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Press Information Bureau
Government of India

Ministry of Defence

Tue, 07 Feb 2023

Training to Armed Forces Medical and Nursing Officers on Management of Chemical, Biological, Radiological and Nuclear (CBRN) Exigencies

Medical Branch of Headquarters Integrated Defence Staff begins workshop for 60 medical and nursing officers of Army, Navy, Air Force and NDRF

The Medical Branch of Headquarters Integrated Defence Staff is conducting 11th Workshop on medical management of Chemical, Biological, Radiological and Nuclear (CBRN) exigencies for medical and nursing officers of the Armed Forces Medical Services (AFMS) and National Disaster Response Force (NDRF) from 07 to 10th February, 2023 at the Army Hospital (Research & Referral). Sixty medical and nursing officers from the Indian Army, Indian Navy, Indian Air Force and NDRF are participating in the workshop.

The workshop aims to train young services medical professionals to operate in CBRN environment and render first aid and long term management of the CBRN exposures. Lectures, demonstrations of CBRN exercises and hands on training on use of CBRN equipment will be imparted by the experts and scientists from Armed Forces Medical College, Institute of Nuclear Medicine and Allied Sciences, NDRF, Indian Army and Indian Air Force units.

Air Marshal BR Krishna, Chief of the Integrated Defence Staff inaugurated the Workshop today on February 7, 2023. Lt Gen AK Jindal, Commandant, Army Hospital (R&R); Air Marshal Rajesh Vaidya, Deputy Chief of Integrated Defence Staff (Medical), Senior Officers from the Medical Directorates of the three Services and senior professionals from institutes of national repute like National Center for Disease Control and National Disaster Management Authority were also present during the event.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1897017>

India can be Superpower in Defence Manufacturing: General Chauhan

Lauding the private sector contribution in defence manufacturing, Chief of Defence Staff (CDS) General Anil Chauhan on Tuesday said India has the potential to emerge as a superpower in making military equipment and has displayed wherewithal to develop big and complex platforms. Referring to the inauguration of Hindustan Aeronautics Ltd's new helicopter factory -- India's largest chopper manufacturing unit -- in Tumakuru district of Karnataka on Monday, General Chauhan said post-independence, it was the country's dream to become self-reliant in defence manufacturing.

He was speaking at the inauguration ceremony of the Micro, Small and Medium Enterprises (MSMEs) Defence Expo 2023, organised by NIBE Defence and Aerospace Ltd in Chakan on Pune city fringes.

"When we imagine a powerful India, our major focus goes towards the Armed Forces and we feel proud about their achievements. According to me, a big defence ecosystem is standing behind the Armed Forces, which is making the country powerful and this defence ecosystem works in tandem with the Armed Forces," General Chauhan said.

The people in this ecosystem do not wear uniforms and do not come under the Army, Navy or Air Force Acts, but they have a strong desire to do something for the nation and they are always inspired by that desire, said the CDS. "I feel that to make the country more powerful, the silent majority has a big role to play and we should recognise this contribution. Which is why I have come here to give recognition to this silent majority and say that all you people are with us in the process of making the country powerful," General Chauhan said.

Post-independence, it was the country's dream to become self-reliant and independent in the defence sector, and ordnance factories and defence public sector undertakings (DPSUs) have played a major role in realising that goal, he said. Sometime ago, the defence sector was thrown open to private players and emphasis was given to the Make-in-India initiative (aimed at country becoming a manufacturing powerhouse), he said.

"I firmly believe these two attempts of the government will unleash the power of the youth and entrepreneurs of India. NIBE Defence is a fine example of this entrepreneurship," General Chauhan said. Considering the contribution of the private sector, it can be seen that India can emerge as a superpower in defence manufacturing, he said.

The CDS further said there was a need for a "whole-of-nation approach, instead of the whole-of-government approach", in the field of defence manufacturing. For that, all stakeholders like Armed Forces, DPSUs, DRDO (Defence Research and Development Organisation), private industries, MSMEs and individual innovators have worked together, he said.

"Until now, there was a mindset that India cannot develop big and complex platforms. However yesterday, Prime Minister Narendra Modi inaugurated the HAL helicopter factory in Karnataka's Tumakuru. This will encourage tier-2 and tier-3 industries and generate employment," he said.

Make in India and Indianisation drives will save foreign exchange and in the coming years, the defence export will increase and defence diplomacy, too, will get encouragement, General Chauhan said. Appealing to defence manufacturers to make quality products, he said, "It is important that in this competitive world, we work together to make globally competitive products.

https://wap.business-standard.com/article-amp/current-affairs/india-can-be-superpower-in-defence-manufacturing-general-chauhan-123020701025_1.html

THE TIMES OF INDIA

Wed, 08 Feb 2023

Rajnath Singh Set to Host Defence Ministers' Conclave

The ministry of defence (MoD) on Tuesday said defence minister will host a defence ministers' conclave on February 14, on the sidelines of Aero India 2023. "The conclave will comprise defence ministers of friendly foreign countries and address aspects related to deepen cooperation for capacity building - through investments, R&D, joint venture, co-development, co-production and provisioning of defence equipment - training, space, artificial intelligence (AI) and maritime security to grow together with the broad theme 'Shared Prosperity Through Enhanced Engagements in Defence (SPEED)," the MoD said in a statement.

The conclave, it added, will be an opportunity for defence ministers to engage with one another to carry forward the Prime Minister's vision of "Make in India, Make for the World for a secure and prosperous future for generations to come". Claiming the defence sector has shown promising growth despite disruptions caused by Covid-19, MoD said India is shifting focus towards defence innovation and tech incorporation.

<https://timesofindia.indiatimes.com/city/bengaluru/rajnath-singh-set-to-host-defence-ministers-conclave/articleshow/97712454.cms>

THE ECONOMIC TIMES

Tue, 07 Feb 2023

Boeing to Showcase Initiatives to Boost 'Make-in-India' at Aero India

US aerospace major Boeing on Tuesday said it will showcase at the upcoming Aero India its focus on boosting local services, investments and partnerships in complimenting India's ambitious goal of achieving self-reliance in defence manufacturing. The 14th edition of 'Aero India', known as Asia's largest aerospace exhibition, will be held in Bengaluru from February 13 to 17. Boeing said a key strategic goal for it in India is to strengthen and leverage local talent and its growing network of more than 300 supplier partners.

"The Indian aerospace and defence industry is poised for growth and offers significant opportunities for Boeing with our proven portfolio of products and services," said Salil Gupte, president, Boeing India. "Boeing is committed to supporting and enabling this progress with a vision to bring the best of Boeing to India and take the best of India to the world," he said. Boeing's displays at the Aero India will be built around the theme of "The Runway to a Billion Opportunities" highlighting local partnerships and investments in India, according to the company. The exhibits will also feature a range of advanced products including the F/A-18 Super Hornet, P-8I, CH-47 Chinook, 737, 787 Dreamliner and 777X.

The F/A-18 Super Hornet is in contention with Dassault Aviation's Rafale M for the Indian Navy's requirement for 26 deck-based jets for aircraft carrier INS Vikrant. The Indian armed forces operate a sizeable number of Boeing-manufactured military platforms that included 11 C-17 heavy-lift transport aircraft, 22 AH-64 Apache helicopters (with six more on order), 15 CH-47 Chinook choppers, 12 P-8I long-range maritime reconnaissance and anti-submarine warfare aircraft.

India also has three Boeing VVIP aircraft, and two Head of State aircraft. In addition, more than 150 Boeing airplanes, including the next-generation 737, 737 MAX, 757, 777, and 787 Dreamliner, are operated by India's leading commercial airlines. The joint venture between Boeing and Tata Advanced Systems Ltd -- Tata Boeing Aerospace Limited (TBAL) -- recently delivered the first fuselage for six AH-64 Apache attack helicopters ordered by the Indian Army from its state-of-the-art facility in Hyderabad.

TBAL has produced and supplied Boeing's Apache final assembly plant in Mesa, Arizona with more than 190 fuselages. Boeing said visitors will be able to experience the AH-64 Apache simulator and learn more about the combat helicopter's capabilities and a wide range of missions.

It said the company will meet with customers and industry partners to discuss India's future aviation, defence, and security requirements, focusing on in-country manufacturing, leveraging engineering and research talent, and strengthening local partnerships. Boeing said it is expanding its support for local customers in India by establishing an ecosystem of comprehensive support packages and indigenous maintenance, repair and overhaul (MRO) capabilities with partners through the Boeing India Repair Development and Sustainment (BIRDS) programme. This all forms part of Boeing's commitment to Make in India and Aatmanirbhar Bharat, it said.

https://m.economictimes.com/news/defence/boeing-to-showcase-initiatives-to-boost-make-in-india-at-aero-india/amp_articleshow/97697886.cms



Wed, 08 Feb 2023

Aero India 2023 | Roadblocks to Aatmanirbharta

By Smruti Deshpande

While India is actively publicising its intention towards becoming Aatmanirbhar, or self-reliant in defence, the country still relies heavily on foreign equipment. India continues depending on different countries for key technologies such as missiles, fighter jets, tanks, UAVs as well as engines. Even as efforts are being made by the local industry to step up manufacturing, India

remains one of the largest importers of defence platforms. A Stockholm International Peace Research Institute (SIPRI) report from 2022 stated that India accounts for 11 per cent of the global arms imports. Russia remains India's largest defence partner, although this is slowly changing with India's imports from France and the US increasing considerably over the past few years.

From Russian Shores

After Russia attacked Ukraine, India's arms dependence on Russia became the focus of debate within the country and abroad. The three Indian service chiefs were faced with the question of how western sanctions on Russia would hamper India's military preparedness. Experts mulled the impact on India, spoke of possible shortages as well as alternatives India could consider. The Indian defence manufacturing industry was brought into the limelight and Aatmanirbharta was deemed as a solution. The US saw an opportunity to wean India away from Russia and promoted its defence industry.

While India is turning towards the West, it is not yet possible to completely shut Russia out when it comes to procurements. India's military relations with Russia will continue because of the country's lack of investment in Maintenance Repair and Overhaul (MRO) facilities. While the Indian Air Force's (IAF) in-house MROs have been equipped to maintain fleets of rotorcraft and fixed-wing aircraft, it is not possible for the force to cater to every aircraft present in the force. India and Russia have signed pacts to maintain some of the Russian-origin military equipment within the country.

For instance, in 2017, the two countries signed two key agreements for long-term maintenance and technical support for Russian-made Su-30MKI fighter jets of the IAF. The pacts were signed between India's Hindustan Aeronautics Limited (HAL) and two Russian companies in the presence of the then defence minister Arun Jaitley and Russia's industry and trade minister Denis Manturov. In November 2022, The Hindu reported that the single squadron of Mi-35 attack helicopters in the IAF were undergoing a complete overhaul in Russia to extend the lifespan of these helicopter by six years. The overhaul is being undertaken in two batches and it should be completed by mid-2023.

Similarly in 2019, the Mi-26 helicopters were also required to fly back to Russia for overhaul. The IAF operated two squadrons of the older Russian Mi-25/35 attack helicopters, of which one squadron has been phased out following the induction of 22 Boeing AH-64E Apache attack helicopters in 2019-20. Of the 500 helicopters that the IAF operates, 90 are Mi-17s, 130 are Mi17 Vs and the one squadron of Mi-35 attack helicopters, all of which are of Russian origin. India also operates Mi-26 heavy-lift helicopters and Kamov anti-submarine warfare helicopters. The rest include Advanced Light Helicopters (ALH), including the Rudra variant, AH-64E Apache attack helicopters and CH-47F Chinook heavy lift helicopters.

Despite the local industry having stepped up, India continues to depend heavily on Russian spares. In addition, Russia is the only country willing to share some of its most advanced technologies with India. The procurement of the S-400 missile defence system is one example. India signed a deal of nearly 5.5 billion USD for five squadrons of S-400 missile defence systems. India started receiving its delivery in December 2021. While India awaits the delivery of the third squadron, the first two have been deployed in the Ladakh sector.

