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समाचार पत्रों से चयित अंश
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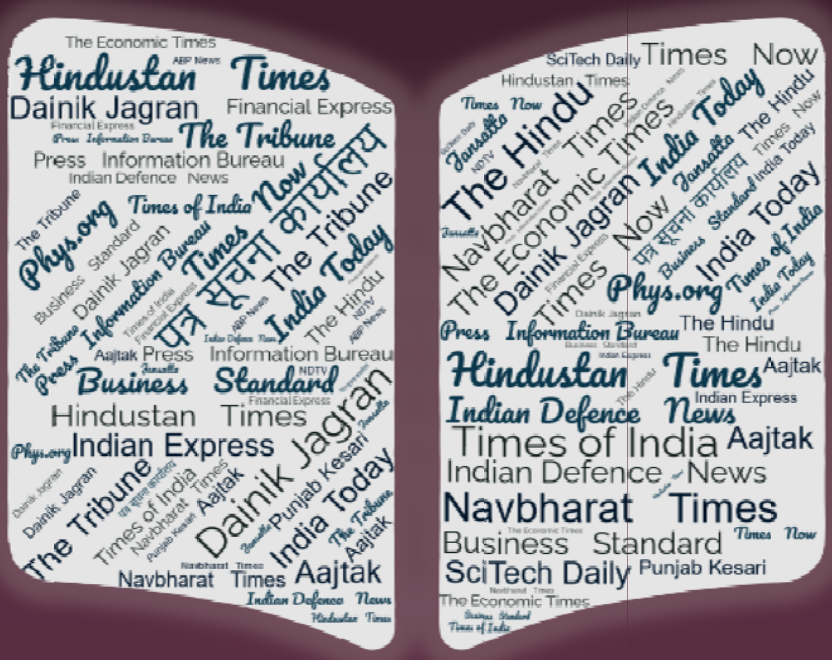

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CONTENTS

DRDO News

DRDO Technology News

Press Information Bureau
Government of India

Ministry of Defence

Sun, 02 Oct 2022 2:16 PM

DRDO Chairman and Officials Pay Floral Tributes to Mahatma Gandhi on his birth Anniversary

Also Launches a Special Campaign 2.0 on Swachhta in all DRDO Establishments in the Country

On the occasion of the birth anniversary of Mahatma Gandhi, floral tributes were paid at his portrait in Central Foyer of DRDO Bhawan by Dr Samir V Kamat, Secretary DDR&D and Chairman DRDO, Director Generals, Directors, and other officers and staff of DRDO headquarters in New Delhi today. A Special Campaign for Disposal of Pending Matters and cleanliness drive was also launched by DRDO today. Pendencies in specified areas such as Pending PMO references, Pending references from state governments, Pending inter-ministerial references(Cabinet note), Parliamentary assurances pending for more than 03 months, Pending public grievances and appeals, identification of cleanliness campaign sites, Space Management Planning, scrap disposal etc., with special focus on Records Management (Digitization of records) will be taken up during the Special Campaign. This initiative is part of the Special Campaign 2.0 on swachhta being undertaken by Ministry of Defence during the period from 2nd October 2022 to 31st October 2022.

Also, a Fit India Plog Run event was organised at DRDO headquarters today, as part of Fit India Freedom Run (FIFR) 3.0. More than 250 Officers and staff participated in this plog run. Through this initiative, Fit India Mission converges with Swachh Bharat Abhiyan. Cleanliness drive by various directorates of DRDO HQ were also undertaken in their respective areas and offices.

https://pib.gov.in/PressReleasePage.aspx?PRID=1864421

Arunachal24.in

Fri, 30 Sep 2022

3rd DRDO Kisan Jawan Vigyan Mela held Tawang

The 3rd DRDO Kisan Jawan Vigyan Mela was conducted today in the Defence Research Laboratory R&D Centre (RDC) at Changbu, Tawang. The mela has been organised as a part of diamond jubilee celebration of DRL Tezpur. The villagers, self help groups, head of offices of Tawang district, and ex servicemen participated in the mela. The chief guest GS Udawat Commandant 38th Battalion SSB Tawang praised DRL about its commendable job in border areas and stressed that we need to double the income of farmers.

The DRL and DRDO will be contributing milestone contribution, civil and military interaction will increase through this mela. The people of Tawang has always supported defence personnel and let us continue to strengthen borders. Earlier in his Welcome address Dr BJ Gogoi Officer incharge DRL RDC Tawang informed about DRDO, its activities and future plans which included expansion of DRL RDC Tawang and its infrastructure development. He informed that 50 advance weather prediction system will be installed in different parts of Arunachal sister DRDO lab – DGRE.

The Chief Coordinator of the mela Dr. Ajitabh Bora, Sc E of DRL informed that this mela is on the line of jai jawan jai kisan jai vigyan and jai anusandhan slogan given by the Prime Minister and first and second Kisan Jawan Vigyan mela were conducted in DRL RDC Salari in West Kameng district in 2018 and 2019. The aim of this mela is to provide platform for interaction of farmers and jawans with scientists, through kisan sabha. He further informed that DRDO mainly deals with defence but its benefit should go to civilians also.

Providing good quality organic vegetables is a horticulture therapy to jawans, this mela also provides civil military interaction, demonstration and promotion of modern agro technologies in border areas to check migration of villagers from border villages to urban areas, food processing units and mushroom spawn producing units are being created to facilitate self help groups by lending the resources. He said there is an instruction from the govt to every dept to adopt villages along Himalayan border areas and accordingly DRDO has adopted few villages in Kalaktang and Tawang.

https://arunachal24.in/arunachal-3rd-drdo-kisan-jawan-vigyan-mela-held-tawang/

THE HINDU

Sun, 02 Oct 2022

SVIMS and DRDO Deliberate on Manufacture of Biomedical Implants

The Tirumala Tirupati Devasthanams' (TTD) Sri Venkateswara Institute of Medical Sciences (SVIMS) and the Defence Research and Development Organisation (DRDO) have achieved

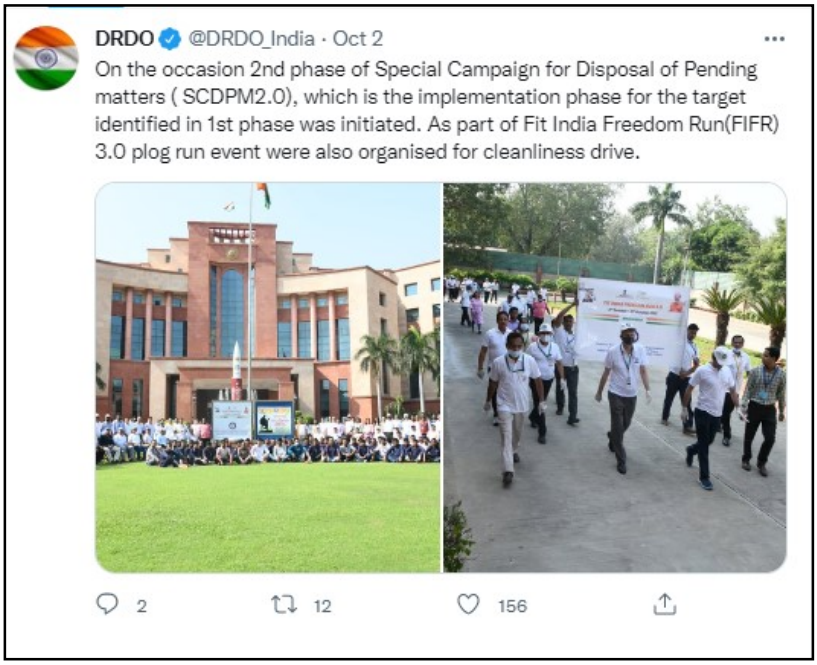
significant progress in the third round of deliberations pertaining to manufacture and use of biomedical implants. The meeting, attended by Scientific Adviser to Raksha Mantri G. Satheesh Reddy (who earlier headed the DRDO) and SVIMS Director and Vice-Chancellor B. Vengamma here on Saturday, discussed the arrangement being worked out with the Institute of Nuclear Medicine and Allied Sciences (INMAS), functioning under the aegis of the DRDO, towards this task, and the role of the Defence Bio-Engineering and Electro Medical Laboratory (DEBEL) in handling state-of-the-art life support systems and biomedical devices.

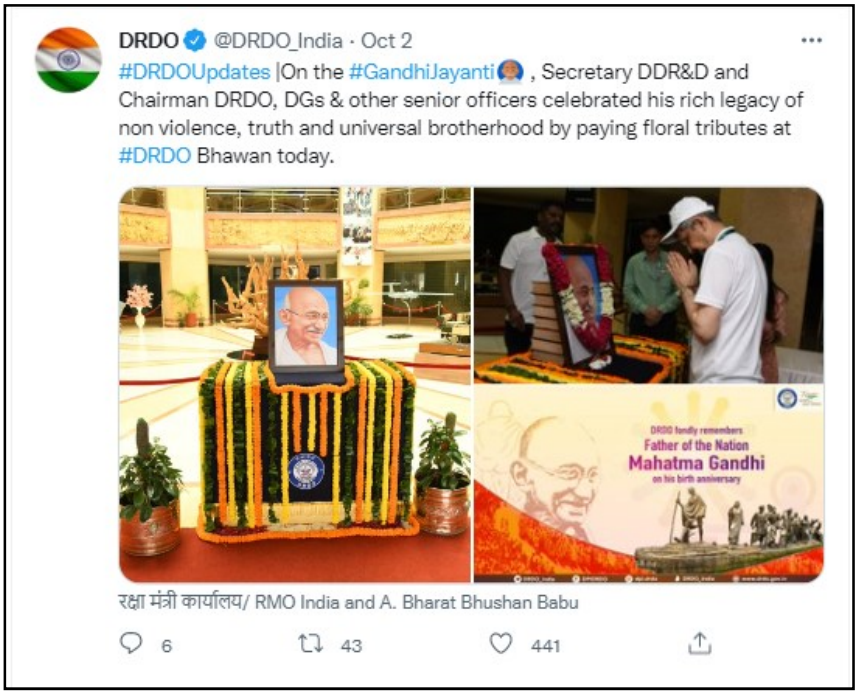
Member of Parliament M. Gurumoorthy, who is also a physiotherapist by profession, explained that the country still imported a chunk of biomedical implants required for heart, spine and head surgeries, adding that making the same in the country would save nearly ₹20,000 crore for the exchequer.

