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SUCCESSFUL WARHEAD MISSION OF NEW-GENERATION ANTI-RADIATION MISSILE (NGARM/RUDRAM-I)

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SUCCESSFUL WARHEAD MISSION OF NEW-GENERATION ANTI-RADIATION MISSILE (NGARM/RUDRAM-I)

India's first indigenously developed New Generation Anti-Radiation Missile (NGARM/ RudraM-I) was successfully flight tested on 02 May 2024 in Chandan Range, Rajasthan. With a miss-distance of 5 meters, the missile achieved its intended range and impacted the target. The launch successfully met all mission objectives. The purpose of this successful flight test was to showcase the warhead's operation during the missile's terminal phase.

The mission sequence successfully guided the missile towards the target in the Chandan Range, and the warhead detonated on the target, destroying it.

Several mission events and technologies were validated through this flight test, such as the safe separation of the weapon from the launch aircraft, the long-distance dual-pulse solid propulsion system, guidance and control algorithms utilising inertial navigation systems and electro-mechanical actuation systems, the operation of the end-game processor based on measurements of the laser altimeter, and the detonation of the pre-fragmented warhead by the safe-arm mechanism.

With this flight test, a significant milestone has been achieved, and the confidence of neutralising targets with high accuracy has been demonstrated.

Various DRDO laboratories, Indian Air Force units, Hindustan Aeronautics Limited (Nasik), and QA and certifying agencies,

NGARM on Sukhoi-30 MKI fighter aircraft

namely MSQAA and CEMILAC, participated in this mission.

NGARM, which is now also popularly known as RudraM-I, is an anti-radiation missile with the role of Suppression of Enemy Air Defences (SEAD) missions. It is an air-to-ground weapon system that is launched from Sukhoi-30 MKI fighter aircraft of the Indian Air Force.

The weapon system has been designed and developed by the Defence Research & Development Laboratory (DRDL), Hyderabad, as the nodal laboratory, with the support of DRDO laboratories such as Research Centre Imarat (RCI), Advanced Systems Laboratory (ASL), Defence Electronics Research Laboratory (DLRL), Armament Research & Development Establishment (ARDE), High Energy Materials Research Laboratory (HEMRL), Instruments Research & Development Establishment (IRDE), Integrated Test Range (ITR), Terminal Ballistics Research Laboratory (TBRL), and various industry partners.

Target just before warhead detonation

Warhead detonation in the end-game

Target after warhead detonation

AIR-TO-SURFACE MISSILE—RUDRAM-II SUCCESSFULLY FLIGHT-TESTED

The Defence Research & Development Organisation (DRDO) successfully flight-tested the RudraM-II, the air-to-surface missile from the Su-30 MK-I platform of the Indian Air Force (IAF) off the Coast of Odisha on 29 May 2024.

The flight test met all the trial objectives, validating the propulsion system and control & guidance algorithms. The Integrated Test Range, Chandipur, deployed range tracking instruments such as electro-optical systems, radar, and telemetry stations at various locations, including the on-board ship, to capture flight data and validate the missile's performance.

RudraM-II is an indigenously-developed solid-propelled air-launched missile system meant for an air-to-surface role to neutralise

many types of enemy assets. The missile system incorporates a number of state-of-the-art indigenous technologies developed by various DRDO laboratories.

Hon'ble Raksha Mantri Shri Rajnath Singh congratulated DRDO, IAF, and industry on the successful test flight of RudraM-II.

The successful test has consolidated the role of the RudraM-II system as a force multiplier for the Armed Forces, he said.

Dr Samir V Kamat, Secretary, DD R&D & Chairman, DRDO, complimented the DRDO team for their untiring efforts and contribution culminating in the successful flight test.

TRIALS OF SOFT TARGET MUNITION NIPUN

Armament Research & Development Establishment (ARDE), Pune, in association with the High Energy Materials Research Laboratory (HEMRL), Pune, has developed the Soft Target Munition NIPUN based on the General Staff Qualitative Requirements (GSQR) provided by the Indian Army.

The NIPUN Munition has successfully undergone user evaluation trials, demonstrating compliance with all GSQR

parameters. The munition has unique features like a load-assisted arming mechanism, anti-rodent plastic material, and improved explosives.

Soft Target Munition NIPUN provides enhanced safety during handling, transportation, and laying.

Salient Features:

Mass	:	200 g
Overall Dimensions	:	Ø 92 mm
Height	:	53 mm

ARDE has transferred the technology to two Indian private industries: M/s EEL, Nagpur, and M/s PEL, Hyderabad. The Indian Army has placed an order on both production agencies for a total of 6.97 lakh munitions. Both industries delivered the first batch of 41,000 munitions in May 2024. ARDE successfully completed the Pre-Dispatch Inspection (PDI) in the presence of DGQA representatives, clearing more than 10 defect-free lots from each of the production agencies.

DEMONSTRATION-CUM-TRIALS OF 7.62 X 51 MM ASSAULT RIFLE—UGRAM, TO CAPF OFFICERS

The assault rifle is the primary personal weapon of the frontline soldier in the Armed Forces and must be rugged, lethal, light in handling, and yet effective. It allows the soldier to close in on the enemy and kill him during conventional operations. The assault rifle has evolved from the erstwhile 7.62mm bolt-action SLR to the currently in service 5.56mm INSAS Rifle. The reduction in calibre was due to the change in doctrine and concept from killing to incapacitation, which was thought to be better since it would tie down more troops. However, considering the present operational scenario, lA is again going back to the 7.62mm calibre assault rifle, adopting the doctrine of shooting to kill instead of incapacitating.

