

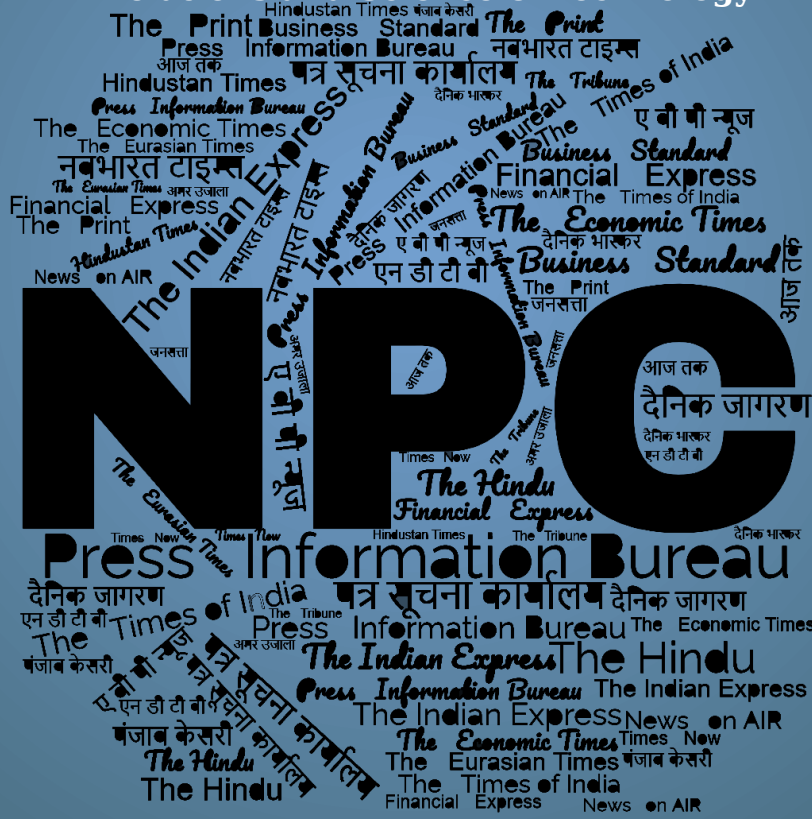
जून
June
2023

खंड/Vol. : 48 अंक/Issue : 119
24-26/06/2023

समाचार पत्रों से चयित अंश Newspapers Clippings

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

A Daily service to keep DRDO Fraternity abreast with DRDO Technologies, Defence Technologies, Defence Policies, International Relations and Science & Technology



रक्षा विज्ञान पुस्तकालय
Defence Science Library
रक्षा वैज्ञानिक सूचना एवं प्रलेखन केंद्र
Defence Scientific Information & Documentation Centre
मेटकॉफ हाउस, दिल्ली - 110 054
Metcalf House, Delhi - 110 054

CONTENTS

S. No.	TITLE	Page No.
	Defence News	1-24
	Defence Strategic: National/International	1-24
1.	IAF Fighter Jets Practice 'Touch and Go' on UP's Purvanchal Expressway	<i>The Economic Times</i> 1
2.	GE-HAL Deal to Co-produce 99 Jet Engines to Cost Less than \$1 Billion	<i>Business Line</i> 1
3.	Defence Ministry Says Attempts being Made to Derail Drone Deal with US, 'Price Discovery' yet to be Done	<i>The Print</i> 2
4.	India to Kick off Acquisition Process for 31 Armed Drones from US in Early July	<i>The Times of India</i> 4
5.	Predator Drones to be Deployed by Defence Forces at Three Major Hubs Across India	<i>ANI</i> 5
6.	'Predator' Drone Deal to Bring Countries to India's Doorstep for MRO Services: Ex-Defence Secretary	<i>The Economic Times</i> 6
7.	As Part of UAV Deal with U.S. Firm, India is Expected to Develop Some Components Locally	<i>The Hindu</i> 7
8.	India, US to Jointly Produce Engines for Next Generation Fighter Jet Aircraft	<i>The Economic Times</i> 8
9.	Defence Deals Boost India-US Ties, New Era in Relations, S Experts	<i>The Economic Times</i> 9
10.	Jet Engine Deal Ensures 80% Technology Transfer to HAL; First Engine in Three Years	<i>The Hindu</i> 10
11.	Make in India Dream for Defence Sector Moves One Step Closer, First Jet Likely in 3 Years	<i>The Economic Times</i> 12
12.	The Nuts and Bolts of the Engine Modi Brings to Power Atmanirbhar Bharat	<i>The Economic Times</i> 13
13.	Research, Transfer and Co-production: Tech Ties to Cover over 20 Domains	<i>The Tribune</i> 15
14.	Big Takeaways from PM Modi's State Visit to the US	<i>Financial Express</i> 16
15.	PM Modi, Egyptian President Discuss Trade, Defence & Security in Cairo	<i>Hindustan Times</i> 17
16.	India-Maldives Joint Defence Exercise Ekuverin Ends	<i>ANI</i> 18
17.	Pakistan Based Hackers Target Indian Army, Education Sector in New Cyber Attack	<i>Telangana Today</i> 19
18.	China Helps Pakistan Build Defence Infrastructure along LoC, Says Officials	<i>India Today</i> 20
19.	ASEAN Planning First Joint Military Drill amid 'Regional Tensions with China'	<i>The Economic Times</i> 21
20.	Raytheon Conducts Flight Test of Short-Range Air-Defence System	<i>Janes</i> 23
21.	Eight Chinese Warplanes Approach Waters Controlled by Taiwan	<i>The Economic Times</i> 23

Science & Technology News			24-30
22.	"India and the USA to Break New Ground in the 'Space'", Says Dr Jitendra Singh	<i>Press Information Bureau</i>	24
23.	Dr Jitendra Singh Launches the GEMCOVAC® -OM, an Omicron-specific mRNA-based Booster Vaccine	<i>Press Information Bureau</i>	27
24.	What are the Artemis Accords & what do they Mean for India's Space Dreams	<i>The Print</i>	28

THE ECONOMIC TIMES

Sat, 24 Jun 2023

IAF Fighter Jets Practice 'Touch and Go' on UP's Purvanchal Expressway

As spectators cheered, fighter jets of the Indian Air Force Saturday practiced 'touch and go' landing over the Purvanchal Expressway, district officials here said. Around 300 people, including villagers from more than two dozen nearby villages, attended the training exercise which commenced around 11 am and lasted for two hours, the officials said.

Sukhoi and Mirage fighter jets practiced 'touch and go' on the three-and-a-half-kilometre airstrip at Arwal Kiri Karwat in the Kurebhar area here on the expressway, the officials said.

In view of the programme, a 12 km stretch of the expressway was closed and a traffic diversion was put in place by the authorities. District Magistrate Jasjit Kaur, Superintendent of Police Somen Barma, Jaisinghpur MLA Raj Babu Upadhyay, along with several army officials, were present at the training event. The team of Air Force officials was alerted when a dog ran into the airstrip and police personnel were deployed to stop canines from reaching the airstrip.

The 341-km long Purvanchal Expressway from Lucknow to Ghazipur, which was inaugurated by Prime Minister Narendra Modi on November 16, 2021, passes through nine districts of the state.

During the inauguration, Modi himself landed on the airstrip in a Hercules aircraft of the Air Force.

<https://economictimes.indiatimes.com/news/defence/emergency-exercise-iaf-fighter-jets-touch-down-on-purvanchal-expressway/articleshow/101235708.cms>

THE HINDU BusinessLine

Sat, 24 Jun 2023

GE-HAL Deal to Co-produce 99 Jet Engines to Cost Less than \$1 Billion

The General Electric (GE) Aerospace-Hindustan Aeronautics Limited (HAL) deal for transfer of technology (ToT) to co-produce engines in India for the LCA Tejas MK-2 is expected to cost less than a billion dollars for 99 engines, top Defence Ministry officials' calculations — ahead of formal price negotiations and clearance from the US Congress for the rare export of critical military hardware — show. The pact will catapult India into an elite club of possible four, after the US,

Russia and France. The base calculation of the cost of engine manufacturing began in 2012 when the Defence Research and Development Organisation's (DRDO) Aeronautical Development Agency opened talks with GE for ToT of GE F414-INS6 after burning turbofan engines in the 95 kN thrust class for LCA MK-2 project, said sources. The Indian Air Force (IAF) requires LCAs to replace its aging fleet and replenish its strength.

But at that time, the US had only agreed for 58 per cent ToT. It has now been increased to 80 per cent which would take up the Indian content in the fighter aircraft to upwards of 72 per cent. Besides, accumulation of more-than-a-decade-long inflation since the initial negotiation also needs to be taken note of, sources said. A senior Ministry officer said Defence Minister Rajnath Singh's guidance and leadership enabled the signing of these agreements with the US.

What's the gain

Top official stated that the GE F414-INS6 engine ToT is at a "different level and scale" and has never happened anywhere in the world in terms of military technology. "More than the business transaction, the exchange of critical technology shows the trust Biden administration has in the Indian government and its intellectual stream since the ToT is beset with many IPR issues," said top defence officials, given the fear that it might not fall in enemy hands or with third party.

Among 11 key technologies being offered by the GE are special coating to avoid corrosion, erosion and thermal barrier for hot end; machining and coating for single crystal turbine blades; machining and coating of nozzle guide vanes and other hot end parts; and blisk machining, said sources.

An analysis of the comparison of government-to-government negotiations between India and the US in 2012 and 2023, as top defence sources divulged, show that GE has agreed to fully offload its skill set as opposed to limited ToT earlier. Similarly, there are 11 other points where the Modi government was able to convince the Biden administration to hand over more aspects of deep technology, said officials.

Defence officials believe that India also stands to benefit from the deal with an increase in payload and fuel capacity, multiplying of operational capabilities and less turnaround time for repair and maintenance. HAL is expected to take at least three years to roll out LCA MK-2, said sources.

Overall, it will eventually expedite India's stride to become self-reliant in manufacturing of fighter jets, since it would aide other indigenous efforts already going on for aerial platform development, manned and unmanned for military purposes and for civilians aircrafts, too.

It is learnt that the entire manufacturing would happen in India except for small components, and the IAF is expected to place orders for 120 to 130 LCA MK-2s.

