

अगस्त
Aug
2023

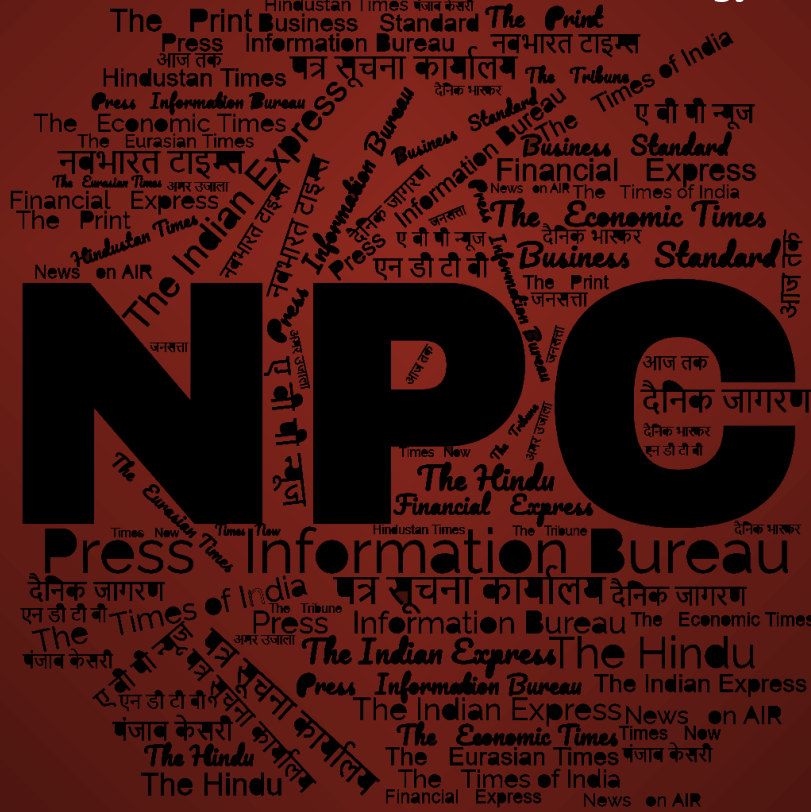
खंड/Vol. : 48 अंक/Issue : 150

09/08/2023

समाचार पत्रों से चयित अंश Newspapers Clippings

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

A Daily service to keep DRDO Fraternity abreast with DRDO Technologies, Defence Technologies, Defence Policies, International Relations and Science & Technology



रक्षा विज्ञान पुस्तकालय
Defence Science Library
रक्षा वैज्ञानिक सूचना एवं प्रलेखन केंद्र
Defence Scientific Information & Documentation Centre
मेटकॉफ हाउस, दिल्ली - 110 054
Metcalfe House, Delhi - 110 054

CONTENTS

S. No.	TITLE	Page No.
	DRDO News	1
	DRDO on Twitter	1
	Defence News	2-13
	Defence Strategic: National/International	2-13
1.	General Manoj Pande, Chief of the Army Staff, Left for the United Kingdom, to Review 201st Sovereign's Parade at Sandhurst Academy	<i>Press Information Bureau</i> 2
2.	Rajya Sabha Passes Inter-Services Organisation (Command, Control & Discipline) Bill – 2023	<i>Press Information Bureau</i> 3
3.	रक्षा क्षेत्र पर GDP का 5 से 6 प्रतिशत खर्च करना पड़ा तो सरकार पीछे नहीं हटेगी, लोकसभा में बोले राजनाथ सिंह	पंजाब केसरी 4
4.	Indian Army may have to Wait Longer for Light Tank	<i>Times Now</i> 6
5.	Defence Ministry to Switch to Locally Built OS Maya amid Threats	<i>The Hindu</i> 6
6.	India & US to Hold Yudh Abhyas Exercise in Alaska Next Month, Focus on Disaster Relief Operations	<i>The Print</i> 7
7.	US, India Explore Joint Development of Land Systems	<i>Janes</i> 8
8.	Submerged Sentinels: Ushering in a New Maritime Era with Unmanned Underwater Vehicles	<i>Financial Express</i> 8
9.	Did China Hack Japan's Defence Networks? Tokyo's Response	<i>Hindustan Times</i> 13
	Science & Technology News	13-16
10.	'Even if Sensors, Engines Fail ...': How ISRO is Planning Proper Touchdown of Chandrayaan-3's 'Vikram' Lander	<i>The Times of India</i> 13
11.	UoH Medical Device now with DRDO for Patent Consideration	<i>The Times of India</i> 14
12.	Newly-Discovered Skull in China Baffles Scientists. Is it yet another Lineage of Humans?	<i>WION</i> 15

DRDO on Twitter



DRDO

@DRDO_India



[#DRDOUpdates](#) | Computerised Psychological Screening System (COPSYSS) was handed over by Dr UK Singh, DG(LS), DRDO to [@sthaosen](#), DG [@crpfindia](#) in the presence of Dr Samir V Kamat, Secretary DDR&D and Chairman, DRDO today. [#LeapWithDRDO](#)
[@SpokespersonMoD](#) [@PIBHomeAffairs](#)



2:16 pm · 8 Aug 2023 · **10.4K** Views



Press Information Bureau
Government of India

Ministry of Defence

Wed, 09 Aug 2023

General Manoj Pande, Chief of the Army Staff, Left for the United Kingdom, to Review 201st Sovereign's Parade at Sandhurst Academy

General Manoj Pande, Chief of the Army Staff left for the United Kingdom today, to review the 201st Sovereign's Parade of Commissioning Course 223 at the prestigious Royal Military Academy, Sandhurst as the Sovereign's Representative.

The Sovereign's Parade at Royal Military Academy Sandhurst is a reputed event, known for its illustrious history and the passing out of officer cadets from across the globe. General Manoj Pande is the first Chief of the Army Staff from India to be the Sovereign's Representative for the parade. During his visit, the General will also be visiting the Indian Army Memorial Room which occupies a place of pride in the Royal Military Academy.

