

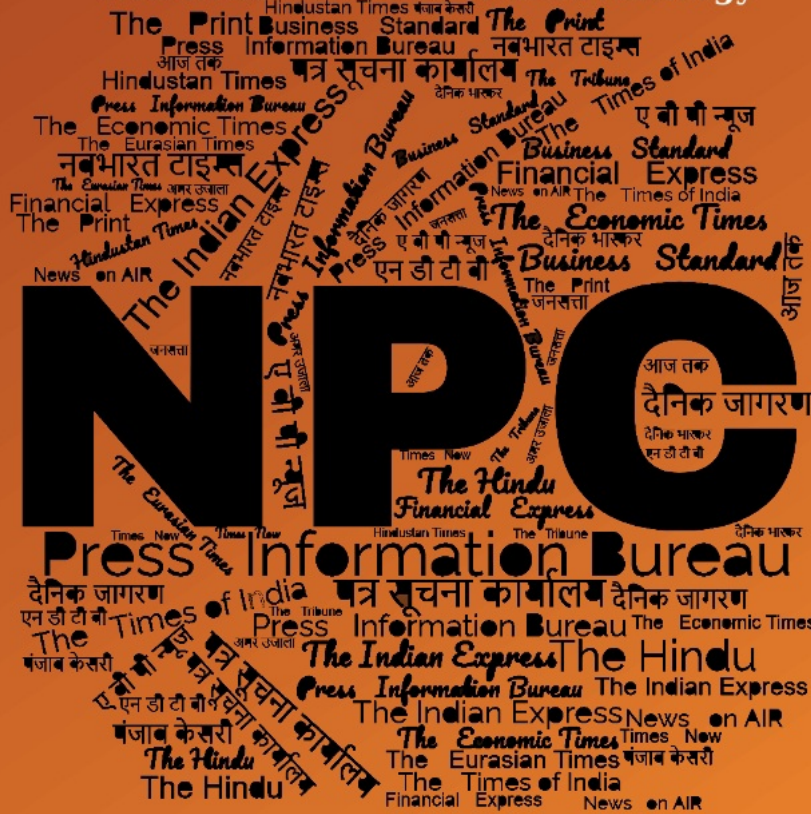
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CONTENTS

S. No.	Title	Source	Page No.
DRDO News			1-1
1	Bharat Forge, Tata likely to get DRDO-made towed guns deal	<i>The Economic Times</i>	1
Defence News			2-15
Defence Strategic: National/International			
2	India-Vietnam Joint Military Exercise VINBAX 2024 Commences At Ambala, Haryana	<i>Press Information Bureau</i>	2
3	CDS Gen Anil Chauhan concludes his four day visit to Algeria	<i>Press Information Bureau</i>	3
4	Implementation of agreement with India to disengage troops going on 'smoothly' : Chinese Foreign Ministry	<i>The Economic Times</i>	4
5	India-China Relations on a New Path: Blueprint for Peace Along the LAC	<i>Financial Express</i>	5
6	Defence exhibition 'East Tech 2024' to foster collaboration between Army, manufacturers: Official	<i>The Economic Times</i>	6
7	Breaking barriers at sea: Women in Indian Navy redefine maritime strength and inclusivity	<i>Financial Express</i>	7
8	Pakistan Navy test-fires ballistic missile having range of 350 km from warship	<i>The Economic Times</i>	9
9	Japan launches a defense satellite carried by a new flagship H3 rocket	<i>The Economic Times</i>	10
10	Exclusive: IAF Chief Talks On Ukraine-Russia War; Says 'DEAD' Campaigns Vital To Gain Edge On The Ground	<i>The EurAsian Times</i>	11
11	Alarm after defence PSU sells explosives to banned German CompanyLCA Tejas: 1st Export Order For Indigenous Combat Jets May Come Sometime, But Can HAL Deliver?	<i>The EurAsian Times</i>	13
Science & Technology News			15-18
12	World's first wooden satellite, developed in Japan, heads to space	<i>The Economic Times</i>	15
13	NASA AI vision tech for spacecraft ends up in Factories on Earth	<i>News Nine</i>	16
14	Swiss varsity students achieve what no European space firm could-a successful rocket hop test	<i>Deccan Herald</i>	17

THE ECONOMIC TIMES

Tue, 05 Nov 2024

Bharat Forge, Tata likely to get DRDO-made towed guns deal

Bharat Forge has emerged as the lowest bidder in an estimated ₹7,000 crore deal for **advanced towed artillery gun systems (ATAGS)** developed by **DRDO** for the Indian Army. The order is likely to be split 60:40 between Bharat Forge and Tata Advanced Systems Ltd (TASL), the two developmental partners for the indigenous guns.

Sources said that commercial bids for the order of 307 guns were opened last week and after scrutiny it was determined that Bharat Forge is the lowest bidder. As per rules of procurement, TASL will get 40% of the order share if it matches the price bid put up by its competitor.

The towed guns have been extensively tested by the Army in different terrains, from desert areas to high altitude ranges in Sikkim, and have been declared fit for induction. Designed by DRDO to replace the Bofors towed guns that are the current mainstay 155 mm artillery system in service, the ATAGS have already been exported to Armenia.

Among the tests conducted by the Army were sustained firing drills using just the backup battery at heights of over 13,000 feet and checking performance at extremely low temperatures.

