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June
2023

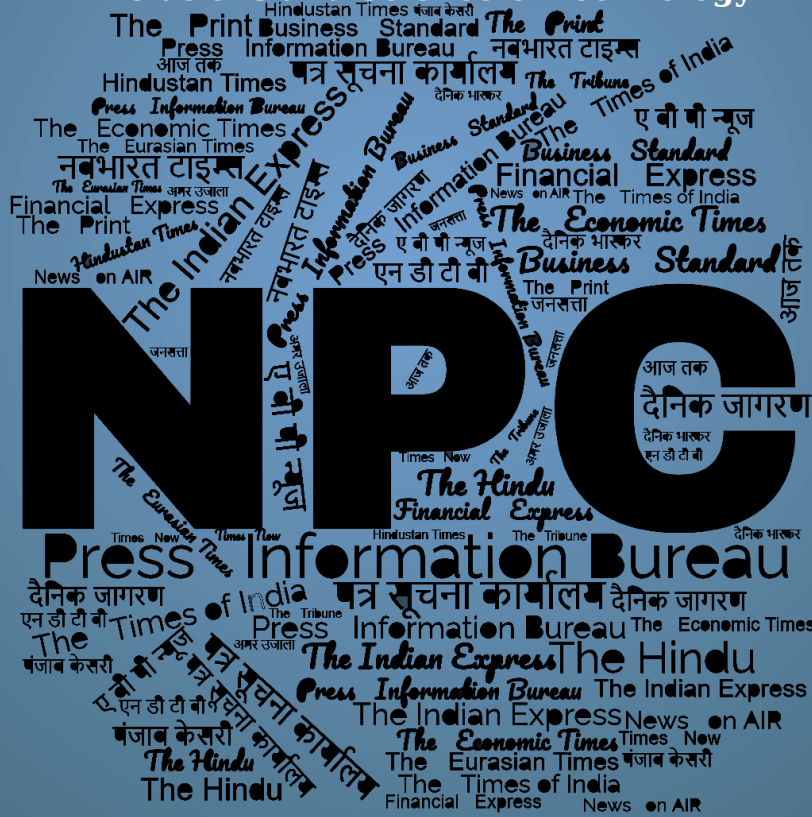
खंड/Vol. : 48 अंक/Issue : 112

15/06/2023

समाचार पत्रों से चयित अंश Newspapers Clippings

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

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NE India Broadcast

Wed, 14 Jun 2023

World Blood Donor Day Celebrated at DRDO , Tezpur



World Blood Donor Day was observed on 14 June 2023 at Defence Research Laboratory (DRL), DRDO, Tezpur, in association with the Blood Bank, Kanaklata Civil Hospital, Tezpur by organizing a Blood Donation Camp as part of the “Raktdaan Amrit Mahotsav”.

A large number of volunteers have participated in the camp, out of which 26 units of blood was collected.

World Blood Donor Day is a significant event that aims to create awareness about the importance of blood donation and acknowledge the selfless contribution of blood donors in saving lives. By organizing this camp, DRL-DRDO is promoting the spirit of voluntary blood donation and helping meet the constant demand for safe blood.

<https://neindiabroadcast.com/2023/06/14/world-blood-donor-day-celebrated-at-drdo-tezpur/>



Thu, 15 Jun 2023

Defence Ministry to Decide on US Predator Drone Deal Today: Sources

The Defence Ministry is likely to decide on the deal to acquire US-made Predator drones at a meeting scheduled to be held on Thursday, June 15, government sources told India Today. The deal has been in the works for several years but it was put on hold in order to give a boost to the “Make In India” programme. The Defence Ministry meeting will take place just before Prime Minister Narendra Modi's first state visit to the US from June 21 to 24.

On Wednesday, news agency Reuters reported that the Biden administration is pushing the Indian government to give nod to the deal ahead of PM Modi's visit. The US State Department, Pentagon and White House have asked India to be able to "show" progress on the deal, according to the Reuters report.

As per the initial plans, the deal will see the acquisition of 30 American Predator high-altitude long-endurance drones equipped with strike capability, including missiles. The drones were to be equally distributed among the three services and operated for surveillance along the border areas.

The drones under discussion -- the MQ-9B SeaGuardian drones -- are made by General Atomics, an American energy and defence company. The high-altitude long-endurance drones come armed with strike missiles which can take out enemy targets with a high accuracy.

India is currently operating two predator drones which were hired on lease from an American firm and they have been helping the Navy to keep track of activities in the Indian Ocean region.

<https://www.indiatoday.in/india/story/defence-ministry-meeting-us-predator-drone-deal-2393163-2023-06-14>



Thu, 15 Jun 2023

Defence Minister Rajnath Singh Reviews Armed Forces' Preparedness for Cyclone 'Biparjoy'

As cyclone 'Biparjoy' approaches Gujarat's coastal areas, Defence Minister Rajnath Singh reviewed the preparedness of the Armed Forces to tackle the storm. Spoke to all three Service Chiefs and reviewed the preparedness of the Armed Forces for the landfall of cyclone 'Biparjoy'.

The Armed Forces are ready to provide every possible assistance to civil authorities in tackling any situation or contingency due to the cyclone.

— Rajnath Singh (@rajnathsingh) June 14, 2023

"Spoke to all three Service Chiefs and reviewed the preparedness of the Armed Forces for the landfall of cyclone 'Biparjoy'. The Armed Forces are ready to provide every possible assistance to civil authorities in tackling any situation or contingency due to the cyclone," tweeted Singh.

ANI reported that as per Sub Divisional Magistrate Parth Talsania, approximately 4,500 individuals have been relocated to shelter homes as a precautionary measure in anticipation of cyclone Biparjoy's arrival near the Jakhau coast. The cyclone is expected to make landfall on the evening of June 15 and move across the Rann region towards Rajasthan.

Inspector General Ravi Gandhi of the Border Security Force (BSF) in Gujarat visited the coastal regions of Bhuj to assess the steps being taken to minimize the destructive impact of cyclone Biparjoy.

He also evaluated the preparedness of the BSF to handle any unforeseen circumstances arising from the cyclonic storm as it moves along the Rann region towards Rajasthan.

Cyclone Biparjoy is expected to traverse the entire Indo-Pak international border. In addition to their primary duty of border security, the Border Security Force (BSF) has efficiently arranged the necessary resources for rescue operations.

The India Meteorological Department (IMD) has issued a Red alert, indicating a severe warning for the coastal regions of Saurashtra and Kutch in Gujarat due to cyclone Biparjoy.

<https://www.livemint.com/news/india/defence-minister-rajnath-singh-reviews-armed-forces-preparedness-for-cyclone-biparjoy-11686789503430.html>

THE ECONOMIC TIMES

Thu, 15 Jun 2023

India, US Near Deal to Build Fighter Jet Engines in Boost to PM Modi Defence Manufacturing Plan

The US and India are likely to agree to jointly manufacture fighter jet engines in the South Asian nation when Prime Minister Narendra Modi visits Washington next week, a sign of closer military cooperation between the two countries in the face of China's growing assertiveness.

The deal is close to the finish line, according to people with knowledge of the matter, who asked not to be identified as the details are confidential. The White House is expected to clear the proposal from General Electric Co., the Massachusetts-based aerospace manufacturing giant, to produce the engines with state-owned Hindustan Aeronautics Ltd. for the Tejas light-combat aircraft, the people said.