Special Secretary to Chief Minister R. Harikrishna, SVIMS Medical Superintendent Ram took part. Dr. Satheesh Reddy and Dr. Gurumoorthy later visited Sri Padmavati Hrudayalaya, the TTD's centre for heart diseases in infants, where its Director N. Sreenath Reddy explained the treatment being extended to babies having congenital cardiac disorders.

https://www.thehindu.com/news/national/andhra-pradesh/andhra-pradesh-svims-and-drdo-deliberate-on-manufacture-of-biomedical-implants/article65959588.ece

DRDO On Twitter





Defence News

Defence Strategic : National/International

Press Information Bureau
Government of India

Ministry of Defence

Fri, 30 Sep 2022 6:32 PM

Raksha Mantri Shri Rajnath Singh Urges Industry Cooperation to take Indian Defence Sector to New Heights

Government Steps to Improve Defence Industry manufacturing eco system are showing results: RM

Raksha Mantri Shri Rajnath Singh exhorted the Indian defence Industry to make new investments and lay more emphasis on research & development to scale new heights. He was addressing the 117th Annual session of PHD Chamber of Commerce & Industry (PHD-CCI) held in New Delhi on September 30th, 2022. "Make new investments, put more emphasis on research & development, and harness its full potential to take the Indian defence industry to new heights. This effort of yours will be very important not only for the defence industry, but also for the overall growth of the entire country,' he said.

Raksha Mantri added that the Indian defence sector offers immense potential and the companies even from abroad see opportunities. PHD-CCI being one of the oldest industry associations having many national and international members could act as ambassador of the Indian defence industry. "Your roots are spread far and wide in the country and abroad. You can fulfil your role by communicating with all the domestic and foreign companies, connecting them with the Indian defence industry and acting as a bridge between these two," he said

Appreciating the PHD-CCI for scheduling a dedicated session on 'Make in India: A success story of India's Defence Indigenization' Raksha Mantri said that this is equally related to the national security, and the economic progress of the country. National security is one of the most important components in the progress of a nation. The social, economic and cultural upliftment of the nation are not possible without security.. India had paid the price in past for neglecting national security. Even after independence not enough attention was given to make defence sector strong and self-reliant, he lamented.

Striking an optimistic note, Raksha Mantri said that Indian defence industry is progressing steadily in partnership with private sector."There was either no way for the private sector in the

past to enter the defence sector, and even if there was some scope, the industry was not ready to set foot in the defence sector due to various reasons". These reasons were lack of political will, appropriate policy to incentivize their entry, high investment and long gestation period. Raksha Mantri noted that the government has removed these bottlenecks and played the role of an incubator, catalyst, consumer and facilitator in the case of private industry. Several steps have been taken by the Ministry of Defence, under the 'Make in India' and 'Self-reliant India' initiatives of the Government, to change the old traditions, and to create a manufacturing climate, in which the public and private sectors could participate.

Elaborating upon the far-reaching reforms undertaken by the MOD to bolster the private sector participation in defence sector, Raksha Mantri said that Government labs opened to the private industry, transferred technology at zero fee, provided access to test facilities, and upfront funding through DRDO was provisioned. The Ministry of Defence has issued 3 positive indigenization lists of 309 items which will be procured from domestic vendors as per norms. Three lists have also been issued by Defence Public Sector Undertakings (DPSU), in which more than 3700 are Line Replacement Units, Sub-systems and other Components. In addition, an iDEX initiative has been launched to encourage innovators and start-ups. The policy decision has been taken to increase the limit of FDI to 74% by the automatic route, and to 100% by the government route in special cases. Government has taken several steps like introduction of defence industrial corridors-- two Industrial corridors have been set up each in Uttar Pradesh and Tamil Nadu, corporatization of OFB which creates win-win situation for armed forces, industry, start-ups and innovators, said Raksha Mantri.

He further said : "The magnitude of all these efforts is beginning to come before us. Today we are not only producing to meet our own defence needs, but also fulfilling the defence needs of many other countries under 'Make for the World'. It is a matter of great happiness that defence exports have increased manifold from what we used to have, and have reached Rs 13,000 crores last year. We used to be counted as one of the biggest arms importers in the world until now. But today we are one of the top 25 arms exporting countries of the world. We have targeted a turnover of Rs 1.75 lakh crore in defence manufacturing, including Rs 35,000 crore from exports in aerospace, and defence goods and services by 2025." PHD-CCI is one of the oldest chambers in the country. Since its establishment in 1905, it has been proactive National Apex Chamber working at the grass-root level and with strong national and international linkages. The Chamber acts as a catalyst in the promotion of industry, trade and entrepreneurship. PHD Chamber, through its research-based policy advocacy role, positively impacts the economic growth and development of the nation.

https://pib.gov.in/PressReleasePage.aspx?PRID=1863867

Press Information Bureau
Government of India

Ministry of Defence

Sat, 01 Oct 2022 1:04 PM

Pay System for Agniveers & SPARSH Mobile App among Key Digital Initiatives Launched by Raksha Mantri During 275th Annual Day of Defence Accounts Department

"Our endeavour is to provide best services to the serving & retired personnel as well as their families"

Quick & quality disposal of pensioners' grievances should be top priority: Shri Rajnath Singh tells DAD

Bolstering national security through a powerful military & self-reliant defence industry is our focus: Speedy decisions strengthen combat readiness: RM

Raksha Mantri Shri Rajnath Singh launched several digital initiatives of Defence Accounts Department (DAD) during its 275th Annual Day celebrations in New Delhi on October 01, 2022. The initiatives include System for Pension Administration (Raksha) (SPARSH) mobile app; Pay System for Agniveers; International Air Ticket booking module in Defence Travel System (DTS); Defence Accounts Receipts and Payment System (DARPAN); Defence Civilian Pay system and Defence Accounts Human Resource Management System. The Raksha Mantri, in his address, commended the DAD for taking forward the 'Digital India' vision of the Government, stating that the new initiatives will increase transparency and efficiency in the functioning of the Department.

On the occasion, Shri Rajnath Singh also gave away the Raksha Mantri Awards for Excellence 2022 to three teams for exhibiting exemplary initiative in implementing key department projects - development, testing and implementation of SPARSH; implementation of E-Concurrence in DRDO and Pay and Accounts Office (PAO) Bharati: Your PAO, A call away 24*7.

SPARSH Mobile App

The app will ensure pensioner access and reach to important functionalities of the SPARSH portal through their mobiles. Ministry of Defence implemented the portal (*https://sparsh.defencepension.gov.in/)* for pensioners of the Armed Forces as well as defence civilians as an integrated system for automation of sanction and disbursement of defence pension. It is an end-to-end solution to all pension-related processes, from claim initiation to disbursement. Pensioners can log on to the portal and get their pension-related issues resolved.

Describing SPARSH as a landmark step, Shri Rajnath Singh said, it is the Government's endeavour to provide best services to the serving personnel, ex-servicemen and their families during the soldiers' lifetime as well as after death. He added that special emphasis is being laid to disbursing right pension at the right time. The Raksha Mantri called upon DAD to make speedy and quality disposal of grievances of pensioners as their first priority. He praised the department

for regularly organising Outreach Programmes and 'Raksha Pension Samadhan' for on-the-spot redressal of problems, urging them to continue working in that direction.

Agniveer Pay System

The system will facilitate efficient pay management for Agniveers, who will soon join the Armed Forces through the Government's transformational Agnipath scheme. The fully automated IT system will be a specialised and secure portal to ensure claim processing and pay-roll management of Agniveers. Shri Rajnath Singh also inaugurated a centralised PAO (Army) for Agniveers at Delhi Cantonment.

Defence Travel System

The system provides end-to-end solution, from booking of rail and air tickets to claim submission on its portal for Defence Services and Civilians in cashless and paperless environment. It will provide facility of booking of air tickets for foreign travel to defence services replacing Air Exchange Warrants. It will fill the time gap between GSL receipt and ticket booking and eliminate last hassle for travelling officer.

DARPAN

The Defence Accounts Receipts and Payment System is a unified solution for third party bill payment and accounting. Its real-time processing will provide comprehensive insights into various accounting and financial performances.

Defence Pay Civilian System

The System envisages disbursement of pay of all defence civilians through a single, centralised and fully automated system. Both Units and PCDA/CDA offices have been given access to the system and units will be able to check the payment status on the portal itself.

Defence Accounts HR Management System

With the launch of the application, the department steps into a new paradigm of digitally enabled human resource management. The platform has various self-service modules like e-service book, leave management, pay roll generation and promotion details which will be accessible to the employees through a mobile app, anywhere anytime.

PAO-Bharti

Through the initiative, which was part of the Raksha Mantri Excellence Awards this year, the Armed Forces personnel will be able to get real-time data related to pay & allowances and claims. In addition, through its Interactive Voice Response System, the personnel will be able to register their complaints through phone and get the replies within 48 hours. The system has been implemented in seven PAOs. The Raksha Mantri hoped that it will soon be implemented in the remaining offices also. Shri Rajnath Singh lauded the DAD for imbibing Prime Minister Shri Narendra Modi's mantra of 'reform, perform and transform' by adopting these digital initiatives. "The department is evolving itself according to the ever-changing times, while staying connected with the traditional values," he said.

The Raksha Mantri also praised the vital role played by the DAD in managing the financial resources of the Services by following the principles of financial prudence. "As India has completed 75 years of independence, it is moving forward with renewed confidence and determination under the leadership of Prime Minister Shri Narendra Modi in 'Amrit Kaal' to

become one of the most powerful countries in the world by 2047. This goal can only be achieved if India has a strong military, which is equipped with state-of-the-art weapons/equipment, manufactured by an 'Aatmanirbhar' defence industry. Bolstering national security has been our top priority since the beginning. The allocation of a total budget of Rs 5.25 lakh crore to Ministry of Defence in 2022-23 is a testament to that unwavering resolve. The DAD is playing a crucial role in this endeavour," he said.

Shri Rajnath Singh shed light on the important role the department can play in realising the vision of 'Aatmanirbharta' in Defence. "68 per cent of capital procurement budget has been earmarked for the domestic industry during Financial Year 2022-23, which underlines the Government's commitment towards achieving self-reliance in defence manufacturing. The DAD should bolster their support to the Government's efforts through speedy decisions, as delays not only lead to loss of time and money, but also adversely impact the combat readiness of the country," he said.

The Raksha Mantri elaborated on the committee constituted under the chairmanship of the Defence Secretary for the performance and efficiency audit of various aspects of Ministry of Defence. This committee, through audit, will review the work being done in the Ministry from a new and creative perspective, he said, stressing that DAD can play an important role in the process. This will not only increase the efficiency of the Services, but also reduce wasteful expenditure, he said.

Shri Rajnath Singh termed financial advice; accounting, billing and payments and internal audit as the three major roles of the DAD in Ministry of Defence, which contribute significantly in Nation Building. He suggested the department to explore opportunities for setting up a faceless mechanism on financial advice and billing & payments, taking advantage of the latest technological advancements. He hoped that the department will continue to discharge their departmental duties with similar enthusiasm & dedication and contribute in defence financial management of the country.