Armament Research & Development Establishment (ARDE), Pune, has designed a 7.62x51 mm assault rifle (Ugram) under a MM project as per GSQR 1607 issued by the Indian Army. Through extensive interactions with various users, ARDE evolved the design and incorporated specifically intuitive handling requirements. ARDE placed a development contract with Dvipa Defence India Pvt. Ltd., Hyderabad, to develop Ugram. Dvipa Defence India Pvt. Ltd. realised the first five prototypes of the weapon in a record time of four months. The Ugram assault rifle weighs less than 4 kg, has superior ergonomics, and its performance parameters are best in class.

Keeping in mind that the Ugram assault rifle would be suitable for CAPFs involved in border guarding as well as in the CL environment (anti-naxal operations), A demonstration-cum-trial was organised for all

CAPFs under MHA, including Delhi Police, at ARDE on May 2 and 3, 2024, by the Directorate of Low Intensity Conflicts (DLIC), DRDO HQrs. The CAPFs involved in the trials were BSF, CRPF, ITBP, SSB, NSG, and Assam Rifles. The CAPF representatives extensively tested and evaluated the Ugram assault rifle according to the GSQR parameters, including firing and weapons. Weapons found to perform exceedingly well, complying with all GSQR parameters.

The CAPFs team also conducted a comparative evaluation of Ugram with an ex-import Sig 716 rifle and reported that it was superior in handling, functional, and ergonomic aspects. Director, DLIC is actively pursuing MHA Police Modernisation to facilitate the induction of 'Ugram' into the CAPFs.

INAUGURATION OF LARGE CAST CURE FACILITY

A large cast-cure facility is created at the Advanced Centre for Energetic Materials (ACEM), Nasik, to meet the futuristic requirements of the project for the processing of large-size rocket motors in the 50T class of the HD 1.3 category and the 10T class of the HD 1.1 category.

The facility was inaugurated by Dr Samir V Kamat, Secretary DD R&D & Chairman DRDO on 18 May 2024 through Video-Conference in the presence of Prof. Prateek Kishore, OS & DG (ACE), Dr Anil Prasad Dash, OS & Director, HEMRL, Shri TV Jagadeeswar Rao, Sc 'G' & General Manager, ACEM, and Shri Gagan Inder Wadhwa, CE (CW&E), CCE (R&D) West, Pune. Shri CH Suryakiran, Sc 'G' was also present from the program ANSP.

Officers and staff from the ACEM, Nasik, EMU, Nasik, and CCE (R&D) Nasik teams attended the event.

Shri Rao, inaugurated the facility on behalf of Dr Samir V Kamat, Secretary DD (R&D) & Chairman DRDO, by cutting the ribbon and raising the curtain.

Following the facility's inauguration, Shri Rao gave a presentation that detailed the features of the large cast-cure facility.

The General Manager provided a virtual tour of the large cast cure facility to the chairman, detailing the major equipment and systems within.

HANDING OVER OF LATOT DOCUMENTS TO INDUSTRIES

Dr Samir V Kamat, Secretary, DD R&D & Chairman, DRDO, handed over the LAToT of anti-microbial bed sheets and anti-bed bug bed sheets to three industries during his visit to DRL, Tezpur on 23 May 2024. He also released the Annual Report of DRL, highlighting its progress and achievements.

On the occasion, Dr UK Singh, DS & DG (LS), highlighted the importance of establishing collaborations with academia and industry for translational research that benefits the Armed Forces. Dr DV Kamboj, Director DRL, underscored DRL's new R&D directions, focusing on soldier support for jungle warfare, signature mitigation, and entomological bio-threat prediction and mitigation.

DRDE, GWALIOR SIGNS MOA WITH ICMR-NIV

A Memorandum of Agreement (MoA) between the Defence Research & Development Establishment (DRDE), Gwalior, and the National Institute of Virology (NIV, ICMR), Pune, was signed on 01 May 2024 at ICMR HQrs, New Delhi, for collaborative R&D on advanced diagnostics and medical countermeasures on high-risk viruses of defence and public health importance.

Dr Manmohan Parida, OS & Director DRDE, and Dr Naveen Kumar, Director NIV, exchanged the MoA in the presence of Dr Rajeev Bahl, Secretary, DHR & DG-ICMR, and Dr UK Singh, DG (LS). The event was witnessed by senior scientists from both the organisations, including Dr DT Selvam, Director (PM) from the office of DG (LS), Dr PK Dash, Sc 'G', and Dr MK Meghvansi, Sc 'F' from DRDE, and Dr Nivedita Gupta, Sc 'G' from ICMR HQrs. The MoA is aimed at performing collaborative R&D programs in areas of mutual interest, including joint technical training programs on high-risk pathogens, collaborative R&D projects, the sharing of biological samples, and organising joint seminars/ conferences. Through this MoA, both premier R&D institutions in India have reiterated their commitments toward creating a robust R&D ecosystem for strengthening national capabilities and preparedness in the realm of biodefence and public health.

NATIONAL TECHNOLOGY DAY CELEBRATION

ASL, Hyderabad

Advanced Systems Laboratory (ASL), Hyderabad, celebrated National Technology Day 2024 (NTD 2024) on 28 May 2024. Shri BV Papa Rao, DS & Director ASL, addressed the gathering and highlighted the importance of the day and theme of this year 'Promoting Clean and Green Technologies for a Sustainable Future'. In his address he also mentioned about recent achievements and future programmes of the ASL.

Dr R Srinivasan, Sc 'G', delivered the NTD oration on 'Tactical Missile Control using Solid Propellant Reaction Control System'. He discussed the critical control requirements for man portable missiles that arise during periods of inadequate Aerodynamic control, (i.e.) during launch phase, ignition and end game manoeuvres. Shri Rao presented NTD medal and certificate to Dr Srinivasan.