Modi starts his first formal state visit on June 21. President Joe Biden will host him for a state banquet, and the Indian leader will also address the US Congress.

A number of the deliverables from Modi's visit "are not just bullet points on a page," US National Security Adviser Jake Sullivan said at a conference in New Delhi on Tuesday. "They are fundamentally designed to remove those obstacles in defense trading, in high tech trade, in investment in each of our countries."

Sullivan is in India this week for meetings with top Indian officials ahead of the Modi visit.

Modi's visit comes as the Biden administration is working to deepen its relationship with countries that are crucial to counter what it sees as China's growing threat. In deepening its ties with India the US has also appeared willing to overlook its democratic backsliding as it seeks to pull the South Asian nation away from Russia's sphere of influence.

Ties between US and India have grown stronger as concerns over China have increased despite significant differences "in the fields of values and vision," said Sushant Singh, a senior fellow at New the Centre of Policy Research, a New Delhi-based think tank. "Those are currently being overridden by interests."

The jet engine agreement, which would require technology transfer from America, will need approval from the US Congress, where India is banking on the general upswing in ties and bipartisan support to clear remaining hurdles.

Bengaluru-based Hindustan Aeronautics Ltd. and India's Ministry of External Affairs didn't immediately reply to requests for comment. The US National Security Council had no comment, and GE declined to comment.

The jet engine agreement would fit in with Modi's wider push to boost defense manufacturing locally but with technology partnerships with nations that are keen to draw New Delhi into their orbit as Russia's war in Ukraine drags on into a second year. Earlier this month Germany's Thyssenkrupp AG's marine arm and India's Mazagon Dock Shipbuilders Ltd. signed an initial agreement to jointly build submarines for the Indian navy.

Russia remains India's largest supplier of military hardware, though purchases have slowed by 19% in the last five years due to sanctions and increased competition from other manufacturing countries. Russian deliveries of military supplies to India have ground to a halt as the countries struggle to find a payment mechanism that doesn't violate Western sanctions.

The domestic production of the GE engines will strengthen India's fighter jet program and its air force, whose fleet of rapidly aging Russian fighters need to be replaced. It will also boost Modi's image as he looks at a third term in office in national elections next year.

India and the US will also likely inch closer to agreements on other defense issues, including India's purchase of over a dozen armed drones that could exponentially boost its sea and land defense capabilities. Its current unmanned aerial vehicles can only be used for surveillance and reconnaissance, the people said. As border tensions with China flared in the summer of 2020, New Delhi borrowed two MQ 9B drones from the U.S.

The drones' deal with the San Diego-based General Atomics has been mired in bureaucratic red-tape for years. In addition the two countries will be discussing jointly building the eight-wheeled armored personnel carrier — Stryker — in India.

<https://economictimes.indiatimes.com/news/defence/india-us-near-deal-to-build-fighter-jet-engines-in-boost-to-pm-modi-defence-manufacturing-plan/articleshow/101007631.cms>

Wed, 14 Jun 2023

India & US Set to Collaborate Deeper in Defence and Space Technology

The India-US Initiative on Critical and Emerging Technologies (iCET) is set to become a significant pillar in the bilateral strategic partnership between India and the United States.

In his address at Roundtable on Advancing India-US iCET organized by industry body CII in New Delhi on June 13, National Security Advisor, Ajit Doval said that significant progress has been made in various areas, while in some, the two nations have started moving in the right direction.

Ahead of Prime Minister Narendra Modi state visit to the US next week, the two sides have in place the Indo-US Quantum Coordination Mechanism, the signing of an MoU on semiconductors, and the initiation of dialogues on telecom, biotech, AI, defence, and space demonstrate the positive momentum and collaborative efforts between the two sides. These initiatives aim to foster technology capabilities and exploit opportunities, propelling the strategic relations between the two countries to a higher orbit. The strategic trade dialogue, serving as a platform to address regulatory barriers and export control issues, plays a crucial role in facilitating trade and cooperation between industries, businesses, scientists, research scholars, and institutions. This holistic approach, encompassing government, industry, academia, and research bodies, instills confidence and encourages a common endeavor towards achieving tangible results.

The visiting Assistant to the US President for National Security Affairs, Jake Sullivan, said that iCET is not solely about technology but also people-to-people relationships, skill-building, and deepening defence cooperation. The removal of collaboration barriers, investment opportunities, and advancements in clean energy, semiconductors, AI, advanced computing, biotech, and quantum technologies are key focuses of this initiative.

The strong foundation between India and the US, coupled with their shared vision for iCET, holds immense potential in shaping the next phase the world faces. By connecting, protecting, and healing people through technology, both nations can co-author a transformative future.

The launch of iCET exemplifies the commitment of both countries to strengthening their bilateral relationship. To ensure effective implementation, Chandrajit Banerjee, Director General of CII, suggests the establishment of a core group that will collaborate with US counterparts and drive the iCET agenda forward.

About iCET

It represents a strategic leap forward in the India-US partnership, facilitating collaboration, technology exchange, and skill development. By leveraging the strengths of both nations, the initiative aims to unlock new opportunities, lead technological revolutions, and shape a brighter future for both countries and the global community.

Launch of INDUS-X

India and the US are set to launch under the iCET INDUS-X which will help to promote partnerships in defence innovation ecosystems. It will be led by the US Department of Defense and Indian Ministry of Defence's Innovation for Defence Excellence (iDEX).

<https://www.financialexpress.com/business/defence-india-us-set-to-collaborate-deeper-in-defence-and-space-technology-3125271/>

Breakthrough Likely in Semiconductor Supply Chains Ahead of Modi's Visit: US NSA

As India and the US race to shore up deliverables for Prime Minister Narendra Modi's visit to Washington, US National Security Advisor Jake Sullivan said on Wednesday there could be "substantial results" on bilateral collaboration in semiconductor supply chains as early as next week.

President Joe Biden has directed all wings of the US government to remove obstacles and barriers standing in the way of deeper defence trade and technology cooperation and the US is committed to meet India's requirements in key areas such as maritime domain awareness, Sullivan said while declining to discuss specific defence deals such as the supply of engines for India's homegrown fighter jets and possible sale of armed drones.

With US Secretary of State Antony Blinken set to travel to China this week – the first such visit in five years – Sullivan told a small group of Indian journalists that such contacts are aimed at responsibly managing the competition with China so that it "doesn't enter a downward spiral".

The "core elements" of Washington's approach towards Beijing remain unchanged, and the US will work with allies and partners to compete with China in areas ranging from economics to military deterrence, he said.

Sullivan also spoke publicly for the first time on work being done by the US, India, Israel, Saudi Arabia and the United Arab Emirates (UAE) on a major infrastructure project to link West Asian railway networks to Indian ports, saying the plan was discussed during his two-day visit to New Delhi.

In addition to holding two rounds of talks with his Indian counterpart Ajit Doval, the two NSAs reviewed progress in the initiative on Critical and Emerging Technologies (iCET), which was launched in January, and set new priorities and objectives for the process. The initiative fosters closer cooperation between private industry and scientific institutions in seven areas – AI and quantum computing, advanced materials, defence, semiconductors, next-generation telecommunications, biotech and space.

Sullivan said there will be a "host of substantial announcements in many areas" and "some serious deliverables in the major domains" of India-US ties during the Indian prime minister's state visit to the US next week, only the third such visit hosted by Biden during his presidency.