During his visit to the UK, General Manoj Pande will interact with General Sir Patrick Sanders, Chief of General Staff of the British Army and General Gwyn Jenkins, Vice Chief of Defence Staff of the UK Armed Forces. He will engage in high-level discussions with General Sir James Hockenhull, Commander of UK Strategic Command, Lieutenant General Ralph Wooddisse, Commander Field Army and Major General Zachary Raymond Stenning, Commandant of Royal Military Academy Sandhurst, focusing on various matters of common interest, including defence cooperation, counter-terrorism efforts and strategic planning.

This visit marks a momentous milestone in strengthening the diplomatic, military, and cultural ties between the two nations. It bears testimony to the enduring camaraderie that has flourished over the years, promoting mutual cooperation and understanding in the realms of defence and security.

The special invitation to General Manoj Pande acknowledges the long-term collaboration and friendship between India and the UK. The General's participation in the Sovereign's Parade signifies the continued commitment to enhancing military ties and promoting peace and security on the global stage. It stands as a befitting example of mutual respect and appreciation, further reinforcing the strong foundation of India- United Kingdom relations.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1946913>



**Press Information Bureau
Government of India**

Ministry of Defence

Tue, 08 Aug 2023

Rajya Sabha Passes Inter-Services Organisation (Command, Control & Discipline) Bill – 2023

The Rajya Sabha, on August 08, 2023, passed the Inter-Services Organisation (Command, Control & Discipline) Bill - 2023. It was passed by the Lok Sabha on August 04, 2023. The bill seeks to empower Commander-in-Chief and Officer-in Command of Inter-Services Organisations (ISOs) with all disciplinary and administrative powers in respect of the personnel serving in or attached to such organisations. Initiating the bill in the Upper House, Raksha Mantri Shri Rajnath Singh described the bill as necessary to strengthen the Armed Forces in view of the global security scenario, emphasising that only through better jointness and integration can the military move forward towards securing national interests. The bill will ensure better coordination among the three services and bolster the integrated structure, he said, assuring the House that it will prove to be a milestone in the path to India's military reforms.

The Raksha Mantri pointed out that today's warfare is no longer conventional, but has become technology and network centric, which makes it even more important for the three Services to work with greater coordination to face future challenges faced by the country.

About ISO Bill - 2023

Currently, the Armed Forces personnel are governed in accordance with the provisions contained in their specific Service Acts - Army Act 1950, Navy Act 1957 and Air Force Act 1950. The enactment of the Bill will have various tangible benefits such as maintenance of effective discipline in inter-services establishments by the Heads of ISOs, no requirement of reverting personnel under disciplinary proceedings to their parent Service units, expeditious disposal of cases of misdemeanour or indiscipline and saving of public money & time by avoiding multiple proceedings.

The Bill would also pave the way for much greater integration and jointness amongst the three Services; lay a strong foundation for creation of Joint Structures in times to come and further improve the functioning of the Armed Forces.

Salient Features

- The 'ISO Bill- 2023' shall be applicable to all personnel of regular Army, Navy and Air force, and to persons of other forces as notified by the Central Government, who are serving in or attached to an Inter-Services Organisation.
- This Bill empowers the Commander-in-Chief, Officer-in-Command or any other officer specially empowered in this behalf by the Central Government with all the disciplinary and administrative powers in respect of personnel serving in or attached to their Inter-Services Organisations for the maintenance of discipline and proper discharge of their duties, irrespective of the service to which they belong to.
- The Commander-in-Chief or the Officer-in-Command means General Officer/Flag Officer/Air Officer who has been appointed as Commander-in-Chief of Officer-in-Command an Inter-Services Organisation.

- To maintain Command and Control in absence of the Commander-in-Chief or the Officer-in-Command, the officiating incumbent or the officer on whom the command develops in absence of a C-in-C or Oi/C, will also be empowered to initiate all disciplinary or administrative actions over the service personnel, appointed, deputed, posted or attached to an Inter-Services organisation.
- The Bill also empowers the Commanding Officer of an Inter-Services organisation to initiate all disciplinary or administrative actions over the personnel appointed, deputed, posted or attached to that Inter-Services Organisation. For the purpose of this Act, Commanding Officer means the officer in actual command of the unit, ship or establishment.
- The Bill empowers the Central Government to constitute an Inter-Services Organisation.

The 'ISO Bill-2023' is essentially an Enabling Act and it does not propose any change in the existing Service Acts/Rules/Regulations which are time-tested and have withstood judicial scrutiny over the last six decades or more. Service personnel when serving in or attached to an Inter-Services Organisation will continue to be governed by their respective Service Acts. What it does is to empower Heads of Inter-Services Organisations to exercise all the disciplinary and administrative powers as per the existing Service Acts/Rules/Regulations, irrespective of the service they belong to.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1946667>

पंजाब केसरी

Tue, 08 Aug 2023

रक्षा क्षेत्र पर GDP का 5 से 6 प्रतिशत खर्च करना पड़ा तो सरकार पीछे नहीं हटेगी, लोकसभा में बोले राजनाथ सिंह

रक्षा मंत्री राजनाथ सिंह ने मंगलवार को आश्वासन दिया कि यदि देश की सुरक्षा के लिए रक्षा क्षेत्र पर सकल घरेलू उत्पाद (जीडीपी) का पांच से छह प्रतिशत भी खर्च करना पड़ा तो सरकार इससे पीछे नहीं रहेगी। साथ ही उन्होंने कहा कि देश की सेनाएं हर प्रकार की युद्धकला के लिए तैयार हैं। अंतर सेना संगठन (कमान, नियंत्रण एवं अनुशासन) विधेयक 2023 पर हुई चर्चा का जवाब देते हुए रक्षा मंत्री राजनाथ सिंह ने यह बात कही। उनके जवाब के बाद सदन ने इस विधेयक को ध्वनिमत से पारित कर दिया। लोकसभा इसे पहले ही पारित कर चुकी है। विधेयक पर चर्चा होने से पहले ही मणिपुर मुद्दे पर चर्चा और प्रधानमंत्री नरेन्द्र मोदी के बयान की मांग को लेकर विपक्ष ने सदन से बहिर्गमन कर दिया।