As part of the celebrations, an exhibition presenting the Department's rich history was witnessed by the Raksha Mantri. On display were relics and photographs of the Department, portraying its cultural heritage and contribution which were appreciated by Shri Rajnath Singh. Defence Secretary Dr Ajay Kumar, Chief of the Army Staff General Manoj Pande, Financial Advisor (Defence Services) Smt Rasika Chaube, Additional Controller General of Defence Accounts Shri Avinash Dikshit and other senior officials of Ministry of Defence were present during the event.

https://pib.gov.in/PressReleasePage.aspx?PRID=1864083

THE ASIAN AGE

Sun, 02 Oct 2022

Rajnath Launches App for Defence Personnel

Defence minister Rajnath Singh on Saturday launched a number of digital initiative for defence personnel including System for Pension Administration (Raksha) (SPARSH) mobile app, Pay System for Agniveers, and International Air Ticket booking module in Defence Travel System (DTS) among others. He launched these digital initiatives of Defence Accounts Department

(DAD) during its 275th Annual Day celebrations Agniveer Pay System will facilitate efficient pay management for Agniveers, who will soon join the Armed Forces. The fully automated IT system will be a specialised and secure portal to ensure claim processing and pay-roll management of Agniveers.

The SPARSH Mobile App will ensure pensioner access and reach to important functionalities of the SPARSH portal through their mobiles. Ministry of defence implemented the portal for pensioners of the Armed Forces as well as defence civilians as an integrated system for automation of sanction and disbursement of defence pension. It is an end-to-end solution to all pension-related processes, from claim initiation to disbursement. Describing SPARSH as a landmark step, Mr Singh said, it is the government's endeavour to provide best services to the serving personnel.

https://www.pressreader.com/india/the-asian-age/20221002/281698323630764

Press Information Bureau
Government of India

Ministry of Defence

Sun, 02 Oct 2022 7:21 PM

Visit of Adm R Hari Kumar, CNS to New Zealand

Adm R Hari Kumar, Chief of the Naval Staff (CNS), Indian Navy, visited New Zealand from 29 September to 01 October 22. The CNS was warmly welcomed in the traditional Powhiri ceremony hosted by the Royal New Zealand Navy (RNZN) leadership at the Te Taua Moana Marae and was presented the Ceremonial Guard of Honour at the Navy Ground.

The CNS held detailed deliberations with Rear Admiral David Proctor, Chief of Navy, RNZN. The discussions covered a wide spectrum of maritime cooperation opportunities. Both leaders exhibited enthusiasm towards expanding the scale and scope of bilateral engagements in the coming years. The CNS conveyed compliments to RNZN leadership for their active participation in MILAN-22 and that the Indian Navy was looking forward to maiden participation of young RNZN officers in the upcoming Admiral's Cup Sailing Regatta, scheduled to be hosted by the Indian Navy in December 2022. In a milestone development, an Agreement on White Shipping Information Exchange, was signed during this visit. Closer collaboration towards enhancing shared Maritime Domain Awareness is in keeping with convergent views of both countries with regard to promoting greater transparency in the maritime domain.

The visit coincided with the Anniversary Celebrations of RNZN. The CNS was delighted to be the Special Guest at the 'Beat Retreat and Ceremonial Sunset Ceremony' held at Auckland to mark this special occasion. The CNS was also provided a comprehensive tour of the Maritime Museum of New Zealand, showcasing the country's rich maritime heritage. The CNS, accompanied by Shri Bhav Dhillon, Honorary Consul of India at Aukland, also availed the opportunity to meet Indian veterans and community leaders in Auckland.The visit to New Zealand further consolidated shared commitments of both navies and has set in motion a promising growth trajectory for deeper bilateral maritime engagements.

https://pib.gov.in/PressReleasePage.aspx?PRID=1864538

mint

Sun, 02 Oct 2022

Govt Focusing on Innovative Solutions to Empower Defence Sector: Rajnath Singh

Union defence minister Rajnath Singh said the government is focusing on innovative solutions to empower the country's defence sector. "Innovation in Defence Excellence, worth ₹498 crores, aims to benefit 300 new startups for innovative design and development in the defence sector," the defence minister said. Highlighting that national security is vital to the progress of any country, Rajnath Singh said that with the boost in Indian defence manufacturing now, we can stop importing defence equipment from other countries. Not only that we could even export some goods to other countries under the 'Make in India' scheme. The policy of indigenous manufacturing of defence equipment would give a fillip to the Indian economy, he said, adding the government has also raised the limit of FDI in this sector.

Highlighting that national security is vital to the progress of any country, Rajnath Singh said that with the boost in Indian defence manufacturing now, we can stop importing defence equipment from other countries. Not only that we could even export some goods to other countries under the 'Make in India' scheme. The policy of indigenous manufacturing of defence equipment would give a fillip to the Indian economy, he said, adding the government has also raised the limit of FDI in this sector. Presently, Rs. 85,000 crores has been allotted for research and development in the private sector involved in defence manufacturing. The initiation of two defence corridors in the country would put India in a win-win situation. India featuring among the top 25 defence export countries is a proud achievement for us, the minister said.

https://www.livemint.com/news/india/govt-focusing-on-innovative-solutions-to-empower-defence-sector-rajnath-singh-11664538185985.html

The EurAsian Times

Fri, 30 Sept 2022

India's Arjun Tanks to Get 'Artificial Intelligence' Capabilities to Detect, Track & Engage Hostile Targets

The MK1A is an upgraded version of the Arjun platform, with increased firepower, maneuverability, and survivability, designed and developed by India's Defense Research and Development Organization (DRDO). The Janes report said that Banglore-based Tonbo Imaging is building the system in collaboration with the state-run Bharat Electronics Limited (BEL) plant in Chennai, India. The report said, "Tonbo Imaging is partnered with BEL, Chennai, to meet [BEL's] demand for fire-control systems. Hence, BEL awarded us a contract to manufacture and deliver the [electro-optical fire-control system] for Arjun MK1A MBTs."

The Elpeos fire-control product will be delivered as part of the deal and integrated into the Arjun MK1A MBTs. According to the Tonbo Imaging website, ELPEOS is a multi-sensor electro-optical payload developed for precision targeting and easy integration into remote-controlled weapon systems (RCWSs).

ELPEOS has a cooled MWIR imager with high resolution, a color CCD camera, a Laser Range Finder, and an integrated ballistic computer. For target acquisition and georeferencing, it can optionally incorporate a GPS and a Digital Magnetic Compass with an inclinometer. This system makes it easier for tanks to acquire, lock, and engage moving targets using human or automatic tracking. EurAsian Times contacted the company to find out more about the system's capabilities. Tonbo Imaging told EurAsian Times that "the system is one of the lightest sighting systems for RCWS equipped with an advanced AI processor capable of detecting, tracking and engaging the 12.7mm gun on identified targets. It has also been supplied to a few global armies for the 12.7mm weapon." "The ELPEOS sighting system has been qualified in summer and winter trials. It is a sensor-fused system. So you can see day and night imagery in the same video feed," Tonbo Imaging added.

The company also informed EurAsian Times about the system's three silent features, which are as follows:

1. Automatic target detection, tracking, and classification

2. Low power consumption and weight

3. Free from foreign export and licensing requirements and India's only indigenous RCWS sighting system

In September 2021, India announced the procurement of 118 homegrown Arjun MK1A tanks for the Indian Army. With various cutting-edge technology systems, the MK1A is outfitted with precise and superior firepower, all-terrain mobility, and unbreakable multi-layered protection. It can engage the adversary in day and night conditions in static and dynamic modes. The tank is believed to include 72 new features with a higher percentage of domestically produced components.

Arjun MK1A Tank

Arjun MK1A is the latest version of the Arjun Tank built by the Combat Vehicles Research and Development Establishment (CVRDE) and other DRDO research facilities. The tank has significant enhancements over the Arjun MBT, the Indian Army's existing main combat tank in service. Furthermore, the MK1A can operate in all terrains and engage targets at night. The tank is outfitted with advanced technologies. As a result, this indigenous MBT is at par with any modern tank in its class elsewhere in the world. The tank is specifically constructed and designed for Indian conditions, making it appropriate for deployment to protect the borders effectively. The order is anticipated to provide 200 Indian vendors, including micro, small, and medium-sized businesses (MSMEs), with the opportunity to engage in manufacturing.

The Arjun Mk II or MK1A's overall design is comparable to other main battle tanks, with the driver's compartment at the front, the three-man turret in the middle, and the engine and transmission in the back. The four-person crew of the Arjun Mk II consists of the commander, gunner, loader, and driver. The driver has a seat that provides additional protection during a mine blast. An integrated explosive reactive armor (ERA) system is installed in the turret and the front portion of the chassis. With upgraded KANCHAN, an Indian modular composite

armor, all-around protection has been improved. The Mark 1-A has a better gunner sight (a 120mm main cannon) equipped with automated target tracking capabilities than its predecessor, the Arjun 1. This facilitates attack even while the MBT is moving, enabling the tank's crew to find and track mobile targets automatically.

Aside from the standard armor-piercing fin-stabilized discarding sabot (APFSDS) and high explosive squash head ammunition, it also has integration for thermobaric and penetration-cum-blast ammunition. The Arjun Mark 1A is said to have a maximum cruising range of 500 kilometers and a top speed on the road of 58 kilometers per hour and 40 kilometers per hour in cross-country. Trenches up to 2,430 mm broad, whether created naturally or artificially, can also be traversed. The tank can cross a 1.4-meter-deep water obstacle without special equipment. The Arjun MK II or MK1A is powered by a German V-90 turbocharged, charge-cooled, water-cooled diesel engine producing 1030 kW at 2,400 rpm. The Arjun Mk II has an epicyclic gearbox, a hydrodynamic torque converter, a mechanical lock-up clutch, a hydrodynamic retarder, and four forward and two reverse gears.

https://eurasiantimes.com/indias-arjun-tanks-to-get-artificial-intelligence-capabilities-to-detect-track-engage-hostile-targets/

THE HINDU

Sun, 02 Oct 2022

IAF to Formally Induct Indigenously-Built Light Combat Helicopter on October 3

The Indian Air Force (IAF) will induct on October 3, 2022 the first batch of indigenously-developed Light Combat Helicopter (LCH), in a boost to its combat prowess as the multi-role platform is capable of firing a range of missiles and other weapons. The LCH, developed by state-run aerospace major Hindustan Aeronautics Ltd (HAL), has been primarily designed for deployment in high-altitude regions. It will be inducted into the IAF inventory at a ceremony in Jodhpur in presence of Defence Minister Rajnath Singh and Chief of Air Staff Air Chief Marshal VR Chaudhari, officials said on Sunday. The 5.8-tonne twin-engine helicopter has already completed various weapons firing tests, they said.