"One is in semiconductor supply chains, and I think you can expect to see some substantial results from that as soon as next week. The second area is 5G and Open RAN [open radio access network], where US software companies and telecommunications firms are working very closely with Indian telecommunications firms on how we deploy 5G, 6G, and Open RAN at scale and I think you will also see some progress there," he said.

With India and the US opting to keep Chinese telecom majors such as Huawei out to ensure the security of their networks, the Quad has stepped up efforts to roll out Open RAN in the Indo-Pacific by enabling service providers to use non-proprietary components from a variety of vendors.

Modi and Biden are also expected to focus on artificial intelligence because it is "going to be so transformative of our economies, our societies, our national security", Sullivan said. The two sides can align their approaches in this area and the US National Science Foundation is working to

sponsor joint research between the two sides in AI, machine learning and advanced wireless, he said.

Sullivan was more circumspect in responding to questions about an agreement on manufacturing the GE-414 engine, developed by GE Aviation, in India to power the country's home-grown combat aircraft and the possible sale of armable MQ-9B drones made by General Atomics. The GE engine "has been a major focus of us trying to get progress [but] I won't say more on exactly where it is because I'll leave that, just stay tuned and we'll see where things are next week", he said.

Both sides are focused on the "long-term vision of greater integration of our defence supply chains, greater co-production, co-development and the opportunity for us to do the kinds of technology transfer that is in India's interest", Sullivan said. Towards this end, Biden has directed every element of the US government to "remove unnecessary and outmoded obstacles and barriers to deeper defence trade and technology cooperation".

"He [Biden] wants to make good on a long-standing promise made between the US and India that we would deepen our cooperation, including co-production and co-development and having co-production mean that critical defence technologies are produced here in India," Sullivan said.

Sullivan, who spoke to reporters shortly before the US announced that Blinken will travel to China on Friday, said Biden has been "very straightforward and consistent" in his approach to China. "We are in competition with China. But we do not see conflict or a new Cold War, and we want to manage that competition responsibly so that it doesn't enter a downward spiral," he said.

While the US will continue to work with China on issues such as global macroeconomic stability, climate and public health, Biden has made it clear "intense competition requires intense diplomacy". The US has "myriad concerns with China's behaviour and activities" and the "core elements of our China approach remain as they were from the day President Biden entered office", he said.

"We're investing in the sources of our own strength. We are aligning with allies and partners and we are competing vigorously in every significant domain, from economics and technology to military deterrence to writing the rules of the road of the 21st century," Sullivan said.

In response to a question from HT, Sullivan outlined how the US is working with India, the UAE, Saudi Arabia, Israel and "potentially other partners" to pursue infrastructure projects that increase economic connectivity from Europe to Southeast Asia. The proposals in this regard cover green hydrogen, renewable electricity and fibre networks and will involve working through I2U2 and with Saudi Arabia, he said.

Noting that the plan was discussed during his visit, he said: "The US wants to support and encourage and facilitate and play a part in those kinds of infrastructure projects. I can't speak to the details of the main projects that we are discussing because there's still a...certain matter of discretion in that."

He added, "We see just an enormous opportunity for the Middle East not to be a source of instability, but rather to be a source of connectivity that becomes the crossroads from India all the way to Europe."

On May 7, Sullivan, Doval and UAE NSA Sheikh Tahnoun bin Zayed Al Nahyan met Saudi Crown Prince Mohammed bin Salman in Jeddah to discuss the major connectivity project expected to link West Asian rail networks to Indian ports.

<https://www.hindustantimes.com/india-news/breakthrough-likely-in-semiconductor-supply-chains-ahead-of-modi-s-visit-us-nsa-101686758584930-amp.html>

'The time is now': US Lawmaker on Defence Ties with India

US Representative Richard McCormick stressed on having ties between the United States (US) and India economically, militarily and strategically. He emphasised that lawmakers whether they are Democrats or Republicans need to pay more attention to India as a "future partner going forward".

On reports of the US pushing a sign a big-arms drone deal during the upcoming visit of Prime Minister Narendra Modi, he said, "I think the more we link our countries together, both strategically, economically, militarily, the better. If you look at the threats in the region, if you look at India's strategic location next to China, Pakistan, and Bangladesh, with all the problems that we have in that part of the world right now, we need a strong partner, somebody that we can link ourselves to." Media reports suggest that the Biden administration is urging India to iron out bureaucratic hurdles and take forward a long-awaited deal for U.S.-made armed drones ahead of Indian Prime Minister Narendra Modi's upcoming visit to Washington.

Responding to a question if the state visit to the White House on June 22 will pave the way for the purchase of up to SeaGuardian drones from defence firm General Atomics as reported by Reuters, McCormick said, "Well, I think right now we need to sort out a lot of details, the way things are right now. They have been traditionally buying from Russia. That takes a while to transition from, especially when you talk about supplying parts and getting things into. A country and then training people to be proficient in those weapons systems take a while, but I think the time is now. I think they (India) understand the importance of our partnership, especially when it comes to the economic ties that benefit from that also. But I think this is an important alliance into the future that's going to benefit this entire region and the world."

Ahead of PM Narendra Modi's visit to the US, Defence Minister is going to discuss the acquisition of MQ-9 Reaper drones from the US. The acquisition of these drones is scheduled to come up for discussion during an important high-level meeting of the defence ministry on Thursday, defence sources told ANI.

Modi and Biden are also expected to discuss the co-production of munitions and ground vehicles, like armoured personnel carriers, while Modi is in Washington, the Reuters report suggests said.

The decision to purchase MQ-9s rests with the Indian government, and Biden administration officials emphasized the potential benefits of acquiring the drones while acknowledging India's autonomy in the matter. Experts suggest US President Joe Biden has made deepening ties with India a cornerstone of his policy to counter China's growing influence, placing special attention this year on collaboration between the world's two largest democracies on advanced military technologies, despite their lack of a formal security alliance.

"We need to make sure we continue to be linked to that very important part of the world with somebody who sees the world very similar to us," McCormick told ANI.

Speaking about PM Modi's upcoming visit to the US, Congressman said that he thinks that everybody understands the importance of the relations between the two nations. He said that India is growing its economy in a "slow, methodical way." He also spoke about China's growing economy and noted that some of that has been done in "very bad ways".

"Well, if you're talking about Prime Minister Modi coming here, I think those will be private conversations, some of them. But I think everybody understands how important that allyship is. When you talk about the most populous country in the world right next to the second most

populous country in the world, which they keep on switching off a little bit late, but also the fact that China's growing its economy from about 5 trillion only 10 years ago to 18 trillion just in 10 years. Now they've done some of that in very bad ways, and they've run up a lot of debt."

"But, I think India is doing it the slow, methodical way that they need to by encouraging trade with that huge consumer base, as well as somebody who can produce a lot of things that are both technologically advanced as well as just production. I think we compare with them in very good, beneficial ways to both countries having very real consequential conversations about how we stabilize that region of the world and also tie our countries together forever into the future," McCormick said.

Prior to PM Modi's visit, US National Security Advisor Jake Sullivan visited India. He held a meeting with PM Modi and discussed matters of bilateral cooperation here in Delhi. The two sides also reviewed progress under India-US Initiative on Critical & Emerging Technologies (iCET) during the meeting. Sullivan also met his Indian counterpart Ajit Doval in New Delhi.