रक्षा क्षेत्र पर खर्च करने से सरकार पीछे नहीं रहेगी

विधेयक पर चर्चा का जवाब देते हुए राजनाथ सिंह ने कहा कि सेना के थिएटर कमान के बारे में अभी कुछ कहना जल्दबाजी है। उन्होंने कहा कि भविष्य में यदि कभी थिएटर कमान बना तो मौजूदा विधेयक के प्रावधान एक अधिसूचना के माध्यम से उस पर भी लागू होंगे। रक्षा मंत्री ने सदन को आश्वासन दिया कि देश का समुद्री हित पूरी तरह से संरक्षित है। उन्होंने यह भी आश्वासन दिया कि "हर प्रकार की युद्धकला (वारफेयर) के लिए हम तैयार हैं और तैयारी का यह सिलसिला लगातार आगे बढ़ता जा रहा है।" सिंह ने कहा, "भारत की सुरक्षा और आत्मसम्मान की रक्षा के लिए हम वित्तीय संसाधनों की किसी प्रकार की कोई कमी नहीं आने देंगे।" उन्होंने कहा कि सकल घरेलू उत्पाद (जीडीपी) का तीन से चार प्रतिशत ही नहीं, यदि जरूरत पड़ी तो जीडीपी का पांच से छह प्रतिशत तक रक्षा क्षेत्र पर खर्च करने से सरकार पीछे नहीं रहेगी।

कमान नियंत्रण में मिलेगी सहायता

उन्होंने सदन को यह भी भरोसा दिलाया कि राष्ट्रीय सुरक्षा रणनीति को लेकर उपयुक्त स्तर पर काम चल रहा है। उन्होंने कहा कि अभी तक यह समग्र नीति बन नहीं पायी थी किंतु अब उस पर काम चल रहा है। सिंह ने कहा कि भारतीय नौसेना देश के मछुआरों की रक्षा करने के लिए प्रतिबद्ध है। विधेयक पर चर्चा में भाग लेते हुए बीजू जनता दल के सुजीत कुमार ने कहा कि यह सुरक्षा की दृष्टि से बहुत महत्वपूर्ण विधेयक है इसलिए उनका दल इसका समर्थन करता है। उन्होंने कहा कि इस विधेयक के कानून बनने से अंतर सेना संगठन की दक्षता बढ़ेगी और अनुशासनात्मक कार्यवाही को जल्द निस्तारित किया जा सकेगा। वाईएसआर कांग्रेस के अयोध्या रामी रेड्डी आला ने उम्मीद जतायी कि यह विधेयक विभिन्न कमानों के बीच समन्वय के मामले में एक मार्गदर्शक प्रकाश साबित होगा। उन्होंने कहा कि इससे कमान नियंत्रण में सहायता मिलेगी।

दुनिया की तीसरी बड़ी अर्थव्यवस्था बनेगा भारत

भाजपा के अशोक वाजपेयी ने कहा कि इस विधेयक को बनाने से पहले सभी पक्षधरों से विचार विमर्श किया गया। उन्होंने कहा कि इस विधेयक के कानून बनने से सेनाओं में अनुशासन और काम करने का बेहतर माहौल बन सकेगा। भाजपा के लेफ्टीनेंट जनरल (सेवानिवृत्त) डॉ. डी पी वत्स ने विधेयक पर चर्चा में भाग लेते हुए थिएटर कमान के सुझाव का समर्थन किया। उन्होंने कहा कि अभी तक हमारी सेना की रणनीति अपनी सीमाओं की रक्षा करना है। उन्होंने कहा कि भारत विश्व की तीसरी सबसे बड़ी अर्थव्यवस्था बनने के लक्ष्य से काम कर रहा है जिसमें थिएटर कमान की महत्वपूर्ण भूमिका होगी। विधेयक पर चर्चा में तमिल मनीला कांग्रेस (एम) के जी के वासन, वाईएसआर कांग्रेस के वी विजयसाई रेड्डी, अन्नाद्रमुक के एम थंबीदुरई, तेलुगु देशम पार्टी के कनकमेदला रवींद्र कुमार, भाजपा के कामाख्या प्रसाद तासा ने हिस्सा लिया तथा आशा व्यक्त की कि इस विधेयक के प्रावधानों से अंतर सेना संगठन में बेहतर समन्वय हो सकेगा और अनुशासन को कायम रखने में मदद मिलेगी।

सुरक्षा ढांचे को और अधिक मजबूती मिलेगी

इससे पहले विधेयक को चर्चा के लिए पेश करते हुए रक्षा मंत्री राजनाथ सिंह ने कहा कि अभी तक थलसेना, वायुसेना एवं नौसेना अपने अपने संबंधित अधिनियम शासित होते हैं। उन्होंने कहा कि किंतु अंतर सेना संगठनों के मामले में कर्मियों के खिलाफ अनुशासनात्मक कार्रवाई में कठिनाइयां आती हैं। उन्होंने कहा कि सेना के तीनों अंगों से जानकारी लेकर तथा कानून एवं विधि मंत्रालय से परामर्श कर इस विधेयक को तैयार किया गया है। उन्होंने कहा कि यह विधेयक अंतर सेना संगठनों के प्रमुखों को बेहतर अनुशासनात्मक एवं प्रशासनिक अधिकार प्रदान करता है और इससे वे अपने संगठन में प्रभावी कमान नियंत्रण और अनुशासन ला सकेंगे। उन्होंने कहा कि इससे हमारे सुरक्षा ढांचे को और अधिक मजबूती मिलेगी। रक्षा मंत्री ने कहा, “मैं सदन को यह विश्वास दिलाना चाहता हूँ कि यह विधेयक भारत के सैन्य सुधारों की दिशा में एक मील का पत्थर साबित होगा।”

