

फरवरी

February
2023

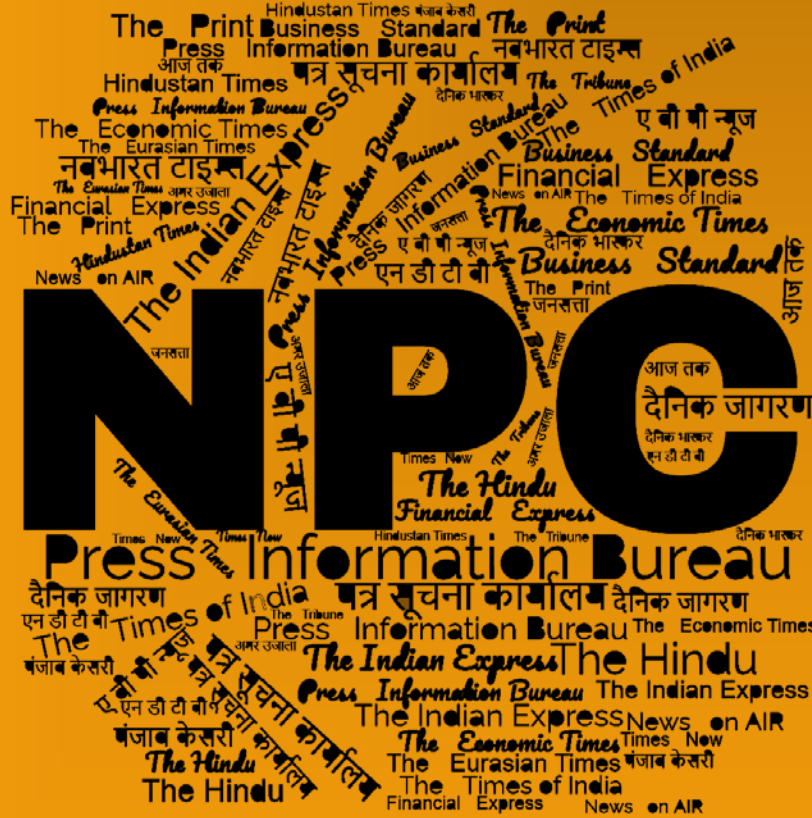
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DRDO News

DRDO Technology News



Press Information Bureau
Government of India

Ministry of Defence

Fri, 03 Feb 2023

Projects of DRDO

The Government has worked out the Mission Mode (MM) projects of the Defence Research and Development Organisation (DRDO). As on date, DRDO is working on 55 MM Projects for a total sanctioned cost of Rs 73,942.82 crore. These are in the area of Decoys, Nuclear Defence Technologies, Air Independent Propulsion (AIP), Combat Suite, Propulsion System, Air Droppable Container, Torpedo, Fighter Aircraft, Cruise Missile, Unmanned Aerial Vehicle, AEW&C Aircraft System, Gas Turbine Engine, Assault Rifle, Warhead, Light Machine Gun, Rocket, Advanced Towed Artillery Gun System (ATAGS), Infantry Combat Vehicle Command, Ordnance Disposal System, Tactical Radios, EW Systems, Radars, Life Support System, Geographical Information System, Surface to Air Missile, Anti-ship Missile, anti-Airfield Weapon, Glide Bomb, Simulator etc. This information was given by Raksha Rajya Mantri Shri Ajay Bhatt in a written reply to Shri Komati Reddy Venkat Reddy and others in Lok Sabha today.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1895971>

Defence News

Defence Strategic : National/International



Press Information Bureau
Government of India

Ministry of Defence

Sat, 04 Feb 2023

‘Aatmanirbharta’ in Defence: Prime Minister Shri Narendra Modi to Dedicate to the Nation HAL’s Helicopter Factory at Tumakuru, Karnataka on 6th February

In yet another step towards ‘Aatmanirbharta’ in defence, Prime Minister Shri Narendra Modi will dedicate to the nation a Helicopter Factory of Hindustan Aeronautics Limited (HAL) in

Tumakuru, Karnataka on February 06, 2023. RakshaMantriShriRajnath Singh and senior officials of Ministry of Defence will be present on the occasion. The Greenfield Helicopter Factory, spread across 615 acres of land, is planned with a vision to become a one-stop solution for all helicopter requirements of the country. It is India's largest helicopter manufacturing facility and will initially produce Light Utility Helicopters (LUHs).

The LUH is an indigenously designed and developed 3-ton class, single engine multipurpose utility helicopter with unique features of high maneuverability. Initially, this factory will produce around 30 helicopters per year and can be enhanced to 60 and then 90 per year in a phased manner. The first LUH has been flight tested and is ready for unveiling. The factory will be augmented to produce other helicopters such as Light Combat Helicopters (LCHs) and Indian Multirole Helicopters (IMRHs). It will also be used for Maintenance, Repair and Overhaul of LCH, LUH, Civil Advanced Light Helicopter (ALH) and IMRH in the future. Potential exports of civil LUH will also be catered to from this factory.

The HAL plans to produce more than 1,000 helicopters in the range of 3-15 tonnes, with a total business of over Rs four lakh crores over a period of 20 years. Besides generating direct and indirect employment, the Tumakuru facility will boost the development of surrounding areas through its CSR activities with large-scale community centric programmes on which the company will spend substantial amounts. All this will result in improvement in the people's lives in the region. The proximity of the factory, with the existing HAL facilities in Bengaluru, will boost the aerospace manufacturing ecosystem in the region and support skill & infrastructure development such as schools, colleges and residential areas. Medical and health care would also reach the community residing in the various nearby Panchayats.

With the establishment of facilities like Heli-Runway, Flight Hangar, Final Assembly Hangar, Structure Assembly Hangar, Air Traffic Control and various supporting service facilities, the factory is fully operational. This factory is being equipped with state-of-the-art Industry 4.0 standard tools and techniques for its operations. The foundation stone of the facility was laid by the Prime Minister in 2016. This factory will enable India to meet its entire requirement of helicopters without import and giving much needed fillip to the Prime Minister's vision of 'Aatmanirbhar Bharat' in helicopter design, development, and manufacture.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1896255>

The Tribune

Fri, 03 Feb 2023

India's Military Equipment Import Down for 1st Time in 3 Years

By Ajay Banerjee

India's import of military equipment is slowing down for the first time in three years. Military equipment acquisition is done under what is called the capital budget and is meant for payment of weapons, equipment, planes, warships, submarines, helicopters, etc.

The immediate impact of imports coming down could be due to policies of curbing imports and relying more on 'Make in India'. The data on imports of the five-year period from 2017-18 to

2021-22 was tabled in Parliament today. In the period of five years, imports grew for three consecutive financial years (2018-19, 2019-20 and 2020-21) and showed a downward trend in 2021-22. The increase may be largely due to payment for the Rafale fighter jets and the high value items like surveillance planes, specialised submarine hunting helicopters besides emergency purchases.

PROCUREMENT IN 5 YRS	
Financial year	Imports
2017-18	₹30,677.29 cr
2018-19	₹38,115.60 cr
2019-20	₹40,330.02 cr
2020-21	₹43,916.37 cr
2021-22	₹40,839.53 cr

In March 2022, Sweden-based think tank Stockholm International Peace Research Institute (SIPRI) released its assessment for a five-year period (2017-2021). Titled “Trends in international arms transfers-2021”, the report stated, “India was the world’s largest importer of weapons and military equipment and accounted for 11% of total global arms imports in the period.”

The SIPRI report had a good news too. It compared two five-year blocks — between 2012-16 and 2017-21 and said Indian arms imports decreased by 21% during 2017-21 when compared with the previous five-year block. Importantly, to curb imports, United

States, Russia, France and Israel, the countries that have been supplying weapons and military equipment in the past decade, have been told that these will have to be ‘Made in India’ in future.

<https://www.tribuneindia.com/news/nation/army-equipment-import-down-for-1st-time-in-3-yrs-476389>

THE TIMES OF INDIA

Sat, 04 Feb 2023

India Spent \$24 Billion for Buying Foreign Defence Items in Last 5 Years

India procured military hardware worth Rs 1.9 lakh crore (almost \$24 billion) from countries like the US, France, Israel and Spain among others, in the last five years. The military hardware included helicopters, aircraft radars, rockets, guns, assault rifles, missiles and ammunition. India has inked 264 capital acquisition contracts for military equipment since 2017-2018, which included 88 deals with foreign vendors accounting for 36% of the total value, junior defence minister Ajay Bhatt told on Friday. The procurement from foreign vendors was Rs 30,677 crore in 2017-18, Rs 38,116 crore in 2018-19, Rs 40,330 crore in 2019-20, Rs 43,916 crore in 2020-21 and Rs 40,840 crore in 2021-22. The Rs 59,000 crore deal with France for 36 Rafale fighters, which was inked in September 2016, does not figure in this list.

The Defence Acquisition Procedure-2020, with a focus on ‘Atmanirbhar Bharat’ and ‘Make in India’, introduced major policy initiatives for boosting indigenous defence capability and reduction of reliance on imports,” said Bhatt. “Further, DAP-2020 provides the highest preference to ‘Buy Indian’ category of acquisition and ‘Buy Global’ is only permitted in exceptional situations, with specific approval of the Defence Acquisitions Council, or the defence minister,” he added.

He also said DRDO is working on 55 'mission mode' projects at a total sanctioned cost of Rs 73,943 crore. These projects are in the areas of nuclear defence technologies, airindependent propulsion for submarines, combat suites, torpedoes, fighter aircraft, cruise missiles, unmanned aerial vehicles, gas turbine engine, assault rifles, warheads, light machine guns, rockets, advanced towed artillery gun systems, infantry combat vehicles, surface-to-air missiles, anti-ship missiles, anti-airfield weapons and glide bombs.

As reported by TOI earlier, India remains ahead of Russia and the UK as the third largest military spender in the world, but far behind China that spends four times and the US 10 times its defence budget. The government has taken steps to get India out of its strategically vulnerable position as the world's largest arms importer, accounting for 11% of the global weapons imports. But there is still a long way to go. DRDO, defence PSUs and ordnance factories need to deliver much better in a cost-effective manner, while a much larger participation from the domestic private sector is required, with global majors setting up production facilities in India.