In March, the Prime Minister Narendra Modi-led Cabinet Committee on Security (CCS) approved the procurement of 15 indigenously developed Limited Series Production (LSP) LCH at a cost of Rs 3,887 crore. The defence ministry had said 10 helicopters would be for the IAF and five will be for the Indian Army. The LCH has similarities with Advanced Light Helicopter Dhruv. It has a number of stealth features, armoured-protection systems, night attack capability and crash-worthy landing gear for better survivability, officials said. The LCH is equipped with requisite agility, manoeuvrability, extended range, high altitude performance and all-weather combat capability to perform a range of roles including combat search and rescue (CSAR), destruction of enemy air defence (DEAD) and counter-insurgency (CI) operations.

The helicopter can also be deployed in high-altitude bunker-busting operations, counter-insurgency operations in the jungles and urban environments as well as for supporting ground forces. The helicopter can also be used against slow-moving aircraft and remotely piloted aircraft

(RPAs) of adversaries. Officials said it would be a potent platform to meet the operational requirements of the IAF and the Indian Army. They said state-of-the-art technologies and systems compatible with stealth features such as reduced visual, aural, radar and IR signatures and crashworthiness features for better survivability have been integrated into the LCH for deployment in combat roles. Several key aviation technologies like a glass cockpit and composite airframe structure have been indigenised, they said.

The future series-production version will consist of further modern and indigenous systems, they said. The IAF has already accepted four LCH helicopters. The officials said IAF plans to procure more LCH in the near future. "We are already working with DRDO and HAL to integrate new weapons on the helicopter," said one of the officials. The helicopter has been tested under stringent operating conditions including at sea level, in desert regions and in Siachen. In February 2020, it was declared ready for production. The Army has a plan to acquire 95 LCH largely for a combat role in the mountains.

https://webcache.googleusercontent.com/search?q=cache:EITHQ-el_qgJ:https://www.thehindu.com/news/national/iaf-to-formally-induct-indigenously-built-light-combat-helicopter-on-october-3/

THE HINDU

Sun, 02 Oct 2022

Army Expects to Boost Fire Power with Induction of Artillery Guns

In the next five years, the Indian Army's Regiment of Artillery would see major force accretion with the induction of several guns, including indigenous ones. These include the Dhanush, Sharang, M777 Ultra Light Howitzer (ULH), additional K9-Vajra howitzers and the Advanced Towed Artillery Gun System (ATAGS). The seventh regiment of the M777 is under way, and the induction of all 145 guns should be completed in the next few years, a defence source said. Similarly, with their deployment and performance in high altitude regions, the Army is now going in for 100 more K9-Vajra tracked self-propelled howitzers. One regiment of the indigenous Dhanush artillery systems, developed based on the Swedish Bofors guns, has been inducted and operationalised in high altitude area along the Northern Borders after extensive validation. By March 2023, the Army should receive 18 guns to form the second Dhanush regiment, the source said.

On the Sharang guns, the up-gunned 130mm artillery guns to 155mm, 45 calibre guns, three regiments have been operationalised so far with the 4th regiment in process. The order for up-gunning 300 guns is being executed by three difference DPSUs carved from the erstwhile Ordnance Factory Board. "Three Sharang regiments are expected to be delivered per year and 15 artillery regiments are to be equipped with Sharang. So, it should be done in five years," the source explained. The Army received the first Sharang gun in February 2020 and the entire process of acquiring these guns is expected to be completed in four years of time. On this note, the source stressed on the need to upscale the capacities and capabilities of the domestic industry and the need to evolve a "conglomerate or consortium culture". "This is what will compress the timelines."

At the same time, defence sources said there has been no impact of the war in Ukraine on their ammunition supplies. Several types of ammunition and rockets are imported from Russia, but there utilisation is limited and the stocks have been lasting, a source said.

ATAGS system

On the ATAGS system which has completed validation trials in May, officials said they are fast-tracking the remaining process for quicker induction. Following this, Electromagnetic Interference/ Electromagnetic Compatibility (EMI/ EMC) trials were completed, followed by maintainability trials by the Corps of Electronics and Mechanical Engineers, the source explained. Currently, the Director General Quality Assurance (DGQA) evaluation is under way which includes environmental tests. They are being concurrently to shorten the evaluation and should be completed in another two months, the source said after which the preliminary requirements would be converted to General Staff Quality Requirements (GSQR) and commercial bids will be sought. This would be followed by cost negotiations and the initial order for 150 guns would be split between the Lowest bidder (L1) and the second (L2) in 70:30 ratio, the source added.

The ATAGS is a 155mm, 52 calibre heavy artillery gun jointly developed by Armament Research and Development Establishment (ARDE), the Pune-based laboratory of Defence Research and Development Organisation (DRDO), in partnership with Bharat Forge and Tata Group. In May, the gun successfully completed validation trails towards meeting the specifications of the Army is now ready for induction. For long range fire power, the Army is looking at additional indigenous Pinaka Multi-Rocket Launch System (MRLS) systems, to add to the four regiments in service. Six more Pinaka regiments have been contracted and they would be inducted in the next 4 to 5 years, sources said. The Defence Ministry has also approved the procurement of the Extended Range (ER) Pinaka rockets. The range of Pinaka rockets has significantly expanded as also the types, officials said. The range of original Pinaka rockets is 37 km, the upgraded Mk-1 over 45km and the guided ER has a range of 75km.

https://www.thehindu.com/news/national/army-looking-at-major-accretion-of-indigenous-artillery-guns-in-inventory/article65959031.ece

THE HINDU BusinessLine

Sun, 02 Oct 2022

Diamond-Based Coating for Gun Barrels

The science of coating surfaces to increase their ability to withstand wear and tear and, sometimes, impart lubrication has immensely helped industry. The newly launched Advanced Conformal-Coating Technology (AdCoaTech) lab at IIT-Madras is developing technologies to give Indian defence capabilities an ‘atmanirbhar coat’. The AdCoaTech lab was set up jointly by DRDO-CVRDE lab and IIT in August. “This is the first-of-its-kind set-up in any academic institute in India for physical vapour deposition technique for conformal coatings on the inner surface of long cylinders and tubes,” says Dr N Arunachalam, Associate Professor, Manufacturing Engineering Section, IIT-M. As India aims for self-reliance (atmanirbharta) in defence production, it would manufacture more weapons such as guns and tanks. As bullets and

shells shoot through barrels, the friction generates tremendous heat. If a machine gun fires 100 rounds rapidly, the barrel can glow red hot — that's why they have 'barrel shrouds' for the gunner to grip it safely. There is the same problem in the barrels of tanks and artillery guns. It would greatly help if the insides of the barrels were ultra-smooth to reduce friction (and hence heat).

This calls for a suitable coating material for the insides of the barrels that can give both hardness and lubrication properties. Such coats find use in several other areas too. For example, the insides of the cylinders that house the pistons attached to a tank's wheels — the up-down motion creates tremendous heat and wear-and-tear. There are many methods for coating surfaces. Coating materials are deposited onto surfaces physically, chemically, in the form of plasma, or by cold spray — all of which are extensively used in industry — but coating the insides of surfaces is a challenge. The research in this area is for developing 'recipes' and the equipment that will do the coating. AdCoaTech lab has developed such coating equipment in collaboration with Excel Instruments, Mumbai. As for the recipe, Dr Arunachalam's team uses what is called 'diamond-like carbon'. Diamond is the hardest material in the world, but how do you get it to stick to surfaces. Besides, aren't they expensive? Well, no. In science, diamond is not necessarily a shining stone; it just refers to a particular structure of arrangement of carbon atoms.

Carbon atoms make three types of bonds — sp1, sp2 and sp3. "The bonding arrangements between carbon atoms produce different types of carbon allotropes such as graphite or diamond," notes Prof Abdul Wasy Zia, of the City University of Hong Kong, in a 2020 scientific paper. In graphite, the carbon atoms form sp2 bonds with neighbouring carbon atoms to form a honeycomb-like structure. But if the bonds are of sp3 type (formed under extreme pressure and temperature), carbon exists as diamond. Diamond is very hard — around 100 giga pascals, as compared with graphite's 3 GPa. 'Diamond-like carbon' coatings are a mixture of sp1, sp2, and sp3 carbon. The more the sp3, the better the tribological characteristics. 'Diamond-like carbon' coatings have been used in industry for long. However, IIT-M is perfecting the technology for defence applications — the collaboration with DRDO will develop complex coatings for the special needs of the defence forces. "The aim of this project is to develop diamond-based coating technologies, which are essential for DRDO's immediate and future needs for defence components," says Dr Arunachalam.

Prof MS Ramachandra Rao of the Department of Physics at IIT-M says the AdCoaTech lab has "produced innovative technology to develop diamond-based coatings on inner surfaces of industrial-scale cylinders, which conventional coating technology cannot achieve". He said the coating dissipates heat and can withstand tremendous loads. "Pneumatic and hydraulic systems, aerospace parts, and defence vehicles are a few of the applications for these coatings," Prof Rao said.

https://www.thehindubusinessline.com/business-tech/diamond-based-coating-for-gun-barrels/article65962386.ece

THE ECONOMIC TIMES

Fri, 30 Sept 2022

CDS Gen Chauhan Calls on Defence Minister Rajnath

Chief of Defence Staff Gen Anil Chauhan on Friday called on Defence Minister Rajnath Singh. The meeting came hours after Gen Chauhan assumed charge as India's new Chief of Defence Staff. The post fell vacant after the country's first CDS Gen Bipin Rawat died in a helicopter crash in Tamil Nadu in December last year. Officials described Gen Chauhan's interaction with Singh as a courtesy meeting. Known as an expert on China, his appointment to the top post comes amid the lingering border row between Indian and Chinese troops in eastern Ladakh.

https://economictimes.indiatimes.com/news/defence/cds-gen-chauhan-calls-on-defence-minister-rajnath/articleshow/94556524.cms

mint

Sun, 02 Oct 2022

CDS Anil Chauhan Asks 3 Defence Forces to Work on Creation of Theatre Commands

General Anil Chauhan, the new Chief of Defence Staff (CDS), has asked the Army, Navy, and Air Force to move forward with the creation of integrated theatre commands in his first communication with the three armed forces. On October 3, the CDS will also travel to Jodhpur to see the Light Combat Helicopter being inducted into the Indian Air Force. This will be Air Chief Marshal VR Chaudhari's first trip outside of Delhi since assuming his new position. The creation of theatre commands to aid the Army, Navy, and Air Force in fighting the upcoming wars jointly was one of the top mandates for the newly created position of Chief of Defence Staff in 2019. "The CDS has communicated to the defence forces to move ahead on creating theatre commands which would be his priority area. A lot of discussions have already been done on the issue and it is now time to move forward," government sources told ANI.

