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DRDO News

DRDO Technology News

ThePrint

Tue, 30 Aug 2022

Soldiers in Ladakh can Get Fresh Vegetables Round the Year: DIHAR

People living in the arid land of Ladakh will be able to grow fresh vegetables round the year as scientists have developed a new greenhouse model, a passive solar greenhouse, for farming.

The model, developed by a team of scientists of the Defence Institute of High Altitude Research (DIHAR), was displayed at the Ladakhi Kisan Jawan Vigyan Mela, an inter-unit garden competition organised by DRDO (Defence Research and Development Organisation).

DIHAR, established in 1960, was tasked to find ways to meet the fresh food requirement of the soldiers deployed in the harsh terrain of Ladakh, officials said.

Researchers from DIHAR led by senior scientist Dr Tsering Stobdan developed the new model of Ladakh greenhouse, a passive solar greenhouse.

“Through this technology, we could now provide these micro green plants to the soldiers,” a scientist said.

The new method eliminates the need for armed forces to consume canned food and helps them grow fresh vegetables inside their bunkers in just 10-12 days, he said.

With this technology, soldiers can grow vegetables in the barren and arid land of Ladakh that are rich in nutrients, with little to no fat and zero cholesterol.

<https://theprint.in/india/soldiers-in-ladakh-can-get-fresh-vegetables-round-the-year-dihar/1108656/>

DRDO on Twitter

 DRDO 
@DRDO_India

#DRDOUpdates | Hon'ble MPs and senior officials of the Parliamentary Public Accounts Committee visited Dr APJ Abdul Kalam #MissileComplex, Hyderabad on a study visit today and interacted with scientific fraternity.
[@DefenceMinIndia](#)
[@SpokespersonMoD](#)



8:58 PM · Aug 30, 2022 · Twitter for iPhone

 DRDO 
@DRDO_India

#DRDOUpdates | Defence Institute of High Altitude Research (DIHAR) Organised 29th Ladakhi Kisan-Jawan mela.

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[@SpokespersonMoD](#)



Defence News

Defence Strategic : National/International



Press Information Bureau
Government of India

Ministry of Defence

Tue, 30 Aug 2022 3:15PM

India No Longer Weak, it is Strong & Well-Equipped to Deal With All Challenges, Says Raksha Mantri Shri Rajnath Singh in Udaipur, Rajasthan

“India has never attacked any country, nor has it captured an inch of foreign land, but if anyone tries to cast an evil eye, we will give a befitting reply”

2016 surgical strikes & 2019 Balakot airstrikes are proof that India's military prowess is no less than any country: RM

Under the leadership of Prime Minister Shri Narendra Modi, India has been transformed into a strong, confident & self-reliant nation which is fully equipped to deal with all kinds of threats and challenges. This was stated by Raksha Mantri Shri Rajnath Singh at a function in Udaipur, Rajasthan on August 30, 2022. He stated that the steps taken by the Government in the last eight years have injected a new confidence into the Armed Forces. He asserted that India has never attacked any country, nor has it captured an inch of foreign land, but if anyone ever tries to harm the sovereignty, unity & integrity of the Nation, a befitting reply will be given.

“It is the result of the last eight years that India is no longer weak. We clarified our stand on terrorism when our Armed Forces, displaying tremendous might, carried out surgical strikes in 2016 and Balakot airstrikes in 2019. It was a proof that India's military prowess is no less than any country,” Shri Rajnath Singh said. He assured the Nation that the Armed Forces are deployed with full readiness to protect the people from anti-India elements.

The Raksha Mantri asserted that the foundation of ‘Aatmanirbhar Bharat’ has been laid under the leadership of Prime Minister Shri Narendra Modi and this strong & self-reliant ‘New India’ is moving shoulder-to-shoulder with powerful countries. He listed out a number of steps taken by Ministry of Defence to promote ‘Aatmanirbharta’ in defence, including issuance of three positive indigenisation lists of 310 items and earmarking 68 per cent of capital procurement budget for domestic industry in Union Budget 2022-23. He added that foreign companies are being encouraged to manufacture in India under the ‘Make in India, Make for the World’ vision to strengthen the domestic defence industry.

Shri Rajnath Singh pointed out that the efforts taken by the Government have started to bear fruit as India is not only catering to its own needs, but is also fulfilling the requirements of other countries. He appreciated the fact that defence exports, which were worth about Rs 900 crore eight years ago, have now grown to around Rs 13,000 crore. He added that a target of Rs 2.75 lakh crore worth of defence exports by 2047 has been set, exuding confidence that India is well on course to achieve the objective.

The Raksha Mantri reiterated the Government's commitment to ensure the safety of Indians who not only reside within the country, but also in other parts of the world. He stressed that the safe return of Indian nationals from Ukraine, amid its ongoing situation with Russia, was testament to Prime Minister Shri Narendra Modi's resolve of ensuring the safety and security of every Indian.

Shri Rajnath Singh was in Udaipur to unveil the statue of Panna Dhai, a 16th-century nursemaid to Udai Singh II, the fourth son of Indian ruler Sangram Singh I, popularly known as Rana Sanga. Paying glowing tributes, Shri Rajnath Singh commended the bravery of Panna Dhai, who sacrificed her son to protect Udai Singh II, father of Maharana Pratap, in the interest of Mewar and the entire country. He urged the people to take inspiration from Panna Dhai and play their part in Nation Building.

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=1855465>



Press Information Bureau
Government of India

Ministry of Defence

Wed, 31 Aug 2022 11:15AM

Keel Laid for First Warship of ASW SWC Project Being Constructed at CSL, Kochi

Keel laying of the first warship (BY 523, Mahe) of Anti-Submarine Warfare Shallow Craft (ASW SWC) project under construction by CSL, Kochi, was undertaken on **30 Aug 22** by **VAdm Kiran Deshmukh, CWP&A** in presence of Shri Madhu S Nair, CMD, CSL, Commodore V Ganapathy, WPS (Koc), CSL, Directors and other senior officials of CSL and Indian Navy.

Speaking on the occasion, VAdm Kiran Deshmukh, CWP&A, appreciated CSL efforts in achieving the milestone despite Covid constraints and resultant lockdowns. He called it a noteworthy achievement by the shipyard and commended professionalism displayed by all. Further, he highlighted that construction of these vessels is a major boost for the '**Aatma Nirbhar Bharat**' and India's 'Make in India' commitment. The Chief Guest indicated that keel laying is a major milestone activity in the shipbuilding process and paves way for amalgamation of various blocks towards fully constructed ship.

CWP&A further added that these platforms will undertake sub-surface surveillance in coastal areas with the purpose of detecting and neutralizing underwater threats.

During the address, CMD-CSL, highlighted that despite several challenges posed by the Covid-19 pandemic during execution of this complex shipbuilding project, the shipyard has ensured continuous production of ships through innovative solutions. He thanked the Indian Navy for their unstinted support and reiterated the shipyard's commitment to deliver quality ships on time.



<https://www.pib.gov.in/PressReleasePage.aspx?PRID=1855654>



Tue, 30 Aug 2022

HAL Works to Add More Indigenous Content on LCA

In a bid to increase self-reliance and to cater to the future specifications of global customers, state-owned Hindustan Aeronautics is ensuring that there is more indigenous content of the Light Combat Aircraft 'Tejas'. Prospective customers including Argentina, Malaysia, the Philippines, Indonesia are among those which have expressed their interest in LCA.

With various components coming in through different countries of origin for the 'Tejas', HAL has an additional overhead: to get clearances for exporting the fighter from each of them. For instance South American nation Argentina, a keen prospective importer of the LCA Tejas, has a long-standing dispute with the UK over the Falkland Islands. It has requested a variant without

any UK components. One of the components in the LCA Tejas is its Quartz Radome Nose Cone that it sources from Cobham, a British manufacturer.

It is not going to be easy replacing Quartz Radome Nose Cone

Replacing the Quartz Nose Cone from Cobham is not an easy feat. However, the Aeronautical Development Agency (ADA) has already designed an in-house radome nose cone. It was to supply the nose cone for the Tejas Mark 1 and Mark 1A initially; however, the nose cone was replete with issues which is why Cobham won the tender. ADA has also supplied a pre-production radome nose cone for the ongoing Advanced Medium Combat Aircraft (AMCA) program. The quartz radome nose cone will most likely be indigenously developed through Defence Research and Development Organisation (DRDO). For the DRDO, Research Centre Imarat (RCI) is the most likely candidate to innovate a new solution.

Housed in the Dr APJ Abdul Kalam Missile Complex, the RCI is best positioned to take on the task of a quartz radome construction for the LCA Tejas.

UK aerospace manufacturer, Cobham, has equipped the Light Combat Aircraft (LCA) Tejas with a quartz radome and an in-flight refuelling (IFR) probe. Cobham's imports have increased the lethality of fighter aircraft.