Russia is the only country to help India indigenously develop nuclear-powered submarines. A study by Stimson Centre in July 2020 said 86 per cent of Indian military equipment were of Russian origin and that the dependence was likely to continue because more than 55 per cent of the Indian defence imports since 2014 had been from Russia. The country is the world's second-largest arms exporter, which accounts for 20 per cent of global weapons sales. As per an Al Jazeera report, Moscow exports nearly 90 per cent of its arms to 10 countries. Its biggest customer, India, bought 23 per cent of Russia's weapons for some USD 6.5 billion over the past five years. Half of India's total arms imports, 49.3 per cent, come from Russia.

According to data by the Observer Research Foundation, in the decade between 2011 and 2021 Russia made USD 22.8 billion worth of arms transfers to India, which was 42.5 per cent higher than the previous decade. Aircraft make up 48.6 per cent of Russian arms exports and while it exported 400 fighter jets, including the Sukhois and MiGs to not less than 13 countries, India bought at least half of them. India recently concluded a deal worth USD 677 million with Russia for the manufacturing of the AK-203 rifles within the country. A joint venture company, the Indo-Russian Rifles Private Ltd at Korwa, Amethi, will produce six lakh rifles. The BrahMos missile system is another important example of India-Russia cooperation.

An analysis by the Institut Montaigne suggests that the Su-30 MKI fighters constitute 14 of the IAF's 30 squadrons. Around 70 per cent of the equipment of the IAF are of Russian origin. Among the Russian aircraft with the IAF are MiG-29UPG, MiG-21, IL-78 tankers, IL-76 aircraft that now carry Airborne Warning and Control Systems that India procured from Israel. Interestingly, the paper also says that 'while India has for decades attempted to develop a military industry of its own, Russia has assisted the country more than any other in this direction. For example, it has helped build factories to assemble licenced MiG-21 and MiG-23/27 fighters, as well as to repair T-72 tanks. Comparatively, Russia has been more open than the West to the transfer of technologies in the framework of joint ventures.'

The Indian Navy is also an operator of Russian platforms. The navy, according to Institut Montaigne, has 40 per cent of Russian equipment in its inventory, the lowest of the three armed forces. One of the major additions into the navy was INS Vikramaditya, which was bought in 2004 after Russia decommissioned it. The vessel was originally operated by the Soviet navy. In addition to that, major ships such as the Rajput-class destroyers, Talwar-class frigates, and Veer-class missile corvettes have also been of Russian origin. India's eight kilo-class submarines also come from Russia. In 2019 India signed a pact with Russia for Chakra-3 attack submarines. According to SIPRI, Russia has pending deliveries to India, which include air defence systems, frigates and a nuclear-powered submarine. Naval nuclear propulsion is also one key technology that India imports from Russia. Admiral Grigorovich-class guided-missile frigates are among the ones yet to be delivered.

In one of its reports FORCE had said the army awaits 464 Russian T-90MS main battle tanks (MBTs), an undisclosed number of 2S25 Sprut-SD light tanks and 12 Su-30MKIs—to be licence-built locally—besides several other items. Different data suggests that nearly 90 to 95 per cent of the army's 3,000 MBTs operated by around 67 armoured regiments were imported from Russia and licence-built in India. Russian T-72M1 and T-90S tank variants and the 2,000-odd infantry combat vehicles—the BMP 1& 2 — were similarly procured. The Konkurs Anti-Tank-Guided-Missiles (ATGM), Korent ATGM, OSA surface-to-air missile, Pechora surface-to-air missile, Strela surface-to-air missile and the Igla are Russian. So also are the Smerch and Grad multiple rocket launcher systems in use with the army. The R-77, R-37, the R-73 air-to-air

missiles, the Kh-59, Kh-35, the Kh-31 air-to-surface missiles, the KAB laser-guided bombs are operated from the Su-30 MKI.

The US Inroads

A report published by SIPRI in May 2022 stated that India had bought USD 4 billion worth of military equipment from the US and more than 25 billion worth from Russia in the past decade. The US is India's second largest arms exporter, and the three services use several platforms bought from the US. In a bid to gain advantage over Russia, especially after the conflict between Russia and Ukraine, the US has actively begun weaning India away from Russia by offering USD 500 million as military financing. If India accepts such aid, it would be following Egypt and Israel.

In October 2022, Rajnath Singh during a seminar by the US-India Business Council invited US defence companies to carry out joint R&D and manufacturing in India to create a global supply chain 'free from vulnerabilities and uncertainties.' India is leaning towards the West for arms procurements. According to data released by the Defence Security Cooperation Agency (DSCA), a part of the US Department of Defence (DoD), India's weapons procurement from the US jumped from a meagre USD 6.2 million to a whopping USD 3.4 billion in the final year of Donald Trump's administration. The 2020 edition of the Historical Sales Book records that India purchased weapons worth USD 754.4 million in 2017 and USD 282 million in 2018. Between 1950 and 2020, US sale of weapons to India under Foreign Military Sales (FMS) category was USD 12.8 billion. According to the SIPRI, Russia's share of the Indian market fell to 58 percent from 76 per cent in 2013-2018. In this period, the US held the second place as arms supplier to India.

In recent times India has bought platforms worth billions of dollars from the US. In December last year, the Indian Navy reinitiated the programme to buy six Boeing P8I Long Range Maritime Reconnaissance (LRMR) aircraft under a multi-billion-dollar government-to-government deal, which stalled after the expiry of the price offer on 31 July 2022, as reported by BusinessWorld. The Indian Navy operates 12 P8Is of which eight are based at the naval air base INS Rajali in Arakonam on the Eastern Seaboard and four at INS Hansa in Goa on the West. The navy also operates six MH-60 R multirole helicopters that were bought as a part of the Foreign Military Sales (FMS) government-to-government deal. The delivery of all 24 of these helicopters will be completed by 2025.

The IAF awarded USD 328.8 million contract to Lockheed Martin in 2021 to provide comprehensive support for the IAF's 12 C-130J Super Hercules. India first placed the order for six airlifters in 2008. These were delivered between 2010-2011. Additional ones were received in 2017 and 2019. India already operates about 15 Chinook helicopters procured from Boeing. The Hindu reported that India might buy 11 more Chinooks. The IAF operates 22 AH-64 E Apache helicopters while six are being procured by the army. There is a possibility that the army will buy more of these helicopters. Apart from Apaches and Chinooks, the IAF also operates C17 Globemasters. Three VVIP aircraft and two head of state aircraft are also in service in India.

Boeing is offering its F/A18 Super Hornet Block III for the Indian Navy. The company is also competing for the IAF's fighter jet race. Boeing has fielded the F15 EX and F/A-18 Super Hornet jets for the IAF's Multirole Fighter Aircraft (MRFA) programme. But the programme has been stuck for a long time. The F/A18 Super Hornet competed with the French Rafale-M for the Indian Navy's twin engine deck-based fighters. Rafale-M seems to have edged the Super Hornet

out and India will sign a deal with France in the coming months. Boeing has invested in the Boeing India Repair Development and Sustainment (BIRDS) programme in order to help develop India into a regional MRO hub.

In addition, India awaits the procurement of 30 MQ-9 Predator/Reaper drones from General Atomics, 10 each for the three services, all of which will cost the exchequer 3 billion USD. ISTAR (Intelligence, Surveillance, Target Acquisition and Reconnaissance), an aircraft that tracks mobile ground targets, maps natural disaster areas and monitors ships and activities near the borders and littoral regions, can be used with a fixed or mobile station to perform command and control operations. During his address on the 90th Air Force Day last October, Chief of Air Staff Air Chief Marshal V R Chaudhuri confirmed the force's intention to buy this aircraft.

European Market

India has a variety of weapon systems in its inventory, procured or jointly manufactured with different OEMs around the world. While France ranks number one on India's list of countries to procure defence platforms from among the European countries, several other countries and conglomerates are not far behind. The United Kingdom, for instance, according to a CNBC report, has pledged to help India build its advanced fighter jets. In a first for an Asian country, the UK said it would issue an open general export licence to India.

Recently, India's Garden Reach Shipbuilders and Engineers (GRSE) has partnered with Rolls Royce for building marine engines in India. GRSE and Rolls Royce Solutions will cooperate to manufacture under licence the technologically advanced MTU S4000 marine engines. The Kolkata-based GRSE signed a memorandum of understanding (MoU) with Rolls Royce Solutions of Germany to locally manufacture the latter's marine diesel engines. Rolls Royce has been a long-standing partner of India's. Several Indian military aircraft today are powered by the over 750 Rolls-Royce engines of 10 engine types, and are soaring the skies, including combat and strike aircraft, trainers, strategic airlift, VVIP and surveillance aircraft. According to a Financial Express report in October 2022, Rolls Royce is in talks with the DRDO to rev up AMCA engines. The report stated, "India is in talks with Rolls-Royce, French company Safran, which powers the Rafale fighter, and American company GE, which powers the Light Combat Aircraft Tejas, over a prospective agreement to manufacture a jet engine in India."

MBDA, a European missile systems manufacturer, is a key player in arming Indian forces. India's Rafale fighters are armed with the MBDA's Meteor beyond visual range air-to-air missile, MICA air combat missile and SCALP deep strike missile. MBDA is also cooperating with Bharat Dynamics Ltd for the final assembly, integration and testing (FAIT) of ASRAAM and Mistral missiles for the air force. The navy's Kalvari-class submarine is armed with the MBDA's SM39 Exocet submarine-launched anti-ship missiles. The Army used the MILAN anti-tank guided missile designed by MBDA and built in India. ASRAAM missiles will also add to the air force's power. MBDA will deliver the ASRAAM as the New Generation Close Combat Missile programme, to arm the IAF's upgraded Jaguar fleet and Tejas LCA M1A.

While India is looking inwards for defence manufacturing, the local industry has a long way to go because of its limited R&D and manufacturing capability. This means there will still be dependence on foreign OEMs. For the Indian industry to truly march on, the best ingredient is entering into joint ventures.

<https://forceindia.net/cover-story/roadblocks-to-aatmanirbharta/>

At Aero India, Focus on Safety & Tech Transfer

By Abhijit Bhattacharyya

With Aero India 2023, Asia's biggest air show, to be-gin at the Yelahanka Air Force Station in Bengaluru on February 13, a brief focus on flight safety in the Indian Air Force is necessary. A few major flight safety failures, resulting in fatal accidents, need to be revisited with all seriousness as each mishap is a tragedy and colossal loss to the nation: men, material and monetary.

March 2014 saw the crash of a brand-new Lockheed Hercules C-130J between Agra and Gwalior, killing all aboard. In July 2016, an AN-32 flying from Chennai to Port Blair fell into the Bay of Bengal, with no survivors. In June 2019, another AN-32 crashed in Arunachal Pradesh, killing all on board. In December 2021 a Mi-17V5 helicopter crashed in Coonoor on its way to Wellington, killing India's highest-ranked serving general along with his entire entourage. And now, on January 28, 2023, a mid-air collision of a Sukhoi-30 MKI and a Mirage-2000 killed one pilot and critically injured two others. Much more surely needs to be done on the safety aspects as global manufacturers and merchants of flying machines showcase products for sale and export to India at the Aero India show.

As flight safety reigns supreme in any aviation enterprise, one needs to tread with caution and care to examine the offers of traders and techies.

Thus, the profile of all combat aviation comes to the fore through the full spectrum of the US-made Boeing F-15 and F-18; Lockheed Martin F-16 and F-35 fighters and the B-1B Rockwell bomber.