<https://www.thehindubusinessline.com/companies/ge-hal-deal-to-co-produce-99-jet-engines-to-cost-less-than-1-billion/article67001904.ece>

ThePrint

Sun, 25 Jun 2023

Defence Ministry Says Attempts being Made to Derail Drone Deal with US, 'Price Discovery' yet to be Done

Stung by a series of messages circulating on social media regarding proposed purchase of what has been termed as "overpriced" MQ-9B drones from the US, the defence ministry hit back Sunday stating that attempts were being made to "derail the deal".

“Price and other terms and conditions of the purchase are yet to be finalised and subject to negotiations. In this regard, all are requested not to spread fake news/misinformation which can have a serious impact on the morale of the armed forces and adversely impact the acquisition process,” it said in a statement.

The drones are part of the \$3 billion deal for 31 High Altitude Long Endurance (HALE) drones between India and the US, which will bring to culmination the Indian military’s long-standing desire to have unprecedented surveillance and attack capability.

While the deal is yet to be inked formally, it was part of the joint statement released following a meeting between Prime Minister Narendra Modi and US President Joe Biden this week.

Under the deal, the Navy will get 15 MQ-9B drones in maritime and anti-submarine warfare kits, while the Army and the Indian Air Force (IAF) will get eight each of the land version.

The joint statement said MQ-9Bs will be assembled in India and will enhance the ISR (intelligence, surveillance and reconnaissance) capabilities of India’s armed forces.

As part of plans, US company General Atomics will establish a Comprehensive Global MRO (Maintenance, Repair and Overhaul) facility in India to support India’s long-term goal to boost indigenous defence capabilities. The firm has a tie-up with India’s Bharat Forge, part of the Kalyani Group, for its drone business.

However, Trinamool Congress leader Saket Gokhale Saturday put out a series of tweets challenging the pricing of the drones.

While the defence ministry did not name Gokhale in its statement, sources in the establishment said his tweet was what led to the ministry’s clarification.

A source told ThePrint: “Price discovery is yet to take place in the system. If one goes by Gokhale’s tweet, one would assume that even the US air force is buying the drone very expensive compared to the UK, which seems to have got it cheaper. The deal with the US is through the government-to-government route, as is usually the case when it comes to key weapon systems.”

What the ministry said

The defence ministry stated that “the Defence Acquisition Council (DAC) had on June 15, 2023, accorded the Acceptance of Necessity (AoN) for acquisition of 31 MQ-9B (16 Sky Guardian and 15 Sea Guardian) High Altitude Long Endurance (HALE) Remotely Piloted Aircraft Systems (RPAS) for Tri-Services from the US through Foreign Military Sale (FMS) route”.

The AoN included the number of unmanned aerial vehicles to be procured along with associated equipment.

“The AoN noted the estimated cost of 3,072 million US dollars provided by the US Government. However, price will be negotiated once policy approval of the US Government is received. The Ministry of Defence will compare the acquisition cost with the best price offered by General Atomics to other countries. The procurement is in progress and would be completed as per the laid down procedure,” it added.

The ministry clarified that under the FMS route, a Letter of Request (LOR) would be sent to the US government where the tri-services’ requirements, details of equipment and terms of procurement would be included.

Based on the LOR, the US government and ministry of defence will finalise the Letter of Offer and Acceptance (LOA) where details of equipment and terms of the procurement would be negotiated and finalised in accordance with the FMS programme, and the price and terms offered by the US government and General Atomics to other countries, it said.

“Meanwhile, some speculative reports emerged in sections of social media referring to the price and other terms of purchase. These are uncalled for, have ulterior motives and are aimed at derailing the due acquisition process,” the ministry added.

ThePrint had earlier reported about why India was going in for these specialised drones and what the three services aimed to use them for. It was also reported that the air force was initially not on board for the deal, but eventually agreed to it.

<https://theprint.in/defence/defence-ministry-says-attempts-being-made-to-derail-drone-deal-with-us-price-discovery-yet-to-be-done/1641632/>

THE TIMES OF INDIA

Sun, 25 Jun 2023

India to Kick off Acquisition Process for 31 Armed Drones from US in Early July

India will kick-off the formal acquisition process for the 31 top-notch weaponised MQ-9B drones from the US early next month, with the aim being to ink the actual contract within this fiscal and complete induction of all the remotely-piloted aircraft systems in phases over the next six to seven years.

The “hunter-killer” MQ-9B Reaper or Predator-B drones, designed to fly for around 40 hours at altitudes over 40,000-feet for surveillance missions and armed with Hellfire air-to-ground missiles and smart bombs for precision strikes, are far superior to China’s existing armed drones. China, incidentally, has also been supplying its armed Cai Hong-4 and Wing Loong-II drones to Pakistan.

“The actionable LoR (letter of request) for the 31 MQ-9B drones will be sent to the US government in the first week of July. This comes after the Rajnath Singh-led defence acquisitions council accorded the AoN (acceptance of necessity) for the deal on June 15,” a top defence ministry officer said on Saturday.

The inter-governmental deal for the 31 drones -- 15 Sea Guardians for Navy and eight Sky Guardians each for Army and IAF with their associated mobile ground control systems, weapons and other equipment -- is estimated to be worth around \$3.5 billion (almost Rs 29,000 crore).

Under the deal, the high-altitude, long-endurance (HALE) drones will be assembled in India. “Drone-manufacturer General Atomics will make some components here by tying up with Indian companies. The current figure for this is 8-9% but there is scope to increase it to 15-20%,” the officer said.

General Atomics will also set up a “cost-effective and comprehensive global MRO (maintenance, repair, overhaul) facility” in India, which can cater to other countries like Australia and Japan as well.

The US government will respond to India’s LoR with a LoA (letter of acceptance) with the final costing and the requisite notification to the US Congress under its foreign military sales (FMS) programme.

“A lot of the technical-commercial discussions have already taken place. The contract will be inked after the final nod from our CCS (cabinet committee on security),” the officer said.

Though it will depend on General Atomics' production capacity, India hopes to induct the first 10 MQ-9B drones within one to two years of the contract being inked. The rest will come in batches every six months.

With nine 'hard points' to carry missiles and smart bombs, the drones will bolster India's long-range over-the-horizon ISR (intelligence, surveillance and reconnaissance) and strike capabilities both in the Indian Ocean Region (IOR) as well as the land frontiers with China and Pakistan.

The plan is to deploy the drones at three tri-Service ISR command and control centres in the northwest, northeast and south India. The two unarmed Sea Guardians, acquired by the Navy on lease from General Atomics in September 2020, are based at naval air station INS Rajali at Arakkonam in Tamil Nadu. They have been effectively used for high-end ISR missions both in the IOR as well as the 3,488-km Line of Actual Control with China.

The MQ-9B deal is also expected to help DRDO eventually develop indigenous armed HALE drones capable of firing missiles and precision-guided munitions on enemy targets before returning to their home bases to re-arm for their next mission like manned fighter jets.

While lagging far behind China in this critical military arena, the Indian armed forces do have a large number of UAVs (unmanned aerial vehicles), mainly of Israeli-origin, for real-time reconnaissance and precision-targeting. The IAF also has some Israeli Harop "killer" or Kamikaze drones that act as cruise missiles by exploding into enemy targets and radars.

In July last year, DRDO had tested the stealth wing flying testbed (SWiFT), a scaled down version of what is eventually supposed to be a remotely-piloted strike aircraft (RPSA). But it will take several years to become operational.

<https://timesofindia.indiatimes.com/india/india-to-kick-off-acquisition-process-for-31-armed-drones-from-us-in-early-july/articleshow/101246435.cms>



Fri, 23 Jun 2023

Predator Drones to be Deployed by Defence Forces at Three Major Hubs Across India

The Indian defence forces will deploy the 31 Predator drones at three major hubs across the country to carry out surveillance of all areas, including the borders with China and Pakistan, and the vast maritime zone.

During Prime Minister Narendra Modi's visit to the US, the two countries announced the plans of Indian forces to procure 31 Predator drones.

The plan is to deploy these drones at three major hubs, one of which would be in the North or Northwest region while another would be in the northeastern region from where they would be looking after the entire region, senior defence officials said.

One of the hubs would be created at the INS Rajali from where the forces are already operating the two Predator drones taken on lease during the initial phase of a standoff with China in 2020-21.

The three forces would also be operating these drones from bases which would enable the launching and landing of such unmanned aerial vehicles.

The drones on lease are operated by the General Atomics representatives but now the Indian pilots from the three services would be trained for this role in India as well as in the US.

The drones would be operated by the tri-services jointly.

The proposal in this regard in the defence acquisition council was also sent by the tri-services headquarters.

A detailed scientific analysis was carried out by officers from the tri-services to arrive at the number of unmanned aerial vehicles of this long endurance variety.

All the future deals by the tri-services, including ones for helicopters, drones and air defence weapon systems, would be done in the same manner," the official added.

India shares vast maritime and land boundaries with two major adversaries -- Pakistan and China -- and requires constant monitoring of their activities to safeguard its national security interests.

The Predators, also called the MQ-9 Reaper, can fly up to 36 hours at a stretch and can be used for focused monitoring of any specific point or area of interest.

<https://www.aninews.in/news/national/general-news/predator-drones-to-be-deployed-by-defence-forces-at-three-major-hubs-across-india20230623194351/>

THE ECONOMIC TIMES

Sun, 25 Jun 2023

'Predator' Drone Deal to Bring Countries to India's Doorstep for MRO Services: Ex-Defence Secretary

Describing the defence agreements signed during Prime Minister Narendra Modi's US visit as "historic", former defence secretary Ajay Kumar said several countries using 'Predator' drones are likely to come to India for maintenance and overhauling. India and the US inked a USD3 billion deal for 31 High Altitude Long Endurance (HALE) UAVs, of which the Navy will get 15 SeaGuardian drones, while the Army and the Indian Air Force will get eight each of the land version – SkyGuardian.

A joint statement by the two countries affirmed that these cutting-edge drones would be assembled in India, significantly augmenting the intelligence, surveillance, and target acquisition capabilities of the Indian armed forces.

"When the US sells such advanced equipment, they never agree to any manufacturing outside the country. But in this particular case, it has said that the Predator drones will be assembled here and a full MRO hub for these drones will be set up as well," Kumar said.