The three services have also done several studies in individual capacity as well as joint ones to discuss the issue of theatre commands in detail, they said. The late Gen. Bipin Rawat, Gen. Chauhan's predecessor, also put a lot of effort into making the three forces leaner, faster, and more equipped with contemporary weapons. According to earlier plans, a maritime theatre command, along with western and eastern land-based commands, were to be established. Additionally, Air Defence Command was to be established, with the Ladakh region being temporarily excluded. However, the Indian Air Force expressed its opposition to the creation of too many theatre commands, stating that doing so could result in the division of its current assets, such as fighter jets. It was also against any land or maritime commands and wanted theatres to be created to deal with specific threats from different sides.

These investigations and presentations by the three forces have continued following Gen. Rawat's passing, and presentations on the subject have been made to the top officials of the

defence ministry. The establishment of these commands is likely to pick up steam now that CDS Gen Chauhan is in charge, and decisions in this regard are anticipated to be made soon.

https://www.livemint.com/news/india/cds-anil-chauhan-asks-3-defence-forces-to-work-on-creation-of-theatre-commands-11664713671304.html

THE TIMES OF INDIA

Sat, 01 Oct 2022

CDS Signals Integrated War Machinery

All security challenges confronting the nation will be tackled jointly by the armed forces, chief of defence staff (CDS) General Anil Chauhan said on Friday, signalling his intent to work towards building an integrated warfighting machinery. Returning to active service as a four-star general after having retired as a three-star officer heading the Eastern Army Command in May last year, Gen Chauhan (61) has the mandate to inject synergy among the Army, Navy and IAF in operations, logistics, plans and doctrines as well as decide on inter-service prioritisation of capital arms procurements based on anticipated budgets. Gen Chauhan, who had been the military adviser to NSA Ajit Doval since October last year, said it was a matter of pride and honour for him to be appointed to the highest post in the armed forces.

"There are hopes and expectations among the three services, the government and the citizens of the country from the CDS post, which I will try to fulfil to the best of my abilities," he said, after receiving the tri-service guard of honour at South Block. With the government determined to push ahead with the plan for integrated military theatre commands, Chauhan will have to allay IAF's apprehensions on this count. IAF contends it will be operationally unwise to divide the country's "limited air assets" among different theatre commands.

https://timesofindia.indiatimes.com/india/cds-signals-integrated-war-machinery/articleshow/94573147.cms

IDN INDIAN DEFENCE NEWS
Global Defence, Aerospace & Security

Sun, 2 Oct 2022

What Type of Light Tank does India Need?

By J.K. Sharma

There is no denying the need of Light Tank but is there prudence in going for a 25 ton with similar firepower as T-90 and capable of floatation? It would compromise on protection and other basic fighting features, no matter how much you may load it with Artificial Intelligence (AI), surveillance drones and/or loitering munition. The Light Tank is needed with a reckoned fire power, adequate armour protection and good power to weight ratio to ensure agility and survivability, the two non-negotiable characteristics of any Armour Fighting Vehicle (AFV)

These tanks will be used to counter Chinese deployment of a large number of similar armoured columns along the Line of Actual Control.

A MEDIA REPORT "EYE ON China threat, Army launches Project Zorawar to deploy light tanks for mountain warfare" published earlier goes on to say that the "Indian Army wants the light tank to be amphibious, allowing it to be deployed across the Pangong Tso lake in Eastern Ladakh". Leave aside a strategician, even a person with common knowledge of military tactics would be rather intrigued with this kind of thought process. With the type of surveillance and acquisition systems deployed across the frontage and precision weapon systems to back the same available, will PLA allow even a single tank to float across the Pangong Tso across the imaginary LAC? No doubt Indian Army needs a light tank, but is this the light tank that we need for the areas in Eastern Ladakh and Sikkim?

The quest for a light tank was hyped in the aftermath of Galwan in June 2020. Implanted articles on "Why India Desperately Needs the Russian Aquatic Tank Killer – The SPRUT against China" started to appear in print and online news media. On July 28, 2020, post the visit of Rajnath Singh, Defence Minister of India to Russia, the media reports mentioned of Indian Army's decision to pick up 2S25M SPRUT-SDM1 Tank Destroyer (light tank) under the emergency purchases clause, as the same is already in service with the Russians Army for some time. The reports also mention that these tanks will be used to counter Chinese deployment of a large number of similar armoured columns along the Line of Actual Control (LAC). It also stated that the Army has finalised the general staff quality requirements (GSQR) and will approach the defence ministry in September for the Acceptance of Necessity (AON) for a tank with a maximum weight of 25 tons with a margin of 10 per cent capable of floatation with the same firepower as its regular tanks, but also armed with Artificial Intelligence (AI), integration of tactical surveillance drones to provide a high degree of situational awareness and loitering munition, along with an active protection system.

This is a travesty of even naivety. Because PLA opposite deploys VT-4 main battle tank and Type 15 Light Tanks. VT-4 also known as the MBT 3000 previously, is a third generation Main Battle Tank. It is also the latest tank model from T-90 II A series and compares a shade better than T-99. Rightly, so we have T-72 and inducted T-90 after Galwan against the same in Ladakh. Type 15 weighs 30 tonnes against which Indian Army is looking for a Light Tank. This uses a new fully-stabilized 105mm rifled gun and not similar gun as on T-72/T-90, which have a 125mm gun. And that is because a 25/30 tonne tank can never be a stable platform with 125mm gun having a trunnion pull of 102 to 105 tonnes which would hugely affect the efficacy to fire accurately even when static. So the Indian Light Tank cannot have a 125mm main gun and will have to settle for calibre up to 105mm. Secondly, Type 15 is powered by a 1,000 hp (746 kW) electronically controlled diesel engine, with hydro-mechanical full automatic transmission which ensures operation at high altitudes with its powerful engine and oxygen generators.

While there is no denying the need of Light Tank, is there prudence in going for a 25 tonne with similar firepower as T-90 and capable of floatation? In its endeavour to ensure one size fits all, essentially implying that light tank should also be capable of operating in riverine terrain of North Punjab/South J&K and Rann of Kutch the tank weight has been pegged at 25 tonnes so that it can float. Consequently it would compromise on protection and other basic fighting features, no matter how much you may load it with Artificial Intelligence (AI), surveillance drones and/or loitering munition. While the Armoured Corps makes Qualitative Staff Requirements for 25 tonne tank capable of floatation, the Mechanised Infantry is seeking a

Future Infantry Combat Vehicle (FICV) of similar tonnage but with 30mm Cannon as its main armament and four ready to launch third generation Anti-Tank Guided Missiles (ATGM), which gives it a tremendous potential as tank destroyer. One of the main and non-negotiable feature of FICV is that it should be capable of floating. And that is why the weight is pegged at 25-27 tonnes.

Indian Army has deployed T-72/T-90 Medium tanks along with BMP II both in Eastern Ladakh and North Sikkim opposite China. The requirement of a Light Tank of 30 tonne class hence cannot be overemphasised. But to have a tank of 25 tonne Class with floatation capability (least required) while the Mechanised Infantry, which forms an integral part of a Combat Team/Group/ Command along with tanks, proposing for development and acquisition of an FICV of 27 tonne class also with similar protection and floatation capabilities is certainly not a prudent approach as it is not only an issue of duplication of effort amidst scarce resources, which the country is grappling with, but also a matter of complexities of design and development of military hardware.

There is no doubt that military minds amongst the serving fraternity would have applied themselves on this much needed weapon platform against China but the literature, implanted or otherwise, evince an approach of impracticality. Just as in 2020 we almost bought SPRUTSDM1, a vintage technology BMP Chassis based system with unstable 125mm turret in the name of Light Tank, we should not land up having an equipment which is no good either way just because we want to have something and raise additional armoured regiments.

The Light Tank is needed with a reckoned fire power, adequate armour protection and good power to weight ratio to ensure agility and survivability, the two non-negotiable characteristics of any Armour Fighting Vehicle (AFV) and loaded with features of AI, Active Armour protection System, Loitering Ammunitions and integrated drones. Hence, what Indian Army should be looking at is not a 25 tonne floating tank which would be designers nightmare with these requirements, as no other nation has come up with anything like this so far. Given the expertise of Indian Defence Industry, making one even with the assistance of DRDO would be a huge challenge. What it should strive for is to have a 30 tonne light tank with 105mm Gun, 1000 HP engine and STANAG IV/V level protection with other features as mentioned above.

http://www.indiandefensenews.in/2022/10/what-type-of-light-tank-does-india-need.html

IDN INDIAN DEFENCE NEWS
Global Defence, Aerospace & Security

Sun, 2 Oct 2022

Godrej Develops Anti-Drone System for Internal Security Requirements

Anti-drone systems in the country are also being manufactured in view of the increasing threats of drones in the country from across the border. In particular, the smuggling of drugs, weapons and drone attacks on military institutions is to be stopped through drones on the border. Apart from this, drone attack is also a big threat to VVIP security. An exhibition of one such counter

drone system has been put up at the headquarters of BPRD under the Ministry of Home Affairs in Delhi. Godrej, an Indian multi-national FMCG company which also makes defence equipment for the armed forces, has entered into the production of internal security systems. The company has designed a special anti-UAV drone system. This anti-drone system looks like a special gun, which the company has named Chimera. It is available in both MANPAD i.e. man-portable and static versions. The company's senior manager Suman Mohapatra said, a Jawan can carry on his shoulders and can shoot down any Unmanned Aerial Vehicle (UAV) of the enemy coming within a range of about one kilometre.

According to the company, the Chimera system has the ability to track any drone as it has a special antenna that the Jawan can carry on his back in a backpack. It jams the radio frequency (RF) of the drone. With this, the enemy drone will either fall to the ground or it goes back to its range. According to the company, the static version of the Chimera has a range of 4-5 km. It can be installed in any sensitive building or rally etc., where VVIPs are present.

Why Is Chimera Important?

Suman Mohapatra said that the cost of Chimera MANPAD Anti Drone is Rs 3-4 crore. Some security agencies of the country have started using it in VVIP security. For security reasons, the company declined to reveal the names of the security agencies. Smuggling of drugs and weapons from Pakistan on the border is now happening through drones. The BSF has to face a lot of difficulties in neutralizing these drones. In such a situation, anti-drone systems like Chimera can prove to be very effective. Apart from this, the threat of attack from drones also remains constant. Last year, a Jammu airbase was attacked by a drone operated by terrorists from Pakistan.There is always a danger of drone attack on the Red Fort during Independence Day

celebrations, Republic Day celebrations at Kartavya Marg and across the country, rallies or any other big social or political events. In several foreign countries, many incidents of drone attacks on VVIP personalities with drones have also come to the fore. This is the reason why the Bureau of Police Research and Development (BPRD) has kept the theme of the 4th Police-Superintendent Conference in Delhi as Cyber-Crime and Counter Drones. During this counter drone exhibition was also organized. The two-day (29-30 September) conference and exhibition was inaugurated by Minister of State for Home Affairs Nityanand Rai.