Stealthier: How Important is a Quartz Radome

“A portmanteau of radar and dome, a radome, is a structural, weatherproof enclosure that protects a radar antenna. In a fighter aircraft, like the LCA Tejas, a radome is housed in the nose cone. This radome is used to sniff out targets in the open air. A radar essentially is a torch that illuminates an area with electromagnetic waves. When these waves hit an object, they are reflected back towards the radar, which alerts the pilot of an object in the vicinity,” Girish Linganna, Aerospace & Defence Analyst explained to Financial Express Online.

According to him, “The nose cone is built from a glass fibre transparent to the radar. The consideration is for the reflection of the radar signals by the nose cone itself. Hence, carbon fibre is not used. You can imagine that even if the plane sends out strong signals, given that it is being sent out in the open air, the target reflections will be very weak. This makes transparency and sensitivity a priority when designing. A dish radar antenna becomes a good reflector for the enemy's radar. So, to find the enemy in the sky without giving up our own position, one must avoid a dish radar antenna.”

Active Electronically Scanned Array (AESA) radar is a revolutionary addition to an aircraft. This radar uses a flat array of hundreds of tiny radar emitter and receiver modules. Now, instead of all these hundreds of radars working precisely the same, they are all offset; each module emits the signal slightly out of phase. As a result, the flat AESA radar, without any moving parts per se, can vary the angle of the radar beam from the perpendicular. The radar beam may move up to 60 degrees in any direction from the perpendicular: up, down, left or right.

“Now, if you look at AESA radar, it is found at an angle pointing upwards. This is another nifty placement of the radar to increase stealth. When directed at the target by moving the dish, dish radar will reflect the target's radar signal. Since the AESA radar need not move, it can be kept at an angle so that it does not reflect the enemy's radar signal,” Mr Linganna, Aerospace & Defence Analyst, adds.

Quartz fibre is actually an ultra-pure glass fibre. However, quartz has exceptional strength-to-weight characteristics, low electromagnetic interference and low dielectric properties. The Tejas Mark 1A features AESA radar. Initially, they featured Indo-Israeli ELTA multi-mission radar (MMR). The addition of the quartz radome increased the radar range from about 50 KM to more than 80 KM.

“The radar will be replaced by the indigenous Uttam Radar, which will boast more than 100 KM range and track about 50 targets and engage four simultaneously.”

<https://www.financialexpress.com/defence/hal-works-to-add-more-indigenous-content-on-lca/2649908/>



Tue, 30 Aug 2022

New Ensign for Indian Navy! PM Modi to Present Navy's New Nishaan on IAC Vikrant

PM Modi to present Navy's new Nishaan on IAC Vikrant. The Indigenous Aircraft Carrier 'Vikrant' which is all decked up to be commissioned in the India Navy at a ceremony on Friday will get a new Naval Ensign (Nishaan).

According to an official statement Prime Minister Narendra Modi will commission the IAC 'Vikrant' and it will have the new ensign, and this means from now on all the Indian Navy ships will have this ensign on board. The statement from the PMO said: new ensign would do away with the colonial past. Befitting the rich Indian maritime heritage.

What has changed?

The Indian Navy has a white flag which has horizontal and vertical red stripes. This symbolizes the Cross of Saint George and the intersection is superimposed with the emblem of India. The Tri Colour is placed in the upper canton next to the staff.

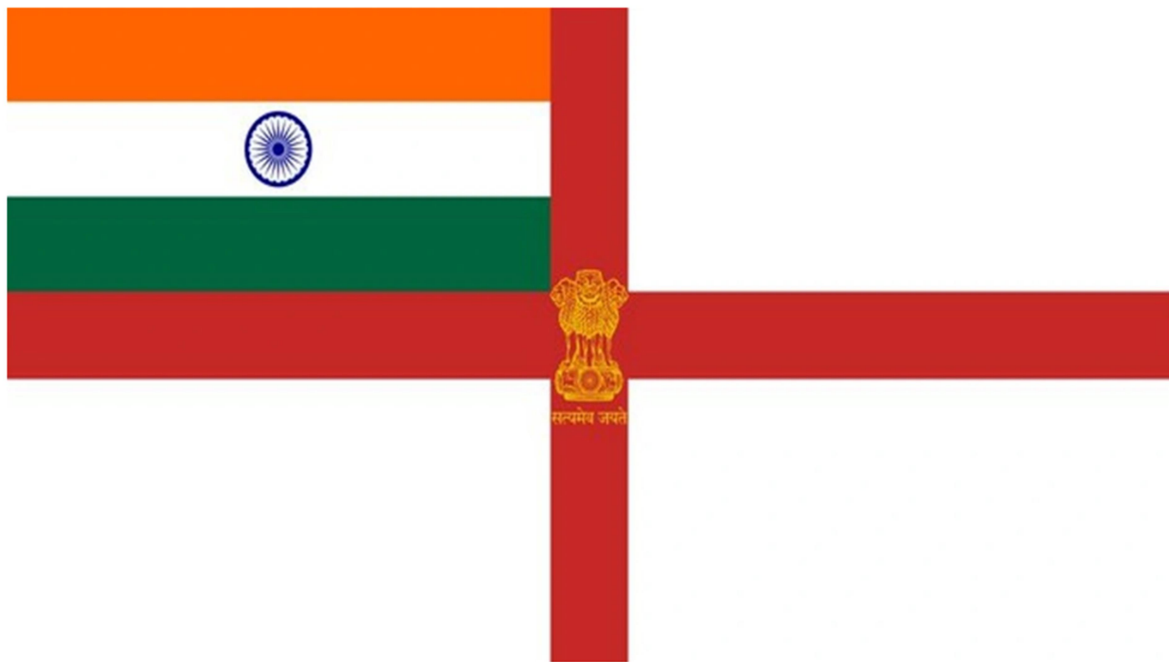
No one in the defence and security establishment gave details of what changes will be there, however mentioned that the cross will go. And there will be certain colour changes and there will be a naval crest which will be depicting an anchor.

Sources in the defence security establishment said that there will be a commonality maintained with the Flags of the other two services: Indian Army and Indian Air Force.

Has the Naval Ensign been changed before?

The answer is yes. This will be the fourth time since 1950 that the ensign has been changed.

Since 1950 the Naval Ensign has undergone changes three times. On Friday, it will be the fourth time.



The Indian Navy has been focusing on boosting its overall capabilities in light of China's increasing attempts to bolster its military presence in the Indian Ocean region (IOR). The IOR is critical to the strategic interests of New Delhi.

More about the earlier changes

When India became a republic on January 26, 1950, the Navy Crest and Flags were Indianised. The Ensign and Distinguishing Flags, however, retained a legacy of the British – while the Union Flag was replaced immediately by the Indian tricolor, the Red St. George's Cross remained.

Until 2001, the Indian Navy retained the Red Saint George's Cross in its flags and ensigns, unlike other former colonial navies who had discarded the Cross in their flags and ensigns.

It was on August 15, 2001, the Indian Navy's design of the ensign was changed and it was then the Cross was removed from the Crest of the Indian Navy.

In the early 1970s, Vice Admiral Vivian Barboza in the early 1970s gave the idea to change the ensign. He later retired as the Flag Officer Commanding-in-Chief, western Naval Command.

The original ensign was adopted again by the Indian Navy in 2004. This is because, explained a senior officer that there were complaints from the Force that the blue of the Crest was not clear from the Ocean and the Sky. Following the complaints, the Indian Navy went back to the Saint George's Cross and the Indian emblem was added in its intersection. Another round of changes took place in 2014, when the ensign and naval crest both were updated. Now they are inscribed with "Satyameva Jayate" which is in the Devanagari script.

Why was this changed?

According to the information in the public domain the late former President Pranab Mukherjee had given his approval to change the crest and the naval ensign. Both the corrected emblem and crest were adopted by the Indian Navy on August 15, 2014. What the Indian Navy has is a White

Ensign and it has vertical and horizontal red stripe which is intersecting at the centre of the flag. Then there is a golden state emblem which is superimposed on the intersection. However, it did not have the mandatory phrase “Statymeva Jayate”, which should have been below the Lion Capital with three lions mounted on the abacus and there is a Dharma Chakra right in the centre. Also there is a galloping horse and a bull on either side.

<https://www.financialexpress.com/defence/iacvibrant-will-get-a-new-naval-ensign-nishaan-complete-details/2649579/>



Tue, 30 Aug 2022

114 Multi-Role Fighters, LCA Tejas, AMCA Jets, S-400 Missiles – IAF Chief Outlines his Game Plan for Possible Conflict With China

By Prakash Nanda

Believing in the maxim that it is “better to be feared than loved,” India’s Chief of the Air Staff (CAS), Air Chief Marshal V R Chaudhari, wants “Scholar Warriors” rather than “Air Warriors” in his force to fight the future wars that are going to be unlike the previous ones.

“What we are witnessing today, and the war in Ukraine provides us some lessons, is that the nature of warfare is changing. Now wars are of blended nature. These are hybrid wars. The enemy resorts to asymmetric methods and aims at disproportionate impacts, which one has to fight conventionally and beyond by developing multi-domain capabilities”, the Air Chief said.