A full Maintenance, Repair and Overhaul (MRO) means throughout the entire life cycle of these drones, their maintenance will be done in India, he added.

Emphasizing the significance of the General Atomics MQ-9B High-Altitude Long Endurance (HALE) UAVs, Kumar said countries such as the UK, France, Italy, Japan, Australia and Spain operate the MQ-9 system.

"Since Predators are a platform which other countries are also using, we can expect that in the future, some of the Predators from other countries will come for maintenance, repair and overhaul to India," he said.

On an MoU between General Electric and Hindustan Aeronautics Limited (HAL) for the GE414 fighter jet engines, the former secretary said the production of aero engines has been an area of deficiency for India and this agreement will prove to be a significant milestone towards the country's goal of developing its own jet engines.

"As regards the GE414 engines being manufactured in India with large-scale value addition, I think this is a historic moment. Aero-engine is one area where India has had a deficiency in the past and this is a major landmark in our journey to create our own aero engines and I think this is therefore, truly historic," Kumar said.

<https://economictimes.indiatimes.com/news/defence/predator-drone-deal-to-bring-countries-to-indias-doorstep-for-mro-services-ex-defence-secy/articleshow/101257331.cms>



Sun, 25 Jun 2023

As Part of UAV Deal with U.S. Firm, India is Expected to Develop Some Components Locally

As part of the process to conclude the deal for procurement of 31 MQ-9B armed High Altitude Long Endurance (HALE) Unmanned Aerial Vehicles (UAV), the Defence Ministry is expected to issue the Letter of Request (LoR) to the U.S. by the first week of July. This would initiate acquisition through the Foreign Military Sales (FMS) programme of the U.S. government. Meanwhile, discussions continue to increase the indigenous content and sourcing as part of the deal, according to Ministry officials. The deal is expected to take a few months to be concluded.

“The current indigenous content proposed in the MQ-9B deal is 8-9% while India is hoping it can be increased up to 15-20%. Discussions are on and General Atomics is positive to it and the U.S. government has to agree to it,” a senior Defence Ministry official said.

Some of the components will be manufactured here which can be scaled up and some of the electronics, sensors and avionics can also be manufactured here, the official said adding discussions are continuing on it. General Atomics is also in talks with several Indian companies as part of the deal, officials said.

The U.S.-India joint statement issued after the talks between U.S. President Joe Biden and Prime Minister Narendra Modi said that the MQ-9Bs, which will be assembled in India, will enhance the Intelligence, Surveillance, and Reconnaissance (ISR) capabilities of India's armed forces across domains. “As part of this plan, General Atomics will also establish a comprehensive global Maintenance, Repair and Overhaul (MRO) facility in India in support of India's long-term goals to boost indigenous defence capabilities,” the statement said.

On June 15, days before Mr. Modi's U.S. visit, the Defence Acquisition Council chaired by Defence Minister Rajnath Singh accorded Acceptance of Necessity (AoN) for the 31 MQ-9Bs - 15 for the Navy and eight each for the Army and Air Force. As per the process, once the LoR is sent to the U.S. Department of Defence, a Letter of Acceptance (LoA) will be issued followed by commercial negotiations with the company. The U.S. administration will have to notify the U.S. Congress of the potential sale, which is expected to be a formality. In the penultimate step, the deal has to be approved by the Cabinet Committee on Security after which the contract can be concluded.

According to its manufacturer General Atomics, the MQ-9B can provide roughly 80% of the capability of a large human-flown maritime patrol aircraft at about 20% of its cost per hour. This is the primary reason the Indian Navy is particularly keen on these UAVs as they will significantly enhance its ISR capabilities to monitor the wide expanse of the Indo-Pacific.

Dr. Vivek Lall, Chief Executive of General Atomics Global Corporation said PM Modi and President Biden have significantly enhanced the defence relationship between the two countries by announcing the decision to acquire MQ-9B for the Indian armed forces. “This is a breakthrough moment for India-U.S. strategic and defence partnership and General Atomics is pleased to be a major contributor in taking it to the next level,” he said in a comment to The Hindu.

Indian Navy already operates two MQ-9As on lease from General Atomics since November 2020. In November 2022, the two UAVs completed 10,000 flight hours during a period of two years, and covered over 14 million square miles of operating area, according to General Atomics.

At Aero India in February this year, Hindustan Aeronautics Limited (HAL) and General Atomics announced an understanding to formulate a comprehensive engine MRO programme to support HALE UAVs in the Indian market.

<https://www.thehindu.com/news/national/as-part-of-uav-deal-with-us-firm-india-is-expected-to-develop-some-components-locally/article67005557.ece>

THE ECONOMIC TIMES

Fri, 23 Jun 2023

India, US to Jointly Produce Engines for Next Generation Fighter Jet Aircraft

India and the US have signed a pact to jointly produce engines for next generation combat fighter jet aircraft. The pact is expected to see significant transfer of technology to the Indian defence manufacturing sector. The two sides also launched an initiative for sharing defence technology and fostering research and development to enhance defence industrial partnership.

A major milestone during Prime Minister Narendra Modi’s visit to the US, the pact will provide engines for the Tejas Mk 2 fighter jet programme and place GE Aerospace as the leading contender for the future Advanced Multirole Combat Air craft (Amca) requirement as well.

Announcing a memorandum of understanding with Hindustan Aeronautics Limited, GE Aerospace described it as a ‘key element in strengthening defence cooperation’ and said it places the company in a strong position to create a family of products in India.

India has been actively searching for fighter jet engine technology that is considered vital in the quest for self-reliance in defence manufacturing. The official statement did not mention the quantum of technology transfer, but officials have said that up to 80% tech transfer in terms of value will be undertaken.

“Our F 414 engines are unmatched and will offer important economic and national security benefits for both countries as we help our customers produce the highest quality engines to meet the needs of their military fleet,” GE chairman and chief executive officer H Lawrence Culp Jr. said.

The MoU will lead to building 99 engines for the Indian Air Force for the upcoming order for LCA Mk2 fighter jets. The jets will be powered by the F 414 engine, which will deliver more power than the current set of F 404 engines that the LCA Mk1A are fitted with. GE said the pact puts it in a

strong position for the prototype development, testing and certification of the Amca programme with its F 414-INS6 engine. In addition to the order for 99 engines for Tejas Mk2, the F 414 is also likely to power the first 40 Amca fighter jets. The remaining are planned to be powered by a more powerful engine.

<https://economictimes.indiatimes.com/news/defence/india-us-to-jointly-produce-engines-for-next-generation-fighter-jet-aircraft/articleshow/101208499.cms>

THE ECONOMIC TIMES

Fri, 23 Jun 2023

Defence Deals Boost India-US Ties, New Era in Relations, S Experts

Defence deals signed between India and US during Prime Minister Narendra Modi's US visit not only enhance India's defence capabilities, but also show growing proximity between the two countries, experts said on Friday.

India and US inked a \$3 billion deal for 31 High Altitude Long Endurance (HALE) UAVs, of which the Navy will get 15 SeaGuardian drones. while the Army and the Indian Air Force (IAF) will get eight each of the land version - SkyGuardian.

Another major announcement that came was an MoU signed between GE and Hindustan Aeronautics Limited (HAL) to jointly produce fighter jet engines for the Indian Air Force.

Former Deputy National Security Advisor Pankaj Saran called it a "new era" in India-US relationships.

"This marks a new era in relationships. The key takeaway is the focus on two sectors - defence and technology. The third element is the boldness of ambition shown by both sides," Saran told PTI.

"In the past also we have had summits, but in this particular summit there is a very conscious decision for both sides to significantly increase their ties in strategic areas," he said.

Former Vice Chief of Indian Air Force Air Marshal Ravi Kant Sharma (retired) said the MoU signed between GE and HAL is a great step forward for India and its jet engine programme.

"It will provide a boost in making India move towards self reliance in jet engine technology, though there will be a long road ahead before we produce an engine. The F414 is a contemporary, state of the art engine... While we do not know the fine prints, this MoU will definitely help in moving towards indigenous jet engines," Sharma said.

Talking about the deal for the Unmanned Aerial Vehicles (UAV), he said, "These UAVs can sustain for long duration, fly at high altitude, and have encrypted communication. In any warfare, you need intelligence, surveillance and reconnaissance... It will provide good ISR capabilities."

The Indian Navy has already been operating two Reaper drones which were hired on lease from an American firm.

Former Navy Spokesperson Captain DK Sharma (retired) said the drones provide a huge advantage, especially as India has been watching its maritime boundaries with the ramping up of Chinese activities in the Indian Ocean area.

"These drones are an asset which has not been shared anywhere in the world, India is probably the first country to get the MQ9B, they had earlier given us two MQ9 Reapers on 'Company Owned, Company Operated' model," the retired navy spokesperson told PTI.

"The two UAVs have already flown around 12,000 hours and they have changed the way surveillance is done, data is collected and a maritime domain awareness picture is created. It was very well appreciated," he said.

"Our area of responsibility - from Africa in the west to Sunda Strait in the east, and in the south, is huge. Last few years we have also seen a lot of Chinese presence in the area on one pretext or the other. We wanted some advanced surveillance assets which are not very costly to operate. One hour of a sortie of a Reaper costs in thousands (of Rupees), when the same job is done by the P8-I, the cost comes to a few lakhs," he said.

"It has hard points, can be weaponized, can go on a pure ISR mission, or anti-submarine warfare mission, and can be armed with hellfire missiles or other weapons. It can do the job as the mission requires," he added.

The Predators, also called the MQ-9 Reaper, can fly up to 36 hours at a stretch and can be used for focused monitoring of any specific point or area of interest.

Other major outcomes of PM Modi's state visit to the US includes computer storage chip maker Micron's announcement to set up a semiconductor assembly and test plant in Gujarat, and the decision by the two countries to send an Indian astronaut to the International Space Station in 2024.

India has also decided to join the Artemis Accords, which brings like-minded countries together on civil space exploration, and NASA and ISRO have agreed to a joint mission to the International Space Station in 2024.

