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DECCAN HERALD

Thu, 17 Oct 2019

'India's tech progress to safeguard national interest'

New Delhi: India's pursuit of advancement in critical technologies is to safeguard its national interest and not to dominate others, said P K Mishra, the principal secretary to the prime minister, on Wednesday.

Addressing the 41st Defence Research and Development Organisation (DRDO) here, he said scientists should not just be content with developing technologies and their applications but must aspire to make India a global leader and an important stakeholder in the new international protocols.

He also suggested three Rs -- requirement, resources, and relevance -- as key factors in determining the country's quest for advancement in emerging technologies.

"Our requirement is to seek advancement in key technologies of the future to safeguard our national interest in a constantly evolving geopolitical arena and ensure socio-economic progress through application of such technologies. Our pursuit of technological advancement is not for exerting influence or dominating others but to make it a level-playing field," he said.

The top bureaucrat emphasized the need to develop a strong understanding as well as insight in technological changes and anticipate focus areas in order to first gain, and then maintain, a competitive edge.

This is critical not just for geopolitical and national security reasons, but also to ensure that the country sits at the high table in global dialogues and initiatives in the field of innovation as well as trade and commerce, Mishra said.

He said the availability of key resources could be a limiting factor in the quest for key technologies. But this could, on the other hand, offer an opportunity to innovate, he pointed out.

Using such initiatives in emerging technologies, the DRDO must hone its skills so as to become a net producer of value-added resources, he said.

Emerging technologies, he observed, must be relevant to development efforts, and spin-offs from them would support in various spheres.

He also cited the example of space technologies developed by the ISRO to help farmers in different ways.

"Similarly, innovative use of artificial intelligence in agriculture, manufacturing industry, and even use of smart materials could be of immense relevance to various sectors of the economy," Mishra said.

Referring to the young scientists laboratories, Mishra said they should not work in silos.

In 2015, the government sanctioned establishment of seven young scientists centres headed by the younger lot in the DRDO.

Mishra said the scientists should keep abreast with associated researchers in related fields and the requirements of the industry.

"This logic extends to the cross-platform integration of focus areas in these five labs, because the focus areas are interdependent in their technological premise as well as applications. Hence, they need to talk to each other," he said.

https://www.deccanherald.com/national/indias-tech-progress-to-safeguard-national-interest-768973.html

ANI

Thu, 17 Oct 2019

Success of DRDO's young scientists' labs essential for India: Top PMO official

ANI | Updated: Oct 16, 2019 21:17 IST

New Delhi [India], Oct 16 (ANI): In line with Prime Minister Narendra Modi's views, the DRDO has set up five laboratories under young scientists below the age of 35 who would be working in fields including artificial intelligence and smart materials, Principal Advisor to Prime Minister PK Sinha said on Wednesday.

"He (Prime Minister Modi) suggested that young scientists below the age of 35 years be given an opportunity to innovate and explore frontier areas. With this in view, DRDO has taken the momentous step of setting up five Young Scientists' Laboratories working in five niche technology areas such as artificial intelligence, quantum technologies, cognitive technologies, asymmetric technologies and smart materials," Sinha said.

He made the comments while addressing the 41st DRDO Directors' Conference.

Mishra said the five labs will offer a useful template of research and development in the field of emerging technologies in the country.

"Their success is essential for our country gaining pole position in this global race, where shelf-life of products as well as technologies is getting increasingly shorter. This is a bus we cannot afford to miss, if we want to achieve a decent quality of life for our citizens," he said.

Urging the young scientist labs to not work in silos, the top official in the PMO said that these labs "should be kept abreast with associated researchers in related fields and the requirements of the industry."

Mishra suggested the success mantra of three R's -- Requirement, Resources and Relevance -- to the young DRDO scientists as key factors in determining the country's quest for advancement in emerging technologies.

He said that a mechanism also needs to be evolved to monitor the progress against the stated objectives, and constantly update with international developments in related fields. "We do not wish to end up in a scenario where we are found to be reinventing the wheel," Mishra outlined.

"We must aspire to become global leaders and important stakeholders in new international protocols, which are bound to be formulated and reformulated as the world sees a constant transformation in technological and innovation landscape," he said.

"I look forward to seeing our share in patent applications from these focus areas rise manifolds in the years to come," Mishra added.

The top PMO official underlined that the innovative use of artificial intelligence in agriculture, manufacturing industry, and even use of smart materials could be of immense relevance to various sectors of the economy.

He expressed confidence that the young scientists will be capable of making desired advances in the next-generation technology and innovation, provided they are supported by an ecosystem which allows them the freedom to think and execute.

Mishra said that the labs should be linked to the indigenous development of 'supporting the hardware in chips, materials and so on, asserting that it will truly be in line with the Prime Minister's flagship 'Make in India' initiative. (ANI)

REPUBLIC

Thu, 17 Oct 2019

DRDO complimented by PM's principal secretary for fulfilling vision

PK Mishra complimented the DRDO for fulfilling the Prime Minister's vision of having at least five labs run by scientists under the age of 35 years

By Devarshi Mankad

Mumbai: The Defence Research and Development Organisation (DRDO), on Wednesday, stated that Dr P.K. Mishra, the Principal Secretary to the Prime Minister complimented the organization for attaining the PM's vision of creating a Young Scientists Labs. The Principal Secretary praised DRDO for providing technology leadership for defence systems.