Congressman Richard McCormick spoke about the consequential conversations that will take place between India and US during PM Modi's visit. He emphasised that lawmakers whether they are Democrats or Republicans need to pay more attention to India as a "future partner going forward." He talked about the importance of India and its strength of numbers, industrial base and its amount to produce things.

In a sign of the continued bipartisan support in America for strong bilateral ties with India, Prime Minister Narendra Modi will address a joint session of the United States Congress during his first state visit here next week.

The keenness shown by Republicans, that Modi, who has been invited by US President Joe Biden (a Democrat), address the joint address shows that both sides are interested in deepening and widening ties that India and the US currently enjoy. Asked about China being a binding factor between Republicans and Democrats, McCormick said, "I think a lot of people don't realize how important India is. I think that's why it's important for Prime Minister Modi to be here and have these consequential conversations. Anybody who's not thinking about the importance of India doesn't realize the strength of numbers, the amount of industrial base, and the amount to produce things that China produces simultaneously, but from a much more friendly venue."

"Somebody, who's following the World Trade Organization rules rather than breaking them, somebody who doesn't have global dominance in mind but actually working with other countries to mutual benefit. That's the kind of partner we need. I think when you talk about Democrats and Republicans, whether you be a Democrat or Republican, I think we have to pay a lot more attention to India as a future partner going forward, especially considering China right now," he added.

<https://timesofindia.indiatimes.com/india/the-time-is-now-us-lawmaker-on-defence-ties-with-india/articleshow/101008545.cms>



Thu, 15 Jun 2023

3 Years after Galwan: Ramp-up in LAC Infra, Troop Presence, Op Logistics

Thursday, June 15 will mark three years of the Galwan Valley incident when Indian and Chinese troops clashed deep inside eastern Ladakh, leaving 20 Indian Army personnel dead.

At the time of the clash, a month after PLA intrusions were detected along the Line of Actual Control in 2020, the Indian military infrastructure in the region was sparse, with just a division strength of around 15,000 troops of the Leh-based XIV Corps guarding the LAC there.

Three years later, winds of change have swept this Union Territory in terms of sheer troop density and the scale of infrastructure developed there.

Nearly 50,000 additional troops – more than the population of Leh itself – were deployed to eastern Ladakh in the immediate aftermath of the Galwan Valley clashes.

While earlier, just one of XIV Corps' two divisions were specifically tasked with looking at the border, there are now more than two divisions of troops deployed at the LAC including a Rashtriya Rifles force that was moved from J&K. Additional reserves have been deployed in the depth areas, including elements of a Strike Corps. This was done after the Army carried out a reorientation of all its Strike Corps in 2021.

The last three years have also seen the deployment of a plethora of modern equipment for Intelligence, Surveillance and Reconnaissance (ISR) in eastern Ladakh and deployment of additional mechanised and armoured regiments, up from 4-5 regiments to 10-12. Additional repair and recovery elements have been put in place for armoured vehicles, and cater to wear and tear.

To facilitate quick deployment of soldiers to the LAC and their accommodation and living, the last three years have been devoted to aggressive construction of military infrastructure – additional roads, tracks, bridges, permanent defences, habitat and shelters for troops in areas unoccupied earlier. This is a sea change from the past when troops were mostly responsible for patrolling and monitoring the borders.

While tensions had been building up since May 2020 with the increasing presence of Chinese troops near the LAC and instances of a few minor confrontations that month, the deployment of additional troops and equipment, and the rapid boom in military infrastructure began after the Galwan Valley incident.

India and China have held 18 rounds of military talks and 27 meetings of the Working Mechanism for Consultation and Coordination on India-China Border Affairs (WMCC) so far. The talks have led to disengagement of troops at the post 2020 friction points with the creation of buffer zones, but legacy issues such as Depsang Plains and Demchok continue to fester, leading to limited or no patrolling by Indian troops at these points.

The last three years have seen a massive push towards infrastructure development which includes creation of military posts, living habitat and gun positions, apart from new roads, bridges, tracks, tunnels and helipads.

According to data accessed by The Indian Express, the Border Roads Organisation (BRO) completed 19 infrastructure projects in 2021 and 26 in 2022 in Ladakh alone. It has set a target of completing 54 projects this year. These include roads and bridges among other miscellaneous projects.

A high priority project which the BRO is expected to complete soon is the construction of an alternate route to Daulat Beg Oldie, which will begin from Sassoma along the Nubra river and traverse through Sasser La and Gapshan before joining the main 255-km long Durbuk-Shyok-DBO road running along the LAC.

Other important strategic projects include the Saser-Brangza bridge, the Shinku La tunnel linking the pass connecting Himachal Pradesh with Ladakh.

Roads connecting Khalste to Batalik, Kargil to Dumgil and Khalsar to Shyok and Tangtse to Lukung and a tunnel at Hambotingla and a tunnel on the DS-DBO road are the other projects.

Additionally, bridges on the DS-DBO road are being upgraded to Class 70 specifications, which can carry vehicle weight up to 70 tonnes.

Development and improvement of helipads and advanced landing grounds at several strategic locations of Ladakh, including those existing at Chushul and DBO, Nyoma, Hanle and Thakung, have also been carried out in the last three years.

To boost border infrastructure, particularly along the LAC in eastern Ladakh, an allocation of Rs 5,000 crore was made this financial year, up from Rs 3,500 crore in 2022-23.

Communication networks right up to forward posts, logistics bases, underground shelters to meet the needs of the enhanced troop density, secure and robust supply chain, and adequate stocking facilities have been developed in recent months.

Habitats to house 22,000 troops and technical storage for 450 armoured personnel carriers and guns have also been constructed closer to the LAC.

Permanent defences and protective shelters are being constructed so that troops living close to the LAC can react quickly to any contingency.

With no immediate clarity on moves towards de-escalation of troops from either side, Defence officers say the focus will remain on construction of more military infrastructure to sustain troops in the Ladakh region. This, they underline, has significantly eased supply chains and boosted operational logistics.

<https://indianexpress.com/article/india/3-yrs-after-galwan-lac-infra-troop-presence-op-logistics-ramped-up-8663416/>



Wed, 14 Jun 2023

Air Power at Sea Requires a Big Boost

By Group Captain Praveer Purohit

In this very month, 81 years ago, the Americans and Japanese fought an intense four-day air-sea battle in the Pacific Ocean. Historians hail it as a decisive engagement that turned the tide of World War II in the Pacific. Known as the Battle of Midway, it was unique for two things. One, it laid to rest Japanese hopes of neutralizing American naval power and two, the decisive role played by air power in its conduct and outcome. The Japanese air attack on Pearl Harbour in December 1941 had brought to fore the deadly punch inherent in aircraft carriers. It also reinforced the offensive characteristic of air power. Preceding the Battle of Midway by a month, the USA and Japanese had fought each other in the Battle of Coral Sea – the world’s first air-sea battle with carrier borne air power.

