

DRDO HANDS OVER MEDIUM RANGE- MICROWAVE OBSCURANT CHAFF ROCKET TO INDIAN NAVY





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DRDO HANDS OVER MEDIUM RANGE- MICROWAVE OBSCURANT CHAFF ROCKET TO INDIAN NAVY

In a ceremony in New Delhi on June 26, 2024, the Defence Research and Development Organisation (DRDO) presented the Medium Range-Microwave Obscurant Chaff Rocket (MR-MOCR) to the Indian Navy. Dr Samir V Kamat, Secretary, Department of Defence R&D & Chairman DRDO, presented the MR-MOCR to the Director General of Naval Armament Inspection, Indian Navy, and Rear Admiral Brijesh Vashistha.

DRDO's Defence Laboratory, Jodhpur, developed the niche technology known as Microwave Obscurant Chaff (MOC), which obscures radar signals and creates a microwave shield around platforms and assets, thereby reducing radar detection.

The medium-range chaff rocket has assembled a special type of fiber with a diameter of a few microns and unique microwave obscuration properties. The rocket, when fired, forms a microwave-obscurant cloud in space, spreading over a sufficient area with adequate persistence time, thus creating an effective shield against hostile threats with radio frequency seekers.

Indian Navy ships successfully conducted Phase-I trials of MR-MOCR, demonstrating the MOC cloud's blooming and persistence in space.

In Phase-II trials, the Radar Cross Section (RCS) reduction of an aerial target to the extent of 90 per cent has been demonstrated and the system cleared by the

Indian Navy. The Indian Navy has received the quantity of MOC rockets that meet the qualification requirements.

Hon'ble Raksha Mantri Shri Rajnath Singh has complimented DRDO and the Indian Navy on the successful development of MR-MOCR. He termed the MOC technology as another step towards achieving 'Aatmanirbharta' in defence.

The DRDO Chairman congratulated the Defence Laboratory, Jodhpur, team for this significant achievement.

The Director General of Naval Armament Inspection, Indian Navy, also applauded the efforts of DRDO for indigenously developing this strategically important technology in a short span of time.





HIGH SPEED EXPENDABLE AERIAL TARGET 'ABHYAS' SUCCESSFULLY COMPLETES DEVELOPMENTAL TRIALS WITH IMPROVED BOOSTER CONFIGURATION

The Defence Research and Development Organisation (DRDO) has successfully completed six consecutive developmental trials of the High Speed Expendable Aerial Target (HEAT) 'ABHYAS' with improved booster configuration on 27 June 2024 from the Integrated Test Range (ITR), Chandipur, Odisha. With this, ABHYAS has successfully completed ten (10) developmental trials, demonstrating the reliability of the system.

The trials were carried out with improved radar cross section, visual, and infrared augmentation systems. The trials successfully validated various mission objectives, including safe booster release, launcher clearance, and endurance performance. Two

launches were conducted back-to-back within a 30-minute gap, demonstrating the ease of operation with minimal logistics. Representatives from the Services witnessed the flight trials.

The Aeronautical Development Establishment (ADE), Bengaluru, designed ABHYAS, with production agencies Hindustan Aeronautics Limited (HAL) and Larsen & Toubro (L&T) leading the development process. It provides a realistic threat scenario for weapon system practice.

This indigenous system is designed for autonomous flying with the help of an autopilot and a laptop-based ground control system for aircraft integration, pre-flight checks, and autonomous flight. It also has a feature to record data during a flight for

post-flight analysis. The booster has been designed by Advanced Systems Laboratory (ASL), Hyderabad, and the navigation system by Research Centre Imarat (RCI), Hyderabad. With identified production agencies, ABHYAS is now ready for production.

Hon'ble Raksha Mantri Shri Rajnath Singh has complimented DRDO, the Armed Forces, and the industry for the developmental trials of 'ABHYAS'. The successful tests are noteworthy testimony to the synergy between DRDO and industry, he said.

Dr Samir V Kamat, Secretary, Department of Defence R&D & Chairman DRDO congratulated the teams associated with the successful flight trial and said the system is cost-effective with huge export potential.



SUCCESSFUL VALIDATION TRIALS OF MPATGM WEAPON SYSTEM

The Man Portable Anti-Tank Guided Missile (MPATGM) is one of the prestigious weapon system development projects of Defence Research and Development Laboratory (DRDL), Hyderabad.

The DRDL conducted two successful consecutive validation flight trials on 2 July 2024 at Pokharan with bull's eye hits, complying with the required parameters of the Indian Army (maximum range of 2.5 km and minimum range of 200 m).

The flight trials were conducted as a joint operation with the Indian Army, with a user-deliverable warhead.

The maximum distance hit was proven with a 'top-attack' flight path, and the minimum distance hit was proven with a 'direct attack' flight path. For both flight trials, warheads exploded on impact, and all dynamics were smooth and as predicted.

Thermal Target Systems (TTS) that simulate the actual thermal signature of a battle tank were used as the target for demonstrating the hit capability of the missile.

Both the missile and the 'launcher system' are state-of-the-art and on par with most of the world's best third-generation ATGMs.

As a development partner, M/s BDL, Kanchanbagh, Hyderabad, shall realize the required MPATGM weapon system for the user trials.