What Is BPRD

The Bureau of Police Research and Development (BPRD) is an agency under the Ministry of Home Affairs, which provides specialized research and suggestions towards the modernization of police and central paramilitary forces across the country. Many other companies have also participated in the BPRD exhibition. One such company from Bhopal is DSE Technology, which has tied up with a company from Netherlands and has developed an anti-drone system with a range of 8-10 km. Destructive-drone can be shot down by installing this Tactical Drone Detection and Neutralization System on the roof of any sensitive headquarters or military establishment.

http://www.indiandefensenews.in/2022/10/godrej-develops-anti-drone-system-for.html

IDN INDIAN DEFENCE NEWS
Global Defence, Aerospace & Security

Sun, 2 Oct 2022

First Made-In-India Boosters by Solar Group's Economic Explosives Limited (EEL) for Brahmos Missile Delivered

Economic Explosives Limited (EEL), defence arm of Nagpur's Solar Group, handed over two units the first indigenous booster to be used in the medium-range stealth supersonic cruise missile BrahMos to Brahmos Aerospace Private Limited (BAPL) reports Shishir Arya of TOI. So far, the country has been depending on Russia for the major component which gives the initial thrust to a missile. The boosters were handed over at a function held at EEL's plant, over 30km from the city. BAPL, which is an Indo-Russian joint venture, has its units at Nagpur and Hyderabad. It is also working on a smaller version of the BrahMos missile. Of around one third of the size, it is expected to also have a range of 300 km like the current version. EEL, which has emerged as the first private company to make the boosters, has bagged order for 20 units in all. BAPL's managing director Ajit Rane said during the handing over function that the company had a much higher requirement and would expect that the industry makes more numbers. The company would be needing as much as eight boosters in a month, he said.

Rane said the booster is among the three process components which had originally come from Russia in the initial stages. These include — the seeker, sustainer engine and the booster. Of these, the booster has now been indigenized, he added. Solar Group chairman Satyanarayan Nuwal said the company is also keen to take up work for making warheads for the missile and is ready to meet any higher requirement. Solar Group had got the transfer of technology (ToT) for the boosters in 2018. The final approval, which included inspection by the Russian team, came in April 2022, after which the two units were finally delivered. Nuwal said this comes as a major achievement, especially for the Aatmanirbhar Bharat endeavour.

Talking to TOI on the sidelines of the handing over function, Rane said that BAPL is working on a different variant of the missile. The smaller version but with the same range is on the drawing board stage. In over two months, it is expected to be ready for trials, he said. BAPL also has bagged an export order from Philippines, he said. Developing indigenous booster is expected to reduce major dependence on imports. A missile has a ramjet engine which attains a speed in Mach. However, for the engine to reach up to a certain speed, the missile needs a push from the booster. Earlier, the EEL had delivered the first batch of indigenously designed 30mm ammunition to the Navy. The rounds are used for air defence on the ships.

http://www.indiandefensenews.in/2022/10/first-made-in-india-boosters-by-solar.html

IDN INDIAN DEFENCE NEWS
Global Defence, Aerospace & Security

Mon, 3 Oct 2022

India Defence Start-Up Develops Barrel-Launched Loitering Munition

India Defence Start-Up Redon Systems Pvt Ltd has developed a Barrel-Launched Loitering Munition system that is capable of carrying out missions in Semi-Autonomous or Autonomous modes even in GPS-denied environments. This Barrel-Launched Loitering Munition system can carry a payload of 1.5 kilograms at a service ceiling of 4,000 meters and has a strike radius of 30 kilometers to target enemy hideouts, Vehicles Fuel and ammunition dumps. It features Multi-Barrel Launch capability, Encrypted Communications with real-time video transmission and it can also be launched in swarms to overwhelm enemy air defences.

Features

Drone:

1.5 Kg payload excluding electronics and optics

Encrypted communications with real time Video transmission

Works in GPS Denied environments

Multi barrel launch capability

4000m operational height

-20 to 50deg C operating temperature

30 km strike radius

15 min setup time

Software Platform:

Object identification and tracking

Semi Autonomous and Autonomous modes of operation

Real time relay of GPS co-ordinates of targets to the Ground Station

Swarm capability

http://www.indiandefensenews.in/2022/10/india-defence-start-up-develops-barrel.html

THE TIMES OF INDIA

Sun, 02 Oct 2022

MiG-29 Squadron Replaces Abhinandan's 51 Swordarms

The IAF has kicked off the phased retirement of its existing four MiG-21 'Bison' fighter squadrons, with the first one in Srinagar being "number-plated" on Friday. It has been replaced by a MiG-29 squadron for air defence of the critical region. The Srinagar-based '51 Swordarms' Squadron of MiG-21s had played a major role in thwarting Pakistan Air Force's retaliation a day after the IAF's pre-dawn air strikes on the Jaish-e-Mohammed facility at Balakot on February 26, 2019. Group Captain Abhinandan Varthaman, then a Wing Commander, was awarded a Vir Chakra for shooting down an F-16, while his MiG-21 also went down during the aerial skirmish on that day.

The other three squadrons of the single-engine MiG-21s, which were the first truly supersonic fighters to be inducted by IAF in 1963 but have been dogged by an alarmingly high crash rate in later years, willbe phased out by 2025, as was reported by TOIin July. These three MiG-21 squadrons are currently based in Uttarlai, Suratgarh and Nal in Rajasthan. Retirement of the old and highly-unforgivingMiG-21s, which lack modern systems with built-in safety mechanisms, has been delayed several times because of the shortfall in fighter squadrons. IAF is currently making do with just 32-33 squadrons (each squadron has 16-18 jets), when its "authorised strength" is 42. 5 squadrons to deal with China and Pakistan, due to the long delays in induction of new fighters, including the indigenous Tejas light combat aircraft. IAF, of course, now has 36 new omni-role Rafale fighters, inducted under the Rs 59,000-crore deal with France.

The force is also banking upon the induction of 73 "improved" Tejas Mark-1A fighters and 10 trainers, in the February 2024- February 2029 timeframe under the Rs 46,898-crore contract inked with HAL last year.

https://timesofindia.indiatimes.com/india/mig-29-squadron-replaces-abhinandans-51-swordarms/articleshow/94592111.cms

The Indian EXPRESS

Sun, 02 Oct 2022

Take Steps to Encourage India's Transition away from Russian Weapons: Congressional Amendment

A strong US-India defence partnership rooted in shared democratic values is critical to advancing US' interests in the Indo-Pacific, three American senators have said in a legislative amendment that urges the Biden administration to encourage New Delhi to accelerate its transition away from Russian weapons. Senator Mark Warner, Co-Chair of the Senate India Caucus, along with Senators Jack reed and Jim Inhofe, in the amendment to the National Defense Authorization Act, says that India faces immediate and serious regional border threats

from China, with continued military aggression by the Chinese people along the India-China border.

The relations between India and China have soured over the incursion by Chinese troops in eastern Ladakh in May 2020, leading to a prolonged military standoff that is still unresolved. India has made it clear to China that peace and tranquillity along the Line of Actual Control (LAC) were key for the overall development of the bilateral ties. "The United States should take additional steps to encourage India to accelerate its transition away from weapons and defence systems manufactured in the Russian Federation while strongly supporting India's immediate defense needs," said the amendment. It said that for its national defence, India relies on weapons manufactured by Russia.

Russia has been a major supplier of military hardware to India. In October 2018, India signed a USD 5 billion deal with Russia to buy five units of the S-400 air defence missile systems, notwithstanding a warning by the US that going ahead with the contract may invite sanctions under the provisions of Countering America's Adversaries Through Sanctions Act (CAATSA). Russia started delivery of the first regiment of the missile systems in December last year and it has been deployed to cover parts of the border with China in the northern sector as well as the frontier with Pakistan. "A strong United States-India defence partnership rooted in shared democratic values is critical to advancing United States interests in the Indo-Pacific region," the amendment said.

It said that such partnership between the world's oldest and largest democracies is critical and should continue to be strengthened in response to increasing threats in the Indo-Pacific region so as to send an unequivocal signal that sovereignty and international law must be respected. China, which has territorial disputes with many countries in the strategic Indo-Pacific region, has been opposing the US' proactive policy specifically in the disputed South China Sea. China claims nearly all of the disputed South China Sea, though Taiwan, the Philippines, Brunei, Malaysia and Vietnam all claim parts of it. Beijing has built artificial islands and military installations in the South China Sea. Beijing is also involved in a maritime dispute with Japan over the East China Sea.

The amendment welcomes the US-India Initiative on Critical and Emerging Technologies and says that it is an essential step to developing closer partnerships between the governments, academia, and industry in the two countries for the purpose of addressing the latest advances in artificial intelligence, quantum computing, biotechnology, aerospace, and semiconductor manufacturing. "Collaborations between engineers and computer scientists through the United States-India Initiative on Critical and Emerging Technologies are vital to help ensure that the United States, India, and other democracies around the world foster innovation and facilitate technological advances that continue to far outpace the technology of the Russian Federation and the People's Republic of China," said the proposed amendment.

https://indianexpress.com/article/india/encourage-india-transition-away-russian-weapons-congressional-amendment-8185481/

INDIA TODAY

Sat, 01 Oct 2022

North Korea Fires 4th Round of Missile Tests in 1 Week, Japan Calls Move 'Unprecedented'

North Korea on Saturday fired two short-range ballistic missiles toward its eastern waters, South Korean and Japanese officials said, making it the North's fourth round of weapons launches this week that are seen as a response to military drills among its rivals. South Korea's military said that it detected the two North Korean missile launches 18 minutes apart on Saturday morning coming from the North's capital region. Japan's Defense Ministry said it also spotted the launches. "The repeated ballistic missile firings by North Korea are a grave provocation that undermines peace and security on the Korean Peninsula and in the international community," South Korea's Joint Chiefs of Staff said in a statement. It said South Korea strongly condemns the launches and urges North Korea to stop testing ballistic missiles. Toshiro Ino, Japan's vice defense minister, called the launches "absolutely impermissible." He said the four rounds of missile testing by North Korea in a week is "unprecedented."