Fast forward to present. On 31 May 2023, the Indian Air Force (IAF) tweeted about four Rafale aircraft undertaking a six-hour long mission in the Indian Ocean. On 09 June, the IAF tweeted about, “another outing in the Indian Ocean”, this time by Su-30 aircraft that flew for nearly eight hours. Well, the excitement did not end here. The very next day, on 10 June, the Indian Navy (IN) tweeted and released video footage of multi-carrier operations in which both the aircraft carriers-INS Vikramaditya and INS Vikrant operated in tandem along with a significant element of embarked air power assets. Few media reports gave it a “with an eye on China” twist. Air power practitioners in both IAF and IN would have been more circumspect, knowing as they would, the

enduring lessons – both doctrinal and tactical from the aforementioned World War II battles. The importance of air power at sea was not lost on the Indian Navy. Its first aircraft carrier, INS Vikrant was commissioned on 04 March 1961, giving our Navy a head start in carrier operations. Acquisition of the next aircraft carrier had to wait till 1987, even as budgetary constraints and a continental mindset prevented it from acquiring the much needed third carrier. To be sure, Indian air power at sea has made steady progress, due to the experience gained in carrier operations, expansion of shore based naval aviation and modification of IAF aircraft with anti-ship capability. Recent acquisitions such as P-8I and MH-60R Helicopter have significantly boosted the maritime air capability. Yet, a dispassionate and professional analysis reveals, to paraphrase Robert Frost, that we have miles to go before we sleep.

Capability development is a function of many factors, primary amongst these being the national strategy and a military strategy that flows from the former. Since India has not enunciated a national security strategy, the exercise of force structuring and capability development suffers from lack of sanctified guidance. However, examination of factors such as the geography around us, our vast coastline, Exclusive Economic Zone (EEZ), island territories, maritime trade, freedom of navigation in the oceans & Sea Lines of Communication (SLOC) and the Chinese game plan give us indicators on the capabilities that we must develop. With Indian interests extending not just in the Indian Ocean Region (IOR) but also in the Pacific, it is but natural that we must factor the geography and requirements of force projection not just in IOR but in the larger Indo-Pacific.

It is in this context that our air power at sea assumes greater importance. As the Battles of Coral Sea and Midway showed, the outcome of the larger war was decided in air-sea battles in the ocean, far away from the mainland of both Japan and the USA. No system by itself is a game-changer, be it surface combat ships, submarines or ship-based air power. It is the synergistic application of these systems linked with shore-based air power through a robust, secure, reliable and redundant network that acts as a meaningful deterrent to the adversary. It also acts as a comforting factor to friends, allies, and partner countries. The inherent characteristics of air power such as reach, responsiveness, lethality and versatility lend itself as a system of choice to keep own warships out of harm's way and ensure sea control. Quality and quantity of platforms is both important to demonstrate capability and viable deterrence. Let us examine the assets that can be brought to bear in maritime air operations over the Indo-Pacific. The IN presently has only the MiG-29K fighter that is beset with serviceability problems. The Twin Engine Deck Based Fighter (TEDBF) project has still not been accorded approval by CCS which means it won't be on the operational flight line before 2031-32. Sadly, the interim requirement of IN for 57 fighters to be purchased 'off the shelf' was curtailed to 26. Despite trials of the F/A-18 Super Hornet and Rafale-M, government decision on the acquisition is awaited. The present capability may appear adequate for fleet air defence but seems woefully short for strike roles. Shore based fighters of IAF can augment the strike capability but the low strength of IAF fighters and their commitment to many other equally important missions poses a major challenge. Fortunately, the P-8I and the smaller Do-228, accords us good capability in Maritime Reconnaissance (MR). The threat from enemy air power entails us to possess good early warning capability. On land one can deploy several radars and aerostats, but at sea there are limitations on the number of radars (which is a function of the number, types and position of warships deployed) as well as their range. This is sought to be overcome by Airborne Early Warning (AEW). The IN does not have any fixed wing AEW aircraft and hence employs the Ka-31 helicopter for the purpose. Its development began in 1980 and first flew in 1987. The Navy received the first batch of these helicopters in 2003. The mechanically scanned radar has a range of about 150 kms for a fighter class target and it can remain on station for two and half hours. Thus, the only AEW asset with the Navy is obsolescent and its numbers, serviceability and vintage imply the Navy has to do with 'what it has' rather than 'what it must have'. The IAF's AEW/ AWACS assets are also limited resulting in an unhealthy situation. The answer lies in ship based fixed wing

AEW aircraft that have the advantage of better range, time on station and sensors than their rotary wing counterparts. Sadly none of our aircraft carriers can embark such aircraft for lack of a catapult launch system. The helicopter fleet of the Navy still flies the vintage but venerable Chetak and Sea King. Its ongoing induction of the MH-60R is a shot in the arm but the numbers contracted (24) are inadequate against the earlier stated requirement of 123.

Air power can deter and destroy multifarious threats in the maritime environment that emanate from under the surface (submarines), surface (warships) and from air. Its ability to do so fast and without getting close to the enemy would undoubtedly give sleepless nights to a nation without adequate air power, even in peacetime. Chinese expansion of air power is progressing at a hectic pace and given its trajectory and our tortoise like pace, we run the risk of spending sleepless nights. Hence, it is imperative that we invest substantially in crafting a potent capability. To do so, here are a few 'must do fast' actions. First, a third aircraft carrier of at least 75000 tonnes, capable of operating fixed wing AEW aircraft and a larger number of fighters requires immediate approval and commencement of work. Secondly, the IAF requirement of 114 Multi Role Fighter Aircraft (MRFA) and IN one of either F/A-18 Super Hornet or Rafale-M must be fulfilled on a 'fast track' basis. Thirdly, the quality and quantity of critical combat enablers in IAF such as Air to Air Refuellers (AAR) and AWACS must be augmented immediately. Fourthly, add more teeth to the anti-submarine/ anti-surface vessel capability by inducting more numbers of MH-60R. Fifthly, increase joint participation by IAF and IN in multinational maritime exercises in the Indo-Pacific. Last, develop a major joint air base in the Andaman & Nicobar Islands and deploy assets that give it full spectrum conventional capability.

Geo-political currents in the Indo-Pacific due to China have destabilized the region. As a Quad member, India can be a major stabilizing player. Neither the littorals in the Indo-Pacific nor China will be swayed by our statements or optics. Hard power is what the Chinese respect. Hard power is also what will enable us to live in peace, focus on stability and ensure development, which is our vision of Security And Growth for All in the Region (SAGAR). Our hard power must bring more value to the table. The more valuable our hard power is to friends, partners, and allies, the better our geo-political standing. Enhancing our air power capability is a good start.

<https://www.financialexpress.com/business/defence-air-power-at-sea-requires-a-big-boost-3125656/>



Wed, 14 Jun 2023

India is Drifting away from Russia on Defence

By Harsh V Pant

Defence partnerships, by their very definition, are strategic in nature. A simple act of buying and selling weapons, more often than not, binds nations in a symbiotic relationship that can be both liberating and constraining at the same time. It gives the buyer nation much-needed space to conduct its foreign policy without the threat of violence hanging overhead, and to be able to respond in kind, if indeed that threat comes to pass. In the anarchical environment that is international politics today, effective military capability is the sine qua non for effective diplomacy.

Yet, the constraints of defence partnerships are equally strong. An overdependence on external supplies of weaponry keeps a nation perpetually on tenterhooks, forcing upon it choices that it would not make otherwise. In an attempt to keep the defence supplier in good humour, the buyer has to ensure deft navigation of ties as and when interests diverge. A buyer nation is often forced to

craft its foreign policy according to the benevolence of the supplier nation; for any country, that can be costly at times.