DRDO SANCTIONS SEVEN NEW PROJECTS TO THE PRIVATE SECTOR UNDER TECHNOLOGY DEVELOPMENT FUND SCHEME

Aim is to nurture industries, especially MSMEs and start-ups, in defence and aerospace sectors

Providing impetus to Aatmanirbharta, the DRDO has awarded seven new projects to industries under the Technology Development Fund (TDF) scheme for various requirements of the Armed Forces, aerospace, and defence sectors.

These project sanctions are a testimony to the continuing endeavor of DRDO to nurture industries, especially MSMEs and start-ups, in the defense and aerospace domains. These technologies' indigenous development will strengthen the military industrial ecosystem.

The approved projects include the following details:

Indigenous Scenario and Sensor Simulation Toolkit

The project aims to develop an indigenous toolkit for simulator training pilots in realistic scenarios. This will help in full mission planning and large-scale force engagement. Oxygen 2 Innovation Pvt. Ltd., a start-up in Noida, has received the project award.

Underwater Launched Unmanned Aerial Vehicle

The project focuses on adaptable marine battlefield accessories suitable for various combat roles.

The objectives are Intelligence, Surveillance and Reconnaissance (ISR) and Maritime Domain Awareness (MDA).

The project has been awarded to Sagar Defence Engineering Pvt. Ltd., Pune.

Long-range Remotely Operated Vehicles for Detection and Neutralisation

The vehicles are dual-use systems that will enable detection, classification, localisation, and neutralisation of underwater objects while keeping key assets away from the suspected operational area.

The project has been awarded to a start-up, IROV Technologies Pvt Ltd., Kochi.

Development of an Ice Detection Sensor for Aircraft

The project aims to develop a system for a system for detecting icing conditions inflight, caused by supercooled water droplets that freeze after their impact against the aircraft's external surfaces and are utilised by the aircraft to turn on the anti-icing mechanism.

The project has been awarded to Craftlogic Labs Pvt. Ltd., Bengaluru.



Agreement signed for new TDF Project at ITR Balasore in the presence of DG (TM), Director ITR and Director TDF



Development of a Radar Signal Processor with an Active Antenna Array Simulator

The project will enable the deployment of multiple target systems to test and evaluate multiple short-range aerial weapon systems. It serves as the basic building block for larger radar systems. The project has been sanctioned to Data Pattern (India) Limited, Chennai.

Development of an Indian Regional Navigation

Satellite System-based Timing Acquisition and Dissemination System

Accord Software & Systems Pvt. Ltd., Bengaluru, has received approval for the project. It aims to enable the indigenisation of timing acquisition and dissemination systems, the use of Indian Constellation for acquiring time, and the development of customised and flexible timing systems as per range requirements.

Development of Graphene-based Smart and E-textiles

for Multifunctional Wearable Applications

The start-up, Alohatech Private Limited, Coimbatore, has been sanctioned the project. It will develop conductive yarn and fabric-making processes using graphene nanomaterials and conductive inks.

The outcome will be advanced nano-composite materials-based E-textiles utilising the inherent advantages for practical clothing applications.



Agreement signed for new TDF Project at DRDL, Hyderabad, in the presence of Director, DRDL and Director, TDF



TDF SCHEME PLAYING A CRUCIAL ROLE IN PROMOTING 'AATMANIRBHARTA' IN DEFENCE

Start-ups & MSMEs being encouraged to enhance capabilities in cutting-edge technology

The Technology Development Fund (TDF) scheme is encouraging the participation of public and private industries, especially start-ups and MSMEs, to create an ecosystem aimed at enhancing the capabilities of cutting-edge technology and promoting 'Aatmanirbharta' in defence. The TDF scheme is a flagship program of the Ministry of Defence executed by Defence Research and Development Organisation (DRDO) under the 'Make in India' initiative. Till date, a total of 77 projects, with a commitment of over Rs 300 crore, have been sanctioned to various industries, and 27 defence technologies have been successfully realised under the scheme.

The following are some start-up success stories from the TDF scheme:

Combat Robotics, Pune

Combat Robotics, the Pune-based start-up, has successfully developed an innovative simulator for unmanned vehicles. It is a multi-domain simulator that supports Unmanned Ground Vehicles (UGVs), Unmanned Underwater Vehicles (UUVs), Unmanned Surface Vehicles (USVs), and Unmanned Aerial Vehicles (UAVs), serving as an excellent development tool for agencies working on developing autonomous systems.

The simulator provides comprehensive environmental modeling, scenario and vehicle modeling, and intuitive control systems with developer documentation. It is designed to cater to the demands of testing and validating the autonomous

behavior of unmanned vehicles across multiple domains. It has been developed by the Centre for Artificial Intelligence and Robotics (CAIR), a Bengaluru-based DRDO laboratory.

ChiStats Labs Private Limited, Pune

Virtual Sensors for Aero Gas Turbine Engine Health Monitoring

The project aims to develop a comprehensive diagnostic system for various parts of the Aero Gas Turbine Engine (AGTE), resulting in increased operational reliability and engine longevity. The system is built on stronger foundations of modern AI/ML technologies. It efficiently handles large-scale data, and conducts operational assessments rapidly with a high



Autonomous drone for search and report mission in enclosed/ indoor environment successfully developed under TDF (User- CAIR)



degree of accuracy. The virtual sensor framework is being developed indigenously.

Gas Turbine Research Establishment (GTRE), Bengaluru, provided technical guidance and mentorship for the technology's successful development. ChiStats Labs Private Limited is a start-up in the field of data science and AI solutions, and the winner of the *Dare to Dream 2.0* Innovation Contest at DRDO.