<https://economictimes.indiatimes.com/news/defence/defence-deals-boost-india-us-ties-new-era-in-relations-say-experts/articleshow/101221540.cms>



Fri, 23 Jun 2023

Jet Engine Deal Ensures 80% Technology Transfer to HAL; First Engine in Three Years

The jet engine deal with U.S. is an “almost done” deal and will see 80% technology transfer by General Electric (GE) to Hindustan Aeronautics Limited (HAL). This will include critical technologies. The first engine will roll out three years after the contract is ready, according to a senior Defence Ministry official.

A previous ‘Engine Development Agreement’ in 2012 between GE and HAL for the F414 engine had 58% technology transfer, the official stated.

Groundbreaking

A factsheet issued by the White House on the bilateral meetings, described the GE proposal to jointly produce the F414 Jet Engine in India as “groundbreaking”, adding that a manufacturing license agreement has been submitted for Congressional notification.

“It will take three years for the first engine to roll out once the contract is signed. The 80% technology transfer to HAL is of critical importance. Such a transfer has not happened before and shows the level of trust India evokes in the US,” a senior defence source said on the Memorandum of Understanding (MoU) between GE and HAL to manufacture F414 engines for the Light Combat Aircraft (LCA)-MK2 in India. “Except for a small component, the F-414-INS6 engine will entirely be manufactured in India.”

“This trailblazing initiative to manufacture F-414 engines in India will enable greater transfer of US jet engine technology than ever before,” the joint statement issued after talks between Prime Minister Narendra Modi and President Joe Biden said.

Critical technologies

Some of the key technologies that would be transferred to India include special coatings for corrosion; casting, machining and coating for Single Crystal for turbine blades; casting, machining and coating of nozzle guide vanes and other hot parts; blisk machining; forging/ power metallurgy discs for turbine; machining of thin walled titanium casing; friction inertia welding for fan and after burner; Polymer Matrix Composites (PMC) for bypass polymer duct; Ceramic Matrix Composites (CMC) for LPNGV, flaps; laser drilling technology for combustor; bottle boring of shafts.

Timeline

On the timeline, Foreign Secretary Vinay Kwatra said that the US Congress would have to approve the deal which involves two separate legislations: Export Administration Regulations (EAR) and International Traffic in Arms Regulations (ITAR), and that some of the spadework had been completed during the Strategic Trade Dialogue he participated in earlier this month in Washington.

“Given that it is crucial to address the regulatory ecosystem, which intersects with technology cooperation, India and US recently held the first meeting of the strategic trade dialogue. The whole idea behind the strategic trade dialogue is that we look at regulatory issues more in terms of finding ways to enable our technology cooperation.” Mr. Kwatra said that the Jet engine tech transfer deal was one of the “strong, strategic and shared priorities” for both PM Modi and President Biden.

While the final cost is yet to be worked out, the official said the costing is indexed to the 2012 agreement based on which the current cost for 99 engines should be under \$1bn.

Payload boost

The F414 will significantly enhance the capability of the LCA-MK2 and engines for prototype and testing are already available. As reported by The Hindu earlier, the LCA-Mk2 will be 1350mm longer featuring canards and a payload of 6500kgs compared with 3500kgs for the Mk1 and MK1A.

Around 120-130 LCA-MK2 jets are likely to be produced. A final decision has to be taken by the Defence Acquisition Council headed by Defence Minister Rajnath Singh, who has been pushing the project towards faster execution, officials said. The official noted that they are still in talks for co-development of a 110KN engine to power the Advanced Medium Combat Aircraft (AMCA)-MK2. This F414 deal makes GE the frontrunner for the deal, though a final decision is yet to be taken.

Approval process

The defence official said that in addition to US Congressional approval, there are some commercial terms that are yet to be finalised. The official said it will result in shorter turnaround time for maintenance, repair and overhaul as well as access to new generation technologies which will percolate to other sectors. The deal also shows that the US trusts our Intellectual Property Rights

(IPR) regime and that the technology would remain secure. The US has showed confidence in our military systems also, the official added.

The Cabinet Committee on Security (CCS) has already approved the development of the LCA-Mk2 at a total development cost of ₹9000 crore and roll out of the first prototype is expected by 2024.

<https://www.thehindu.com/news/national/jet-engine-deal-ensures-80-technology-transfer-first-engine-will-roll-out-in-3-years/article67002402.ece>

THE ECONOMIC TIMES

Sat, 24 Jun 2023

Make in India Dream for Defence Sector Moves One Step Closer, First Jet Likely in 3 Years

Following Prime Minister Narendra Modi's official state visit to the United States, General Electric Co's GE Aerospace signed an MoU with Hindustan Aeronautics Limited (HAL), the maker of LCA Tejas MK1, to jointly produce in India the fighter jet engine, GE414.

The timeline for this project suggests that India is likely to manufacture its first GE-F414 jet engine within the next three years.

The project will involve 80% transfer of technology (ToT) and the new deal will signal a new era of bilateral defence-industrial collaboration with US.

The MoU inked between General Electric (GE) Aerospace and Hindustan Aeronautics (HAL) in Washington will translate into the actual contract "within a few months" after conclusion of some remaining commercial negotiations, a top government officer told TOI in an interview on Friday.

According to some reports, while the pricing isn't fixed, the likely cost for GE's F414 could fall anywhere between \$1 million and \$3.71 million.

During his address to the Indian diaspora at the Ronald Reagan Building in Washington, DC, PM Modi said, "In these 3 days, a new and glorious journey of India and the US relations has begun. This new journey is of our convergence on global strategic issues, of our cooperation for Make in India Make for the World."

PM Modi said, "Be it technology transfer and manufacturing cooperation or increasing coordination in the industrial supply chain, both nations are taking strong steps towards a better future. The decision of General Electric Company to manufacture fighter planes in India will prove to be a milestone for India's defence sector."

In the future, the GE414 engines will be used for the LCA Tejas Mk2, but also for the future Twin Engine Based Fighter (TEDBF) and the Advanced Medium Combat Aircraft (AMCA) Mk1 projects.

Currently, the production of LCA Tejas Mk2 has been reportedly delayed due to the wait for transfer of technology of GE414 engines.

Moreover, PM Modi has set his sights on tripling the value of India's annual defence exports to \$5 billion over the next two years. To this end, the government has been making diplomatic efforts to export the Tejas.

The deal between GE Aerospace and HAL, will aid in this endeavor and give India's defence sector a much needed boost.

While there is no clarity yet on it, India could be able to manufacture and supply spares to other countries with aircraft fitted with the GE414 engine. Eventually, India will emerge as a fighter jet maker, which is considered a mark of a developed country.

The acquisition of engine-making know-how, as the GE deal promises transfer of technology, will provide India independence in manufacturing jet fighters. Now India buys its fighter jets from Russia and France. The deal will also put India ahead of China as India will be one of the very few countries that produce jet engines indigenously --- the US, the UK, France and Russia.

In a report by TOI, an official said, "India has been in talks for the GE-F414 engines since 2012. At that time, only 58% ToT was offered. Now, it's 80%, which is of an unprecedented kind and scale, and critically important for India. It shows India has gained trust and confidence among US policy-makers."

With the GE-F414 INS6 turbofan engines in the 98 Kilonewton thrust class, the Tejas Mark-2 jets will have better operational capabilities, a longer combat range and greater weapon-carrying capacity than the existing Tejas Mark-1 jets, which have the older GE-F404 engines procured without ToT.

Now GE Aerospace will seek the necessary export authorisation which is highly likely given the bipartisan support in the US Congress for India-US defence cooperation.

It is the most important deal among various defence and technological agreements between India and the US that have materialised with Modi's visit.

<https://economictimes.indiatimes.com/news/defence/make-in-india-dream-for-defence-sector-moves-one-step-closer-first-jet-likely-in-3-years/articleshow/101231354.cms>

THE ECONOMIC TIMES

Fri, 23 Jun 2023

The Nuts and Bolts of the Engine Modi Brings to Power Atmanirbhar Bharat

With the prospect of a two-front war with China and Pakistan always present before India, the country needs a stronger air force, a key edge India can have over both these countries. India's dependency on foreign countries for fighter aircraft is a big handicap for its military. India can manufacture fighter aircraft domestically, as it has proved with Light Combat Aircraft (LCA) Tejas Mk1, but it can't manufacture the engines by itself and has to import them.

Amid Prime Minister Narendra Modi's official state visit to the United States, General Electric Co's GE Aerospace has signed an MoU with Hindustan Aeronautics Limited (HAL), the maker of LCA Tejas MK1, to jointly produce in India the fighter jet engine, GE414. It is the most important deal among various defence and technological agreements between India and the US that have materialised with Modi's visit. Now GE Aerospace will seek the necessary export authorisation which is highly likely given the bipartisan support in the US Congress for India-US defence cooperation.

Inside the GE414 jet engine

In 1986, GE began working with the Aeronautical Development Agency and HAL to support the development of the LCA with F404 engines. Subsequently GE Aerospace's F404 and F414 have been part of development and production programs of LCA Mk1 and LCA Mk2 programmes. In

total, 75 F404 engines have been delivered and another 99 are on order for LCA Mk1A. Eight F414 engines have been delivered as part of an ongoing development program for LCA Mk2.

The F414, which shares its basic design with the F404 engine, is a tried-and-tested engine for fighter jets. The F414 stands on a foundation of over 5,600 F404/F414 engines built and a combined 18 million engine flight hours.

With seven other countries having F414-powered aircraft in operation or on order (the US, Sweden, Australia, Kuwait, Brazil, South Korea and Indonesia), the F414 continues to exceed goals for reliability and time on wing. To date, more than 1,600 F414 engines have been delivered globally.

For more than 30 years, the US Navy has depended on F414 power. Today, the F414 continues to deliver for the most demanding combat missions. The engine proves its versatility every day as it continues to power front-line fighters for armed forces around the globe. It has become the engine of choice for an increasing number of advanced, next-generation combat aircraft.

The F414 engine is used to power many advanced fighter jets such as Boeing F/A-18E/F Super Hornet, Boeing E/A-18G Growler, Saab JAS 39E/F Gripen NG and South Korean KAI KF-21 Boramae. It also powers NASA's X-59 QueSST quiet supersonic technology research aircraft.

The F414 offers unrestricted engine performance on demand with rapid engine throttle response and zero throttle restrictions. Excellent afterburner light and stability ensure extra thrust is ready on demand when needed.