CABS, Bengaluru

Shri Dhipu TM, Sc 'E', delivered the NTD 2024 oration held at the Centre for Air Borne Systems (CABS), Bengaluru. The oration was delivered on 'Advances in Computer Vision for Defence: A Glimpse into Vision Transformers'. The oration discussed the emerging field of transformer architecture, which is currently the state-of-the-art in artificial intelligence. At the culmination of the oration, Dr K Rajalakshmi Menon, DS & Director, CABS, presented the NTD medal and certificate to Shri Dhipu TM.

CHESS, Hyderabad

The Centre for High Energy Systems & Sciences (CHESS), Hyderabad, celebrated NTD 2024 on 15 May 2024 by organising a special event in the presence of Dr Manoranjan Patri, Chairman CEPTAM, as a Chief Guest. Dr Jagannath Nayak, OS & Director, CHESS, addressed the gathering, highlighting the importance of the day and motivating all scientists and staff to deliver the usable and cost-effective high-power laser-based DEW products to the Services. Dr K Nithyanandan, Assistant Professor at IIT-Hyderabad, gave a special invited talk on 'Emerging Laser-based Technology for Smart Solutions'.

Ms Shilpi Goyal, Sc 'F', gave an oration titled 'Coherent Beam Combination: Futuristic Technology for Direct Energy Weapons'. Ms Goyal received the NTD certificate and medal from Chairman CEPTAM. Afterwards, Chief Guest Dr Patri delivered a keynote address.

DRDE, Gwalior

Defence Research & Development Establishment (DRDE), Gwalior, celebrated NTD 2024 on 13 May 2024. On the occasion, Dr S Ponmariappan, Sc 'F' delivered the NTD oration on 'Advancements in Bio-aerosol Detection and Identification Technologies: Safeguarding Against Biological Threats'. The oration focused on the latest trends and developments in bioaerosol technologies and their implications for biological defence. Dr MM Parida, OS & Director, presented him with the NTD medal and a commendation certificate.

DRL, Tezpur

Defence Research Laboratory (DRL), Tezpur, celebrated NTD 2024 on 13 May 2024. Dr K Santhanam, former Director of DRL, Tezpur, and DFRL, Mysuru, graced the occasion as the Chief Guest. The event commenced

with a welcome address by Dr Dev Vrat Kamboj, Director, DRL. He highlighted the essence of the NTD and emphasised the importance of this day as a catalyst to inspire the next generation of innovators and technologists.

The NTD 2024 oration was delivered by Dr P Chattopadhyay, Sc 'F', on 'Therapy and Delivery: Using Drugs to Develop Future Soldiers'. They bestowed upon him a commendation certificate and a medal. The Chief Guest also addressed the august gathering and shared his extensive experience in R&D. On this occasion, science model display and quiz competitions were organised on 10 May 2024 at DRL, Tezpur among the school students of Sonitpur district, Assam.

INMAS, Delhi

The Institute of Nuclear Medicine and Allied Sciences (INMAS), Delhi, celebrated NTD 2024 on 10 May 2024. Dr Sudhir Chandna, Director, INMAS, inaugurated the event and addressed the gathering. He advised all scientists that efforts are required to plan and execute R&D in a well-defined manner and complete milestones within the defined cost and time lines.

Shri Vinod Kumar, Sc 'F', delivered the oration on 'Development of Products and Technologies to Enhance CBRN Emergency Preparedness'. In his presentation, the orator highlighted a few commercially available CBRN products developed by INMAS, such as DivyadrishtiTM (mobile whole-body counter), RemoconTM (self decon wipes), ShudhikaTM (Buddycaredecon wipes), Protecton TM (medical responder's protection suit), and Swachh series products.

Dr Chandna presented the NTD medal and certificate to Shri Vinod Kumar.

IRDE, Dehradun

Instruments Research & Development Establishment (IRDE), Dehradun, celebrated NTD 2024 on 10 May 2024. Shri Anurag Kushwaha, Sc 'F' delivered the oration on 'LIDAR Technologies in Defence and Efforts of Indigenous Development in DRDO'. Dr Ajay Kumar, OS & Director IRDE, inaugurated the event. He highlighted the importance of the day to the success and achievements of scientists, researchers, engineers, and all others involved in the successful conduct of three nuclear tests at the Indian Army's Pokhran Test Range in Rajasthan. Dr Ajay Kumar commended Shri Kushwaha and awarded the NTD medal and certificate to him.

MTRDC, Bengaluru

The NTD 2024 was celebrated on 10 May 2024, at the Microwave Tube Research and Development Centre (MTRDC), Bengaluru. Shri Potluri Venkata Siva Rao, Sc 'F', delivered the NTD oration on 'Mechanical Engineering Approach in Development of High-Power Microwave Devices and Systems'. He was felicitated by Dr SK Datta, Centre Head, MTRDC, with the medal and the oration certificate.

NSTL, Visakhapatnam

Naval Science & Technological Laboratory (NSTL), Visakhapatnam, celebrated NTD 2024 on 10 May 2024. Shri Surendra Kumar, OS & former Director, ARDE, Pune, was the Chief Guest, while Dr Y Sreenivas Rao, DS & DG (NS&M), was the Distinguished Guest. As part of the celebration, an Open House Exhibition was also arranged where 150 models were received. Dr Kishore Kumar Katikani, Sc 'F' & Chairman, NTD 2024, delivered the welcome address.

On the occasion, the NTD medal and certificate were presented to Sri S Sathiya Kumar, Sc 'E' for his oration on 'Indigenous Li-ion Battery Technology is Immune to Thermal Runaway'.