Tools for Data Assessment, Active Learning, and Believability for Visual Data

This ground-breaking project is aimed at enhancing AI model validation and optimisation for defence applications. It will facilitate collaboration among scientists through shared and reproducible experiments. All the tools are accessible via a user-friendly web interface. The project focuses on developing a comprehensive framework to address the unique challenges posed by the vast amounts of data generated in defence scenarios. It consists of four key modules: data and feature assessment, active learning, AI believability, and web application. It will empower defence organisations to build more accurate, reliable, and efficient AI models, leading to improved decision-making and enhanced capabilities in various critical applications. CAIR was instrumental in mentoring and monitoring the project.

NewSpace Research and Technologies Pvt. Ltd., Bengaluru

'Autonomous Drone as First Responder for Search and Report

Operations in Enclosed/Indoor Environments', a Bengaluru-based start-up has developed a state-of-the-art UAV that can explore indoor environments in a variety of conditions, including low light. The project aims to develop an indoor UAV with an autonomous navigation stack, an onboard object detection module, and a localization fallback mechanism integrated with flight control firmware. Integration with the autonomous navigation stack includes 3D mapping, exploration algorithms, and AI/ML engines.

The project's success opens up avenues for a variety of applications, including search and rescue operations, surveillance, industrial inspections, environmental monitoring, and hazardous environment exploration, significantly contributing to technological advancements in unmanned aerial systems. CAIR, Bengaluru, has provided technical guidance and mentorship for the development of the technology.

Dr Samir V Kamat, Secretary, Department of Defence R&D & Chairman DRDO has congratulated the start-ups and DRDO laboratories associated

with these projects. These achievements mark DRDO's successful endeavor to promote the industry in realising Hon'ble Prime Minister Shri Narendra Modi's vision of 'Aatmanirbhar Bharat', he said. The primary goals of the TDF scheme are as follows:

- * To provide grant-in-aid to Indian industries, including MSMEs and start-ups, as well as academic and scientific institutions for the development of defence and dual-use technologies that are currently not available in the Indian defence industry.
- * To engage with the private industries, especially MSMEs and start-ups, to bring in the culture of design and development of military technology and support them with grant-in-aid.
- * To focus on the research, design, and development of niche technologies that are being developed for the first time in the country.
- * To create a bridge amongst the Armed Forces, research organisations, academia, and qualifying and certifying agencies with private sector entities.



'Divya Drishti' successfully developed under TDF (User- CAIR)



INAUGURATION OF SHIELDED X-RAY IRRADIATION FACILITY

Shielded X-Ray Irradiation Facility (X-Rad 225XL) was inaugurated by Dr Sudhir Chandna, Director, Institute of Nuclear Medicine and Allied Sciences (INMAS), Delhi, on 30 May 2024. Dr Chandna stated that the X-ray irradiator will facilitate the radiation countermeasure and biomarker research at INMAS and will support and enhance the ongoing radiation biology research in the institute. The world's most advanced radiation biology laboratories are transitioning from using radioactive material source-based irradiators to X-ray source-based irradiators. In the same spirit, INMAS has also established this facility. The facility will be utilised for the irradiation of cell culture and small animals like



mice and rats. The instrument is capable of irradiating the samples on a spectrum of low to high-dose rates. Addressing the occasion, Director, INMAS said that the facility will give access to radiation

biology research at INMAS. Dr Anant Narayan Bhatt, Sc 'F', and his team provided operational demonstration of the equipment to Dr Chandna and the scientists of the institute.

INTERNATIONAL YOGA DAY CELEBRATION

Defence Research and Development Organisation (DRDO) celebrated International Yoga Day (IYD 2024). A mass yoga practice session was organised for all Delhi-based laboratories of DRDO and DRDO HQrs by the Defence Institute of Physiology & Allied Sciences (DIPAS), Delhi, at the DRDO Complex, Timarpur, Delhi, on 14 June 2024 during the early morning hours (0600–0730 hrs) under the countdown programme of the 10th International Day of Yoga. The programme was inaugurated by Dr Samir V Kamat, Secretary, DDR&D & Chairman, DRDO, with his gracious presence and active



Dr Samir V Kamat, Secretary, DDR&D & Chairman, DRDO, participating in mass yoga practice session organised by DIPAS, Delhi

participation, along with Delhi-based Directors. Dr UK Singh, DS & Director General (Life Science),

spoke in his inaugural address about the significance and benefits of yoga. He also spoke on the basic



philosophy of yoga, its relevance and benefits to one's health, and how to incorporate simple yogic techniques in daily life. Dr Kamat emphasised role of yogic practice in daily life and mentioned how yoga research was initiated in the country by researchers at AIIMS and DIPAS, followed by a yoga demonstration (the Common Yoga Protocol) carried out by Dr Indu Sharma of Morarji Desai National Institute of Yoga and his team, followed by a vote of thanks by Director, DIPAS.

ACEM, Nasik

IYD 2024 was celebrated on 21 June 2024 at the Advanced Centre for Energetic Materials (ACEM), Nasik, in the presence of Prof. Prateek Kishore, OS & DG (ACE), and Shri TV Jagadeeswar Rao, GM, along with officers and staff of ACEM, with great zeal and enthusiasm. Various asanas were performed, and their benefits were explained by the yoga instructor, Smt Ishrat Merchant. The DG (ACE) reiterated the benefits of yoga for the body, mind, and soul and asked employees to inculcate yoga as an essential habit in their lives.