'Fulfilled PM's vision'

The DRDO tweeted, "Dr. PK Mishra PS to PM complimented DRDO on fulfilling Prime Minister's vision of creating 5 Young Scientists Labs manned by scientists of age less than 35. This will allow young scientists to innovate independently. He added that technology leadership will be determined by who drives it and the chosen areas. He appreciated DRDO's role in providing technology leadership for defence systems."

The Principal Secretary was attending the 41st DRDO Directors' Conference, where he said, "DRDO has taken the momentous step of setting up five Young Scientists' Laboratories working in five niche technology areas such as Artificial intelligence, Quantum Technologies, Cognitive Technologies, Asymmetric Technologies, and Smart Materials."

The Prime Minister, in his first term, had advised the DRDO to have at least five laboratories of defence research agency to be headed by scientists younger than 35 years of age. The DRDO, soon after PM's nudge set up a new lab within the Electronics and Communications Systems (ECS) department fro young scientists. In 2014, at a DRDO event, Prime Minister had asked the scientists and the authorities to bring in some fresh, young faces and also to complete the projects on time. In a speech. he said, "The big challenge is how do we complete our work before time. If the world brings out a weapon in 2020, can we do it by 2018? Can you select five laboratories where everybody will be below 35 years in age? Even the decision-makers are below 35 years? You need to take a risk and bring some fresh air".

Need for innovation

The Prime Minister had highlighted the need to be fast and lead the way in Defence Research and innovation. "That is why the challenge before India is that how do we complete work before time. If the world is coming up with some products in 2020, can we come in the field prepared with products in 2018. DRDO has to decide whether it has to respond to the situation or it has to be proactive and set agenda for the world and we have to set agenda for the global committee. We can be the world leader by not following but by showing the way," the Prime Minister had said.

https://www.republicworld.com/india-news/general-news/drdo-complimented-by-pms-principal-secretary-for-fulfilling-vision.html

Thu, 17 Oct 2019

Aim for technology that remains contemporary for 10-15 years, Rajnath Singh tells DRDO

Rajnath Singh lauded DRDO for achieving the 100 days' target and identifying milestones to commemorate 75 years of Independence and the roadmap for 5 years

New Delhi**:** Defence Minister Rajnath Singh on Tuesday asked DRDO to aim for the systems with technologies that remain contemporary for next 10-15 years so that the armed forces maintain technological superiority. Addressing the 41st DRDO Directors' conference here, he called upon DRDO fraternity to imbibe the working ethos of former President Bharat Ratna Dr A P J Abdul Kalam. He stated that defence research and development and manufacturing has the potential to provide highest employment, direct or indirect. According to a Defence Ministry release, the minister said technology also has its limitations and development of products have a gestation period. "For such complex systems, the technical requirements keep evolving during the development cycle. Spiral development of these systems should be preferred option," he said.

He lauded DRDO for achieving the 100 days' target and identifying milestones to commemorate 75 years of Independence and the roadmap for 5 years. National Security Advisor Ajit Doval said DRDO has a seminal role in making India technologically strong. He mentioned that in modern war, technology and finance would decide the outcome. Noting that need-based technology will enable India to have an edge over its adversaries, he said critical technologies should be developed indigenously. The DRDO is the only organisation which can take up system integration and should further strengthen it, he said. Army Chief General Bipin Rawat expressed confidence that future wars will be won with indigenous systems.

He said DRDO has made major strides to ensure that needs of the services are met by providing various weapon systems. Chief of Naval Staff Admiral Karambir Singh in his address stated that Indian Navy is efficiently using Varunastra, Maareech, Ushus, TAL and various other DRDO-developed systems Air Chief Marshal RKS Bhadauria lauded the capabilities of Light Combat Aircraft Tejas and asked DRDO to develop next generation aircraft Advanced Medium Combat Aircraft (AMCA), harnessing the technologies and experience of LCA. He said DRDO has been able to achieve the objectives of self-reliance to a great extent in the past seven decades. Bhadauria appreciated the organisation's role in electronic warfare technologies, radars, composite materials for LCA, astra and other systems.

DRDO cheif G Satheesh Reddy spoke of various technologies developed by DRDO. He said the theme of the conference - Technology leadership for empowering India- was in line with the

requirement to develop indigenous systems with advanced technologies. Singh also released two compendia - `DRDO-Industry Partnership: Synergy' and `Growth and DRDO Products with Potential for Export'. DRDO Policy and Procedures for Transfer of Technology to support industry was also released by him. He also launched the new website of DRDO. Chitra Rajagopal, DG (SAM) said modernisation of armed forces was a continuous process based on threat perception, operational challenges and technological changes and DRDO was committed to equip our armed forces with Internationally competitive systems, giving then a decisive edge in the battlefield A conference is an annual event where a number of brainstorming sessions are planned over two days.

https://www.mid-day.com/articles/aim-for-technology-that-remains-contemporary-for-10-15-years-rajnath-singh-tells-drdo/21916156

THE HINDU

Thu, 17 Oct 2019

With Chief of Defence Staff due, Army feels need for a Joint Services Act

It will facilitate faster integration, feel officials

By Dinakar Peri

New Delhi**:** With the government announcing the appointment of a Chief of Defence Staff (CDS), the ongoing Army Commanders Conference (ACC) discussed the need for creating arrangements to enable effective integration, Army sources said on Wednesday.