The Army has also issued a tender to acquire next-generation artillery guns that will be designed, developed and manufactured in India. The Army requires 400 of these gun systems in the first phase though the requirement could be multiplied in the coming years as legacy equipment is replaced.

The acquisition of a new towed gun system is seeing keen interest from the private defence manufacturing sector that has invested heavily in the past few years to develop artillery systems. Contenders for the contract will include Larsen & Toubro, which has already manufactured and supplied K9 Vajra selfpropelled artillery guns to the Army.

Bharat Forge and TASL will also be top contenders. The advanced 155mm/52 calibre guns will be lighter and more versatile than current artillery guns, including ATAGS.

<https://economictimes.indiatimes.com/news/defence/bharat-forge-tata-likely-to-get-drdo-made-towed-guns-deal/articleshow/114956159.cms?from=mdr>



**Press Information Bureau
Government of India**

Ministry of Defence

Mon, 04 Nov 2024

India-Vietnam Joint Military Exercise VINBAX 2024 Commences At Ambala, Haryana

The 5th Edition of Vietnam Indian Bilateral Army Exercise “VINBAX 2024” commenced today at Ambala. The exercise is scheduled to be conducted from 04 to 23 November 2024 at Ambala and Chandimandir. The exercise is a sequel to previously conducted bilateral exercise in Vietnam in 2023 and a major milestone in strengthening the bilateral relations between India and Vietnam.

This edition marks a significant increase in the scope with Bi Service level participation for the first time by personnel of Army and Air Force from both the countries. The Indian Army contingent comprising 47 personnel is being represented by a Regiment of the Corps of Engineers along with personnel from other arms and services. The Vietnamese contingent comprising of similar strength will be represented by the troops Vietnam People's Army.

The aim of VINBAX-2024 is to enhance joint military capability of both sides in employment and deployment of Engineer Company and Medical Teams to undertake engineering tasks as part of United Nation Contingent in Peace Keeping Operations under Chapter VII of the United Nations Charter.

The conduct of VINBAX-2024 as a field training exercise with enhanced scope from previous editions of bilateral exercise will strengthen mutual confidence, interoperability and enable sharing of best practices between the Indian Army and Vietnam People’s Army. A 48 hours Validation Exercise with Humanitarian Assistance & Disaster Relief demonstration and equipment display is also part of the schedule to assess the standards achieved by both contingents while executing technical military operations under similar scenarios in UN missions. The joint exercise will also provide an opportunity to the troops of both the Contingents to learn about the social and cultural heritages of each other.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2070563>



**Press Information Bureau
Government of India**

Ministry of Defence

Mon, 04 Nov 2024

CDS Gen Anil Chauhan concludes his four day visit to Algeria

Both Countries ink milestone memorandum in defence Cooperation

Chief of Defence Staff General Anil Chauhan led a high-ranking Indian military delegation on an official visit to the People's Democratic Republic of Algeria from 31 Oct - 03 Nov 2024. The visit was part of a broader endeavour to strengthen India-Algeria relations which have seen increasing cooperation in recent years, particularly in the areas of trade, education, technology and defence.

In a significant step, Gen Anil Chauhan and his counterpart, General of Army Said Chanegriha, Chief of Staff of Algerian People's National Army signed a milestone Memorandum in Defence cooperation between India and Algeria. This Memorandum represents not only a step forward in bilateral military cooperation but also lays down the foundation for long-term collaboration across a variety of sectors.

The CDS complimented General Said Chanegriha, on the high standards of the military parade and commemorative events of 01 Nov 2024, marking the 70th Anniversary of Algeria's Glorious Revolution, a pivotal moment in Algeria's history.

Gen Chauhan interacted with the Director of the Higher War College and addressed senior officers of the of the People's National Army. He underscored the shared history of both nations, fostering a bond based on similar values and principles. CDS highlighted the dividends of geography of both Algeria and India in their global aspirations, stating, "the core strategic outlook of a nation is shaped by its geography and historical experience".

CDS called for peaceful resolution of global conflicts. He said, "India always supports peaceful resolution to global conflicts. India has re-established its Defence Wing in Algeria and welcomes the re-opening of Defence Wing of Algeria in India".

Giving an overview of India's National Security Strategy, CDS said, "In today's complex geopolitical construct, India understands her responsibilities and desires to engage as a 'Vishwa-Bandhu' – a reliable partner for the world". He highlighted the agreement in the field of space sciences and the major strides taken by India in technology development.

Gen Chauhan added that the Indian Armed Forces are undergoing transformation and are ready to share their experiences with the People's National Army of Algeria. He emphasised upon India's increasing defence production capability under the 'Make in India' and 'Make for the World' programmes.

India and Algeria share a commitment to self-determination, respect for sovereignty, and mutual support in multilateral domains. As regional leaders in South Asia and North Africa, both countries

bring unique strategic advantages to the partnership, contributing to a more balanced and multipolar global order. The high level visit complements the recently concluded visit by the President of India to Algeria, underscoring the strong political will on both sides to deepen diplomatic, military and strategic cooperation.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2070684>

THE ECONOMIC TIMES

Mon, 04 Nov 2024

Implementation of agreement with India to disengage troops going on 'smoothly' : Chinese Foreign Ministry

China Monday said that the implementation of the agreement with India to disengage troops in eastern Ladakh is going "smoothly at the moment" but declined to comment on the resumption of patrolling at the two friction points in Depsang and Demchok.