“The weapons India now needs in future wars will range from a small computer to hypersonic missiles. We must rebuild India’s traditional war-fighting machinery amid a new emerging paradigm.

Need of the hour is to re-imagine, re-invent, re-train, and re-dedicate”, he pointed out while delivering the 20th Major General Samir Sinha lecture at India’s tri-service, the United Services Institute (USI) today (August 30). He was talking about “The Indian Air Force: Present Status and the Way Ahead.”

The CAS talked of preparing for a two-front war, but it seems that in this two-front, Pakistan was not a matter of much concern for him. He highlighted how one has to fight on two fronts against China – one front in the east (North-East) and the other in the North (Ladakh). He asserted that India is well-prepared to meet the Chinese threat, a threat that will remain both short-term as well as long-term.

However, the Indian Air Chief did admit that given the resource constraints, the IAF will be emphasizing on “enablers” to add to the impact of the arms and ammunition that the forces’ inventory will have. But, “I do say that the numbers do matter, and our inventory needs expansion,” he pointed out.

According to him, the “future plans” of the Indian Air Force to have these numbers:

Six squadrons of the LCA MK1 A

Six squadrons of LCA MK2

114 MRFA aircraft

Seven squadrons of AMCA

Five squadrons of S-400

106 Basic Trainers

6 AEW&C systems

Upgradation of Su-30MKI

Upgradation of Mi-17 and Mi-18

The Air Chief also talked of the need to have more UCVs, transporters, and weapons such as Astra, Rudra, Brahmos, and radars, which he included in the “hardware” section of the need.

But what is more important than even the hardware today is the software, he said. Because the domains of the war now include cyber to space, he explained.

For him, Space-based assets significantly enhance the potency of air power, and outcomes in the space domain will probably decide the eventual victor in future conflicts.

While traditional communication satellites with geosynchronous orbits have proved their worth due to longer service life and a wide area of coverage, the communication satellites in low and medium earth orbits have their own advantages, the Air Chief said.

“Therefore, we are witnessing a highly proliferated low earth orbit with multiple commercial players entering this segment. In due course, this technology of low earth orbit satellites will evolve, and we shall see reduced manufacturing and launching costs which will favor the shift towards this concept.

While capability enhancement in multiple domains of space application is the way forward, I strongly feel that this evolution can only be fast-tracked through increased civil-military fusion, which is a blend of institutes, industries, startups, academia, research and development, and test and evaluation laboratories,” he noted.

According to Chaudhari, the Defence Space Agency, which is the lead agency for aggregating the requirements of the armed forces, would play a key role in synergizing civil-military cooperation to achieve the desired capabilities in the days to come.

This would mandate increased interplay between the government and commercial space agencies. Like the air power’s effect on surface battles, aerospace power is fast emerging as a new paradigm that will greatly influence all surface activities, he highlighted. “The outcomes in the aerospace domain will probably decide the eventual victor in future conflicts.”

Information warfare is another dimension of the future war, which the Air Chief explained in great detail. Fighting all this requires the fifth generation of technologies, which must be indigenous, he stressed. “ We have to be self-reliant as much as we can.”

He also emphasized the need for “Working Smart” by “faster decision-making,” which is possible because of the ongoing technological revolution.

<https://eurasianimes.com/114-multi-role-fighters-lca-tejas-amca-jets-s-400-missiles-iaf/>



Tue, 30 Aug 2022

IAF to Induct Indigenous Light Combat Helicopters Soon

Ahead of its annual day on October 8, the Indian Air Force is getting set to formally raise the first unit of the indigenous Light Combat Helicopters in Jodhpur.

While the IAF is still in the process of finalizing the number of LCHs to be acquired, the first unit will have ten helicopters. These helicopters are expected to replace the ageing Russian Mi-25 and Mi-35 attack helicopters. According to reports, with the induction of 22 AH-64E Apache attack helicopters, one of the squadrons of the Russian helicopters has been replaced and the existing Mi-35 squadron is soon going to be sent for the overhaul for extending its life cycle.

In June this year, the Indian Army has already raised its first LCH squadron in Bengaluru and the unit is expected to move to Eastern Command along the Line of Actual Control on the completion of the raising in 2023. The army’s requirement is 95 machines in seven units. Typically each unit has 10 helicopters, and these are expected to be deployed in combat roles in mountainous terrain.

Financial Express Online had reported in March on the approval given by the Cabinet Committee on Security (CCS) for the procurement of 15 Limited Series Production (LSP) variants of the LCH. These 15 machines are coming at a cost of Rs 3,887 crore, there will be an infrastructure worth Rs 377 crore.

Designed, developed and manufactured by HAL, the IAF will get 10 helicopters and the Indian Army will get five for the Army. On board the indigenous content is about 45 percent by value and this is expected to go up to 55 percent for Series Production Version.

For the Indian Army, the LCH is the first dedicated attack helicopter in its fleet. It operates 75 Rudra helicopters, and has the weaponised variant of the indigenous Advanced Light Helicopter. In 2024, the Army is expected to start receiving Apache attack helicopters from the US through Foreign Military Sales route. It has contracted for six under an approximate \$800 million deal from the US in 2020 and is also in talks with the US Boeing Company for the procurement of 11 additional Apache helicopters.

<https://www.financialexpress.com/defence/iaf-to-induct-indigenous-light-combat-helicopters-soon/2649920/>

Tue, 30 Aug 2022

GRSE Conferred with Coveted Green Channel Certification by Defence Ministry

Garden Reach Shipbuilders and Engineers Ltd., (GRSE), one of the leading Public Sector Undertaking and Mini-Ratna Category 1 Shipyard, has been conferred with the coveted Green Channel Certification by Ministry of Defence, Govt. of India, on 30 August 2022 at Head Quarters, Directorate General of Quality Assurance, Ministry of Defence, New Delhi, for supply of Portable Steel Bridges (Bailey Type) of various spans and configurations to Indian Army.

Cmde PR Hari, IN (Retd.), Chairman & Managing Director, GRSE received the Green Channel Certification from Lt Gen RK Malhotra, Director General, Quality Assurance (DGQA) in the presence of distinguished officials from GRSE and Indian Army / DGQA. This is a remarkable achievement considering the fact that, GRSE is the only organization in India qualified for the prestigious Green Channel Certification for Portable Steel Bridges (Bailey Type), from Indian Army.



GRSE conferred with coveted Green Channel Certification

An initiative of Government of India to facilitate “Ease of Doing Business”, to promote the national mission of “Make in India” with special focus on “Defence Manufacturing”, going forward, Indian Army would accept the GRSE made Portable Steel Bridge components based on GRSE’s internal Quality Control Certification. This is a testament to the inherent commitment of GRSE to supply quality goods in shorter time frames.

The Portable Steel Bridge Division of GRSE has developed new improved versions of portable bridge designs through R&D efforts. More than 5,300 portable steel bridges have been supplied by GRSE to Indian Army, Border Road Organization, State PWDs and Central Government. The bridges, primarily used for disaster management, have also been exported to friendly countries including Bhutan, Nepal, Myanmar, and Sri Lanka.

<https://www.psuconnect.in/news/grse-conferred-with-coveted-green-channel-certification/34119>

Drone Intrusions Along India-Pak Border Have Risen in 2022: BSF Data

Drone intrusions at the India-Pakistan border have almost doubled this year with Pakistan based terror groups and smugglers intensifying their efforts to send weapons, explosives and drugs using these vehicles. According to data compiled by the Border Security Force (BSF), which guards the International Border (IB) with Pakistan, there were 97 drone sightings in all of 2021, which have gone up to 107 in first seven months this year. The majority of drone intrusions have been reported from Punjab, where 93 drones were seen crossing between January 1 and July 31 this year, followed by 14 in Jammu (at the international border). In comparison, there were only 64 drone intrusions observed at the IB in Punjab and 31 in Jammu during 2021. Two drones were seen entering from the Line of Control (LOC) in Jammu last year while there has been no drone sighting there thus far this year.

“There are still five months left in this year and activity to smuggle arms and explosives through various routes usually increase towards winters. Also, these are just those drones which our jawans could hear or notice or locals informed us about. It is very difficult to intercept, stall and deactivate all the drones at such a vast border,” said a BSF officer, who didn’t want to be named.

The drones drop weapons such as rifles, pistols, military grade explosive RDX, detonators, grenades, assembled and semi-assembled improvised explosive devices (IEDs) such as tiffin (lunch-box) bombs and sticky bombs, drugs, and fake currency.

A senior counter-terrorism official, requesting anonymity, said “terror outfits such as Lashkar-e-Taiba (LeT) and its offshoot in Jammu and Kashmir The Resistance Front (TRF), Jaish-e-Mohammed (JeM) as well as Khalistani outfits backed by Pakistani spy agency ISI are continuously using Chinese drones to send payloads via Amritsar, Jalandhar, Gurdaspur in Punjab and Kathua, R S Pura and Kanachak areas in Jammu”.