विधेयक के कारणों एवं उद्देश्य में क्या कहा गया

विधेयक के कारणों एवं उद्देश्य में कहा गया है कि वर्तमान में भारतीय वायु सेना, थलसेना एवं नौसेना के कार्यरत कर्मी क्रमशः वायुसेना अधिनियम 1950, थलसेना अधिनियम 1950 एवं नौसेना अधिनियम 1957 के तहत काम करते हैं। इसके अनुसार इन तीनों सेनाओं के अधिकारियों के पास यह अधिकार है कि वे अपनी सेवा के कर्मियों के ऊपर अनुशासनात्मक कार्रवाई कर सकें। इसमें कहा गया कि इस समय कई ऐसे अंतर सेना संगठन हैं जिसमें विभिन्न सशस्त्र बलों के कर्मी एक साथ काम करते हैं। वर्तमान में अंतर सेना संगठन के कमांडर चीफ या प्रमुख के पास अन्य सेवाओं के कर्मियों के विरुद्ध अनुशासनात्मक या प्रशासनिक कार्रवाई करने का अधिकार नहीं है। इसमें कहा गया कि इस विधेयक के तहत अंतर सेना संगठन के कमांडर चीफ या प्रमुख के पास अन्य सेवाओं के कर्मियों के विरुद्ध अनुशासनात्मक या प्रशासनिक कार्रवाई करने का अधिकार दिया गया है।

<https://www.punjabkesari.in/national/news/6-percent-gdp-defense-sector-government-will-not-back-down-rajnath-singh-1863514>

Indian Army may have to Wait Longer for Light Tank

India, or rather, the Indian Army needs a light tank, and all these months there were concerns whether the German engine would be available. Now, the Americans have stepped in: the engines for the 24 ton prototype that the Defence Research and Development Organisation (DRDO) is readying will be by Cummins, a well regarded firm, high level sources said. While Cummins has come at the same time as the Modi-Biden meet in Washington DC, it is being seen as a coincidence. This will lead to delays, perhaps by three or four months as the hull has to be modified to fit in the American engine, but it should be ready to roll out by January. Two or three prototypes are being readied. The tank, with a 105mm gun, will eventually get an indigenously developed engine but that will take 3-4 years. A collaboration with an international manufacturer is expected. The Army is keen on a light tank— for the mountains, parts of Gujarat, Punjab and parts of the East.

The order of 108 new Arjun Mark 1A is progressing. The delivery is likely, in stages, in a few years.

<https://www.timesnownews.com/india/indian-army-may-have-to-wait-longer-for-light-tank-details-article-102544150>



Defence Ministry to Switch to Locally Built OS Maya amid Threats

In the face of increasing cyber and malware attacks on defence as well as critical infrastructure across the country, the Defence Ministry has decided to replace the Microsoft Operating System (OS) in all computers connected to the Internet with a new OS, Maya, based on open-source Ubuntu developed locally. “Maya has the interface and all functionality like Windows and users will not feel much difference as they transition to it. To begin with, the direction is to install Maya on all computers connected to the Internet in South Block before August 15,” one official involved in the process said. In addition, an ‘end point detection and protection system’, Chakravyuh, is also being installed in these systems.

Currently, Maya is being installed only in Defence Ministry systems and not on computers connected to the networks of the three Services. On this, the official said the three Services had also vetted it and would adopt it on service networks as well soon. The Navy had already cleared it and the Army and the Air Force were currently evaluating it, the official added.

Maya was developed by government development agencies within six months, the official said. Maya would prevent malware attacks and other cyberattacks which had seen a steep increase, the official noted. There have been a series of malware and ransom attacks in the country, including on critical infrastructure in the recent past. There have been several efforts in the past as well in the Defence Ministry to replace Windows OS with an Indian one.

<https://www.thehindu.com/news/national/defence-ministry-to-replace-microsoft-os-with-maya/article67172875.ece>

India & US to Hold Yudh Abhyas Exercise in Alaska Next Month, Focus on Disaster Relief Operations

India and the US will hold their bilateral Army exercise in Alaska next month. The focus of the exercise will be on launching swift and coordinated operations in high altitude areas for emergencies like natural calamities, among others, ThePrint has learnt.

While the dates are still under consideration, it is learnt that the 19th edition of the exercise, called the Yudh Abhyas, will be held in the second week of September.

According to officials in the defence and security establishment, about 150 Infantry regiments will take part from the Indian side.

The exercise, which will follow a UN mandate, will focus on humanitarian and disaster relief (HADR) operations along with a few aspects of anti-terrorism operations. Troops from both nations will practice launching swift and coordinated relief efforts in case of natural calamities, the officials told ThePrint.

The annual exercise is conducted alternatively between India and the US. The previous edition was held in Uttarakhand in November 2022, close to the Line of Actual Control with China, whereas in 2021 the exercise was held in October at the Joint Base Elmendorf Richardson, Alaska (USA).

This will come soon after the Malabar exercise, which will see the four Quad countries — India, US, Japan and Australia — conduct naval drills in Australian waters between 11 and 22 August. The aim of this exercise is to enhance interoperability among the four navies.

The Yudh Abhyas exercise follows Indian Prime Minister Narendra Modi's official state visit to the US in June, where, after his meeting with President Joe Biden, the two countries sought to boost bilateral ties and deepen strategic technology collaboration with a special focus on defence and technology arenas.

In fact, a week before Modi's visit to the US, American Defence Secretary Lloyd Austin had visited India and met Defence Minister Rajnath Singh to conclude a roadmap in Defence Industrial Cooperation, outlining plans for the next few years.

In recent times, India has moved closer to the West, especially the US, in order to diversify the inventory of the armed forces and in view of a rising China challenge.

India has also signed three key defence agreements with the US — the Basic Exchange and Cooperation Agreement (BECA) for geo-spatial cooperation in 2020 during the 2+2 ministerial dialogue; the Communications Compatibility and Security Agreement (COMCASA) in 2018; and the Logistics Exchange Memorandum of Agreement (LEMOA) in 2016.

<https://theprint.in/defence/india-us-to-hold-yudh-abhyas-exercise-in-alaska-next-month-focus-on-disaster-relief-operations/1705016/>

Tue, 08 Aug 2023

US, India Explore Joint Development of Land Systems

The United States and India are exploring a partnership to jointly develop and produce land systems including mobility systems and howitzers.