"The Chinese and Indian troops are implementing the resolutions that the two sides reached on issues concerning the border area, which is going smoothly at the moment," Foreign Ministry spokesperson Mao Ning told a media briefing here while replying to a question.

She, however, declined to answer a specific question on the commencement of patrolling in the two areas by the Indian troops.

On Saturday, Ministry of External Affairs spokesperson Randhir Jaiswal told the media in New Delhi that the Indian Army has commenced verification patrolling at Depsang, the second friction point in eastern Ladakh.

Patrolling at Demchok had begun on Friday, a day after the Indian and Chinese troops completed disengagement at the two friction points in eastern Ladakh.

On October 21, Foreign Secretary Vikram Misri said in Delhi that an agreement had been finalised between India and China following negotiations over the past several weeks and that it would lead to a resolution of the issues that arose in 2020.

The agreement was firmed up on patrolling and disengagement of troops along the LAC in eastern Ladakh, a breakthrough to end the over four-yearlong standoff. The ties between the two Asian giants nosedived following a fierce clash in the Galwan Valley in June 2020 that marked the most serious military conflict between the two sides in decades.

<https://economictimes.indiatimes.com/news/defence/implementation-of-agreement-with-india-to-disengage-troops-going-on-smoothly-chinese-foreign-ministry/articleshow/114945752.cms>

India-China Relations on a New Path: Blueprint for Peace Along the LAC

India and China are cautiously exploring a path to peace along the Line of Actual Control (LAC) as tensions begin to ease after years of confrontation. In recent comments from Brisbane, Australia, Foreign Minister S. Jaishankar expressed hope for sustainable improvement in India-China relations, now that both countries have initiated a troop disengagement process. This step, he suggested, could open the door to deeper stability along the disputed border.

Jaishankar, addressing the Indian community in Australia, highlighted how the recent troop pullback marks significant progress. Reflecting on the years of strained relations, Jaishankar remarked, “Our relations [with China] were very bad.” He emphasized that while the disengagement is a major step forward, it’s only the beginning. “After the withdrawal of both countries on the LAC, we have to see in which direction we can move forward. We feel that the withdrawal from the LAC is a welcome step. This opens up the possibility that other steps can also be taken,” he noted.

This cautious optimism follows years of stalemate after the 2020 Galwan Valley clash, which pushed relations to their lowest since the 1962 war. In the aftermath, India responded by deploying troops to match China’s buildup on the LAC, restricting Chinese investments, and banning certain apps and visas from China. Jaishankar acknowledged that these measures reflected India’s stance against compromising its security, emphasizing, “Everyone knows the reasons” behind the strained ties.

A new momentum in diplomatic dialogue began after Prime Minister Narendra Modi’s recent meeting with Chinese President Xi Jinping in Russia, which set the stage for more talks at the security and diplomatic levels. Jaishankar noted, “So this is how things have been sorted out,” suggesting that India is taking a measured approach to mending relations through high-level engagements.

Defence Minister Rajnath Singh has echoed similar sentiments, revealing that India and China are working towards a “broad consensus” based on equality and mutual security. This includes respecting traditional patrolling rights and the rights of local communities on both sides of the LAC. Singh affirmed that this approach at the military and diplomatic levels could pave the way for a more structured peace in disputed areas.

Yet, challenges remain. Jaishankar stressed that, while troop disengagement is a promising step, it is “just one issue to be resolved.” Many unresolved matters persist, underscoring the complex nature of India-China relations.

The blueprint for peace will require sustained diplomacy and incremental progress, as noted by India's Army Chief General Upendra Dwivedi, who stressed the need for further "de-escalation," or reduction of troop numbers, along the border to maintain stability.

With the disengagement progress, there is hope for a reset, albeit a cautious one. The developments mark a potential turning point, giving India and China an opportunity to move beyond confrontation. For both nations, the path forward will depend on maintaining open dialogue, respecting mutual interests, and ensuring security for all stakeholders.

<https://www.financialexpress.com/business/defence-india-china-relations-on-a-new-path-blueprint-for-peace-along-the-lac-3656012/>

THE ECONOMIC TIMES

Mon, 04 Nov 2024

Defence exhibition 'East Tech 2024' to foster collaboration between Army, manufacturers: Official

With an aim to showcase cutting-edge technologies, and foster collaboration between the Indian Army and the nation's defence manufacturers, the Eastern Command will host a two-day weapons and equipment exhibition 'East Tech 2024' from Tuesday, an official said.

'East Tech 2024' aims to address the operational challenges faced by the Eastern Command of the Indian Army, the Defence official said in a statement.

"The two-day exhibition aims to showcase cutting-edge technologies, and foster collaboration between the Indian Army and the nation's defence manufacturing sector, including MSMEs, DRDO (Defence Research and Development Organisation), DPSUs (defence public sector undertakings), research and development organisations and academia," he said.

Stating that the event will provide a vital platform to Indian manufacturers and start-ups to showcase the latest advancements in defence technologies, he said it will enable the Indian Army to identify and incorporate contemporary indigenous technologies essential for meeting the dynamic demands of the eastern sector and beyond.

The exhibition, conducted in partnership with the Society of Indian Defence Manufacturers (SIDM), is designed to enhance the technological knowledge base of attendees, acquainting them with state-of-the-art technologies and commercial off-the-shelf solutions, the official said.

"East Tech 2024 aspires to raise awareness among defence stakeholders about the latest hardware solutions and innovations produced by Indian manufacturers under the 'Raksha Atmanirbharta' initiative, which emphasises self-reliance in defence manufacturing," he said.