RAISING DAY CELEBRATION AT CABS

Centre for Airborne Systems (CABS), Bengaluru, was formed on 01 February 1991 and the 33rd Lab Raising Day was celebrated on the evening of 11 May 2024. The Chief Guest for the function was Dr Sameer V Kamat, Secretary, DD R&D & Chairman, DRDO. Shri MZ Siddique, DS & DG (Aeronautics) and Air Vice Marshal Tarun Chaudhry VSM, ACAS (Proj), Air HQrs, were the Guests of Honour. Dr S Christopher, former Secretary DD R&D & Chairman, DRDO, Directors of sister DRDO laboratories and invitees from various industry houses also graced the occasion.

The dignitaries visited Martyr's Memorial at IAF's Aircraft Systems Testing Establishment (ASTE) to offer floral tributes to the Martyrs of DRDO and IAF. Dr Kamat inaugurated the Electrical Rig for Aircraft Systems (ERAS) facility in the august presence of the dignitaries.

Dr K Rajalakshmi Menon, DS & Director, CABS, welcomed the gathering and presented the progress of the laboratory over the years. She spoke about the successful commissioning of the ERAS facility and mentioned that the project is completed successfully and the rig is certified by CEMILAC.

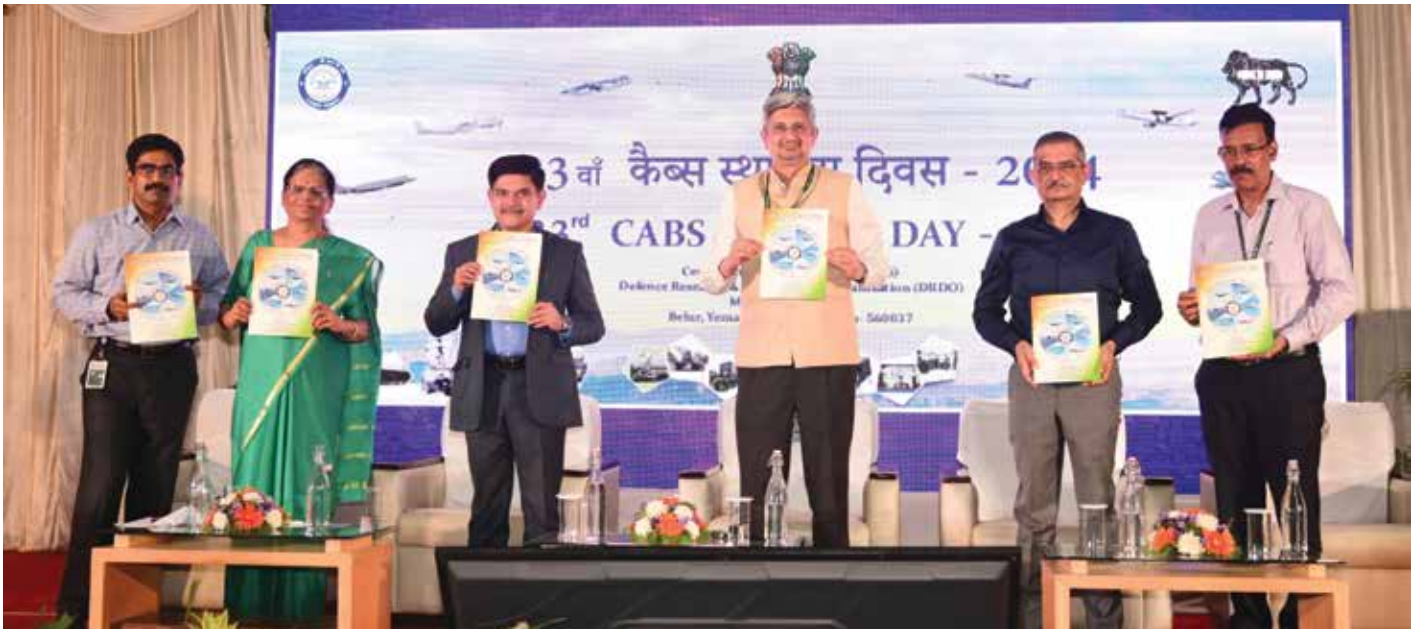
AVM Tarun Chaudhry expressed his satisfaction on the functioning of the two AEW&C NETRA systems delivered to IAF by CABS in the past. He stated that the on-going AEW&C Mk-II programme is very important to Indian Air Force to our skies and appreciated one and all for the success of the projects.

Shri Siddique appreciated the progress made by CABS over the years and conveyed his best wishes for the successful execution of all the tasks/programmes of CABS.

To mark the achievements of CABS over the past few years, *CABS Newsletter*, was released by the dignitaries. Director, CABS announced new names coined for the existing two hangars as 'Rakshak' and 'Shakthi'.

For the first time in DRDO, 'DRDO Flight Test Engineers (FTE) Insignia', was released on the occasion. Shri AS Kumaran, Sc 'F' and Shri Debjith Modak, Sc 'C' were the recipients of the FTE insignia. Dr Kamat pinned the insignia to Shri Modak, who completed the FTE course in 2023, bagging first rank. Mission System Integration and Test Rig (MySIR) model was unveiled by the dignitaries and was declared as 'Product Release' for the current year.

Dr SK Venkatesh, Sc 'G' & Chairman, Organising Committee, gave the vote of thanks and expressed gratitude to the Chief Guest, Guests of Honour, and all invitees for sparing their valuable time and gracing the occasion.



INTERNATIONAL YOGA DAY CELEBRATIONS

DMSRDE, Kanpur

Defence Materials and Stores Research & Development Establishment (DMSRDE), Kanpur, celebrated 10th International Yoga Day 2024 (IYD 2024) on 21 June 2024.

The event was inaugurated by Dr Mayank Dwivedi, OS & Director, DMSRDE. He delivered the welcome address and spoke about the usefulness of yoga as a medicine for living a healthy and stress free life for every human being.

