so far in 2023 has fired around 20 missiles over nine different launch events. They included short-range missiles fired from land, cruise missiles launched from a submarine, and two different intercontinental ballistic missiles fired an airport near Pyongyang as it tries to demonstrate a dual ability to conduct nuclear attacks on South Korea and the U.S. mainland.

The latest ICBM test last Thursday preceded a summit between South Korean President Yoon Suk Yeol and Japanese Prime Minister Fumio Kishida, who agreed to resume security dialogues and take other steps to improve their oft-strained relations in the face of North Korean threats.

North Korea already is coming off a record year in testing activity, with more than 70 missiles fired in 2022, as Kim accelerates his weapons development aimed at forcing the United States to accept the idea of the North as a nuclear power and negotiating badly needed sanctions relief from a position of strength.

In response to the most recent ICBM launch, the U.N. Security Council scheduled an emergency open meeting Monday morning at the request of the United States, United Kingdom, Albania, Ecuador, France and Malta. Security Council resolutions have long banned North Korean ballistic missile activity, but permanent council members Russia and China have thwarted punishment or further sanctions in recent years.

https://www.business-standard.com/article/international/n-korea-launches-latest-missile-simulated-nuclear-counterattack-on-s-korea-123032000121_1.html

ThePrint

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US, Philippines to Announce New Sites for U.S. Military as Soon as Possible – U.S. Official

The United States and Philippines will announce new sites as soon as possible for an expanded Enhanced Defense Cooperation Agreement (EDCA), which gives the Western power access to military bases in the Southeast Asian country.

Philippine President Ferdinand Marcos Jr last month granted the United States access to four military bases, on top of five existing locations under the 2014 EDCA, which comes amid China's increasing assertiveness towards the South China Sea and self-ruled Taiwan.

Speaking at the Basa Air Base in Manila, one of the existing EDCA sites, visiting U.S. Air Force Secretary Frank Kendall said the defence agreements between the two countries were "not focused on any particular issue."

EDCA allows U.S. access to Philippine bases for joint training, pre-positioning of equipment and building of facilities such as runways, fuel storage and military housing, but it is not a permanent presence.

While the Philippines has yet to formally identify the sites, a former military chief has publicly said the United States had asked for access to bases in Isabela, Zambales and Cagayan, all on the island of Luzon, facing north towards Taiwan, and on Palawan in the southwest, near the disputed Spratly Islands in the South China Sea.

Leaders of local governments at the potential EDCA sites have backed the government's decision to allow the United States greater access to the bases, Philippines' defence chief, Carlito Galvez, said in a joint news conference with Kendall.

Galvez and Kendall were leading a groundbreaking ceremony for the rehabilitation of the Basa Air Base's runway. "Today's event is a physical manifestation of our Enhanced Defense Cooperation Agreement, a key pillar of the U.S.-Philippine alliance," Kendall said in a speech, adding it built on a seven-decade-old Mutual Defense Treaty that applied anywhere in the South China Sea.

“We are at an inflection point in history and our cooperation will help ensure we stay on the path to peace and stability,” he added.

The runway rehabilitation is part of \$82 million the United States has allocated for infrastructure investments at the existing five EDCA sites.

“Moving forward we hope the U.S will consider more EDCA projects,” Galvez said.

<https://theprint.in/world/us-philippines-to-announce-new-sites-for-u-s-military-as-soon-as-possible-u-s-official/1457672/>

Science & Technology News

THE TIMES OF INDIA

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‘Need to Work on New Ideas to Make India a Global Tech Leader’

The two-day national level brainstorming workshop on Technology Vision 2047 organised at Banaras Hindu University (BHU), began on Monday. The workshop aims to discuss and design the futuristic technology under the umbrella of Technology Information, Forecasting and Assessment Council (TIFAC). Eminent scientist and researchers from various parts of country gathered at BHU to take part in the workshop.