Do we get a glimpse of the machines? The original manufactured General Dynamics (later Lockheed) F-16 multi-role fighter reportedly is being offered to India with full tech transfer for local production, use and export. Though this sounds good in theory, India may do better to avoid this single-engine fighter of 1972 vintage despite its 4,600-plus worldwide sales. It's too late in the day. Regarding the twin-engine Boeing F-15, there's little India can do because of the sheer high unit cost of the 1980s' craft being \$100 million-plus, as noted by Jane's All the World's Aircraft. That brings us to yet another two-engine F-18 naval version, which was offered to India. The point is: when India is on the cusp of making its own indigenous craft for the Navy's home-made aircraft-carrier, will it be prudent to abort the take off of a local make operating from the deck?

Lockheed Martin's latest, state-of-the-art US fighter, the F-35, however, faces rough times. Being supremely sophisticated, this single-engine craft costs between \$90 million and 125 million apiece. Its teething problems also appear endless. Apart from several mishaps in the recent past, what became extremely serious is the December 2022 crash-landing of an F-35 at Fort Worth, Texas, resulting in grounding of the entire fleet. The consequences of the crash turned dramatic because Pratt and Whitney too stopped delivery of the engines "until further information from the investigation is known and safety of flights can be ensured".

Ironically, earlier too, the F-35 faced turbulence just before its July 2014 Farnborough, UK, international debut. The proposed programme “had to be cancelled owing to a catastrophic engine failure at Eglin Air Force Base (US) on June 23, followed in early July by imposition of a fleet-wide grounding order”.

However, these mishaps haven't stopped the F-35 from being used and ordered, as Canada has just finalised an agreement to purchase 88 F-35 fighters for \$85 million apiece. Thus, the F-35 today is used by Japan, South Korea, Australia, Norway, Britain, Italy, Denmark, Netherlands, Canada and the US. For India, though, one sees no possibility of going for it even if it's offered owing to intrinsically complicated and complex technical, financial, operational, maintenance, logistics and spares in the South Asian ambience.

Another interesting Aero India entry is that of Rockwell International's B-1B Lancer strategic bomber, famously ordered by President Ronald Reagan in 1981. Though no longer on production line, this four-engine bomber has acquired a maritime role for “long range anti-ship missile” being worked out by the US Defence Advanced Research Project Agency, akin to India's DRDO. The US Air Force being its solitary user, can any of these old/used 64 operational aircraft fit India's requirement? No. That said, India's choices and options today aren't as wide as one might wish. Every air show is about trade and commerce. It's the conventional way to impress the host nation and other participants, nudging them to explore the possibility of acquiring ready-made craft off the shelf. For India, that is a constant challenge. To import the “best and the latest” or try to indigenise as much as possible?

True, no country (even the US, which has extensive aircraft design and development tie-ups with Communist China) today can claim 100 per cent self-sufficiency due to globalised outsourcing, yet for New Delhi, the reality is that the IAF has never had a US fighter in its inventory. It's always been a European product (British or French), Russian or the multi-national SEPECAT Jaguar.

Therefore, simply put, India must today demand technology transfer and not import of ready-made machines. The latest technology is required for fighter engines, landing gear, systems, avionics and controls. The interfacing of tech with the fuselage must be done by India, in India. Any agreement or contract must be on manufacture of the systems which are absolutely essential for making an Indian enterprise state of the art. Anyone who comes here must be told in clear terms that this is non-negotiable. Else, India will continue to remain import-dependent.

Contextually, a bizarre situation of 1986 still rankles in the mind. Media reports suggested that the US was persuading India to import the Northrop Corporation's new F-20 Tiger-shark fighter through “Foreign Military Sales”. Those were the days of archaic info systems, so little was known. Fortunately, someone in the Indian government alerted a bright IFS officer in the PMO that the F-20 was a failed machine as two of three prototypes had crashed — first in South Korea and then in Paris. Even the US Air Force had not gone for it, and had in fact severely criticised both the machine and its maker.

Times, however, have changed. Nonetheless, the propensity to jump for the glittering fighters and reluctance to look beyond the shining brochure and handbook produced for an air show must be avoided. Aviation is a multi-billion-dollar business, and every life matters. Flight safety must come first. The recent crash of a civil aircraft in Nepal and the loss of two IAF fighters on the same day in Gwalior should not be forgotten and any bid to make a deal or contract in a hurry must be avoided.

The writer is a life member of the Aeronautical Society of India and an alumnus of the National Defence College. He is also an advocate practising in the Supreme Court.

<https://www.deccanchronicle.com/opinion/columnists/070223/abhijit-bhattacharyya-at-aero-india-focus-on-safety-tech-transfer.html>



Tue, 07 Feb 2023

IAF Looking for New Transport Aircraft – Is Embraer’s C-390 Millennium Coming?

By Huma Siddiqui

Ahead of the Aero-India 2023, the Indian Air Force (IAF) has initiated the process for acquiring a medium transport aircraft (MTA) which has the capability of lifting 18-30 tonnes.

In December the IAF issued a Request for Information (RFI) for MTA, which is expected to replace the existing AN-32 transport aircraft which are in service. And the bid submission date has been extended from Feb 3, 2023 to March 31, 2023.

Which are the other transport aircraft in the IAF Fleet?

Besides the AN-32 and Avro fleet that IAF flies, there are 12 C-130J Super Hercules from Lockheed Martin and 11 C-17 Globemaster strategic airlift aircraft from the US. Also there is Russian IL-76 heavy transport and mid-air refueling tanker IL-78.

What does the RFI specify?

According to the RFI, within 36 months of signing the contract the deliveries are expected to start. The vendors according to the RFI are expected to share details about the overall time frame of production; delivery schedule with stage wise breakup of the entire project is expected to be submitted post conclusion of contract.

For a batch of 40 aircraft/60 aircraft/80 aircraft, respectively, the RFI wants the vendors to submit Rough Order of Magnitude (ROM) which includes the cost of aircraft and associated equipment among others.

Will the Embraer’s C 390 of Brazil fit the bill?

As the Indian Air Force (IAF) eyes for a new transport aircraft, Brazilian aerospace manufacturing giant Embraer is likely to offer its C390 Millennium aircraft. The aerospace major Embraer is expected to participate in the Aero-india 2023 next week. Will the C390 Millennium be present is something which is not clear. There is no confirmation from Embraer if the C390 will be showcased during the show.

Financial Express Online had reported in June 2022 that the company officials have indicated that this transport aircraft has been offered to the IAF. The C390 has been ordered by several

countries including the Netherlands in a competition against Lockheed Martin's C130-H Super Hercules.

The Brazilian Air Force is flying this aircraft which is a twin-engine, medium-size, jet-powered military transport aircraft from 2019.

It has a load capacity of 26 tonnes (57,000 lb) and has the capability of performing different operational roles which include aerial refueling, transporting VIPs to cargo, and also carrying out more challenging logistical operations including aerial refueling. This aircraft is the heaviest to be manufactured by the aerospace giant of Brazil – Embraer. And can be operated with a three person flight crew — two pilots and a loadmaster. It has the capacity to carry 80 troops, or a combination 74 stretchers and eight attendants or 66 paratroopers.

Is Embraer in Talks with the IAF?

In an earlier conversation with Financial Express Online, Jackson Schneider, President & CEO, Embraer Defense & Security had said that the company is open to work with an Indian partner and would deliver the best solution to India by integrating locally manufactured components, capabilities and capacities. And after fulfilling India's orders it would be exported too with Indian parts on board, he had stated in 2022.

In the new competition Lockheed Martin is expected to be a tough competitor to the Brazilian Embraer's C390.

Mid-air refueller

Since the IAF is also looking to either lease to buy mid-air refuellers, these aircraft can be used in that role too. To meet its urgent requirement talks had been going on with Airbus for leasing A 330 multi-role tanker transport (MRTT) and Boeing's KC-46 tanker which is a derivative of Boeing 767 passenger aircraft.

<https://www.financialexpress.com/defence/iaf-looking-for-new-transport-aircraft-is-embraers-c-390-millennium-coming/2974348>



Wed, 08 Feb 2023

Invest in Defence Modernization

By Ashok K Mehta

The only surprise in the defence budget was no surprise: static, in real terms, a negative budget for modernization- the litmus test of capability enhancement for maintaining deterrence in order to meet the two-and-a-half threat challenge plus government articulated missions of retaking PoK and Aksai Chin. Much of the capital is consumed by committed liabilities – payment for equipment already ordered and in the pipeline. Overconfidence in a strong government and leader, the chimera of G20 grandeur, and 'it is not an era of war' but 'Amrit Kaal has ruled out conflict with China and Pakistan. Northern Army Commander, Lt Gen Dwivedi earlier and former Army Chief, Gen Naravane, only last month, revived illusions of 'we are in a position of

strength' in Ladakh. In the last nine years, the ruling government has invested more in lip servicing and symbolism than in closing the capability gap with China as defence budgets have hovered between 1.5 and 1.6 percent of GDP. Former Defence Minister Arun Jaitley would admit: "we have no money, we can't put cess on defence". So the government has renamed anonymous islands after PVC winners, built giant statues, installed tall flags, and embellished Jai Jawan Jai Kisan Jai Vigyan with Jai Anusandhan.

In the current fiscal defence has dropped to 1.4 percent of GDP and for the first time in decades, dipped below 2 percent of GDP if the pension bill is included. The capital acquisition increased from Rs 12,000 crore to Rs 1.6 lakh crore just an 8 percent increase well below inflation and the falling rupee. As there is no National Defence Strategy and a Policy, Plans, and Budgeting System to evaluate inter se capabilities, allocation is erratic and prioritized by CDS. IAF chief Air Chief Marshal VR Chaudhuri has thrice publicly mentioned the dangers of combat squadron strength dwindling to 28/30 squadrons against the authorized 45 squadrons. PM Modi acquired 38 Rafales against 126 MRCA urgently sought by IAF. Its requirement of 114 MRCA has been languishing for years: Acceptance of Necessity (AoN) is still not fructified i.e. forget it.

Similarly, the Navy, whose missions have multiplied – from the Gulf of Aden to the Indo-Pacific – is woefully deficient in submarines, and the indigenous aircraft carrier Vikrant is minus aircraft and other subsystems. At this pace of modernization, the third aircraft carrier is a mirage. Manpower-intensive Army needs a new tank, a light tank, and a new gun. The increased capital segment of the revenue budget is to make up for deficiencies in ammunition and equipment to fight a 30-day war not 10 days of intense conflict. Neither the hand-picked service chiefs bar Chaudhuri, nor the deeply-selected CDS Gen Anil Chouhan, has pointed to shortfalls in the modernization budget. They are unlikely to do so in the prevailing environment when discretion has become a better part of valour. Young officers have proven the backbone as an ADC of President Murmu gently ticked off Modi when he tried to step ahead of her during the Republic Day parade.

Two instances need recall. Former Army Chief, Gen Shankar Roy Choudhury warned the government that Army will not be responsible for any operational mishap due to inadequate funding and former CNS Adm Vijay Shekhawat declared at a press briefing that naval shipyards not receiving ship orders will have a negative effect on naval capabilities. The next day Defence Minister Mulayam Singh Yadav invited Shekhawat to breakfast. It is inconceivable that the highly nationalistic government that has excelled in capex – infrastructure hikes and doubled railway budget – has kept the sword arm insufficiently sharpened.