The F414 is designed to maximize time-on-wing, simplify maintenance and keep life cycle costs low. Its six-module engine architecture is reliable, easy to maintain, and interchangeable. With no scheduled overhauls and on-condition maintenance, the F414 maximises engine availability.

Atmavirbhar in defence

India needs more fighter aircraft to tackle the joint threat of Pakistan and China as a large number of its own aircraft are aging. Citing the increasing number of fighter aircraft in the Chinese and Pakistan air forces, then Vice Chief Air Marshal Sandeep Singh had said last year that there would be a requirement for 42 squadrons of fighter aircraft by the Indian Air Force, ANI had reported.

The IAF is authorised to have 42 squadrons which would mean around 800 fighter aircraft. A squadron typically has 18 aircraft. But at present it is stuck at 31 squadrons due to delays in the development of the LCA Tejas as well as in the procurement of high-ability multirole fighters. The situation is going to worsen further with the planned decommissioning of the MiG-21s in near future and all squadrons of Jaguar, Mirage-2000 and MiG-29 fighters by the middle of the next decade.

The scenario not only calls for speedier manufacturing but also self-reliance. The acquisition of engine-making know-how, as the GE deal promises transfer of technology, will provide India independence in manufacturing jet fighters. Now India buys its fighter jets from Russia and France. The deal will also put India ahead of China as India will be one of the very few countries that produce jet engines indigenously --- the US, the UK, France and Russia.

The GE414 engines will be used for the LCA Tejas Mk2, but also for the future Twin Engine Based Fighter (TEDBF) and the Advanced Medium Combat Aircraft (AMCA) Mk1 projects. Production of LCA Tejas Mk2 has been reportedly delayed due to the wait for transfer of technology of GE414 engines.

The deal might also give a push to India's defence export ambitions. There is no clarity yet on it but India could be able to manufacture and supply spares to other countries with aircraft fitted with the GE414 engine. Eventually, India will emerge as a fighter jet maker, which is considered a mark of a developed country.

Modi has set the ambition to more than triple the value of annual defence exports to \$5 billion over the next two years. To this end, the government has been making diplomatic efforts to export the Tejas. The Tejas has been beset by design and other challenges, and was once rejected by the Indian Navy as too heavy.

The ripple effect

The GE414 deal is a landmark agreement since the US has been wary of sharing advanced defence tech with India. It is America's big vote of confidence for India, which will reverberate in the American corporate sector for a long time. If GE Aerospace starts engine production in India, it will be an encouraging sign for many other American manufacturers, especially those who make high-tech products, undecided about shifting production to India, given India's proximity to Russia, among other factors.

Atul Keshap, the President of US Indian Business Council, told PTI recently that if the GE414 engine deal went through, it would impact the US-India defence relationship for four decades in a positive way. "I think it will have a ripple effect across the US and Indian defence industries, and most importantly, our private sector companies. It will unleash even more confidence and even more deal-making," he said.

<https://economictimes.indiatimes.com/news/defence/the-nuts-and-bolts-of-the-engine-modi-brings-to-power-atmanirbhar-bharat/articleshow/101217217.cms>

The Tribune

Sun, 25 Jun 2023

Research, Transfer and Co-production: Tech Ties to Cover over 20 Domains

India and the US have identified about two dozen areas of technology partnership as a direct result of the discussion between PM Narendra Modi and US President Joe Biden, said Foreign Secretary Vinay Mohan Kwatra at the end of the day's official engagements in Washington on Thursday.

"You will find very clearly that technology, in particular advanced technology across various domains, has been one of the most substantive outcomes from the visit and from the discussions between the leaders," he said.

Technology cooperation covered transfer, trade and services as also research, co-production and on developing technologies across different sectors, said the Foreign Secretary. In this respect, he referred to Micron's plan to set up an assembly line and test facility in India with a total investment of about \$2.75 billion; Lam Research's decision to train 60,000 Indian engineers and plan by Advanced Applied Materials to invest \$400 million to set up an engineering centre heavily centred on technology. The Initiative on Critical and Emerging Technologies has led to the resolve to set up a quantum coordination mechanism and the quantum information and science and technology agreement. This is besides deliberations on quantum entanglement exchange, quantum economic development consortium and R&D under the India-US Science and Technology Endowment Fund.

Kwatra also referred to joint development and commercialisation of AI and quantum technologies, high-powered computing technology and development of source codes. Google's AI Research Centre also announced to continue investment through the \$10 billion digitalisation fund, he said.

In S&T, there was an implementation arrangement relating to cyber physical systems and secure and trustworthy cyberspace. The two sides also agreed to fund joint projects, which would include semiconductors, next generation communication, cybersecurity, green technologies and intelligent transport systems.

In the India-US defence industrial cooperation roadmap and energy too, there are half a dozen agreements, including the GE decision to make jet engines and the plan to buy MQ-9B Reaper drones.

<https://www.tribuneindia.com/news/nation/research-transfer-and-co-production-tech-ties-to-cover-over-20-domains-519685>



Fri, 23 Jun 2023

Big Takeaways from PM Modi's State Visit to the US

By Huma Siddiqui

Prime Minister Narendra Modi's state visit to the United States has resulted in significant outcomes, particularly in the realm of technology cooperation. – The visit has been hailed as path-breaking, with various deals and agreements being forged between the two nations.

Advancements in defense partnership, space cooperation, and commitment of both nations to harnessing advanced technologies for mutual benefit. The joint production of jet engines, the procurement of HALE drones, and the establishment of semiconductor facilities demonstrate a substantial leap in indigenous manufacturing capabilities and defense partnerships.

The collaboration in quantum computing and space exploration opens new frontiers for scientific advancement and global cooperation. As both nations continue to deepen their ties, the state visit serves as a testament to the shared vision of progress, innovation, and strategic partnership between India and the US.

Technology Cooperation: Advancing Across Domains

Technology cooperation featured prominently in discussions, covering diverse domains such as defense, space, and energy. The focus was on advanced technology, with an emphasis on technology transfer, services, and collaborative research. This comprehensive approach to technology cooperation marks a significant achievement of the state visit.

Key Projects and Agreements: Jet Engines and Drones

General Electric and Hindustan Aeronautics Limited (HAL) signed an MoU to jointly produce fighter jet engines, enabling greater technology transfer and indigenous manufacturing capabilities.

The Indian Navy, Army, and Air Force will procure 31 MQ-9B High Altitude Long Endurance (HALE) drones from the US, strengthening India's surveillance and attack capabilities. These drones are going to be assembled in India and will be deployed to enhance the ISR (intelligence, surveillance, and reconnaissance) capabilities of Indian Navy, Air Force and Army.

To support long term goals in boosting India's indigenous defence capabilities, the US based General Atomics will set up a Comprehensive Global MRO facility in the country.

Semiconductor Manufacturing and 5G/6G Technologies:

Micron Technology will invest up to USD 825 million to build a new semiconductor assembly and test facility in India, supported by the Indian government.

Joint Task Forces on advanced telecommunications, focused on Open RAN and 5G/6G research and development, were launched by Prime Minister Modi and President Biden. India's Bharat 6G Alliance and the US Next G Alliance will be led by Public-private cooperation in these areas.

Quantum Computing:

India and the US have established a joint Indo-US Quantum Coordination Mechanism to facilitate collaboration among industry, academia, and government. The aim is to develop a comprehensive Quantum Information Science and Technology agreement, furthering advancements in quantum computing.

Advancements in Defence Partnership:

The defence sector witnessed significant developments during PM Modi's visit.

The joint production of fighter jet engines with General Electric and HAL marks the beginning of a new era in the India-US partnership, enabling indigenous manufacturing capabilities. The joint statement referred to this deal as a "landmark" and "trailblazing initiative" for greater technology transfer.

Exploring New Frontiers in Space Cooperation:

NASA and the Indian Space Research Organisation (ISRO) will work together to develop a strategic framework for human spaceflight cooperation by the end of 2023. India signed the Artemis Accords, which advance a common vision of space exploration for the benefit of humankind.

The Artemis Accords aim to land the first woman and person of color on the Moon, conduct scientific discoveries, and explore more of the lunar surface.

Concern for Ukraine and Commitment to Global Security:

Both leaders expressed deep concern over the conflict in Ukraine, acknowledging its tragic humanitarian consequences. The impacts of the war on the global economic system, including food, fuel, and energy security, were underscored, calling for greater efforts to mitigate them.

Commitment to providing humanitarian assistance to Ukraine was reiterated, along with a renewed commitment to empowering the Quad as a partnership for global good.

<https://www.financialexpress.com/business/defence-big-takeaways-from-pm-modis-state-visit-to-the-us-3139868/>



Sun, 25 Jun 2023

PM Modi, Egyptian President Discuss Trade, Defence & Security in Cairo

Prime Minister Narendra Modi and Egyptian president Abdel Fattah El-Sisi on Sunday held bilateral talks in Cairo, focussing on trade & investment, defence & security, renewable energy, cultural and people to people ties.

"Synergising - multifaceted ties PM @narendramodi held a productive meeting with President @AlsisiOfficial in Cairo on 25 June 2023 The leaders discussed ways to further deepen the partnership between the two countries, including in trade & investment, defence & security, renewable energy, cultural and people to people ties. An agreement to elevate the bilateral relationship to a "Strategic Partnership" was signed by the leaders", Arindam Bagchi, spokesperson, ministry of external affairs, tweeted.

"Three MoUs in the fields of Agriculture, Archaeology & Antiquities and Competition Law were also signed", he added.

Modi, the second Indian prime minister on a state visit to Egypt in 26 years, was conferred with the African country's highest state honour 'Order of the Nile' by the Egyptian president Sisi. It is the 13th international award to be bestowed on the prime minister since he assumed office in 2014.

Earlier in the day, PM Modi visited the 11th century Al-Hakim mosque which has been restored by India's Dawoodi Bohra community. "Honored to visit the historic Al-Hakim Mosque in Cairo. It's a profound testament to Egypt's rich heritage and culture", Modi tweeted.

Later, Modi visited the Heliopolis Commonwealth War Cemetry and offered tributes to the Indian soldiers who bravely fought and laid down their lives in Egypt and Palestine during the First World War.