Dr Rakesh Kumar Gupta, Sc 'E' explained the benefits of yoga in achieving the perfect harmony between the mind and body. He also showcased various Yogasanas which were practiced by DMSRDE personnel. All Officers and staff participated in the event with full zeal and enthusiasm. Dr Kavita Agarwal, Sc 'F' was the nodal officer for the event.

EMU, Hyderabad

On the occasion of 10th edition of IYD 2024, EMU (R&D), Hyderabad, organised Yoga Day on 21 June 2024. The event was organised on a large scale with the objective of providing physical health fitness to the employees. The theme of International Yoga Day, 2024 is 'Yoga for Women Empowerment' focusing on enhancing the physical and mental well-being of women.

Large number of officers and staff voluntarily participated and observed white dress code and enthusiastically performed Yogaasanaas, Praanaayaama, Mudras.

Yoga Guru Sri Venkat Reddy Garu, Dr Shaikh Ghouse Mohiddin, Addl. CCE & Estate Manager and his team, participated in the event. On the occasion, the Estate Manager wished that yoga rejuvenates our body and keeps us calm and fit and it should be practiced every day to ensure balanced and good health. He hoped that each participant should be an example for future generations and inculcate the habit of practicing regularly.

PXE, Chandipur

IYD 2024 was observed at Proof & Experimental Establishment (PXE), Chandipur, on 21 June 2024. The programme started with a welcome address by Shri Ratnakar S Mohapatra, Sc 'F'. He explained the importance of yoga in our day to day life with the history behind celebration of International Day of Yoga. Shri Manoranjan Swain, Senior Faculty of Art of Living Centre, Balasore was the Chief Guest on this occasion.

Shri Shreedhar Senapati, Co-Instructor assisted him during live demonstration of Yoga. They demonstrated various Yoga asanas, pranayama and meditation. They explained the merits of different asanas and suggested to put them in practice in daily life. They suggested the names of corresponding asanas for each problem like back pain, mental stress, anxiety and other ailments. They also clarified doubt raised by participating employees. Observation was also made at the Military Wing of PXE, where both Service Personnel and DSC participated.

Shri Aniruddha Bose, Sc 'G', Officiating Director, emphasised the benefit of Yoga for physical & mental health and requested employees to practice to rip its benefit. Around 270 employees participated in the event.

CELEBRATION OF WORLD TELECOM DAY 2024

World Telecommunication and Information Society Day 2024 was celebrated at Integrated Test Range (ITR), Chandipur, on 17 May 2024. Shri K Suchendar, OS & Director ITR inaugurated the event. On the occasion, a lecture on 'Renaissance of HF and its Relevance to Test Range' was delivered by Shri HK Ratha, OS (Retd) former Director, ITR. More than 100 officers and staff attended the event.

The event was organised by Shri Pradip Saha, Sc 'F' and his team.

DEPLOYMENT OF ANTI DRONE SYSTEM-D4, DURING NEW GOVERNMENT SWEARING-IN-CEREMONY

The DRDO deployed D4—Anti Drone System during the swearing-in-ceremony of the Hon'ble Prime Minister of India and Union Council of Ministers at the Rashtrapati Bhawan on 09 June 2024.

With the approval of the competent authority, D4 system was installed successfully for the event in the vicinity of Rashtrapati Bhawan to give protection against rogue drones flying in the red zone declared by Rashrapati Bhawan security wing.

The teams from various laboratories of DRDO, viz., LRDE, DLRL, CHESS, IRDE and M/s BEL were deployed for the operation of the system. CCE (R&D), Delhi, DMS, and EMU gave logistic supports. The overall event was coordinated by DLIC.

WORLD ENVIRONMENT DAY CELEBRATION

On June 5, 2024, the Naval Physical and Oceanographic Laboratory (NPOL), Kochi, celebrated World Environment Day, the largest international environmental event. The theme for 2024 is "Land Restoration, Desertification, and Drought Resilience" with the slogan "Our Land, Our Future. We are #Generation Restoration"emphasizes the importance of restoring land, combating desertification, and enhancing resilience to drought. NPOL celebrates the day every year to raise awareness of our responsibility towards environmental protection. Saplings were planted on the technical campus, and the program

was led by Dr Duvvuri Seshagiri, Outstanding Scientist & Director, NPOL.

The Works Estates & Services Group of NPOL coordinated the event.

BLOOD DONATION CAMP AT ITR

Integrated Test Range (ITR), Chandipur, organised a blood donation camp on 29 May 2024. Shri K Suchendar, OS & Director, ITR, inaugurated the camp.

Dr Basanta Upadhyay, Head Blood Bank, Dist. HQR Hospital, Balasore, Dr Niladri Roy, Sc 'G', DOMS, ITR, graced the occasion.

Shri Suchendar in his inaugural speech said that the blood you donate gives someone another chance at life. There is no substitution for blood. We should encourage everyone to voluntarily donate blood for a noble cause.

The camp collected a total of 388 units of blood. Many scientists, officers, staff, ITR fraternity, and DSC personnel participated in the noble cause. Each participant received a certificate.

WORKSHOP ON HANDLING OF LEGAL MATTERS AT IRDE

A two-day workshop on 'Handling of Legal Matters' was organised by Dte of Personnel (DoP), DRDO HQrs, in collaboration with the Instruments Research and Development Establishment (IRDE) at Dehradun on 06-07 June 2024.

The workshop aimed to make the laboratories and establishments aware of the procedural aspects and urgency required in handling legal issues. More than 75 participants from different DRDO laboratories attended the workshop.

On the first day, an eminent speaker, Hon'ble Shri Ashok Kumar Kacker, District Judge (Retd.), interacted with the participants on the topics of administrative law, especially the view of the judiciary about government departments defending court cases in courts of law. Apart from this, Shri Parvesh Kumar, Joint Director, DoP, introduced the participants to the procedural aspects of handling court cases, including the preparation of counter-affidavits, the implementation of court orders, the handling of contempt petitions, and so on.