<https://timesofindia.indiatimes.com/india/india-spent-24-billion-for-buying-foreign-defence-items-in-last-5-years/articleshow/97590871.cms>

The Tribune

Indigenisation can Bridge Gaps in Defence Capability

By GP Capt Murli Menon

Sun, 05 Feb 2023

IT is heartening that the defence budget has been hiked to Rs 5.94 lakh crore, 13 per cent up from the 2022-23 allocation of Rs 5.25 lakh crore. The enhancement includes Rs 10,000 crore addition in capital expenditure at Rs 1.62 lakh crore, a major portion of which would be for equipment and weapon acquisition from Indian private players for self-reliance.

The revenue expenditure of Rs 2.7 lakh crore, slated for maintenance of establishments as also payment of salaries and pensions, saw an increase of 15.89 per cent. The defence pensions saw a major hike at Rs 1.38 lakh crore — up by 16 per cent from Rs 1.19 lakh crore in 2022-23 — considering the increased pensions with the revision of the One Rank, One Pension (OROP) scheme and the arrears worth Rs 28,138 crore. The outgo towards new acquisition of 126 4.5-generation MMRCA (Medium Multi-Role Combat Aircraft) for the IAF and the expected induction of indigenous and imported fighters for the Navy's INS Vikrant carrier would be addressed by these allocations. The Navy's procurement wish list includes submarines, guns, destroyers and underwater vehicles.

The Army needs new light battle tanks, artillery guns, armoured vehicles, including those for the Ladakh front requirements. As the lead on the Budget before the 2024 General Election, these figures do not indicate any major escalation in our security stance externally or internally.

At increases of 16.32 per cent, 10.96 per cent and 2.79 per cent for the Army, Navy and the Air Force, respectively, the budgetary allocations are not considerable when inflation gets factored in. The Border Roads Organisation (BRO) gets a substantial jump of 43 per cent in the Budget, clearly to cater for the urgent requirements to counter Chinese machinations along northern borders. The Defence Research and Development Organisation (DRDO) has been earmarked an outlay of Rs 23,264 crore, which is a hike of 9 per cent against last year's allocation, once again

barely enough to combat inflation. Capital expenditure increase for defence is a mere 6.7 per cent, against the nation's overall capital expenditure commitments.

There are some positives in the Budget proposals nevertheless. Tax exemptions for the Agniveer Corpus Fund is one such proposal, riddled as it is with question marks about the controversial scheme's viability. The 13.18 per cent of the total Budget of Rs 45,03,097 crore, even with expected annual inflation of 8-10 per cent, is a desirable enhancement, though whether it is large enough in terms of the nation's Gross Domestic Product (GDP) is a moot point. Advanced democratic nations ought to have at least 3 per cent of their GDP earmarked for defence and whether India would reach that figure anytime soon is doubtful though, as our GDP is leapfrogging substantially — at least 7 per cent each year.

Indigenisation is the only way to bridge critical gaps in defence capability. The recent initiatives by the government such as OROP have increased the quality of life of an average serviceman and would help substantially in attracting better talent to the armed forces. The recessionary trends after the Covid pandemic and amid the Ukraine war are bound to take their toll on the budgetary pressures on 'Third World' economies. Tightening the belt is inescapable in all aspects of defence capability, from training to acquisitions and maintenance. Another aspect to consider in the defence sector is the transparency of the budgeting process. Since we do not practise a 'black budget' philosophy to hide some key projects, one wonders how the nuclear arsenals are budgeted for. Is our strategic arms capability within the realm of 'national defence' or is it under a different code head such as the DRDO?

Nevertheless, Rs 5.94 lakh crore out of Rs 45,03,097 crore total budgetary outlay, this year's allocation signals the changed priorities of the government owing to incremental threats from China, while encouraging the indigenous industry to pitch in. At about 2 per cent of the GDP, our Budget compares poorly with Rs 18.86 lakh crore of China. As the economy recovers from the Covid shock over the next few years, India's security considerations would perforce dictate an increase in defence spending to reach at least 3 per cent of our GDP.

The only way forward is to encourage more private sector companies such as Tata and Mahindra to participate in defence production, especially in the medium and high-tech regimes. Premier institutes such as IITs and even private academic universities need to be incentivised to get into the defence sector to run academic courses that aid the defence industry. Of course, the government needs to provide tax incentives to manufacturers in this sector. Given the prevalent institutional limitations in manpower induction and cutting-edge technology, defence budgetary allocations are bound to run short for a nation the size of India. Innovative methods have to be found to augment the resources. The increased capital outlay for the Army is expected to be utilised for getting new specialised drones, loitering munitions, small arms and to upgrade existing tanks and armoured personnel carriers. That of the Navy would be utilised for ship-borne drones, loitering munitions, missiles, satellites and small warships. The IAF hopes to utilise its marginal increase in capital outlay to get new air defence systems, missiles, drones, anti-drone systems, satellites and combat helicopters.

The overall increase in defence spending is aimed to plug critical gaps in our defence capability vis-à-vis China. Hence, the focus on border infrastructure, drones and the like. A recent statement by a top US General talks of a possible conflict with China over Taiwan in 2025. Though the statement has been attributed to a personal view by the White House, clearly there's more to it than meets the eye. Any such turmoil in our neighbourhood would impact India considerably. If a war in distant Europe could turn things topsy-turvy here in India,

economically, any conflagration in or around Taiwan would have more serious consequences as China is bound to look for diversionary moves in Ladakh and elsewhere. Any reappraisal of the Indian defence budget, including the latest one, needs to be seen in this light.

<https://www.tribuneindia.com/news/comment/indigenisation-can-bridge-gaps-in-defence-capability-476973>

The Tribune

Sun, 05 Feb 2023

Stiff Target for Weapons Upgrade

By Ajay Banerjee

Looking at new technologies, the Indian Army has designated the year 2023 as the ‘year of transformation’, which, among other aspects, kicks off a specific long-term plan for upgrading the profile of weaponry, equipment and war-fighting gadgets by 2030.

Army Chief General Manoj Pande had, in January, announced a ‘shift in stated goals’ and laid out a new target for adding state-of-the-art weapons and reducing the number of weapons and systems that are classified in the category of ‘vintage’.

Gen Pande said on January 12: “As of now, 45 per cent of our equipment is vintage, 41 per cent of the equipment is of current technology and some 12-15 per cent of the equipment is state-of-the-art.” By 2030, the aim is to have 45 per cent equipment in the state-of-the-art category and 35 per cent of current technology, he added.

Gen Pande’s statement is a shift in targets and policy. In the recent past, the Ministry of Defence mentioned in Parliament that the equipment profile should be in the ratio of 30:40:30, meaning 30 per cent state-of-the-art, 40 per cent current technology weapons and 30 per cent vintage.

What is this upgradation

In the past many decades, gradual upgrades were carried out but the existing tanks, helicopters, artillery guns, rockets and assault rifles face the threat of disruption.

As the arc of technology widens, the wishlist of the Army ranges from low earth orbit satellites to tethered drones and from robotic mules to jet-packs worn by troops. Already, the force, in the past three years or so, has taken a technological leap and is getting long-range artillery. The Artificial Intelligence (AI) centre at the Military College of Telecommunication Engineering (MCTE), Mhow, has set up multiple projects which are working on ground. The AI-based surveillance systems now dot the 749-km-long Line of Control (LoC) with Pakistan and also the 3,448-km-long Line of Actual Control (LAC) with China.

It has the active support of industry, start-ups and academia.

Swarm drones have been ordered for use in the Himalayas where India is handicapped by the terrain of rough and high peaks. Each drone in a swarm has the capability to carry out individual as well as collective tasks. For the tank and mechanised formations, the Army is looking at 750 autonomous combat vehicles (ACVs). Precision-strike UAVs, the ‘Predators’, 5G communications, air defence systems with augmented reality, laser and energy directed weapons, besides complex algorithms to encrypt data, are among the technologies that would see the light

of day. Maj Gen BS Dhanoa (retd), who retired as Commander of the Higher Command Wing at the Army War College at Mhow, says, “The actual number and type of equipment will be solely dependent upon our R&D capabilities, indigenous production, and the ability of the Army to induct these in sufficient numbers.”

It is likely that future high-tech platforms are better iterations of tanks, helicopters, artillery guns and precision rocket systems, besides UAVs, for reconnaissance and for striking at targets, says Maj Gen Dhanoa, a former Armoured Corps officer.

Possible additions could be an array of electronic surveillance, detection and jamming systems, including against unmanned aerial and ground threats, he adds.

Technology roadmap

The Army is pursuing a ‘modernisation and technology’ infusion. “It has a defined roadmap for adding niche technologies,” says a serving officer. Most of the technology is to be ‘disruptive’ to surprise the adversary.

Amit Cowshish, former financial adviser, Ministry of Defence, says, “It seems the state-of-the-art equipment for the Army could be guided by imperatives of making the force nimble and lethal. A greater use of AI, smart munitions, agile combat platforms, and remotely operated equipment, is possible.” It is unlikely that all of these new additions would be remotely crewed or be autonomous weapons’ systems, avers Maj Gen Dhanoa.

On mission mode

The Defence Research and Development Organisation (DRDO) is working on 55 projects that are termed to be on ‘mission mode’ at a sanctioned cost of Rs 73,942 crore for the three services. For the Army, the projects include nuclear defence technologies, air droppable containers, cruise missiles, UAVs, assault rifles, warheads, light machine guns, rockets, advanced towed artillery gun system (ATAGS), infantry combat vehicles, tactical radios, electronic warfare systems, radars and geographical information system.

The National Mission on Interdisciplinary Cyber Physical Systems under the Department of Science and Technology has separate hubs working on specific technologies. Some of these are dual-purpose use — military and civilian. These include the work at the Indian Institute of Technology (IIT), Kharagpur, for Artificial Intelligence and Machine Learning; Indian Institute of Science, Bengaluru, for Robotics and Autonomous Systems; IIT-Roorkee for materials; IIT-Madras for sensors, and IIT-Hyderabad for Autonomous Navigation.

Innovations for Defence Excellence (iDEX), launched by the Ministry of Defence in 2018, is meant for co-creation and co-development in the defence sector. The iDEX provides financial support to start-ups, MSMEs and individual innovators. In December last year, it signed the 150th contract with private industry. At present, a programme is open under iDEX seeking solutions for the armed forces in the space domain.