Some of these weapons and IEDs sent via drones have, in fact, been used in terror attacks in Ludhiana, Kashmir and other areas in last two years. For instance, the TRF carried out a twin-drone attack at Jammu Air Force Station, in which two unmanned aerial vehicles (UAVs) travelled from across the border and dropped two 3 kg to 5 kg improvised explosive devices (IEDs) at the air facility, damaging a portion of the building. The National Investigation Agency (NIA) is currently investigating the case, apart from half a dozen other cases pertaining to use of drones for dropping explosives in Punjab and Jammu.

BSF has tried to bring down some of the drones or traced their destinations with the help of local police. The border force has also deployed several technologies including ‘Anti-Drone Guns’, which use jammers to block the GPS and radio links of the drones, forcing them to land.

It also fires at the low flying drones and has been successful in taking down six drones this year in Ferozepur, Amritsar and Abohar areas of Punjab till July 15 this year. Last year, the BSF shot down two drones.

However, the BSF officer cited above said, “We don’t have fool-proof solution to drone intrusions. We are working with the Defence Research and Development Organisation (DRDO), Bureau of Police Research and Development (BPRD) and private companies to have modern technologies to deal with the threat of drones.”

Experts say that drones are being used by Pakistan based groups to avoid capture of men and reduce costs. Shreya Upadhyay, a strategic affairs expert and assistant professor at Christ University, Bengaluru, said : “The drones are becoming an alternative to physical infiltration of terrorists and mules; they are easy to operate as well, from a covered area or building across the border. Steps need to be taken for the indigenization of drone sensors and platforms.”

Sameer Patil, a Mumbai based internal security expert, said : “The increase in drone sightings suggests that Pakistan based saboteurs have found the usage of drones as a cost-effective means to smuggle contraband, notwithstanding several interdictions. It also denotes that they have successfully leveraged the gaps in border surveillance.”

<https://www.hindustantimes.com/india-news/drone-intrusions-along-india-pak-border-have-risen-in-2022-bsfdata-101661918247466.html>

THE HINDU
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India Japan Thrash Out Key Areas of Defence Co-Operation Ahead of 2+2 Dialogue at Tokyo

UAVs, anti-drone systems, robotics, underwater communication, Li-ion battery technology and intelligence systems are some projects under consideration.

To further boost defence co-operation, India and Japan have identified projects in areas of UAVs, anti-drone systems, robotics, underwater communication, Li-ion battery technology and intelligence systems, Anurag Bajpai, Joint Secretary (Defence Industries Production) in defence ministry said on Tuesday. The defence co-operation assumes significance, given that Defence Minister Rajnath Singh along with External Affairs Minister S Jaishankar are travelling to Tokyo to participate in the 2 + 2 dialogue between India-Japan on September 8, being organised at a time when China has upped the ante on Taiwan casting significant strategic repercussions on both the friendly countries.

Defence industry dialogue

At the maiden virtual India-Japan defence industry dialogue, Bajpai stated the defence PSU Bharat Electronics Limited (BEL) and M/s Toshiba Corporation of Japan are in discussion for Li-Ion battery technology. Similarly, "BEL has submitted proposal to M/s Jupiter Corporation, Japan, for supply of Anti Drone System for the end requirement of Japanese MoD," the joint secretary is said to have told the audience. The dialogue was organised primarily by Society of Indian Defence Manufacturers (SIDM), the apex body of Indian defence industry, and the International Security Industrial Council — Japan.

Sharing other precise details of the co-operation, Bajpai, as per the SIDM, also stated Acquisition, Technology & Logistics Agency (ATLA), the research and development arm of the Japan Self-Defense Forces, and Defence Research and Development Organisation of the Indian defence ministry have collaborated in fields like UGV/robotics project, silicon carbide (SiC) single crystal bulk growth, wafer fabrication process technology, underwater communication, underwater wireless power transmission, fabrication facility for development of case less brushless micro motors, nano uncooled thermal camera for nano UAVs, co-operative and distributive intelligence technologies etc.

High-tech defence systems

The Defence Ministry Officer also talked about a wide range of high-tech defence systems for air, land, sea and space applications that would interest the Japanese industries.

Indian ambassador to Japan, Sanjay Kumar Verma, joined the dialogue to invite Tokyo to take up the initiatives available due to Aatmanirbhar Bharat scheme and two defence corridors in UP and Tamil Nadu. Referring to Joint Working Group on Defence Equipment and Technology Co-operation (JWGDETC), Verma suggested the two industry bodies to expedite the progress on mutually identified dual use items and technologies. "Around 23 Indian companies had expressed interest in dual use items and the process of interaction between Indian and Japanese companies has started. However, the progress of interaction has been very slow and there is a need to facilitate companies for regular and frequent interactions, especially at the initial stages," the ambassador commented on the outcome of fifth JWGDETC.

Self-reliance initiatives

Ambassador of Japan to India Satoshi Suzuki shared his country's interest in participating in the self-reliance initiative through co-development, co-design and co-manufacture including manufacturing under Make in India, said SIDM sources who participated in the event.

Interestingly, Suzuki said Japan, currently developing a successor to the F-2 aircraft that will be retired in the mid-2030s, can assist in India's attempt to develop an indigenous fifth-generation stealth fighter and future generation naval vessels and submarines.

Neeraj Gupta, Chairman of SIDM International and Exports Committee, said the two regional powers, with similar goals and values, can also pool resources to develop technologies of the future such as on artificial intelligence, 3D printing, Internet of Things, among others.

<https://www.thehindubusinessline.com/news/world/india-japan-thrash-out-key-areas-of-defence-co-operation-ahead-of-22-dialogue-at-tokyo/article65830220.ece>

India Eyes ‘Powerful’ Battle Tanks to Fight China Up in the Himalayas; is South Korea Favourite to Win the Deal?

By Ashish Dangwal

According to the latest media reports, the Indian Army is initiating Project Zorawar (roughly translating to powerful), which involves the induction of indigenous light tanks to enable quicker deployment and movement in high-altitude areas.

The Indian Army felt a pressing need to have light tanks in service to oust its rival, China, in a bid to secure operational dominance in High Altitude Areas (HAA). Following the border conflict with China in the summer of 2020, the requirement for the light tanks in service was prominently emphasized.

In the absence of light tanks, the Indian Army had to use larger tanks like the T-72 and the T-90. Both the T-90 and the T-72 weigh roughly 46 tons. Another Indian tank, Arjun Mk 1A, which weighs 68.5 tons, is the newest of the Army’s three distinct tank models.

These tanks aren’t designed for high-altitude environments. Instead, they are effective when used in plains and deserts. On the other hand, China is believed to have many highly advanced, state-of-the-art tanks used in combat as a combination of medium and light tanks with high power-to-weight ratios.

The EurAsian Times had earlier reported that Beijing had stationed the latest ZTL-11 wheeled armored personnel carriers, the CSK series of assault vehicles, and the third-generation modern light tank ZTQ 15 (Type 15) along the LAC in Eastern Ladakh in the last two years.

While Indian armored battalions struggled to carry their hefty T-72s across mountain passes as high as 17,500 feet, China’s ZTQ-15 small tanks sped through with ease.

Maj Gen Harsha Kakar (Retd) spoke to EurAsian Times and emphasized the need for lightweight tanks for the Indian military. “Considering the terrain, lightweight tanks are best suited. Strategically it will enhance defensive and offensive options. A clear signal to the Chinese; we mean business and are no pushovers,” he said.

The operational challenges of utilizing big main battle tanks (MBTs) in mountain warfare have pushed India’s light tank program forward. In 2021, the Indian Army released a Request for Information (RFI) to procure 350 Light Tanks weighing less than 25 tons. These tanks will be used in High Altitude Areas (HAA) to confront Chinese armored columns stationed along the LAC. In March 2022, The Indian government had given preliminary approval for the domestic design and development of light tanks for mountain combat.

The latest media reports stated that the Army has completed the general staff quality requirements and will submit an Acceptance of Necessity (AON) to the defense ministry in September, which will initiate the project.

What Does The Indian Army Seek?

According to the report, the Army is considering developing a light tank with a maximum weight limit of 25 tons and the same amount of firepower as its standard tanks.

The military also wants it to be equipped with loitering munition, artificial intelligence (AI), tactical surveillance drone integration to provide a high level of situational awareness, and an active protection system. The active protection system protects the tank from anti-tank-guided missiles and munitions. The project has been titled 'Zorawar' after Zorawar Singh Kahluria, a military general who served as the 'conqueror of Ladakh' under Jammu's Raja Gulab Singh.

Meanwhile, the defense sources also explained that the projected conversion of the Vajra-tracked self-propelled artillery into a light tank had been canceled because it would not match the Army's weight criteria. The report said that the 25-ton weight limit is the highest that can be transported in high-altitude zones. Also, sources revealed that the disruption in the global supply chain for defense-related components caused by the continuing Russia-Ukraine conflict had hampered the manufacturing and maintenance of India's imported fleet of tanks.

Therefore, India must design and develop a light tank domestically for the Indian Army.