ASL, Hyderabad

Advanced Systems Laboratory (ASL), Hyderabad, celebrated IYD 2024 on 21 June 2024. Shri BV Papa Rao, DS & Director, ASL, addressed the gathering and highlighted the importance of yoga in our lives. Shri Ramchandra Chary organized a yoga session in ASL, elucidating the significance of yogic practices for personal and mental health and fitness. Senior scientists, officers, and staff participated in the yoga practices.



IYD 2024 celebrations at ACEM, Nasik



IYD 2024 celebrations at ASL, Hyderabad

DIPR, Delhi

IYD 2024 was celebrated on 21 June 2024 at Defence Institute of Psychological Research (DIPR), Delhi. Ms Chandni Kumari, the invited guest, a certified yoga master, and yoga protocol instructor from the Ministry of Ayush conducted the yoga sessions. All the employees actively participated in the yogic practices of asanas, pranayama, and meditation in the Seminar Hall. The instructor during her interactions with the participants,

shared her insights on diverse benefits of yoga and urged upon the DIPR fraternity to maximise its reach by integrating Yoga into daily lives.





DRL, Tezpur

Defence Research Laboratory (DRL), Tezpur, celebrated IYD 2024 on 21 June 2024. Dr Rama Dubey, officiating Director gave the inaugural address and felicitated yoga instructors from Vivekananda Kendra, Tezpur. She highlighted the importance of yoga and encouraged the participants to practice it regularly for sound mental health. Yoga instructors demonstrated and discussed the significance of various asanas and pranayam. Officers and staff members of DRL, AO R&D, the offices of IFA, DGRE RDC, and EMU of Tezpur participated in the program.

DL, Jodhpur

Defence Laboratory, Jodhpur (DLJ) celebrated IYD 2024 on 21 June 2024 with the theme of 'Yoga for Self and Society' for fostering a positive and healthy work environment. Shri RV Haraprasad, OS & Director, highlighted the significance of yoga in promoting physical and mental health. During the event, a lecture was given by Dr Ram Gopal,



IYD 2024 celebrations at DRL, Tezpur

Former Director, DLJ on 'Holistic personality development through yoga, pranayam, and meditation' followed by a yoga session by Dr Mahesh Chandra Vyas, Sc 'E' with the simple stretches and breathing Yogasanas.

ITM, Mussoorie

IYD 2024 was celebrated at the Institute of Technology Management (ITM), Mussoorie, on 21 June 2024 in two sessions. The first session was organised for STEMS 22.4 course participants at the 19 CD Sports Complex under the supervision of the course

Director. The second session was dedicated to ITM employees to acknowledge the benefits of yoga. Shri SP Dobhal, Director, ITM, addressed the gathering, explaining the significance of Yoga Day.

MTRDC, Bengaluru

IYD 2024 was celebrated at the Microwave Tube Research & Development Centre (MTRDC), Bengaluru, on 21 June 2024. The yoga session was led by certified yoga instructors Ms Vijayalatha N, Ms Neha Shitut and Ms Purvi from Ananda Sangha, Kriya Yoga



Officers and staff at ITM, Mussoorie, celebrating IYD 2024



Meditation Centre, Bengaluru. Ms Vijayalatha explained the advantages and numerous benefits that yoga offers, including improved physical health, mental clarity, and stress relief. Subsequently, a yoga session was arranged by Ms Vijayalatha and a meditation session was arranged by yoga instructors. Dr SK Datta, Centre Head, MTRDC, also addressed the gathering during the occasion.

NMRL, Ambernath

IYD 2024 was celebrated at the Naval Materials Research Laboratory (NMRL), Ambernath, on 21 June 2024 to promote awareness about the physical and mental health of employees with the theme 'Yoga for Self and Society'. Dr B Basu, Sc 'G' & Officiating Director, NMRL, highlighted the importance of yoga and encouraged the employees to practice yoga and meditation. Shri Nilesh, a yoga instructor from The Art of Living Foundation, Mumbai, was invited to conduct a yoga session during the event to spread awareness about the benefits of yogasanas, pranayama, mudras, and meditation. The session was designed to cater to all levels of experience, from beginners to advanced practitioners. The celebration had a significant positive impact on maintaining physical and mental health, especially in a high-stress work environment.

NPOL, Kochi

Naval Physical & Oceanographic Laboratory (NPOL), Kochi, celebrated IYD 2024 on 21 June 2024 with informative programs focusing on the significance of



MTRDC, Bengaluru, celebrating IYD 2024



IYD 2024 celebrations at NMRL, Ambernath



NPOL, Kochi, celebrating IYD 2024

yoga for a healthy and happy life. An invited talk by Shri Ramesh K, Deputy General Manager (Vigilance) (Retd.), BPCL, and Art of Living practitioners was

arranged. He highlighted that yoga is a practice that represents the harmony of mind and body, and the unity of yoga integrates the body and mind through breath,



bringing peace to our hectic lives. In the yoga practice session, Adv. Srilakshmi Iyer demonstrated yoga asanas and pranayama. All officers and staff participated in this session, led by Shri Ramesh K. All participants were provided with a book titled 'Know Your Mind' by Sri Sri Ravi Shankar in English, Malayalam, and Hindi. The NPOL Works Committee coordinated the event.