"Prime Minister paid homage to over 4,300 valiant Indian soldiers who sacrificed their lives in Egypt and Aden during the 1st World War," the MEA said in a press release.

<https://www.hindustantimes.com/india-news/pm-narendra-modi-egypt-visit-abdel-fattah-el-sisi-bilateral-talks-defence-trade-101687690828124.html>



Sat, 24 Jun 2023

India-Maldives Joint Defence Exercise Ekuverin Ends

The twelfth edition of India-Maldives Joint Exercise Ekuverin concluded after intense validation training.

Taking to Twitter, the Additional Directorate General of Public Information of the Indian Army said, "The exercise has strengthened mutual confidence and enabled sharing of best practices."

The 12th edition of the joint military exercise "Ex Ekuverin" between the Indian Army and the Maldives National Defence Force has taken place at Chaubatia, Uttarakhand from 11 to 24 June 2023, reported the Ministry of Defence.

Ekuverin meaning 'Friends' is a bilateral annual exercise conducted alternatively in India and Maldives.

A platoon strength contingent from Indian Army and Maldives National Defence Force has participated in a 14-day long exercise.

The exercise aimed at enhancing interoperability in Counter Insurgency/ Counter Terrorism Operations under the UN mandate and carrying out joint Humanitarian Assistance and Disaster Relief operations. The focus was to share best practices and enhance coordination and cooperation between both the forces at tactical level, according to the Ministry of Defence.

The 11th edition of the exercise was held in Maldives in December 2021. The defence cooperation between the two countries extends from joint exercises to assisting the Maldives with defence training and equipment requirements. Both nations have very close and friendly relations in economic, cultural and military cooperation. 'Ex Ekuverin' will assist in further bolstering these ties between the two nations.

<https://www.aninews.in/news/world/asia/india-maldives-joint-defence-exercise-ekuverin-ends20230624233823/>

Telangana Today

Sat, 24 Jun 2023

Pakistan Based Hackers Target Indian Army, Education Sector in New Cyber Attack

Indian security researchers on Saturday said they have detected a new wave of cyber attacks orchestrated by a notorious Pakistan-based group against the Indian Army and the education sector.

Transparent Tribe, a persistent threat group that originated in 2013 in Pakistan, has been targeting Indian government and military entities, according to the report by Seqrite, the enterprise arm of Pune-based Quick Heal Technologies.

The Pakistan-based group (dubbed as APT36) is using a malicious file titled “Revision of Officers posting policy” to lure the Indian Army into compromising their systems.

The file is disguised as a legitimate document, but it contains embedded malware designed to exploit vulnerabilities, the team noted.

Furthermore, the cyber-security team has also observed an alarming increase in the targeting of the education sector by the same threat actor.

Since May 2022, Transparent Tribe has been focusing on infiltrating prestigious educational institutions such as the Indian Institutes of Technology (IITs), National Institutes of Technology (NITs), and business schools.

These attacks intensified in the first quarter of 2023, reaching their peak in February.

“The subdivision of the Transparent Tribe, known as SideCopy, has also been identified targeting an Indian defence Organisation. Their modus operandi involves testing a domain hosting malicious file, potentially to serve as a phishing page,” said the researchers.

This sophisticated tactic aims to deceive unsuspecting victims into divulging sensitive information.

APT36 has cleverly utilised malicious PPAM files masquerading as “Officers posting policy revised final”.

A PPAM file is an add-in file used by Microsoft PowerPoint.

“These files exploit macro-enabled PowerPoint add-ons (PPAM) to conceal archive files as OLE objects, effectively camouflaging the presence of malware,” said the report.

Seqrite recommended some preventive measures such as exercising caution while opening email attachments or downloading files, especially if they are unsolicited or from untrusted sources.

“Regularly update security software, operating systems, and applications to protect against known vulnerabilities. It is also important to implement robust email filtering and web security solutions to detect and block malicious content,” the team advised.

<https://telanganatoday.com/pakistan-based-hackers-target-indian-army-education-sector-in-new-cyber-attack>



Sun, 25 Jun 2023

China Helps Pakistan Build Defence Infrastructure along LoC, Says Officials

China has been helping the Pakistan Army build its defence infrastructure besides providing Unmanned Aerial and Combat Aerial Vehicles, setting up communication towers and laying underground cables along the Line of Control, officials said.

This, according to the officials, is part of efforts to further shore up China's position as an all-weather friend of Pakistan while ensuring the safety of the growing Chinese enclaves on Pakistan-occupied Kashmir (PoK) set up on the pretext of securing the China–Pakistan Economic Corridor (CPEC) road and hydel projects built in the occupied territory.

The officials said that the recently developed SH-15, a 155 mm truck-mounted howitzer gun, has also been spotted at some places along the Line of Control (LoC) after it was displayed on Pakistan Day last year.

Known as a 'shoot and scoot' artillery weapon, Pakistan had signed a contract with Chinese firm North Industries Group Corporation Limited (Norinco) for the supply of 236 SH-15s and, according to London-based Janes Defence magazine, the first batch was delivered in January 2022.

Though the presence of senior PLA officials at forward posts, as was detected in 2014, was not found, some intercepts suggested that Chinese troops and engineers were setting up infrastructure along the LoC, including building underground bunkers, the officials said.

The Army has officially maintained silence on the issue but has been constantly updating the intelligence agencies, sources said.

The Chinese military's presence, according to experts, is due to Beijing's 46-billion-dollar CPEC under which Gwadar Port in Karachi will be linked to China's Xinjiang province through the Karakoram highway, an area under the illegal occupation of China.

The officials suggested that Chinese experts were digging some tunnels in the Leepa Valley located in PoK, preparatory to building an all-weather road that will serve as an alternative route to reach the Karakoram highway.

It may be mentioned here that a Chinese telecom company took over Pakistan's telecom company in 2007 and formed China Mobile Pakistan (CMPak), which is a 100 per cent owned subsidiary of China Mobile Communications Corporation.

In August last year, the Pakistan Telecommunication Authority (PTA), while renewing the mobile licence of CMPak (Zong) for PoK, gave permission for expanding Next Generation Mobile Services (NGMS) in the region.

India has strongly objected to the presence of the Chinese in Gilgit and Baltistan regions in the past, and officials said the Army was completely prepared to frustrate any moves from across the border.

India and Pakistan have been observing a ceasefire since February 25, 2021.

Srikanth Kondapalli, professor of Chinese studies at Jawaharlal Nehru University who has been part of a think-tank on Indian policy towards China, feels that arms transfers to Pakistan are part of a design to secure China's interests in the region.

He said that in line with its often-stated stand of being Pakistan's "all-weather" friend and to balance India by pursuing the overall regional dominance policy, Beijing has stepped up its arms transfers to Pakistan.

"China had initiated an Economic Corridor (CPEC) in 2014 in violation of sovereignty concerns of India in Pakistan-occupied Kashmir.

"In addition to road expansion of the Karakoram Highway, China has sent an estimated 36,000 'security guards' into PoK to protect its hydroelectricity projects and other infrastructure projects from terror attacks," he said.

Kondapalli said that China had also been constructing "well-off society" villages in PoK.

"Modern warfare also requires 24/7 surveillance and China has been supplying 10 CH-4A drones, specifically designed for high-altitude missions over land and sea that can fire from up to 5,000 metres, in addition to 48 Wing Loong-II drones, used as a surveillance and aerial reconnaissance and precision strike platform, to Pakistan since 2018," he said.

<https://www.indiatoday.in/india/story/china-helps-pakistan-build-defence-infrastructure-along-loc-says-officials-2397758-2023-06-25>

THE ECONOMIC TIMES

Sun, 25 Jun 2023

ASEAN Planning First Joint Military Drill amid 'Regional Tensions with China'

The Association of Southeast Asian Nations (ASEAN) is planning its first joint military drill amid regional strain with China, Voice of America (VOA) reported.

According to the Indonesian military, the drill will be conducted in Indonesia's South Natuna Sea.

During the 20th ASEAN Chief of Defence Forces Meeting in Bali, organized on June 7, ten ASEAN military chiefs agreed to conduct routine joint training and coordinated patrols in waters of the South China Sea. There will be the army, naval and special forces involved from September 18 to September 25, despite scepticism from member state Cambodia, as per VOA.

Indonesian military spokesperson Rear Admiral Julius Widjojono said, "This exercise is focused not on combat, so it is best suited for the south that is in direct contact with the people." He added that the drills will be held in and around Batam island at the mouth of the Malacca Strait, another strategic waterway for world trade. On Monday, the Indonesian military gathered with ASEAN military delegates in the Indonesian capital city of Jakarta to discuss preparations for the exercises, including scenarios, equipment to be used and the drill's location, as per a military press release, VOA reported.

The ASEAN exercise named Solidarity, will be held as China is asserting its claim to areas of the South China Sea that are also claimed by the ASEAN member states; Indonesia, Vietnam, Malaysia, Brunei and the Philippines. This year, Indonesia holds the rotating chair of the regional bloc.

"China believes that defence and security cooperation between countries needs to be conducive to regional peace and stability. They should not escalate tensions or undermine trust between countries, still, less target any third party," the spokesperson for the Chinese Embassy in Washington, Liu Pengyu said, according to VOA.

According to an Indonesian military spokesperson, Rudy Hernawan, Cambodia and Myanmar, ASEAN members maintain close ties with China and they did not participate in the planning conference held on Monday.

Mohamad Rosyidin, an international relations analyst from Diponegoro University in Semarang, Central Java, said the original location for the military drill in the South China Sea could have deterred participation by some ASEAN countries.

Earlier this month, Commander-in-chief of the Royal Cambodia Armed Forces Cambodian General Vong Pisen, released a statement stating that Cambodia had formed a working group to study the proposal for a combined drill before seeking approval to participate from the Defence Ministry, as per VOA. Citing the country's perceived closeness to China, Rosyidin further said that he doubts Cambodia will participate in the drill.

China says most of the South China Sea, or approximately 90 percent of the three million-square-kilometre South China Sea, lies within the "nine-dash line" that it views as a maritime border.

The US has responded to China's claims on the South China Sea by vowing to protect and preserve the rules-based maritime order along with ASEAN and the East Asia Summit.