Throughout the Cold War, the structural realities were such that India and the West were on the opposite ends of the political spectrum. The West targeted with a vengeance India's attempts at securing its strategic autonomy and denied it access to high-end technology, be it civilian or defence. Facing this technology denial regime, where India started building its nuclear and space programmes indigenously, it reached out to the former Soviet Union for meeting its operational defence requirements. India, right from Independence, faced a tough neighbourhood with Pakistan and China emerging as critical threats. And both ended up having the support of the West.

To secure its periphery and wider interests, New Delhi entered into a defence partnership with the former Soviet Union that helped India manage a highly adversarial regional and global environment. While the Soviet Union balanced the United States (US) at the global level, the arms it supplied to India allowed New Delhi to hold its own against regional adversaries. From aircraft carriers to nuclear submarines, the sky became the limit for the Indo-Soviet defence partnership. However, a relationship that evolved due to the structural requirements of Cold War geopolitics, soon turned into one of extreme overdependence in the absence of efforts by New Delhi to develop its own domestic defence manufacturing base.

As the Cold War ended and the international order shifted, the need for diversification of defence imports became all the more obvious. And a process started that continued till date whereby India started engaging nations as diverse as the US, France and Israel in defence. Though Russia's share of Indian defence imports fell from 62% to 45% between 2017-2022, it remained India's largest defence supplier by a wide margin, with France coming in second at 29%.

Moscow has proved to be a reliable defence partner of India over a long period, and this gives it a lot of cache in Indian strategic circles. In defence, reliability is a key criterion if a long-term relationship is to be sustained.

But changing strategic realities come with their own constraints and possibilities. Russia's war against Ukraine is putting pressure on the ability of the Russian defence industry to meet Indian defence needs. Even to meet its own material requirements, Moscow is today having to rely on Iran and North Korea for weapons and munitions, raising serious doubts about its ability to fulfil its external obligations. The Indian Air Force has publicly made a statement that due to the war in Ukraine, Russia won't be able to meet its commitments on vital defence supplies to India.

More significant perhaps is the growing perception of an ever-closer Moscow-Beijing relationship. At a time when the most important security challenge for New Delhi is China's aggression along the Line of Actual Control, Russia's gravitation toward China will inevitably have an impact on how New Delhi views its long-term defence partnership with Moscow. Reliance on Russian weaponry for taking on Chinese soldiers along the LAC is an interesting contradiction that may have influenced India's stance on the Ukraine war, but it is hardly likely to be a sustainable option for a problem that is going to be part of India's strategic calculus for years to come.

It is in this context that one has to view the conclusion of a roadmap for US-India Defence Industrial Co-operation during US secretary of defence Lloyd Austin's recent visit, aimed at galvanising technology co-operation and co-production in India's defence needs. Ahead of Prime Minister Narendra Modi's US visit next week, the two nations are also negotiating a security-of-supply agreement, and a reciprocal defence procurement pact. The same week also witnessed German defence minister Boris Pistorius pitching for Berlin as a reliable defence partner with ThyssenKrupp AG and Mazagon Dock Shipbuilders Limited (MDL) signing a MoU to jointly bid for constructing submarines for the Indian Navy.

For the West, this is a moment to reflect on the possibility of weaning India away from Russia; for New Delhi, the costs of overdependence on a single nation for defence requirements are becoming obvious. This recalibration is likely to produce new defence engagements and New Delhi would do well to make the most of this unique moment in global politics.

<https://www.hindustantimes.com/opinion/india-is-drifting-away-from-russia-on-defence-101686751510421.html>

The Tribune

Thu, 15 Jun 2023

Quantum Warfare Poses Threat to National Security

By Lt Gen DS Hooda (Retd)

As we find ourselves amid the fourth industrial revolution, with quantum technologies spearheading progress, nations worldwide acknowledge the critical necessity of quantum readiness. India has now joined these frontrunners, having launched the National Quantum Mission in April with a substantial budget allocation of Rs 6,000 crore. While the objectives of the mission are commendable, as we step into this new era, we must also consider the looming threat to our national security from quantum warfare.

The second quantum revolution, as it is known, could completely reshape technologies related to computing, communication, cryptography and sensing. Notably, many countries have recognised this shift, dedicating considerable resources to quantum research.

In 2018, the US passed the National Quantum Initiative Act ‘to accelerate quantum research and development for the economic and national security of the country.’ Russia, Germany, the UK, France and Canada have affirmed their commitment to quantum technologies, earmarking substantial funds for research projects.

China is emerging as a leader in quantum technology, launching the first-ever satellite dedicated to quantum communication, Micius, in 2016. The nation has reported breakthroughs such as the quantum teleportation of a two-particle system, creation of the world’s inaugural quantum router and the establishment of the first-ever quantum-encrypted government network. China’s ambitious plans include setting up a satellite-based quantum communication system and launching a solid-state quantum chip project.

While quantum technology holds immense promise for the advancement of humankind, it also has a dark side — its potential weaponisation for military use. Quantum warfare will become a reality within the next 10 years. Quantum sensors would detect objects that are invisible to traditional sensors, such as stealth aircraft and submarines. The employment of quantum technology will potentially create new military capabilities that could disrupt current military systems, necessitating significant investments in upgrading defence capabilities and developing new offensive technologies. This potential could trigger a global quantum arms race, escalating tensions between nations and raising the risk of conflicts over strategic resources.

Quantum technology is today in an early stage of development, but the preparation for quantum warfare must begin now. The speed at which new technologies have evolved and have been adopted has surprised most experts. Within six months of the launch of ChatGPT, there are limitless ways in which users are utilising its potential. Similarly, a breakthrough in quantum

technology could suddenly be upon us, and if we are not fully ready, it could have serious implications for our national security.

The most imminent threat posed by quantum technologies is in the field of encryption. Current encryption algorithms use a 128-bit or 256-bit key to encrypt data, and the fastest supercomputer available today would take billions of years to test every possible key and crack the encryption. As quantum computers mature, their formidable processing capacity could render current cryptographic systems obsolete. South China Morning Post recently reported that a Chinese quantum computer, Jiuzhang, can process artificial intelligence-related tasks 180 million times faster than the fastest supercomputer available today.

Although there are claims and counterclaims on how vulnerable the current encryption algorithms are to quantum computers and how quickly this technology would become available, there is a clear danger. Data harvesting (storing encrypted data for later decryption with quantum computers) has already commenced in several countries. In a 2022 poll conducted by Deloitte, more than half the respondents believed that their organisations were at risk of ‘harvest-now, decrypt-later’ attacks.

Recognising this imminent threat, President Joe Biden signed the Quantum Computing Cybersecurity Preparedness Act into law in January. This act encourages all government agencies to prioritise transitioning to post-quantum encryption solutions in light of the potential dangers posed by quantum computers.

The technology for the implementation of quantum-resistant communication is already with us. Post-quantum encryption refers to cryptographic algorithms that are secure against attacks by future quantum computers. There is a pressing need to implement these new encryption and signature schemes on our critical infrastructure assets.

Currently, the US National Institute of Standards and Technology (NIST) is conducting an international competition to select the ‘post-quantum cryptography’ algorithms to be standardised and adopted across the globe. The process started in 2016, and in 2022 the NIST identified four promising post-quantum algorithms. These could form industry and government-standard encryption and identity authentication schemes.

India has set ambitious targets in its National Quantum Mission to develop quantum computers, satellite-based secure quantum communications and multi-node quantum networks with quantum memories. Our national and academic institutions — Defence Research and Development Organisation, Centre for Development of Advanced Computing, Indian Institutes of Technology and International Institute of Information Technology, Hyderabad, to name a few — already have some of the groundwork in place.