The government took huge operational risks by keeping the Army alone deficient of 300,000 soldiers: no recruitment was done for the last three years due to Covid. While the annual demobilization of 65,000 soldiers continued, no salaries had to be paid for the void in recruitment. Only now will 46,000 Agniveers be recruited on a low salary and no pension. It's OROP whose cost equaled modernization allocation but has reduced to Rs 1.3 lakh crore that is hurting. OROP arrears worth Rs 23000 crores are due by 31 March. Modi must rue his 2014 BJP election manifesto in signing up for OROP. This is indeed an era of war. As Russia's invasion of Ukraine enters its second year, India has to review its relations with Russia which has China, a no-limit strategic partnership. India is still dependent on Russian military hardware, technology, and spares. Serge Chemezov, CEO of Russia military industrial Rostek was in India last month for payment of dues on account of Russian oil and S400 AD systems. The Americans are making determined efforts including the use of sanctions and diplomatic pressure to wean India away

from Russian equipment. All European countries are increasing defence budgets to meet twin Russia-China challenges. The UK, France, and even Germany have reached 2 percent of GDP spending levels. Japan has erased the one percent GDP embargo and will spend USD332bn over the next five years. In Asia Pacific, South Korea, and the Philippines are increasing defence capabilities by 8 and 5 percent respectively. Despite active LAC and LoC and a sensitive internal environment, the Modi-Shah government is happy to let China march ahead with a defence budget thrice India's size. There is an urgent need for recapitalization of defence to deter China.

<https://www.dailypioneer.com/2023/columnists/invest-in-defence-modernisation.html>



Wed, 08 Feb 2023

A Perspective on the Defence Budget

By Lt Gen P R Shankar

It is my firm belief that the Indian Armed Forces are ready and strong enough to guard the territorial integrity and sovereignty of the nation. However, the question is – are the Indian Armed Forces ready to anchor India's rise as a global power? The answer is very clearly not yet. The difference between the two states is technology or lack of it. The day our Armed Forces are enabled with the military technologies of this century, we will be one of the great powers on this earth.

Any commentary on the defence budget for the year 2023-24 must be based on this matrix. Very clearly, the increase in the overall outlay of the defense budget and consequentially, the increases in the outlays to the various sub heads fully meets the objective of being able to guard the territorial integrity and sovereignty of the nation. No questions on that. Full marks to the government on this score. However, the critical question is – does the defense budget meet the aspirations of a rising India to be a global power. In my opinion it falls woefully short. It falls short, not due to the absence of adequate outlay or allocation for defense but in its lack of vision and silence of informed thought.

There is no doubt that India is a rising power. I have written about that extensively in two of my articles – Geo-economics of India's rise and India – The Emerging Third Pole. I am convinced that India has attained a critical 'unstoppable' mass. When our prime minister talks of India being a 'Vishwaguru', I am proud that he can do so since the people of India empower him to do so. India's rise is currently anchored by its rise in its geo-economics, diplomacy, productivity, and most other elements which make up its power structure. If there is one element which weighs down India in its rise at present, it is its defense sector and armed forces. Let me explain further. In the last century, the USA was producing military aircraft by the hour, tanks by the day and warships by the week or even less to beat the Germans and Japanese.

Our current defense budget caters for the Indian Armed Forces to acquire weapon systems like tanks, guns, aircraft, and ships which were the essentials of the last century. It does not even start to cater for acquisition of the military technologies of this century with which our potential adversaries are equipping themselves with. These technologies provide the force multiplication

needed to cross a threshold value of power. Without such an empowered force matrix, India will not be able to project power or carry out defense diplomacy to back its aspirational role in global affairs. These technologies are the 'differentials' between being a 'power of reckoning' or not. We are staring at a bottom line where our valiant soldiers are facing technologically advanced adversaries on an uneven playing field.

It is very heartening that the CAPEX, across the board, has been increased from 2.7–3.3% of the GDP in the budget. Some analysts point out that eventually this ratio is likely to shoot up to 4.5% within the year. It will do immensely good to the gross national power of India. However, the current defense outlay is barely 2% of the GDP. If the economy grows as envisaged, even within this year, the defense expenditure as a percentage of the GDP is likely to dip further! Moreover, the defense allocation as a percentage of the total budget outlay has also decreased! We have a situation where our national investment and growth is in one direction and the defense outlays in another! It raises a major question. Are the defense forces part of the nation or apart from them? From a very fundamental and conceptual point of view, national growth must spur growth of its defense and vice versa. The nation and its defense forces must grow together. There must be a 'seep through' effect from one to the other. That must shine through the national budget, which is the traditional Indian instrument of policy and governance. Very evidently, this thought process seems to be missing, unless I am missing a point. I would like to be educated (with logic and reason and not dogma which seems to be free flowing these days).

There is no doubt in anyone's mind that 'defense' is a driver of any nation's economy. Scientific innovations and technological breakthroughs spurred by defense requirements contribute immensely to the development cycle of nations. Hence there must be an umbilical connection between civil and military sectors. These days, this connection goes by the neo modern Chinese term 'Civil Military Fusion'. Civil Military Fusion has propelled nations to greatness whether it is erstwhile Imperialist nations like Japan or Great Britain and in current times USA, Russia, and more recently China. The current defense budget has no vestige of Civil Military fusion whatsoever. In fact, the opposite seems to be the case. Let me highlight it further. Very importantly, if military technologies of this century are not injected into the Armed Forces, we will remain short on our aspirations. Critically, most of these technologies are dual purpose in nature and have the great quality of being able to 'double drive' the national economy as also meet defense requirements. While many other policy issues were announced on the floor of the Parliament during the budget speech, the issue of leveraging and exploiting dual use technologies was conspicuous by its very absence. Further, two defense corridors were launched with great fanfare some time back. There was a lot of 'to and fro' on these corridors. They were to be the 'double engines' of national growth. Once the initial heat and dust of these corridors has settled down, it is emerging that they are merely languishing. In the case of the Southern Defense corridor, the languishment is palpable.

It seems 'Defense' has once again become the 'holy cow' it was not meant to be. The budget speech gave a complete miss (even to the mere mention) of the defense budget /outlay. In fact, the word 'defense' did not even appear in all the ticker tapes of TV channels broadcasting the budget live. Am I missing a trick? It has become a practice in the recent past not to even outline the basic proposals related to defense on the floor of the house during the budget presentations. The policy thrust for development of India's Defense and security is beset by increasing opacity and lack of debate on this critical aspect of national importance. It does not make a vibrant democracy proud. The lack of providing an opportunity for debate by the ruling class and the

lack of insistence on debate by the opposition class on defence related issues indicates either political ignorance or indifference. Both are deeply disturbing and detrimental to national interests.

After the declassification of the budget, the public discourse in the Armed Forces fraternity indicates that this pill is being accepted as one which must be swallowed in mute resignation. In fact, some analysts have eulogized the budget for the minor mercies showered on its defense establishment for the fear of even that being denied. The intellectual and perceptual gaps in the politico-military hierarchy could not have been starker. The lack of unitary politico military thought could cost the nation dearly. The fact that it is costing Russia dearly, after being involved in a sapping conflict for nearly a year, should give us a clear indication of the danger of leaving the military out of the 'loop' and using armchair defense experts and bureaucrats in their place. After all, wise people learn from other's mistakes. Are we destined to be fools forever?

One might say that I have gone over the top. Allow me to elucidate further with some examples. Increasing defense exports, to offset defense expenditure is a stated policy of the government. Yet there is no organized road map or structure to realize laid down goals. In the absence of such a plan, backed by an organization, an important stream of revenue is completely missing in the national budget. What is more distressing is that the opportunity for defense exports is now. There is a Russia sized hole in the international defense market. Who is filling it? Predictably China! What are we doing? Twiddling thumbs – even though we can produce or service Russian equipment the most. Further, one expects the national budget to lay the tone for incentivizing defense innovation and enhancing defense atmanirbharta. That was clearly missing in the budget presentation. It was also announced with some fanfare (some time back) that defense research will go beyond the brick wall of DRDO to spur academia and private research. The public silence on this is deafening to say the least. It appears that a well-coordinated hijack has taken place to ensure that the DRDO bastion is not breached. It is understandable that defense expenditure is a white elephant proposition. It will remain so until the vibrancy of market financing mechanisms (including venture capitalism) and the potential of startups are not tapped. Till new ideas are floated and some elementary risk is taken, the anemic IDEX will remain the weak harbinger of startups in defense. Something more robust and meaningful is needed at national level. By the time a startup goes through the hoops of the myriad procedures, it is time for a 'shutdown'. Many of these issues will find their right feet if we can embark on some degree of sensible civil-military fusion. However, our discourse on civil military fusion is limited in concept to fast tracking defense acquisition. All this is aided and abetted by a bureaucracy completely at odds with reality. The budget is just a reflection of the ills that plague the defense establishment.

Last but not the least, I would like to make another point. Even if the finance minister did make some additional allotment to financially meet our defense necessities, I am confident that the entire staff of the MOD finance will not be able to advise or guide the MOD and Services on how to spend it effectively. In fact, very often they do the opposite due to a misplaced sense of probity, morality and vision of what's good for the nation. Simply put, India lacks the structure to modernize its military. In effect, India will lack the ability to rise as a great power despite having the potential of being able to do so.

My remarks on the defense budget are not a punt on the finance ministry alone. Much of this responsibility lies with the men in uniform also. The military leaders in Delhi must leave the fighting to the front-line troops and start looking over the horizon to prepare the armed forces

and the nation for the future. They bear the responsibility of putting across the bottom lines to the political hierarchy, without fear or favor, instead of parroting what is politically correct (ostensibly). It is time that the leadership – military and political sit down together and hammer things out. Our growth and role as a power of consequence and our attempts to achieve strategic independence is predicated on how the defense establishment grows. The defense budget is only a reflection of the problems within.

I do understand that not many will heed this bleat. However, it is time to heed the clarion call of the salami slicer who has recovered from Covid. One can prevent one Yangtze. How can we prevent more which are coming our way relentlessly if we are not prepared?

<https://www.financialexpress.com/defence/a-perspective-on-the-defense-budget/2974379>

नवभारत टाइम्स

Wed, 08 Feb 2023

स्वदेशी विक्रांत पर फाइटर्स की लैंडिंग तो बस शुरुआत

भारत में विकसित लाइट कॉम्बैट एयरक्राफ्ट (एलसीए-नेवी) विमानवाहक पोत आईएनएस विक्रांत पर उतरा। भारत की आत्मनिर्भरता के लिए यह एक ऐतिहासिक उपलब्धि है। एलसीए को आईएनएस विक्रांत पर उतारे जाने से स्वदेशी लड़ाकू विमान के साथ स्वदेशी विमानवाहक पोत डिजाइन, विकसित और निर्मित किये जाने की भारत की क्षमता को दुनिया देखा है। मेक इन इंडिया की दिशा में यह एक मील का पत्थर है जिसको दुनिया ने देखा। इससे पहले INS विक्रांत भारत के डिफेंस सेक्टर को आत्मनिर्भर बनाने की कोशिश में बड़ा कदम था। भारत ने उस दिशा में कदम बढ़ा दिए हैं साथ ही उन देशों की सूची में शामिल हो गया कि वह अपनी तकनीक से बड़े जहाज बना सकता है और ऐसे कारनामे कर सकता है। आने वाले वक्त में DRDO की मदद से होगा और भी कमाल

भारतीय सेना की ताकत बढ़ी है। एयरक्राफ्ट कैरियर नेवी के लिए बेहद जरूरी है। जमीन पर दुश्मन के हमलों को बचाने के लिए एयरफोर्स की ओर से मोर्चा संभाला जाता है वहीं समुद्र में यह काम नेवी का हो जाता है। ऐसे में जरूरी है कि समुद्र के बीच वह लड़ाकू विमानों को उड़ा सके। एयरक्राफ्ट कैरियर से नेवी की वह क्षमता बढ़ती है। दुश्मन का कोई लड़ाकू विमान हवा से हमला करने की फि राक में हो तो जरूरी है कि उसका जवाब कई तरीकों से दिया जाए। एयरक्राफ्ट कैरियर नेवी को वह क्षमता प्रदान करता है कि वह बिना किसी रुकावट के इसे ऑपरेट कर सके। शुरू में आईएनएस विक्रांत से मिग -29K ऑपरेट होंगे। DRDO नेवी के लिए डबल इंजन का फाइटर जेट बना रहा है, उसका पहला प्रोटोटाइप कुछ ही साल में तैयार हो जाने की उम्मीद है। ये फिर मिग-29K फाइटर एयरक्राफ्ट को रिप्लेस करेंगे।