"The government has approved CDS. There is need for creating arrangements and structures to synergise and which can pave way for effective integration. The ACC discussed requirement of a Joint Services Act. Currently each Service has an individual Act passed by Parliament," a source said. A Joint Services Act on approval by the government will facilitate faster integration, the source said.

While no recommendations are being sent to the government, officials said a broad report on the deliberations and outcomes of the ACC is sent to the government.

Prime Minister Narendra Modi, in his Independence Day address, announced the appointment of Chief of Defence Staff (CDS) who will be above the three Chiefs, a long-pending demand to bring in synergy and enable tri-Service integration.

A committee headed by the National Security Advisor has been constituted to finalise the modalities and the charter of the CDS with a mandate to submit the recommendations within 90 days. The CDS will act as the single-point military adviser to the government on military and strategic issues and will also oversee common service issues like procurement, training and logistics.

There is now a Chiefs of Staff Committee (COSC) comprising the three Service Chiefs with the seniormost as the Chairman. Army Chief Gen. Bipin Rawat recently took over as the Chairman COSC.

The ACC also discussed the restructuring of the Army headquarters which is part of the broader force modernisation for which some approvals have been accorded by the government. "It has been decided that restructuring in totality will commence on receipt of full government sanction to the proposals, whenever the same is received," a source said.

https://www.thehindu.com/news/national/with-chief-of-defence-staff-due-army-feels-need-for-a-joint-services-act/article29715102.ece

THE ECONOMIC TIMES
WWW.ECONOMICTIMES.COM

Thu, 17 Oct 2019

Indian Army plans to procure drones to counter enemy threats

The recent Indian Army commanders' conference ended with a decision to procure slow moving UAVs which can double up as missiles to counter any threat from across the border. The decision comes after IB submitted a detailed report on Pak drones

New Delhi: Amid heightened threats at the borders with Pakistan and China, the Indian Army has planned to procure load ferrying drones, slow moving unmanned aerial vehicles doubled up as missiles, and artificial intelligence based solutions for change detection to carry out surveillance at high altitude border areas, sources in the armed forces said on Wednesday.

The Army Design Bureau, facilitator for Research and Development efforts and initiation of Procurements of Weapons and Equipment required by the Indian Army, brought together all stakeholders at Manekshaw Centre in Delhi Cantonment on Tuesday where 40 different companies showcased their defense equipment, consisting mostly of drones and artificial intelligence based security solutions.

The bureau, which was set up in 2016, roped in the Defence Research and Development Organisation, academia, defence public sector undertakings (DPSUs), Ordnance Factory Boards, and private industry to deliver higher quality defence products.

Present at the venue were all Indian Army commanders who had decided to procure slow moving unmanned aerial vehicles (UAVs) doubled up as missile, known as loiter munition drones, to counter any threat from across the border.

Some of the UAVs showcased can also hit human targets. "It was a most preferred defence product during the meet and Indian Army has decided to procure as per need and requirement," said sources in the force.

A loiter munition drone is a kind of UAV designed to engage beyond line-of-sight ground targets with an explosive warhead. Loiter munitions are meant to provide infantry the capability to strike while they move carrying out surveillance. T

here were also drones that can be used to carry loads up to 40 kgs above 10,000 feet. Indian Army stated that these drones would be very helpful in providing logistics during winters at high altitude when the roads are closed down due heavy snow making difficult to transport any logistics. "It will be very effective in treacherous terrains both on the China and Pakistan frontiers," said an Indian Army officer.

Recently the Intelligence Bureau has submitted a detailed report to the Defence and Home Ministries citing the threat of Pakistan state actors sending drones to smuggle ammunitions into India. It has also said that the drones recovered in Punjab were all of Chinese make.

Last month, Indian investigative agencies had recovered drones in Punjab which were apparently sent by terror groups linked with the Pakistan's ISI.

https://economictimes.indiatimes.com/news/defence/indian-army-plans-to-procure-drones-to-counter-enemy-threats/articleshow/71612264.cms

THE TIMES OF INDIA

Thu, 17 Oct 2019

IAF exercise in civil airports starts with Kolkata

By Jayanta Gupta & Shubhro Niyogi

Kolkata: Flyers in Kolkata airport may witness a multirole Su-30 MKI air superiority fighter aircraft take off from close quarters in the days to come. NSCBI Airport, along with five other airports in the region — Andal, Guwahati, Dimapur, Imphal and Pasighat — will be used in two phases by the Indian Air Force as part of its exercise to familiarise pilots and ground crew with operations at busy civilian airports.

The first phase for the fighter operations started on Wednesday with two Su-30 MKIs landing in Kolkata. It will continue till Saturday. The next one will be from October 29 to November 1. Apart from the Su-30 MKIs, Hawks will also participate in the exercises. Though Hawks are primarily used as advanced trainers by the IAF, they can double as fighters. “This is part of capability build-up and operational training from dispersed locations in case of hostilities. While IAF pilots and ground staff will learn about operations at busy airports and co-ordinate operations with their civilian counterparts, the civilian functionaries will get to familiarise themselves with military operations. The air-traffic controllers will be guided by fighter controllers of the IAF when the military aircraft take off, ” an IAF officer said.

History has it that the two Gnats and two Mig-21s of the IAF that shot down two Pakistani Sabres in the Battle of Boyra on November 22, 1971, took off from the Kolkata airport. According to some, the present IAF exercise is significant as Integrated Battle Groups of the Army’s Panagarh-based Mountain Strike Corps are currently engaged in Ex Himvijay in the Northeast.