The need now is to craft a cohesive post-quantum security strategy. India has formidable economic power and abundance of talent, but often falls short in the formulation of a strategy — the most notable absence being that of a national security strategy. The lack of a strategy generally leads to sub-optimal employment of resources. An essential element of India’s strategy must be securing of our infrastructure in three most critical sectors — defence, energy and banking. Any breach in these systems, any weakness that exposes them to quantum-level threats, could have grave consequences.

In setting up the National Quantum Mission, the government acknowledges the urgency to adopt next-generation transformative technologies on a war footing. Just as ‘Digital India’ has been a tremendous success, we must now confront the challenges of the quantum age with an equal measure of urgency and determination.

<https://www.tribuneindia.com/news/comment/quantum-warfare-poses-threat-to-national-security-517162>

With Eye on Allies and Partners, Pentagon Makes Changes in its Foreign Military Sales Process

In a significant shift, the US secretary of defence Lloyd Austin has instructed agencies implementing foreign military sales (FMS) to improve their understanding of requirements of allies and partners; enable efficient reviews for the release of technology; provide allies and partners priority capabilities; accelerate acquisition and contracting support; and incorporate the requirements of allies and partners in the expansion of US's own defence industrial base capacity.

Austin's decision comes in the wake of a concerted effort by the US to build a networked security architecture in the Indo-Pacific and ease the rigid system of export controls that govern sales and tech transfer of US systems even to the closest allies. The decision is also expected to help the relationship with India, with which the US has just concluded a road map on defence industrial cooperation. In a statement, the department of defence (DoD) said that Austin had set up a FMS Tiger Team in 2022 "to address historical inefficiencies in the United States' transfer of defence articles and services to foreign allies and partners". Under FMS, the US government uses DoD's acquisition system to procure defence articles and services on behalf of allies and partner nations. The Tiger Team's recommendations are leading to six shifts.

One, to understand needs of allies and partners, DoD will change the way it "organises, trains, and equips for security cooperation, including by establishing a Defence Security Cooperation Service on par with the Defence Attaché Service". Two, for the efficient release of technology, DoD will "review and update policies", empower accountable officials, and work with other agencies. Three, to help allies and partners meet their own national security needs, DoD will improve its own methodologies.

Four, to accelerate acquisition, it will establish contract award standards and develop process maps to monitor FMS priorities. Five, in the process of expanding its own defence industrial capacity, DoD will develop a comprehensive study to incentivise DIB investment in production capacity and building surge capability for high-demand, low-supply platforms, systems, and services. "The strategy will include use of multi-year contracts; enhanced use of the Special Defence Acquisition Fund; five-year predictive analyses of partner demand; and sustained engagement with the DIB." And finally, DoD will work with state department and the US Congress to improve these processes.

Explaining the significance of Pentagon's decision, including for India, Frank O'Donnell, a non-resident fellow at the Stimson Centre South Asia programme, said, "This initiative shows that DoD, at its most senior levels, is committed to streamlining defence technology cooperation with partners and allies. India's capability requirements will be central in shaping these reforms, and Delhi can expect to similarly be one of its key beneficiaries."

However, he said that similar urgency was required from India in demonstrating its willingness to reduce bureaucratic barriers to defence technology cooperation and interoperability with the US. "The upcoming state visit of the Prime Minister - and, in particular, the related proposed Predator acquisition, long beset by delays on the Indian side - are prime opportunities for Delhi to underline this intent."

<https://www.hindustantimes.com/world-news/with-eye-on-allies-and-partners-pentagon-makes-changes-in-its-foreign-military-sales-process-101686756487511.html>

China Builds on its Global Military Intelligence Network, but is Still Playing Catch up to the US

Amid reports that China is expanding its electronic eavesdropping capabilities in Cuba - which Beijing has denied - China's evolving military surveillance network has some way to go to match the sweep and reach of the U.S. and its allies, defence and intelligence analysts say.

WHAT IS A FOREIGN LISTENING POST?

Five defence and intelligence analysts and four diplomats say large-scale military operations, even in peacetime, demand extensive attempts to vacuum up communications and electronic emissions, all part of what is known as signals intelligence (SIGINT).

The targets could be, for example, conversations between military commanders, a ballistic missile communicating with its command centre or microwave exchanges between a satellite and its ground station. All generate information that can be used against adversaries in a conflict.

Even if the communications can't be decoded, tracking the volume and timing of signals can provide vital intelligence, retired military officials say. Radars and jamming equipment also produce electronic signatures that can be captured.

Fibre optic cables and mobile phone networks have complicated SIGINT efforts, but militaries still routinely communicate via radio.

Large militaries operate ships, surveillance aircraft, satellites and sometimes submarines capable of gathering such signals, but land-based stations expand a nation's scope and reach.

The United States and its allies operate a vast global military surveillance network, centred around the listening posts of the Five Eyes grouping of the U.S., Britain, Canada, Australia and New Zealand and the long-standing U.S. military presence in the Indo-Pacific, including sites in Taiwan, Guam and Diego Garcia, a British territory.

WHY PUT ONE IN CUBA?

The Cuba station is important to the People's Liberation Army for several reasons. It puts the East Coast of the U.S. within range, including military and civilian space launches in Florida and several large army and naval bases.

Cuba's proximity to the equator could make it easier to monitor geostationary military satellites, said one retired military official familiar with such operations.

It could also help China watch the development of SpaceX's Starlink satellite network - a communications tool that Ukrainian forces have used extensively in their conflict with Russia, which Moscow calls a "special operation".

Carl Thayer, a professor at the Australian Defence Force Academy of the Australian National University, said that although PLA surveillance had a long way to go in catching up with the reach of the U.S. and its allies, the Cuba station marked a fresh front in the SIGINT rivalry.

Aside from monitoring capabilities, a large, permanent presence on Cuba "is an important symbol, getting right under the noses of the U.S. and reflecting China's global ambitions", he said.

China's ministry of defence declined to comment.

In 2019, Reuters reported that China's military was running a space monitoring station in Argentina.

WHAT DOES CHINA HAVE ALREADY?

Defence analysts and diplomats tracking China's military modernisation say that Beijing has extensive listening posts on the Chinese mainland and Hainan Island but that its broader offshore operations remain a work in progress.

After reclaiming and fortifying a string of disputed reefs in the South China Sea over the last decade, China built new SIGINT infrastructure reaching deep into Southeast Asia, according to a 2018 study by the International Institute for Strategic Studies in London (IISS).

China operates its own Beidou system of global navigational satellites and deploys large space tracking ships in the Indian and Pacific Oceans as well as smaller maritime surveillance craft and early warning and surveillance aircraft.

The IISS Military Balance notes China operates 207 satellites, including 86 for SIGINT and early warning operations.

The Pentagon's 2022 report on China's military said the tracking ships are operated by the PLA's expanding Strategic Support Force (SSF) and can follow ballistic missile launches and satellites.

The SSF also operates tracking and command stations in Namibia, Pakistan and Kenya, as well as Argentina, the report notes.

Regional diplomats say that as China builds a global military intelligence network, it lacks a U.S.-style system of alliances and partnerships that can help discreet surveillance efforts.

WHERE ELSE MIGHT CHINA BUILD THEM?

Speaking on Monday, U.S. Secretary of State Antony Blinken did not specify other countries China was considering for listening posts, but some Western diplomats say they expect Chinese diplomatic pressure for facilities in the South Pacific and across the Indian Ocean.