यह तो बस शुरुआत है... इस लिस्ट में शामिल हुआ भारत

चीन और पाकिस्तान से टक्कर के लिए भारत ने अपने दूसरे एयरक्राफ्ट कैरियर आईएनएस विक्रांत को पिछले साल नौसेना में शामिल किया। स्वदेशी विमानवाहक पोत आईएनएस विक्रांत को नौसेना में शामिल करने के बाद भारत ने अपने दूसरे विमानवाहक पोत पर काम शुरू कर दिया है। आईएनएस विक्रांत को नौसेना में शामिल कर भारत दुनिया का सातवां देश बन गया जिसके पास विमानवाहक पोत निर्माण की क्षमता है। यह कोई आसान काम नहीं था। 2022 में आईएनएस विक्रांत जैसे विशाल विमानवाहक पोत का निर्माण किया। कुछ साल पहले तक कोई विश्वास नहीं कर सकता था कि भारत ऐसे काम करने में भी

सक्षम है। अमेरिका, ब्रिटेन, फ्रांस, जर्मनी, चीन और जापान के बाद भारत सा तवां देश है जो विमानवाहक पोत का निर्माण कर सकता है।

चीन की हर चाल पर नजर, भारत ने बढ़ाए कदम

हिंद महासागर में चीन लगातार अपनी ताकत बढ़ा रहा है और इस दिशा में वह लगातार बढ़ रहा है। चीन के साथ तनाव के बीच भारत को भी इस दिशा में काम करने की जरूर थी। भारत ने भी इस दिशा में तेजी से कदम बढ़ाए हैं। भारत यह देख रहा है कि चीन कैसे दूसरे देशों को कर्ज के जाल में फंसाकर वहां के बंदरगाहों पर कब्जा कर रहा है। एक रिपोर्ट के मुताबिक दुनिया दस सबसे व्यस्त बंदरगाहों में से 7 पर चीन का कब्जा है। एक वक्त हिंद महासागर पर भारत का दबदबा था लेकिन यह बात 13 वीं सदी की है। आज दुनियाभर में 80 फीसदी के करीब तेल हिंद महासागर के रास्तों से ही गुजरकर पहुंचता है। चीन के साथ चुनौती के बीच पावर बैलेंस के लिए भारत को भी इस दिशा में तेजी से कदम बढ़ाने की जरूरत थी और भारत ने उस दिशा में अपने कदम बढ़ा दिए हैं।

<https://navbharattimes.indiatimes.com/india/india-power-ins-vikrant-defence-sector-make-in-india-self-reliant/articleshow/97704801.cms>

The Tribune

Wed, 08 Feb 2023

Will Give apt Response to Any Aggression along LAC: Army

The Army on Tuesday said it was ready to give a befitting response to any Chinese aggression in Ladakh, maintaining that the integrity of the country was being ensured through physical patrolling and technical means. Addressing the Northern Command Investiture Ceremony here, Lt General Upendra Dwivedi, General Officer Commanding-in-Chief, also said the ongoing Russia-Ukraine war had brought forth many lessons, such as employment of disruptive and dual use technologies. “On the LAC, our response to Chinese attempts to unilaterally change the status quo was a swift, undaunted and synergised action. Any adverse aggressive designs or attempts will definitely be met with appropriate posturing of forces and a strong intent with complete synergy among the three services,” he said.

Meanwhile, the Army units involved in the Galwan clashes in Eastern Ladakh with the Chinese troops dominated the commendation and appreciation certificates handed out at the investiture ceremony, which was held in Kashmir for the first time since Independence.

Of the four Chief of the Army Staff appreciation certificates, three were awarded to units involved in Operation Snow Leopard, undertaken in the Ladakh sector after the Galwan clashes in June 2020.

Of the 49 GoC-in-C’s commendation certificates, 18 were given to units deployed in Ladakh while they also bagged nearly half of the 24 appreciation certificates.

The 6 Bihar unit was awarded the commendation certificate for its “unprecedented contribution” in pushing back the enemy in the Galwan Valley while 22 J&K Rifles got the certificate for foiling Chinese incursion in a hand-to-hand combat in Chushul sector.

He also said Kashmir had witnessed a concerning rise in narco-terrorism as Pakistan had been using this as a new tool in its proxy war in J&K. “The neighbouring country is sending drugs and weapons through drones in an attempt to disrupt the social fabric here. Security forces are alive to this trend and have already initiated counter-drone measures to curb the menace,” he said.

Lt Gen Dwivedi said the situation along the Line of Control had remained stable and the ceasefire understanding with Pakistan continued to sustain. — PTI

Honour for units involved in Galwan clashes

- Three Chief of the Army Staff appreciation certificates given to units involved in Operation Snow Leopard after Galwan clashes.
- 18 GoC-in-C’s commendation certificates given to Ladakh units. They also got nearly half of the 24 appreciation certificates.

<https://www.tribuneindia.com/news/j-k/will-give-apt-response-to-any-aggression-along-lac-army-477586>



Wed, 08 Feb 2023

Indian Forces Seek Armed Predator Drones from US

The Indian armed forces are seeking 18 armed Predator MQ 9A drones from the US, and electronic and spatial intelligence organisation NTRO will soon acquire eight Indian-manufactured medium altitude long endurance (MALE) drones for border surveillance and reconnaissance, according to people aware of the matter.

While Indian Navy already has two General Atomics-manufactured Sea Guardian (MQ 9B) drones for maritime domain awareness on lease from the US, the acquisition of 18 armed drones on a government-to-government basis -- with each of the three services getting six drones -- will be put up before the Modi government at the Combined Commanders Conference at Karwar Naval Base in April, the people said. The conference, which will be addressed by Prime Minister Narendra Modi, was shifted from March to April due to logistical requirements.

Though the navy, which is the leading service in armed drone acquisition and deployment, earlier projected the requirement of 30 drones at cost of \$3 billion, the number was pruned to 18 after operational analysis, mission requirements, and force projection due diligence by the Chiefs of Staff Committee (COSC).

Incidentally, the Indian Embassy in Washington hosted Neal Blue, chairman, General Atomics, and Dr Vivek Lall, CEO, General Atomics, among other top CEOs at a dinner in honour of US Secretary of Commerce Gina Raimondo and National Security Adviser Jake Sullivan during NSA Ajit Doval’s visit to the US on February 3-4. It was during this visit that the White House announced a path-breaking high-technology partnership with India.

While India has acquired the capability to build MALE reconnaissance and surveillance drones with the help of Israel in a joint venture in Gujarat, the Indian military needs armed drones since both China and Pakistan have the Wing Loong II armed drones in their arsenals. Also, the lease for the two Sea Guardian drones runs out early next year but will likely be extended given its high-definition imagery, long endurance, and other surveillance capabilities. The Indian Navy also used the Sea Guardian drones and the Boeing P 8 I multi-mission aircraft to scan the entire 3,044km Line of Actual Control with China to understand the military preparations made by the PLA. This has given the Indian military a clear idea of the Chinese army's plans and capabilities.

Though some national security planners feel the Predator-armed drone is prohibitively expensive, and find US-made manned Boeing P 8 I aircraft sufficient for the job, the Indian military wants a mix of both armed and surveillance drones for country-specific missions. The Predator armed drone can fly up to 50,000 feet for up to 24 hours, and carries an option of Hellfire air-to-ground missiles for high-value targets or air-to-air missiles to bring down aerial enemy targets.

<https://www.hindustantimes.com/india-news/indian-forces-seek-armed-predator-drones-from-us-101675796452001-amp.html>



Wed, 08 Feb 2023

China Declined U.S. Request for Call between Defence Chiefs after Balloon Shootdown

China declined a request for a phone call between U.S. Defense Secretary Lloyd Austin and Chinese Defense Minister Wei Fenghe after Washington brought down a Chinese spy balloon, a Pentagon spokesperson said on Tuesday.

A U.S. Air Force fighter jet shot down the balloon off the South Carolina coast on Saturday, a week after it first entered U.S. airspace and triggered a dramatic—and public—spying saga that worsened China-U.S. relations.

The Pentagon submitted the request for a secure call on Saturday after the balloon came down, Brigadier General Pat Ryder said in a statement.

"Unfortunately, the PRC (China) has declined our request. Our commitment to open lines of communication will continue," Mr. Ryder said.

The balloon caused a political uproar in Washington and prompted the top U.S. diplomat, Antony Blinken, to cancel a Sunday-Monday trip to Beijing that both countries had hoped would steady their rocky relations.

China has said it was a weather balloon that had blown off course into U.S. airspace and accused the United States of overreacting.

The White House has downplayed any drastic effect the incident would have on U.S.-China relations. Mr. Biden himself said on Monday that the issue had not weakened relations.

When Mr. Austin met Mr. Wei in November in Cambodia, he emphasized the need to improve crisis communications.

No U.S. Defense Secretary since Jim Mattis in 2018 has visited China.

Despite tensions between the United States and China, U.S. military officials have long sought to maintain open lines of communication with their Chinese counterparts to mitigate the risk of potential flare-ups or deal with any accidents.

But China has turned down Mr. Austin's requests to talk in the past, before they eventually met for the first time in June 2022.

Relations between China and the United States have been tense, with friction between the world's two largest economies over everything from Taiwan and China's human rights record to its military activity in the South China Sea.

<https://www.thehindu.com/news/international/china-declined-us-request-for-call-between-defence-chiefs-after-balloon-shutdown/article66483318.ece/amp/>



Tue, 07 Feb 2023

Readying to Welcome SU-35 Fighters, Iran Unveils Underground Air Force Base 'Eagle 44' to House UAVs, Warplanes

By Sakshi Tiwari

The Iranian Air Force unveiled an underground tactical military base named 'Eagle 44' amid rising military threats from its adversaries that became more evident after the recent drone strikes. On February 7, Iran unveiled "Eagle 44," a first-of-its-kind underground air force installation big enough to accommodate fighter jets, Iran's official IRNA news agency reported.

The airbase was visited by the Chief of Staff of the Iranian Armed Forces, Major General Mohammad Hossein Baqeri, and Iran's Army Commander, Major General Abdolrahim Mousavi.

The tactical airbase has been designed to accommodate and prepare various aircraft for missions, including fighter jets, bombers, and unmanned aerial vehicles. The location of the base was not covered in detail in the report.

The broadcast report especially highlighted that the base is buried in the mountains to shield it from ordnance dropped by US strategic bombers that can breach defences.

This Iranian underground complex includes an alert area, command post, warplane hangars, repair and maintenance center, navigation and airport equipment, and fuel tanks. Moreover, the media report stated that the sizable underground airbase could also receive and prepare for missions for the Air Force's new fighter jets.

This revelation may be noteworthy as Iran is slated to receive two dozen Su-35 fighter jets from its ally Russia in the coming months.

This will mark the biggest modernization for Iran's Air Force in decades as the service still operates a fleet of archaic F-4 Phantom II, F-14 Tomcat, and F-5E/F Tiger II planes from the Cold War era besides a few MiG -29 aircraft.

Earlier, the IRNA news agency had said that the Russia-made fighter jets would be housed at Tactical Air Base (TAB) 8 of the Islamic Republic of Iran Air Force (IRIAF).

The base is situated in the city of Isfahan. However, with the new announcement, it may be worth wondering if Iran would station some of these fighters in this new underground facility with enhanced security.

Oghab-44 is one of the several Air Force tactical underground bases built recently throughout Iran, considering the operational needs of the Air Force units and civil defense needs.

These bases, built by requirements and with a high level of safety, are situated beneath mountainous regions so that they can be used for surprise aerial operations in places where the opponents would not expect them, said the Iranian report.