The two-day event at Biswa Bangla Mela Prangan here includes both exhibitions and live demonstrations, he said. The event will serve as an ideal venue for fostering collaboration between the Indian Army and various players in the defence industry, including start-ups, major companies

and research institutions, contributing to the development of future-ready solutions for the nation's defence, he added.

<https://economictimes.indiatimes.com/news/defence/defence-exhibition-east-tech-2024-to-foster-collaboration-between-army-manufacturers-official/articleshow/114949092.cms>



Mon, 04 Nov 2024

Breaking barriers at sea: Women in Indian Navy redefine maritime strength and inclusivity

In a landmark year for women in the Navy, Sub Lieutenant Anamika B Rajeev earned distinction as the Navy's first woman helicopter pilot, while the all-woman crew of INSV Tarini successfully circumnavigated the globe. Their achievements are emblematic of a new era within the Navy, one where barriers are not only being challenged but dismantled, and where women are emerging as central players in India's maritime security.

From Pioneering Roots to Modern Progress

The journey of women in the Indian Navy began during World War II, when they served in supporting roles within the Royal Indian Navy. It wasn't until the 1990s, however, that the Indian Navy officially inducted women, primarily into the Medical and Education Corps. These initial forays laid the groundwork for today's achievements, and over the years, pioneering women in these fields proved that gender should not be a determinant of ability.

One such trailblazer, Lieutenant Commander (Retd) Saroj S Sethi, recalls the challenges women faced navigating traditionally male-dominated environments. "At that time, everything was set up for men," she recalls. "We had to carve our own space and prove our abilities." Each milestone brought the Navy closer to becoming a truly inclusive institution, a legacy carried forward by today's women in uniform who now serve across diverse and demanding roles.

Recent Milestones: Celebrating Female Leaders in the Navy

Sub Lieutenant Anamika B Rajeev's ascent to becoming the Indian Navy's first woman helicopter pilot is a testament to her perseverance and to the Navy's commitment to equality. Her rigorous training at INS Rajali's Helicopter Training School in Arakkonam tested her resilience, technical skill, and resolve. Now at the helm of her own aircraft, she sends a powerful message to young Indians that women are not only welcome in the defence forces but are also excelling in roles once reserved solely for men. Rajeev's success reflects a paradigm shift in the Navy's policies toward women, especially as they move into combat and operational roles. It's a shift that aims to set new standards of excellence in defence and aviation for women across India.

Commander Prerna Deosthalee: Leading from the Deck

In December 2023, Commander Purna Deosthalee made history as the first woman to command a naval warship, the INS Trinkat. Her role is both symbolic and substantive, underscoring the Navy's dedication to providing equal opportunities in command positions. Deosthalee's appointment demonstrates a future where leadership is driven by merit, not restricted by gender.

Navika Sagar Parikrama: A Global Voyage with Purpose

One of the most celebrated accomplishments in recent years was the circumnavigation of the globe by an all-woman crew aboard INSV Tarini. Led by Lieutenant Commander Vartika Joshi, the eight-month Navika Sagar Parikrama spanned 22,000 nautical miles, navigating perilous storms, freezing conditions in the Southern Ocean, and other daunting challenges. The mission served as a testament to the endurance, skill, and resilience of the crew, while also signaling the Navy's growing commitment to women in maritime roles.

Their journey resonated deeply across Indian communities worldwide. Each port of call was met with enthusiastic receptions from local communities and the Indian diaspora, further symbolising the Navy's dedication to inclusivity and the increasing role of women in India's global maritime presence.

Broadening Horizons: The Role of Agniveers and Women in Naval Aviation

The Navy's commitment to inclusivity is underscored by recent policies that expand opportunities for women in both combat and support roles. In 2022, the Indian Naval Air Squadron 314 made headlines with its first all-women independent maritime reconnaissance mission in the North Arabian Sea. This mission not only showcased women's growing role in naval aviation but also highlighted the Navy's recognition of their capability to lead complex, independent operations.

More recently, the induction of over 1,000 women as part of the Agniveer scheme under the Agnipath recruitment program has opened new paths for women in the Navy. This historic move reaffirms the Navy's dedication to diversifying its ranks and creating a defence force that reflects India's rich demographic tapestry.

Building a Supportive Framework: Policies, Training, and Mentorship

The Navy's push for inclusivity is supported by policies that address both practical needs and institutional culture. Training programs across fields—from aviation to navigation—ensure women are fully equipped for their roles. Mentorship from seasoned officers, such as Captain Dilip Donde, who guided the INSV Tarini crew, plays an invaluable role in imparting technical and leadership skills.

The Navy Welfare and Wellness Association (NWWA) also provides crucial support for service members' families, helping them navigate the unique challenges of naval life. In a further nod to gender inclusivity, the Navy has implemented gender-specific uniforms for operational comfort, separate accommodation on vessels like INS Vikrant and INS Imphal, and family-friendly policies, including childcare facilities and maternity leave.

Creating a Truly Inclusive Navy: Language and Policy Shifts

As part of a holistic approach to inclusivity, the Navy is revising gendered language in official communications. Terms such as "servicemen" have been replaced with "service personnel," and

“mankind” has given way to “humanity.” This shift, while subtle, underscores the Navy’s intent to create an environment where all personnel feel valued equally.