In support of the shared commitment by the US and India to advance defence industrial co-operation, both sides have committed to jointly develop and produce military systems, potentially including land mobility systems and an extended-range version of the M777 howitzer, US Department of Defense (DoD) spokesperson Lieutenant Colonel Martin Meiners told Janes.

Janes understands that the land mobility systems include Stryker infantry combat vehicles (ICVs) and their joint production in India. The Stryker ICV is the US version of the Light Armoured Vehicle III (LAV III) developed and manufactured by General Dynamics Land Systems, Canada. The US Army operates more than 4,500 Strykers across multiple variants.

The Stryker is a family of 8×8 wheeled armoured vehicles, which includes multiple variants capable of performing as armoured personnel carriers (APCs), infantry fighting vehicles (IFVs), and so on. According to Janes Land Warfare Platforms: Armoured Fighting Vehicles, the M1126 is the primary Stryker variant. It is an APC and provides protected mobility for an equipped section of nine infantry personnel. The weapon options of the M1126 include a 12.7 mm M2 heavy-barrel machine gun or an Mk 19 automatic grenade launcher. The M2 provides an effective engagement range of 1,500 m at a cyclic rate of fire of 450–600 rds/min.

<https://www.janes.com/defence-news/news-detail/us-india-explore-joint-development-of-land-systems>



Tue, 08 Aug 2023

Submerged Sentinels: Ushering in a New Maritime Era with Unmanned Underwater Vehicles

By Cdr Rahul Verma (Retd)

Just as astronauts gaze upon distant galaxies, underwater adventurers peer into the abyss, uncovering ecosystems teeming with life yet to be comprehended. The phrase “The final frontier, where no man has gone before” resonates anew as we plunge into the watery unknown, deciphering the ancient languages of marine life and mapping intricate underwater landscapes. So, I would like to quote myself, “The underwater realm, akin to space, beckons as the ultimate frontier, where mysteries lie shrouded and exploration leads us to uncharted depths, echoing the sentiment, ‘The final frontier, where no man has gone before’.”

In this grand endeavour, Unmanned Underwater Vehicles (UUVs) serve as our technologically-advanced counterparts to space probes, delving into oceanic depths with unparalleled precision. These silent sentinels navigate where humans can’t, unearthing the secrets of the abyss and

revealing the delicate balance of marine ecosystems. They embody the spirit of exploration as they traverse the unknown, much like their cosmic counterparts in the vastness of space. While stars adorn the skies above, bioluminescent wonders illuminate the dark ocean floor, reminding us that the cosmos' beauty has a counterpart beneath the waves. And just as space missions yield precious knowledge about our universe, so do underwater expeditions yield insights into the intricate web of life that calls the oceans home. This ceaseless quest for knowledge, both space and the underwater realm entice the human spirit to explore, to unravel secrets, and to venture into the unknown with the courage to discover what lies beyond the horizon whether it be the twinkling lights of distant stars or the mesmerizing bioluminescence of the deep sea, guided by the silent guidance of UUVs.

In this vast expanse of the world's oceans, a silent revolution is underway, and its impact on global maritime security is nothing short of profound. The emergence of Unmanned Underwater Vehicles (UUVs) is altering the very fabric of naval strategy, casting new perspectives on safeguarding maritime interests. With a keen focus on the dynamic Indian Ocean Region (IOR), where the rise of the Chinese navy is asserting a considerable presence, the transformative potential of UUVs comes into sharper focus.

UUVs: Navigating the Underwater Frontier

Unmanned Underwater Vehicles are the cutting edge of maritime technology, offering the capability to operate autonomously beneath the waves. These underwater sentinels redefine naval operations by seamlessly conducting tasks such as reconnaissance, surveillance, mine detection, and even covert insertions. By operating autonomously and gathering real-time data, UUVs provide an unparalleled advantage in detecting and responding to underwater threats, from hostile submarines to illicit activities that undermine maritime security. In the ever-expanding realm of maritime technology, Unmanned Underwater Vehicles (UUVs) stand at the forefront of innovation, redefining how we explore and comprehend the mysteries of the underwater world. Often referred to as the "Silent Observers of the Deep," UUVs are spearheading a revolution in underwater exploration, surveillance, and security. As technological marvels, UUVs encompass a diverse range of autonomous submersible platforms, each tailored for specific tasks and environments. From compact gliders to robust remotely operated vehicles (ROVs) and autonomous underwater robots, UUVs have transcended the limitations of human presence beneath the waves, opening up an entire frontier for exploration and discovery. The significance of UUVs lies not only in their capacity to delve into oceanic depths that were once beyond human reach but also in their potential to revolutionize a spectrum of industries. From environmental research and resource exploration to maritime security and defense, UUVs have proven their utility in multifaceted applications.

While UUVs have achieved remarkable strides, challenges persist. Enhancing their autonomy, extending operational endurance, and refining obstacle avoidance capabilities are ongoing areas of development. Additionally, as UUV technology evolves, ethical considerations surrounding their deployment, potential interference with marine life, and international regulations must be addressed. In the intricate dance between innovation and responsibility, UUVs represent a vital chapter in humanity's quest to unravel the mysteries of the deep. As they navigate the underwater frontier, these unassuming submersibles have the power to reshape how we perceive, explore, and protect the world beneath the waves. UUVs are not only expanding our knowledge but also paving the way for a sustainable and secure future in the underwater world.

Global Maritime Security Bolstered

Unmanned Underwater Vessels have emerged as a game-changer in maritime security, redefining traditional approaches to safeguarding vast coastlines and critical maritime assets. These self-propelled, submersible vehicles are designed to operate independently, minimizing risks to human lives while significantly extending the reach and effectiveness of naval operations. Around the globe, nations are integrating UUVs into their maritime security strategies, enhancing their ability

to monitor underwater threats, clandestine activities, and environmental changes. With their silent and covert operations, UUVs provide real-time data, enabling timely response to potential security breaches. Moreover, their advanced sensor technologies offer unparalleled capabilities in identifying underwater anomalies, from hostile submarines to illegal underwater activities.