The Iranian military also unveiled a long-range airborne missile 'Asif' on the sidelines of the inauguration of the underground air base. The missile will reportedly be installed on Su-24 fighters.

The underground facilities house the fighter aircraft in secure areas and outfit them with electronic warfare equipment, a variety of bombs, and missiles, which enable aerial standoff operations and increase the strategic range of attacks against distant targets.

Iran Is Ramping Up Security With Underground Bases

The Iranian Air Force had already revealed an underground drone base known as "Drone Base 313" in the summer of 2022. Iranian state television (IRIB) said at the time that this secret military base is concealed somewhere in the Zagros mountain range, which runs along the nation's Persian Gulf coast. "More than 100 combat, reconnaissance, and attack drones belonging to the army are kept for operations in this base located in the heart of the Zagros mountains," the report said.

At Drone Base 313 , two new weapons were also unveiled. The first of these weapons was the Heidar-1 cruise missile, carried by the drones Keman-22 and Fotros. This underground facility was reportedly built to house the large Iranian unmanned aerial vehicles (UAV) fleet.

Recent developments show that the Air Force has elaborate plans to build underground bases around Iran. This becomes even more significant as Iran runs a high risk of being struck by enemies in the region, evidenced by the recent drone strike that hit a military factory in the central city of Isfahan.

"Any attack on Iran from our enemies, including Israel, will see a response from our many air force bases, including Eagle 44," Iran's armed forces Chief of Staff Mohammad Bagheri told state TV.

After an anti-aircraft fire hit the drones, an explosion was captured on camera, probably the result of one of the drones landing on the roof of the building. The Iranian military asserts that it shot down two more drones before they arrived at the target area.

Iran has taken an extreme exception to the incident, accusing Israel of conducting the drone strike and pledging revenge. It is pertinent to note that even though Tel Aviv has not claimed the drone strike on Isfahan, its politicians, lawmakers, and military officials have warned that the Israel Air Force could bomb Iranian military facilities. Some reports suggest that the country has worked out the details of potential attacks.

The unveiling of this new Iranian underground air base comes just days after the US and Israel conducted their largest-ever joint exercise with the participation of thousands of troops, dozens of aircraft, naval ships, and artillery systems. The exercise was widely interpreted as a message to Iran amid escalating tensions.

As the threat continues to mount from the West and regional adversaries, Iran is expected to build more such military facilities underground.

<https://eurasianimes.com/readying-to-welcome-su-35-fighters-iran-unveils-underground/>



Wed, 08 Feb 2023

‘Invisible Fighters’: Russia is Developing Camouflage Units to Make its Soldiers Undetectable to Thermal Imagers

By Ashish Dangwal

Russia is reportedly working on a camouflage kit that will make its fighters invisible to thermal imagers and, by changing its color, will enable them to blend in with the terrain. In an interview with RIA Novosti, Vladimir Kormushin, general director of CJSC Cuirass, the company that created the chameleon-like camouflage, disclosed the details of the kit. CJSC Cuirass is one of the top domestic developers and producers of personal armor protection and individual fighting gear for the Russian Ministry of Defense, Federal Security Service, and other law enforcement agencies.

“We strive to provide fighters with camouflage that could make them invisible to the enemy. Today we are tasked with sheltering military personnel in various wavelength ranges, including thermal imaging. This can be achieved thanks to the emergence of new special materials,” he said.

He noted that “invisibility” is obtained using unique fabrics with special dyes.

He added that the ideal gear should make the fighter invisible against shifting external backgrounds.

However, the corporation didn’t offer a timeframe by which the technology would become a reality. Although it may sound like some enigmatic technology straight out of a science fiction film, the Russian inventor is confident that it will impact future battlefields.

Technology Crucial For Future Russian Soldiers

Besides that, the equipment for the future soldier, “Legionnaire,” which is expected to appear in the middle of the 2030s, can also be developed using innovation in this domain.

Kormushin predicts that a prototype Legionnaire might debut as early as 2025 and that mass production of the troops’ equipment will begin in 2035.

Developing the combat protective kit (BPC), winter camouflage, and goggles is another area in which the firm is actively involved.

The EurAsian Times reported that future Russian combat troops might be outfitted in a real-life armored suit.

To equip future Russian soldiers, the armor suit is being created as part of Russia’s ambitious “Project Legionnaire.” The corporation previously asserted that the Iron Man suit was made to encase a fighter’s body, similar to the armor worn by medieval knights.

The first battlesuit produced in Russia was unveiled in 2018 by state-owned multinational Rostec.

Engineers tested the Ratnik, or “Warrior,” armored exoskeletons during Russia’s military intervention in Syria. Rostec claimed that it had provided the Russian military with 300,000 suits.

However, no Russian “Ratnik” exoskeletons have yet been observed on the battlefield in Ukraine, despite a volley of complaints from across the country about the army’s grossly inadequate equipment.

Oleg Faustov, the deputy general director of the combat equipment and armor protection manufacturer, Armocom, previously pointed out that certain lines and areas cannot be occupied by machines alone. Therefore, a human soldier’s contribution to a battle is indispensable.

As a result, the human soldier must be safeguarded as much as possible. For this reason, all of the world’s most powerful armies—including the Russian military—have begun to explore the idea of developing such an “iron man,” Faustov added.

Additionally, it was recently disclosed that the study on the Legionnaire program was in full swing and would take just one year as opposed to the projected three.

To outfit a future soldier, the next-generation Legionnaire project is working to develop an armored helmet equipped with an augmented reality system that can receive data from drones.

The company intends to explore the possibility of developing a modular armored helmet as part of this project.

The helmet will integrate several cutting-edge technologies at once, including augmented reality, so that diverse details about the battlefield scenario, control signals, and danger warnings could be presented in the soldier’s field of view.

The combatant’s helmet would be equipped with sensors, allowing them to discern whether a sniper or a weapon with high precision is pointing at them.

Furthermore, a drone’s information, including an image, can be displayed on the helmet thanks to augmented reality technology, allowing the military to control the drone directly.

Many forces, including the US military, are turning to network-centric solutions in addition to composite armor for their soldiers as battlefields become more data- and AI-driven.

<https://eurasianimes.com/invisible-fighters-russia-camouflage-units-to-make-its-fighters/>

Science & Technology News



Press Information Bureau
Government of India

Ministry of Science & Technology

Tue, 07 Feb 2023

Argentina Seeks India's Support to Deploy Technologies for Implementation by Industry and Facilitating the Entrepreneurs in Argentina.

A high-level delegation from Argentina Minister of Science, Technology & Innovation of Argentina, Mr Daniel Filmus called on Union Minister of Science and Technology and Earth Sciences Dr Jitendra Singh here today and discussed bilateral collaboration between the two countries.

CSIR can play a lead role especially in industrial innovation collaboration through joint technology development and upscaling of each other's Intellectual Property (IP) for commercialization: Dr Jitendra Singh

Dr Jitendra Singh also recalled Prime Minister Narendra Modi's meeting with Argentina President Mauricio Macri on the side-lines of G20 in 2016 at Hangzhou

Argentina Minister of Science, Technology & Innovation of Argentina, Mr Daniel Filmus accompanied by a high-level delegation, called on Union Minister of Science and Technology and Earth Sciences Dr Jitendra Singh here today and discussed bilateral collaboration between the two countries.

The Argentina Minister also sought India's support to deploy technologies for implementation by industry and facilitating the entrepreneurs in Argentina.

Dr Jitendra Singh said, CSIR would be very keen to connect with the Industries from Argentina and work towards implementation of the technologies/products/processes in Latin American Nations with governmental support. He said, CSIR is among the global R&D leaders and has intrinsic strengths to provide S&T expertise in the development process through effective international collaboration.

Dr Jitendra Singh also recalled Prime Minister Narendra Modi's meeting with Argentina President Mauricio Macri on the sidelines of G20 in 2016 at Hangzhou.

Dr Jitendra Singh said, the CSIR can play a lead role, especially in industrial innovation collaboration through joint technology development and upscaling of each other's Intellectual Property (IP) for commercialization.

Dr Jitendra was pleased to note that CSIR and National Council of Scientific and Technical Research (CONICET) of Argentina had signed a cooperation agreement way back in 1985 which was renewed in 2009. Two joint R&D projects were executed by their institutes under inter-governmental programme between DST, India and the Ministry of Science, Technology and Productive Innovation (MINCyT) of Argentine on a) Exploring microbial diversity in traditional fermentations from India and Argentina and its potential for bioethanol production (CSIR-Central Leather Research Institute, CSIR-CLRI) during 2015-18) and b) Developing and implementing chemogenomics platform for aiding drug discovery for tropical infectious diseases" (CSIR-National Chemical Laboratory (CSIR-NCL) during 2016-19).

Dr Jitendra Singh said that, CSIR welcomes strengthening collaboration with Argentina for co-development and deployment of joint programs especially focused on promoting in-house development in industrial sectors such as Biotechnology (including plant biotechnology and food technologies); Nanotechnology (including nanomaterials); Healthcare (Therapeutics, using both modern science and traditional knowledge, Diagnostics, Vaccines and Pharmaceuticals); Sustainable (Green) Energy and Environment; Marine science and Oceanography; Mining and Minerals; Aerospace technologies; Electronics and instrumentation; and Chemicals, Leather and Petrochemicals.

Dr Jitendra Singh informed his Argentinian counterpart Mr Filmus that Council of Scientific and Industrial Research (CSIR), with world-class expertise and facilities, is one of the largest industrial R&D organizations in the world with 37 multi-disciplinary R&D institutes located across India. With its state-of-the-art expertise, capacities and capabilities CSIR could contribute effectively towards Research and Innovation Collaborations, Technology Partnerships, Research Infrastructure Development & Sharing, and Capacity Building., the Minister added.

CSIR's Technology Incubators [Venture Center at CSIR-National Chemical Laboratory (NCL), Atal Incubation Centre at CSIR-Centre for Cellular and Molecular Biology (CCMB), Aerospace Incubation Centre of CSIR-National Aerospace Laboratories (NAL), Incubation Centre of CSIR-Institute of Himalayan Bioresource Technology (IHBT) and CSIR-Indian Institute of Toxicology Research] are successfully contributing in India's innovation development with active participation of industry, especially start-ups. CSIR can host science parks', incubators and accelerators' residents from Argentina in its incubators and facilitate its incubators' residents to access such facilities in Argentina. Also, CSIR could organize specialized entrepreneurship development programmes/ training courses focused specifically for technological updates and sharing incubator management experiences.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1897032>

Space Offers Huge Economic Opportunity: Former ISRO Chief

Space is becoming an area of immense importance that offers a huge economic opportunity, stated Padma Shri recipient AS Kiran Kumar, former chairman of the Indian Space Research Organisation (Isro) in Gandhinagar on Tuesday.

Addressing the third convocation of the Karnavati University, Kumar said, “Space, which is considered as the fourth frontier for humanity after land, ocean and air, is becoming an area of immense importance and also offers a huge economic opportunity. Space technology is growing...”

Adding that India, currently the fifth largest economy in the world, has its sight set on top of the ladder and is striving to make use of the best potential to reach there, Kumar said, “Space economy is expected to grow to a trillion dollars in the coming years... India is in the process of transforming itself from a space-capable country to one with space technology capacity to provide solutions and services to self and others.”

Speaking at the event, Rushikesh Patel, Minister of Higher and Technical Education, Health and Family Welfare said, “You have received a degree at a time when India has received the G20 presidency. This is no trivial thing. The 21st-century India has shown a vision by creating various opportunities for the youth.”

Advising students to be more disciplined, JM Vyas, vice-chancellor, NFSU, said, “Use your knowledge to gain wisdom and become a better person.”

Sunil Sethi, chairman, FDCI, inspired students to not miss out on opportunities and said, “The younger generation believes in YOLO — You Only Live Once. Believe in Yolo but do not give up on opportunities that life offers you.” As many as 863 students were conferred with degrees in various disciplines at the convocation.