According to South Korean and Japanese estimates, the North Korean missiles flew about 350-400 kilometers (220-250 miles) at a maximum altitude of 30-50 kilometers (20-30 miles) before they landed in the waters between the Korean Peninsula and Japan. Ino, the Japanese vice minister, said the missiles showed "irregular" trajectory. The five other ballistic missiles fired by North Korea on three occasions this week also show similar low trajectories. Some experts say that the weapons are a nuclear-capable, highly maneuverable missiles modeled after Russia's Iskander missile. That Iskander-like missile is capable of striking strategic targets in South Korea, including U.S. military bases there.

Saturday's launches came a day after South Korea, Japan and the United States held their first trilateral anti-submarine drills in five years off the Korean Peninsula's east coast. Earlier this week, South Korean and U.S. warships conducted bilateral exercises in the area for four days. Both military drills this week involved the nuclear-powered aircraft carrier USS Ronald Reagan and its battle group. North Korea views such military drills among its rivals as an invasion rehearsal and often responds with its own weapons tests. The North Korean missile tests this week also came before and after U.S. Vice President Kamala Harris visited South Korea on Thursday and reaffirmed the "ironclad" U.S. commitment to the security of its Asian allies.

This year, North Korea has carried out a record number of missile tests in what experts call an attempt to expand its weapons arsenal amid stalled nuclear diplomacy with the United States. The weapons tested this year included nuclear-capable missiles with the ability to reach the U.S. mainland, South Korea and Japan.

South Korean and US officials say North Korea has also completed preparations to conduct a nuclear test, which would be its first in five years. Experts say North Korean leader Kim Jong Un eventually wants to use the enlarged nuclear arsenal to pressure the United States and others accept his country as a legitimate nuclear state, a recognition he views as necessary to win the lifting of international sanctions and other concessions. Multiple United Nations Security

Council resolutions ban North Korea from testing ballistic missiles and nuclear devices. The country's missile launches this year are seen as exploiting a divide at the U.N. council over Russia's invasion of Ukraine and U.S.-China competitions.

In May, China and Russia vetoed a U.S.-led attempt to toughen sanctions on North Korea over its ballistic missile launches. "North Korea's frequent short-range missile tests may strain the isolated state's resources. But because of deadlock on the U.N. Security Council, they are a low-cost way for the Kim regime to signal its displeasure with Washington and Seoul's defense exercises while playing the domestic politics of countering an external threat," said Leif-Eric Easley, a professor at Ewha University in Seoul.

https://www.indiatoday.in/world/story/as-north-korea-fires-4th-round-missile-tests-in-week-japan-calls-move-unprecedented-2007003-2022-10-01

REUTERS®

Sat, 01 Oct 2022

Germany Says it will Supply Ukraine with Air Defence System in Days

Germany will deliver the first of four advanced IRIS-T air defence systems to Ukraine in the coming days to help ward off drone attacks, its defence minister Christine Lambrecht said during an unannounced visit to Odessa on Saturday. As air raid sirens sounded in the port city above, Lambrecht held talks with her Ukrainian counterpart Oleksii Reznikov in an underground bunker. Lambrecht had extended a visit to nearby Moldova for the meeting. "In a few days, we will deliver the very modern IRIS-T air defence system," she told ARD television. "It is very important for drone defence in particular."

Ukraine has been seeing more attacks from Iranian-made kamikaze drones in recent weeks, costing lives and causing serious damage to infrastructure. It first emerged in May that Berlin was considering sending the IRIS-T surface-to-air defence system, which costs 150 million euros ($147 million) apiece. The German armed forces themselves do not currently own the system, reckoned among the world's most advanced. Earlier, meeting her Moldovan counterpart Anatolie Nosatii in Chisinau, she urged Western countries not to be deterred from arming Ukraine by threats that Russia could use nuclear weapons. "We have to be very careful," she said. "But we mustn't let ourselves be paralysed." Germany is facing calls to step up its support for Ukraine, including by sending offensive weapons such as the modern tanks Kyiv says it needs to take the fight to Russian forces.

Berlin has so far resisted such calls, arguing that such moves would escalate the situation and pointing out that no other country has so far sent tanks more modern than old Soviet stock sent by former Warsaw Pact countries.

https://www.reuters.com/world/europe/germany-says-it-will-supply-ukraine-with-air-defence-system-days-2022-10-01/

TIMES NOW

Sun, 2 Oct 2022

'Deeply Concerned by China's Aggression in Taiwan Strait...': US Secretary of Defense Lloyd J. Austin

'We're deeply concerned by China's aggressive, escalatory, and destabilising military activities in the Taiwan Strait and elsewhere in the Indo-Pacific,' said US Secretary of *Defense* Lloyd J. *Austin* III after a meeting with Australian Deputy Prime Minister *Richard Marles* in Hawaii on Saturday. "The World faces a growing challenge from autocratic countries attempting to change the status quo through threats, coercion and provocative military activities and even naked aggression," he added. The two world leaders further discussed the steps needed to 'enhance deterrence and strengthen security in the Indo-Pacific.' "We talked about enhancing our interoperability and expanding our operations and advancing our on-going posture, force posture initiatives," Austin said.

Last month, US President Joe Biden made it pretty clear that US forces would defend Taiwan in the event of a Chinese invasion. Responding to a question asked during a CBS 60 Minutes interview about whether US forces would defend the self-ruled island claimed by China, *Biden* replied, "Yes if in fact, there was an unprecedented attack." Speaking on Biden's remarks, a White House spokesperson said later that the US policy towards Taiwan had not changed. "The President has said this before, including in Tokyo earlier this year. He also made clear then that our Taiwan policy hasn't changed. That remains true," the spokesperson said.

The US Secretary of Defense also spoke on the Russia-Ukraine conflict and noted that 'nations around the world are uniting to oppose Russia's unprovoked and cruel invasion of Ukraine.' "The United States and Australia are united in opposing actions that threaten peace, stability and the rules-based international order," he said.

https://www.timesnownews.com/world/deeply-concerned-by-chinas-aggression-in-taiwan-strait-us-secretary-of-defense-lloyd-j-austin-article-94595401

THE ECONOMIC TIMES

Sat, 01 Oct 2022

China Struggling to Find Enough Trained Pilots for its Three Aircraft Carriers: Report

China is struggling to find enough trained pilots to operate fighter jets from aircraft carriers, prompting its navy with two aircraft carriers commissioned and another launched in June, to speed up the pilot training programme, a media report here said. The People's Liberation Army Navy (PLAN) is struggling to meet increased demand for qualified ship-borne fighter jet pilots to operate the specially made J-15 jets for the aircraft carriers. The PLAN has sped up carrier-based

fighter jet pilot training programmes in the decade since the commissioning of its first aircraft carrier, the Liaoning, but its lack of a fighter trainer specifically designed for carrier-based operations has hindered progress, according to an article published in Ordnance Industry Science Technology, a Chinese military magazine. With Fujian, China's third and most advanced aircraft carrier, having started sea trials last week, the PLA needed at least 200 qualified carrier-based fighter jet pilots to operate 130 ship-borne aircraft, Beijing-based naval expert Li Jie was quoted as saying by the Hong Kong-based South China Morning Post on Saturday.

The Fujian is equipped with advanced electromagnetic catapults, similar to those on the US supercarrier Gerald R Ford, while China's first two carriers featured ski-jump designs, so the navy will have to master a new aircraft launch and recovery system. Official media reports say China plans to produce more aircraft carriers to match the strength of the US Navy. "It's full of challenges, as aircraft design and pilot training are among the world's most difficult and complicated core technologies - which no one will share with you," Li said. Defence experts say that while China is producing aircraft carriers at a faster pace, it is still a work in progress for the J-15 carrier-based fighter jets, which were stated to be too heavy for deployment on aircraft carriers. China is rapidly modernising its navy, almost launching a battleship every month or two.

Dai Mingmeng, who flew a J-15 prototype on its maiden flight from the deck of Liaoning on November 3, 2012, when he was 41, was one of the first five Chinese pilots to achieve ship-borne certification. He and other senior carrier-capable pilots are now training the latest generation. State-run China Central Television said the navy has directly recruited cadets from high school graduates aged between 16 and 19 since 2020. The average age of the latest generation of new naval aviation pilot cadets was 20, at least 10 years younger than their predecessors. The PLA Navy started training its own pilots - rather than picking qualified candidates from the air force - following the establishment of the Naval Aeronautical University in Yantai, Shandong province, in 2017 - adopting the same approach as its US counterpart.

PLAN pilots use the Chinese-made JL-9G, a single-engine twin-seat aircraft first revealed in 2011, as a carrier-trainer variant, but it cannot be used to simulate emergency landings on a flight deck because of flaws such as being too light and too slow, Ordnance Industry Science Technology, a Chinese magazine said in a report marking the 10th anniversary of the Liaoning's commissioning on September 25, 2012. Those flaws have seen it confined to land-based simulated carrier training, the Post quoted the report. "In the past few decades, the US military has been using the T-45 Goshawk carrier-qualified trainer to train its pilot cadets. Now, the Americans have developed a more advanced variant, the T-7A Red Hawk, which is equipped with a more powerful General Electric F404 afterburning turbofan engine that will make ship-borne fighter pilot training more efficient," it said.

China's only ship-borne fighter jet, the twin-engine single-seat J-15 Flying Shark, has been dubbed the world's heaviest carrier-borne fighter as it weighs 17.5 tonnes with a maximum speed of Mach 2.4 - just over 2,960km/h while the gross weight of the JL-9G trainer is just 7.8 tonnes and it has a top speed of Mach 1.05. "The PLA does not have the luxury of owning a trainer like the T-45, so Chinese pilot cadets' carrier-based training entirely relies on flying the J-15, posing a great challenge to improving their flying skills [because of the absence of a back-seat coach]," the Chinese magazine's report said. Two J-15 fighters crashed in April 2016, resulting in one death and one serious injury. China has developed a twin-seat variant of the J-15 known as the J-

15S, but recent footage shown by state media confirmed that platform has been turned into the ship-borne J-15D electronic warfare aircraft, Macau-based military analyst Antony Wong Tong said.

"Why China's J-15S hasn't been turned into a trainer like the Americans' is a perplexing problem," Wong said, adding that one factor could be the cost, which would be much higher. Zhou Chenming, a researcher with the Beijing-based Yuan Wang military science and technology think tank, told the Post that China was still testing the twin-seat J-15S, adopting a similar approach to the Americans when they turned the F-15 Eagle into different versions, including the twin-seat F-15E Strike Eagle.

https://economictimes.indiatimes.com/news/defence/china-struggling-to-find-enough-trained-pilots-for-its-three-aircraft-carriers-report/articleshow/94587909.cms

TAIPEI TIMES

Mon, 3 Oct 2022

US, Australia, Japan Boost Military Ties

The defense ministers of Australia, Japan and the US on Saturday agreed to advance military cooperation in the face of China's growing ambitions. "We are deeply concerned by China's increasingly aggressive and bullying behavior in the Taiwan Strait, and elsewhere in the region," US Secretary of Defense Lloyd Austin said as he welcomed his counterparts from Australia and Japan to the US military headquarters for the Pacific region in Hawaii. "Our interest lies in the upholding of the global rules-based order. But we see that order under pressure in the Indo-Pacific as well, as China is seeking to shape the world around it in a way that we've not seen before," Australian Minister for Defence Richard Marles said.