"The People's Republic of China has failed to put forth a lawful, coherent maritime claim in the South China Sea (SCS), and the United States, therefore, rejects all PRC maritime claims within Indonesia's exclusive economic zone," U.S. State Department spokesperson said in an email to VOA on Tuesday.

"Freedom of the seas and adherence to international law in the South China Sea are vital interests for the entire international community, including international organizations like ASEAN," the spokesperson added.

"Together we seek the protection and preservation of respect for international law, lawful unimpeded commerce, and freedoms of navigation and overflight and other lawful uses of the sea."

In the past, ASEAN nations, including US and China have participated in naval exercises with other countries, but the September drills would be the first involving just the bloc.

Although some may see the exercise as a signal to China, Indonesia's military chief implied that the drills would not show ASEAN's military might.

Widjojono, the military spokesperson, said that the military drill was related to the "high risk of disaster in Asia, especially Southeast Asia."

"ASEAN is not a defence pact," said Admiral Yudo Margono at a news conference in Bali on June 6. "The drill will focus instead on disaster relief, search and rescue activities, followed by community service. The Indonesian military hopes to collaborate [with ASEAN countries] to create regional security. If we can achieve security and stability in the region, we can secure the air and sea trade routes which will then ensure people's welfare."

"The joint military drill will be a great opportunity for Southeast Asian military to better mitigate natural disasters and improve their disaster preparedness," he said. "So when a disaster occurs in one country, their neighbouring country can offer their assistance quicker," according to VOA.

<https://economictimes.indiatimes.com/news/defence/asean-planning-first-joint-military-drill-amid-regional-tensions-with-china/articleshow/101254867.cms>



Fri, 23 Jun 2023

Raytheon Conducts Flight Test of Short-Range Air-Defence System

Raytheon Australia has conducted a flight test of a short-range ground-based air-defence (SRGBAD) system at the Woomera Test Range in South Australia, the company said in a press release on 20 June.

According to Raytheon, the “successful” flight test demonstrated the SRGBAD system's “accuracy and capability” to detect, track, and engage with targets.

The Australian Department of Defence (DoD) is procuring an SRGBAD system under Project Land 19 Phase 7B.

The project achieved first pass government approval in February 2017. In April 2017 Raytheon was appointed as the sole contractor to develop the SRGBAD system.

Raytheon collaborated with Kongsberg Defence & Aerospace (KDA) to develop an ‘Australianised’ version of the National Advanced Surface-to-Air Missile System (NASAMS) in order to meet the SRGBAD requirement.

The project achieved second pass government approval in February 2019 and the DoD signed a contract worth AUD2.5 billion (USD1.7 billion) with Raytheon Australia in March 2019 to procure NASAMS.

The project includes the acquisition of radars, missile launchers, and command-and-control systems, as well as integration with existing army vehicles and radios.

<https://www.janes.com/defence-news/news-detail/raytheon-conducts-flight-test-of-short-range-air-defence-system>

THE ECONOMIC TIMES

Sat, 24 Jun 2023

Eight Chinese Warplanes Approach Waters Controlled by Taiwan

Taiwan's defence ministry said Saturday that eight Chinese warplanes had crossed the median line of the Taiwan Strait and come close to waters under Taipei's control.

Taiwan lives under constant threat of invasion by China, which views the self-ruled island as part of its territory to be seized one day.

On Saturday, Taiwan's defence ministry said 19 Chinese warplanes including J-10 and J-16 fighters were detected around the island.

Eight of them crossed the median line of the Taiwan Strait and approached the island's contiguous zone, or the band of sea within 24 nautical miles (44 kilometres) of its coast, the ministry said in a statement.

"Additionally, five PLAN (Chinese navy) vessels conducted joint combat patrol," it continued, adding that it was closely monitoring the situation and had deployed its patrol aircraft and vessels in response.

Beijing has ramped up incursions into Taiwan's air defence identification zone (ADIZ) in recent years as relations between the two sides have plunged.

Taiwanese Defence Minister Chiu Kuo-cheng warned in March that Beijing could use a potential visit by US House Speaker Kevin McCarthy as an excuse to cross into Taiwan's contiguous zone and approach its territorial space, defined as being within 12 nautical miles of the coast.

McCarthy instead met Taiwanese President Tsai Ing-wen in California in April, prompting China to launch three days of military exercises around the island that included simulating targeted strikes and practising a blockade.

On the final day of the drills, Taiwan detected 12 Chinese warships and 91 aircraft around the island, with 54 planes entering its southwestern and southeastern ADIZ.

The ADIZ is not the same as Taiwan's territorial airspace, and includes a far greater area that overlaps with part of China's own ADIZ and even some of the mainland itself.

<https://economictimes.indiatimes.com/news/defence/eight-chinese-warplanes-approach-waters-controlled-by-taiwan/articleshow/101238486.cms>

Science & Technology News



Press Information Bureau
Government of India

Ministry of Science & Technology

Fri, 23 Jun 2023

"India and the USA to Break New Ground in the 'Space'", Says Dr Jitendra Singh

Artemis Accord signed during PM Modi's historic US visit will take our Space cooperation to a new high: Dr Jitendra Singh

"Pact will pave the way for easing of restrictions on import of Critical Technologies"

India can participate in the US led Artemis programme for exploration of moon and other celestial objects

"In a nutshell, it should suffice to say that India and the USA are to break new ground in the 'Space'. And, the credit goes to Prime Minister Narendra Modi who, during the last 9 years, took a series of unorthodox and path-breaking decisions, which enabled India to achieve a quantum

jump in our Space sector capabilities, as a result of which the USA, which had begun its space journey several years before us, is today seeking collaboration with us as an equal partner.

This was stated here today by Union Minister of State (Independent Charge) Science & Technology; MoS PMO, Personnel, Public Grievances, Pensions, Atomic Energy and Space, Dr Jitendra Singh, while briefing the media about several significant decisions and agreements accomplished during Prime Minister Narendra Modi's ongoing USA visit, especially with relation to signing of "Artemis Accord " and Joint Indo-US mission to the International Space Station in 2024.

"Could anything give us greater pride than to realise that the country like USA which landed the first human being on the surface of Moon when we were singing nursery rhymes about Moon, is today seeking our inputs and our expertise on Moon mission," he said.

Explaining to the media, the Minister said, the purpose of the Artemis Accord is a common vision with USA and other countries via principles, guidelines and best practices so that we could supplement each other's activities for peaceful purposes with transparency and also work together for avoiding harmful activities.

On the other hand, the joint mission to the International Space Station, said Dr Jitendra Singh, which is separate of signing of the Artemis Accord, will develop a framework for joint mission to the International Space Station in 2024, which the USA envisages as a possibility for closer cooperation between the space agencies of the two countries to get closer to the realities of Moon and subsequently to Mars and other planets.

As for Science & Technology, Dr Jitendra Singh informed that on Semiconductors, Micron will invest 800 Million Dollars with additional financial support from Indian government. Similarly, US Quantum Consortium has welcomed and invited the Indian Quantum industry as its members.

The agreement signed during Prime Minister Narendra Modi's historic US visit between India and the US on cooperation in Space Research will take our bilateral relations to a new high, said Dr Jitendra Singh.

"As PM Modi said, 'Even sky is not the limit for cooperation with the US'," the Minister said.

Dr Jitendra Singh said India will contribute to the International Space Station next year as part of the India-US collaboration in the Space Science field. US President Joe Biden has already confirmed this in the White House after a meeting with Prime Minister Narendra Modi on Thursday.

Dr Jitendra Singh said ISRO is likely to team up with NASA as it plans to return to the moon with a manned mission by 2025.

The joint statement by India and the United States during PM Modi's ongoing visit said NASA would provide "advanced training" to Indian astronauts at one of its facilities.

Dr Jitendra Singh said, as per the Artemis Accord, India can participate in the US led Artemis programme for exploration of moon and other celestial objects under common protocols. The pact will also pave the way for easing restrictions on import of critical technologies in the space domain especially electronics, benefitting Indian companies to develop systems and innovate for US markets. It will also facilitate participation of India in more scientific programmes jointly, allow access to common standards for long term engagements in activities including human Spaceflight programmes and stronger engagements with the US in more strategic areas including micro-electronics, quantum, space security etc.

Dr Jitendra Singh said America today realizes the importance of partnering with us. "Though India and the US have been collaborating in the Space sector for long, but the journey in the last nine

years of the Modi Government has really taken off on a growth trajectory. India is no longer lagging behind in Space exploration, and today, we are equal partners in Deep Space Missions,” he said. Dr Jitendra Singh clarified there are virtually no restrictions and no technology denial by the US. “In fact, we are today technologically capable,” he said.

Dr Jitendra Singh said the ISRO has earned considerable foreign exchange by launching satellites for global clients. ISRO, in association with its commercial arms, has successfully launched 385 foreign satellites from 34 countries on board PSLV. “Almost 90% of this revenue has been generated in the last nine years,” he said.

The Artemis Accord was signed on October 13, 2020 by eight Founder Nations, - Australia, Canada, Italy, Japan, Luxembourg, UAE, UK and the United States. Its members include the traditional US allies like Japan, France, New Zealand, UK, Canada, South Korea, Australia and Spain while African nations like Rwanda, Nigeria etc are the new partners. Out of 22 European nations only eight (Luxembourg, Italy, UK, Romania, Poland, France, Czech Republic and Spain) have signed the accord.

The Artemis Accord is a non-binding agreement with no financial commitments. The purpose of these Accords is to establish a common vision via a practical set of principles, guidelines, and best practices to enhance the governance of the civil exploration and use of outer space with intension of advancing the Artemis program. Adherence to a practical set of principles, guidelines, and best practices in carrying out activities in outer space is intended to increase the safety of operations, reduce uncertainty, and promote the sustainable and beneficial use of space for all humankind. The accords represent a political commitment to the principles described herein, many of which provide for operational implementation of important obligations contained in the Outer Space Treaty and other instruments.

The principles set out in these accords are intended to apply to civil space activities conducted by the civil space agencies of each signatory. These activities may take place on the moon, Mars, comets, asteroids, including their surfaces and sub surfaces, as well as in orbit of the Moon or Mars, in the lagrangian points for the Earth-Moon system, and in transit between these celestial bodies and locations. The Signatories intend to implement the principles set out in these accords through their own activities by taking, as appropriate, measures such as mission planning and contractual mechanism with entities acting on their behalf.