On the first day, Prof Pradeep Srivastava, executive director, TIFAC described the aims of Technology Vision-2047 while G Satheesh Reddy, Scientific Advisor, Defense Minister and former secretary of DRDO spoke about the technical achievements and challenges of the country. He also gave suggestions to make India technologically self-reliant and global leader by 2047.

He said that at the time of independence, there were very few research institutions in the country, which has increased tremendously now. However, the problem of quality education and innovation still persists in the country, and this is the reason why India is still a follower in global technology sphere and waste huge foreign exchange in importing it. He said that if India has to become a global technology leader, researchers and youth will have to work on new and disruptive ideas. The workshop was also addressed by Dr RS Verma, director MNNIT, Allahabad; Dr TN Singh, director IIT-Patna; Dr HB Srivastava, Director general, TMD, DRDO; Dr Manmohan Parida, director, DRDE; Dr Tusar Kanti Behera, director IIVR and others. The workshop was coordinated by Geeta Rai of the department of Molecular and Human Genetics, BHU.

<https://timesofindia.indiatimes.com/city/varanasi/need-to-work-on-new-ideas-to-make-india-a-global-tech-leader/articleshow/98847838.cms>

ISRO's LVM-3 to Launch Second Fleet of 36 Satellites Sunday, Completing OneWeb Constellation

In its second commercial launch, India's heaviest launch vehicle LVM-3 will launch a fleet of 36 OneWeb satellites, completing the first generation of the huge broadband constellation. The launch is scheduled for March 26 at 9:00 am from the second launch pad of the country's only spaceport at Sriharikota in Andhra Pradesh. The final launch will enable the company to initiate global coverage.

The satellites have already been integrated and the rocket is in place at the launch pad ahead of Sunday's launch. This is the second OneWeb fleet that India is launching, with the first being carried out by the same vehicle in October last year. This initiated India's journey into the commercial heavy lift-off space.

The United Kingdom-based company, backed by the UK government and India's Bharti, plans to create a 588-satellite strong constellation to provide high-speed, low-latency global connectivity. These satellites will be placed in 12 rings of 49 satellites each, with every satellite completing a full trip around the Earth in 109 minutes. Sunday's launch will be the 18th fleet to be launched by the company.

"OneWeb already has connectivity solutions active today in key geographies across the globe and is bringing new areas online. OneWeb's high-speed, low-latency solutions will help connect communities, enterprises, and governments around the world, demonstrating the unparalleled potential of LEO (low earth orbit) connectivity," the company said in its release. It added, "Across India, OneWeb will bring secured solutions not only to enterprises but also to towns, villages, municipalities and schools, including the hardest-to-reach areas across the country."

In the previous mission, the 36 satellites were launched in a 600 km circular orbit around the Earth in a precise manner. "The separation has to be sequenced in such a way that the customer requirement of a minimum 137 metre distance between any pair of satellites is maintained. This is achieved by orienting and reorienting the cryo stage (third stage of the rocket) using the on-board thrusters," director of Vikram Sarabhai Space Centre Dr S Unnikrishnan Nair had said during the previous mission.

The same challenge will be faced by the launch vehicle during Sunday's launch. Till the OneWeb India-1 mission in October, the heavy launch vehicle had carried only a single satellite during its two development flights and its first operational flight carrying onboard Chandrayaan-2. Senior fellow at Manohar Parrikar Institute for Defence Studies and Analyses Ajay Lele said with a focus on the commercial space market, India managed to seize the opportunity presented by OneWeb. "The OneWeb satellites were initially to be launched by Russia. Although India has managed to fill the void created by Russia due to the war [in Ukraine], there is a need for ISRO to now create its own space in the sector," he said.

Despite being one of the major space-faring nations, India accounted for only about 2 per cent of the commercial market. With the space sector opened up to private players in 2020, this is likely to increase as more and more companies are developing their own small satellite launch capabilities.

<https://indianexpress.com/article/technology/science/isros-lvm-3-to-launch-second-fleet-of-36-satellites-sunday-8508143/>