What Choices Does India Have?

The Russian Sprut tank was previously thought to be a key candidate for the Indian Army's need for a lightweight tank. However, the latest report claimed that India would not purchase Russian Sprut light tanks but instead seek something with similar capabilities. This action effectively ended the possibility of India receiving the Sprut tanks that Russia had proposed to India during Defense Minister Rajnath Singh's visit to Moscow in 2020.

Kakar feels India will take time to build its lightweight tank. He continued, "It is not likely to be regular order, possibly one time with sufficient reserves. Unlikely we will get a manufacturer to set up and produce in India. It could be a joint venture like the K9 artillery SP gun or a one-time purchase."

An Indian Defense company, Larsen & Toubro (L&T), and a South Korean defense corporation Hanwha Defense are collaborating to develop light tanks for the Indian Army.

The two businesses previously worked together to develop the K9 Vajra-T self-propelled howitzer (SPH), a K9 Thunder variant, for the Indian Army. As previously reported by the EurAsian Times, an L&T official stated in February 2022 that the business intends to collaborate on constructing light tanks with Hanwha Defense.

Hanwha Defense is reportedly offering the Indian Army its K21-105 light tank. It has a 105 mm turret with a 10-degree depression angle and a nearly 42-degree elevation angle, which helps fire at targets on higher slopes.

The K21-105 is based on the K21 infantry fighting vehicle and has a 105mm rifled gun turret with a maximum direct fire range of four kilometers. It can fire both standard NATO and newly developed smart ammunition.

The vehicle, which has increased maneuverability and a weight of about 25 tons, is cheaper to build. The K21-105 is an amphibious armored vehicle. This improves battle effectiveness by enabling armored columns to cover natural barriers like rivers or lakes.

The DRDO has also previously stated that it will provide two alternatives involving the K-9 Vajra hull. However, the latest report has ruled out the prospect of creating a light vehicle utilizing the Vajra-tracked self-propelled artillery.

BAE Systems Hägglunds has also previously announced that it believes it can provide a single baseline platform capable of meeting the Indian Army's diverse needs. However, the business has not specified whether it will collaborate with any local private company to develop a lightweight tank in India.

According to Darren Restarick, region sales director for BAE Systems Hägglunds, the CV90 family of armored combat vehicles (AFVs) can fulfill the Indian Army's light tank, Futuristic Infantry Combat Vehicle (FICV), and Future Ready Combat Vehicle (FRCV) criteria.

Restarick explained that by employing the same platform for three requirements, with the ability to add or subtract armor and alter turrets, attrition capabilities would be increased. The operator can "regenerate the product" based on the current demands. The BAE CV-90 family's light tank, the CV90120-T, features a Hägglunds turret mounted on a CV90 chassis from the current generation. It has a fully stabilized 120mm high-pressure smoothbore cannon called the CTG 120/L50 that can fire up to 14 rounds per minute. The battlefield management system for the tank is fully integrated, has open electronic architecture, is scalable, and is constructed on a video network with displays at each crew station.

The tank's defensive assistance suite (DAS) consists of a top attack radar, laser, radar, and missile approach warning systems and an MSA (multispectral aerosols) active countermeasure system that can recognize intelligent indirect munitions. Its survivability is also increased by the radar-absorbing track skirts and stealth turret design.

<https://eurasianimes.com/indian-army-eyes-powerful-battle-tanks-to-fight-china-up-in-the-himalayas/>

ThePrint

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Japan Airforce Lt Gen Meets IAF Contingent on Sidelines of Exercise Pitch Black 2022

On the sidelines of Exercise Pitch Black 2022, Japanese Air Self-Defense Force Lieutenant general Takehiro Morita visited the Indian Air Force contingent at Royal Australian Air Force (RAAF), Darwin and discussed the issues of mutual interest.

Exercise Pitch Black 2022, hosted by the Royal Australian Air Force (RAAF) was scheduled to conduct in 2018 but the COVID-19 pandemic cancelled all the plans and after a hiatus of four-year, it is re-scheduled in this year, according to the statement released by Defence Ministry.

According to the statement, "The IAF contingent, led by Group Captain YPS Negi, comprises over 100 air warriors, deployed with four Su-30 MKI fighter and two C-17 aircraft. They will undertake multi-domain air combat missions in a complex environment and will exchange best practices with the participating air forces."

PBK22 is Air Force's biennial capstone international engagement activity with key strategic partners. This year's participants include Australia, Canada, France, Germany, Indonesia, India, Japan, Malaysia, Netherlands, New Zealand, the Philippines, Republic of Korea, Singapore, Thailand, UAE, the UK and the US.

Significantly, Germany, Japan, and the Republic of Korea will be participating fully for the first time. PBK22 Director Engagement Group Captain Peter Wood said he was pleased to see a return to Pitch Black after the extended break, added the release.

"International participation in Exercise Pitch Black, from within the Indo-Pacific region and further abroad, provides all nations' personnel with experience in working with aircraft, systems and work practices, in northern Australia's unique environment, that would otherwise be unfamiliar," Group Captain Wood said.

"Exercising with our international partners in combined air combat operations is pivotal to ensuring Air Force remains ready to respond whenever the Australian Government requires," added Wood.

The exercise is a biennial three-week multi-national large force employment exercise conducted primarily from RAAF Base Darwin and RAAF Base Tindal. RAAF Base Amberley, located near Ipswich will also be included in the exercise this year.

Exercise Pitch Black will run from August 19 – September 8, 2022.

"The training and integration of forces that occurs during this exercise directly supports Air Force's ability to conduct operations," said Group Captain Wood.

"We'll have nations operating out of RAAF Bases Darwin and Tindal primarily, supported by RAAF Base Amberley," he added. Exercise Pitch Black 2022 is the Royal Australian Air Force's most significant International Engagement activity with forces participating from a wide range of partner and allied nations developing and enhancing military relationships at all levels.

"We are very much looking forward to working with our international partners once again for Exercise Pitch Black," said Wood. Exercise Pitch Black features a range of realistic, simulated threats which can be found in a modern battle-space environment and is an opportunity to test and improve our force integration, utilising one of the largest training airspace areas in the world — Bradshaw Field Training Area and Delamere Air Weapons Range.

Activities such as Exercise Pitch Black recognize Australia's strong relationships and the high value on regional security and fostering closer ties throughout the Indo-Pacific region.

The exercise will also support a concurrent International Observer Group program in order to provide an opportunity for foreign forces to gain an appreciation of how Australia prepares for and executes major activities.

The exercise will include day and night flying. There will not be any overarching scenario for the exercise. Each mission will be executed as a stand-alone serial with distinct training objectives.

<https://theprint.in/world/japan-airforce-lt-gen-meets-iaf-contingent-on-sidelines-of-exercise-pitch-black-2022/1108826/>

Tue, 30 Aug 2022

Iran, an Emerging Superpower-Changing the Definition of New Quad

By Dr (Prof) Nishakant Ojha

To reduce the extended political, economic, and military ties between India and the US. This triple axis includes Iran, China, and Russia. The trio has also shunned India's decision to shift heavily toward the West in the post-Cold War era. Therefore, in retaliation, Russia's recent warming of relations with the pair strengthened the Sino-Pak geostrategic link.

The US and India's extensive cooperation, particularly the post-civil nuclear agreement, contributed to the developing union of three atomic powers.

Such conditions have drawn the attention of the major world powers to the area, and more recently, a number of extra-regional entities have shown a strong interest in South Asia as a whole. Consequently, a new geopolitical great game has been developing in the area under the creation of power blocks. India, the dominant player in South Asia, has been in an exceedingly difficult position as it attempts to strike a balance between China and the US. In light of this, the study will largely concentrate on the emergence of the Zuth Asian Triple Axis and any potential effects it may have on the growing strategic leverage between India and the US.

The rising strategic convergence between the three countries is a significant geopolitical development, even though it is still too early to definitively establish the presence of a Russia-China-Iran "axis"; this is especially true considering the potential emergence of power blocs given the intensifying strategic confrontation between the US and China.

The Indo-Pacific, the heart of US-China competition, will most likely be where this convergence takes place. The four QUAD nations—India, the United States, Japan, and Australia—are becoming convergent, which has led to the renaming of Asia-Pacific as Indo-Pacific. The region will be "free, open, inclusive, healthy, and grounded by democratic ideals," according to the countries' shared vision delivered following the first QUAD summit, was the first united statement.

It is claimed the country is now emerging as a superpower and the claim made is that the United States and "even greater powers will have to make an alignment with Islamic Republic of Iran" following the April 22 launch of Iran's first military satellite.

Iran now has one of the most developed and diverse economies in the Middle East and North Africa, according to a well-known online publication that analyses political risk and geopolitics for the business world. This is because of the lifting of international sanctions on the nation.