The Kolkata air traffic control (ATC) will issue a Notice to Airmen (NOTAM) for the exercise, cautioning about consequential delays. “We do not anticipate major delays. The two-hour slots for the exercise in the mornings and evenings were decided jointly, keeping in mind the need for least disruption in civilian flights and IAF’s commitments. Since fighter planes carry critical fuel, they cannot be kept on hold. Some civilian flights may be delayed by 5-10 minutes, but we don’t anticipate any major disruption,” a senior ATC official said.

The fighters will be under the operational control of Kolkata ATC with fighter controllers overseeing the operations at the air traffic navigation facility at the airport. “There will be a few more flights during these hours. As IAF planes will fly in formation, it will be new for the controllers. Though fighter jets are capable of flying at twice the speed of civilian aircraft, we do not see any problem in ensuring safety of all flights,” the official added.

https://timesofindia.indiatimes.com/city/kolkata/iaf-exercise-in-civil-airports-starts-with-kolkata/articleshow/71622835.cms

The Tribune
VOICE OF THE PEOPLE

Thu, 17 Oct 2019

Ropar IIT in pact with Army for tech solutions

Ropar: The Indian Institute of Technology (IIT), Ropar, has appointed Lt Gen PM Bali as Professor of Practice here today. Lt Gen Bali was offered the position when he was here to deliver a lecture.

An MoU was also signed on the occasion between Ropar IIT and the Indian Army for collaboration in academics and research.

Chief of Staff of Army's Western Command Lt Gen Bali delivered his first lecture at the institute on "China: An Overview" that brought out a broad understanding of China, its psyche and philosophy, strategic interests, dynamics of relations with India, possible triggers of future conflict and their manifestation and implications for India.

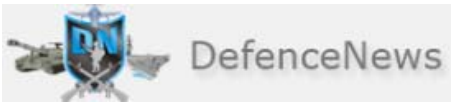
Explaining the contours of China's Belt and Road initiative, he marvelled on its scale and sophistication, while underscoring the technological, economic and strategic implications.

He added, "We can foresee with confidence that with the way we are going ahead by associating with institutes such as Ropar IIT, Indian Army will win wars with Indian solutions."

Highlighting the detrimental effect of India's dependence on import for military capability, he said, "Military superiority is not determined by numbers alone, armed forces need better technology."

Professor SK Das, Director, Ropar IIT, said, "This is just a beginning of academia-Army relationship. Ropar IIT is ready to give technological solutions to the issues faced by the Indian Army that needs to be addressed. Ropar IIT will also explore the possibilities of conducting short-term courses and lectures at the institute by the Indian Army.

https://www.tribuneindia.com/news/punjab/ropar-iit-in-pact-with-army-for-tech-solutions/848048.html



Thu, 17 Oct 2019

Army to create structures for operational synergies with Navy, IAF

Top commanders of the Army on Wednesday deliberated on creating arrangements and structures to bring synergy in operational functioning with the Navy and Air Force following Prime Minister Narendra Modi's policy directive for tri-services coordination two months ago.

At a key conference here, the top commanders also felt that a Joint Services Act will facilitate faster integration of operation of the three forces, besides enhancing combat overall combat capabilities, official sources said.

At present, each service works under provisions of individual Act passed by Parliament.

The commanders also decided to roll out at the earliest new training module at different levels to include various operational dimensions like space warfare and artificial intelligence.

As part of the training, the Army commanders have decided to focus on rolling out 'honour code' in officers training academies to instill moral and ethical standards wherein individual cadets are trained to behave as desired as per service ethos of the force, sources said.

In case of aberrations, there will be a self-correcting mechanism. The system of honour code was discussed in details which has been compared with international academies and it has been decided to roll it out, the sources said.

On enhancing coordination with the Navy and the Indian Air Force, the sources said the commanders discussed about creating arrangements and structures to achieve the goal of "jointmanship".

In a landmark military reform, Modi in his Independence Day speech on August 15 announced that the country will have a chief of defence staff (CDS) to bring synergy in functioning of the Army, Navy and Air Force.

The government has began work on creating the CDS by January next year.

The commanders, as part of a six-day deliberations from Monday, also discussed ongoing restructuring of the Army headquarters following some approvals accorded by the government.

Sources said it has been decided at the Army Commanders' Conference that restructuring in totality will commence on receiving "full sanction" by the government to the proposals which were aimed at making the army leaner and meaner as well as to enhance its combat capabilities.

The conference also discussed need for enhancing training in the Army.

With changing spectrum of war and conflicts, the ACC discussed in detail to adopt various dimensions of training like space, artificial intelligence, much-upgraded military education, the sources said.

The scope of training on these aspects is planned at different levels and shall be rolled out at earliest, they said.

The commanders also reviewed the operational preparedness of the Army in dealing with all possible security challenges and felt that the artillery ammunition inventory, particularly the precision guided munitions, in the formations guarding sensitive border areas needs to be enhanced.

Recently, 155MM excalibur artillery ammunition from US has arrived which can be fired at extended ranges, the sources said.

The complete proposal and acquisition was fast-tracked and this could happen primarily due to delegation of financial powers to the service headquarters and delegation of emergency powers to the Vice Chiefs of respective service headquarters, they said.

They said 155mm Dhanush towed gun system is under induction, adding it is going to qualitatively improve firepower of Indian artillery.