How will new systems work

A scenario could be like this. The AI-backed surveillance systems along the LAC are backed by an intelligent monitoring system which reads movement patterns across the border areas. These could be feeds from over-flying drones or ground-based sensors and even cameras. All inputs are collated and an assessment is made in real-time on how to tackle the troops, equipment or flying objects sent in by the adversary. AI is enabling remote target detection as well as classification of

targets — if it's a man or machine, armed or unarmed. These projects are part of the 12 AI domains identified by the National Task Force of Technology.

Among the new gadgets being looked at for tackling threats on the ground is a remote-controlled weapon station that will allow a heavy machine gun operator to fire the weapon remotely. Ninety such remote systems are being procured for eastern Ladakh and forward areas along the Himalayas. The Army wants the system to recognise a target and also fire at command.

To tackle close-range threats in the air, the Army intends to procure 220 air defence guns to strike at fighter aircraft, transport aircraft, helicopters, UAVs, cruise missiles, besides slow-moving paragliders. The guns need to be mated with radars that will allow immediate firing at threats.

Achieving targets

Is the target set by the Army Chief achievable with these emerging new in-house technologies?

Amit Cowshish, being the finance man, lends perspective: "Money will be a major constraint, apart from procedural complexities and the long gestation period of major acquisition programmes." He refuses to put a figure on the money needed for this upgrade. Maj Gen Dhanoa terms the Army Chief's statement "aspirational in nature". It's a statement of intent but it does not automatically translate into capability in a given timeframe (till 2030).

Within the strategic circles, the Army Chief's target has become a talking point. "Even if the Army can get to a level of 35 per cent of state-of-the-art weapons, it will be success story," a mid-level officer says.

What is state-of-the-art

It's a classification arrived at by comparing what other leading militaries are operating and is considered the latest in its class. For example, the Akash missile system is in the state-of-the-art category.

Current weapons are those that are within the operating lifespan claimed by the manufacturer.

The operating life of a product decides its classification. If the life of an artillery gun is listed as 25 years by the manufacturer, it is deemed to be off the current weapons list when it completes 25 years in service. To explain, the 130 mm field gun is 'vintage'.

<https://www.tribuneindia.com/news/features/stiff-target-for-weapons-upgrade-476830>

THE ECONOMIC TIMES

Sat, 04 Feb 2023

Army now Wants 850 Nano Drones for Special Operations

The Army now also wants to buy 850 indigenous nano drones for surveillance in special missions along the northern borders with China as well as in counter-terrorism operations through a fast-track procedure. The request for proposal (RFP) for 'emergency procurement' of the nano drones comes after the 12-lakh strong Army has kicked off several acquisition projects for different kinds of drones over the last few months.

Amidst the continuing 33-month-long military confrontation with China, the sheer operational utility of drones has been reinforced by the recent conflicts ranging from Armenia-Azerbaijan to the ongoing Russia-Ukraine one. The Army is tasked to conduct special missions in conventional operations, counter-terror operations and out-of-area contingency operations, which require 'enhanced situational awareness' about potential threats in the intended target areas.

“Reconnaissance missions for these operations are currently physically conducted by small teams of soldiers acting as scouts. This not only increases the risk of casualties but also can jeopardise the entire operation,” an officer said.

The RFP said, “The existing volatile situation as prevailing along the northern borders and in the hinterland in disturbed areas mandates urgent procurement of the nano drones for enhancing immediate situational awareness of the troops.” It specified that the delivery has to be completed within a year of the contract being inked. As reported by TOI earlier, the acquisition process for kamikaze drones, armed drone swarms, logistics drones and surveillance quadcopters, among others, for infantry battalions has already been launched.

Similarly, the Army is also going in for indigenous procurement of 80 mini remotely piloted aircraft systems (RPAS), 10 runway-independent RPAS, 44 upgraded long-range surveillance systems and 106 inertial navigation systems to better direct long-range and high-volume firepower at enemy targets for artillery regiments. The Army also wants to buy 12 sets of autonomous surveillance and armed drone swarms (A-SADS), each with 50-75 artificial intelligence-enabled aerial vehicles capable of communicating with control stations as well as among themselves. While seven of these sets are meant for high-altitude areas with China, the other five drone swarms are for operations in desert areas and plains along the borders with Pakistan, as reported by TOI earlier.

https://m.economictimes.com/news/defence/army-now-wants-850-nano-drones-for-special-operations/amp_articleshow/97600013.cms



Sat, 05 Feb 2023

IAF Revises Doctrine, Lays Out its Role in a ‘No War, No Peace’ Setting

By Amrita Nayak Dutta

The Indian Air Force (IAF) Saturday made public a revised doctrine in which it laid out the role of air power in the “no war, no peace scenario” that India typically faces. The doctrine highlighted the use of air power as part of a joint military strategy involving the two other forces. The doctrine — which refers to air power as aerospace power — also emphasised that defensive and offensive counter-operations are “inextricably linked”. In a note in the revised doctrine, Air Chief Marshal VR Chaudhari said that network-centric warfare is now fundamental to IAF’s power projection, with offensive and defensive operations being conducted through an Integrated Air Command and Control System.

About bringing in jointness in the Indian military, the IAF doctrine stated that aerospace power offers wide options towards a comprehensive military strategy. The doctrine, in a first, extensively detailed the “no war, no peace” (NWNP) environment, saying the condition requires

the IAF to work towards shaping the behaviour of external threats. It said IAF effectively demonstrated rapid air mobility and deterrence through posturing during the Eastern Ladakh standoff with China. It also cited the example of the 1971 Indo-Pakistan war where the IAF's counter operations against Pakistan air assets gave it freedom for offensive operations. "The IAF was instrumental in enabling surface forces to prosecute their operations unhindered by enemy air. On the Western front, favourable air situation established by the IAF allowed offensive air operations against enemy's armoured thrusts and provided close air support to the Indian Army in its land operations," it said.

The doctrine also spoke about shaping operations through air diplomacy, air force-to-air force engagements for training and cooperation, and demonstration of aerospace power capabilities in the NWP environment. It talks about a shift from 'threat based and demanded' to 'capability demanded' force requirements, development of R&D capabilities through private-public partnership in niche technologies and establishment of robust joint structures. The doctrine comes amid the ongoing military discourse of Russia being unable to use its air power effectively in the war against Ukraine.

Air Marshal Diptendu Choudhury (ret'd) who was part of the doctrine team, told The Indian Express that Russia's ineffective use of offensive air power against Ukraine—which included a poorly executed SEAD and Counter Air campaign, was among key aspects which led to the failure of its military strategy and prolonged the war. "Despite Russia's tactical frontline aviation being under the direct control of the Operational Strategic Command (OSK)- West, it has failed to coordinate and leverage air power towards its surface campaign objectives," he said.

About the doctrine, he said that air power's role in offensive operations was as important as assisting the other services. The IAF first published a doctrine in 1995, which was revised in 2007. In 2012, a revised and unclassified basic doctrine was published. The latest doctrine revises the 2012 document. Senior officers of the force said that rapid changes in global air power necessitates a review of the doctrine from time to time.

<https://indianexpress.com/article/india/iaf-revises-doctrine-lays-out-its-role-in-a-no-war-no-peace-setting-8424561/>



Fri, 03 Feb 2023

IAF to Procure New Transport Aircraft to Replace AN-32

The Indian Air Force (IAF) has initiated the process to find a replacement for the AN-32 transport aircraft in service. It has issued a Request For Information (RFI) for the procurement of a Medium Transport Aircraft (MTA) with a carrying capacity of 18 to 30 tonnes.

The RFI was issued on December 9, 2022, and the earlier bid submission date of February 3 has now been extended till March 31. "The overall time frame of production, delivery with stage wise breakup of the entire project post conclusion of contract is required to be submitted. It is envisaged to commence deliveries of platform within 36 months of signing of Contract," the RFI said. The vendors are to provide Rough Order of Magnitude (ROM) cost of aircraft and

associated equipment among others for a batch of 40 aircraft/60 aircraft/80 aircraft, respectively, it stated.

In the past, several IAF officials had stated that the just C-295MW, 56 of which have been just contracted, which falls in similar category as the AN-32 in terms of cargo carrying capacity would be considered as a potential replacement for the AN-32 given that a running assembly line would be available once the 56 aircraft are delivered. However, based on load carrying capacity specified in the RFI, 18 to 30 tonnes, the C-295 no longer fits the bracket as it is in the 5-10 tonnes category. Essentially, the IAF is looking to replace the AN-32s with an aircraft of higher carrying capacity, sources stated.

An earlier project to jointly co-develop and produce a MTA of 20 tonnes with Russia to replace the AN-32s was scrapped few years back after initial design discussions.

The IAF operates around 100 AN-32s which are the work horse of the force and they all been upgraded recently under a \$400-million deal signed with Ukraine in 2009. Some of them were upgraded in Ukraine a decade ago to improve avionics and increase engine lifespan, while several others are being upgraded at an IAF repair facility in Kanpur.

In September last year, the Defence Ministry signed a 21.935 Crore contract with Airbus and Space S.A., Spain for procurement of 56 C-295MW transport aircraft to replace the Avro aircraft in service with the IAF which it is executing in partnership with Tata Advanced Systems Limited (TASL). An Airbus-TASL joint venture will assemble the C-295s at a manufacturing facility being set up in Vadodara, Gujarat. In addition to the AN-32s and AVROs, the transport fleet of the IAF consists of the IL-76 heavy transports and IL-78 mid-air refuelling tankers from Russia, 12 C-130J Super Hercules and 11 C-17 Globemaster strategic airlift aircraft from the U.S.

Under Make in India

The RFI has asked aircraft manufacturers to indicate the scope of work related to MTA, which would be undertaken under Make in India under appropriate category with estimate of indigenous content mandatorily.

Also state the capability to undertake indigenous manufacture of systems, subsystems, components, consumables, spares, ammunition and materials of the main equipment and platform in India, either through its own subsidiary or in a Joint Venture and the time period for developing infrastructure for manufacture.