The *Japan Times* yesterday quoted Japanese Minister of Defense Yasukazu Hamada as saying during the talks that "today, the international community is faced with these severe security environments due to Russia's aggression against Ukraine, China's unilateral change of status by force in the South and East China seas, and the remarkable development of North Korea's nuclear and missile-related technologies, among others." "The three ministers 'strongly condemned' China's ballistic missile launches during massive military exercises surrounding Taiwan" following a visit made by US House of Representatives Speaker Nancy Pelosi to Taipei at the beginning of August, the report quoted the Japanese Ministry of Defense as saying.

"On the rising tensions over self-ruled Taipei, the three also reiterated the importance of peace and stability across the Taiwan Strait, and agreed to encourage the peaceful resolution of cross-strait issues," the ministry was quoted as saying. The three ministers "pledged to 'promote concrete and practical initiatives to ensure the security of the Indo-Pacific region' and vowed to 'continue to advance trilateral cooperation,' including expanded and strengthened trilateral training and the promotion of defense equipment and technology cooperation 'with the view to enhance trilateral interoperability,'" the *Japan Times* said."The defense chiefs also affirmed that the three countries would align their strategies 'to continue to closely work together and remain committed to the region in order to realize a free and open Indo-Pacific and maintain and strengthen the rule-based international order," the report said.

The US is pressing a diplomatic offensive to counter Chinese influence in the region. On Thursday, Washington announced a US$810 million aid package for Pacific Island nations where the US plans to intensify its diplomatic presence. US Vice President Kamala Harris last week traveled to Japan and South Korea, and said that the US would act without fear or hesitation throughout Asia, including the Taiwan Strait.

https://www.taipeitimes.com/News/front/archives/2022/10/03/2003786329

THE HINDU

Sun, 02 Oct 2022

China Withdraws Proposal Against AUKUS Nuclear Submarines Plan at IAEA

"China has withdrawn a draft resolution at the International Atomic Energy Agency (IAEA) against the AUKUS grouping seeking to provide Australia with nuclear-powered submarines following India's objective view on the issue," sources said. China tried to get the resolution passed at the general conference of the IAEA that took place in Vienna from September 26 to 30.

The big deal behind the ruckus over AUKUS

The AUKUS (Australia, the U.K. and the U.S.) security partnership announced in September last it would facilitate Australia getting technology to build nuclear-powered submarines. The sources said, on September 30, China argued that this initiative was in violation of their responsibilities under the Nuclear Non-Proliferation Treaty (NPT). It also criticised the role of IAEA in this regard. "India took an objective view of the initiative, recognising the soundness of the technical evaluation by IAEA.

The Indian Mission to the IAEA in Vienna worked closely with many IAEA member states in this regard," said a source. "India's considered role helped many smaller countries take a clear stand on the Chinese proposal. Realising that its resolution would not get majority support, China withdrew its draft resolution on September 30," the source said. The sources said India's "deft and impactful" diplomacy was deeply appreciated by IAEA member states, particularly the AUKUS partners.

https://www.thehindu.com/news/international/china-withdraws-proposal-against-aukus-nuclear-submarines-plan-at-iaea/article65958001.ece

Press Information Bureau
Government of India

Ministry of Science & Technology

Fri, 30 Sep 2022 4:56 PM

Experts Discuss Role of Hydrogen in Making India Carbon Neutral

Experts from academia and industry deliberated about the current status of hydrogen as a source of energy and the role it can play in making India carbon neutral at the International Platform on Hydrogen Economy - An Industry-Academia Conclave on September 30, 2022. While inaugurating the Conclave, Dr. V K Saraswat, Member Science, NITI Aayog, said that with hydrogen demand increasing, companies are taking steps to increase hydrogen production as well as invest in technologies for it. As a result cost of hydrogen production is likely to come down in the future. "Journey towards green hydrogen is through blue hydrogen accompanied with carbon capture & utilisation," he pointed out. Dr. Saraswat highlighted that we need to reduce the production cost of hydrogen and upscale production of electrolytes required for it, which are largely imported today. "Along with this, we need to clean up the grid, increase use of nuclear energy and produce cleaner fossil fuels for becoming carbon neutral," he added.

Dr. S Chandrasekhar, Secretary, Department of Science and Technology (DST), urged the experts at the conference to work on a white paper to make hydrogen a real perfect future fuel. "India has planned to become carbon neutral by 2070. We need practical solutions to make this achievable and invest resources in the right direction to make that happen," Dr. Chandrasekhar said. The conclave was organised by the Department of Science and Technology (DST) to support academia-industry interaction in order to address the industry-informed challenges. It provided the member countries and coalition partners opportunities to show their leadership in significant demonstrations of future uses for hydrogen, which are very likely to be at the forefront of building future global hydrogen economies.

Dr. Akhilesh Gupta, Senior Adviser, DST, emphasised on an overall strategy to work on Hydrogen and on international collaborations to reach the target of carbon neutrality by 2070. Dr. Ashish Lele, Director, CSIR-NCL, elaborated on the current status of hydrogen technologies in the country, while Mr. Noe Van Hulst, Special Advisor Hydrogen, IEA & Chair, IPHE, said that India has become an important player in the global enthusiasm on hydrogen and should look at potential collaborations with countries with hydrogen requirements in the future.

https://pib.gov.in/PressReleasePage.aspx?PRID=1863793

INDIA TODAY

Sun, 02 Oct 2022

Mangalyaan Quietly Bids Goodbye: India's Maiden Mars Mission Runs Out of Fuel

Over a decade after it was launched, India's maiden mission to Mars — Mangalyaan — has completed its journey. The Mars Orbiter Mission (MOM) has, reportedly, run out of propellant, making it difficult to be revived in the Red Planet's orbit. This development is fuelling speculation that the mission is finally over. The Indian Space Research Organisation (Isro), which operates the spacecraft around Mars, is yet to say anything on the matter of whether the probe can be revived or not. Sources told news agency PTI that there is no fuel left in Mangalyaan. "Right now, there is no fuel left. The satellite battery has drained," sources in the Indian Space Research Organisation (ISRO) told PTI, adding that the link has been lost.

"Recently there were back-to-back eclipses including one that lasted seven-and-half hours. As the satellite battery is designed to handle an eclipse duration of only about one hour and 40 minutes, a longer eclipse would drain the battery beyond the safe limit," PTI reported, quoting unnamed sources. The mission had already exceeded expectations as it remained operational for over eight years when it was designed for a six-month-long mission around Martian orbit.

Mangalyaan was launched in 2013 onboard PSLV-C25 as the first interplanetary mission from India, making Isro the fourth space agency in the world to launch such a mission beyond Earth's orbit. The spacecraft was a demonstration mission aimed at establishing that India could design, launch and operate a mission on another world. Developed at just Rs 450 crore, the mission to Mars from India was one of the most cost-effective interplanetary missions ever designed. The spacecraft was equipped with five instruments to study the Martian surface features, morphology, mineralogy and the Martian atmosphere. The five instruments included the Mars Color Camera (MCC), Thermal Infrared Imaging Spectrometer (TIS), Methane Sensor for Mars (MSM), Mars Exospheric Neutral Composition Analyser (MENCA) and Lyman Alpha Photometer (LAP).

"MOM is credited with many laurels like cost-effectiveness, a short period of realisation, economical mass-budget, and miniaturisation of five heterogeneous science payloads", ISRO officials pointed out. India has been planning to launch another mission to Mars in the coming years, which is also likely to be an Orbiter. Former Isro chief K Sivan, during his tenure in 2021, said Mangalyaan-2 will be undertaken only after the launch of Chandrayaan-3, India's upcoming Moon mission. He added that the space agency had asked the scientific community for suggestions on possible experiments and it is in the process of receiving these. The second Mars mission remains on the drawing board for now.

https://www.indiatoday.in/science/story/mangalyaan-quietly-bids-goodbye-india-s-maiden-mars-mission-runs-out-of-fuel-2007474-2022-10-02

INDIAN DEFENCE NEWS
Global Defence, Aerospace & Security

Sun, 2 Oct 2022

ISRO's Test Vehicle Ready for Gaganyaan Crew Escape System Characterisation Flight

The Indian Space Research Organisation (ISRO) is preparing for multiple flights of the specially designed test vehicle that will be used to test the Crew Escape System (CES), which will be a crucial element of India's first human space flight mission (Gaganyaan). ISRO in August 2022 had successfully tested the Low Altitude Escape Motor that will power the Crew Escape System, a system to eject the Gaganyaan crew module with astronauts in case of an eventuality. The emergency system will jettison the crew module from the launch vehicle if an emergency occurs during the initial phase of the flight.

The Indian space agency test-fired the Low Altitude Escape Motor at Sriharikota on Wednesday and said that the Crew Escape System (CES) takes away the Crew module of the Gaganyaan mission in case of any eventuality and rescues the astronauts. "In case of mission-abort during the initial phase of flight, LEM provides the required thrust to CES, to take away the Crew Module from the launch vehicle," ISRO said in a statement. A special purpose solid rocket motor, the LEM is equipped with four reverse flow nozzles and generates a maximum sea level thrust of 842 kN (nominal) with a burn time of 5.98 seconds (nominal). The nozzle end of the motor is mounted at the fore end of the launch vehicle unlike at the aft end in conventional rocket motors to prevent exhaust plumes from filling the crew module and suffocating the astronauts.

The main objective of the test conducted was to evaluate motor ballistic parameters, validate motor subsystem performance, confirm the design margins, evaluate the thermal performance of nozzle liners, validate the integrity of all interfaces, evaluate the head-end mounted safe arm (HMSA) based ignition system performance, and to evaluate side thrust due to misalignment and variation in flow and other functional parameters including flow reversal. The Gaganyaan mission, which was set to conduct the maiden uncrewed mission this year, has been pushed to 2023 as ISRO continues to perfect the systems and has said that it will not take any chances, since this is the first time it is attempting to send humans into space from India.

The Indian space agency has, however, maintained that it will conduct two unmanned abort missions during which the spacecraft will be launched to an altitude of 15 kilometers and ISRO will simulate an abort scenario after which the crew capsule will return to Earth under parachutes. ISRO chief S Somnath has said that their first priority is human safety and they will be simulating failures and bringing the crew back safely under those circumstances.

http://www.indiandefensenews.in/2022/10/isros-test-vehicle-ready-for-gaganyaan.html