All activities under the Artemis Accord will be conducted for peaceful purposes. Partner states are to uphold the transparency principle by publicly describing policies and plans. Partner nations to utilize open international standards, develop new standards when necessary, and strive to support interoperability. Partner nations commit to taking all reasonable steps possible to render assistance to astronauts in distress and determine which of them should register relevant space object in accordance with the Registration Convention.

Partner nations are obligated to release their scientific data publicly to ensure that the entire world can benefit from the Artemis journey. Member nations are to inform UN about their space activities. Partner nations will avoid harmful interference and act in a manner that is consistent with the principles reflected in the Space Debris Mitigation Guidelines of the UNCOPUOS.

International cooperation has been part of the Indian space programme since inception. ISRO’s maiden mission to Moon, the Chandrayaan-1, has been an exemplary example of international cooperation with its international payloads. It has also earned several national and international laurels and was instrumental in the ISRO-NASA joint discovery of water molecules on the moon surface, unattained by any of the previous missions of such nature.

ISRO and NASA are realizing a joint satellite mission called NISAR (NASA-ISRO Synthetic Aperture Radar) for earth science studies. As part of ISRO’s prestigious Gaganyaan programme,

the cooperation opportunities with countries and space agencies having expertise in human space flight are being explored. The cooperation activities are focused in astronaut training, life support systems, radiation shielding solutions etc.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1934838>



Press Information Bureau
Government of India

Ministry of Science & Technology

Sat, 24 Jun 2023

Dr Jitendra Singh Launches the GEMCOVAC® -OM, an Omicron-specific mRNA-based Booster Vaccine

**India's first mRNA vaccine developed using the indigenous platform technology by Gennova,
with funding support from DBT & BIRAC**

**Govt has always supported technology-driven innovation towards the creation of a 'future-ready' technology platform in line with PM Modi's vision of Aatmanirbharta, says Dr
Jitendra Singh**

**“Vaccine does not require cold storage, easy to deploy even in remote areas and can be
administered without a needle injection”**

Union Minister of State (Independent Charge) for Science and Technology, MoS PMO, Department of Atomic Energy and Department of Space and MoS Personnel, Public Grievances and Pensions, Dr Jitendra Singh launched the GEMCOVAC® -OM, an Omicron-specific mRNA-based Booster vaccine.

India's first mRNA vaccine has been developed using the indigenous platform technology by Gennova, with funding support from Department of Biotechnology (DBT) and Biotechnology Industry Research Assistance Council (BIRAC). A few days ago this vaccine got the nod from the office of the Drug Control General of India (DCGI) for Emergency Use Authorization (EUA).

"I take great pride in DBT fulfilling its mission yet again – enabling technology-driven entrepreneurship through creating this indigenous mRNA-platform technology. We have always supported technology-driven innovation towards the creation of a 'future-ready' technology platform in line with the Prime Minister's vision of Aatmanirbharta," said Dr Jitendra Singh.

GEMCOVAC® -OM is the fifth vaccine developed with support from Mission COVID Suraksha implemented by DBT and BIRAC under Atmanirbhar Bharat 3.0 package of Govt. of India for accelerated development of Indian COVID-19 vaccines.

“Within a year of implementation, the Mission Covid Suraksha demonstrated major achievements, such as (i) Development of the World's first DNA Vaccine for COVID-19, and (ii) Supporting the development of the nation's first mRNA Vaccine and intranasal vaccine candidates and a subunit vaccine against COVID-19,” said Dr Jitendra Singh.

The Minister said this 'future-ready' technology platform can be used to make other vaccines in a relatively short developmental timeline.

“Steady investments made by the Government of India has created a strong entrepreneurship as well as Startup ecosystem which had actually facilitated our response against the mitigation of the

COVID-19 pandemic. I congratulate DBT and BIRAC for fulfilling its mission yet again by enabling technology-driven entrepreneurship through creating this indigenous mRNA-platform technology,” he said.

GEMCOVAC® -OM is a thermostable vaccine and does not require ultra-cold chain infrastructure used for other approved mRNA- based vaccines.

“This innovation makes it easy for last mile deployment in our country. The existing supply chain infrastructure is sufficient to deploy this vaccine,” said Dr Jitendra Singh, adding, “Its unique feature is that this vaccine can be administered without a needle injection.””

The GEMCOVAC® -OM vaccine is delivered intra-dermally using a needle-free injection device system and in study participants it generated significantly higher immune responses. The clinical outcome demonstrates the need for variant-specific vaccines for desired immune response.

Dr Jitendra Singh said, under the guidance of Prime Minister Narendra Modi, DBT and BIRAC have made strenuous efforts to strengthen the Indian vaccine research and development over the last nine years.

A number of key initiatives are currently being implemented to promote basic and translational vaccine research, including the (i) Indo-US Vaccine Action Programme, (ii) National Biopharma Mission, (iii) Ind-CEPI Mission, and (iv) Mission COVID Suraksha, which was launched as part of Atmanirbhar Bharat 3.0, with the goal of bringing safe, efficacious, affordable and accessible indigenous COVID 19 vaccines to the citizens of the country at the earliest.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1935001>

ThePrint

Fri, 23 Jun 2023

What are the Artemis Accords & what do they Mean for India’s Space Dreams

Prime Minister Narendra Modi announced Thursday that India has agreed to join the Artemis Accords (Accords), a National Aeronautics and Space Administration (NASA)-led initiative for the peaceful, sustainable and transparent cooperation in space, according to the US Department of State.

“We have agreed to join the Artemis Accords. We have taken a long leap in our space cooperation,” said Prime Minister Modi during a joint press conference with US President Joe Biden late Thursday night. The PM is on a visit to the US.

Based on the 1967 Outer Space Treaty between countries, the Accords are a set of principles, which “represent a political commitment...many of which provide for the operational implementation of important obligations contained in the Outer Space Treaty and other instruments,” states Section 1 of the Artemis Accords, available on the NASA website.

Section 1 of the Accords further add that the principles apply to the civil space activities specifically, “conducted by the civil space agencies of each signatory”. The principles apply to any activities undertaken on the Moon, Mars, comets, asteroids, including the surfaces and sub-surfaces.

Any activities undertaken in the orbit around the Moon, Mars or in the Lagrangian points of the Earth-Moon system — Lagrangian points are positions in space where objects tend to stay put, according to NASA — and also in transit between these celestial bodies are covered under the principles of the Accords.

The Artemis Accords were launched on 13 October, 2020, with eight founding members, namely, Australia, Canada, Italy, Japan, Luxembourg, United Arab Emirates, United Kingdom and the United States of America. Ecuador was the 26th nation to sign the accords on 21 June, 2023, before Prime Minister Modi announced India's agreement to join the accords.

ThePrint looks at what makes the Artemis Accords and why they matter.

Principles of the Artemis Accords

Former Indian Air Force officer, Group Captain Ajey Lele, a consultant with the Manohar Parrikar Institute for Defence Studies and Analyses, explained to ThePrint that these accords were voluntary and had no legally binding provisions.

There are 10 principles to the Accords, namely the peaceful purposes for exploration of space, transparency in the dissemination of the space policies of the signatories and space exploration plans and the development of interoperable and common exploration infrastructure and standards.

The signatories to the Accords also agree to render any emergency assistance in outer space and acknowledge the obligations under the Rescue and Return Agreement — an agreement on the rescue and return of astronauts and the return of objects launched into outer space — and the registration of space objects under the Registration Convention.

The Registration Convention is a mechanism to assist countries in identifying space objects.

The Accords also have provisions on the sharing of scientific data, both from its own activities and coordinated activities with other signatories, preserving outer space heritage, extraction and utilisation of resources from space, deconfliction of outer space and the commitment to plan for the mitigation of orbital debris.

Aspects of the Artemis Accords

“The Artemis Accords has two aspects, first the Moon and Mars mission under the Artemis programme and secondly a creation of a rules-based mechanism for the exploration of space,” Lele told ThePrint.

He added: “The [Artemis] Accords are a global standards-setting agreement, with the standards decided by the United States of America. The Accords itself does not give India immediate access to any new technology or programme, but opens the door for future bilateral agreements in space cooperation.”

In the first aspect described by Lele, under the Artemis missions, NASA is planning to land the first woman and the first person of colour on the Moon. The ambitious Artemis missions include the construction of the Artemis base camp on the surface of the Moon, and the construction and operationalisation of the Gateway — a multipurpose outpost (space station) orbiting the Moon — apart from sending a person to the Moon.

Through collaboration with its commercial and international partners, NASA is aiming to establish its first long-term presence on the Moon. From its learnings from the Moon, NASA is aiming to send the first human to Mars.

Lele told ThePrint that signing the Accords does not stop India from cooperating with space agencies outside of the Artemis missions. Russia and China are not signatories to the Accords.

Gunjan Singh, an assistant professor at the O.P. Jindal Global University explained to ThePrint how being a part of multilateral agreements like the Artemis Accords gives countries a “seat at an exclusive table” that would set the global standard for space exploration.

Singh further explained that the Gulf War — an armed campaign waged by 39 nations in response to Iraq’s invasion of Kuwait in 1990-91 — underlined the strategy and benefits from a space programme and this led to powers like China, Russia and the US to expand their space programmes. “From a geo-political perspective, being a part of such agreements helps countries safeguard their interests better and through collaboration understand the full spectrum of opportunities available in space,” she added.

In the joint statement released Thursday, President Biden and Prime Minister Modi also announced that NASA and the Indian Space Research Organisation (ISRO) have agreed to develop a “strategic framework for human spaceflight cooperation” by the end of this year. NASA also announced that Indian astronauts will be provided with advanced training at the Johnson Space Centre in Houston, a decision hailed by the two leaders.

India will also be launching the NASA-ISRO Synthetic Aperture Radar (NISAR) satellite in 2024. The satellite, a part of a NASA-ISRO joint project is said to feature the most advanced radar system ever launched on a NASA space mission according to NASA.

<https://theprint.in/science/what-are-the-artemis-accords-what-do-they-mean-for-indias-space-dreams/1639137/>