“Methods to enhance indigenisation and to setup dedicated manufacturing line, including design, integration and manufacturing processes in India, either through its own subsidiary or in a joint venture,” the RFI said. Capability of Indian vendors to indigenously design and develop the required equipment along with level of indigenisation including use of indigenous military material, delivery capability, maintenance support and Life Cycle Support is also to be specified.

The vendors should also consider making India, a regional or global hub for manufacturing and Maintenance, Repair & Overhaul (MRO) of the equipment. Among other details requires, the RFI added that vendors are also to specify capability to provide maintenance infrastructure, and to set up an ecosystem of indigenous vendors and manufacturers for sustenance of the platform and also indicate feasibility of using indigenous military materials and raw materials already being manufactured in the country.

<https://www.thehindu.com/news/national/iaf-issues-tender-to-procure-a-medium-transport-aircraft-to-replace-an-32s/article66467760.ece>

The Tribune

Fri, 03 Feb 2023

Chief of Defence Staff Gen Anil Chauhan Chairs High-Level Security Meeting in Jammu

Chief of Defence Staff General Anil Chauhan, who was on a two-day visit to Jammu and Kashmir, chaired a high-level security meeting here, officials said on Friday.

The meeting was attended by Udhampur-based northern Army commander Lt General Upendra Dwivedi and Director General of Police Dilbag Singh among others, they said.

Additional Director General of Police, Jammu zone, Mukesh Singh and General Officer Commanding of Jammu-based 16 Corps, also known as White Knight Corps, Lt Gen Sandeep Jain and General Officer Commanding 26 Infantry division Major General Gaurav Gautam also attended the meeting, they said.

The Chief of Defence Staff visited forward areas and hinterland formations in Kashmir on the first day of his visit and was briefed about the security situation by field officers.

On his arrival in Jammu this morning, General Chauhan was received by Air Officer Commanding, Air Force Station Jammu, Air Commodore G S Bhullar, officials said.

“#CDS Gen Anil Chauhan accompanied by #ArmyCdrNC, Lt Gen Upendra Dwivedi arrived at Jammu. The CDS chaired a high level security meeting attended by #ArmyCdrNC, DGP @JmuKmrPolice Shri Dilbag Singh, ADGP JKP, Lt Gen Sandeep Jain GOC 16 Corps & GOC 26 Infantry Div,” tweeted A Bharat Bhushan Babu, principal spokesperson of the Defence Ministry.

Officials said General Chauhan later returned to Delhi after visiting Nagrota cantonment.

<https://www.tribuneindia.com/news/j-k/chief-of-defence-staff-gen-anil-chauhan-chairs-high-level-security-meeting-in-jammu-476270>

THE ECONOMIC TIMES

Fri, 03 Feb 2023

Some Units Reported Minor Injuries to Para Troopers Using Airborne Helmets in 2022: MOS Defence

Some military units reported minor injuries to para troopers while using airborne helmets last year, Minister of State for Defence Ajay Bhatt said on Friday. He said this in Lok Sabha while replying to a question on whether airborne helmets procured for special forces malfunctioned resulting in injuries to troops. The contract for procurement of ballistic helmets at a cost of Rs 170.81 crores was signed in December, 2016. Bhatt said necessary proceedings have been initiated in the matter to take suitable action as per laid down policy.

"While conducting para jumps, some of the units reported minor injuries to para troopers while using the airborne helmets during the year 2022," Bhatt said. "The item was trial evaluated in the year 2016 by Integrated Headquarters of Ministry of Defence (MoD) Army and ballistic testing of samples was done at Terminal Ballistics Research Laboratory (TBRL), Chandigarh," he added.

The minister said airborne helmets, based on technical specifications obtained after trials, were duly inspected by the Authority Holding Sealed Particulars (AHSP) that is Controllerate of Quality Assurance (General Stores), Kanpur. Bhatt said the procurement was undertaken post clearance by the AHSP. "The airborne helmets were found suitable for induction after being trial evaluated by the Indian Army. The contract for procurement of ballistic helmets at a cost of Rs 170.81 crores was signed in December, 2016," he said.

<https://economictimes.indiatimes.com/news/defence/some-units-reported-minor-injuries-to-para-troopers-using-airborne-helmets-in-2022-mos-defence/articleshow/97582001.cms>



Sat, 04 Feb 2023

Manthan, the Annual Defence Innovation Event, to be Part of Aero India 2023

The defence ministry said Friday that Manthan 2023, its annual defence innovation event, would be the flagship technology showcase event at this year's Aero India show in Bengaluru.

The Manthan platform will bring leading innovators, startups, micro-, small and medium-sized enterprises (MSME), incubators, academia and investors from the defence and aerospace ecosystem under one roof. Manthan is being organised by the ministry's Innovations for Defence Excellence (iDEX) and will be held on February 15. iDEX's objective is to create an ecosystem to foster innovation and technology development in defence and aerospace.

Defence Minister Rajnath Singh will launch the next edition of Defence India Startup Challenges (DISC) on cybersecurity.

Manthan 2023 will have many firsts, including the establishment of the iDEX Investor Hub and MoUs with investors. It will provide an overview on the future vision and initiatives of iDEX to galvanise the startup ecosystem in the defence sector.

The defence minister, chiefs of the Army, Navy and the Air Force, ministry officials, innovators, and startups will attend the event.

Till date, iDEX has launched eight rounds of DISC and received more than 6,850 applications from innovators. It is funding and mentoring 190 startups or MSMEs to provide cutting-edge solutions to the armed forces.

<https://indianexpress.com/article/cities/bangalore/manthan-the-annual-defence-innovation-event-to-be-part-of-aero-india-2023-8422738/>

Aero India: Lockheed will Showcase F-21 and Host of Other Products

U.S. aerospace company Lockheed Martin will showcase its advanced defence capabilities and solutions at the Aero India scheduled to take place between February 13 and 17. The company said its exhibit this year would showcase its most innovative capabilities on offer to the Indian Armed Forces, including the F-21 fighter aircraft, C-130J transport aircraft, MH-60R Romeo multimission helicopter, JAVELIN Weapon System, and S-92 multirole helicopter.

Opportunity for local industry

“Our participation will be focused on engaging with our customers while creating opportunities for the local industry to feed into the global supply chain and manufacture in India, for India and for the world,” said William (Bill) Blair, chief executive, Lockheed Martin India Pvt. Ltd. The prime attraction at the Lockheed Martin booth will be the F-21 fighter aircraft cockpit demonstrator that will be available for defence and aerospace customers and partners to fly the jet for themselves, experiencing its unmatched performance.

The F-21 fighter aircraft, which is on offer to the Indian Air Force (IAF) for the Multirole Fighter Aircraft competition, is configured with the latest sensors and mission avionics systems that couple onboard and off-board data information into an effective, easy to manage combat situation display. The Indian Navy’s most recent rotary wing acquisition, MH-60R Romeo helicopter, will occupy a prominent place at Lockheed Martin’s Aero India display. The first three MH-60R helicopters were delivered to India in 2021 and are being utilised to train Indian pilots and crew members in the U.S.

In July/August 2022, the Indian Navy accepted the delivery of another three helicopters at Kochi International Airport and they will be initially based at Naval Air Station INS Garuda in Kochi. A total of 24 MH-60Rs will be delivered in the country over the next few years. The world’s most versatile one-man portable and platform-employed anti-tank precision weapon system, JAVELIN, also will be part of Lockheed Martin’s exhibit at Aero India.

Manthan 2023 on February 15

Manthan 2023, the annual defence innovation event, will be the flagship technology showcase event at Aero India 2023. The Manthan platform will bring the leading innovators, startups, MSMEs, incubators, academia, and investors from defence and aerospace ecosystem under one roof and will be held on February 15.

The Ministry of Defence said that Manthan 2023 will have many firsts, including the launch of challenges on Cyber Security, the establishment of iDEX Investor Hub, and MoUs with investors. Manthan will provide an overview of the future vision/next initiatives of iDEX to galvanise the startup ecosystem to foster innovation and technology development in the defence sector.

<https://www.thehindu.com/news/cities/bangalore/aero-india-lockheed-will-showcase-f-21-and-host-of-other-products/article66467021.ece/amp/>

THE ECONOMIC TIMES

Sun, 06 Feb 2023

Rishi Sunak Makes 'Special Gesture' by Joining India-UK Security Dialogue

UK Prime Minister Rishi Sunak joined the meeting between India's national security advisor Ajit Doval and his British counterpart Tim Barrow in London, said the High Commission of India in London. Doval's visit to London comes right after he met his US counterpart Jake Sullivan in Washington on Tuesday and ahead of his trip to Moscow this week.

"A special gesture by PM Rishi Sunak to join for a while NSA dialogue between Sir Tim Barrow and M. Doval at the Cabinet Office. Deeply value PM's assurance of his government's full support to deepen strategic partnership in trade, defence, S&T. Look forward to visit of Sir Tim to India soon," tweeted the High Commission of India. Doval did some "plain speaking on Sikh radicalism, pro-Pakistan groups and BBC documentary" with his British counterpart, according to people familiar with the matter. Anti-India activities by Sikh radicals and attacks against the Indian diplomatic mission have grown in recent years and the local administration has not acted adequately, they said. Similarly, anti-India Pakistanis are active in the UK, said the people, adding that this section has often influenced British MPs in their approach to India. The BBC documentary on PM Narendra Modi has cast a shadow on bilateral ties, they said.

Barrow was appointed as the UK NSA in September last year. He earlier served as political director and second permanent under-secretary at the Foreign, Commonwealth & Development Office, according to the UK government website. India and the UK have concluded six rounds of negotiations for a trade deal and the next round is set to begin soon. Soon after he became PM, Sunak had indicated he would take a different approach to trade deals to his predecessor, Liz Truss, who was PM for a few weeks but set the tone for Britain's negotiations as trade minister.

https://m.economictimes.com/news/defence/rishi-sunak-makes-special-gesture-by-joining-india-uk-security-dialogue/amp_articleshow/97621193.cms

THE TIMES OF INDIA

Sun, 05 Feb 2023

India, France, UAE Join Hands to Boost Ties in Defence, Energy

India, France and the on Saturday announced a formal trilateral cooperation initiative with the aim of expanding cooperation in several area of mutual interest, including solar and nuclear energy. Significantly, acknowledging that defence is an area of close cooperation among the three countries, they said in a joint statement that efforts will be undertaken to further promote

compatibility, and joint development and co-production, while seeking out avenues for further collaboration and training between the three countries' defence forces.