The Pentagon report lists 14 countries where China "has likely considered" military logistics facilities, including Myanmar, Sri Lanka, Tanzania and Angola.

China's defence ministry declined to comment.

"This trend is only going to grow alongside China's global reach," said Singapore-based defence analyst Alexander Neill. "Wherever China establishes a new military footprint, they will need to establish a new SIGINT capability."

<https://economictimes.indiatimes.com/news/defence/china-builds-on-its-global-military-intelligence-network-but-is-still-playing-catch-up-to-the-us/articleshow/100986445.cms>



Wed, 14 Jun 2023

Improved Defence Capabilities can Track Objects in Space, Claims Russia

Russia said on Wednesday it has enhanced its defence capability to track objects in space, allowing it to detect foreign spacecraft and determine their purpose much more quickly.

Defence Minister Sergei Shoigu was briefed by Colonel General Alexander Golovko, commander of Russian space forces, during a visit to a new facility in Russia's western military district, his ministry said.

Russia likes to boast that it is developing military technology unmatched by other countries despite the distraction of its costly war in Ukraine, where it has struggled to make headway against a highly motivated defending army equipped with advanced NATO weapons.

Shoigu was informed that the new site has "unique capabilities for automatic search, detection and control of small space objects in near-Earth space", the ministry said.

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It can track objects as small as 10 cm (4 inches), it added. By 2027, it would be able to detect spacecraft post-launch four times faster than before, and to determine their purpose twice as fast.

<https://www.ndtv.com/world-news/improved-defence-capability-to-track-objects-in-space-russia-claims-4121029>

Science & Technology News



Wed, 14 Jun 2023

ISRO & JAXA Forge a Lunar Partnership: LUPEX Mission set to Soar

Indian Space Research Organisation is in talks with the Japanese space agency JAXA on a future lunar lander mission. Called Lunar Polar Exploration or LUPEX, this mission is projected to launch later in the decade.

LUPEX represents an exciting opportunity for India and Japan to combine their expertise and resources in exploring the lunar surface. The mission aims to study the Moon's polar regions which hold great scientific value and potential resources. By collaborating on LUPEX, ISRO and JAXA can jointly contribute to advancing our understanding of the Moon's geology, composition, and potential for future human exploration.

A Cosmic Partnership:

Last week Indian Ambassador to Japan Sibi George visited JAXA Tsukuba Space Center and held discussions with Dr Yamakawa Hiroshi, President JAXA. Based on the information in the public domain, discussions were focused on the ongoing projects on lunar exploration, navigation, and exploring potential of the two countries collaborating in the space sector.

Recognizing the immense scientific and commercial potential of lunar missions, both countries are eager to combine their knowledge, skills, and resources to accelerate progress in this domain. The establishment of a lunar base, sample return missions, and robotic exploration are among the ambitious goals that collaboration can help achieve. "Collaborative efforts can lead to accelerated progress in understanding the Moon's geology, resources, and potential for future human missions," explained a top diplomat who wished to remain anonymous.

Navigating the Stars

Navigation is another crucial aspect of space exploration, and enables precise positioning and guidance of spacecraft. Working jointly in navigation technology can improve mission success rates, enhance spacecraft autonomy, and support more complex missions, such as interplanetary exploration.

The discussions on potential collaboration in the space sector highlight the willingness of both countries to strengthen their partnership and share expertise. By pooling their resources, India and Japan can jointly develop advanced technologies, conduct joint missions, and explore new frontiers in space. This collaboration can extend beyond lunar exploration and navigation, encompassing satellite development, Earth observation, space science, and satellite applications for societal benefits.

The outcomes of these discussions and potential collaborative projects hold the promise of significant advancements in space science and technology, opening up new opportunities for both countries and contributing to the global space community.

The two countries can also share their knowledge and experience in satellite design, development, and launch. Collaborative satellite missions could be undertaken to address common objectives such as climate monitoring, disaster management, and telecommunications.

Earth Observation: Space agencies of both countries can work jointly on Earth observation missions to enhance the monitoring of natural resources, weather patterns, and environmental changes.

Space Science Missions: Joint exploration missions to study celestial bodies, planetary science, and deep space phenomena can be pursued. And can together conduct cutting-edge research that can be shared with the global space community.

Human Spaceflight: The two countries can explore opportunities for cooperation in human spaceflight programs, such as sharing knowledge, training resources, and technological advancements. Collaboration in this area can pave the way for future joint manned missions and the exchange of astronauts.

Space Technology Development: ISRO and JAXA can engage in joint research and development of advanced space technologies, including propulsion systems, robotics, navigation, and satellite communication. Joint projects and knowledge-sharing initiatives can accelerate technological advancements and mutual capabilities.

<https://www.financialexpress.com/business/defence-isro-jaxa-forge-a-lunar-partnership-lupex-mission-set-to-soar-3125434/>



Wed, 14 Jun 2023

Indian Scientists Develop Low-Cost Method to Detect Alzheimer's at Early Stage

Researchers at the Indian Institute of Science, Bengaluru have developed a low-cost method to detect Alzheimer's at an early stage.

They have developed a small molecular fluorogenic probe that can sense a specific enzyme linked to the progression of Alzheimer's disease.

The team claims that it can be fabricated into a strip-based kit that may enable on-site diagnosis.

The details have been published in *Analytical Chemistry*, which states that the early detection of Alzheimer's disease is important for taking proper measures against it.

Alzheimer's disease is a progressive neurological disorder that affects millions of people worldwide and is characterised by a gradual decline in memory, thinking, and cognitive abilities.

It is due to the accumulation of two abnormal protein structures in the brain: beta-amyloid plaques and tau tangles. Beta-amyloid plaques are sticky clumps of protein fragments that accumulate between neurons, disrupting their communication and leading to cell death. Tau tangles, on the other hand, are twisted fibers of the tau protein that build up inside neurons, impairing their ability to transport nutrients and essential molecules.

Debasis Das, Assistant Professor at IISc along with Jagpreet Sidhu, a CV Raman postdoctoral fellow have designed a small molecular probe that can sense a specific enzyme linked to the progression of Alzheimer's disease.

"Our target enzyme is Acetylcholinesterase (AChE)," researchers said adding that studies have shown that in the early stages of Alzheimer's disease, AChE levels become imbalanced, thus making it a potential biomarker for the disease.

Brain cells or neurons secrete neurotransmitters – molecules that instruct other cells to perform certain functions.

Acetylcholine (ACh) is one such neurotransmitter, its levels in our nervous system are tightly controlled by enzymes like AChE, which breaks it down into two parts – acetic acid and choline.

The team analysed the crystal structures of the enzyme (AChE) and the substrate (ACh) and designed a synthetic molecule that mimics ACh.

The probe developed by the team has one structural element (quaternary ammonium) that interacts specifically with AChE, and another that binds to the active site in AChE and gets digested (just like natural ACh), giving out a fluorescent signal.

They tested the new tool on commercially available AChE as well as lab-made human brain AChE expressed in bacteria.

"We now have a proof-of-concept and a lead. Our goal is to take it to translation, in an Alzheimer's disease model. For this, we need to modify the probe," says Das.

<https://www.indiatoday.in/science/story/indian-scientists-develop-low-cost-method-to-detect-alzheimers-at-early-stage-2392963-2023-06-14>