In the contemporary context, the security of individual nations is profoundly intertwined with global security more than ever before. The process of globalization has intricately interconnected countries into an implicit security framework, leading to heightened interdependence and reliance on international collaboration as an essential condition for national progress. The advocacy and sustenance of security in the worldwide maritime domain emerge as a pivotal aspect, given that unhindered access to oceanic routes is crucial for a nation's sustained economic growth. The influence of the maritime commons on trade, international business, and the movement of populations cannot be underestimated, amplifying the significance of ensuring security in oceans, coastal regions, ports, and harbours. This assurance of maritime security stands as a foundational pillar for prosperity. Conversely, any endeavours by nations, groups, or individuals aimed at undermining, damaging, or disrupting security in the maritime realm must be regarded as a global predicament. The task of monitoring and safeguarding the maritime commons from a diverse array of threats has emerged as a foremost concern for all nations that hold a vested interest in the mutual relationship between economic well-being and security within an unimpeded maritime environment. The impact of UUVs on global maritime security is sweeping. As nations from the United States to France, Israel, and beyond integrate UUVs into their maritime security strategies, the paradigm of naval engagement is evolving. UUVs provide a cost-effective solution to monitoring vast maritime territories, offering constant surveillance and the ability to respond rapidly to unfolding situations.

Indian Ocean Region's Strategic Imperative

The Indian Ocean Region (IOR) is a theatre of strategic significance where maritime security is entwined with geopolitical dynamics. The presence of the CCP Navy in the region adds complexity to the situation. China's expanding naval presence in the IOR, marked by initiatives such as the String of Pearls strategy, underscores its ambitions to safeguard its maritime interests. The People's Liberation Army Navy's deployment of Unmanned Underwater Vehicles, including the HSU 001, showcases China's recognition of the transformative role of UUVs in maritime affairs. The strategic importance of the Indian Ocean Region (IOR) extends profoundly into the realm of underwater domain awareness. In an era characterized by evolving security challenges, technological advancements, and intricate geopolitical dynamics, understanding and effectively managing the underwater domain have become imperative for the stability and prosperity of nations within the IOR. As a vital conduit for global trade and commerce, the IOR holds immense economic significance. A significant portion of the world's trade passes through its waters, making maritime routes in the region crucial arteries for international business. Ensuring the security of these routes demands comprehensive awareness of underwater activities, as potential threats, whether conventional or asymmetric, could emerge beneath the waves.

The presence of strategic chokepoints, vital ports, and sensitive littoral zones further underscores the need for robust Underwater Domain Awareness. The vast expanse of the Indian Ocean presents both opportunities and challenges. From resource exploration to submarine operations, understanding the underwater environment is paramount for nations aiming to safeguard their interests and respond effectively to emerging security concerns. Collaborative efforts are key in achieving comprehensive underwater domain awareness. The complexities of the underwater domain transcend national boundaries, necessitating cooperation among nations in information-sharing, technology exchange, and joint monitoring. By fostering regional partnerships, nations within the IOR can collectively enhance their capability to detect and respond to underwater

threats, such as clandestine submarine activities, illegal fishing, and environmental hazards. In the context of the Indian Ocean Region, which has gained prominence due to its economic vitality and strategic significance, the deployment of Unmanned Underwater Vessels takes on heightened importance. The vast expanse of the Indian Ocean presents unique challenges that demand innovative solutions. UUVs are proving to be indispensable tools in addressing these challenges, ranging from piracy and illegal fishing to ensuring the safety of critical maritime trade routes. India, as a key stakeholder in the Indian Ocean Region, has been proactive in harnessing UUV technology to bolster its maritime security posture. The Indian Navy's integration of UUVs into its operations reflects a commitment to leveraging cutting-edge technologies to safeguard its maritime interests. These vehicles are adept at conducting intricate surveys, mapping the ocean floor, and patrolling sensitive areas, contributing to India's domain awareness and maritime domain awareness capabilities.

Chinese Naval Dynamics

The HSU 001 (Hai Su Yi Hao) UUV stands as a symbol of China's maritime aspirations. Its long-duration autonomous capabilities, combined with deep-sea exploration capabilities, demonstrate China's intent to assert its influence in the underwater realm. This advanced technology aligns with China's pursuit of safeguarding sea lines of communication and protecting its expanding overseas interests. The HSU 001 exemplifies the profound impact that UUVs are poised to have on naval power dynamics in the region.

As in many other Chinese technology industries, the state plays a leading role in undersea vehicle development. In 1986, Chinese Premier Zhao Ziyang initiated the State High-Tech Development Plan (863 Plan) to fund billions of dollars in applied technology development. In 1996, marine technologies were added to the program, adding further fuel to China's emerging undersea vehicle industry. In particular, three government-sponsored research institutions form the backbone of Autonomous Undersea Vehicle (AUV) and UUVs development in China. Each began undersea vehicle research in the 1980s, and has gone on to pioneer lines of UUVs and AUVs in use today.

Apart from China's major AUV design centers, an increasing number of research institutions and private businesses are venturing into the Chinese AUV market. In a 2019 publication by the Chinese Society of Naval Architecture, over 159 undersea vehicle research projects were listed as being developed across 40-plus Chinese universities. This marks a significant rise compared to the 15 universities that had formed undersea vehicle research teams merely four years earlier. Dr. Wu Jianguo, a professor at Hebei University of Science and Technology, has highlighted that more than 48 universities and 45 enterprises in China are engaged in notable UUV and AUV endeavors. China's military-civil fusion strategy has further catalyzed the surge in the country's private-sector AUV industry. By fostering collaboration and knowledge exchange between the military and private technology firms, China has achieved certain strides in expediting AUV research. Several enterprises are now pioneering independent lines of AUVs, breaking free from the confines of the prominent three research institutes. While their global competitiveness relative to industry giants like U.S.-based Bluefin Robotics and Norway's Kongsberg remains uncertain, Chinese firms like Xi'an Tianhe Haiphong Intelligent Technology and Startest Marine appear to be emerging as leading champions of China's AUV systems and equipment.