The government said that a phone call between the foreign ministers of the three countries was to adopt a roadmap for the implementation of this initiative. "During this call, the three sides agreed that the trilateral initiative will serve as a forum to promote the design and execution of cooperation projects in the fields of energy, with a focus on solar and nuclear energy, as well as in the fight against climate change and the protection of biodiversity, particularly in the region. For this purpose, the three countries will explore the possibility of working with the Indian Ocean Rim Association (IORA) to pursue concrete, actionable projects on clean energy, the environment, and biodiversity," said the joint statement. The trilateral initiative is seen as an acknowledgement of their shared desire to promote international stability and prosperity.

It was further noted that the trilateral initiative will serve as a platform to expand cooperation between the three countries' development agencies on sustainable projects. "Furthermore, it was agreed that the three countries will seek to ensure greater alignment of their respective economic, technological, and social policies with the objectives of the Paris Agreement," it said, adding in support of these endeavours, a range of trilateral events will be organised in the framework of the Indian Presidency of the G20 and the UAE's hosting of COP-28 in 2023, respectively. The three countries will also seek to strengthen exchanges of views on emerging threats from diseases.

<https://timesofindia.indiatimes.com/india/india-france-uae-join-hands-to-boost-ties-in-defence-energy/articleshow/97611290.cms>



Fri, 03 Feb 2023

Military Cooperation Remains the Hallmark of India-Israel Relations

By Harsh Kumar Upadhayay

As India and Israel celebrate the 31st anniversary of their diplomatic relations, it is time to recall and reassess just how much progress has been made and how much more needs to be done to forge a strong Indo-Israel strategic partnership. Having completed three decades of diplomatic relations, during the course of which both countries have had extensive engagements on issues pertaining to defence, security, intelligence, counter-terrorism as well as agriculture and water cooperation, one can expect that in the fourth decade, this relationship will acquire greater strategic significance at bilateral and mini-lateral levels.

Overview of defence cooperation

A brief analysis of the ongoing bilateral cooperation between these two countries presents a very rosy picture of the relationship that began on 29 January 1992. In a very short span of just three decades, Indo-Israeli relations have traversed from non-relation to strategic partnership. In the brief period of the last thirty years, Israel has become a major supplier of defence equipment to India, standing second to Russia on a few occasions. As per the data furnished by the Indian

Ministry of Defence (MoD) Israel was ahead of Russia in the year 2013–2014 and 2015–2016, in terms of signing defence contracts with India.

In the decade spanning from the year 2000 to 2010, the bilateral defence trade was estimated to be around \$10 billion. India was the top recipient of Israeli arms, accounting for 42% of the total Israeli arms export as revealed in a report titled “Trends in International Arms Transfer” published by the Stockholm Peace Research Institute (SIPRI).

Having successfully collaborated in high-profile areas to develop Medium Range Surface to Air Missile (MRSAM) and Long-Range Surface to Air Missile (LRSAM) named Barak-8, both countries have also ventured into the domain of space. For instance, in 2008, India successfully launched an Israeli reconnaissance satellite TecSAR-1 in exchange for an X-band Synthetic Aperture Radar (SAR) installed on India’s RISAT-2 (Radar Imaging Satellite with all-weather capability). Very recently in 2018, both countries signed an agreement to collaborate in Electric Propulsion Systems (EPS) areas for small satellites, atomic clocks and GEO-LEO (Geosynchronous Earth Orbit-Low Earth Orbit) Optical Link. Thus, from sales of weapons to technology transfer and from research and development to Joint Ventures (JVs), both countries have swiftly upgraded their relationship to strategic levels.

Few minor challenges

Despite the extensive cooperation taking place in the domain of defence and security, many analysts and scholars in the past have suspected this bilateral security cooperation to be transactional, where India is the buyer and Israel is the seller. At the heart of such a “buyer-seller relationship” analogy is the argument that the ongoing Indo-Israeli defence relationship is a tactical or ad hoc association. Others have suspected this so-called “strategic partnership” to be mostly one-way in terms of benefits derived, as New Delhi keeps forking out the funds and is left to perform only the back-end work with much lesser access to high-value and front-end work like dealing with target seeker and propulsion tech on MRSAM and LRSAM projects.

Another factor that might dent the alleged “buyer-seller dynamics” is India’s quest for being self-reliant (Atma-nirbhar) in defence production. Of late India’s arms imports dwindled by 21% between 2012–16 and 2017–21, which can be attributed to its growing emphasis on cultivating a vibrant military-industrial ecosystem comprising research, domestic design & development, and defence equipment manufacturing by the public and private sector companies. To promote indigenisation, the Government of India (GoI), in a series of notifications, has restricted the import of multiple defence systems and subsystems since December 2021. These import restrictions apply to a range of weapon systems such as corvettes, airborne early warning systems, tank engines, radars, towed artillery guns, short-range surface-to-air missiles, cruise missiles, and offshore patrol vessels. These import caps on the purchase of defence equipment can also result in the stagnation of Indo-Israeli defence cooperation.

Way forward

So, what is the way forward for both these countries to enhance their defence partnership as it enters the fourth decade of their relationship? Needless to say, the governments across both countries have played a significant role in shaping the foundations of dynamic defence cooperation, through military diplomacy, joint collaborations, and multiple exchange programmes. Very recently in October 2021, both countries agreed to form a task force to identify new areas of cooperation and formulate a comprehensive 10-year plan in order to advance the prospects of future bilateral defence cooperation. Of late, multiple companies from

India and Israel are collaborating to manufacture critical components as well as defence platforms. For instance: Mahindra Defence and Israel's Aeronautics signed an MOU to partner on the production of Naval Shipborne UAV systems which can be launched and recovered from Indian warships. Likewise, Cyient Solutions and Israel-based BlueBird Aero Systems entered into a joint venture to offer UAV systems to Indian defence, security, and police forces. Cyient will utilize BlueBird's technology and manufacturing know-how to design, manufacture, and assemble advanced UAV systems at its production facilities in Hyderabad.

What further needs to be done is to create a conducive business environment for the private players from both countries enabling them to collaborate and flourish by producing defence platforms having export potential. The intermeshing of Indian and Israeli defence industries where India provides the main market along with the investment for the development of high-tech armaments and military technology, and Israel provides for its design and development skills along with competencies for the manufacture of conventional military bulk goods, will fully meet the demands of both the countries. Besides meeting the defence requirements, such an intermeshed arrangement will also serve as a potential hub for the export of military equipment to various countries in Asia, Africa, and Latin America.

Apart from the bilateral defence cooperation, the recent creation of I2U2 and the participation of India and Israel as members of this newly formed quadrilateral grouping is an indication that this partnership is now graduating from bilateral to mini-lateral levels. Although this is a geoeconomic grouping primarily designed for economic cooperation, it has the potential to serve as a geopolitical platform for India and Israel to exert geostrategic influence. For Israel, this grouping presents an opportunity to exhibit its improved diplomatic relations with an Arab counterpart coupled with opportunities to further negate the calls of the BDS (Boycott, Divestment and Sanctions) movement by gaining market for its companies in a quadrilateral framework. For India, this grouping helps expand its strategic manoeuvrability in West Asia. Earlier, as a consequence of Arab-Israel rivalry, India couldn't imagine and enter into a common cooperative venture with Israelis and Arabs on board. India had to walk a delicate geopolitical tightrope to balance its relationship with Arabs and the Israelis.

The fourth decade of this bilateral relationship thus brings an equal set of challenges and opportunities to deal with, capitalizing upon which, the bilateral relations between the two will continue to grow and prosper in the decades to come.

<https://www.financialexpress.com/defence/military-cooperation-remains-the-hallmark-of-nbspindia-israel-relations/2971005/>

The Tribune

Fri, 03 Feb 2023

Indian Army to Develop Tailor-Made Military Courses for Cambodia

The Army will develop tailor-made courses at its training establishments and send a training team to Cambodia, a member of the Association of Southeast Asian Nations (ASEAN) organisation. The details about this were announced today after Lieutenant General Hun Manet,

Deputy Commander-in-Chief of Royal Cambodian Armed Forces (RCAF) and Commander of Royal Cambodian Army, along with a delegation, met Indian Army Chief General Manoj Pande.

The delegation commenced the visit by laying a wreath at the National War Memorial. The Cambodian General called on Army Chief Pande, who reaffirmed India's support to Cambodia by offering customised training modules for the RCAF. The two sides have also announced a schedule for the first Army-to-Army talks in Cambodia.

“This is the maiden visit by any Commander of the Royal Cambodian Army and is a milestone in Army-to-Army relations between both countries,” the defence ministry said, underlining the importance of the visit. Military relations between India and Cambodia have grown in recent past and are set to expand in various fields such as training cooperation, counter-improvised explosive device (IED), demining and UN peacekeeping. Defence Minister Rajnath Singh had visited Cambodia in June 2018 and November 2022. Defence cooperation between both countries is governed by a bilateral defence cooperation agreement signed in 2007.

The Cambodian General called on Defence Secretary Giridhar Aramane, who briefed the delegation on Indian indigenous defence equipment manufacturing ecosystem and the Army Design Bureau. He later met Vice-President Jagdeep Dhankhar, Defence Minister Rajnath Singh, External Affairs Minister Dr S Jaishankar and Deputy National Security Advisor Vikram Misri.

“Pleased to meet Lt. Gen Hun Manet of Cambodia today afternoon. Exchanged views on geopolitical situation & regional challenges. Agreed on the need for independent minded nations to cooperate closely. Discussed possibilities in defence & security, connectivity and digital delivery,” Jaishankar tweeted.

Politically, Cambodia is one of the China's oldest and closest partner countries and the two sides make regular high-level visits. Cambodia has also been one of the strongest supporters of the one-China principle. Economically, China is Cambodia's top foreign investor, a major donor and an increasingly important trading partner. In 2021, China topped Cambodia's list of investors with a total investment of \$2.32 billion. On Saturday, Lt Gen Hun Manet is scheduled to visit Rajputana Rifles Regimental Centre in Delhi Cantt where he will witness the training of Agniveers and a display of indigenous defence equipment. He is also scheduled to meet Gen Anil Chauhan, the Chief of Defence Staff, prior to his departure from New Delhi.