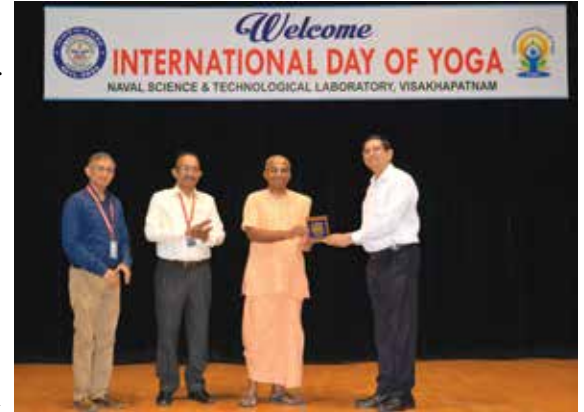
NSTL, Visakhapatnam

Naval Science & Technological Laboratory (NSTL), Visakhapatnam, celebrated IYD 2024 on 21 June 2024. All officers and staff of NSTL participated in a mass yoga practice. Two sessions

made up the program schedule. Officers, staff, and family members of NSTL participated in the morning session.

Dr Y Srinivasa Rao, DG (NS&M), and Dr Abraham Varughese, Director, NSTL, along with 120 other members, actively participated and performed yoga. Shri A Visweswara Rao, Senior Security Asst. (Qualified Yoga Teacher), provided guidance to the experienced and novice practitioners.

Dr Niskinchana Bhakta Dasa from Akshya Patra delivered a lecture on yoga for the modern age,



Dr Y Srinivasa Rao, DG (NS&M), felicitating Dr Niskinchana Bhakta Dasa

interacted with the participants, and explained various physical, mental, and spiritual aspects of yoga and Panchakoshas in the day-to-day activities of life.

ANNUAL DAY CELEBRATION AT DRDL

The 63rd annual day of Defence Research and Development Laboratory (DRDL), Hyderabad, was celebrated with much fervor and aplomb on 5 July 2024. Dr Samir V Kamat, Secretary DD R&D & Chairman DRDO, was the Chief Guest of the event, and Shri U Raja Babu, DG (MSS), was the Guest of Honour. Shri GA Srinivasa Murthy, Director, DRDL, gave an annual day address, highlighting DRDL's achievements in the past year. He expressed his delight in the success of the Multiple Target Multiple Mission of AKASH, which has established India as the first country to engage four targets simultaneously with a single firing unit. Some of the other notable accomplishments that he mentioned were the successful flight trials of SMART, QRSAM, NGARM, and AKASH-NG, as well as the maiden launch of the ASTRA MK-I from the Tejas aircraft.



Shri Raja Babu expressed deep satisfaction with the laboratory's remarkable advances in the realization of various technologies, which have contributed to its notable successes in the past year. Dr Kamat expressed his immense happiness in being able to be a part of the celebrations of DRDL as it completes 63 years of existence.

On the occasion, the PLM software developed by Shri SK Roy, Sc 'G' and team was released

by the Chief Guest. Dr Kamat appreciated the design of the software and remarked that he would make efforts to implement the software in all the laboratories of DRDO.

The dignitaries also released the 24th edition of the Hindi magazine ASTRA and the most recent issue of the *DRDO Newsletter* (July 2024). Shri M Varadanam, Sc 'G' & Chairman, Organising Committee, delivered the vote of thanks.



CELEBRATION OF WORLD ENVIRONMENT DAY

To mark the celebration of World Environment Day, a plantation program was conducted on 05 June 2024 at Integrated Test Range (ITR), Chandipur. Shri K Suchendar, Director, ITR, inaugurated the program with the plantation of fruit bearing saplings. More than 50 saplings were planted. Team ITR has always been proactive in protecting the environment and keeping the surroundings clean. ITR has taken initiatives to ensure a clean and healthy environment. The event was conducted by Dr SK Sahu, Sc 'F', GD (FI&ES), and his team.



NATIONAL FIRE SERVICES DAY CELEBRATIONS AT DRDL

Safety, Fire, and Environmental Engineering Division (SFEED), under the Group 'Testing & Safety' GD-T&S, Defence Research and Development Laboratory (DRDL), Hyderabad, conducted the National Fire Services Day Celebration on 31 May 2024. SFEED conducted various demonstrations at DRDL to create awareness of firefighting techniques among DRDL employees.

Three hundred and twelve employees participated in the celebration and awareness program. The day's slogan was 'Ensure Fire Safety to Contribute to Nation Building'. Shri Arvind Kumar, Director, Centre for Fire, Explosive, & Environment Safety (CFEES), Delhi, was the



Chief Guest for the occasion. Dr CVS Murthy, Associate Director, DRDL; Shri GV Siva Rao, Group Director, T&S, DRDL; and Shri N Vijay, Head SFEED/GD-T&S, DRDL, gave awareness talks and

addressed the participants on the importance of safety, a safe work culture, and other associated topics.

Shri Arvind Kumar delivered a talk on 'Role of CFEES on



Fire Protection and Prevention Measures at DRDO'. The event distributed prizes to "First Aid Fire Fighting Emergency Responders"

and the winners of various competitions. All the participants took a fire safety pledge. The DRDL network and banners conducted a

widespread publicity campaign in the laboratory to raise awareness of "fire safety and emergency response."