On the second day, another eminent speaker, Shri Vijay Bahuguna, Dy GM, THDC India Ltd., interacted with the participants on the topics of contract law and arbitration.

Dr BK Das, DS & DG (ECS) inaugurated the workshop and stressed the need of flexibility and grievance redressal by the leaders to avoid litigation. Dr Ajay Kumar, OS & Director, IRDE; Shri LC Mangal, Director DEAL; Shri SP Dobhal, Director ITM; and Dr Sanjai K Dwivedi, Director, DoP, also graced the occasion.

During the valedictory session, Smt U Jeya Santhi, OS & DG (HR) interacted with the participants and took feedback. Smt Santhi appreciated the efforts and stressed the need to address issues at an early stage.

STANDARDISATION EXERCISE BY DIPR AT SCS, BENGALURU

As part of numerous activities and initiatives held throughout the year to establish the efficacy of the officer selection system, the Defence Institute of Psychological Research (DIPR), Delhi, in collaboration with Service HQrs conducted the Standardization Exercise, which is organised annually by All Services and the Air Force.

All India Standardisation Exercise (AISE) 2024

The All India Standardisation Exercise (AISE) 2024 was conducted at Selection Centre South (SCS), Bengaluru, during 06-11 May 2024. Approximately 50 assessors representing 16 Service Selection Boards (SSBs), including 13 Army Boards and one each from the Air Force, Navy, and Coast Guard Boards spread across the country, participated in the six-day exercise in a single batch. These assessors carried out their assessment on the live batch of candidates who reported SCS for their testing. The DIPR team of scientists and service officers moderated the exercise, discussing each case. Scientists, service officers, and assessors gave presentations pertaining to selection-related aspects. The Adjutant General of the Indian Army, the Director General Rtg, the Director DIPR, the ADG Rtg, the Commandants of all Centers, and representatives from all Service HQrs attended AISE.

Air Force Standardisation Exercise (AFSE) 2024

The Air Force Standardisation Exercise (AFSE) 2024 was conducted at 1 Air Force Selection Board, Dehradun, during 08-12 April 2024. The exercise was conducted over a period of five days for one batch. Around 40 assessors representing eight service selection boards (five Air Force boards and one each from the Army, Navy, and Coast Guard) participated in this exercise. The DIPR team, which consisted of scientists and service officers, served as technical moderators, while the DIPR statistical team coordinated data compilation. AFSE was attended by the Director, DIPR, the Presidents of all five Air Force Boards, ADG Rtg., and representatives from all Service HQrs.

8TH TECHNOLOGY COUNCIL MEETING—MHA-DRDO COLLABORATION

The MHA-DRDO collaboration created the Directorate of Low Intensity Conflict (DLIC), HQrs with a mandate to support MHA's agencies (CAPFs, IB, NDRF, and State Police Services) with DRDO technologies for the forces' operations. The collaboration has led to the development of products with cutting-edge technologies by DRDO laboratories for use in internal security, border surveillance, and disaster management. These forces have already implemented numerous products, and laboratories are actively exploring new ones through research and development. To foster close interactions and collaborative solutions, the Technology Council and Apex Council were formulated.

The 8th Technology Council Meeting was held at DRDO Bhawan on 09 May 2024, chaired by Dr Chandrika Kaushik, OS & DG (PC & SI), while members from MHA, CRPF, BSF, NSG, ITBP, CISF, SSB, NDRF, Assam Rifles, IB, and Delhi Police attended the council. Scientists from DEBEL, LRDE, R&DE(E), ARDE, ISSA, VRDE, IRDE, DMSRDE, HEMRL, DEAL, DYSL-AI, and DIBER attended the meeting either through VC or in person.

The Director of DLIC, Shri Sangita Rao Achary, who also serves as the Member Secretary of the Technology Council, showcased the advancements made in various areas. These included the introduction of UBGL with SD mechanism, LMG, CQB, ASMI pistol, OTLs, weaponised HHTI, dazzlers, anti-miner boot, perimeter intrusion detection system (SUMITRA), ROVs, counter drone systems, GPRs, man-pack SDR, exoskeleton, etc. Various labs also presented new developments, such as the 7.62x51 mm Assault Rifle (Ugram), BPJ Level 6, ergonomic Combat Boot, ECWCS, Compact Tran Horizon Communication System (CTCS), and Smart Hybrid Energy Management System. The council members appreciated the progress made by DRDO laboratories on these technologies and expressed that regular meetings will help in meeting the technology requirements of CAPFs, NDRF, and police in emerging challenging scenarios.

CLUSTER COUNCIL MEETING AT NPOL

The Naval Systems & Materials (NS&M) 63rd Cluster Council Meeting was held in the Naval Physical & Oceanographic Laboratory (NPOL), Kochi, on 23 May 2024. Dr Y Sreenivas Rao, DS & DG (NS&M) chaired the meeting.

The welcome address was given by Dr Ajith Kumar K, Sc 'G' & Director, NPOL. Shri RV Hara Prasad, OS & Director, DLJ, Dr R Balamuralikrishnan, OS & Director, DMRL, Dr Mayank Dwivedi, OS & Director, DMSRDE, Shri PT Rojatkar, OS & Director, NMRL; Dr Abraham Varughese, OS & Director, NSTL; Ms K Sangeeta, IDAS; Jt. IFA; and other senior officers from the cluster laboratoriess attended the meeting. DG (NS&M) and other laboratories Directors felicitated

Dr Ajith Kumar for being superannuated from government service on 31 May 2024.