<https://www.tribuneindia.com/news/nation/army-to-develop-tailor-made-military-courses-for-cambodia-476394>

नवभारत टाइम्स

Mon, 06 Feb 2023

क्या चीन के जासूसी गुब्बारे भारत में कर रहे जासूसी?

अमेरिका ने एक चीनी जासूसी गुब्बारे को मार गिराया है। यह चीनी गुब्बारा एक हफ्ते से अमेरिकी इलाके में था। अमेरिका ने इसे दक्षिण कैरोलिना के तट पर मार गिराया। अमेरिका के फाइटर जेट एफ-22 ने मिसाइल दागकर इसे गिराया। अमेरिका ने इसे जासूसी गुब्बारा बताया, लेकिन चीन का कहना है कि यह मौसम के बारे में जानकारी जुटाने वाला सामान्य किस्म का गुब्बारा था। अमेरिका में चीनी गुब्बारे की इस घटना से यह सवाल उठा है कि हो सकता है कि भारत में भी चीन ऐसी हरकत करे। यह सवाल इसलिए भी

अहम है क्योंकि चीन और भारत के बीच करीब 32 महीनों से ईस्टर्न लद्दाख में लाइन ऑफ एक्चुअल कंट्रोल पर तनाव के हालात हैं। दोनों देशों के 50 हजार से ज्यादा सैनिक वहां डटे हुए हैं।

इंडियन आर्मी चीफ जनरल मनोज पाण्डे कह चुके हैं कि ईस्टर्न लद्दाख में एलएसी पर स्थिति स्थिर है, कंट्रोल में है लेकिन अनप्रेडिक्टेबल है। उन्होंने यह भी कहा है कि पिछले कुछ समय में चीनी सैनिकों की तैनाती ईस्टर्न सेक्टर यानी अरुणाचल प्रदेश और सिक्किम के दूसरी तरफ बढ़ी है। चीनी सैनिक वहां एक्सरसाइज करने आए थे और फिर उनकी तैनाती को वहां बढ़ा दिया गया। दरअसल ऐसा ही ईस्टर्न लद्दाख में भी हुआ था। वहां भी चीनी सैनिक ट्रेनिंग के लिए एलएसी के पास आए और फिर वापस नहीं गए और इसके बाद वहां तनाव शुरू हुआ। अब अमेरिका पहुंचे चीन के जासूसी गुब्बारे को देखने के बाद यह खतरा बन गया है कि चीन एलएसी के पास भी उनका इस्तेमाल कर सकता है या कर रहा होगा।

रक्षा विशेषज्ञ मेजर जनरल अशोक कुमार (रिटायर्ड) ने कहा कि इस तरह के ऑब्जेक्ट को पहले डिटेक्ट करना, फिर उसे आइडेंटिफाई करना और फिर खत्म करना होता है। अमेरिका ने उस बलून को 29 जनवरी को डिटेक्ट किया। वह गुब्बारा अमेरिका के सेंसिटिव मिसाइल इंस्टॉलेशन के ऊपर उड़ रहा था। तब भी उसे गिराने में इतना वक्त लगा। अमेरिकियों का यह कहना था कि अगर उसे पहले गिराएं तो हो सकता है कि उसका मलबा नीचे गिरकर अहम प्रॉपर्टी को डैमेज कर दे।

अशोक कुमार ने कहा कि यह बात अहम है कि वह बलून इतनी दूरी तय कर अमेरिका पहुंचा। भारत के साथ तो चीन का इतना लंबा बॉर्डर लगता है तो यहां तो उसका आना और भी आसान है। लेकिन भारत का पूरे बॉर्डर पर एयर सर्विलांस सिस्टम मजबूत है और उसे लगातार और मजबूत किया जा रहा है तो इसकी संभावना कम है कि ऐसा कोई जासूसी बलून आए और वह डिटेक्ट न हो पाए। हालांकि यह उसकी साइज पर भी निर्भर करेगा।

रक्षा विशेषज्ञ अशोक कुमार का कहना है कि अमेरिका गया चीन का जासूसी बलून साइज में इसलिए भी बड़ा होगा क्योंकि उसे लंबी दूरी तय करनी थी। अगर उस साइज का बलून आता है तो आसानी से डिटेक्ट हो जाएगा। लेकिन कम दूरी के लिए साइज में छोटे बलून का भी इस्तेमाल हो सकता है। उन्होंने कहा कि बलून को डिटेक्ट करने के साथ ही बड़ा क्रिटिकल आस्पेक्ट है उसका आइडेंटिफिकेशन करना। उसका सर्विलांस आउटपुट कहां है, उसके अंदर क्या है, यह सब पता लगाना। उसके बाद उसे इंगेज करना यानी मार गिराना। अशोक कुमार के मुताबिक, हमारे पास सुखोई-30 और रफाल जैसे फाइटर जेट हैं और उनकी मिसाइल से इस तरह के बलून को आसानी से इंगेज किया जा सकता है। लेकिन यह इस पर भी निर्भर करेगा कि यह किस हाइट पर है, उसी के आधार पर इंगेजमेंट होगा। उन्होंने कहा कि हमारा ज्यादा फोकस पारंपरिक तरह के खतरे की तरफ रहता है, लेकिन वक्त आ गया है कि अब गैर पारंपरिक खतरों की तरफ ध्यान दिया जाए। इस पर काम किया जाए कि कैसे वे डिटेक्ट होंगे, कैसे पहचान होगी और कैसे एक्शन लिया जाएगा। इस पर काम हो रहा है, लेकिन और भी सुधार की गुंजाइश है।

डियन आर्मी में डीजी इंफैंट्री के पद से रिटायर हु लेफ्टिनेंट जनरल संजय कुलकर्णी कहते हैं कि वैसे तो जासूसी ड्रोन के जरिए भी होती है, लेकिन बलून ज्यादा लंबे वक्त तक हवा में रह सकता है। उसका कवरेज भी ज्यादा होता है। वह स्थिर भी रह सकता है और मूव भी कर सकता है। इसे बहुत लंबी दूरी में कहीं जमीन पर बैठकर मॉनिटर किया जा सकता है। उन्होंने कहा कि इसकी आशंका से कोई इनकार नहीं कर सकता कि चीन इस तरह के जासूसी बलून का इस्तेमाल एलएसी के पास भी कर सकता है। पहले जासूसी इंसान करते थे, फिर तरह-तरह के इन्फिर्मेट का सहारा लिया जाने लगा और अब हवा में भी हर जगह आंख और कान हैं। तो ऐसे में ज्यादा अलर्ट रहना और ज्यादा कैमोप्लाज ही रास्ता है।

सिक्वोरिटी एजेंसी से जुड़े एक अधिकारी ने कहा कि पहले भी कभी-कभी ईस्टर्न लद्दाख के पैंगोंग इलाके के ऊपर चीन ने बलून उड़ाए हैं। लेकिन यह उनके एरिया में होता है तो उसका कुछ किया नहीं जा सकता। पैंगोंग झील का दो तिहाई हिस्सा चीन के कब्जे में है। ऐसे बलून में लगे कैमरे के जरिए ऊपर से देखकर तैनाती का पता कर सकते हैं, सारे मूवमेंट का भी पता कर सकते हैं। यानी सब कुछ एक्सपोज्ड है। ऐसे में चुनौती बढ़ जाती है। रडार को छोटी चीजों को पकड़ने में दिक्कत आती है। जैसे ड्रोन को पकड़ना मुश्किल होता है। उसी तरह बलून या फिर किसी भी दूसरी तरीके से दुश्मन की जासूसी से बचने के लिए प्रोएक्टिव होना ही समाधान है।

<https://navbharattimes.indiatimes.com/navbharatgold/day-today/are-chinas-spy-balloons-spying-in-india-too/story/97624855.cms>



Mon, 06 Feb 2023

Ukraine to Replace Defence Minister in Wartime Reshuffle

Ukraine is set to replace Defence Minister Oleksii Reznikov with the chief of its military spy agency, a close ally of President Volodymyr Zelenskiy said on Sunday, in a reshuffle at the forefront of Ukraine's war campaign.

Mr. Reznikov would be transferred to another ministerial job and replaced by Kyrylo Budanov, head of the GUR military intelligence agency, said David Arakhamia, a senior lawmaker and chief of Servant of the People parliamentary bloc. "War dictates changes in personnel policy," Mr. Arakhamia said on the Telegram messaging app.

He said that Ukraine's "force" agencies—like the Defence Ministry—should not be headed by politicians during wartime, but people with a background in defence or security.

There was no immediate comment from Mr. Reznikov, a former lawyer who became defence minister in November 2021, a few months before Russia launched its full-scale invasion on Feb. 24, 2022. Mr. Arakhamia did not say when the move would be formalised. The imminent shakeup was also reported by several Ukrainian media outlets citing sources as well as another lawmaker, Yaroslav Zheleznyak, writing on Telegram.

Mr. Budanov, 37, is an enigmatic intelligence operative decorated for his role in classified operations who rapidly rose through the ranks to head up Ukraine's Main Directorate of Intelligence.

Mr. Arakhamia said Mr. Reznikov would be made minister of strategic industries.

His exit from the defence ministry would be the highest profile government change in a slew of resignations and sackings following a corruption scandal late last month. The shakeup coincides with Ukrainian fears that Russia is planning a major new offensive this month. Ukraine is planning its own counter-offensive but is waiting on Western supplies of battle tanks and infantry fighting vehicles.

Military Aid Overseer

Asked earlier at a news conference about media reports of his possible exit from the ministry, Mr. Reznikov told reporters that any decision was up to Mr. Zelenskiy.

As a wartime defence minister, Mr. Reznikov (56) fostered ties with Western defence officials and helped oversee the receipt of billions of dollars of military aid to help Kyiv fend off the Russian invasion.

Mr. Reznikov singled out Ukraine's "de facto" integration into the NATO military alliance as a top priority, even if joining the bloc was not immediately possible de jure.

During his tenure as Defence Minister, he spoke out strongly about wartime corruption, which he said was akin to "marauding". But in recent weeks his own Defence Ministry became embroiled in a corruption scandal over an army food contract that envisaged paying vastly inflated prices. It caused a public outcry. One of his deputy Ministers has been fired, and two other senior officials have also since left their posts. The scandal prompted Mr. Zelenskiy to embark on a major reshuffle that saw the exit of an array of regional governors, deputy ministers and other officials.