PARTICIPATION IN INTERNATIONAL EXHIBITION

Shri M Ranganayakulu, Sc 'F', from the Centre for Airborne Systems (CABS), Bengaluru, participated in showcasing advanced defence systems in Eurosatory 2024, the global event for defence and security, as part of the India Pavilion during, 17-21 June 2024 at Paris, France. He was designated as the team leader of five DRDO scientists and displayed the flagship technology of the Airborne Early Warning & Control (AEW&C) System at the event. Mr Jawed Ashraf, Ambassador of



India to the Republic of France, inaugurated the India Pavilion.

WORKSHOP ON EXPLORING TERAHERTZ FOR MILITARY COMMUNICATION

A one-day workshop on 'Exploring Terahertz for Military Communication' was organised at Defence Electronics Applications Laboratory (DEAL), Dehradun, on 05 June 2024. The workshop was graced by Dr BK Das, DS & DG (ECS), as the Chief Guest and Shri MH Rahman, Director, DIA-COE-IIT Delhi, as the Guest of Honour.

Shri LC Mangal, OS & Director, DEAL, in his welcome address, brought out the agenda of the workshop to frame a roadmap along with the ecosystem for exploring terahertz communication technologies for defence applications.

More than 70 participants, including experts from DEAL, IRDE, MTRDC, SSPL, DRDO HQrs, DIA-COE-IIT Delhi,



GAETEC, SAMEER, IITM, IITD, IITR, and industry partners, attended the workshop. Eminent speakers from DRDO, industry, and academia delivered seven talks on related technologies, including one keynote.

During the deliberations, experts discussed and debated

several significant technological challenges, exploring potential solutions.

During the panel discussion, experts discussed and consolidated valuable inputs, and the path forward for the initiation of terahertz communication technology development.



COURSE ON PHOTONIC INTEGRATED CIRCUITS

Solid State Physics Laboratory (SSPL), Delhi, organised a course on 'Photonic Integrated Circuits (PIC) Technology and Future Application in Defence' during 3-5 July 2024. The course was inaugurated by Dr Meena Mishra, OS & Director, SSPL. Prof. Shankar Kumar Selvaraja from IISc Bengaluru, delivered the keynote address, followed by lectures from Prof. BK Das, Prof. Sudarshan, and Prof. Anil Prabhakar from IIT Chennai, Prof. Rahul from BITS Pilani.

Also, the participation from industry for measurement,



design, and simulation was well appreciated. Additionally, the participants witnessed a live demonstration of the design of PICs. Participants from SAG,

DYSL QY, STAR-C, and SSPL attended the course.

Dr Sunil Sharma SC 'F' and Shri Ashish Jindal SC 'D' organized the course.

COURSE ON BIODOSIMETRY FOR MEDICAL MANAGEMENT OF RADIATION EXIGENCIES

A course on 'Biodosimetry for Medical Management of Radiation Exigencies' was conducted during 3-7 June 2024, at the Institute of Nuclear Medicine and Allied Sciences (INMAS), Delhi, with the objective of creating a trained pool of manpower within DRDO to help in case of any nuclear exigency.

Thirty participants from DIHAR, Leh; MTRDC, Bengaluru; SFC, Jagdalpur; VRDE, Ahmednagar; and INMAS, Delhi, attended the course.

Dr Sudhir Chandna, Director, INMAS, emphasised the requirement of biodosimetry preparedness in the context of the ongoing Ukraine-Russia conflict. The course was designed with equal emphasis on lectures and demonstrations.

Faculties were invited from INMAS and AIIMS, Delhi.



The topics covered included basic radiation biology, radiation physics, multi-parametric biodosimetry, including hands-on training in performing dicentric assays, and the global status of biodosimetry laboratory networking.

The course concluded with an objective-type, question-based examination. Director, INMAS distributed certificates to the participants. Dr Amit Alok, Sc 'E', was the course director, and Dr Shuchi Bhagi, Sc 'D', was the course coordinator.



SEMINAR ON KNOWLEDGE MANAGEMENT SPECIAL FOCUS: TACIT KNOWLEDGE MANAGEMENT

On accomplishing six decades of providing scientific advice to the IAF, O/o Scientific Advisor to Chief of the Air Staff (SA to CAS) successfully organised a half-day seminar on Knowledge Management (Special Focus: Tacit Knowledge Management) on 07 June 2024 at Air Force Station, New Delhi. Air Marshal Ashutosh Dixit, Deputy Chief of the Air Staff (DCAS) and former Scientific Advisor to the Chief of the Air Staff, graced the seminar. Smt Asha Tripathi, Sc 'G' & SA to CAS welcomed the guests. A large number of IAF officers from all over India participated in video conferencing over the AFNET.

Dr S Karunanidhi, Outstanding



Scientist (Retd.), DRDO, delivered the keynote lecture through AFNET from Air Force Station Hakimpet, Hyderabad, on 'Knowledge Management through

the Science of Bharat'. Throughout the seminar, DCAS participated in discussions. The seminar concluded with a vote of thanks by Smt Asha Tripathi.

VIGILANCE AND SECURITY SENSITIZATION PROGRAMME AT ASL

Advanced Systems Laboratory (ASL), Hyderabad, organised Vigilance and Security Sensitization Programme during 24-25 June 2024. Shri U Raja Babu, DS & DG (MSS), was the Chief Guest, and Shri BV Paparao, DS & Director, ASL, was the Guest of Honour. Shri Raja Babu highlighted the recent cyber security issues and advised exercising utmost caution in this regard. Shri BV Paparao cautioned all participants against any lapse with regard to cyber security. Dr W Gowri Shankar, DOMS, ASL, delivered the welcome address, and Shri Ajay Kumar Singh,



Chairman, Organising Committee, briefed about the program in his inaugural address. A total of 187

employees from all the laboratories in the MSS cluster attended the program.