Charting the Way Forward: A UUV-Centric Future

The advent of UUVs presents an opportunity for nations to bolster their maritime security strategies. In the context of the Indian Ocean Region, countries must adopt a multi-dimensional approach that combines conventional naval assets with the strategic integration of UUVs. By leveraging the underwater realm, nations can enhance their maritime domain awareness, detect emerging threats, and safeguard critical sea lanes. In the maritime realm, the path to progress is paved with innovation, and Unmanned Underwater Vehicles (UUVs) have emerged as the compass

guiding us toward a future of enhanced capabilities and unprecedented exploration. As we stand at the juncture of evolving technology and strategic foresight, charting a course that places UUVs at the heart of our maritime endeavours promises to revolutionize industries, redefine security paradigms, and unlock the secrets of the deep. By harnessing UUVs' capabilities, we are poised to reimagine the boundaries of resource exploration, environmental conservation, and maritime security. The intricate ecosystems beneath the waves, often hidden from human eyes, hold vital clues to understanding the delicate balance of our planet. UUVs' silent navigation through the ocean's depths allows us to gather invaluable data, contributing to informed decision-making in resource management and ecological preservation. Moreover, the transformative potential of UUVs in maritime security cannot be underestimated. These autonomous sentinels, equipped with advanced sensors, act as vigilant guardians, patrolling underwater domains with unblinking precision. Whether tracking submarines, monitoring maritime routes, or detecting illicit activities, UUVs amplify our ability to secure vast stretches of ocean, ensuring the safety of critical assets and international waters.

As we embark on this UUV-centric journey, it is imperative to cultivate a collaborative spirit. Partnerships among governments, research institutions, and private enterprises can accelerate technological advancements, streamline regulatory frameworks, and establish international norms for responsible UUV usage. Shared knowledge, pooled resources, and coordinated efforts are the navigational tools that will steer us toward a future where UUVs play an integral role in fostering global maritime stability. China's no-rule-based approach in its maritime activities raises concerns as it ventures into deeper waters, where Unmanned Underwater Vehicles (UUVs) wield potential to both heighten maritime security and amplify uncertainties. This is where QUAD and other rule based democracies have to come together to share niche technologies to help leapfrog the gap in capabilities. Attaining Underwater Domain Awareness (UDA) has emerged as an imperative undertaking, emphasized as a pivotal priority by former Chief of the Indian Navy, Admiral Karambir Singh, during the Navy Day press briefing in December 2020. Subsequently, the Navy has unfolded its strategic "Unmanned Roadmap," dedicated to bolstering its capabilities in unmanned technology and systems.

An unclassified rendition of this comprehensive 'Unmanned Capability Roadmap' was unveiled at the Swavlamban 2022 seminar held from 19th to 19th July 2022. Significantly, the Integrated Unmanned Roadmap for the Indian Navy was unveiled by Defence Minister Rajnath Singh during this year's Naval Commanders Conference, signifying a proactive stride towards enhancing naval capabilities. We as a nation are also working towards creating our own UUVs through Make 2 projects. The best of Indian companies are showcasing their UUVs prowess whether it is DRDO, GRSE, Adani, L&T or MDL for being part of this project. Even Indian Start-ups like Sagar Defence, UDPL and Tardid Technologies have been progressing steadily in the iDEX cases in creating their own autonomous solutions powered by AI engines. The AI Engine along with Adaptable Engines (programmable logic) and Scalar Engines (processor subsystem) form a tightly integrated heterogeneous architecture on Versal Adaptive Compute Acceleration Platforms (ACAPs) that can be changed at both the hardware and software levels to dynamically adapt to the needs of a wide range of applications and workloads.

In charting this transformative trajectory, we recognize that challenges lie ahead from refining autonomous capabilities to addressing ethical considerations and regulatory complexities. However, these challenges are but waypoints on a journey that promises to reshape how we perceive, utilize, and safeguard the oceans. A UUV-centric future holds the promise of pushing the boundaries of human understanding, forging a path toward sustainable coexistence with our aquatic world, and securing maritime domains in ways previously unimaginable. The voyage is underway, and as we navigate uncharted waters, the horizon is adorned with possibilities, a future where UUVs navigate not only the depths but also the forefront of human progress.

As nations across the world, including those within the Indian Ocean Region, navigate the complexities of naval dynamics, the transformative role of UUVs cannot be overlooked. The seas may be vast, but the future of maritime security is being shaped by these submerged sentinels.

<https://www.financialexpress.com/business/defence-submerged-sentinels-ushering-in-a-new-maritime-era-with-unmanned-underwater-vehicles-3204046/>



Tue, 08 Aug 2023

Did China Hack Japan's Defence Networks? Tokyo's Response

Japan cannot confirm if any security information has been leaked, the top government spokesperson said on Tuesday when asked about a Washington Post report on Chinese hacking into its defence cyber networks.

Chinese military hackers gained access to a classified defence network in Japan beginning in 2020, accessing information about the US ally's military capabilities, plans and assessments of shortcomings, the Washington Post reported on Monday, citing senior officials.

Upon hearing about the incident, the heads of the US National Security Agency flew to Tokyo to brief the Japanese defence minister, who asked the US officials to alert the prime minister themselves, the newspaper report said. Speaking at a regular press briefing on Tuesday, Japan's Chief Cabinet Secretary Hirokazu Matsuno said Japan and US have always been in close communication on various levels. "Due to the nature of the matter, I am unable to provide further details of the communication but we haven't confirmed the fact that security information has been leaked due to cyber attacks," he said. There was no immediate comment from Beijing.

Matsuno also said that cyber security is the foundation for maintaining the Japan-U.S. alliance, and that Japan will continue to work to keep its network firm and secure. Meanwhile, Japan's slow response to improve its cyber network could impede greater intelligence sharing between the Pentagon and Japan's Defence Ministry, the Washington Post said, citing officials.