Setting New Horizons: The Future of Women in the Navy

The Navy’s vision for the future is ambitious and forward-looking. As it integrates more women into operational and leadership roles, it’s exploring potential avenues, from combat roles on submarines to command positions on aircraft carriers. This vision reflects a philosophy of “excellence without boundaries,” recognising that diversity strengthens operational readiness and builds a more resilient force.

Admiral Sunil Lanba (Retd), a former Chief of the Naval Staff, aptly summarised this transition, stating that the courage of today’s women in the Navy will inspire generations. The Navy’s path toward a truly inclusive force, however, is not just a tribute to the achievements of its female officers; it is a strategic imperative in building a force that can adapt to the complex challenges of modern maritime security.

Towards a Balanced, Resilient Force

As the Navy breaks barriers and broadens horizons, it stands not only as a symbol of strength and resilience for India but also as a beacon of opportunity for women across the nation. In the years to come, the Indian Navy will continue to cultivate an environment where every sailor, regardless of gender, can serve with pride and contribute to a future where inclusivity and operational excellence go hand in hand.

<https://www.financialexpress.com/business/defence-breaking-barriers-at-sea-women-in-indian-navy-redefine-maritime-strength-and-inclusivity-3656037/>

THE ECONOMIC TIMES

Mon, 04 Nov 2024

Pakistan Navy test-fires ballistic missile having range of 350 km from warship

The Pakistan Navy successfully test-fired an indigenously developed ballistic missile having a range of 350 km from a warship, it said on Monday.

"The missile system with a range of 350 km is capable of hitting land and sea targets with high precision," according to the Pakistan Navy.

The system is equipped with an advanced navigation system with features to change its direction and speed. Chief of Naval Staff Admiral Naveed Ashraf, senior officers of the Pakistan Navy, scientists and engineers witnessed the demonstration of test-firing of the missile.

President Asif Ali Zardari, Prime Minister Shehbaz Sharif, Chairman Joint Chiefs of Staff Committee and Services Chiefs congratulated the participating navy units and scientists on the missile test.

<https://economictimes.indiatimes.com/news/defence/pakistan-navy-test-fires-ballistic-missile-having-range-of-350-km-from-warship/articleshow/114954503.cms>

THE ECONOMIC TIMES

Mon, 04 Nov 2024

Japan launches a defense satellite carried by a new flagship H3 rocket

Japan launched a defense satellite designed for information-gathering and military operations on a new flagship H3 rocket on Monday, as the country seeks to build up its military capability amid growing tension in the region.

The H3 No. 4 rocket lifted off from the Tanegashima Space Center on a southwestern Japanese island. Everything went as planned and the satellite placed at the top of the rocket was successfully separated about half an hour after liftoff, the Japan Aerospace Exploration Agency, or JAXA, said in a livestream. JAXA will give further details about the launch later Monday.

The rocket is carrying a Defense Ministry satellite, Kirameki No. 3, which uses X-band communication for military operations and reconnaissance, including information-gathering for signs of North Korean missile activity.

Xband satellite is less affected by weather conditions and is capable of supporting stable communication. Kirameki No. 3 adds to two earlier X-band satellites already in operation. Monday's launch was initially planned for Oct. 20 and came after four postponements due to a technical glitch and bad weather.

The launch was the third consecutive successful flight of the H3 system after the shocking failed debut flight last year when the rocket had to be destroyed with its payload.

Japan sees a stable, commercially competitive space transport capability as key to its space program and national security. JAXA and its main contractor, Mitsubishi Heavy Industries, have been developing the H3 launch system as a successor to its current mainstay, H-2A, which is set to retire after two more flights.

MHI will eventually take over H3 production and launches from JAXA and hopes to make it commercially viable by cutting the launch cost to about half of the H-2A.

<https://economictimes.indiatimes.com/news/defence/japan-launches-a-defense-satellite-carried-by-a-new-flagship-h3-rocket/articleshow/114941871.cms>

Exclusive: IAF Chief Talks On Ukraine-Russia War; Says ‘DEAD’ Campaigns Vital To Gain Edge On The Ground

“The Indian Air Force is working hard to remain a credible Air Force,” says India’s Air Chief Marshal Amar Preet Singh, who took over as the 28th Air Chief of India on September 30, 2024. He is an alumnus of the National Defence Academy, Defence Services Staff College, and National Defence College. He is a Qualified Flying Instructor and an Experimental Test Pilot with more than 5,000 hours of service flying a variety of fixed-wing and rotary-wing aircraft.

India’s new Chief of the Air Staff (CAS) told this author how the IAF has evolved from being a tactical force to a strategic force, from being defense-oriented to one aiming at air domination, from having the capability of meeting a single threat at one time to fight a two-front war simultaneously, and from protecting territorial assets to guarding India’s space assets.

“Man, machine, structures, and processes are the key elements of war-fighting that need a regular review to keep pace with the emerging contours of warfare. The Indian Air Force (IAF) follows the same process of critical review and has instituted suitable measures within all these elements to ensure a credible war-fighting force for the envisaged operational conditions.

The IAF has taken several vital steps to keep pace with the changing character of war, including inducting modern platforms and weapon systems like Rafale, LCA, and S-400 and upgrading the existing ones, cadre management, reforming operational training and professional military education at all levels, and optimizing our war-fighting processes incorporating modern technology.