The commanders were also apprised about roll out of the Officers Automated Structured Information System (OASIS) for full automation of service records of officers. OASIS has been hosted on Army Intranet and has details of every officer's data from pre-commissioning to retirement.

The commanders also discussed the issue of non-empanelled officers and felt that the reason for not being empanelled was not due to lack of merit but because of lack of vacancy in select ranks.

It was decided that more number of non-empanelled officers now will be selected for foreign missions as well as for UN tenures, sources said.

All opportunities shall be provided to these officers for meeting their personal and professional aspirations, they said.

The commanders also discussed the long-pending proposal of granting pension to Emergency Commission officers who had actively participated in the 1965 and 1971 wars.

Sources said the Army headquarter will respond to the Defence Ministry's communication to its earlier proposal to grant pension to Emergency Commission officers who were part of the two wars.

The issue of granting ex-servicemen status to military nursing officer also figured in the deliberations.

Such a status shall help them with certain privileges which are not available today. Army headquarters is pursuing the case in a faster manner, the sources said.

http://www.defencenews.in/article/Army-to-create-structures-for-operational-synergies-with-Navy,-IAF-737486

THE TIMES OF INDIA

Thu, 17 Oct 2019

Army inducts Dhanush howitzer, American precision guided Excalibur artillery ammunition

New Delhi: In a major boost to its firepower, the Indian army has inducted the indigenous Dhanush howitzer and the American precision guided Excalibur artillery ammunition in its inventory.

According to Army sources, the top brass of the force was briefed about the induction of this weapon system and ammunition on Wednesday.

The Excalibur ammunition which has been acquired under the fast track procedure can hit targets at extended ranges.

Army commander's conference was briefed about ammunition's induction, where several other matters were also discussed including the new post of the Chief of Defence Staff and induction of 'Made in India' Dhanush artillery gun.

Army Commander's Conference discussed the issue of creation of the new post of the Chief of Defence Staff and it came to notice that army commanders felt the need for creating structures that can help in effective integration of the new office with services, sources said.

Army Commanders also discussed proposals about giving enhanced grants for personnel, who are invalidated out of service due to injuries and disabilities before 10 years of service.

Sources said that the commanders were also briefed about the induction of Dhanush artillery gun in the force and how it is going to enhance the firepower of the Indian Army in operations.

https://timesofindia.indiatimes.com/india/army-inducts-dhanush-howitzer-american-precision-guided-excalibur-artillery-ammunition/articleshow/71617795.cms

THE ECONOMIC TIMES

Thu, 17 Oct 2019

Is China planning to use military force?

Chang, founder of KanwaAsian Defence, says that China's primary military target is Taiwan, although it would hesitate to open a two-front war while still smarting from the trade war. China is also unsure of India's military response

Hong Kong: China is implementing the largest military build-up the world has seen since the end of World War II. The uppermost question that needs to be answered is why.

China has been investing heavily in the People's Liberation Army (PLA) even though the country is not at war and despite the fact that no country is directly threatening or targeting the authoritarian nation. Nonetheless, Chairman Xi Jinping has prioritized modernization of the PLA.

Who is the primary target in China's military sights? That is the question ANI asked Andrei Chang, founder of KanwaAsian Defence. There was no doubt in the editor's view: "Taiwan is number one." While Xi has been busy militarizing the South China Sea via a chain of reclaimed reefs that now host runways, ship berths, and military facilities, Taiwan remains the strategic priority for China.

Chang elaborated: "The South China Sea is already done in the first stage because they built many, maybe three, artificial military bases, including airports. If there's a possibility of trouble with the USA, America may invade such ocean islands and isolate them. In the case of a small-scale

confrontation occurring, this is what will happen in the South China Sea. But the main, main target, the first priority, is Taiwan."

The Canadian resident, who has studied the PLA for decades, said that Xi wants to not only learn from Mao Zedong but to actually go beyond what Mao achieved because Xi "is a very ambitious guy".

"He really wants to do some big thing, according to my information. He always talks to high-ranking military commanders, and it's this generation's mission to achieve unification. I do think the most dangerous area in Taiwan, and that's why many things in the military parade focused on Taiwan."

Chang was referring to the massive parade on 1 October when the PLA showed a plethora of new hi-tech weapons, of which 40 per cent had never been shown to the public before. Indeed, that parade demonstrated just how much research and development, as well as investment, is being poured into the PLA, the armed wing of the Communist Party of China.

With so much new shiny equipment in its hands, is the PLA willing to use it forcefully at the behest of its communist leaders? Would China actually be willing to attack Taiwan?

Chang gave his opinion. "Yes, it's very possible. Otherwise, why have they invested so much? At the moment, however, I think the first priority is economic and political warfare. They've penetrated Taiwanese society so much, including the press and media to make them more pro-Chinese. It's psychological warfare and propaganda warfare at the moment, as well as economic warfare against Taiwan. But if nothing works, Xi Jinping might think of the military struggle. He always uses the phrase 'military struggle preparation' or 'military struggle combat readiness'. He's serious and he could do anything within his term."

Given that Xi has already changed long-held rules -abrogating a regulation requiring the general secretary of the party to retire after two five-year terms - that means Xi has plenty of time to bring Taiwan to heel and to consider military options if current methods continue to fail.

Of course, the complicated and increasingly violent mess that has enshrouded Hong Kong for the past few months - a territory that is normally pragmatic and mostly concerned with making money - is demonstrating to all in Taiwan the dangers of embracing China. Indeed, the way Xi has handled Hong Kong is irreversibly repelling many Taiwanese.