<https://www.hindustantimes.com/world-news/did-china-hack-japans-defence-networks-tokyos-response-101691468714173.html>

Science & Technology News

THE TIMES OF INDIA

Tue, 08 Aug 2023

'Even if Sensors, Engines Fail ...': How ISRO is Planning Proper Touchdown of Chandrayaan-3's 'Vikram' Lander

Isro chief S Somanath has said that the Indian space agency is planning a proper touchdown of Chandrayaan-3's Vikram lander even in the event that its sensors or engines fail.

Explaining the logic, Somanath said that Vikram has been designed in a way that it can make a soft landing on the lunar surface even if all the sensors and two of its engines do not work.

"The entire design of the lander has been made in a manner that makes sure that it would be able to handle failures," the Isro chief said during a talk on 'Chandrayaan-3: Bharat's Pride Space Mission', hosted by the non-profit organisation Disha Bharat.

The Isro chairman attributed this to a well-engineered design bolstered by robust algorithms.

Isro is planning to land Vikram on Moon on August 23.

"If everything fails, if all the sensors fail, nothing works, still it (Vikram) will make a landing. That's how it has been designed - provided that the propulsion system works well," Somanath said.

India's lunar mission, Chandrayaan-3, embarked on its celestial voyage on July 14 and successfully entered lunar orbit on August 5.

A series of three de-orbiting maneuvers are planned to bring the spacecraft closer to the lunar surface.

These intricate exercises are aimed at gradually aligning the spacecraft's trajectory with the lunar surface, facilitating a planned landing of the Vikram lander as per schedule.

These de-orbiting maneuvers are scheduled for August 9, August 14 and August 16.

The purpose is to progressively reduce the spacecraft's orbital altitude to a targeted 100km x 100km above the lunar surface.

In a synchronized sequence, following the "deboost" operation to slow down the lander, a subsequent step will involve the separation of the lander propulsion module. This strategic maneuver will pave the way for the final descent and landing on the lunar terrain.

One of the main challenges for the Isro team would be to maneuver the horizontal orientation of the "Vikram" lander into a vertical stance for safe lunar touchdown.

Somanath underscored the importance of transitioning from horizontal to vertical motion, highlighting that this aspect was a previous stumbling block during the Chandrayaan-2 mission.

<https://timesofindia.indiatimes.com/india/even-if-sensors-engines-fail-how-isro-is-planning-proper-touchdown-of-chandrayaan-3s-vikram-lander/articleshow/102544690.cms>

THE TIMES OF INDIA

Wed, 09 Aug 2023

UoH Medical Device now with DRDO for Patent Consideration

An innovation by a team of researchers from the School of Physics in University of Hyderabad (UoH) to diagnose various illnesses is under consideration by the patent division of the Defence Research Development Organisation (DRDO).

The researchers have developed a high 'Q' Helmholtz photoacoustic cell sensor, which can be used to diagnose various diseases such as diabetes, asthma, lung cancer in a non-invasive way. According to the researchers, this device works by low level detection of acetone vapour. They further said that the equipment was also used for detection of trace explosives, atmospheric pollutants, volatile solvents etc.

“The fabricated Helmholtz PA cell is made of aluminium and has proven to be an extraordinary tool for acetone detection, a vital biomarker in diagnosing various diseases. We have achieved unparalleled sensitivity, detecting acetone at levels as low as parts per trillion (PPT). This research holds immense promise for non-invasive medical diagnostics and may revolutionise disease detection,” said professor AK Chaudhary.

Chaudhary and Arjun VS Kidavu, a senior research scholar from ACRHEM, School of Physics, conducted the research. They further said that the equipment was also extended for detection of trace explosives, atmospheric pollutants, volatile solvents etc. The work was published in the recent issue of Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy.

<https://timesofindia.indiatimes.com/city/hyderabad/uoh-medical-device-now-with-drdo-for-patent-consideration/articleshow/102555845.cms>



Mon, 07 Aug 2023

Newly-Discovered Skull in China Baffles Scientists. Is it yet another Lineage of Humans?

Human ancestry is often taken as a done and dusted topic by the layperson. However, that is far from true. Adding to the mystery, an ancient skull is now baffling scientists with its not-so-similar features to the modern human.

The mysterious skull, as per a Science Alert article, belongs to a child that was alive around 300,000 years ago.

Experts at the Chinese Academy of Sciences (CAS) working alongside researchers from China's Xi'an Jiaotong University, the UK's University of York, and Spain's National Research Center on Human Evolution say that this could potentially be the discovery of a new branch of humans.

The mind-blowing discovery

The skull in question was discovered in 2019. Alongside it, researchers also found a jaw and leg bones. The findings were uncovered in East China's Hualongdong and belong to a child between the ages of 12 and 13 years.

What baffles scientists is the fact that they can't match it to any known human lineage. The skull doesn't resemble Neanderthals, Denisovans, or us (the modern human). Yet, it does have some matching features to different lineages. This means that the hominin or the human family tree may need another branch.

I see you in me

The skull, which is nearly complete with a partial cranium and a nearly complete mandible, as per the research published in the Journal of Human Evolution, is similarly structured to the modern human lineage.

In their analysis, the authors write that while its face has modern-human like features, the limbs, skull cap, and jaw "seem to reflect more primitive traits."

Furthermore, it lacks a chin, which is reminiscent of a Denisovan, a lineage that once existed in Asia and is now extinct.

This complicates the process of identification. The skull seems to be a mosaic of physical features, and points to the co-existence of three different lineages in Asia — *H. erectus*, Denisovan, and this new lineage which is "phylogenetically close" to us.

What is this new human called?

Scientists are yet to classify this purportedly new lineage of hominin. For now, they've now labelled it HLD 6 — here HLD represents Hualongdong where the skull was found.

Homo sapiens, or "wise humans" only appeared in China around 120,000 years ago.

The skull discovered by experts, as per researchers at CAS may be the historic uncovering of an entirely new lineage—a hybrid between the branch that gave us modern humans and the branch that gave us other ancient hominins in the region.

<https://www.wionews.com/science/newly-discovered-skull-in-china-baffles-scientists-is-it-a-new-lineage-of-humans-623180>