These steps are reviewed even while being implemented to be ready for future wars. More importantly, there is a growing realization and consensus across strategic circles on the continuum of air and space and its evolving military significance. Most of the air forces have been transformed into air and space forces to harness this unique potential for the furtherance of national interests, and we are cognizant of the same.”

On asked how the IAF is managing the situation with fewer active fighter squadrons today than its authorized strength of squadrons, and that too when there has been tardy progress on the fronts of the Advanced Medium Combat Aircraft (AMCA), Medium Multi-Role Combat Aircraft (MMRCA) and Light Combat Aircraft (LCA), program, Air Chief Marshal Singh replied:

“If we go into a scientific approach to assess the operational implications of narrowing the asset base, the requirements may match the ones projected by the IAF regularly. While we do have some shortages, we have worked to optimize our sustenance and activity cycles to ensure a high tempo of operations and extract more from what we have. The government is also supportive of our endeavor to make good our requirements for weapons, platforms, and systems in an expeditious manner.

“Our capability development programs have the required traction from the government as well as domestic industry, and we have a time-bound plan to fulfill existing gaps.

“I am confident that we have worked out efficient alternatives to maximize existing capabilities and have mitigated vulnerabilities through innovative means, and are ready to deliver to the nation in any contingency. However, we need to be careful of completely substituting this efficiency for effectiveness and must continue with the fast pace of capability development”.

The Indian Air Chief is very proud of the caliber of the fighter pilots at his command.

“We operate in some of the most challenging Op environments in the world. Our standards for selection and training have always been stringent to ensure that the highest quality of human resources is available for undertaking the wide range of tasks that are envisaged in increasingly complex battle spaces.

“Availability and utilization of realistic Virtual Reality (VR) simulators have enhanced the Op preparedness of aircrew. The current Op scenario in the region is providing opportunities for realistic training. Officers are encouraged to develop niche skills of IT, AI & Space to further expand their operational outlook. Technology, doctrine, and human resources are the foundational pillars of any organization and more so for the IAF.

Air Power is sensitive to technology, and its doctrine has to be in sync to harness the potential of technological advances. In this context, the doctrine has been reviewed on op applicability, combat leadership and conduct of air war in all possible scenarios. The man behind the machine is the most important factor in the combat preparedness of any Air Force.

Therefore, there is a continuous effort to ensure that our air warriors are abreast with the latest technological developments. This has ensured that the platforms are capable of rapid role change and thereby provide multiple options to the aerospace power practitioner to employ these flexible assets cohesively as per the emerging situation and not limited to constrained usage in a defined area or in a particular role”.

On the widely prevailing perception that the IAF is opposed to the concept of theater commands, something that the Modi government is very keen on, the CAS said, “The IAF is not opposing the concept of theater commands, but rather working cohesively to ensure the build-up of a more robust system and seamless integration for the transition from present structures to joint structures.”

Significantly, the CAS revealed the lessons that the IAF has learned from the ongoing war in Ukraine. According to him, “the Russian-Ukraine war has thrown up plenty of lessons. The resilience of air power has been demonstrated in this extended war. It has also shown that a sustained DEAD (Destruction of Air Defence) campaign is important to achieve the needed air situation.

It also demonstrated that air superiority is necessary to achieve land objectives. However, a full-spectrum AD (Air Dominance) capability is needed, which includes weapons ranging from shoulder-launched missiles to long-range surface-to-air missiles (SAMs).

Inputs about the effectiveness of the Remotely Piloted Aircraft (RPAs) have been mixed. While initial reports were largely positive, as the major action shifted to the East and where a structured AD system was available, most inputs indicate high vulnerability and limited impact. This highlighted the need for a multi-layered and ranged air defense system with both hard and soft kill options for dealing with RPAs.

“The other important lessons are the Kinetic attacks on major warships, (hitherto) rare events, and the use of anti-ship missiles. So also the proliferation and use of anti-tank and shoulder-launched anti-aircraft missiles. However, definitive conclusions can only be reached once the entire context and conditions become clear.

“Moreover, on a broader scale, it is obvious that the conflicts in the future can be of Short High Intensity, Protracted Low Intensity, or Protracted Conflict of varying intensity.

While a short and swift conflict would require a sharp, mean, and offensive force, the outcome of a protracted conflict would be determined by force preservation and sustenance. The IAF is working intricately on all these aspects to build a credible air force.“

<https://www.eurasiantimes.com/exclusive-iaf-chief-talks-on-ukraine-russia/>



Tue, 05 Nov 2024

LCA Tejas: 1st Export Order For Indigenous Combat Jets May Come Sometime, But Can HAL Deliver?

The Indian government has made the indigenous Light Combat Aircraft (LCA) ‘Tejas’ the flagship product on its defense exports list. Not a single month passes when the news does not pop up that a new country is interested in the fighter jet that had its inception in 1984. But, the question remains if the Indian aerospace maker has the wherewithal to meet export orders, even if it manages to clinch a deal.

India has been aggressively pushing to sell the LCA to foreign air forces. Indian diplomats, along with the team from the aircraft manufacturers, have been meeting foreign officials, throwing diplomatic weight behind the aircraft. In November 2023, Prime Minister Narendra Modi flew in the twin-seater Tejas in a show of confidence. What made it an unparalleled feat was that it was the first sortie in any fighter jet by a serving Indian prime minister.

The Indian Air Force inducted its first LCA Tejas in 2016. Currently, it operates two squadrons of LCA. The biggest handicap the Tejas had was that it was not combat-proven and had never faced a challenger, as its Indian peninsular deployment meant it was a peace-time combat jet.