Iran will become the next Middle Eastern economic superpower by 2025 as analysed. A sort of predicative Analysis turning into reality in coming years. A dramatic shift in the Middle Eastern balance of power will surely result from the Iranian nuclear agreement reached in Vienna last year, allowing Iran to confidently reenter the global arena. There are still discussions about the possibility of a reinvigorated Iran, and the Saudis in particular worry about Iran's potential long-

term dominance of the Middle East. Iran is more than likely on track to become a regional economic behemoth over the next ten years if its economy is unrestricted, with growth rates of about 3.5% predicted for this year. As a result, Iran's economy would have the second-fastest growth rate in the MENA region.

The nuclear agreement will also allow Iran to unfreeze billions in frozen assets abroad; estimates range from \$50 billion to \$150 billion. The Iranian economy will become a superpower by 2025 as a result of this inflow of liquidity and the fact that it is already the most diversified economy in MENA.

Iran will also have the ability to supply the global markets with an additional 1.5 million barrels of oil each day. Tehran does have a significant advantage over its adversary since, despite recent efforts to diversify, the House of Saudi Arabia still relies largely on petrodollars to support its economy, even though it won't be able to equal Saudi Arabia's overall oil output.

Desperate for allies

As part of its ongoing enmity against the West, the Islamic Republic has long sought relations with Russia and China, the former communist bloc. However, more recent attempts to strengthen ties with Europe have failed, driving the Islamic Republic even farther into China's embrace.

By essentially increasing Iran's deference to Russia and China, Khamenei's Look East strategy has brought about a deal that appears to be an absolute capitulation. China, for its part, is excited to walk the red carpet that has been set out in front of it. Iran not only has the natural resources China needs for energy, but it also has potential in other sectors like mining or services, which Iran's post-revolutionary governments were unable to fully utilise but which China might make effective use of.

India to take Chabahar Seriously

As a result, China will be able to surpass two more competitors, Russia and India. China has been making significant investments in neighbouring countries including Sri Lanka, Myanmar, and Bangladesh in an effort to restrain the growth of India's economy. This agreement will impede India's efforts to develop the port of Chabahar on the Persian Gulf into a gateway to markets in Western Asia and a port to rival Karachi in its antagonistic neighbour Pakistan. The issue of distance from the Middle East, which had previously been a Russian advantage, will also be resolved by China's presence on the Persian Gulf.

Naturally, the Islamic Republic wants to prosper. The agreement is anticipated to lessen the effects of Western sanctions and loosen the security perimeter that the US has established in the area. It might give Iran more wiggle room in talks with the West.

With Chinese assistance, Iranian authorities also seek to update their outdated air and naval fleets and benefit economically from China's New Silk Road programme, which India should step up and join.

The development of a port in the Iranian city of Chabahar has drawn more interest as a possible centre of global trade and a site for geopolitical conflict. India has been the main investor in Chabahar port since New Delhi views it as a means of bypassing Pakistan's land routes in order to get access to the Afghan and Central Asian markets. Additionally, the port might deepen relations between India and Iran, which might counterbalance rising Sino-Pakistani collaboration. China has also been gaining power in Iran at the same time, hoping to acquire

access to vital natural resources and maritime lanes. As for Iran, the port may promote new economic and political alliances, and considering that Iran is widely regarded as a pariah state in the West, it is urgently seeking out other possibilities.

Chabahar would provide access to maritime trade routes for Central Asian nations who are landlocked as well as act as a barrier to Chinese and Russian aspirations to monopolise commerce in the area. Iran's standing on the world arena may therefore be enhanced by increased trade with Afghanistan and the Central Asian nations.

Geopolitical Competition Over Chabahar Port

India and China each have their own plans for Chabahar and their bilateral relations with Iran in the meanwhile. India has had a long history of interaction with the Chabahar port because New Delhi sees the port as a chance to enhance India's status as a regional and international force. India is a strong candidate to become a future superpower since it has the second-largest population in the world, the sixth-largest economy, and a long-running effort to join the U.N. Security Council permanently. In order to further consolidate this potential, it has worked to increase its market reach in Western and Central Asia.

The fact that almost all of these routes would have to pass through Pakistan, India's adversary, has greatly hampered India's ability to create land-based trade with nations to its west. Bypassing Pakistan and establishing economic networks with the nations in these regions, India might bypass Pakistan by establishing a sea-based trade route to Western and Central Asia via Chabahar port. Another major factor in China's interest in Chabahar port would be to prevent India from accessing routes to Afghanistan and Central Asia, especially in light of China's investment in Pakistan's Gwadar port.

The next geopolitical flashpoint between adversaries China and India could be a remote Iranian port. Since first expressing interest in 2003, India has committed more than \$500 million to the development of the strategically positioned port of Chabahar, which is located approximately 1,800 kilometres (1,110 miles) from Tehran's capital. Iran, however, has turned to China in the hopes of accelerating construction as a result of ongoing delays.

China is expanding Gwadar, a port on the coast that serves as a showcase for Beijing's Belt and Road building programme. However, it could be a strategic setback for India, which opposes China's expansion in the Indian Ocean and is already concerned that Gwadar, along with other China-backed ports from Myanmar to Bangladesh to Sri Lanka, could someday be used as a military base. The change makes sense for Iran, which wants to ensure Chabahar is a commercial success.

Issues and gaps in the relations between India and Iran have been identified. The US containment policy toward Iran, which is enforced by harsh economic and trade sanctions, has hampered India's connections with Iran in the energy sector. As a hegemonic or major power, the United States traditionally opposes Iran, a regional state or "middle power" that poses a threat to American dominance in the West Asian region—particularly given that Iran continuously defies US demands on the nuclear question. The following sentences express the United States' position on Iran and its nuclear programme: The rise of a new big power is typically opposed by established major powers. Since nuclear weapons and their delivery methods are a defining trait of major powers in the modern period, these powers frequently try to limit or take away middle power's access to such weapons under the guise of concern for global order and stability. On the

other hand, joining the elite group of subjects is also a compelling objective for those middle powers that have the potential to become big powers. Rising states are under pressure to change the system, sometimes intensely and other times less so, due to status inconsistency, or the gap between rising status aspiration and assigned status.

Iran claims that its nuclear programme is for peaceful reasons and that the Nuclear Non-Proliferation Treaty gives it the freedom to enrich uranium (PT). Iran's unwillingness to stop uranium enrichment is seen as a challenge to the US-led global order, the regional order, and a security danger to its position, assets, and those of its friends in the region. The US has sanctioned Iran in many ways as a way of extending its vast authority.

The National Defense Authorization Act of 2012 (NDAA) also included sanctions that had an effect on how the Iranian oil market was monetized. Through the NDA 2013,34, which prohibited how consumers' nations may pay for Iranian crude oil via bank transfer, additional US restrictions on the trade in Iranian petroleum came into place. Energy commerce between India and Iran has suffered as a result of the balance of trade sanctions. Iran was India's second-largest crude supplier from West Asia before US-led restrictions on the capitalization of Tehran's crude oil exports went into force in January 2012, and New Delhi was Tehran's second-largest customer after China. Iran has dropped from that position to eighth, accounting for a much smaller but still considerable 6% of global oil imports by source. China, Russia, Iran, Pakistan, and other countries in the region that surrounds Afghanistan have made it a priority to forge an alliance in order to address the issues that have engulfed the country since the withdrawal of American forces.

It is therefore certain that the upcoming period will alter the overall dynamics of the Quad, and the cascade effects between the two Quads will be eye-opening.

<https://www.financialexpress.com/defence/iran-an-emerging-superpower-changing-the-definition-of-new-quad/2648254/>

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US Army Grounds Entire Fleet of Chinook Helicopters Over Engine Fire Risk

The US Army has grounded its entire fleet of Chinook helicopters, a battlefield workhorse since the 1960s, over the risk of engine fires, a media report said Tuesday. The Wall Street Journal, which broke the story, said such an extreme step was taken out of abundance of caution. India has about 15 CH-47 Chinook helicopters. Over the past few years, they have emerged as one of the major military tools for airlift operations in places like Ladakh and Siachen glaciers to assist Indian forces deployed in these regions.

India received the first batch of Chinook helicopters in February 2019. Boeing completed the delivery of 15 Chinook helicopters to the Indian Air Force in 2020. Officials told the Wall Street Journal the US Army was aware of a small number of engine fires in the helicopters, and the incidents didn't result in any injuries or deaths.

"One of the officials said the fires occurred in recent days, the Journal said. "The U.S. Army Materiel Command grounded the fleet of hundreds of helicopters out of an abundance of caution."

However, officials were looking at more than 70 aircraft that contained a part suspected to be connected to the problem, officials told the daily. The grounding of the heavy-lift Chinook helicopters could pose logistical challenges for American soldiers, depending on how long the order lasts, the Journal said. The US Army has about 400 such helicopters in its fleet.

https://www.business-standard.com/article/international/us-army-grounds-entire-fleet-of-chinook-helicopters-over-engine-fire-risk-122083100083_1.html



Wed, 31 Aug 2022

US 'Concerned' About India's Participation in Russian Military Drills Amid Ukraine War

The United States government on Wednesday expressed concerns about India's plans to participate in joint military drills with Russia amid war in Ukraine. It, however, added that every country will "make its own decisions", hinting that the US will not interfere in these exercises.