What is more, China has modernized its military while the world's preeminent superpower - the USA - has been otherwise engaged in operations in places like Afghanistan, Iraq, and Syria. Belatedly, the USA is reacting to this surge in Chinese military capability, which now enjoys superiority in some technological areas.

The semi-panic that the US military and its political overlords are suddenly experiencing after neglecting the Asia-Pacific region for so long is becoming evident. An example is the formal guidance that General David Berger, Commandant of the US Marine Corps (USMC), recently published. He declared the corps would now focus on Asia-Pacific and that China specifically was a "long-term threat". In other words, he recognized it is time for the USMC to gird its loins against the PLA.

Referring to all US forces in the Pacific, the USMC commandant wrote: "...Our (forward-deployed) forces currently lack the requisite capabilities to deter our adversaries and persist in a contested space to facilitate sea denial." This is a serious admission, acknowledging that the Chinese might win a shoot-up, and certainly that the PLA has got the jump on the US Marines.

While the USA was preoccupied with fighting insurgencies in the Middle East, China became a peer competitor. Retired US Navy Captain Jim Fanell, the former head of navy intelligence in the Pacific and who was fired for voicing concerns about the rise of the PLA because it was politically unpalatable, noted: "...When it comes to war at sea, they [the PLA Navy] are today the superior competitor."

Indeed, China has an arsenal of ballistic and cruise missiles, as well as anti-ship missiles that easily outrange those on USN warships, plus its cyber and space capabilities threaten American command-and-control systems.

A source, a former middle-ranking officer in the USMC with many years of experience in Asia, told ANI: "US Marine Pacific commanders would go to Washington, and return shaking their heads that nobody at Headquarters Marine Corps was interested in the Asia-Pacific, much less the China threat. Even the Pacific Command was often in appeasement mode. Only the Middle East 'sandbox' mattered, while willy-nilly engagement went on with China to show Beijing that we meant no harm."

Belatedly, the USA is now beginning to adjust its military strategy in response to China. Beijing developed its own anti-access area denial (A2/AD) strategy whereby it aims to keep the US military at arm's length from China's coast.

Yet such an A2/AD strategy works both ways. The American source thus told ANI, "The Asia-Pacific has many islands and archipelagos with narrow confined seas. So marines occupying or seizing key terrain and using their own anti-ship missiles, long-range rockets, air defense weapons, smart sea mines and suchlike can just as easily turn Asian island chains and nearby seas into no-go zones for Chinese ships and aircraft trying to break out into the Pacific Ocean."

The former USMC officer noted that the USA has been forced to adopt its own A2/AD strategy against China. "General Berger is calling for an asymmetric approach - just like US officials pester Taiwan to employ against the more powerful China. It is embarrassing to American self-image but better than slugging it out with the Chinese."

However, Beijing cannot just consider Taiwan and the USA in isolation. China famously tested Indian resolve for more than two months along their mutual border in the Doklam region in mid-2017. Is China likely to behave badly against India yet again?

Chang assessed: "Not at the moment. They're too busy with the South China Sea and especially with Taiwan, while another issue is the economy. The trade war with the US has damaged their general power so much. We will see next year and the coming five years: If their economy suffers weakness, that will probably be a new mission they must do - how to keep the economy growing, otherwise they will have no more investment in the military."

He continued: "Talking about the Indian border, it's not their priority. Of course, they have a demand and ambition for territory, especially on the western side. However, I think they tried to test the attitude of India before. If you're soft, if India is soft, China will be tougher. If India is very tough, they will be very soft. They're not so stupid. They still calculate, so the Indian attitude is very tough and I think China will compromise as they did 2-3 years ago. However, the Indian border is not their first priority." Although the PLA totally outstrips the combat power and technology level of India's military, Beijing cannot discount its presence along its southern periphery.

Chang told ANI, "Why do they worry about that? Probably now they are focusing on the Taiwan issue. But if they really launch a war against Taiwan, Beijing worries about India's reaction. Perhaps India can use the opportunity to launch some small-scale incursions or to occupy more territory to force China to conduct a counterattack. This is their scenario in military exercises - we've seen it many times." The last thing China wants is a two-front war. If it was militarily engaging Taiwan - and correspondingly this would also bring the USA into the equation - then China certainly cannot tolerate or allow another front against India. Therefore, the latter is an important factor in China's overall calculus, and India beefing up its military along the Himalayas gives the PLA pause for thought and perhaps acts as a subduing factor for China.

Despite projecting an image of great strength and technological advancement, the PLA still has Achilles heels. The editor of Kanwa identified anti-submarine warfare as one of these. "First of all, the anti-submarine equipment is not enough in terms of quantity, and also we have no idea of the quality. They still use the Russia Kamov [Ka-32 helicopter], so I don't think it will be more advanced than NATO standards for anti-submarine systems." Chang highlighted another weakness of the PLA as being strategic weapon systems such as intercontinental ballistic missiles (ICBM). Even though the PLA Rocket Force rolled no fewer than 48 ICBMs of four different types (DF-5B, DF-31AG, DF-41,

and JL-2) through Tiananmen Square on 1 October, questions remain over China's ability to miniaturizeand deploy nuclear warheads.

Chang explained: "I don't think they can carry more multiple independent re-entry vehicles (MIRV) than the US or Russia," he surmised. Based on the missile size and shape, Chang believes that the new DF-41 ICBM, making its debut in Beijing, does not carry more than four MIRV warheads, of which one or two would be decoys in any case.