But all that could change if Tejas is permanently deployed in one of India’s forward air bases facing west or north, and it would need to patrol the skies over India’s two volatile borders. The

IAF has already begun sending the existing two LCA squadrons on detachments to forward air bases along the western and northern frontiers, as was witnessed recently with a squadron in Awantipur in Jammu and Kashmir for training.

It has been participating in war games with foreign air forces. The IAF's then Vice Chief and present Chief Air Chief Marshal AP Singh piloted the aircraft during the recently concluded multi-lateral wargames 'Tarang Shakti' and intercepted a German Eurofighter in simulated drills. In the coming years, IAF will operate the largest fleet of Tejas fighter aircraft. The IAF has placed orders for 83 + 97 LCA Mk1A aircraft, which will receive 40 upgrades in their first iteration.

The only milestone eluding the fighter jet has been an export order. Despite "intense lobbying," in 2023, Tejas lost to second-hand F-16s in clinching the deal to arm the Argentinian Air Force with fighter jets. A series of media reports have discussed how countries like Congo, Nigeria, the Philippines, Egypt, Malaysia, and Botswana have shown interest in procuring the LCA.

Malaysia opted for the South Korean F-50 Golden Eagle fighter over LCA Tejas. But the question remains – if the HAL gets an export order today, can it execute the deal, or is the LCA export quest a chimera?

What complicates the matter further is that the HAL was scheduled to deliver its first LCA Mk1A fighter jet to the IAF in February 2024. However, a delay in the supply of engines powering these fighter jets from the American firm GE Aerospace has derailed the delivery schedule.

HAL's Aircraft Manufacturing Capacity

While the HAL has the capability to develop a functional fourth-generation fighter jet, its manufacturing capacity is much below the requirement. The new IAF Chief talked about this in his first media interaction. Air Chief Marshal Singh said that the delivery of LCA MK1 started in July 2016, when he was posted at the ASTE (Aircrafts and Systems Testing Establishment). Since then, the IAF has only 38 of these aircraft on its strength.

A former senior IAF official told the EurAsian Times on condition of anonymity: "LCA program is evolving and maturing. The HAL, as a manufacturer, is fully aware of what it takes to manufacture these aircraft. They have the capability. It is the capacity that needs to be enhanced."

When asked if HAL can export these LCA aircraft as of today, the veteran added: "Maybe if a lot of ifs are addressed."

HAL currently can build 8 LCA aircraft per year. This will be augmented to 16 aircraft every year by 2025 and 24 aircraft every year in the next three years. Outlining the capacity augmentation roadmap that the HAL is following, the former Chief Managing Director (CMD) of the HAL was quoted saying that the HAL has increased its production capacity from eight to 16 aircraft annually at its Bangalore facility. The company is also tying up with private players to supply aircraft structures, especially for all four structures—rear, front, center fuselage, and wings—to further strengthen the supply chain.

The HAL is also starting a third line in Nasik, which is expected to be operational by the end of 2024. The Nasik facility is designed to manufacture eight aircraft and will become fully operational from 2024 to 25.

The HAL has been aiming to manufacture 16 aircraft in 2025; however, the engine delays have pushed up the delivery schedule. The HAL has been aiming to deliver 83 LCAs one year before the contracted delivery schedule of 2028-29. This would have been followed by the delivery of 97 LCA MK1A for the IAF. Considering the IAF's fighter jet squadrons are down to the 1965 level, these indigenous fighter jets are critical for the IAF to maintain deterrence against the Chinese Air Force.

This again raises the question of whether the HAL can meet both the IAF's and export demands if the need arises. Coupled with the manufacturing capacity, the dependence on foreign vendors for critical components like engines is detrimental to India's ambitions to export fighter jets.

<https://www.eurasiantimes.com/lca-tejas-1st-export-order-for-indigenous/>

Science & Technology News

THE ECONOMIC TIMES

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World's first wooden satellite, developed in Japan, heads to space

The world's first wooden satellite, built by Japanese researchers, was launched into space on Tuesday, in an early test of using timber in lunar and Mars exploration.

LignoSat, developed by Kyoto University and homebuilder Sumitomo Forestry, will be flown to the International Space Station on a SpaceX mission, and later released into orbit about 400 km (250 miles) above the Earth.

Named after the Latin word for "wood", the palm-sized LignoSat is tasked to demonstrate the cosmic potential of the renewable material as humans explore living in space.

"With timber, a material we can produce by ourselves, we will be able to build houses, live and work in space forever," said Takao Doi, an astronaut who has flown on the Space Shuttle and studies human space activities at Kyoto University.

With a 50-year plan of planting trees and building timber houses on the moon and Mars, Doi's team decided to develop a NASA-certified wooden satellite to prove wood is a space-grade material.

"Early 1900s airplanes were made of wood," said Kyoto University forest science professor Koji Murata. "A wooden satellite should be feasible, too." Wood is more durable in space than on Earth because there's no water or oxygen that would rot or inflame it, Murata added.

A wooden satellite also minimises the environmental impact at the end of its life, the researchers say. Decommissioned satellites must re-enter the atmosphere to avoid becoming space debris. Conventional metal satellites create aluminium oxide particles during re-entry, but wooden ones would just burn up with less pollution, Doi said.

"Metal satellites might be banned in the future," Doi said. "If we can prove our first wooden satellite works, we want to pitch it to Elon Musk's SpaceX."