Mr. Reznikov hosted a news conference on Sunday afternoon, in which he said Ukraine expected a possible major Russian offensive this month, but that Kyiv had the resources at hand to hold them at bay. He also said that his ministry's anti-corruption department needed to be overhauled and that it had not done what it was supposed to do.

<https://www.thehindu.com/news/international/ukraine-to-replace-defence-minister-in-wartime-reshuffle/article66475454.ece/amp/>

Business Standard

Mon, 06 Feb 2023

Ukraine Minister Expects Help from Western Warplanes to Fight off Forces

Ukraine's defense minister expressed confidence Sunday that Western allies would agree to the country's latest weapons request warplanes to fight off Russian forces that invaded nearly a year ago. Defense Minister Oleksii Reznikov told a news conference in Kyiv that Ukraine has already received everything from its wish list to Santa, except planes.

There will be planes, too," Reznikov predicted. The question is just what kind exactly.... Consider that this mission is already completed. So far, Ukraine has won support from Baltic nations and Poland in its quest to obtain Western fighter jets. But several Western leaders have expressed concern that providing warplanes could provoke the Kremlin and draw their countries deeper into the conflict, which has cost tens of thousands of lives and wreaked massive destruction.

Kyiv says such jets are essential to challenging Russia's air superiority and ensuring success in a Russian offensive that Reznikov predicted could begin around the war's one-year anniversary, Feb. 24. "Not all Western weapons will arrive by then, but we have the resources and reserves to help stabilize and sustain the offensive, Reznikov told reporters.

Since the war began, Western leaders have balked at some of Ukraine's requests, such as for longer-range missiles and tanks, only to agree later. The warplanes are the latest example. Ukraine has relocated its warplanes and concealed air defense assets, hampering Moscow's efforts to gain full control of the skies. After suffering early losses, the Russian air force has

avoided venturing deep into Ukraine's airspace and mostly focused on close front line support. German-made tanks are on the way to Ukraine. Reznikov said his forces would begin training on Leopard tanks in Europe on Monday, before their delivery to Ukraine. So far, Canada, Poland, Germany, Great Britain and the United States have announced they will supply tanks to Ukraine.

The Kremlin has said Western countries' supply of increasingly sophisticated and more weapons will only prolong the conflict, and it has characterized NATO as a direct participant. Reznikov, commenting on the supply of Western weapons and the state of the Ukrainian army, took the rhetoric further on Sunday, telling reporters: I absolutely boldly claim that we have become a de facto NATO country. We only have a de jure part left. Ukraine has applied to join NATO, as have two of Russia's other neighbors, Finland and Sweden.

On the battlefield, Kharkiv regional governor OlehSyniehubov said four people were injured Sunday when a Russian S-300 missile fell near an apartment block in Kharkiv city, and another was hurt when a missile hit a university building. Video showed the building hit was the National Academy for Urban Economy, about 700 meters from the city's central square. Meanwhile, heavy fighting continued in the Donetsk region of eastern Ukraine, one of four regions that Russia illegally annexed last year even though its forces do not fully control the area. Donetsk governor PavloKyrylenko said five civilians were wounded in rocket attacks during the night in the city of Druzhkivka and that the town of Avdiivka and its outskirts were also fired on.

In the Donetsk city of Bakhmut, the epicenter of the fiercest fighting in Ukraine, the Ukrainian military said Sunday it had repelled Russian attacks. The founder of the mercenary group Wagner, YevgenyPrigozhin, said in a Telegram post that Kyiv's forces were not retreating and that there are fierce battles for every street, every house, every stairwell. In the Black Sea port of Odesa, workers labored to connect temporary generators shipped in to restore electricity. The city and surrounding area were plunged into darkness over the weekend following a large-scale network failure.

Grid operator Ukrenergo said that the failure involved equipment repeatedly repaired after Russia's savage strikes on Ukraine's energy grid, and that residents should brace themselves for lengthy blackouts. As of Sunday afternoon, about 280,000 customers 40% of the customers remained without power, said prime minister Denis Shmyhal.

https://www.business-standard.com/article/international/ukraine-minister-expects-help-from-western-warplanes-to-fight-off-forces-123020600005_1.html



Mon, 06 Feb 2023

New Long-Range Weapons will not Target Russia: Ukraine Defence Minister

Ukrainian Defence Minister OleksiyReznikov said on Sunday that Kyiv would not use new long-range weapons from the West to strike targets in Russia."On Friday our partners decided to provide us with weapons capable of firing at a distance of 150 kilometres," or around 90 miles, Mr. Reznikov told a news conference."We always tell our partners that we take an obligation not

to use the weapons of foreign partners against the territory of Russia, only against their units in the temporarily occupied territories of Ukraine for the purpose of de-occupying our land," he said.

The U.S. on Friday announced a new \$2.2 billion package of arms and munitions for Ukraine, which the Pentagon said included a new rocket-propelled precision bomb that could nearly double Kyiv's strike range against Russian forces. They potentially give Kyiv's forces the ability to strike anywhere in the Russian-occupied Donbas, Zaporizhzhia and Kherson regions, as well as the northern part of occupied Crimea. France and Italy for their part are expected to deliver mobile surface-to-air missile systems.

In an interview with the weekly Bild am Sonntag published on Sunday, German Chancellor Olaf Scholz said Ukrainian President Volodymyr Zelensky agreed that weapons supplied by the West would not be used to attack Russian territory. Mr. Reznikov also told reporters that Kyiv expected a possible Russian offensive later this month. On February 24, the Kremlin will mark one year since Russian President Vladimir Putin sent troops to Ukraine. "Not all Western weapons" will arrive by the time of a possible Russian offensive this month, Mr. Reznikov said, though he added that Kyiv had the resources to respond.

"We are ready to fight back," he said.

<https://www.thehindu.com/news/international/new-long-range-weapons-will-not-target-russia-ukraine-defence-minister/article66474958.ece/amp/>



Mon, 06 Feb 2023

US Shoots Down Chinese Spy Balloon

The US military has downed the suspected Chinese spy balloon over the Atlantic Ocean and launched a mission to recover all the equipment from its debris, drawing a strong reaction from China which on Sunday warned of repercussions over America's use of force against its civilian unmanned airship.

At the direction of President Joe Biden, the US military at 2.39 PM EST on Friday shot down the Chinese surveillance balloon in the Atlantic Ocean, some six miles (9.65 kms) away from the US shores in South Carolina, with no damage to the life and properties of Americans, a senior Defence official told reporters in Washington. Fighter aircraft from Langley Air Force Base in Virginia inspired a single missile into the balloon, causing it to crash into the ocean within the US territorial airspace, said the official, adding that as of now there are no indications that any people including US military personnel, civilian aircraft or maritime vessels were harmed in any way.

"I told them to shoot it down," Biden told reporters in Hagerstown, Maryland.

"On Wednesday, when I was briefed on the balloon, I ordered the Pentagon to shoot it down as soon as possible. They decided -- without doing damage to anyone on the ground -- the best time to do that was as it got over water, outside within the 12-mile limit," Biden said.

Responding to the downing of the balloon, China expressed strong dissatisfaction and opposition towards the US use of force to attack China's civilian unmanned airship, State-run Xinhua news agency cited a statement from the Chinese Foreign Ministry as saying on Sunday. "The US insisting on the use of force is an obvious overreaction and a serious violation of international practice. China will resolutely uphold the relevant company's legitimate rights and interests, at the same time, reserving the right to take further actions in response," said the Foreign Ministry statement in Beijing.

The Chinese side has, after verification, repeatedly informed the US side of the civilian nature of the airship and conveyed that its entry into the US due to force majeure was totally unexpected, the statement said, noting the Chinese side has clearly asked the US side to properly handle the matter in a calm, professional and restrained manner. Defence Secretary Lloyd Austin said that at the direction of President Biden, fighter aircraft assigned to US Northern Command successfully brought down the high-altitude surveillance balloon launched by and belonging to the People's Republic of China (PRC) over the water off the coast of South Carolina in US airspace.

"The balloon, which was being used by the PRC in an attempt to surveil strategic sites in the continental United States, was brought down above US territorial waters," Austin said. China has claimed that the balloon was merely a weather research "airship" that had been blown off course. This action of downing the balloon of the size of three buses was taken in coordination, and with the full support, of the Canadian Government. Defence officials told US media the debris landed in 14m of water - shallower than they had expected - near Myrtle Beach, South Carolina. The military is now trying to recover debris which is spread over seven miles (11 km).

The Pentagon official told reporters that they took immediate steps to protect against the balloon's collection of sensitive information mitigating its intelligence value to China. By shooting down the balloon, it addressed the surveillance threat posed to military installations and further neutralise any intelligence value it could have produced, preventing it from returning to China.

"In addition, shooting the balloon down could enable the US to recover sensitive PRC equipment. While we took all necessary steps to protect against the PRC surveillance balloon collection of sensitive information of the surveillance balloons overflight of US territory, which was of intelligence value to us," the official said without divulging much of the information. "I can't go into more detail, but we were able to study and scrutinise the balloon and its equipment, which has been valuable. The Chinese officials have themselves acknowledged the high-altitude surveillance balloon which has been useful to the People's Republic of China," said the official.

Now that the balloon has been shot down, the focus has shifted to the recovery mission, which is already underway. Multiple vessels are on the spot along with the divers, to go down if needed. The US has also deployed unmanned vessels that can go down to get the structure and lift it back up on the recovery ship, said the official. FBI officials are also on board as well as other counterintelligence authorities to categorise and assess the platform itself.

According to the second senior defence official, the Pentagon has been tracking this high-altitude balloon for some time. It entered Alaska on January 28. It then entered into Canadian airspace on January 30 and re-entered US airspace over Northern Idaho on January 31. "With confidence, the high-altitude balloon was a PRC surveillance balloon. We assessed that it did not pose a threat at any time to civilian air traffic and because of the altitude of the balloons. We also assess it did not pose a military or kinetic threat to US people or property on the ground, although we were

constantly updating both of those assessments and prepared to take it out if that threat profile changed,” said the official.