It should be noted that last month, Russia announced plans to organise 'Vostok' exercises which will see participation of Belarus, China, Mongolia and Tajikistan as well.

The Vostok 2022 strategic command and staff exercises will be held under the command of the chief of Russia's General Staff, Valery Gerasimov, at 13 training grounds in the Eastern Military District. The exercises are expected to take place till September 5.

The Russian Defense Ministry had stated, earlier, that during the drills the participating forces would practice measures to maintain military security in the eastern region.

When asked about India's possible involvement in the military drills with Russia, White House press secretary Karine Jean-Pierre said, "The United States has concerns about any country exercising with Russia while Russia wages a unprovoked, brutal war against Ukraine. But, of course, every participating country will make its own decisions."

According to experts, India remains an important part of US's strategic affairs in Asia as security relations between the two countries have grown exponentially over the last 15 years.

Meanwhile, India had also inked a USD 5.4 billion deal with Moscow for five squadrons of S-400 Triumf air defence missile system in October 2018. Earlier in June this year, Russian Ambassador to India Denis Alipov said the consignment production is proceeding well and in accordance with the schedule.

<https://www.timesnownews.com/world/us-concerned-about-indias-participation-in-russian-military-drills-amid-ukraine-war-article-93891566>

100 Years in Combat! US Air Force is Upgrading its B-52s to Stay in Service Till 2050 Despite New Bombers Joining in

By Sakshi Tiwari

Breaking Defense reported that the B-52 Stratofortress is undergoing a significant facelift that will allow the strategic bomber to fly for 28 more years if two necessary upgrades are pulled off at once.

The B-52 bomber was inducted into service in 1952 and has participated in several bombing missions. The plans to keep this bomber alive and kicking have been in the works for a while. “The B-52 has and will continue to serve as a vital component of the nuclear triad,” the US Air Force Global Strike Command (GSC), which directs strategic deterrence and long-range strike operations, said in December 2021.

At the time, Boeing Bombers Senior Program Director Jennifer Wong had stated that the USAF intended to keep the B-52 bombers in service through a Commercial Engine Replacement Program, Radar Modernization Program, and an Advanced Extremely High-Frequency Satellite.

However, there are reservations about carrying out two simultaneous modifications. At the Air Force’s Life Cycle Industry Days conference earlier this month, Col. Louis Ruscetta, the senior materiel leader of the B-52 division, told reporters that the Air Force was trying to “identify those friction areas” to make sure that changes on one modification program don’t have a cascading effect across another modification program.

Originally designed as a high-altitude, high-speed penetrating nuclear bomber, the B-52 now provides long-range cruise missile carriage and launch capabilities using the AGM-86B Air-Launched Cruise Missile (ALCM). It is the leading strategic nuclear and conventional weapons platform of the US Air Force.

Big Fat Bomber Of The US

The B-52H Stratofortress is a long-range, heavy bomber that can perform a variety of missions. The bomber can fly at high subsonic speeds at altitudes of up to 50,000 feet (15,166.6 meters). It can carry nuclear or precision-guided conventional ordnance with top-class precision navigation capability.

At 70 years of age, these bombers are deployed widely by the USAF for various missions despite having the B-1 Lancer and the B-2 Spirit in their inventory. EurAsian Times had recently reported that the B-52 took part in the Bomber Task Force (BTF) mission alongside Sweden and Norway.

The Raider and the B-52 will be the two-bomber fleet for at least the next three decades until the 2050s. There are currently 58 B-52s in service today, with another 18 in reserve and a dozen in long-term storage, from the total 744 that were built.

The US Air Force sent B-52 Stratofortress bombers to Royal Air Force (RAF) Fairford in February of this year to participate in a Bomber Task Force mission before Russia started its invasion of Ukraine.

Then, in March, the bombers flew over nations bordering the Black Sea and Central Europe to simulate close-air-support operations with ground forces. Additionally, they traveled to the Arctic to support the NATO-led Cold Response over Canada and Norway by participating in the Noble Defender exercise conducted by NORAD.

B-52s were also used to test the under-development Air-Launched Rapid Response Weapon (ARRW) hypersonic missile for its first captive carry trials in late 2019. Given its operational availability and utility, as well as the minimal wear and tear on the bomber, it is no surprise that the US wants to keep the aircraft relevant for as long as possible.

How Will The US Keep Its B-52 Relevant?

A more capable radar is one of the most critical upgrades needed on this age-old bomber. It has recently been confirmed that the service will start installing the B-52 with the F/A-18E/F Super Hornet's Raytheon AN/APG-79 radar in the middle of the decade. The Raytheon AN/APG-79 AESA radar will require changes to the B-52's cooling systems, for which the radar will be installed "upside down" instead of the Super Hornet's vertical posture, allowing it to gaze down at the ground.

The "fighter-quality" radar will give the B-52 greater air-to-ground detection, range, tracking, and precise weapons delivery and fire-control capability.

In addition to the radar, the service will undertake an ambitious engine replacement program, replacing the bomber's worn-out Pratt & Whitney TF33 engines with a variation of the Rolls-Royce F130.

The B-52 Commercial Engine Replacement Program will upgrade each B-52 with eight new F130 engines. It will also receive ancillary changes, such as new nacelles, pylons, generators, and cockpit display systems.

A complete system preliminary design review is set to occur later this year, Ruscetta informed reporters. The Air Force anticipates that the first B-52s will receive new engines in 2026–2027, with initial operational capability coming in 2030.

The new radar will be installed before the new engines, so the service is still figuring out exactly how the Oklahoma City Air Logistics Complex at Tinker Air Force Base will handle the radar and engine replacement changes.

"The first jets that will come out of that [radar] mod line will most likely have radar only, and then at some point, probably at their next depot timeline, [they will] come back to get the engine replacement," he said. However, once the engine and radar replacement programs are in full swing, B-52s will likely receive both technologies during the same depot period.

In addition to these two major defining upgrades, the USAF is making efforts to add systems and subsystems to improve the capability of this strategic bomber. If everything goes according to plan, the Global Iridium Bomber Set (GLIBS), which has been in operation since 2017, will be replaced by the IRIS system, as previously reported by EurAsian Times.

IRIS is a new beyond-line-of-sight communication (BLOS) system and Air Force Global Strike Command's (AFGSC) solution for integrating the B-52 fleet into the greater Joint All-Domain Command and Control problem set.

The IRIS system provides complete global coverage by leveraging the Low Earth Orbit (LEO) Iridium NEXT satellite constellation.

The B-52 will be in service until 2050 if the Air Force sticks to its current plans, making it the first and possibly the only aircraft to fly continuously for a century.

<https://eurasianimes.com/100-years-us-air-force-is-upgrading-its-b-52s-to-stay-in-service-till-2050/>

नवभारत टाइम्स

Sat, 27 Aug 2022

हाइपरसोनिक मिसाइल के बाद अब चीन बना रहा हाइपरसोनिक गोली, 4 किमी प्रति सेकंड की स्पीड से सूअरों पर लगाया निशाना, ऐसा मिला रिजल्ट

चीन आवाज से पांच गुना ज्यादा स्पीड यानी हाइपरसोनिक स्पीड से चलने वाले मिसाइल और इंजन के निर्माण में लगा है। लेकिन अब अपने हाइपरसोनिक प्रोजेक्ट के आकार को चीन ने छोटा करने का फैसला किया है। चीन हाइपरसोनिक स्पीड से चलने वाली गोली बना रहा है। चीन ने हाल ही में इस तरह की गोली के प्रोटोटाइप का टेस्ट जिंदा टारगेट पर भी किया है। साउथ चाइना मॉर्निंग पोस्ट की रिपोर्ट के मुताबिक चोंगकिंग में एक आर्मी मेडिकल सेंटर के शोधकर्ताओं ने हाल ही में 11 मैक (11 Mach) की स्पीड से फायर होने वाली 5 MM स्टील प्रोजेक्टाइल को जीवित सूअरों पर फायर किया। जिस दौरान ये गोली दागी गई उस दौरान सूअर बेहोश थे।

गोली इंसानों पर किस तरह प्रभाव दिखाएगी, इसे जानने के लिए सूअर पर इसे फायर किया गया। 11 मैक को समझने के लिए कहें तो ये आवाज की रफ्तार से 11 गुना ज्यादा स्पीड है। चाइना ऑर्डनेंस सोसायटी के एक्टा आर्ममेंटरी पीयर-रिव्यू जर्नल के एक पेपर के हवाले से साउथ चाइना मॉर्निंग पोस्ट की रिपोर्ट में कहा गया कि जांघ पर फायर किया गया। इससे सूअरों की तुरंत मौत नहीं हुई। हालांकि उनके शरीर में गंभीर चोटें आईं। उनमें आंतरिक क्षति जैसे हड्डी में फ्रैक्चर और आंत, फेफड़े, मूत्राशय और मस्तिष्क में रक्तस्राव देखने को मिला।