Industrial Application

The researchers found that honoki, a kind of magnolia tree native in Japan and traditionally used for sword sheaths, is most suited for spacecraft, after a 10-month experiment aboard the International Space Station.

LignoSat is made of honoki, using a traditional Japanese crafts technique without screws or glue. Once deployed, LignoSat will stay in the orbit for six months, with the electronic components onboard measuring how wood endures the extreme environment of space, where temperatures fluctuate from -100 to 100 degrees Celsius every 45 minutes as it orbits from darkness to sunlight.

LignoSat will also gauge wood's ability to reduce the impact of space radiation on semiconductors, making it useful for applications such as data centre construction, said Kenji Kariya, a manager at Sumitomo Forestry Tsukuba Research Institute.

"It may seem outdated, but wood is actually cutting-edge technology as civilisation heads to the moon and Mars," he said. "Expansion to space could invigorate the timber industry."

<https://economictimes.indiatimes.com/news/science/worlds-first-wooden-satellite-developed-in-japan-heads-to-space/articleshow/114963330.cms>



Mon, 04 Nov 2024

NASA AI vision tech for spacecraft ends up in Factories on Earth

Over a decade ago, NASA began working on an AI vision technology for its interplanetary spacecraft, such as its rovers and drones on Mars. Through a Small Business Technology Transfer programme, NASA funded the development of a neural network software for artificial intelligence, based on the human brain.

The idea was to enable vehicles on extraterrestrial surfaces to autonomously navigate the terrain, by recognising features in the environment in realtime. An artificial intelligence company from Boston, Neurala, adapted the technology for drone navigation and collision avoidance. In both the applications, the software could run on the vehicle itself, with the limited resources available to an interplanetary surface craft.

The design required that the decisions be made by the device itself, without relaying signals to a decision maker on Earth. The features of the technology that made it suitable for use in a deep space environment, also made it suitable for use on assembly lines on Earth. Neurala has adapted the software to monitor assembly lines in factory floors, which may contain hundreds of items passing through every minute, making visual inspections by humans challenging. The same AI technology that allows Martian vehicles to evaluate the environment in realtime, is also now used to monitor the assembly lines on Earth.

NASA spinoffs benefits Earth

Cofounder of Neurala and its CEO, Massimiliano Versace says, “Our software can learn very quickly on a processor with a very small footprint, a skill we learned working with NASA. By doing so, we enable vision inspection with whatever components are already available, deploying in minutes. In our exploration of the market, we realized that the manufacturing space had a precise need for this technology.” Neurala’s AI software is another example of technology originally developed for applications in space, benefiting humans living on Earth.

<https://www.news9live.com/science/scientists-shocked-by-largest-ever-underwater-feeding-frenzy-2741165>



Mon, 04 Nov 2024

Swiss varsity students achieve what no European space firm could-a successful rocket hop test

A team of students achieved what no other space agency or company in Europe could: a successful rocket hop test.

According to Interesting Engineering(IE), in October, students in the Swiss Federal Institute of Technology Lausanne's Gruyère Space Program (GSP) designed COLIBRI, a 2.5-meter reusable rocket hopper that became the first to perform a rocket hop on mainland Europe.

By doing so, they beat the likes of the European Space Agency (ESA) and Arianespace.

GSP president Jérémy Marciacq told IE,““Our initial goal was simple: to learn as much as possible. We were just entering university, and after experimenting with small 3D-printed rockets, we set our sights on the COLIBRI mission.”

“At the time, we didn’t think it was feasible,” he continued. “We were just trying to get a drone to fly and fire a basic bi-liquid engine. But once those started working, sponsors began to take notice, and that’s when the COLIBRI mission truly took off.”

Marciacq added that the rocket was named after the German and French word for 'Hummingbird', as “it’s the only bird that can fly backward, just like our rocket, which returns to its launchpad.”

COLIBRI performed its successful hop test on October 18, performing 105-metre free flight. The rocket flew to a height of 105 metres, then moved 30 metres southeast before landing back on the launchpad, all within 60 seconds.

While the test was successful, a piece of cheese that the team attached to the rocket as a nod to their heritage almost caused a disaster. “The cheese created an aero effect that led to the rocket overspinning,” Marciacq told IE.

“In the end, it all worked out, and we ate it after the flight. It was slightly warm but still quite tasty!” “It was purely for fun, but in the end it allowed us to discover some limits to our design – notably for roll control,” Marciacq continued.

“We saw that we still have margins in case of reaction control system loss. This also indicates some limits in case of flights with higher speeds – it would require higher thrust in the RCS for roll control.”

“Our success came down to an incredibly dedicated and resilient team,” Marciacq explained to IE. “We faced numerous setbacks along the way, but the determination to see a rocket landing in Europe kept us going.”

After the success it achieved, GSP has now used its rocket tech to launch a startup called PAVE Space.

“At PAVE Space, we’re focusing on developing autonomous spacecraft to advance space mobility and robotics,” Marciacq told IE.

“Our goal is to make space more transparent, sustainable, and operational.”

“As for building a full-scale reusable rocket, that’s not our immediate focus – there are already plenty of players in Europe tackling that,” he continued.

“However, we’re always open to sharing the knowledge we gained from the Colibri project to help others.”

<https://www.deccanherald.com/science/space/swiss-varsity-students-achieve-what-no-european-space-firm-could-a-successful-rocket-hop-test-3261171>