However, China is benefiting greatly from technological help from Russia, even though China invariably ends up copying Russian equipment and then reverse engineering it. Such an approach denies Russia the possibility of further export sales but it does not dampen Moscow's enthusiasm to sell high-tech weapons to Beijing. The newest equipment that China has purchased directly from Russia is Su-35 fighters and S-400 air defense systems.

Chang also pointed out that China's ballistic missile defense owes much to the Russian input too. "They've tested it so many times and they've cooperated with Russia to build early-warning radar systems to track and search for ballistic missiles, especially ICBM targets. This is major progress and President Putin announced it a few days ago that Russia helped China develop a national missile defense system. It means they have both defensive and offensive systems. Not any country, including the US, is doing such things."

https://economictimes.indiatimes.com/news/defence/is-china-planning-to-use-military-force/articleshow/71610444.cms

Firstpost.

Thu, 17 Oct 2019

Indian Air Force to begin joint military exercise 'Shinyuu Maitri' with Japanese counterpart in West Bengal today

- ***The Indian Air Force will be carrying out a joint military exercise 'Shinyuu Maitri' with Japanese Air Self Defence Force (JASDF) from 17 to 23 October.***
- ***The exercise will be held at Air Force Station, Arjan Singh in Panagarh town in West Bengal.***
- ***The focus of the exercise will be to undertake Joint Mobility and Tactical interoperability among the two forces.***

Durgapur: The Indian Air Force will be carrying out a joint military exercise 'Shinyuu Maitri' with Japanese Air Self Defence Force (JASDF) from 17 to 23 October.

The exercise will be held at Air Force Station, Arjan Singh in Panagarh town in West Bengal.

"C-130 J aircraft of the Special Operations Squadron of IAF and C-130 H of Tactical Airlift Squadron of JASDF will participate in the exercise," stated an official press release.

The focus of the exercise will be to undertake Joint Mobility and Tactical interoperability among the two forces.

https://www.firstpost.com/india/indian-air-force-to-begin-joint-military-exercise-shinyuu-maitri-with-japanese-counterpart-in-west-bengal-today-7511211.html

Firstpost.

Thu, 17 Oct 2019

ISRO's space shuttle-like reusable launch vehicle will attempt its first landing in Karnataka

India's RLV includes a Space Shuttle-like craft that could feature an air-breathing ramjet engine

The Indian Space Research Organisation (ISRO) is finally following in the footsteps of NASA and SpaceX by developing a space program for Reusable Launch Vehicles (RLV) which it has been testing since 2016.

The RLV program aims to cut down on launch costs by, well, reusing the spacecraft. ISRO's current project appears to be using a hybrid design that sits somewhere between NASA's now-shuttered Space Shuttle program and SpaceX's reusable rockets.

India's RLV includes a Space Shuttle-like craft that could feature an air-breathing ramjet engine. This craft will take a payload to space and then glide back to Earth, landing like a normal aircraft, much like the Space Shuttle. The rocket that will take this shuttle to orbit will return to Earth much like Musk's Falcon 9 rockets. It will return under its own power and make a landing on a floating platform out at sea.

So far, the RLV shuttle has been tested over water. Now, it will be tested over land and make an attempt at an actual landing. The scientists at ISRO will be tracking the flight and landing of the RLV at the Aeronautical Test Range (ATR) at Challakere in Chitradurga district, Karnataka.

The ATR has 2.2 km runway and the RLV will be dropped from a helicopter at an altitude of three km. According to a report in the *Deccan Chronicle*, an onboard computer will help the RLV glide for some distance before touching down on the runway like an aircraft.

The launch vehicle is critical to unleashing ISRO’s dreams of human space flight, Gaganyaan. It will also help to further cut the cost of launches.

The first demonstration of the rocket's concept was tested on 23 May 2016, when ISRO carried out its 'Hypersonic Flight Experiment' of a two-stage-to-orbit (TSTO), fully-reusable rocket.

Four aspects of the vehicle are to be tested:

- hypersonic flight, tested in the hypersonic flight experiment (HEX)
- autonomous landing, to be tested in the landing experiment (LEX)
- powered cruise flight
- hypersonic flight with air-breathing propulsion, to be tested in the scramjet propulsion experiment (SPEX)

ISRO plans to recover and reuse two stages of the rocket.

To recover the first stage, ISRO will use a similar principle to SpaceX's Falcon 9 boosters, whereby the rocket is programmed to land on a pad in the sea after launch.

For the second stage of the rocket, ISRO plans to test an advanced version of the RLV, tested in 2016, in an advanced test in June or July 2019. The rocket will be controlled by ISRO engineers after launch to land on an airstrip, after which it will be used again for a second launch.

https://www.firstpost.com/tech/science/isro-space-shuttle-like-reusable-launch-vehicle-will-attempt-its-first-landing-in-karnataka-7506051.html

the pioneer

Thu, 17 Oct 2019

IIT-Kgp alumnus develops device to trap vehicular pollutants

New Delhi: An IIT Kharagpur graduate has invented a device called "PM 2.5" which he claimed when fitted near the silencer pipe in vehicles will curb air pollution.