<https://indianexpress.com/article/cities/ahmedabad/space-offers-huge-economic-opportunity-former-isro-chief-8430309/>



IIT Madras, ISRO Sign MoU to Build AR Astronaut Training Module

Indian Space Research Organisation (Isro) has signed a memorandum of understanding (MoU) with Indian Institute of Technology (IIT), Madras, to build training modules for Indian Spaceflight Program, using augmented reality (AR), virtual reality (VR) and mixed reality (MR) technologies. The modules will be built at IIT Madras’ Experiential Technology Innovation

Centre (XTIC), and will also be used to train engineers at Isro's Human Space Flight Centre (HSFC) to establish a laboratory based on extended reality (XR) technologies. The project will include building virtual models and simulations of human physiology, as well as space systems, which will be key to understanding how the human body reacts and adapts to long duration spaceflight — such as a journey to the moon. Other aspects of the project include visualizing and optimizing the design and architecture of space-faring equipment, such as the interiors of a mission's crew module.

The project will also tap into XTIC's network of industry and startup associations, in order to attract interest in building applications and solutions using XR technologies.

XR, to be sure, includes an amalgamation of AR, VR and MR solutions to simulate a physical object. Using XR technologies can help manufacturers and researchers visualize how an object would work in the physical reality, before it is built and applied. Such solutions have been used in various fields, such as healthcare, aviation and other fields, where reaching a real-world usage space (such as oil fields, in mid-air flights, or in between critical surgeries) is difficult.

To create such platforms, companies typically develop a highly accurate digital replica of a product or an environment, typically called a 'digital twin', and use it to assess and validate products.

M. Manivannan, professor at Department of Applied Mechanics at IIT Madras and investigator at XTIC, said that the project can "add value in many aspects of the human spaceflight program, specifically in shortening the design cycle and simulating the space environment."

The MoU comes ahead of the first trial mission under Gaganyaan, Isro's manned human spaceflight mission. On 22 December, in response to a question in the Parliament, Jitendra Singh, union Minister of State for Space, had said that the first unmanned trial mission of Gaganyaan will be launched in the last quarter of this year, leading up to the eventual manned mission launch by the end of 2024.

<https://www.livemint.com/technology/tech-news/iit-madras-isro-sign-mou-to-build-ar-astronaut-training-module/amp-11675683041259.html>



Tue, 07 Feb 2023

After SSLV-D1 Launch Failure, ISRO Makes Structural and Logic Changes to Ensure Success of SSLV-D2

With the second development flight of Isro's new Small Satellite Launch Vehicle (SSLV-D2) scheduled for February 10, a failure analysis report on why satellites were not injected in desired orbits during the August launch suggests that it was because of vibrations picked up by the accelerometers on-board, which led to the systems thinking that they were faulty.

With some changes made to the structures and internal logics, the satellite launch vehicle will carry the Indian Space Research Organisation's (Isro) own earth observation satellite EOS-07, AzaadiSat2 and Janus-1, weighing 334 kg, in a 450-km circular orbit later this month.

The satellites on-board SSLV-D1 were placed in a highly elliptical orbit during the August launch due to a shortfall in velocity, with orbits decaying soon after, making the satellites unusable. This happened despite the first three solid stages working as they should.

A recently released summary of the failure analysis report by Isro shows that during the separation of the second stage, there were vibrations exceeding in frequency and time duration than expectations or ground-test levels. These vibrations were picked up by the six accelerometers on-board, readings from which are used to correct the attitude of the vehicle during the mission.

Because of the importance of accurate readings, a failure logic keeps an eye on the readings from the sensors, and identifies and isolates their readings for a more accurate mission. However, when they picked up the vibrations during the second stage separation, a lot of differences were observed between readings of the accelerometers during a 2-second window that led to the failure logic thinking that all six accelerometers were faulty and initiating salvage mission mode.

Although the accelerometers were found to be functioning well after this transient event, data from them were not utilised for the rest of the mission. The mission switched to a time-based guidance without any feedback on the velocity of the vehicle as the accelerometer readings were not being used. And, the third solid stage did switch on as scheduled but the final liquid propellant-based velocity trimming module (VTM) did not.

This was because it was programmed to not do so for salvage missions as it could be a deterrent to the success of the mission in such cases. Because of the shortage of about 56 m/s at the end of SS3 burn out in final velocity and loss in pointing accuracy due to sensor errors, the targeted orbit could not be achieved. “This indicates that execution of salvage option in all situations need not always lead to successful placement of satellites in an orbit,” the report said.

To ensure that it does not happen again, the report suggests that for the second development flight, the mechanism for separation of the second stage be changed to reduce vibrations. It also suggests a change in the logic of the system to handle such transient events – in cases where multiple sensors are identified to be faulty, readings will be taken for longer duration before going into salvage mode. In case of failure of sensors, the system will be able to navigate using NaVIC (Indian Regional Navigation Satellite System) data. And in case of failure of sensors and data from NaVIC not being available for more than 10 seconds, the vehicle will still get to decide whether the last VTM stage needs to be used even in salvage mode to ensure the minimum required orbit.

<https://indianexpress.com/article/india/sslv-d1-launch-failure-isro-changes-sslv-d2-8429198/lite/>



Wed, 08 Feb 2023

Chandrayaan-3's Likely Landing Sites Finalized

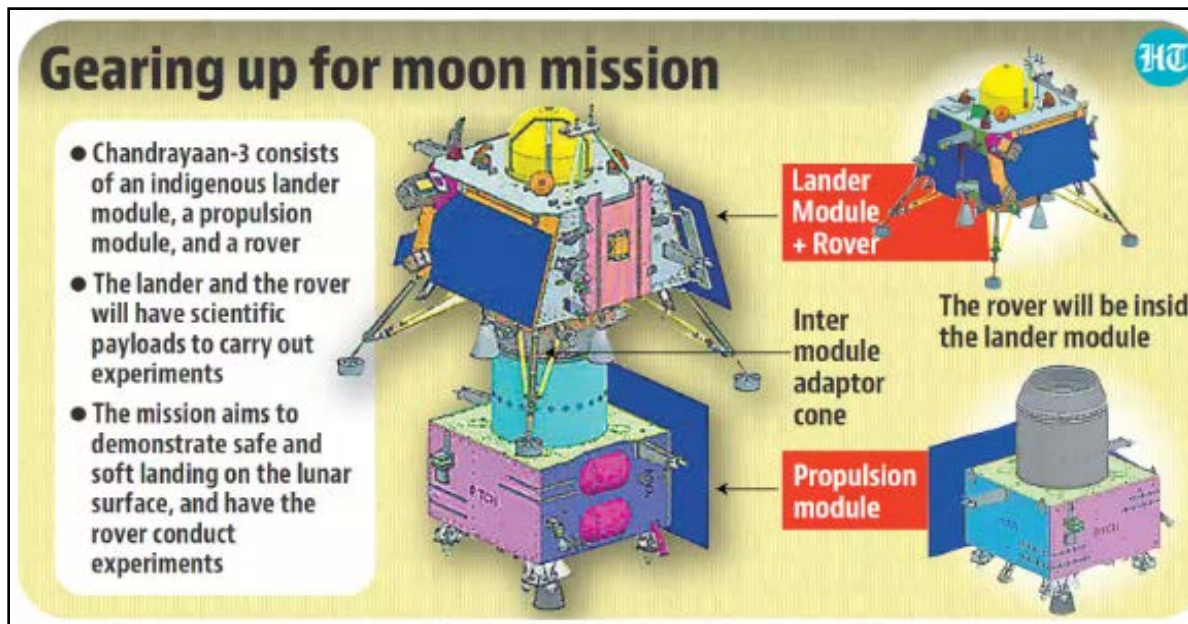
The Indian Space Research Organisation (Isro) has finalised the coordinates of three possible landing sites for its third lunar mission – Chandrayaan-3 – expected to be launched later this

year. All the probable landing sites are on the moon's south polar region on the side facing earth, senior scientists from the space agency said on Tuesday.

The criteria for selecting the landing sites for Chandrayaan-3 – a follow-on mission to Chandrayaan-2 which is meant to demonstrate end-to-end capability in safe landing and roving on the lunar surface – included local and global slope, illumination from the sun, radio communication with earth, and crater and boulder sizes, a space scientist said, asking not to be named. Moon's southern polar region is of particular interest to scientists because there's a possibility of finding water ice. Chandrayaan-3, expected to be launched at the end of 2023, will have a lander and a rover.

The Chandrayaan programme, also known as the Indian lunar exploration programme, is an ongoing series of outer space mission by Isro. The first moon rocket, Chandrayaan-1, was launched in 2008, and was successfully inserted into the lunar orbit.

Chandrayaan-2 was successfully launched and inserted into lunar orbit in 2019, but its lander crash-landed on the moon's surface when it deviated from its trajectory while attempting to land on September 6, 2019, due to a software glitch.



The

The prime landing site for Chandrayaan-3 lies between Manzius U and Boguslawsky M craters on the moon. It also provides flexibility for the lander to land at any place in the 4km x 2.4km area within a distance of 100m from the lander hovering point, according to Isro.

To select suitable sites using coarse and medium resolution data, the local slope should be less than 10 degrees, the global slope should tend towards the equator, more than 90% of the site area should be sunlit for 10-11 days, boulder size should not be more than 2m, and there should be minimum crater and boulder distribution in the area, said a scientist from Isro's Space Application Centre, who is associated with the mission.

“The site selection started with the analysis of the three shortlisted sites for Chandrayaan-2 landing in the 70-80 degrees latitude range,” he said, seeking anonymity. “These sites were

revisited again for Chandrayaan-3 landing sites, but it was found that these sites are not meeting the landing area (4km x 2.4km) requirement.”

Chandrayaan-3 consists of an indigenous lander module, a propulsion module, and a rover. Its objectives include developing and demonstrating new technologies required for interplanetary missions. The lander will have the capability to soft land at a specified lunar site and deploy the rover, which will carry out in-situ chemical analysis of the lunar surface during the course of its mobility.

The lander and the rover will have scientific payloads to carry out experiments on the lunar surface.

Chandrayaan-3 will be launched by Launch Vehicle Mark-3 (LVM3) rocket from Satish Dhawan Space Centre, Sriharikota. The propulsion module will carry the lander and rover configuration till 100km lunar orbit.

The aim of the mission is to demonstrate safe and soft landing on the lunar surface, and have the rover moving around on the lunar surface to conduct in-situ scientific experiments.

Isro has three big-ticket missions lined up between the end of 2023 and the first quarter of 2024. Aditya-L1, India’s first dedicated scientific mission to study the sun, and Gaganyaan’s uncrewed ‘G1’ mission is targeted to be launched in the last quarter of 2023. This would be followed by the second uncrewed ‘G2’ mission in the second quarter of 2024, before the final human space flight ‘H1’ mission in the fourth quarter of 2024.

<https://www.hindustantimes.com/india-news/chandrayaan3s-likely-landing-sites-finalised-101675797237670.html>



Wed, 08 Feb 2023

Microsoft to Revamp Bing, Edge with AI Integration; Eyes to Regain Lead in Consumer Tech

Microsoft said on Tuesday that it is integrating artificial intelligence into both its Edge Web browser and Bing search engine in an effort to regain market leadership in the consumer technology space. The company is investing billions of dollars in artificial intelligence as it directly competes with Alphabet Inc.'s Google, which has long been ahead of Microsoft in search and browser technology.

Now an intelligent chatbot will coexist with Bing's search results and the AI will summarise web pages, synthesise many sources, even create emails and translate them. Microsoft anticipates an additional \$2 billion in search advertising income for every percentage point of market share it increases.

"This technology is going to reshape pretty much every software category," Microsoft Chief Executive Satya Nadella in a briefing at the company's headquarters in Redmond, Washington.