On the same day, the PVDF Sensor Fabrication Facility was inaugurated by DG (NS&M) and he visited the facility along with the cluster laboratories Directors.

LECTURE ON CYBER SECURITY AT ITR

A cyber security awareness program was organised on 28 May 2024 at the Integrated Test Range (ITR), Chandipur. Talks on the topic were delivered by Shri Pradip Saha, Sc 'F' and Col. Anurag Sen, Dy. CSO of ITR. They highlighted various government guidelines for DRDO employees on cyber security, the latest cyber threats, the uses of social media, and case studies on the modus operandi of such threats.

The event was organised by Shri PN Panda, Sc 'F', and his team.

PROTECTED CULTIVATION TECHNOLOGY TRAINING AT BUM LA, TAWANG

DRDO Greenhouse Users (15 nos.) of Bum La (15200 ft. msl) showcased first-hand knowledge of protected cultivation technology keeping in view the harsh climatic conditions of high altitude on 20 May 2024 by the Defence Research Laboratory (DRL), Tezpur, under PS Project DRL-101.

The Defence Research Laboratory (DRL), Tezpur, apprised the users of the importance of antioxidant-rich strawberries, nutrient-dense exotic vegetables, and their respective production technologies.

Users received a variety of high-quality agri-inputs and exotic vegetable cultivation technology to optimise their greenhouse utilisation. Additionally, vermicomposting technology and Good Agricultural Practices (GAPs) were briefed to users in the training.

DRL R&D CENTRE & DRDO TRANSIT FACILITY INAUGURATED AT TAWANG

Dr Samir V Kamat, Secretary, DD R&D & Chairman, DRDO, inaugurated the DRL R&D Centre & DRDO Transit Facility on 24 May 2024 at Tawang, Arunachal Pradesh, in the presence of Dr UK Singh, DS & DG (Life Sciences), and other dignitaries.

He also visited the forward and border areas and engaged in discussions with senior officials of the Indian Army, Paramilitary Forces, and Tawang district's local administration.

APPOINTMENT

Director, NPOL

Dr Duvvuri Seshagiri, Sc 'H', has assumed charge as Director, Naval Physical and Oceanographic Laboratory (NPOL), Kochi, with effect from 01 June 2024. Dr Seshagiri was serving as the Head of the Airborne and Space Borne Radar Division at the Electronics and Radar Development Establishment (LRDE), Bengaluru, before assuming charge as the 11th Director of this prestigious system laboratory.

Dr Seshagiri holds a BE degree in Electronics and Communication Engineering from AU Engineering College, Waltair, and MTech in Integrated Electronics from the Indian Institute of Technology (IIT), Madras. He obtained PhD from DIAT, Pune. He joined LRDE, Bengaluru, in 2002 as Sc 'D' and worked in the prestigious program Air Defence (AD). He had operationalised very long-range radar systems and played a key role in multiple AD missions. He was the leader of the radar system group for airborne systems, and he pioneered the design and development of India's first indigenous active phased array radar, LSTAR, which led to AEW&C's primary radar.

He joined as the system engineer for Project AEW&C and later became the Project Director. He led the development of the first indigenous airborne radar with an air-to-air primary mode. He developed many innovative techniques to handle airborne clutter, as well as technologies for enhancing the detection range. He also served as the project director of Uttam, the indigenous radar used in Tejas-Light Combat Aircraft (LCA). The project showcased the nation's ability to design, develop, and implement sophisticated, contemporary AI radar systems. Currently, multiple fighters, such as the Su-30 MKI, Mig-29K, and all LCA variants, are preparing to equip this radar. These two airborne radars made India self-reliant in the airborne radar segment. India is the third country in the world to successfully develop both airborne and fire control radars. He played a pioneering role in making India self-reliant on airborne radars.

He received multiple awards, including the DRDO Scientist of the Year Award in 2011, the IETE-IRS Award (2019), the SKOCH Platinum Award (2016), and the Path Breaking Research Award (2020) for the development of Uttam radar for LCA. He has published around 40 research articles in prestigious national and international conferences and journals.

HIGHER QUALIFICATION ACQUIRED

Dr Lalit Mohan Pant, Sc 'F', Instruments Research and Development Establishment (IRDE), Dehradun, has been awarded a PhD from the Centre for Sensors, Instrumentation, and Cyber-Physical System Engineering of the Indian Institute of Technology (IIT), Delhi, for his thesis 'Investigations on Metrology of Freeform Optics and Its Application in Infrared Imaging'. The thrust of the research work was to develop a low-cost metrology method for measuring freeform wavefronts and to explore the use of freeform optics for imaging applications. A cubic freeform component is developed for use in infrared imaging systems to compensate for thermal-induced defocus.

PATENTS GRANTED

❄ The Indian Patent Office has granted patent No. 468465 for 'A Telemetry-cum-control System for Towed Linear Projector Arrays' to Nirmal Mohan, Mangalraj Samuel Theophilus, and Krishnakumar P, from the Naval Physical & Oceanographic Laboratory (NPOL), Kochi.

❄ The Indian Patent Office has granted Nirmal Mohan and Rajesh Kumar CS of the Naval Physical & Oceanographic Laboratory (NPOL), Kochi, Patent No. 467222 for 'A Fault-Tolerant Digital Data Acquisition and Telemetry System for Thin Line Towed Arrays over Single Coaxial Cable'.

VISITORS TO DRDO LABS

CAIR, Bengaluru

AVM George Thomas AVSM, VM, visited the Centre for Artificial Intelligence and Robotics (CAIR), Bengaluru, on 18 April 2024. Dr Rituraj Kumar, OS & Director, CAIR, briefed him about the various projects and activities of the laboratory. The briefing was followed by discussion and demonstration of various technologies developed by CAIR in the area of intelligent systems and robotics.