CSeG, ASL, arranged a live telecast for all ASL employees at their respective technology directorates. All the Hyderabad-based laboratories of the MSS

Cluster also received a live telecast. Talks on information security and social media aspects, cyber security and cyber espionage, smart phone security and case

studies, preventive measures against phishing and espionage, the latest cyber threat landscape & trends, etc. were delivered during the program.

CORPORATE REVIEW OF ACEM

A corporate review of the Advanced Centre for Energetic Materials (ACEM), Nasik, was conducted on 06 July 2024. Shri Purusottam Bej, OS & DG (R&M), chaired the Corporate Review Committee, with his co-chair Smt U Jeya Santhi, OS & DG (HR), in the presence of Prof. Prateek Kishore, OS & DG (ACE). Shri TV Jagadeeswar Rao, Sc 'G' & General Manager, ACEM, briefed the committee about the journey of

ACEM, technologies developed for composite propellant processing, and the roadmap ahead. Shri Rao also gave a presentation on the agenda points. Vice Admiral Ranjit Singh, Director, DVS, alongwith Dr Manu Korulla, Director, DCW&E; Dr Ravindra Singh, Director, DMS; Dr Maiya Din, Director, DFMM; Dr SK Dwivedi, Director, DOP; and senior officers from CCE (R&D), O/o DG (ACE), and DRDO HQrs also attended the meeting.

The committee complimented the ACEM team for its contributions to strategic projects of national importance and gave directions for the resolution of all of ACEM's issues. The committee interacted with DRDS, DRTC, and Admin Allied cadre officers. The committee also visited the ACEM plant facilities and received a briefing on the various aspects of composite propellant processing.



Patents Granted

- * A Patent No. 479099 for 'A Method of preparing an electrode material for lithium-ion batteries' has been granted by Indian Patent Office to Dr A Srinivas Kumar and Dr TVSL Satyavani, from NSTL, Visakhapatnam.
- * A Patent No. 539620 for 'A method for preparing high-power lithium-ion with lithium iron cell with lithium iron phosphate for high rate discharge application' has been granted by Indian Patent Office to Dr A Srinivas Kumar, Dr TVSL Satyavani, Dr Kirtan Sahoo, Dr M Srinivas, Shri M Senthili Kumar, Shri KU Gokul, Shri S Sathiya Kumar, Shri MV Raman, Shri K Jagadish, and Shri PK Sahoo, from NSTL, Visakhapatnam.



COURSE ON ADVANCE MANUFACTURING TECHNOLOGY AT DEAL

Defence Applications Laboratory (DEAL), Dehradun, organised a five-day course on 'Advance Manufacturing Technology' during 10-14 June 2024. Shri Pinaki Sen, Associate Director, DEAL, inaugurated the course.

The course was designed to highlight and cover various advance technical developments in the field of defence manufacturing.

A total of 38 participants from various DRDO laboratories and other defence organisations, including BrahMos Aerospace attended the course. The course included combination of lectures, laboratory and industrial visits, demonstrations, and interactive sessions from various speakers.

The course was held in 28 sessions and had advanced modules such as composite manufacturing, mechanical micromachining, additive manufacturing, micro EDM &



micro turning, environmental testing & qualification, design of experiments & case studies, design for X, CAD/CAM/CAE applications, IoT, and augmented reality.

The faculty included eminent speakers from IIT Delhi, IIT Roorkee, India Optel Limited, RCI, DRDL, MTRDC, NPL, IRDE, and DEAL. Industry experts were also invited for providing latest insights in advance

manufacturing technologies. Shri LC Mangal, Director, DEAL attended the valedictory function as the Chief Guest. He highlighted the importance of advanced manufacturing technologies in defence and suggested all the employees to enhance their skills in advance concepts.

Dr RK Bhardwaj, Sc 'F' was the course director, and Shri Ved Parkash, Sc 'E', was the deputy course director.

CELEBRATION OF BIRTH ANNIVERSARY OF DR DS KOTHARI

In commemoration of birth anniversary of Prof. (Dr) DS Kothari on 6 July 2024, floral tribute and homage were offered at Defence Laboratory, Jodhpur. Prof. Kothari was the first scientific advisor to Raksha Mantri and a great visionary.

DLJ is one of the laboratories he founded.





HINDI WORKSHOP AT IRDE

Instruments Research & Development Establishment (IRDE), Dehradun, conducted a one-day Hindi workshop on 25 June 2024.

The workshop's topic was 'Implementation of Official Language Policy and Information Regarding Incentive Schemes'. Shri Punit Vashisth, Sc 'G' & Additional Director, IRDE, inaugurated the workshop.

During his inaugural address, Shri Vashisth emphasized the importance of Rajbhasha and the implementation of its policies. He encouraged the participants to take advantage of this workshop.

Prof. Dinesh Chandra Chamola, Professor & Head, Department of Hindi and Linguistics, Uttarakhand Sanskrit University, Haridwar, was invited to deliver



the lecture.

He delivered two lectures on the topics 'Knowledge of Rajbhasha Rules and Regulations' and 'Use of Hindi in Official Communications'.

Shri LM Pant, Sc 'F' & Vice-chairman, Rajbhasha, introduced

the participants and the workshop. Over 47 participants, including officers and staff of IRDE, attended the workshop. The vote of thanks was given by Shri Krishna Murari, Technical Officer 'C', & Rajbhasha Adhikari.