After the announcement, Microsoft's stock closed 4.2% higher on Tuesday, while Alphabet gained 4.6%.

On desktop computers, Microsoft's new Bing search engine is currently active in restricted preview. It will soon be made available for mobile devices. Microsoft executives stated that the company's AI may still provide factually incorrect information known as a hallucination, thus it is hoped that user feedback would help it develop. It has continued to work on measures to prevent technology abuse in the interim.

Microsoft's corporate vice president for search and AI, Jordi Ribas, told the Reuters news agency that the technological advancements his team saw last summer gave the business confidence to proceed with an AI-infused Bing.

<https://www.wionews.com/science-technology/microsoft-to-revamp-bing-edge-with-ai-integration-eyes-to-regain-lead-in-consumer-tech-559804>

नवभारतGOLD

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ChatGPT से आगे निकल जाएगा का गूगल का Bard?

टेक्नॉलजी की दुनिया में आर्टिफिशियल इंटेलिजेंस (AI) को भविष्य माना जा रहा है। यही वजह है कि दिग्गज कंपनियां AI में अपना दबदबा बढ़ाने के लिए होड़ कर रही हैं। ChatGPT ने AI की जंग को नए मुकाम पर पहुंचा दिया। यह यूजर के सवाल का जवाब इंटरनेट से ढूंढकर नहीं, बल्कि खुद अपने मन से देता है, काफी हद तक इंसानों की तरह।

ChatGPT का मुकाबला करने के लिए दिग्गज टेक कंपनी गूगल अपना एआई टूल बार्ड (Bard) लेकर आई है। इसे पहले यूजर्स का फीडबैक लेने के लिए जारी किया जाएगा। यह सार्वजनिक तौर पर कुछ दिनों बाद रिलीज होगा। अल्फाबेट और गूगल के सीईओ सुंदर पिचाई ने एक ब्लॉग पोस्ट के जरिए यह सारी जानकारी दी। अब सवाल उठता है कि बार्ड क्या है? यह काम कैसे करेगा? गूगल ने अचानक यह सर्विस क्यों शुरू की? यह ChatGPT से किस तरह अलग है? आइए एक-एक करके इन सभी सवालों का जवाब तलाशने की कोशिश करते हैं?

बार्ड क्या है और यह कैसे काम करेगा?

बार्ड का शाब्दिक अर्थ होता है - कवि। इसे LaMDA टेक्नॉलजी से बनाया गया है। गूगल पिछले दो साल से इस पर काम कर रही थी। गूगल आने वाले हफ्तों में इसे टेस्ट करने वालों के लिए खोलेगा, जो इसे यूज करके अपना फीडबैक देंगे। पिचाई का कहना है कि इससे यूजर फुटबॉल में बेस्ट स्ट्राइकर की जानकारी लेने से लेकर अपनी स्किल को बढ़ाने जैसे काम कर सकते हैं।

फिलहाल बार्ड सभी क्षमताओं का खुलासा नहीं हुआ। हालांकि, एक स्क्रीनशॉट से पता चलता है कि यूजर्स, Bard से प्रैक्टिकल सवाल पूछ सकते हैं, जैसे कि बेबी शावर को कैसे ऑर्गनाइज करें या फिर लंच में क्या

है? इस तरह के सवालों के जवाब भी मिल सकते हैं। कंपनी कल 8 फरवरी को एक एआई इवेंट आयोजित कर रही है, जहां वह इसके बारे में और भी जानकारियां दे सकती है।

ChatGPT से कैसे अलग है Bard

गूगल बेशक बार्ड को ChatGPT की टक्कर में लाया है। दोनों टूल्स में काफी समानता है, तो कई अंतर भी हैं। ChatGPT पहले से मौजूद डेटा के आधार पर यूजर के सवालों का जवाब देता है। वहीं, गूगल का चैटबॉट लैंग्वेज मॉडल एंड डायलॉग एप्लिकेशन (LaMDA) से लैस हो गा। यानी यह यूजर्स को ज्यादा सटीक जवाब दे सकता है।

गूगल का कहना है कि बार्ड को बड़े लैंग्वेज मॉडल की पावर, इंटेलिजेंस और क्रिएटिविटी से लैस किया जाएगा। यह यूजर्स से मिले फीडबैक और इंटरनेट पर उपलब्ध चीजों से अपनी जानकारियां भी बढ़ाएगा, जैसे कि इंसान हमेशा नई चीजें सीखते रहते हैं।

पिचाई का कहना है कि बार्ड वेब से लेटेस्ट और हाई क्वालिटी के जवाब ढूंढकर यूजर्स को जानकारी देगा। इसका मतलब है कि यह यूजर्स को लेटेस्ट इवेंट के बारे में भी जानकारी दे सकता है। वहीं, ChatGPT आमतौर पर 2021 तक के डेटा की जानकारी ठीक से देता है। इसे लेटेस्ट जानकारियां देने में मुश्किल होती है। इसकी वजह है कि ChatGPT साल 2021 तक के डेटा पर ट्रेन किया गया है।

बार्ड के आने से गूगल सर्च इंजन बंद हो जाएगा?

इस सवाल का सीधा और सरल जवाब है, नहीं। गूगल सर्च इंजन और बार्ड का काम बिल्कुल अलग है। गूगल यूजर्स के सवालों का जवाब देने के लिए दूसरी वेबसाइट्स का लिंक उपलब्ध कराता है। वहीं, बार्ड लगातार सीखकर खुद ही लोगों के सवालों का जवाब देगा। यह हो सकता है कि ChatGPT पर बढ़त लेने के लिए गूगल अपने सर्च इंजन और बार्ड को एकदूसरे जोड़ दे।

<https://navbharattimes.indiatimes.com/navbharatgold/breaking-news-in-hindi/will-google-bard-be-able-to-overtake-chatgpt/story/97700167.cms>



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Future of AI: ChatGPT vs Bard Battle will Point to What Lies Ahead

This week, Google responded to the conversational AI battles by unveiling Bard, which will rival ChatGPT, the artificially intelligent text generation system by tech startup OpenAI that has become, and often generated, the talk of the town.

To quickly recap, ChatGPT can hold reasonable conversations over topics, explain and contextualise matters across a wide variety of fields and churn out fiction. In doing so, it serves up as a new source for information that has existed on the web, directly challenging what Google is best known for.

Unsurprisingly, Google and other tech companies have hastened the launch of such services. The global chatbot market size is expected to be worth as much as \$3.99 billion by the year 2030,

according to Grand View Research's latest data. Google will have the advantage of being able to use an existing core — the Language Model for Dialogue Applications (LaMDA) platform. Bard is now available to a select group of “trusted testers” with the plan to make it widely available to the public, in the coming weeks.

The tech giant insists that they will take things slowly, if need be, which ties in with the AI Principles that Google set out in 2018, becoming one of the first tech companies to do so. “It’s critical that we bring experiences rooted in these models to the world in a bold and responsible way. That’s why we’re committed to developing AI responsibly,” said Sundar Pichai, CEO of Google and Alphabet, in a statement, unveiling Bard.

The fear of unoptimised or untested AI responding to user queries, raises genuine concern for tech companies. Chatbots have left no stone unturned either, to fuel that fear. At the heart of this is simply the concern that these tools could be considered as authentic sources of information while serving up inaccuracies that can, at its most innocuous, confuse people, but at worst, become conduits for misinformation.

The many concerns

Researchers from the Royal Holloway University of London say chatbots go beyond learning natural language and the art of conversation.

“It holds anthropomorphic features that could trigger feeling of closeness and connectedness,” says researcher Lorentsa Gkinko. “Their use could trigger a range of emotions beyond what users experience with traditional enterprise systems,” adds researcher Amany Elbanna.

It is difficult to point to the exact contours of Bard, as it will eventually emerge for public use. At best, it may be as dynamic and conversational as ChatGPT.

“ChatGPT is shockingly good at sounding convincing on any conceivable topic. But OpenAI is clear that there is no source of truth during training,” says Arvind Narayanan, professor of computer science at Princeton University. “That means that using ChatGPT in its current form would be a bad idea for applications like education or answering health questions,” he adds.

OpenAI has now announced the ChatGPT Plus subscription service, which for \$20 a month (around ₹1,650), gets users faster responses and first access to new features as well as platform improvements.

It is important to note that Google, for now, has not mentioned a possible Bard integration within Search, something its rival Microsoft announced it will do with ChatGPT. Microsoft, already an investor in OpenAI, has plans to pump in \$10 billion more and has already embarked on integrating the AI tool into existing products such as Teams.

“Modern tools powered by AI hold the promise to boost individual, team, and organizational-level productivity and fundamentally change how we work,” said Nicole Herskowitz, Vice president for Microsoft Teams, when the feature, that allows Teams to automatically take notes and create discussed tasks from a meeting, was launched.

Scope of AI chatbots

The version of Bard, going into testing now, will likely not be the same as what everyone gets to use in a few weeks' time. For now, Google will be using what they call a lightweight version of

LaMDA. It uses less computing power, which allows for more users on board and therefore more feedback on responses. That'll change, in due course.

“Bard can be an outlet for creativity, and a launchpad for curiosity, helping you to explain new discoveries from NASA’s James Webb Space Telescope to a 9-year-old, or learn more about the best strikers in football right now, and then get drills to build your skills,” said Pichai.

That should give us a fair hint that Bard will do everything ChatGPT does, and then some, perhaps.

What will need to be closely watched is how Google expands Bard: Will it be a separate app or web-only? Will some of Google’s services such as Meet virtual meeting platform or Docs productivity suite get it?

Google’s insights into changing search trends may give Bard an advantage that ChatGPT and indeed other conversation AI platforms do not have.

Is AI ready to replace traditional search?

“When people think of Google, they often think of turning to us for quick factual answers, like “how many keys does a piano have?” But increasingly, people are turning to Google for deeper insights and understanding — like, “is the piano or guitar easier to learn, and how much practice does each need?” Pichai said, capturing the difference in paradigm that AI tools can bring to search, than conventional systems that work on scraping the web to just identify what word appears where.

But an experimental conversational AI service, much like any other AI, will only be as good as the data sets it learns from. There are often challenges with inclusivity, diversity, and sensitivity in AI conversations. Image processing algorithms have often struggled with skin tones, for instance.

This means the challenge, when a service attempts to not just find what is on the internet but understand it, is much greater and has far deeper implications.

ChatGPT in its various evolutions over time, and indeed Google’s LaMDA, have run up against these challenges. Meta’s Galactica is perhaps the shining example of a large language model, not primed for accuracy. In November last year, three days after the public release of the chatbot, the beta version was taken offline. The problem? It couldn’t separate fact from fiction, and responses were filled with misinformation and bias.

“I asked Galactica about some things I know about and I’m troubled. In all cases, it was wrong or biased but sounded right and authoritative. I think it’s dangerous,” wrote Michael Black, director, Max Planck Institute for Intelligent Systems.

Meta had more hope from the other chatbot, BlenderBot, with the company insisting multiple layers of checks and fail-safe are in place. It is only available to users in US, for now.

Microsoft itself had an unsuccessful tryst with an AI chatbot in 2016. Tay, as it was called, bolted on to Twitter (it used the @TayandYou handle) in the hope it’ll learn from humans. Soon, the bot was tweeting racist, antisemitic, and abusive responses.

Microsoft had to take it offline, a day and some 96,000 AI generated tweets later.

Google's own try with AI in conversations, with the comparatively much simpler Allo messaging app, didn't go according to plan either. Allo, expected to be a WhatsApp competitor, was shut down subsequently.

But much water has flown under the bridge since then, as ChatGPT has shown, and the AI arms race is expected to offer us an even more dramatic landscape in some years.

<https://www.hindustantimes.com/india-news/future-of-ai-chatgpt-vs-bard-battle-will-point-to-what-lies-ahead-101675793511755.html>

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