AVM George Thomas AVSM, VM at CAIR, Bengaluru

DIPAS, Delhi

Surg Vice Admiral Arti Sarin, AVSM, VSM, DGMS (Navy) along with 3 Medical officers from Navy Head Quarters visited Defence Institute of Physiology & Allied Sciences (DIPAS), Delhi on 13 June 2024. Dr Rajeev Varshney, Director, DIPAS, briefed him about the research work being carried out at the institute and also talked about the recent visit of DIPAS team to INS Ashwini, Mumbai, for collaborative projects and setting up High Altitude Diving Research Simulation Facility.

DGMS (Navy) appreciated the work of DIPAS and assured all support of her office to strengthen collaborative work in the area of naval medicine and physiology.

Surg Vice Admiral Arti Sarin, AVSM, VSM, DGMS (Navy) during her visit at DIPAS, Delhi

DIPR, Delhi

❄ Surg Vice Admiral Arti Sarin, AVSM, VSM, DGMS (Navy) visited Defence Institute of Psychological Research (DIPR), Delhi, on a familiarisation visit on 13 June 2024.

Dr Arunima Gupta, Director, DIPR, welcomed the dignitary and briefed her on the various activities of the laboratory.

❄ A one-day interactive meet and brainstorming session was jointly organised by Directorate of Low Intensity Conflict (DLIC), DRDO HQrs and Defence Institute of Psychological Research (DIPR), Delhi, on 11 June 2024. The meet was regarding human performance optimisation of various security forces and the challenges related to screening, selection, placement, training, and wellness were emphasised in the context of changing techno-socio-cultural perspective and contemporary challenges.

Shri Sangita Rao Achary, Director, DLIC, gave a brief overview on contributions of life sciences cluster to CAPFs and emphasised the significance of psychological factors in the

ever-evolving military/security landscape.

During the interactions, Dr Arunima Gupta emphasised upon the requirement of synergy in R&D approaches for addressing human performance optimisation and briefed on the salient outcomes of research for CAPFs. Seventeen senior officers of the rank of Commandant/ equivalent and above dealing with HR/Personnel of eight services viz. CRPF, BSF, ITBP, SSB, NSG, NDRF, CISF, and Delhi Police participated in the interactive and engaging discussions.

Dr Arunima Gupta, Director, DIPR, along with participants during one day interactive meet at DIPR, Delhi

HEMRL, Pune

❄ Air Vice Marshal Tejpal Singh, AVSM VM Commandant, ASTE, visited the High Energy Materials Research Laboratory (HEMRL), Pune, on 15 May 2024. He visited the 'Hall of Energy' (Exhibition Hall), the Flare Smoke & Delay (FS&D) Group, and the High Explosive (HE) Group at HEMRL. The work in the flares and FLSC areas impressed him, and he praised HEMRL's contributions to the IAF.

During the visit, Air Vice Marshal Tejpal Singh showed keen interest in the research and development activities of HEMRL.

Air Vice Marshal Tejpal Singh, AVSM VM, during his visit at HEMRL, Pune

❄ Dr SV Kamat, Secretary DD R&D & Chairman, DRDO, visited the High Energy Materials Research Laboratory (HEMRL), Pune, on 18 May 2023. He inaugurated the Large Motor Cast Cure Facility at ACEM, Nasik, via VC.

The senior scientists gave presentations on solid rocket propellant technology, high-performance gun propellant, programmable opto-pyro technology, and BoM as a TNT replacement during the visit.

Dr SV Kamat, Secretary DD R&D & Chairman, DRDO along with Shri NPN Rao, Sc 'G', at HEMRL, Pune

He interacted with senior scientists in the laboratory and discussed various ongoing projects at HEMRL.

INMAS, Delhi

❄ Inspector General of Nuclear Safety, Indian Navy, Vice Admiral Anand Y Sardesai, VSM, visited the Institute of Nuclear Medicine and Allied Sciences (INMAS), Delhi, on 27 May 2024 and viewed the research and development activities carried out in the field of preparedness for nuclear emergencies.

IGNS was given a detailed overview of R&D activities carried out at the laboratory by Dr Sudhir Chandna, Director, INMAS. Dr Chandna guided IGNS around the 'Biodosimetry Lab' and 'Drug Development Lab', briefing him on radiation exposure detection tests and the development of radioprotectors and decorporating agents. IGNS expressed his desire to work with INMAS in the training of naval personnel on nuclear safety and welcomed the development of decorporating agents and indigenisation of products for nuclear safety by INMAS.

Inspector General of Nuclear Safety, Indian Navy, Vice Admiral Anand Y Sardesai, VSM, interacting with Director, INMAS, Delhi

❄ Lt Gen Arindam Chatterjee, AVSM, VSM, DGMS (Army), visited INMAS, Delhi, on 07 June 2024 and perused the R&D activities carried out in the field of preparedness for nuclear emergencies. Dr Sudhir Chandna, Director INMAS, gave the overview of INMAS and briefed about the activities, thrust areas and research facilities available at INMAS. DGMS (Army) was taken around to the 'Biodosimetry Lab', 'Drug Development Lab' and 'NMR Facility' where he was briefed upon the radiation exposure detection tests, development of radio-protectors and decorporating agents and radiological imaging projects. DGMS (Army) was briefed about various products developed by INMAS for protection and decontamination of radioactivity like medical responder protection suit, super absorbent gel, decontamination wipes and buddy care R&N decontamination kit.

Lt Gen Arindam Chatterjee, AVSM, VSM, DGMS (Army), during his visit at INMAS, Delhi

DGMS (Army) expressed interest for the 'Mobile Radiation Biodosimetry Lab', 'CBRNe Medical & Response Management' advanced training, biomarker analysis approach for predictive modelling of medical ailments faced by the soldiers.

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