HINDI WORKSHOP AT PXE

A Hindi Workshop was organised by Proof & Experimental Establishment (PXE), Chandipur, for the STA 'B' and TA 'B' during 12-14 June 2024. Sri Subodh Kumar Nayak, Director, PXE, inaugurated the workshop. In his inaugural address, he said that the workshop would be impactful and useful for doing the official work in Hindi. Twenty technical staff members participated in the workshop. During the workshop, the faculties trained participants in Hindi about interoffice notes, applications, noting, and drafting and introduced Hindi terminologies useful while working in the office. The faculties discussed rules related to leaves,



LTC, TA-DA, and others in detail in Hindi. Apart from this, in technical sessions, information was given in Hindi about cyber information and security and the security and

the use of radar and sensors in proof and trial. The PXE Director encouraged and distributed certificates to the participants in the valedictory function.



VISITORS TO DRDO LABORATORIES

DL, Jodhpur

Shri Ch Durgaprasad, OS & Centre Head, Centre for Advanced Systems Development and Integration Centre (CASDIC), Bengaluru, visited Defence Laboratory, Jodhpur, on 12 July 2024. He gave a highly anticipated talk on 'Advances in Airborne Electronic Warfare-Indian Scenario' and highlighted the importance of sustained innovation, collaboration, and knowledge sharing to stay ahead in the rapidly evolving domain of electronic warfare. During his visit, Shri Durgaprasad was given a comprehensive tour of the facilities in the laboratory.

INMAS, Delhi

DGMS (Navy) Surgeon Vice Admiral Arti Sarin, AVSM, VSM, visited the Institute of Nuclear Medicine and Allied Sciences (INMAS), Delhi, on 13 June 2024 and viewed the R&D activities carried out in the field of preparedness for nuclear emergencies. DGMS (Navy) was given a detailed overview of R&D activities carried out at the laboratory by Dr Sudhir Chandna, Director, INMAS. Dr Chandna guided her around the 'Biodosimetry Lab', 'Drug Development Lab', 'NMR Facility', 'Cyclotron & QC Lab', and 'Nuclear Medicine Department', briefing her on radiation exposure detection tests, the development of radioprotectors and decorporating agents, the radiation imaging facility, and the production of nuclear isotopes.



Shri Ch Durgaprasad, OS & Centre Head, CASDIC, along with Director, DL, Jodhpur, and senior scientist of DL, Jodhpur



DGMS (Navy) Surgeon Vice Admiral Arti Sarin, AVSM, VSM, during her visit to INMAS

Director, INMAS briefed her about various products developed for radioactivity protection and decontamination, including medical responder protection suits, super absorbent gel, decontamination wipes, CBRN stretchers, and Buddy Care R&N decontamination kits.

IRDE, Dehradun

* Maj. Gen. Puneet Ahuja, SM, VSM and General Commanding Officer (GOC) in 1 Armoured

Division along with his team visited Instruments Research & Development Establishment (IRDE), Dehradun, on 31 May 2024. He was welcomed by Smt Ruma Dhaka, Sc 'G' and Associate Director IRDE. Smt Dhaka explained the products and technologies of IRDE to Maj. Gen. Ahuja. Dr Sudhir Khare, Sc 'G', IRDE, explained Maj. Gen. Ahuja about the features of Gallery and showed the Technology Area, System Area, Down-the-



Memory Lane and Lab WOW moments. Maj. Gen. Ahuja was highly delighted watching the Gallery. He appreciated the efforts of IRDE in achieving the self-reliance in India's defence sector. He wished all the very best to the laboratory towards excellence.

✳ Fifteen trainee officers of Departmentally Enlisted Gazetted Officers (DEGO) from the Central Reserve Police Force (CRPF), Dehradun, visited IRDE, Dehradun, on 12 June 2024. Shri Krishna Kumar Debey, the faculty officer of DEGO, led the DEGO officers during their visit. Smt Ruma Dhaka, Sc 'G' & Associate Director, welcomed the officers and briefed them about the products and technologies developed by IRDE. The DEGO officers visited the IRDE Diamond Jubilee Gallery under the guidance of Dr Ajai Kumar Sahani, Sc 'F', IRDE.

✳ Maj. Gen. R Prem Raj, SM, VSM, & General Officer Commanding (GOC) in Uttarakhand Sub Area visited IRDE, Dehradun, on 28 June 2024. Dr Ajay Kumar, OS & Director, IRDE, presented major R&D initiatives taken by IRDE and technologies developed by IRDE. Maj. Gen. Raj appreciated the efforts of IRDE in developing state-of-the-art systems. A guided tour was conducted at the IRDE Diamond Jubilee Gallery under the guidance of Dr Sudhir Khare, Sc 'G', IRDE. Maj. Gen. Raj also visited the system area, where all the products from the past were on display. Maj. Gen. Raj appreciated the efforts of IRDE in achieving self-reliance for India's defence sector. He wished the laboratory all the very best in its pursuit of excellence.



Smt Ruma Dhaka, Sc 'G' felicitating Maj. Gen. Puneet Ahuja, SM, VSM



Trainee officers of DEGO from the Central Reserve Police Force (CRPF) at IRDE, Dehradun



Maj. Gen. R Prem Raj, SM, VSM, & GOC during his visit to IRDE, Dehradun