Debayan Saha, a mechanical engineering graduate from IIT Kharagpur, who has invented the device claims that one car fitted with the device can neutralise the pollution emitted from 10 cars in its vicinity. "The technology developed by us uses a combination of electric energy and wave energy to influence the pollutants like PM 2.5 such that they act like magnet attracting other particulate pollutants from the ambient atmosphere to get attached to it. As they grow bigger in size they become heavy and fall off safely on the ground like soil," said Saha, who was also a research fellow at AIIMS who worked on air pollution.

"One car on the street can now alleviate the pollution in its immediate environment, and potentially neutralise the pollution emitted from 10 cars in its vicinity. Diving really deep into the problem they found main culprit is not PM- 2.5 but its tiny size because of which it can easily enter into our lungs and bloodstream," he said.

Saha, is in talks with various organisations, to commercialise the product.

A blanket of toxic haze shrouded the national capital region on Wednesday, as air quality in Delhi and the adjoining areas plunged to "very poor" levels, affecting visibility and causing inconvenience to residents.

The Delhi Government attributed the dip in the air quality to rampant stubble burning in neighbouring states, a regular feature in October-November.

The period between October 15 and November 15 is considered critical as maximum number of stubble burning incidents take place in this span in Punjab and adjoining states and is one of the main reasons for alarming spike in pollution in Delhi-NCR.

https://www.dailypioneer.com/2019/state-editions/iit-kgp-alumnus-develops-device-to-trap-vehicular-pollutants.html

THE VERGE

Wed, 16 Oct 2019

NASA unveils future Moon spacesuits that should be ready by 2024

There's still a lot of work to do

By Loren Grush

Today, NASA unveiled its designs for future spacesuits that astronauts will wear during trips to the lunar surface. The suits are still in development, but NASA claims they'll be ready to keep astronauts alive in space by 2024 — the space agency's deadline to return humans to the Moon.

Known as the xEMU, this next generation spacesuit builds on the design of suits already worn by astronauts on the International Space Station. These new ensembles are upgraded so that astronauts wearing them can live and work on the Moon. During a demonstration at NASA headquarters on

Tuesday, a spacesuit engineer showed off the flexibility of the suit, proving it can twist and bend at the waist, unlike suits of the past. The suit's legs are also pliable, allowing wearers to walk on another world — a capability astronauts don't currently need in Earth orbit.

NASA claims that the xEMU can fit a broad range of astronaut sizes, too. "We can fit anywhere from the first percentile female to the 99th percentile male," Amy Ross, a spacesuit designer at NASA, said during the demonstration. That's been a struggle with the current spacesuit design, which only has a few different options in terms of sizing. Such size limitations restrict who can go on spacewalks on the ISS, a problem that NASA encountered in March when it had to postpone its first all female-spacewalk due to spacesuit sizes and availability. NASA says the xEMU will be built with many different sized parts, as well as an adjustable feature in the shoulder that will make it easier for various people to wear the suit.

The xEMU design builds upon lessons learned during the Apollo missions to the Moon. For one, its built to withstand lunar dust, which is incredibly fine and turned out to be a major complication for the Apollo Moon walkers — sticking to everything and getting into equipment. To keep the dust at bay, the xEMU doesn't have zippers or cables, and its main components are sealed. NASA claims the suit can also withstand the extreme temperatures of the lunar surface, operating between 250 and minus 250 degrees Fahrenheit.

While the prototype of the xEMU on stage at NASA headquarters looked impressive, there's still quite a lot of work that needs to be done before these suits are ready for actual Moon walks. NASA has another major review of the spacesuit design planned for 2021. After that, the xEMU will go through a battery of tests including sticking it in a vacuum chamber to simulate the environment of the Moon. If that goes well, it'll be time to send the xEMU to space. NASA plans to launch one of these spacesuits to the International Space Station within the next two years, where an astronaut will don the ensemble for a spacewalk. However, if NASA misses this in-space test for some reason, it doesn't mean they can't send the xEMU to the Moon.

"We will try to get the suit onboard the space station as fast as we can, to get data before we go down to the Moon, but it's not a requirement," Chris Hansen, chief engineer of the International Space Station at NASA, said during a press conference on the suits. "We're comfortable with the design enough that if for some reason one of those schedules slips, it's not required that we go to the space station."

NASA says it is building two xEMU suits for the first planned trip to the Moon in 2024. After that, the agency wants to hand production of the suit over to the commercial space industry. The space agency recently put out a request for information from commercial companies, asking for input on how to best transition the suit to a future contractor. "We don't want to be in the suit production business," Hansen said. "That's much better left to industry. We want them to innovate. We want them to find out how to build our suits cheaper, faster, and provide those suits to commercial entities."

Before all that can happen, NASA has to get the money it needs to pull of its ambitious lunar mission. The Trump administration requested an additional $1.6 billion for NASA for next year to accelerate plans to return humans to the Moon, but it's unclear if Congress will appropriate those funds for the agency. In proposed funding bills for next year, that money isn't included. One reason that funding is so important is that the spacesuit's design is also dependent on the type of lander that NASA chooses to send people to the lunar surface; if NASA doesn't have the money to provide to companies to build landers, then the spacesuit production schedule could get hairy.

"It's really going to come down to when it comes time to contracts for the [landers]... is when the bulk of the money is really going to need to be provided," Marshall Smith, director of human lunar exploration programs at NASA said during the press conference. "That'll be toward the end of the year before we kind of run into a budget issue if we don't get funded at the levels we think we need."

https://www.theverge.com/2019/10/15/20916106/nasa-artemis-moon-space-suits-xemu