4 किमी प्रति सेकंड तक पहुंच जाती है स्पीड

रिपोर्ट में बताया गया कि गोलियां जांघ में 1 किमी से 3 किमी प्रति सेकंड की स्पीड से घुसती हैं। लेकिन जब ये स्पीड 4 किमी प्रति सेकंड हो जाती है तो गोलियों के एंटी प्वाइंट पर एक बड़ा घाव बन जाता है। सामान्य गोलिया 1.2 किमी प्रति सेकंड की रफ्तार से चलती हैं। हाइपरसोनिक स्पीड पर चलने वाली गोलियां अपने गलनांक प्वाइंट पर पहुंच जाती हैं, यानी वह टारगेट के रास्ते में ही गल जाती हैं। इस कारण गोलियों के टारगेट को भेदने की क्षमता कम हो जाती है।

क्रेटर की तरह बनता है घाव

साउथ चाइना मॉर्निंग पोस्ट ने बताया कि टारगेट के संपर्क में आने पर गोलियां जलती हुई दिख रही थीं, जो टक्कर के दौरान जबरदस्त ऊर्जा के कारण होता है। लेकिन वे हाई तापमान के कारण पिघल गए और बिखर गए। रिपोर्ट में कहा गया कि इन पिघली गोलियों से उसी तरह का घाव बना जैसा किसी उल्कापिंड के धरती पर गिरने से गड्ढा बनता है। टक्कर से गोली और मांस दोनों ही तरल में बदल जाते हैं। इस टेस्ट के छह घंटे बाद सूअरों को मार डाला गया।

PLA ने प्रोजेक्ट को दी हैं फंडिंग

रिपोर्ट में चीनी शोधकर्ताओं ने कहा कि साबुन से बने टारगेट भी हाइपरसोनिक प्रभावों को दोहरा सकते हैं। लेकिन फिर भी अभी जानवरों के सिर, छाती और पेट जैसे अन्य महत्वपूर्ण अंगों पर टारगेट की जरूरत है। साउथ चाइना मॉर्निंग पोस्ट ने कहा कि PLA के पास हाइपरसोनिक हथियार विकसित करने की कोई खुली रिपोर्ट नहीं है। हालांकि PLA की ओर से हाइपरसोनिक स्पीड वाली गोली तैयार करने से जुड़े प्रोजेक्ट को फंडिंग दी गई है।

क्या दिक्कत आ सकती है सामने

इस तरह के हथियार को बनाना हालांकि बहुत चुनौतीपूर्ण है। ऐसा इसलिए क्योंकि इन्हें सामान्य बंदूकों से फायर नहीं किया जा सकेगा। क्योंकि वह इस तरह की स्पीड वाली गोली को फायर करने के लिए शक्तिशाली नहीं हैं। अगर इस स्पीड से वह गोली फायर करते हैं तो बैरल फट सकता है। इनके लिए रेलगन का इस्तेमाल हो सकता है। पारंपरिक हथियारों में गोली को गनपाउडर से फायर किया जाता है, लेकिन रेल गन को इलेक्ट्रोमैग्नेटिक एनर्जी के जरिए चलाया जा सकता है।

<https://navbharattimes.indiatimes.com/world/science-news/china-developing-hypersonic-bullet-test-on-pigs-know-what-are-the-challenges-for-hypersonic-technology/articleshow/93804630.cms>

Science & Technology News



Press Information Bureau
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Ministry of Science & Technology

Tue, 30 Aug 2022 2:23PM

Intelligence System and Health Monitoring Solution for EVs Can Ensure Their Efficient Performance

A new complete vehicle intelligence system and health monitoring solution for electric vehicles (EV) can ensure safe and high EV performance, which will occupy a major part of the next-generation transportation system. The system can help in estimating the accurate state of health and state of charge of the battery pack, help fleet operators in their control and facilitate seamless communication.

The unavailability of such vehicle intelligent modules for the different components of EVs serves as a roadblock in their efficiency.

Delhi-based Vecmocon Technologies developed the vehicle intelligence system with critical battery data collection and monitoring, such as cell voltages, temperature, and the current health of the battery. Vecmocon, incubated at FITT-IIT Delhi, with seed support from the Department of Science and Technology, also provides solutions for intelligent vehicles, including keyless entry, preventive and predictive maintenance, user-adaptive algorithms, remote diagnostics, fleet management, and so on.

It can cater to the entire ecosystem of EVs, such as motor power controllers, battery management systems, vehicle intelligence modules, cloud connectivity, etc., with specialized components for high-performance vehicles.

The patented technology at Technology Readiness Level 9 costs around 20- 22k for the entire kit (Battery Management System - 4-5 k, vehicle Intelligence Module - 6-8 k, fast chargers - 4-5 k, instrument cluster - 2-3 k, motor controller - 4-5 k) and is being used by more than 15 EV Manufacturers as well as Original Equipment Manufacturers (OEMs).

“While others are focused on 2 wheelers, 3 wheelers as a product in the Market, we at Vecmocon are building the ecosystem for electric vehicles to happen in India at a very faster pace. We design and develop core components for electric vehicles like Battery Management System, Motor Controller, Vehicle Intelligence Module, Chargers, and the whole of the cloud architecture for Data Analysis, Machine Learning, and Artificial Intelligence,” said Peeyush Asati, one of the founders of the company.

Adarshkumar Balaraman, the other founder, acknowledged DST's support during the company's initial stages.

Vecmocon provides battery packs with all thermal and structural considerations, battery management systems, and Machine Learning (ML) algorithms for battery management design of computationally in-expensive system-local ML algorithms, which run on Rs. 100 micro-controller. It has generated revenue of Rs 5 crore so far.

V.I.M (VEHICLE INTELLIGENCE MODULE)



B.M.S (BATTERY MANAGEMENT SYSTEM)

13S - 17S



<https://www.pib.gov.in/PressReleasePage.aspx?PRID=1855454>

The Tribune

Tue, 30 Aug 2022

Indians Build AI System to Pick Carcinogens from Chemical Crowd, Make Global Waves

A team of Indian scientists are making global waves for developing an Artificial Intelligence-based system that can pick cancer causing compounds out of a chemical crowd, offering massive potential to alter the face of cancer detection landscape. The paper, “Artificial intelligence

uncovers carcinogenic human metabolites”, published in the globally acclaimed “Nature Chemical Biology”, presents a novel AI approach which can identify cancer causing substances from among a sea of molecules.

The work of four collaborating institutes – Indraprastha Institute of Information Technology Delhi, IIT Ropar, CSIR-Institute of Genomics and Integrative Biology and Rajiv Gandhi Cancer Institute, is already being hailed as a game changer in the field of oncology considering only five to 10 per cent of cancer types are heritable and the rest are caused by exposure to carcinogens.

“Since over 90 per cent cancers are caused by exposure to compounds, the ability of our AI method to accurately identify a carcinogen can make a huge difference to cancer response. Over the last few decades, over 700 FDA-approved drugs have had to be withdrawn because these were later shown to be carcinogenic although they passed trial stages. It is a huge burden on pharma to determine a compound’s cancer causing potential. Our AI system, Metabokiller, is a reliable way to accurately detect cancer causing compounds,” Gaurav Ahuja, senior author of the study, told The Tribune on Tuesday.

The Indian researchers’ proved their AI model’s worth by flagging two compounds (which none of the currently used cancer detection models flag as cancer causing) as carcinogenic and proving these as such in experiments.

Ahuja and collaborator Dr Debarka Sengupta say current predictive models for carcinogenicity prediction mainly screen compounds for whether these cause DNA damage and predict carcinogenicity based on this knowledge.

“But a potential cancer causing compound may not essentially damage the DNA alone. Carcinogens can have many other biochemical properties which our AI model assesses for detection. It vastly expands the carcinogen detection ability and can be used by the cosmetic, food, beverages and pharma industries alike,” says Ahuja.

Metabokiller follows biochemical properties known to be associated with carcinogens to detect cancer compounds – a potential carcinogen might induce cellular proliferation (cell division), genomic instability, anti-apoptotic (ability in a cell to not die) response, epigenetic alterations (changes to DNA) and might have electrophilic character (where it induces a positive charge to impact the DNA which is negatively charged). The AI software has already outperformed all current state of the art carcinogenicity detection models.

Asked how it would help, Ahuja explains, “Pharma firms spend billions to validate whether their new drugs can cause cancer. The process takes at least six years and involves animal studies. It would enable the detection of carcinogens on a laptop in two seconds versus six years. The compounds thus flagged by our software can then enter priority research by pharma which can save money, time and animal lives.”

IITD researchers are now working on a predictive model to detect which carcinogen attacks which gene in the human body. “Gall bladder cancer is common among people living in the Ganga belt. Cancer types are often associated with the region people inhabit. We are now working to establish a link between the carcinogen and the gene it targets and mutates,” says Ahuja.

<https://www.tribuneindia.com/news/nation/india-builds-artificial-intelligence-system-to-pick-carcinogens-from-chemical-crowd-426935>