The Chinese authorities have denied it is a spying aircraft, and instead said it was a weather ship blown astray. “We’re also looking at the intel value of the balloon throughout. We are going to learn more as we pick up the debris that was not likely to provide significant added value over and above other PRC intel capabilities such as satellites in low Earth orbit, for example,” said the official. But nevertheless, this balloon was clearly crossing over sensitive sites, including sensitive military sites. As such, the Pentagon took additional precautions to make sure that whatever added intelligence value was minimised. Through constant monitoring and surveillance, the US has learned technical things about this balloon and its surveillance capabilities. “I suspect if we are successful in recovering aspects of the debris we will learn even more,” said the official.

<https://www.dailypioneer.com/2023/page1/us-shoots-down-chinese-spy-balloon.html>

Science & Technology News



Fri, 03 Feb 2023

खगोलविदों ने परमाणु हाइड्रोजन से आकाशगंगा में रेडियो सिग्नल का लगाया पता, भारतीय विज्ञान संस्थान की टीम का शोध

कनाडा स्थित मैकगिल विश्वविद्यालय और बेंगलुरु स्थित भारतीय विज्ञान संस्थान (आइआइएससी) की टीम ने सुदूर आकाशगंगा में परमाणु हाइड्रोजन से निकलने वाले रेडियो सिग्नल का पता लगाने में सफलता पाई है। इस रेडियो सिग्नल को पकड़ने के लिए उन्होंने पुणे स्थित जायंट मीटरवेव रेडियो टेलिस्कोप (जीएमआरटी) के डाटा का उपयोग किया है। आइआइएससी के एक बयान में कहा कि जिस खगोलीय दूरी पर यह सिग्नल पकड़ा गया है, वह अब तक अंतर के मामले में सबसे बड़ी है।

आइआइएससी का बयान

आइआइएससी के अपने बयान में कहा कि यह पहली बार है, जब किसी आकाशगंगा से 21 सेमी का उत्सर्जन देखा गया है। हालांकि, यह रेडियो संकेत बेहद कमजोर है और इसकी सीमित संवेदनशीलता के कारण वर्तमान दूरबीनों का उपयोग कर सुदूर आकाशगंगा से उत्सर्जन का पता लगाना लगभग असंभव है। तारे के निर्माण के लिए बुनियादी ईंधन है 'मंथली नोटिसेज आफ रायल एस्ट्रोनॉमिकल सोसाइटी' पत्रिका में प्रकाशित इस अध्ययन के अनुसार परमाणु हाइड्रोजन किसी आकाशगंगा में तारे के निर्माण के लिए आवश्यक बुनियादी ईंधन है।

अध्ययन के अनुसार

जब आकाशगंगा के आसपास से गर्म आयनित गैस आकाशगंगा पर गिरती है, तो गैस ठंडी हो जाती है और परमाणु हाइड्रोजन बनाती है। इसके बाद यह आणविक हाइड्रोजन बन जाती है और फिर तारों का

निर्माण होता है। अध्ययन के मुताबिक, ब्रह्मांडीय समय के अनुरूप आकाशगंगाओं के विकास को समझने के लिए विभिन्न ब्रह्मांडीय युगों में तटस्थ गैस के विकास का पता लगाने की आवश्यकता है।

मैकगिल विश्वविद्यालय के भौतिकी विभाग और ट्राटियर स्पेस इंस्टीट्यूट के एक पोस्टडॉक्टरल शोधकर्ता अर्नब चक्रवर्ती और आइआइएससी के भौतिकी विभाग के एसोसिएट प्रोफेसर निरुपम राय के इस स्तूत को समझने-परखने के लिए लगभग 8.8 अरब वर्ष पीछे देखना होगा। टीम ने यह भी देखा कि इस विशेष आकाशगंगा का परमाणु हाइड्रोजन द्रव्यमान इसके तारकीय द्रव्यमान से लगभग दोगुना है।

<https://www.jagran.com/news/national-astronomers-detect-radio-signal-from-atomic-hydrogen-in-milky-way-indian-institute-of-science-team-research-23318490.html>



Sun, 05 Feb 2023

NASA Hands Over Payload of NISAR Satellite to ISRO

The National Aeronautics Space Administration (NASA) on Saturday handed over the payload for the NISAR satellite to Indian Space Research Organisation (Isro), people aware of the matter said on Saturday. NISAR (NASA-Isro Synthetic Aperture Radar), is an earth science satellite jointly built by the NASA and the Isro.

The payload was send-off during a ceremony in California. The satellites' launch is expected by the first quarter of 2024, said Isro in a statement. NASA's Jet Propulsion Laboratory's (JPL) director Laurie Leshin said that the handover of the payload marks an "important milestone in our shared journey to better understand planet earth and our changing climate".

"NISAR will provide critical information on earth's crust, ice sheets, and ecosystems. By delivering measurements at unprecedented precision, NISAR's promise is new understanding and positive impact in communities. Our collaboration with Isro exemplifies what's possible when we tackle complex challenges together," Leshin said according to a statement issued by JPL on Saturday. "Today we come one step closer to fulfilling the immense scientific potential NASA and Isro envisioned for NISAR when we joined forces more than eight years ago," Isro chairman S Somanath said during the handover.

He added, "This mission will be a powerful demonstration of the capability of radar as a science tool and help us study earth's dynamic land and ice surfaces in greater detail than ever before." Since early 2021, engineers and technicians at JPL have been integrating and testing NISAR's two radar systems – the L-band SAR provided by JPL and the S-band SAR built by Isro, the space bodies said in a joint statement. They said, later this month, the SUV-size payload will be moved into a special cargo container for a 14,000km flight to India's UR Rao Satellite Centre in Bengaluru. There it will be merged with the spacecraft bus in preparation for a 2024 launch from Satish Dhawan Space Centre in Andhra Pradesh. Over the course of its three-year prime mission, the satellite will observe nearly the entire planet every 12 days, making observations day and night, in all weather conditions.

<https://www.hindustantimes.com/cities/delhi-news/nasa-hands-over-payload-of-nisar-satellite-to-isro-101675535710282.html>

Sat, 04 Feb 2023

ISRO - NASA Satellite to Study Earth's Dynamic Land to Take off from India

NASA and ISRO's developed earth observation satellite that will help to study earth's land and ice surfaces more indepth is all ready to be delivered to India later this month for a possible launch in September. ISRO Chairman S Somanath on Friday visited NASA's Jet Propulsion Laboratory (JPL) in the US state of California to oversee the final electrical testing of the NASA-ISRO Synthetic Aperture Radar (NISAR) satellite on Friday before it is sent to India.

This satellite is going to be a phenomenal outcome of India-US collaboration, to the entire globe. The integration of payload completed, now we have flagged off the satellite to India for further integration and to get ready for its launch next year," Somanath was quoted as saying by ANI, at the formal send-off ceremony organised at the JPL which also witnessed the presence of the senior scientists from the two space agencies.

The SUV-size payload will be shifted into a special cargo container for a 14,000- kilometer flight to the U R Rao Satellite Centre in Bengaluru, later this month. Earlier in 2014, both ISRO and NASA came together to develop the 2,800 kg satellite. In March 2021, ISRO sent its SBand SAR payload developed in India to NASA for integration with the L-Band payload built by JPL. "This marks an important milestone in our shared journey to better understand planet Earth and our changing climate. NISAR will provide critical information on Earth's crust, ice sheets, and ecosystems," JPL Director Laurie Leshin as quoted by PTI. The satellite will help researchers detect slowmoving variations of a land surface that can precede earthquakes, landslides, and volcanic eruptions. Such data could also play a major role in preparing communities for natural hazards such as the Joshimath land subsidence.

Measurement of melting sea ice and ice sheets will improve understanding of the pace and impacts of climate change, including sea level rise. During its three-year primary mission, the satellite will make measurements day and night, in all weather situations, every 12 days, covering practically the whole world.

<https://english.jagran.com/technology/isro-nasa-satellite-to-study-earths-dynamic-land-to-take-off-from-india-10063825>



Sat, 05 Feb 2023

'AI could Help Deliver Personalised Cancer Treatment'

In good news in the cancer care segment, a team of researchers have leveraged artificial intelligence (AI) technology to identify genes critical to a cancer cell's survival, and could help deliver personalised cancer patient treatments. They analysed different types of cancer cells to understand different gene dependencies for identifying the genes, the study said.

Researchers at the University of Sussex, UK, have done this by developing a prediction algorithm that works out which genes are essential in the cell, by analysing the genetic changes in the tumour. This can be used to identify actionable targets that in time could guide oncologists to personalise cancer patient treatments, the study said.

“Our vision is to take advantage of the decreasing cost of DNA sequencing and to harness the power of AI to understand cancer cell differences and what they mean for the individual patient’s treatment. “Through our research, we were able to identify cell-specific gene dependencies using only the DNA sequence and RNA levels in that cell, which are easily and cheaply obtainable from tumour biopsy samples,” said Dr Frances Pearl, Senior Lecturer in Bioinformatics at the University of Sussex.

“This is an incredibly exciting step in our research which means that we can now work to improve the technology so that it can be offered to oncologists and help in the treatment pathways for their patients,” said Pearl. Cancer treatments are primarily prescribed on the basis of the location and type of cancer. Genetic differences in tumours can make standard cancer treatments ineffective. Using a personalised approach to guide treatment could improve life expectancy, quality of life and reduce unnecessary side effects of cancer patients, the study said.

In each cell, there are around 20,000 genes that contain the information needed to make proteins. Around 1,000 of those genes are essential, meaning they are required for the cell to survive. When normal cells become cancer cells, oncogenes, or genes with the potential to cause cancer, become activated and tumour suppressor genes become inactivated, causing a rewiring of the cell.

This causes the cell to become dependent on a new set of genes to survive, and this can then be exploited to kill the cancer cells. By using this new AI technology to target protein products of tumour-specific dependent genes, cancer cells can be killed, leaving the normal cells which are not dependent on these genes relatively unharmed, the study said. Although dependencies can be determined using intensive laboratory techniques, it is costly and time consuming and would not be feasible to analyse all tumour samples in this way, the study said.

<https://www.dailypioneer.com/2023/page1/---ai-could-help-deliver-personalised-cancer-treatment---.html>

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